



CLARK COUNTY, NEVADA

MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

2024



Acknowledgements

Special Acknowledgements

Development of this plan would not have been possible without the commitment of the Clark County Hazard Mitigation Plan Steering Committee. The dedication of the committee's members and jurisdictional representatives to allocate their time to supporting the development of the updated Multi-Jurisdictional Hazard Mitigation Plan has ensured this plan is inclusive of the whole community of Clark County. These efforts of the committee and the commitment to ongoing mitigation activities will set the course for successful implementation of this plan during the next performance period. The participating jurisdictions of the MJHMP include the following:

Municipalities

Clark County, Nevada
Boulder City, Nevada
Henderson, Nevada
Las Vegas, Nevada
Mesquite, Nevada
North Las Vegas, Nevada

Special Districts

Clark County School District
Southern Nevada Health District
Las Vegas Valley Water District
Clark County Water Reclamation District

Tribal Governments

Las Vegas Paiute Tribe
Moapa Band of Paiutes

Clark County 2024 Multi-Jurisdictional Hazard Mitigation Plan

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Record of Revisions

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Acronyms

Acronym	Definition
ARES	Amateur Radio Emergency Services
BIA	Bureau of Indian Affairs (U.S. Department of Interior)
BNICE	Biological, Nuclear, Incendiary, Chemical, and Explosives
CCSD	Clark County School District
CCOEM	Clark County Office of Emergency Management
CDC	Centers for Disease Control and Prevention
CDC/ ATSDR	Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERT	Community Emergency Response Team
CFR	Code of Federal Regulations
CIP	Capital Improvement Plan
CCOEM	Clark County Office of Emergency Management
CCRFGD	Clark County Regional Flood Control District
COG	Continuity of Government
COOP	Continuity of Operations
COVID-19	Coronavirus 2019
CPRI	Calculated Risk Priority Index
DFIRM	Digital Flood Insurance Rate Map
DHS	U.S. Department of Homeland Security
DOT	U.S. Department of Transportation
DSAC	Dam Safety Action Classification
EAP	Emergency Action Plan
EDDMapS	Early Detection & Distribution Mapping System
EMS	Emergency Medical Service
EOP	Emergency Operations Plan

Acronym	Definition
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-To-Know Act
EROS	National Center for Earth Resources Observation and Science
ESF's	Emergency Support Functions
EUA	Emergency Use Authorization
FBI	U.S. Federal Bureau of Investigation
FDA	Federal Drug Administration
FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
FMA	Flood Mitigation Assistance Grant Program
FUSION CENTER	The Southern Nevada Counter-Terrorism Center
GIS	Geospatial Information System
GISMO	Clark County Information Technology, GIS Management Office
HAZMAT	Hazardous Materials
HCCDM	Hydrologic Criteria and Drainage Design Manual
HDPE	High-Density Polyethylene
HHP	High-Hazard Potential
HMP	Hazard Mitigation Program
HRCC	High Plains Regional Climate Center
IBC	International Building Code
IDF	Inflow Design Flood
IEBC	International Existing Building Code
IRC	International Residential Code
LEPC	Local Emergency Planning Committee
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
MMI	Modified Mercalli Intensity
MPSC	Mitigation Planning Steering Committee

Acronym	Definition
MRC	Medical Reserve Corps
MRIR	Moapa River Indian Reservation
MWD	Metropolitan Water District
NCEI	National Centers for Environmental Information
NDMC	National Drought Mitigation Center
NDWR	State of Nevada Division of Water Resources
NEHRP	National Earthquake Hazards Reduction Program
NFIP	National Flood Insurance Program
NICC	National Interagency Coordination Center
NID	National Inventory of Dams
NIMS	National Incident Management System
NNSS	Nevada National Security Site
NOAA	National Oceanic and Atmospheric Administration
NRC	National Response Center
NV DHSEM	Nevada Division of Emergency Management
NVDEM	State of Nevada Division of Emergency Management
NWMA	Nevada Weed Management Association
OSHA	U.S. Occupational Safety and Health Administration
PDSI	Palmer Drought Severity Index
PMF	Probable Maximum Flood
PPE	Personal Protective Equipment
QA	Quality Assurance
QC	Quality Check
RL	Repetitive Loss
SARS	Severe Acute Respiratory Syndrome
SEISMO LAB	Nevada Seismological Laboratory
SEMS	Standardized Emergency Management System

Acronym	Definition
SFHA	Special Flood Hazard Areas
SNWA	Southern Nevada Water Authority
SPI	Standard Participation Index
SVI	Social Vulnerability Index
SWQC	Stormwater Water Quality Committee
TRI	Preliminary Toxics Release Inventory
UReg	Uniform Regulations for the Control of Drainage
USACE	U.S. Army Corps of Engineers
USBR	United States Bureau of Reclamation
USCG NRC	United States Coast Guard National Response Center
USGS	U.S. Geological Survey's
USGS	United States Geological Survey
VEGDRI	Vegetation Drought Response Index
WHO	World Health Organization
WMD	Weapon of Mass Destruction
WUIs	Wildland Urban Interface Areas

Section 1: Hazard Mitigation Program and Requirements

Clark County (County) alongside the cities of Boulder City, Henderson, Las Vegas and North Las Vegas, the Clark County Water Reclamation District, the Clark County School District, the Las Vegas Paiute Tribe, the Moapa Band of Paiutes and the Las Vegas Valley Water District (Steering Committee) have prepared the 2024 Multi-Jurisdiction Hazard Mitigation Plan (MJHMP) to assess the natural and human caused risks to the planning area so as to reduce the potential impact of the hazards by creating mitigation strategies. The 2024 MJHMP represents all the jurisdictions' commitment to create safer, more resilient communities by taking actions to reduce risk and by committing resources to lessen the effects of hazards on people and property.

This plan complies with the Federal Disaster Mitigation Act (2000), Federal Register 44 CFR Parts 201 and 206, which modified the Robert T. Stafford Disaster Relief and Emergency Assistance Act by adding a new section, 322 - Mitigation Planning. This law, as of November 1, 2004, requires local governments to develop and submit hazard mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) and other mitigation project grants. The Planning Group has coordinated preparation of the MJHMP in cooperation with the State of Arizona, other jurisdictions, the County's and city/towns' departments, community stakeholders, partner agencies, and members of the public.

This section of the MJHMP provides a brief description of hazard mitigation planning, local mitigation plan requirements, and an outline of the 2024 MJHMP. There is also an overview of Federal Emergency Management Agency (FEMA) programs and grants related to hazard mitigation.

Hazard Mitigation Planning

Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. In general, hazard mitigation is work done to minimize the impact of a hazard event before it occurs, with the goal of reducing losses from future disasters. 44 CFR § 201.1(b) describes the purpose of mitigation planning is for local governments to identify the hazards that impact them, to identify actions and activities to reduce losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources. For the Planning Team, hazard mitigation planning is a process that will:

- Identify and profile hazards that affect the planning area;
- Analyze the population and facilities at risk from those hazards;
- Develop mitigation strategies and actions to lessen or reduce impact of profiled hazards;
- Implement the strategy and actions that may involve planning, policy changes, programs, projects, and other activities.

The Planning Team's implementation of mitigation actions, which may be short-term or long-term strategies, is the primary objective of the planning process. This type of planning will supplement the other comprehensive planning and emergency management programs.

Local Mitigation Planning Requirements

Hazard mitigation planning is governed by the Stafford Act, as amended by the Disaster Mitigation Act of 2000 (DMA 2000), and by federal regulations implementing the Stafford Act. DMA 2000 revised the Stafford Act to require state, local, and tribal governments to develop and submit to FEMA a mitigation plan that outlines processes for identifying the natural hazards, risks, and vulnerabilities of the jurisdiction. Plan approval by FEMA is a prerequisite to receiving federal hazard mitigation grant funds (see 42 USC § 5165(a)).

To implement the mitigation planning requirements of the Stafford Act, FEMA promulgated 44 CFR Part 201, the federal regulations governing the planning process, plan content, and the process for obtaining approval of the plan from FEMA. The planning requirements set forth in the CFR are identified throughout this plan mirroring the order of the FEMA Regulation Checklist in the Local Mitigation Plan Review Tool. FEMA has released the updated Local Mitigation Planning Policy Guide on April 19, 2022. The policies in the guide take effect on April 19, 2023; they supersede the 2011 Local Mitigation Plan Review Guide. The Local Mitigation Plan Review Tool (April 19, 2023), which has been tailored by FEMA Region IX as an appendix to the Local Mitigation Planning Handbook (2013) and new Local Mitigation Planning Policy Guide (effective April 2023), to demonstrate how the mitigation plan meets the regulation in 44 CFR § 201.6 and offers State and FEMA Mitigation Planners an opportunity to provide feedback to the jurisdiction. The Plan Review Tool has a regulation checklist that provides a summary of FEMA's evaluation of whether the plan has addressed all requirements. Local planners can also use the checklist prior to submitting the plan for approval to ensure they have addressed all the requirements. The Local Mitigation Plan Review Tool and Tribal Mitigation Plan Review Tool Regulation Checklist is provided in [Appendix A](#) of this document.

Note: The Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation have the responsibility to coordinate activities relating to hazard evaluation and mitigation, and to prepare to submit a multi-jurisdictional plan following the criteria established in 44 CFR 201.7 and Section 322 of DMA 2000 (Public Law 106-390) including CFR Parts 200 and 3002 and will amend its plan whenever necessary to reflect changes in tribal or federal laws and statutes.

Hazard Mitigation Plan Description

The 2024 MJHMP consists of the sections and appendices described below:

Table 1: Plan Sections, Appendices, and Descriptions

Section	Description
Section 1: Hazard Mitigation Program and Requirements	Includes background on hazard mitigation planning, lists the MJHMP planning requirements, provides a description of the plan, and discusses grants related to hazard mitigation.
Section 2: Introduction, Planning Process and Plan Maintenance Procedures	Introduces the update to the MJHMP and describes the planning process for the 2024 MJHMP, including an overview of how the MJHMP was prepared, identification of the MJHMP Planning Team, involvement of outside agencies and communities, the inclusion of related plans, reports and information, and stakeholder and public outreach activities. This section also describes procedures for updating the MJHMP to keep it current and for continuance of public engagement in the planning process.
Section 3: Planning Area Description	Includes a description of the natural and built out state of the Planning Team, including climate, geography, demographics, and economic conditions.
Section 4: Hazard Analysis and Risk Assessment	Provides a list of the hazards identified in the 2024 MJHMP, a profile of each hazard and hazard summary, and a risk assessment of the planning area.

Section	Description
Section 5: Mitigation Strategy and Capabilities Assessment	Identifies and evaluates the resources available to participating jurisdictions for hazard mitigation in the County and Identifies and evaluates the current, ongoing, and completed mitigation projects and programs of the participating jurisdictions and lists their mitigation strategies for reducing potential losses.
Section 6: Plan Approval and Adoption	Includes documentation of NV DHSEM and FEMA review process and documentation of MJHMP adoption by the elected leadership of each participating jurisdiction.
Appendix A: FEMA Local Mitigation Plan Review Tool	Contains the FEMA Local Mitigation Plan Review Tool, which documents compliance with the MJHMP planning requirements of 44 CFR Part 201.
Appendix B: Mitigation Planning Steering Committee Documentation	Contains documentation of the planning process for the Planning Team, including meetings, presentations, emails, etc.
Appendix C: Public Engagement Documentation	Contains documentation of the planning process including meetings, presentations held for the stakeholders and public, and other stakeholder/public outreach efforts.
Appendix D: Expanding and Improving Mitigation Project Survey Responses	Contains survey results from the Planning Team as they provided their input on the growth and development of their communities.
Appendix E: Critical Facilities and Infrastructure	Contains list of critical facilities and infrastructure for Clark County and its participating jurisdictions.
Appendix F: FEMA Presidential Declaration Maps	FEMA Presidential Declaration Maps
Appendix G: FEMA DFRIM Maps	FEMA DFIRM Maps, Clark County, NV
Appendix H: Clark County, NV Storm Gauges	Clark County, NV: Flooding, Storm Gauges and Historical Crest Data
Appendix I: Mitigation Action Prioritization Tables	Mitigation Action Prioritization Tables
Appendix J: Jurisdictional Annexes	Contains jurisdiction-specific information, including planning area description, vulnerability analysis, and mitigation strategy for the following jurisdictions: Cities of Boulder City, Henderson, Mesquite, Las Vegas, North Las Vegas, Las Vegas Paiute Tribe, and Moapa Band of Paiutes.

Grant Programs with Mitigation Plan Requirements

Currently, four FEMA grant programs provide funding to local entities that have a FEMA-approved local mitigation plan that meets federal hazard mitigation plan requirements. Three of the grant programs are authorized under the Stafford Act. The remaining two programs are authorized under the National Flood Insurance Act and the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act.

Stafford Act Grant Programs

Funding is provided to state, local, and tribal governments that have an approved MJHMP through the following programs.

Hazard Mitigation Grant Program (HMGP)

The HMGP provides grants to implement long-term hazard mitigation measures after declaration of a major disaster. Its purpose is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. To qualify for

HMGP funding, projects must provide a long-term solution to a problem and the project's potential savings must exceed the cost of implementing the project.

HMGP funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. The amount of funding available for the HMGP under a particular disaster declaration is limited. Under the program, the federal government may provide a state or tribe with up to 20% of the total disaster grants awarded by FEMA and may provide up to 75% of the cost of projects approved under the program.

Hazard Mitigation Grant Program (HMGP) Post Fire (HMGP-PF)

The HMGP- Post Fire provides assistance to help communities implement hazard mitigation measures after wildfire disasters in any areas that receive a Fire Management Assistance Grant (FMAG) declaration. Section 1204 of the Disaster Recovery Reform Act of 2018 Stafford Act to allow FEMA to provide HMGP Post Fire assistance for hazard mitigation measures that substantially reduce the risk of future damage, hardship, loss or suffering in any area affected by a fire for which assistance was provided under Section 420 of the Stafford Act.³¹ amended Section 404 of the 32. Therefore, unlike HMGP, the availability of HMGP Post Fire assistance is not contingent on a major disaster declaration and is instead triggered by an FMAG declaration. Eligible activities may be outside of the declared area as long as the risk reduction benefits include the declared county or counties (e.g., watershed mitigation). HMGP-PF is managed by FEMA and administered by the Nevada Division of Emergency Management.

The Building Resilient Infrastructure and Communities (BRIC) Program

The new BRIC grant program is for pre-disaster mitigation activities and replaces FEMA's existing Pre-Disaster Mitigation program. The BRIC priorities are to:

- Incentivize public infrastructure projects;
- Incentivize projects that mitigate risk to one or more lifelines;
- Incentivize projects that incorporate nature-based solution;
- Incentivize the adoptions and enforcement of modern building codes.
-

BRIC will support states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The BRIC program guiding principles are supporting communities through capability and capacity-building, encouraging and enabling innovation, promoting partnerships, enabling large projects, maintaining flexibility, and providing consistency. In FY 2021, BRIC funding totaled \$1 billion. The federal government provides up to 75% of the cost of projects approved under the program.

Fire Prevention and Safety Grants (FP&S)

The Fire Prevention and Safety Grant (FP&S) are a part of the Assistance to Firefighters Grant (AFG) and support projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal is to reduce injury and prevent death among high-risk populations. Fire departments, local governments, and recognized community organizations are eligible to receive this funding.

National Flood Insurance Act Grant Programs

Flood Mitigation Assistance Program

The goal of the Flood Mitigation Assistance (FMA) Grant Program is to reduce or eliminate flood insurance claims under the National Flood Insurance Program (NFIP). This program emphasizes mitigating repetitive loss (RL) properties. The primary source of funding for the FMA program is the National Flood Insurance Fund. Grant funding is available for planning, projects, and technical

assistance. Project grants are awarded to local entities to apply mitigation measures to reduce flood losses to properties insured under the NFIP. In FY 2021, FMA funding totaled \$160 million. The cost-share for this grant is 75 percent federal and 25 percent nonfederal. However, a cost-share of 90 percent federal and 10 percent nonfederal is available in certain situations to mitigate severe repetitive loss (SRL) properties.

Repetitive Flood Claims Program

The Repetitive Flood Claims (RFC) Program provides funding to reduce or eliminate the long-term risk of flood damage to residential and non-residential structures insured under the NFIP. Structures considered for mitigation must have had one or more claim payments for flood damages. All RFC grants are eligible for up to 100 percent federal assistance.

Other Funding Sources

Bureau of Indian Affairs (BIA) Aid to Tribal Governments (ATG)

This program provides funds to Indian Tribal Governments to support general tribal government operations; to maintain up-to-date tribal enrollment; to conduct tribal election; and to develop appropriate tribal policies, legislations, and regulations. Funds may be used in a variety of ways to strengthen the capabilities of Indian tribes in self-government, community planning, and the maintenance of membership records.

Community Block Grant Program

The Community Development Block Grant (CDBG) Program provides annual grants on a formula basis to states, cities, and counties to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for low- and moderate-income persons. The program is authorized under Title 1 of the Housing and Community Development Act of 1974, Public Law 93-383, as amended 42 U.S.C. 5301 et seq. As mentioned in the previous MJHMP update (2018), this grant is for Acquisition of real property, relocation and demolition, rehabilitation of residential and non-residential structures, construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes.

Southern Nevada Water Authority (SWNA) Water Preservation Funds

As mentioned in the previous MJHMP update (2018), this project-specific funding source by SWNA provides incentives to jurisdictions for water preservation efforts.

Public Assistance (PA) Grant Program

The mission of FEMA's PA program is to provide assistance to state, local, and tribal governments, and certain types of private, non-profit organizations so that communities can quickly respond to, and recover from, major disasters or emergencies declared by the President. Through the PA program, FEMA provides supplemental federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement or restoration of disaster-damaged publicly owned facilities, as well as those of certain non-profit organizations. The PA program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process. The federal share of assistance is not less than 75% of the eligible cost for emergency measures and permanent restoration. The grantee determines how the non-federal share (up to 25%) is split with the eligible applicant(s).

Local Revenues and Budgets

Recognizing the importance of hazard mitigation planning, Clark County and its participating

jurisdiction(s) have self-funded the 25% match required by FEMA's HMGP and HMGP Post Fire grants.

Section 2: Introduction, Planning Process, and Plan Maintenance Procedures

The requirements for documentation of the MJHMP planning process are described below. This section summarizes the Steering Committee’s hazard mitigation planning efforts in 2022-2024. In addition, this section describes public and stakeholder outreach efforts as part of the MJHMP planning process. As well, the section also summarizes the review and incorporation of existing plans, studies, and reports used to develop the MJHMP. Documentation of the MJHMP planning process for the Steering Committee is provided in [Appendix B](#) and documentation of the planning process for the public and stakeholders is found in [Appendix C](#). These appendices document the planning meetings and outreach activities and include meeting agendas, presentation, materials, and other documentation used to conduct the planning process.

Table 2: FEMA Regulation Checklist: Planning Process

FEMA Regulation Checklist: Planning Process	
44 CFR § 201.6(c)(1)	Documentation of the Planning Process: The plan shall include documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process and how the public was involved.
Elements	
A1	Does the Plan document the planning process, including how it was prepared and who was involved the process for each jurisdiction? 44 CFR § 201.6(c)(1)
A2	Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? 44 CFR 201.6(b)(2)
A3	Does the Plan document how the public was involved in the planning process during the drafting stage? 44 CFR 201.6(b)(1) and 201.6(c)(1)
A4	Does the Plan document the review and incorporation of existing plans, studies, reports, and technical information? 44 CFR 201.6(b)(3)

Data Source: FEMA, Local Mitigation Planning Policy Guide, Released April 19, 2022, Effective April 19, 2023

The planning process began with the Planning Team establishing the planning area and inviting stakeholders within the area to participate in the process. In addition, the Planning Team identified the financial and technical resources required to update the MJHMP. Once all the Planning Team’s financial and technical resources were identified, the Planning Team established a schedule for the process.

Plan History

The initial basis for this plan was the 2007 HMP. Clark County took the lead to coordinate with all five incorporated jurisdictions within the County, as well as appropriate districts, universities, private, non-profit, and local, county, state, and federal governments. The 2007 HMP development occurred from July 2002 through September 2006. The 2007 HMP was adopted by the Clark County Board of Commissioners in September 2006. On February 6, 2007, FEMA approved the adopted 2007 HMP. Participating organizations included:

Clark County

- City of Henderson
- City of Las Vegas
- City of Mesquite
- City of North Las Vegas

In March 2011, during the fourth year of the 2007 HMP, the County initiated an update to the HMP which was completed and adopted in 2012. URS Corporation provided professional consulting support. Participating organizations in the 2012 HMP included:

- Clark County
- City of Henderson
- City of Las Vegas
- City of Mesquite
- City of North Las Vegas

Plan Background, Purpose, and Authority

Each year in the United States, disasters take the lives of hundreds of people and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters because additional expenses to insurance companies and nongovernmental organizations are not reimbursed by tax dollars. Many disasters are predictable, and much of the damage caused by these events can be alleviated or even eliminated.

Hazard mitigation is defined by FEMA as “any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event.” A 2019 cost-benefit analysis on hazard mitigation, the most in-depth available to date, concluded that adopting the latest building code requirements is affordable and saves \$11 per \$1 invested, above-code design could save \$4 per \$1 cost, private-sector building retrofit projects could save \$4 per \$1 cost, lifeline retrofit saves \$4 per \$1 cost, and Federal grants save \$6 per \$1 cost. The findings provide evidence that mitigation activities are highly cost-effective, in addition to saving lives and preventing injuries.¹

Examples of hazard mitigation measures include, but are not limited to the following:

- Development of mitigation standards, regulations, policies, and programs;
- Land use/zoning policies;
- Strong building code and floodplain management regulations;
- Dam safety program, seawalls, and levee systems;
- Acquisition of flood prone and environmentally sensitive lands;
- Retrofitting/hardening/elevating structures and critical facilities;
- Relocation of structures, infrastructure, and facilities out of vulnerable areas;
- Public awareness/education campaigns.

National Institute of Building Science Multi-Hazard Mitigation Council, 2019, Natural Hazard Mitigation Saves: 2019 Report

- Improvement of warning and evacuation systems.

Hazard mitigation planning is the process through which hazards that threaten the County are identified, likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies to lessen impacts are determined, prioritized, and implemented. This plan documents the planning process employed by the Planning Team. The MJHMP identifies relevant hazards and risks and identifies the strategy that will be used to decrease vulnerability and increase resiliency and sustainability.

This MJHMP was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 and the implementing regulations set forth in the Federal Register (hereafter, these requirements will be referred to collectively as the DMA 2000). While the act emphasized the need for mitigation plans and more coordinated mitigation planning and implementation efforts, the regulations established the requirements that hazard mitigation plans must meet in order to be eligible for certain federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Act.

Information in this MJHMP will be used to help guide and coordinate mitigation activities and decisions for future land use. Proactive mitigation planning will help reduce the cost of disaster response and recovery to the County and its property owners by protecting structures, reducing exposure and minimizing overall County impacts and disruption. The County has been affected by hazards in the past and is thus committed to reducing future disaster impacts and maintaining eligibility for federal funding.

This update to the 2018 Clark County MJHMP geographically covers the participating jurisdictions within the County boundaries (hereinafter referred to as the Planning Area) which are as follows:

One County

Clark County

Four Cities

City of Boulder City

City of Henderson

City of Las Vegas

City of North Las Vegas

Two Tribal Nations

Las Vegas Paiute Tribe

Moapa Band of Paiutes

Four Special Districts

Clark County Water Reclamation District

Clark County School District

Las Vegas Valley Water District

Southern Nevada Health District

Each jurisdiction, as documented within the plan update, actively participated in the planning process from its inception. Accordingly, each jurisdiction provided at least one representative to offer a locality-specific perspective.

Planning Process Description

As per page 4 of the Local Mitigation Planning Policy Guide released April 19, 2022, it states, “The whole community will build a shared understanding of mitigation investment and its value. Specifically, the whole community will understand how effective mitigation investments can protect people, homes, neighborhoods, cultural and historic resources, ecosystems and lifelines (for example, communications, energy, transportation and water). The federal government and its non-federal partners will create a shared vocabulary and common measures to communicate information about risk and find opportunities to educate, hire, train and develop a base of qualified mitigation professionals.”

The Hazard Mitigation Committee agreed with this strategy. Therefore, any planning process steps were completed with the whole community approach in mind and did so together at all meetings. This means Clark County, Boulder City, Henderson, Mesquite, Las Vegas, North Las Vegas, Las Vegas Paiute Tribe, and Moapa Band of Paiutes, worked together to determine equitable solutions for their residents. Therefore, a development process for each jurisdiction as a stand-alone is not necessary.

In March 2022, the planning process for the 2024 MJHMP began. Select staff from participating jurisdictions and stakeholders were invited to participate on the Steering Committee for the purpose of developing the 2024 MJHMP, in addition to representation from Nevada Division of Emergency Management. A solicitation was also sent to other interested agencies through an email sent by the County. Members of the Mitigation Planning Steering Committee (hereinafter referred to as the MPSC), actively participated in meetings, solicited input from community members, and ensured that all jurisdictional information was reflected in the plan.

If a committee member could not attend a meeting, they were contacted by phone in order to receive all documentation requested by jurisdictions from the meeting. The phone call(s) consisted of a brief overview of the meeting along with time for the planning committee member to offer his/her suggestions or comments. A detailed description of the planning process, including a list of contributions from each jurisdiction, is provided in [Section 2.5 – Jurisdictions](#). A complete list of planning committee participation can be found in Section [2.6 – Mitigation Planning Steering Committee](#). Also, [Appendix B – Mitigation Planning Steering Committee Documentation](#) includes documentation of the planning process for the MJHMP Planning Team, including meetings, presentations, emails, etc. Each jurisdiction conducted additional, informal, planning efforts to support the MJHMP Planning Team. This was primarily due to the operational requirements of the ongoing COVID-19 response. Only one of these supplementary efforts was conducted formally. It is documented herein. Finally, the Jurisdictional Annexes summarize the hazard mitigation elements specific to the following jurisdictions:

- [Boulder City](#)
- [Henderson](#)
- [Mesquite](#)
- [Las Vegas](#)
- [North Las Vegas](#)
- [Tribal Nation: Las Vegas Paiute Tribe](#)
- [Tribal Nation: Moapa Band of Paiutes](#)

These Annexes are supplements to the Clark County MJHMP 2024; therefore, the Annex is not a stand-alone plan but intended to supplement the hazard information provided in the Base Plan document. All

other sections of the MJHMP, or Base Plan, including the sections on the planning process, countywide risk assessment, and procedural requirements related to plan implementation and maintenance apply to all participating jurisdictions. [See Appendix J – Jurisdictional Annexes](#) to see information and details on each jurisdictional profile, planning process, risk assessment, and mitigation strategy for their communities. As a part of the planning process, each jurisdiction provided elements to be included in the jurisdictional annex throughout the entire planning process. A detailed description of the planning process, including a list of contributions from each jurisdiction, is provided in [Section 2.5 – Jurisdictions](#). A complete list of planning committee participation can be found in Section [2.6 – Mitigation Planning Steering Committee](#) and [Appendix B: Mitigation Planning Steering Committee Documentation](#).

What's New in this Plan Update?

Table 3: FEMA Regulation Checklist: Plan Update

FEMA Regulation Checklist: Plan Update	
44 CFR § 201.6(d)(3)	Documentation of the Plan Update Requirements: was the plan revised to reflect changes in development and was the plan revised to reflect changes in priorities and progress in local mitigation efforts?
Elements	
E1.	Does the plan describe the changes in development that have occurred in hazard-prone areas that have increased or decreased each community's vulnerability since the previous plan was approved? 44 CFR § 201.6(d)(3)
E2-a.	Does the Plan describe how it was revised due to changes in community priorities? 44 CFR 201.6(d)(3)
E2-b.	Does the Plan include a status update for all mitigation actions identified in the previous mitigation plan? 44 CFR 201.6(d)(3)
E2-c.	Does the Plan describe how jurisdiction integrated the mitigation plan, where appropriate, into other planning mechanisms? 44 CFR 201.6(d)(3)

Data Source: FEMA, Local Mitigation Planning Policy Guide, Released April 19, 2022, Effective April 19, 2023

Much like the process for updating Clark County’s MJHMP in the past, this plan update involved a comprehensive review of the previous plan (in this case, 2018) and performing a gap analysis, a specific process for evaluating each plan section and determining which portions require updating. As a part of the gap analysis, each section was reviewed in detail to identify all areas requiring re-evaluation and subsequent data needs.

As part of the (insert final approval date), certain elements of Clark County’s 2018 MJHMP have been retained while outdated information has been either updated or reviewed. For the current version, there is a particular focus on updating the risk assessment, providing status for mitigation actions listed in the 2018 plan, identifying new mitigation actions, and describing meetings and presentations held as a part of the plan update.

What’s New? Section 3 – Planning Area (Critical Facilities Summary)

The Clark County MPSC in conjunction with Clark County Office of Emergency Management and Clark County GISMO Information Technology Department assessed the list of critical facilities used throughout the MJHMP plan update and is based off the vulnerability assessment and loss estimated. The complete list is available in [Appendix E – Critical Facilities & Infrastructure](#). Clark County GISMO Information Technology Department staff updated this list to produce updated GIS maps located with the County for this plan update.

What’s New? Section 4 – Hazard Analysis and Risk Assessment

The Clark County MJHMP Steering Committee assessed the hazards addressed in Clark County’s 2012 and 2018 MJHMPs, the 2018 State of Nevada Enhanced Hazard Mitigation Plan, and the Nevada Threats and Hazards, September 2020 document. After assessing these documents, a final decision was made as to which hazards would be included in the Calculated Priority Risk Index (CPRI) and Probability of Future Events and analyzed in the 2024 plan update. A comparison of the hazards along with the final decision is shown in the proceeding table.

Table 4: Summary of Hazards for 2024 Update, Clark County MJHMP

Summary of Hazards for 2024 Update, Clark County MJHMP					
Hazards	Clark County 2012 MJHMP Update	Clark County 2018 MJHP Update	2018 State of Nevada Enhanced Hazard Mitigation Plan	Nevada Threats & Hazards September 2020	Clark County 2024 MJHMP Update
Natural Hazards					
Climate Change	Excluded	Included	Excluded	Excluded	Included as Climate Change (Excessive Heat and Severe Weather) – Disaster History
Drought	Included	Included	Included	Included as Drought	Included – Disaster History

Summary of Hazards for 2024 Update, Clark County MJHMP

Hazards	Clark County 2012 MJHMP Update	Clark County 2018 MJHP Update	2018 State of Nevada Enhanced Hazard Mitigation Plan	Nevada Threats & Hazards September 2020	Clark County 2024 MJHMP Update
Earthquake	Included	Included	Included	Included as Geohazards – Earthquakes	Included as Geohazards, Earthquake and Seismic Hazards – Disaster History
Excessive Heat	Excluded	Excluded	Included	Included as Extreme Heat	Included as Extreme/Excessive Heat – Disaster History
Flooding	Included as Flood and Flash Flooding	Included as Flood	Includes as Floods, Flooding due to Dam Failure, and Flooding along Ditches and Canals	Included as Floods, Landslides & Debris Flow	Included as Flood, Landslides & Debris Flow, Flood – Included Disaster History
Subsidence	Included	Included as Subsidence and Fissures	Included as Land Subsidence and Ground Failure	Included as Fissures & Subsidence	Included as Fissures & Subsidence – Disaster History
Severe Weather	Excluded	Excluded	Included as Severe Weather and Snowfall	Included as Severe Weather	Included as Severe Weather (including Thunderstorms, Lightning, Hail) – Disaster History
Wildfire	Included	Included	Included	Included as Fire, Wildland Urban Interface	Fire, Wildland Urban Interface Included – Disaster History
Human-Caused Hazards					
Dam Failure	Included	Included	Included	Included as Infrastructure, Dam Failure	Included as Infrastructure, Dam Failure
Infestation	Included	Included	Included	Excluded	Included
Epidemic/ Infectious Disease	Included as Epidemic/ Infections Disease	Included as Infections Disease	Included	Included as Infectious Disease – Emerging Disease with Epidemic or Pandemic Potential and Respiratory Virus with Epidemic and Pandemic Potential	Included as Infectious Disease

Summary of Hazards for 2024 Update, Clark County MJHMP

Hazards	Clark County 2012 MJHMP Update	Clark County 2018 MJHP Update	2018 State of Nevada Enhanced Hazard Mitigation Plan	Nevada Threats & Hazards September 2020	Clark County 2024 MJHMP Update
Hazardous Materials	Excluded	Included as Hazardous Material Events	Included	Included as Chemical, Biological, Radiological, Nuclear & Explosives (CBRNE)	Included as Chemical, Biological, Radiological, Nuclear & Explosives (CBRNE) – Hazardous Materials
Terrorism	Included	Included	Excluded	Included as Terrorism – International Terrorism, Domestic Terrorism, and Complex Coordinated Attack	Included
Utility Failure	Included	Excluded	Excluded	Included as Infrastructure as Power Outage	Excluded

Regarding the addition of Extreme/Excessive Heat and Severe Weather to this MJHMP update. While most both extreme heat and severe weather events are limited in their impact, duration, and spatial extent, they remain hazards of concern in the State of Nevada and the entire planning area. In recent years, extreme heat and severe weather (including thunderstorms, hail, wind, and tornadoes) have become increased hazards of concern for the Clark County and its participating jurisdictions (including Clark County Unincorporated Areas and the Tribal Nations of the Las Vegas Paitue Tribe and the Moapa Band of Paitues. With this shift in mitigation efforts, Clark County MPSC has identified these hazards as a concern and have added them to the plan to include previous occurrences and future probability to identify future mitigation actions related to extreme/excessive heat and severe weather in the planning area.

What's New? Section 5 – Mitigation Strategy

The Clark County 2024 MJHMP Update contained a risk assessment of identified hazards for the County and participating municipalities, and a mitigation strategy to address these hazards' risk and vulnerability. Accordingly, an open discussion took place with the MPSC during the planning phase to determine the current mitigation action/priorities to include in this plan update. Among them, and considered a key part of the planning process, Clark County Office of Emergency Management (CCOEM) solicited participation from the County's participating jurisdictions and stakeholders to help identify mitigation activities/goals/projects for plan inclusion. Typically, mitigation activities/goals/projects focus on strengthening infrastructure and facilities. Clark County's cities and stakeholder's participation in the activities related to the mitigation strategy allowed for CCOEM to learn more about each jurisdictions' needs, facilities, and infrastructure. A Clark County mitigation planning steering committee meeting held in November 2022, focused on the Mitigation Strategy update. Facilitated by CCOEM and CONSTANT

Associates, provided Clark County’s steering committee members with information on how to offer valuable insight related to the hazards within Clark County. The Clark County mitigation planning steering committee members learned how CONSTANT Associates would assist them in providing input to update the mitigation projects from the previous plan as well as how and when to offer any new/proposed projects to include in the current HMP update.

Following this meeting, representatives from CONSTANT Associates worked with CCOEM and its participating jurisdiction(s)’ (which includes Clark County Unincorporated Area and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) to provide updates relevant to previous mitigation projects (2018), including the current status (completed, deferred, or carryover). The MPSC was also tasked with identifying any new mitigation projects for this plan update and completing a new mitigation action worksheet created specifically for Clark County. During the planning process, Clark County was able to update these worksheets with its mitigation projects from the 2018 plan update along with the new/proposed projects for the next five-year plan cycle.

Capabilities

A capability assessment was conducted of the MJHMP participating jurisdictions’ authorities, policies, programs, and resources. From the assessment, goals, and mitigation actions were developed.

Clark County and each participating jurisdictions’ capabilities (planning and regulatory, administrative and technical, financial, and education and outreach) were reviewed and updated to provide any changes that reflect their current capabilities as described in the 2018 MJHMP plan update. Each jurisdiction was provided a Jurisdiction Capabilities Assessment Worksheet by CONSTANT to review their capabilities to be included in this plan update. All information provided and available by jurisdictions was included in the worksheets. The Yes/No column denotes if a particular jurisdiction has that specific capability.

STAPLE+E

Clark County and its participating jurisdiction(s)’ (which includes Clark County Unincorporated Area and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) primary hazard risks, and thus priorities are climate change, drought, excessive heat, earthquake, flooding, fissures & subsidence, severe weather (including Thunderstorms, Lightning, Hail wildfire, dam failure, infectious disease, hazardous materials, and terrorism. A composite evaluation matrix was used to prioritize Clark County and its participating jurisdiction(s)’ mitigation projects and activities. The evaluation was conducted for each mitigation project and activity for each participating jurisdiction. All priorities were re-assessed using STAPLE+E for this plan update to ensure that the projects reflect current priorities. The composite evaluation matrix is comprised of the three factors detailed below.

What’s New in the Plan Update – Tribal Nations

CCOEM reached out to ensure the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation were included in the planning process of this MJHMP update. The tribes have been included throughout this plan update and both tribes have been included in [Appendix J – Jurisdictional Annex](#). These annexes contain jurisdiction-specific information, including planning area description, vulnerability analysis, and mitigation strategy for the following jurisdictions: Cities of Boulder City, Henderson, Mesquite, Las Vegas, North Las Vegas, [Las Vegas Paiute Tribe](#), and [Moapa Band of Paiutes](#).

Mitigation Planning Steering Committee (MPSC)

The following table lists the participating jurisdictions of Clark County and their lead representative contact (s) during the MJHMP update’s development, along with their MPSC contributions by plan development phase.

Table 5: Jurisdictional Contribution by Planning Phase

Jurisdictional Contribution by Planning Phase				
Jurisdiction and Representative	Planning Process	Risk Assessment	Mitigation Strategy	Plan Maintenance
Clark County Misty Richardson, Clark County Office of Emergency Management & Homeland Security, Assistant Emergency Management	<ul style="list-style-type: none"> • Lead the MPSC • Provided information on critical facilities, hazards, Points of Contact (POCs) • Served as POC and jurisdiction lead for the MPSC 	<ul style="list-style-type: none"> • Completed hazard history documentation • Completed risk assessment questionnaire • Reviewed risk assessment 	<ul style="list-style-type: none"> • Provided mitigation projects and actions history • Proposed mitigation projects • Prioritized mitigation projects using STAPLE+E approach 	<ul style="list-style-type: none"> • Will lead in the MPSC as prescribed in Section 2 – Plan Maintenance
City of Henderson Josie Ross, City of Henderson, Emergency Management Officer	<ul style="list-style-type: none"> • Co-Lead the MPSC • Provided information on critical facilities, hazards, Points of Contact (POCs) • Served as secondary POC and jurisdiction co-lead for the MPC 	<ul style="list-style-type: none"> • Completed hazard history documentation • Completed risk assessment questionnaire • Reviewed risk assessment 	<ul style="list-style-type: none"> • Provided mitigation projects and actions history • Proposed mitigation projects • Prioritized mitigation projects using STAPLE+E approach 	<ul style="list-style-type: none"> • Will lead in the MPSC as prescribed in Section 2 – Plan Maintenance
Clark County Water Reclamation District Tick Segerblom, Clark County Water Reclamation District, Chair	<ul style="list-style-type: none"> • Provides administrative support for the MPSC • Provided information on critical facilities, hazards, Points of Contact (POCs) 	<ul style="list-style-type: none"> • Completed hazard history documentation • Completed risk assessment questionnaire • Reviewed risk assessment 	<ul style="list-style-type: none"> • Provided mitigation projects and actions history • Proposed mitigation projects 	<ul style="list-style-type: none"> • Will lead in the MPSC as prescribed in Section 2 – Plan Maintenance
Clark County School District Dr. Jesus Jara, Clark County School District, Superintendent	<ul style="list-style-type: none"> • Provides administrative support for the MPSC • Provided information on critical facilities, hazards, Points of Contact (POCs) 	<ul style="list-style-type: none"> • Completed hazard history documentation • Completed risk assessment questionnaire • Reviewed risk assessment 	<ul style="list-style-type: none"> • Provided mitigation projects and actions history • Proposed mitigation projects 	<ul style="list-style-type: none"> • Will lead in the MPSC as prescribed in Section 2 – Plan Maintenance
Las Vegas Valley Water District Marilyn Kirkpatrick, Las Vegas Valley Water District, President	<ul style="list-style-type: none"> • Provides administrative support for the MPSC • Provided information on critical facilities, hazards, 	<ul style="list-style-type: none"> • Completed hazard history documentation • Completed risk assessment questionnaire 	<ul style="list-style-type: none"> • Provided mitigation projects and actions history • Proposed mitigation projects 	<ul style="list-style-type: none"> • Will lead in the MPSC as prescribed in Section 2 – Plan Maintenance

Jurisdictional Contribution by Planning Phase

Jurisdiction and Representative	Planning Process	Risk Assessment	Mitigation Strategy	Plan Maintenance
– Board of Directors	Points of Contact (POCs)	<ul style="list-style-type: none"> Reviewed risk assessment 		
Southern Nevada Health District Dr. Fermin Leguen, Southern Nevada Health District, District Health Officer	<ul style="list-style-type: none"> Provides administrative support for the MPSC Provided information on critical facilities, hazards, Points of Contact (POCs) 	<ul style="list-style-type: none"> Completed hazard history documentation Completed risk assessment questionnaire Reviewed risk assessment 	<ul style="list-style-type: none"> Provided mitigation projects and actions history Proposed mitigation projects 	<ul style="list-style-type: none"> Will lead in the MPSC as prescribed in Section 2 – Plan Maintenance
City of Boulder City Joe Hardy, City of Boulder City, Mayor	<ul style="list-style-type: none"> Provides administrative support for the MPSC Provided information on critical facilities, hazards, Points of Contact (POCs) • POC and jurisdiction lead for the MPSC 	<ul style="list-style-type: none"> Completed hazard history documentation Completed risk assessment questionnaire Reviewed risk assessment 	<ul style="list-style-type: none"> Proposed mitigation projects Prioritized mitigation projects using STAPLE+E approach 	<ul style="list-style-type: none"> Will lead in the MPSC as prescribed in Section 2 – Plan Maintenance
City of Henderson Michelle Romero, City of Henderson, Mayor	<ul style="list-style-type: none"> Participated in MPSC Provided information on critical facilities, hazards, POCs POC and jurisdiction lead for the MPSC 	<ul style="list-style-type: none"> Completed hazard history documentation Completed risk assessment questionnaire Reviewed risk assessment 	<ul style="list-style-type: none"> Proposed mitigation projects Prioritized mitigation projects using STAPLE+E approach 	<ul style="list-style-type: none"> Will lead in the MPSC as prescribed in Section 2 – Plan Maintenance
City of Las Vegas Carolyn G. Goodman, City of Las Vegas, Mayor	<ul style="list-style-type: none"> Participated in MPSC Provided information on critical facilities, hazards, POCs POC and jurisdiction lead for the MPSC 	<ul style="list-style-type: none"> Completed hazard history documentation Completed risk assessment questionnaire Reviewed risk assessment 	<ul style="list-style-type: none"> Proposed mitigation projects Prioritized mitigation projects using STAPLE+E approach 	<ul style="list-style-type: none"> Will participate in the MPSC as prescribed in Section 2 – Plan Maintenance
City of Mesquite Al Litman, City of Mesquite, Mayor	<ul style="list-style-type: none"> Participated in MPSC Provided information on critical facilities, hazards, POCs POC and jurisdiction lead for the MPSC 	<ul style="list-style-type: none"> Completed hazard history documentation Completed risk assessment questionnaire Reviewed risk assessment 	<ul style="list-style-type: none"> Proposed mitigation projects Prioritized mitigation projects using STAPLE+E approach 	<ul style="list-style-type: none"> Will participate in the MPSC as prescribed in Section 2 – Plan Maintenance

Jurisdictional Contribution by Planning Phase

Jurisdiction and Representative	Planning Process	Risk Assessment	Mitigation Strategy	Plan Maintenance
City of North Las Vegas Pamela Goynes-Brown, City of Las Vegas, Mayor	<ul style="list-style-type: none"> • Participated in MPSC • Provided information on critical facilities, hazards, POCs • POC and jurisdiction lead for the MPSC 	<ul style="list-style-type: none"> • Completed hazard history documentation • Completed risk assessment questionnaire • Reviewed risk assessment 	<ul style="list-style-type: none"> • Proposed mitigation projects • Prioritized mitigation projects using STAPLE+E approach 	<ul style="list-style-type: none"> • Will participate in the MPSC as prescribed in Section 2 – Plan Maintenance
Las Vegas Paiute Tribe Deryn Pete, Las Vegas Paiute Tribe, Chairwoman	<ul style="list-style-type: none"> • Participated in MPSC • Provided information on critical facilities, hazards, POCs • POC and jurisdiction lead for the MPSC 	<ul style="list-style-type: none"> • Completed hazard history documentation • Completed risk assessment questionnaire • Reviewed risk assessment 	<ul style="list-style-type: none"> • Proposed mitigation projects • Prioritized mitigation projects using STAPLE+E approach 	<ul style="list-style-type: none"> • Will participate in the MPSC as prescribed in Section 2 – Plan Maintenance
Moapa Band of Paiutes Gregory Anderson Sr., Moapa Band of Paiutes, Chairman	<ul style="list-style-type: none"> • Participated in MPSC • Provided information on critical facilities, hazards, POCs • POC and lead jurisdiction for the MPSC 	<ul style="list-style-type: none"> • Completed hazard history documentation • Completed risk assessment questionnaire • Reviewed risk assessment 	<ul style="list-style-type: none"> • Provided mitigation projects and actions history • Proposed mitigation projects • Prioritized mitigation projects using STAPLE+E approach 	<ul style="list-style-type: none"> • Will participate in the MPSC as prescribed in Section 2 – Plan Maintenance

Mitigation Planning Steering Committee Role

The role of the MPSC was to perform the review, coordination, research, and planning element activities required to update the 2018 MJHMP. Attendance by each participating jurisdiction was required at the Mitigation Planning Steering Committee meetings as they were structured to progress through the planning process. Steps and procedures for updating the MJHMP were presented and discussed at each Mitigation Planning Steering Committee meeting, and assignments for data collection were provided. Each meeting was built on information discussed and assignments given at the previous meeting. Members of the MPSC also had the responsibility of:

- Providing supporting data;
- Conveying information and assignments received at the Steering Committee meetings to other involved parties within their respective jurisdictions such as those involved in public engagement;
- Ensuring that requested assignments were completed and returned on a timely basis;
- Reviewing the draft MJHMP;
- Coordinating official adoption of the MJHMP.
-

Prior to the planning process, the County identified members for the MPSC by initiating contact with as much of the previous Steering Committee as possible. Also, the County wanted to include as many representatives that community lifelines. As per FEMA, community lifelines are:

- A lifeline enables the continuous operation of critical government and business functions and is essential to human health and safety or economic security.
- Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function.
- FEMA has developed a construct for objectives-based response that prioritizes the rapid stabilization of Community Lifelines after a disaster.
- The integrated network of assets, services, and capabilities that provide lifeline services are used day-to-day to support the recurring needs of the community and enable all other aspects of society to function.
- When disrupted, decisive intervention (e.g., rapid re-establishment or employment of contingency response solutions) is required to stabilize the incident.

The specific Community Lifelines are as follows:

- Safety and Security - Law Enforcement/Security, Fire Service, Search and Rescue, Government Service, Community Safety
- Food, Water, Shelter - Food, Water, Shelter, Agriculture
- Health and Medical - Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management
- Energy - Power Grid, Fuel
- Communications - Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch
- Transportation - Highway/Roadway/Motor Vehicle, Mass Transit, Railway, Aviation, Maritime
- Hazardous Material - Facilities, HAZMAT, Pollutants, Contaminants

Contact was made by sending invitations to participate on the Steering Committee via email and via

personal contacts. The invitation explained the importance of the Plan to build resilience and make communities safer.

Prior to the beginning of the plan update process, Constant Associates delivered a presentation that provided a review of the current MJHMP and detailed the update process. The target audience was the agencies/individuals invited to participate on the MPSC. The purpose was to provide an understanding of the Plan, explain its purpose and its benefits, as well as to provide detailed and realistic expectations of the Plan update process.

Members of the MJHMP Steering Committee are listed in the following table. To ensure manageable meeting sizes, each jurisdiction sent a limited number of representatives to MJHMP Steering Committee meetings. The remainder supported the planning process through the data collection and informal planning efforts of their given jurisdiction.

Stakeholders and Mitigation Planning Steering Committee (MPSC) Members

Table 6: Plan Stakeholders and MPSC Members

Plan Stakeholders and MPSC Members				
Name	Organization	Associated FEMA Lifeline	Position	Collaboration/Invitation
Principal Plan Developers				
Michelle Constant	Constant & Associates		CEO + Founder	Executive Management
Jayson Kratoville	Constant & Associates		Director, Operations	Executive Management
Mona Bontty	Constant & Associates		Project Sponsor/Project Manager	Provided project oversight and management, provided additional support and input; coordinated mitigation planning steering committee meetings and open comment steering committee meeting
Dan Smith	Constant & Associates		Deputy Project Manager	Provided additional support and input; plan reviewer and editor
Emily Long	Constant & Associates		Subject Matter Expert	Mitigation Specialist, Principal plan writer
Casey Moes	Constant & Associates		Project Support	Provided additional support and input; coordinated mitigation planning steering committee meetings
Amanda Ozaki-Laughon	Constant & Associates		Project Support	Provided additional support and input; coordinated kickoff meeting
Holly Mann	Constant & Associates		Project Support	Provided additional support and input; coordinated kickoff meeting
Lee Rosenberg	Constant & Associates		Project Support	Provided additional support and input; coordinated kickoff meeting
Local and Tribal Governments				
Misty Richardson	Clark County Office of Emergency Management & Homeland Security	Safety/Security, Communication	Assistant Emergency Manager	Mitigation Planning Steering Committee Chair, represented jurisdiction, and provided additional support

Plan Stakeholders and MPSC Members

Name	Organization	Associated FEMA Lifeline	Position	Collaboration/Invitation
				and input
Josie Ross	City of Henderson	Safety and Security, Communications	Emergency Management Officer	Mitigation Planning Steering Committee Co-Chair, represented jurisdiction, and provided additional support and input
Leigh Ann Anders	Clark County	Safety and Security, Communications	Administrative Services	Represented jurisdiction; provided additional support and input
Jim Anderson	Clark County Animal Control	Food, Water, Shelter	Director, Code Enforcement Animal Protection Service	Represented jurisdiction; provided additional support and input
Travis Anderson	City of North Las Vegas	Safety and Security, Communications	Deputy Fire Chief / Emergency Manager	Represented jurisdiction
Travis H. Anderson	City of Mesquite	Food, Water, Shelter; Transportation	Public Works Director	Represented jurisdiction; Provided additional support and input
Jayson Andrus	City of Mesquite	Safety and Security	Fire Chief	Represented jurisdiction; Provided additional support and input
Brian Arboreen	City of Henderson	Safety and Security	Fire Battalion Chief	Represented jurisdiction
Michael "Mike" Atherall	Las Vegas Metropolitan Police Department/Southern Nevada Counter Terrorism Center	Safety and Security; Communications	Analyst- P#19539	Represented jurisdiction; Provided additional support and input
Samantha "Sam" Baker	Clark County	Communications	Department of Environment and Sustainability	Represented jurisdiction; Provided additional support and input
Solome Barton	City of North Las Vegas	Safety and Security; Communications	Assistant Emergency Manager	Represented jurisdiction
Everett Bates	Las Vegas Metropolitan Police Department	Safety and Security	Detective	Represented jurisdiction
Jae Beasley	Clark County School District	Safety and Security; Transportation	Director of School Safety	Represented jurisdiction, Provided additional support and input

Plan Stakeholders and MPSC Members

Name	Organization	Associated FEMA Lifeline	Position	Collaboration/Invitation
Tori Begay	University Medical Center	Health and Medical	Emergency Preparedness Coordinator	Represented jurisdiction
Edward Burmiester	Clark County GISMO Information Technology Department	Safety and Security	GIS Analyst	Represented jurisdiction
Gregory "Greg" Chesser	City of Boulder City	Safety and Security; Communications	Deputy Fire Chief	Represented jurisdiction; Provided additional support and input
Ariel Choinard	Clark County	Safety and Security;	Contractor	Represented jurisdiction; Provided additional support and input
Aj Cieplenski	Harry Reid International Airport (LAS)	Transportation	Airport Emergency Administrator	Represented jurisdiction
Jeremy Crawford	Kern River Gas Transmission Co.	Energy	Technician	Represented jurisdiction
Kristen Cooper	Clark County Social Service	Safety and Security; Health and Medical	Assistant Manager	Represented jurisdiction
Stephanie Daus	NV Energy	Energy	Emergency Management Specialist	Represented jurisdiction
Guy DeMarco	City of Las Vegas	Safety and Security; Communications	City of Las Vegas OEM	Represented jurisdiction
Gil Doucet	CAEP-Olin Chemical Factory	Energy	Safety Officer	Represented jurisdiction
Skye Dunfield	Clark County Water Reclamation District	Safety and Security; Food, Water, Shelter	Emergency Management Intern	Represented jurisdiction; Provided additional support and input
Mark Escobedo	City of North Las Vegas Development and Flood Control	Food, Water, Shelter	Manager	Represented jurisdiction; Provided additional support and input
Geir Gabrielson	City of Boulder City	Safety and Security; Communications	Manager	Represented jurisdiction
Ronald Glenn	City of Henderson	Communications	Marketing Information Officer	Represented jurisdiction; Provided additional support and input
Matthew Griebel	City of Henderson	Communications	Senior Marketing Information Officer	Represented jurisdiction; Provided additional support and input

Plan Stakeholders and MPSC Members

Name	Organization	Associated FEMA Lifeline	Position	Collaboration/Invitation
Gerald Gunny	City of Henderson Community Development	Safety and Security; Food, Water, Shelter	Structural Engineer	Represented jurisdiction; Provided additional support and input
Catherine Huang Hara, MSW	Clark County Social Service	Safety and Security; Health and Medical	Senior Management Analyst	Represented jurisdiction; Provided additional support and input
Jeff Harper	Moapa Paiute Tribe	Safety and Security; Communications	EM (Acting Chief of Police)	Represented Jurisdiction
Pamela “Pam” Hatty	Clark County Office of Emergency Management & Homeland Security	Safety and Security; Communications	Administrative	Represented jurisdiction; Provided additional support and input
Werner Hellmer	Clark County	Safety and Security; Communications	Manager, Plans Examination	Represented jurisdiction; Provided additional support and input
Dean Hennesy	Moapa River Indian Reservation Police Department	Safety and Security; Communications	Emergency Manager	Represented jurisdiction; Provided additional support and input
John Hines	Las Vegas Valley Water District	Food, Water, Shelter	Corporate Security Services Manager	Represented Jurisdiction
Warren Hull	Clark County School District	Safety and Security; Transportation	Interim Director of Emergency Management	Represented Jurisdiction
Jeremy Hynds	City of Henderson	Safety and Security; Communications	Emergency Manager	Represented jurisdiction; Provided additional support and input
Jeremy Hynds	North Las Vegas Fire Department	Safety and Security; Communications	Emergency Management Specialist	Represented jurisdiction; Provided additional support and input
Bradley “Brian” Iverson	City of Las Vegas, Office of Emergency Management	Safety and Security; Communications	Assistant Emergency Manager	Represented jurisdiction; Provided additional support and input
Albert Jankowiak	City of Henderson Public Works Department	Food, Water, Shelter	Project Engineer III	Represented jurisdiction; Provided additional support and input
Jim Keane	City of Boulder City	Food, Water, Shelter	City Engineer	Represented jurisdiction; Provided additional support and input

Plan Stakeholders and MPSC Members

Name	Organization	Associated FEMA Lifeline	Position	Collaboration/Invitation
Phil Klevorick	Clark County Nuclear Waste	Energy	Principal Management Analyst	Represented Jurisdiction
Norman “Dean” Kiernan	Clark County School District-Office of Emergency Management	Safety and Security; Communications	Director II- Maintenance Production Management Center/Emergency Management	Represented jurisdiction; Provided additional support and input
Carolyn Levering	City of Las Vegas	Safety and Security; Communications	Emergency Manager	Represented Jurisdiction
Spencer Lewis	City of Mesquite Fire and Rescue	Safety and Security; Communications; Hazardous Materials	Captain	Represented jurisdiction; Provided additional support and input
Jason Manzo	Southern Nevada Area Communications Council	Communications	Administrator	Represented jurisdiction
Craig McDougall	Clark County, Regional Flood Control District	Safety and Security; Food, Water, Shelter	Senior Hydrologist	Represented jurisdiction
Dean Mosher	Clark County	Safety and Security; Food, Water, Shelter	Public Works	Represented jurisdiction
Jason Moyer	Las Vegas Metropolitan Police Department	Safety and Security	Detective (Retired)	Represented Jurisdiction
Todd Myers	Clark County Regional Flood Control District (CCRFCD)	Safety and Security; Food, Water, Shelter	Engineering Director/Floodplain Management t	Represented Jurisdiction; Provided additional support and input
Cheryl Nagy	Clark County OEM	Safety and Security; Communications	Preparedness/Recovery Coordinator	Represented Jurisdiction
Stephen Neel	Moapa Valley Fire District	Safety and Security	Fire Chief	Represented Jurisdiction
Jeffrey “Jeff” Ohs	University of Las Vegas (UNLV)	Safety and Security	Emergency Management Coordinator	Represented Jurisdiction
Brian O’Neal	Clark County Fire Department Rural Division	Safety and Security; Communications; Hazardous Materials	Assistant Chief, Rural Division	Represented Jurisdiction; Provided additional support and input
Bryan Ostaszewski	Voluntary Organizations Active in Disasters	Health and Medical	Nevada Chair for VOAD	Represented Jurisdiction
Jim Owens	Las Vegas Paiute Tribe	Safety and Security	Police Chief	Represented Jurisdiction
Sam Palmer	Clark County	Safety and Security	Assistant Director	Represented Jurisdiction
Harriet Parker	Las Vegas Paiute Tribe	Safety and Security; Health and	Safety Officer/ EM Coordinator	Represented Jurisdiction; Provided additional support

Plan Stakeholders and MPSC Members

Name	Organization	Associated FEMA Lifeline	Position	Collaboration/Invitation
		Medical		and input
Steve Parish	Clark County Regional Flood Control District (CCRFCD)	Safety and Security; Food, Water, Shelter	General Manager/Chief Engineer	Represented Jurisdiction; Provided additional support and input
Arthur Perillo	City of Las Vegas Fire & Rescue	Safety and Security; Communications	Assistant Chief	Represented Jurisdiction
Brad Poulson	Kern River Gas Transmission Co.	Energy	Las Vegas District Manager	Represented Jurisdiction
Carlito Rayos	Clark County Fire Department	Safety and Security; Communications; Hazardous Materials	Hazmat Coordinator	Represented Jurisdiction, Provided additional support and input
Michael Richardson	Nevada Division of Environmental Protection, HW & SW Compliance and Enforcement Branch	Safety and Security; Communications; Hazardous Materials	Electrician	Represented jurisdiction
Misty Robinson	Southern Nevada Health District	Health and Medical; Communications	Public Health Supervisor	Represented Jurisdiction
James Rogers	Clark County Office of Public Safety	Safety and Security; Communications	Chief of Public Safety	Represented Jurisdiction
Corey Ross	Las Vegas Valley Water District	Safety and Security; Food, Water, Shelter	Emergency Management Coordinator	Represented Jurisdiction, Provided additional support and input
Melanie Rouse	Clark County Coroner / Medical Examiner	Health and Medical	Coroner	Represented Jurisdiction
Billy Samuels	Clark County Fire Department / OEM	Safety and Security; Communications;	Deputy Fire Chief / Emergency Manager	Represented Jurisdiction; Provided additional support
Dustin Schelin	Las Vegas Fires & Rescue	Safety and Security; Communications; Hazardous Materials	Training Officer, Technical Rescue and HAZMAT	Represented Jurisdiction
Brian Scroggins	City of Las Vegas Charter Schools	Safety and Security; Communications	Emergency Manager	Represented Jurisdiction
Tami Sedivy-Shroder	Clark County Coroner/ Medical Examiner	Health and Medical	Assistant Coroner	Represented Jurisdiction
Madeline Skains	City of Henderson	Communications	Senior Public Information Coordinator	Represented Jurisdiction; Provided additional support and input

Plan Stakeholders and MPSC Members

Name	Organization	Associated FEMA Lifeline	Position	Collaboration/Invitation
Rachel Skidmore	Las Vegas Metropolitan Police Department	Safety and Security; Communications	Emergency Manager	Represented Jurisdiction; Provided additional support and input
Sander Smiles	Voluntary Organizations Active in Disasters	Health and Medical	Nevada Co-Chair of VOAD	Represented Jurisdiction
Clint Spenser	Clark County Road Division	Transportation	Manager	Represented Jurisdiction; Provided additional support and input
Chris Sproule	Las Vegas Fire & Rescue	Safety and Security; Communications	Strategic Planning – Accreditation Manager	Represented Jurisdiction
Tina Stephanitch	American Red Cross	Health and Medical	No title listed	Represented Jurisdiction
Angeline Syzmanski	Clark County Water Reclamation District	Safety and Security; Food, Water, Shelter	Emergency Management Coordinator/ Management Analyst I	Represented Jurisdiction; Provided additional support and input
Andrew Trelease	Clark County Regional Flood Control District	Safety and Security; Food, Water, Shelter	Assistant General Manager	Provided additional support and input
John Turner	Vegas Public Broadcasting Service	Communication	Chief of Broadcast Operations and Emergency Services – Vegas PBS	Represented Jurisdiction
Robert Vega	Clark County	Safety and Security; Communications	Deputy Chief Information Officer	Represented Jurisdiction
Myles Walimaa	Clark County GISMO Information Technology Department	Safety and Security	GIS Analyst	Represented Jurisdiction; Provided additional support and input
Christi Wiegman	American Red Cross	Health and Medical	Disaster Program Manager	Represented Jurisdiction
Michael Wilson	Clark County School Districts	Safety and Security; Communications	Emergency Manager	Represented Jurisdiction
Sarah Wright	Clark County GISMO Information Technology Department	Safety and Security; Communications	Operations Administrator	Represented Jurisdiction; Provided additional support and input

State and Federal Agencies			
Karen Beckley	US Environmental Protection Agency	Director	Represented Agency
Daniel "Dan" Berc	NOAA/ National Weather Service	Warning Coordination Meteorologist	Represented Agency
Ryan Gerchman	Nevada Division of Emergency Management/Homeland Security	Hazard Mitigation Planner	Represented Agency; provided additional support and input
Kendall Herzer	Lower Colorado Basin	US Bureau of Reclamation	Represented Agency
Brian Mitchell	Nellis Air Force Base	Nellis Installation Emergency Manager	Represented jurisdiction
Lucas Basham Murphy	Nevada National Security Site	Supervisor Emergency Management Coordinators	Represented Jurisdiction
Brian Richmond	State of Nevada	No title listed	Represented Agency
Janelle Woodward	Nevada Division of Emergency Management / Homeland Security	State Hazard Mitigation Officer / Grant Projects Analyst II / Earthquake Program Manager	Represented Agency; provided additional support and input

Mitigation Planning Steering Committee Activities

Six (6) meetings were held with the MPSC. Representatives from the County and participating organizations shared the responsibility of chairing the MPSC. The CCOEM also copied documents for review and sent out meeting notices. The following table lists milestone MPSC activities. A full description of Steering Committee activities with documentation is contained in [Appendix B - Mitigation Planning Steering Committee Documentation](#).

Table 7: Steering Committee Planning Activities

Steering Committee Planning Activities		
Date	Activity/Meeting	Purpose
4/18/2022	MJHMP Steering Committee Kickoff Meeting	Introduction of Steering Committee members, discussion of update process, and review of critical tasks necessary for the planning effort.
5/24/2022	MJHMP Steering Committee Quarterly Meeting	Review project schedule and timeline, SharePoint site access and use, and public engagement and hazard mitigation planning questionnaire.
8/16/2022	MJHMP Steering Committee Quarterly Meeting	Review project progress update, review outstanding data requirements, move into the mitigation strategy phase.
11/29/2022	MJHMP Steering Committee Meeting	Introduce new project team, new timeline and overview on New Mitigation Action Worksheet.
2/15/2023	MJHMP Steering Committee Meeting	Update to Mitigation Action Worksheet status, Introduce Capabilities Assessment, introduce Open Comment Period and MJHMP submission
4/26/2023	MJHMP Steering Committee Open Comment Period Review Meeting	Review of the Open Comment Review Period and MJHMP Submission to the State of NV and FEMA

Stakeholder Participation

The Clark County MPSC is made up of stakeholders working together for the development and ongoing maintenance of this plan update. The participants are grouped into actively participating representatives from the participating jurisdictions with Clark County.

- **Mitigation Planning Steering Committee (MPSC):** This group consists of the jurisdictional representatives from the planning area, the State of Nevada Division of Emergency Management, supporting state and federal agencies, the Tribal Governments (Las Vegas Paiute Tribe and Moapa Band of Paiutes) and CONSTANT Associates.
- **Outreach to Vulnerable Communities:** There were members of this group that included some of the jurisdictional representatives that serve and support vulnerable populations in the planning area like Clark County School District, Clark County Animal Control, Clark County Department of Environment and Sustainability, Clark County Senior Services, Southern Nevada Homelessness Continuum of Care, Southern Nevada Health District, the American Red Cross, Voluntary Organizations Active in Disasters (VOAD), participating jurisdiction Fire & EMS departments, and the Tribal Nations of Las Vegas Paiute and Moapa Band of Paiute.
- **Other Stakeholders:** This group consists of interested parties from the local community, socially vulnerable populations and local universities. This plan was developed with the support and input from various commercial interests.
- **Members from the Public-at-Large:** FEMA requires the planning effort to be open to constant input from interested citizens in compliance with Sunshine Laws. In Nevada, public meetings must comply with the State's Open Meeting Act, unless established by statutory exemption. Therefore, any individual citizen who wishes to be involved in this effort to mitigate future disasters is encouraged to attend MPSC meetings and solicit relevant comments to be included in the draft sections of the written plan.
- **Public-at-Large Related to the Tribal Nations (Las Vegas Paiute and Moapa Band of Paiutes):** The meeting invites were extended to the public. As explained in FEMA's Tribal Mitigation Planning Handbook (2017), "Public may mean everyone living or working within the tribal planning area, including those who are not tribal members, or it may mean only tribal members."

Community Engagement

Once the planning process commenced, the MPSC provided the opportunity for neighboring communities, agencies, businesses, academia, non-profits, and other interested parties to be involved in the mitigation planning process. The public was notified of open meetings via the Clark County and its participating jurisdiction websites, Facebook, and/or Twitter accounts. CONSTANT and CCOEM invited all non-covered jurisdictions (Special Districts) to participate in the plan update. Any jurisdictions or special districts not covered in this MJHMP update are either covered under another plan or declined to participate.

Local and Regional Agencies and their representatives of participating jurisdictions, including Mayors, Public Officials, Planning, Building and Zoning, GISMO, Coroner, Health District, Department of Environment and Sustainability, and Fire Department were notified of the MPSC meeting via email and phone. Participating jurisdictions were notified of the MPSC meetings via email and phone by CCOEM. Emergency Managers from neighboring Nevada counties (Lincoln and Nye), neighboring California counties (San Bernadino and Inyo), neighboring Arizona county (Mohave), were personally invited to attend the kick-off and public draft review meeting.

For the two-three weeks prior to each public meeting, an announcement was placed on the Clark County

Government (https://www.clarkcountynv.gov/news_detail_T28_R742.php) and LEPC website ([https://www.clarkcountynv.gov/government/departments/fire/local_emergency_planning_committee_meetings_\(lepc\).php](https://www.clarkcountynv.gov/government/departments/fire/local_emergency_planning_committee_meetings_(lepc).php)). For documentation, see [Appendix C – Public Engagement Documentation](#).

At the first public planning (virtual) meeting, attendees ranked and identified hazards, created a community profile, prioritized mitigation projects, and completed an online community risk assessment questionnaire (<https://www.surveymonkey.com/r/ClarkCountyMJHMP2023>). During this meeting, and the later public review meeting, concerned citizens and other parties were invited to review the most current draft, provide any input of feedback, and ask any relevant questions of the Clark County MPSC and CONSTANT. The online community risk assessment questionnaire, which received input from the 803 responders, was used to select hazards and rank their affects. Climate Change and Drought were ranked as the two top hazards. This input was also used to inform the Calculated Priority Risk Indices (CPRI) and Probability of Future Events contained in Section 4 – Hazard Analysis and Risk Assessment. Finally, survey input was used to select mitigation actions. Input from posting the draft HMP was used to refine the MJHMP and prepared it for submission and review. [Appendix C – Public Engagement Documentation](#) provides documentation of community engagement efforts and public participation.

Due to the COVID-19 pandemic, and COVID-19 Safe Practices for Clark County and the cities of Boulder City, Henderson, Las Vegas, North Las Vegas, Las Vegas Paiute Tribe, Moapa Band of Paiutes, Clark County Water Reclamation District, Clark County School District, and Las Vegas Valley Water District, the Public Review Period of the plan draft was held virtually. MPSC members and the public were invited to review a draft copy of the Clark County MJHMP update posted to Clark County’s website ([Clark County, NV \(clarkcountynv.gov\)](http://ClarkCounty.NV(clarkcountynv.gov))) to help address any questions or concerns. The MPC, stakeholders, and the public provided feedback and input on the plan draft by completing feedback questionnaire.

Open Comment Survey: (<https://www.surveymonkey.com/r/ClarkCountyMJHMP23>)

Relevant federal, regional, state, Tribal and local governments as well as any private and non-profit organizations were invited to provide input and technical expertise. The entities, who volunteered, either in person or by providing hazard data, are listed in the following.

Table 8: Partner Involvement by Entity

Partner Involvement by Entity		
Entry Classification	Entity	Entity Input
Federal Agencies	U.S Census Bureau, Center for Disease Control and Prevention, Federal Drug Administration (FDA), National Oceanic and Atmospheric Administration/National Centers for Environmental Information (NOAA/NCEI), U.S. Army Corps of Engineers (USACE), United States (U.S.) Bureau of Reclamation, U.S. Department of Homeland Security (DHS), U.S. Department of Interior, U.S. Federal Bureau of Investigation (FBI), USDA, National Agricultural Statistics Service, U.S. Geological Survey (USGS), U.S. Geological Survey (USGS) National Center for Earth Resources Observation and Science (EROS), U.S Geological Survey (USGS) National Water Information, U.S. Occupational Safety and Health Administration (OSHA), U.S. Department of Transportation (USDOT), U.S. Drought Monitor/Drought.gov, FEMA HAZUS® Database, FEMA National Risk Index, FEMA Flood Map Service Center; National Park Service, Medlineplus.gov; The National Weather Service	Provided census data, weather data, dam data, land use data, and geological data

Partner Involvement by Entity		
Entry Classification	Entity	Entity Input
State Agencies	Nevada Division of Emergency Management, Nevada Department of Agriculture, Nevada Seismological Laboratory (Seismo Lab), Nevada Health Response, Nevada Department of Transportation (NDOT), Nevada Bureau of Mines and Geology, Nevada Resources and Fire Information Portal Public Viewer, Southern Nevada Counter-Terrorism Center (Fusion Center)	Provided oversight and technical assistance; provided geological data; provided hazard record and data; provided dam data; provided land use data
Local and Tribal Governments	Clark County Office of Emergency Management (CCOEM), Clark County School District (CCSD), Clark County Comprehensive Planning Department, Clark County Fire, Clark County Department of Environment and Sustainability; Clark County Regional Flood Control District; Clark County Water Reclamation District, Las Vegas Valley Water District, Southern Nevada Health District; Participating Municipalities (Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas; Tribal Nations of Las Vegas Paiute and Moapa Band of Paiute Tribe); Las Vegas Metropolitan Police Department Homeland Security Division; Regional Transportation Commission of Southern Nevada (RTC)	Provided input as MPSC members/principal subjects; Provided input – GIS maps; Provided hazard record and data; provided land use data; provided input from various interests
Private Organizations	Constant Associates, American Society of Civil Engineers (ASCE), Las Vegas Valley Water District, Las Vegas Review Journal, Nevada Weed Management Association (NWMA), National Geographic; The Nature Conservancy; Vaisala U.S. National Lightning Detection Network; Science Sparks	Directed planning efforts as principal mitigation planners; provided input from various interests; Provided input – HAZUS report
Academia	Columbia School of Public Health, Nevada State Climate Office at the University of Nevada at Reno	Provided input from various interests
Vulnerable Populations Data	FEMA RISK Map, Clark County Department of Sustainability and Environment, Help Hope Home/Southern Nevada Homelessness Continuum	Provided input from various interests

Local Procedures and Resources

Available Resources/Documentation Resources

The MPSC conducted a comprehensive review of Clark County, NV, and the plan update's participating jurisdictions; the cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, and the Tribal Nations of Las Vegas Paiute and Moapa Band of Paiutes, to determine the availability of existing emergency management and preparedness information.

Clark County Critical Facilities List

The Clark County MPSC in conjunctions with CCOEM and Clark County GISMO Information Technology Department assessed the list of critical facilities used throughout the MJHMP plan update and is based off the vulnerability assessment and loss estimated. The complete list is available in [Appendix E – Critical Facilities & Infrastructure](#). Clark County GISMO Information Technology Department staff updated this list to produce updated GIS maps located with the County for this plan update.

Clark County Emergency Operations Plan (EOP) – November 2019

CCOEM developed a countywide EOP as an all-hazard plan that describes how the County will organize and respond to emergencies and disasters in the community. It is based on, and is compatible with, Federal, State of Nevada, and other applicable laws; regulations; plans; and policies, including Presidential Policy Directive 8, the National Response Framework (NRF), and Nevada Division of Emergency Management (NDEM) plans. A primary responsibility of government is response to emergency or disaster conditions to maximize the safety of the public and minimize property damage. It is the goal of the County that responses to such conditions are conducted in the most organized, efficient, and effective manner possible. Therefore, this EOP utilizes the National Incident Management System (NIMS) for managing emergencies involving multiple jurisdictions and agencies. Consisting of a Basic Plan, Emergency Support Function (ESF) Annexes, and Incident Annexes, this EOP provides a framework for coordinated response and recovery activities during a large-scale emergency.

Clark County Local Emergency Planning Committee, Hazardous Materials Emergency Response Plan – January 2022

This plan is the product of cooperative efforts by the members of the Local Emergency Planning Committee (LEPC) and fulfills a federal requirement of the Superfund Amendments and Reauthorization Act of 1986 (SARA) under Title III, "Emergency Planning and Community Right-To-Know". This document provides guidance for hazardous materials emergency response and represents a consensus by the LEPC upon which to base future planning and training.

Clark County Multi-Jurisdictional Hazard Mitigation Plan

Clark County is currently covered by a FEMA-approved local multi-jurisdictional hazard mitigation plan. The current MJHMP (August 2018) has been reviewed and incorporated throughout this plan per FEMA requirements.

Clark County Master Plan – Adopted November 17, 2021

The Clark County Master Plan is a long-term, general policy plan for the physical development of unincorporated Clark County, satisfying the requirements of Nevada Revised Statute (NRS) 278.160. The plan is a living document and its elements are updated according to the [planning process](#).

Clark County, NV and Incorporated Areas Flood Insurance Study

The Clark County Flood Insurance Study (FIS) revises and updates information on the existence an

severity of flood hazards in the geographic area of Clark County, including the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, and the unincorporated areas of Clark County (referred to collectively herein as Clark County) and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. The study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

Clark County’s Sustainability and Climate Action Plan

In 2019, the Clark County Board of Commissioners made recommendation that Clark County develop and adopt its first ever Sustainability and Climate Action Plan. The impacts of climate change are very real, and they are upon us. This plan recognizes those unique challenges of climate change with the goal of working harder to build resilience into our social, economic and environmental systems.

Clark County, Nevada Climate Vulnerability Assessment – September 2022

The purpose of the Clark County Vulnerability Assessment (CVA), a project of the All-in-Clark County Initiative, was to assess the current and future potential impacts of climate change in Clark County, Nevada, and to develop strategies that reduce those risks to create a more sustainable and resilient future for all. This report summarizes the process and results of the assessment to understand the vulnerabilities of key systems, services, and people to a changing climate.

Clark County Regional Flood Control District (CCRFCD) Master CIP Plan – 2020

The Regional Flood Control District Board of Directors (Board) approved the Ten-Year Construction Program plan (TYCP) at its June 9 meeting. The plan includes \$991 million in total projected revenue, with \$187 million eligible in the first year, beginning July 1, 2022. The TYCP revenues are derived from the District’s one-quarter of one percent sales tax revenue, interest revenues, and bond proceeds from the issuance of debt. The Board adopted the prioritization of projects based on factors including the affected population, assessed land value impacted, public perception of need, emergency access, general inconvenience, and coordination with other projects. Read more about the [projects in the plan](#). The District has completed 677 miles of channel, 104 detention basins built, or 75 percent of its master plan. When all projects on the 10-year plan are completed, another 8 detention basins and 76 miles of conveyance will be added.

Colorado River Drought Contingency Plan – 2019

As part of an agreement with the federal government and the other Colorado River Basin states, Southern Nevada’s Colorado River water supplies were reduced by 3 percent beginning in 2020 due to low water levels in Lake Mead. Under the [Lower Basin Colorado River Drought Contingency Plan](#), Nevada, Arizona, California and Mexico reduced the amount of water diverted from the Colorado River to reduce risks from ongoing drought.

State of Nevada Enhanced Hazard Mitigation Plan – 2018

The State Enhanced Hazard Mitigation Plan is the official statement of Nevada’s statewide hazard mitigation goals, strategies, and priorities. Hazard mitigation can be defined as any action taken to reduce or eliminate long-term risk to life and property from natural and human-caused disasters. The standard version of the State Hazard Mitigation Plan was originally submitted by the Nevada Division of Emergency Management and approved by FEMA in 2004; it was updated in 2007, updated and enhanced in the 2010 iteration. Since 2010, the Nevada Hazard Mitigation Planning Committee, Nevada Hazard Planning Subcommittee, Nevada Division of Emergency Management staff, and Nevada Bureau of Mines and Geology staff at the University of Nevada, Reno contributed to the 2013 update and the current 2018 update of the Enhanced State Hazard Mitigation Plan.

State of Nevada Climate Strategy

The State Climate Strategy is an integrated, economy-wide roadmap for the Silver State to accelerate climate action necessary to achieve Nevada's climate goals and capture the health and economic benefits of the clean energy and technology revolution. The Strategy is just the beginning of future climate action in Nevada. As a living document, the Strategy will be adapted and updated as the impacts of climate change evolve and new climate-friendly technologies become available.

Nevada Threats and Hazards – September 2020

The Nevada Threats and Hazards document is a document created by the State of Nevada Division of Emergency Management (DHS)/Office of Homeland Security (DHS). Within the documents statement of purpose, the reason for this document was that upon further research, FEMA, state agencies, and local jurisdictions were using various terms to define specific threats and hazards. In order to support this effort, DEM has developed a standardized list of threats and hazards to be used in the planning process. The standardized list of terms combines FEMA definitions with a list of hazards specific to geography and industry in Nevada. This document is also a tool that may be used for jurisdictions to facilitate THIRA/SPR planning, plan development and updates (such as the MJHMP update), and grant applications through DEM and DHS.

Federal Guidelines for Dam Safety

These guidelines apply to management practices for dam safety of all Federal agencies responsible for the planning, design, construction, operation, or regulation of dams. They are not intended as guidelines or standards for the technology of dams. The basic principles of the guidelines apply to all dams. However, reasonable judgments need to be made in their application commensurate with each dam's size, complexity, and hazard. The Federal agencies have a good record and generally sound practices on dam safety. These guidelines are intended to promote management control of dam safety and a common approach to dam safety practices by all the agencies. Although the guidelines are intended for and applicable to all agencies, it is recognized that the methods of the degree of application will vary depending on the agency mission and functions.

Southern Nevada Water Authority (SNWA), Water Resource Plan – 2023

The SNWA's 2023 Plan provides a comprehensive overview of water resources and demands in Southern Nevada and discusses factors that will influence resource availability and use over a 50-year planning horizon. The plan does not intend to specifically address all aspects of water resource management and development; rather, it serves as a companion to other detailed planning documents like SWNA major construction and capital plan, SWNA Conservation Plan, regional water quality plan for the Las Vegas Valley Watershed, Annual Operating plan for the Las Vegas Valley Watershed, SWNA Financial Budget and Comprehensive Annual Financial Report, SNVS Operating Plan, and SWNA Water Budget.

Moapa Band of Paiutes Hazard Mitigation Plan, Annex A – 2015

The Moapa Band of Paiute were covered in the Clark County Multi-Jurisdictional Hazard Mitigation Plan (2012) under Annex A. The updated [MJHMP Annex A 2015](#) has been reviewed and incorporated in this plan per FEMA requirements.

Clark County Planning Documents

Clark County's participating jurisdictions provided a host of planning, zoning development-related documents. These documents were reviewed, assessed, and cataloged to compile [Section 5.3 – Capabilities](#) as well as [Section 5.5 – Planning Integration](#) of this HMP.

Technical Resources

The Clark County MPSC employed a variety of technical resources in its plan development. These technical resources were instrumental in completing vulnerability and risk assessments.

CONSTANT Associates

Founded in 2004, CONSTANT Associates (CONSTANT) mission is to make the world a safer place. CONSTANT was the principal plan writer for this MJHMP update.

ArcGIS Pro

Each map developed for this plan was created using ESRI's ArcGIS Pro.

CDC/ATSDR Social Vulnerability Interactive Map

Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry/Geospatial Research, Analysis, and Services Program's Social Vulnerability Interactive map shows how socially vulnerable populations are especially at risk during public health emergencies because of factors like socioeconomic status, household characteristics, racial and ethnic minority status, or housing type and transportation. To help public health officials and emergency response planners meet the needs of socially vulnerable populations in emergency response and recovery efforts, the Geospatial Research, Analysis, and Services Program (GRASP) created and maintains the [CDC/ATSDR Social Vulnerability Index \(https://svi.cdc.gov/map.html\)](https://svi.cdc.gov/map.html).

FEMA DFIRM – Map Center

FEMA's National Flood Hazard Layer (NFHL) data was instrumental in mapping floodplain locations and estimating potential flood impacts and loss estimates.

FEMA National Risk Index for Natural Hazards (National Risk Index Map) Dataset Update 1.19.0 – 3/23/2023

The [National Risk Index \(NRI\)](https://hazards.fema.gov/nri/) is an easy-to-use, interactive tool that shows which communities are most at risk to [natural hazards](#). It includes data about the expected annual losses to individual natural hazards, social vulnerability and community resilience, available at county and Census tract levels. Also, the National Risk Index Maps are interactive maps to visually explore natural hazard risk data across the United States (<https://hazards.fema.gov/nri/map>).

Data Set Update Information: <https://hazards.fema.gov/nri/updates>

HAZUS®

FEMA's HAZUS® is a nationally applicable standardized methodology that contains models for estimating potential losses from earthquakes, floods, and hurricanes. HAZUS® uses Geographic Information Systems (GIS) technology to estimate the physical, economic, and social impacts of disasters. CONSTANT Associates developed the Global Risk Reports for Earthquake and Flooding within the plan update.

National Oceanic and Atmospheric Administration/National Center for Environmental Information (NOAA/NCEI)

Weather data and historical events were primarily provided by NOAA/NCEI, which is formerly known as the National Climatic Data Center (NCDC) (<https://www.ncdc.noaa.gov/stormevents/>).

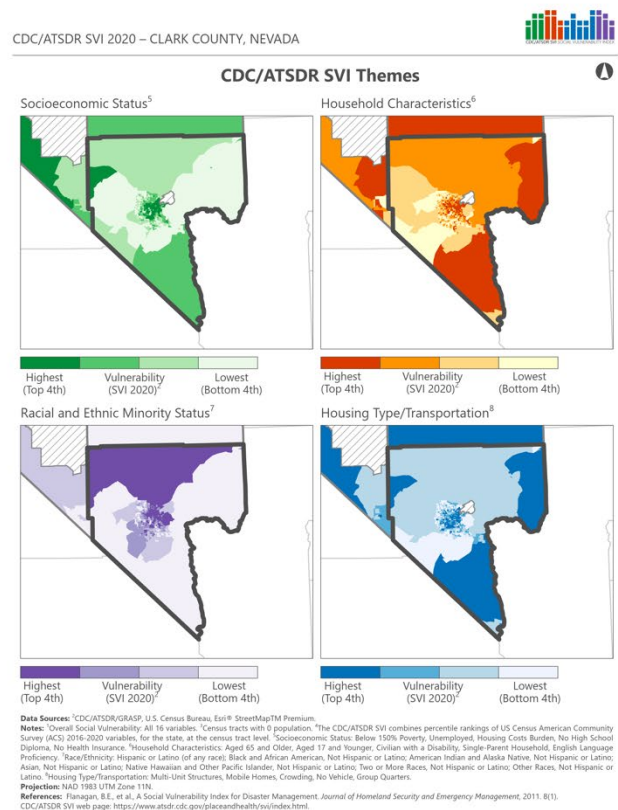
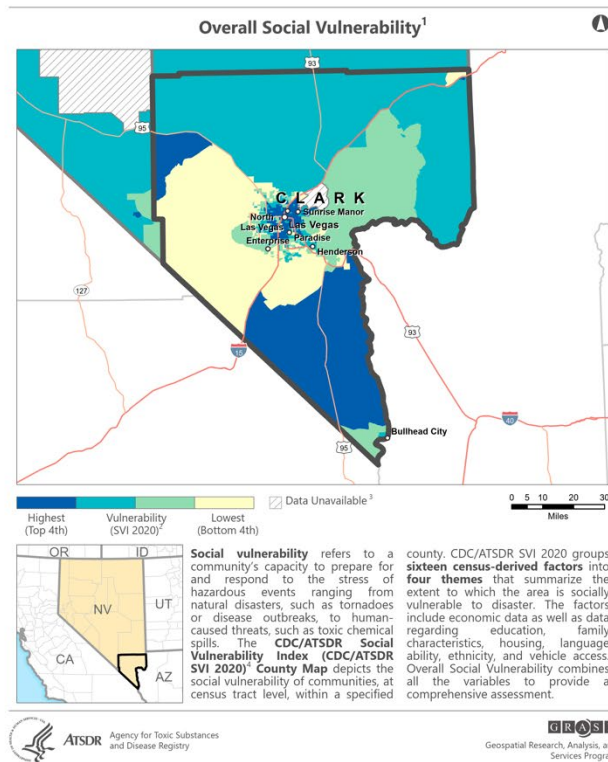
Continued Public Involvement

Clark County and its participating jurisdictions (which includes the Clark County Unincorporated Areas, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) are dedicated to involving the public in the continual shaping of its mitigation plan and the development of its mitigation projects and activities. Clark County will continue to engage those residents who are considered a part of the socially vulnerable population.

The CDC indicates that [Social Vulnerability](#) is when every community must prepare for and respond to hazardous events, whether a natural disaster like torandoes or a disease outbreak, or a human-made event such as a harmful chemical spill. A number of factors, including poverty, lack of access to transportation, and crowded housing may weaken a community's ability to prevent human suffering and financial loss in a disaster. The [CDC/ATSD Social Vulnerability Index \(SVI\)](#) uses U.S. Census data to determine the social vulnerability of every census tract. Census tracts are subdivisions of counties for which the Census collects statistical data. The SVI ranks each tract on 16 social factors, including poverty, lack of vehicle access, and crowded housing, and groups them into four related themes: socioeconomic status; household characteristics; racial and ethnic minority status and housing type/transportation. Each tract receives a separate ranking for each of the four themes, as well as an overall ranking.

Clark County and the cities of Boulder City, Henderson, Las Vegas, North Las Vegas, Las Vegas Paiute Tribe, Moapa Band of Paiutes, Clark County Water Reclamation District, Clark County School District, and Las Vegas Valley Water District, will engage socially vulnerable populations in the planning area and solicit feedback regarding hazard mitigation planning efforts to the areas shaded in dark blues areas on the overall SVI map and the darker areas on the CDC/ASTDR SVI Themes in the map below.

CDC/ATSDR Social Vulnerability Index 2020
CLARK COUNTY, NEVADA



Map Source: [Centers for Disease Control \(CDC\) and Agency for Toxic Substances and Disease Registry \(ATSDR\)](#)

Social vulnerability engagement and outreach efforts in the planning area was difficult to complete due to the COVID-19 pandemic occurring during the planning process of the plan update. The MPSC will target outreach and engagement efforts during to enhance socially vulnerable engagement and outreach during the next MJHMP update planning process (2029).

The Clark County MPSC will continue to keep the public informed about its hazard mitigation projects and activities through the CCOEM website .

Link:

https://www.clarkcountynv.gov/government/departments/fire/office_of_emergency_management.php

The screenshot shows the website for the Clark County Office of Emergency Management. The header includes the Clark County logo and navigation links: 'WHAT WOULD YOU LIKE TO DO?', 'EXPLORE CLARK COUNTY', 'GOVERNMENT', 'WELCOME HOME', and a search bar. The left sidebar lists various resources under the 'OFFICE OF EMERGENCY MANAGEMENT' heading, including 'Executive Team', 'About Us', 'CCFD History', 'Join Our Team', 'Maps & Community Resources', 'Fire Prevention', 'Office of Emergency Management', 'Arson & Investigations', and 'Safety Information'. The main content area features seven cards:

- TROPICAL STORM HILARY**: Updates and information.
- SAFETY & PREPAREDNESS**: Make a plan for your family & home.
- SOUTHERN NV PREPAREDNESS APPS**: Includes a FEMA Ready logo.
- EMERGENCY RESPONSE PLANS**: Various strategic plans for responding to emergencies and disasters in Clark County. Includes a 'SHARE' button.
- EARTHQUAKE SAFETY**: Earthquake Safety Awareness Tips.
- LEPC**: LEPC meeting dates, agendas & minutes.
- UAWG MEETINGS**: Meeting dates, agendas & minutes for the UAWG.

The public will also be invited to participate in [annual MPSC meetings](#) to review and discuss the mitigation related events of the past year and provide feedback on the MJHMP.



togetherforbetter



Local Emergency Planning Committee Meetings (LEPC)



LOCAL EMERGENCY PLANNING COMMITTEE MEETINGS (LEPC)

Executive Team

About Us

CCFD History

Join Our Team

Maps & Community Resources



Prevention

Clark County Local Emergency Planning Committee & Multi-Jurisdictional Hazard Mitigation Plan Steering Committee

[MJHMP Steering Committee/Community Meeting PowerPoint](#)

[2023 Multi-Jurisdictional Hazard Mitigation Plan](#)

Clark County LEPC and MJHMP meetings are open to the public. If you wish to attend a meeting, please contact the [Clark County Office of Emergency Management](#). These meetings are routinely held at the Fire Administration Office, 575 E. Flamingo Road. **Meetings may be held via teleconference, please check the agenda of the respective meeting you are attending.**

2023 Meeting Agendas & Minutes

11/07/23 LEPC Meeting		
07/11/23 LEPC Meeting	Agenda	
04/19/23 LEPC Special Meeting	Agenda	Minutes
03/16/23 LEPC Special Meeting	Agenda	Minutes
02/07/23 LEPC Meeting	Agenda	Minutes

Copies of the updated Clark County MJHMP will be available online through [CCOEMs website](#) and distributed to the participating jurisdictions of Clark County Departments, Clark County Unincorporated Areas and the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, and the Tribal Nations of Las Vegas Paiute and Moapa Band of Paiutes, as well as the special districts of, Clark County School District, Southern Nevada Health District, Clark County Water Reclamation District and Las Vegas Valley Water Authority.

Plan Maintenance

Elements of this section include:

- Monitoring, evaluating, and updating the MJHMP;
- Incorporation into existing plans and procedures;
- Continued public participation.

Table 9: FEMA Regulation Checklist: Plan Maintenance

FEMA Regulation Checklist: Plan Maintenance	
44 CFR § 201.6(c)(1)	Documentation of Plan Maintenance: The plan shall include documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.
Elements	
D1.	Is there discussion on how the community will continue public participation in the plan maintenance process? 44 CFR 201.6(c)(4)(iii)
D2.	Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? 44 CFR 201.6(c)(4)(i)
D3.	Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, where appropriate? 44 CFR 201.6(c)(4)(ii)

Data Source: FEMA, Local Mitigation Planning Policy Guide, Released April 19, 2022, Effective April 19, 2023.

Implementation and maintenance of the MJHMP is critical to the overall success of hazard mitigation planning. This section details the process that the County and cities / tribes will use to monitor, update, and evaluate the plan within the five-year cycle of the plan’s revision to ensure the MJHMP remains an active and relevant document. The format of the plan aligns with the regulation checklist and is divided into sections of information. When it is time to maintain or revise the MJHMP, data can be easily located and incorporated, resulting in an easy method to keep the plan current and relevant.

The Clark County MPSC has developed a method to ensure monitoring, evaluation, and updating of its mitigation plan. Upon adoption of the Clark County MJHMP Update, CCOEM will utilize its Local Emergency Planning Committee (LEPC) to provide plan updates, revisions, and data collection for future MJHMP planning purposes. The LEPC chair will utilize the created MPSC for proposed mitigation projects comprised of CCOEM’s Assistant Emergency Manager and jurisdictional representatives from the MPSC. The CCOEM Assistant Emergency Manager will be determined by a vote in the MPSC. Additional members may be added based on necessity. The MPSC will submit a quarterly report to the LEPC, which in turn, will submit an annual report to CCOEM. Refer to the Clark County MJHMP Update Quarterly Report form at the end of this section for additional details.

CCOEM may request a non-scheduled report on the monitoring, evaluation, or updating of any portion of the MHMP plan due to irregular progress on mitigation actions and or projects, in the aftermath of a hazard event, or for any reason deemed appropriate.

Plan Monitoring and Situational Change

The goals of this phase of plan maintenance are:

Plan Monitoring: regularly report on the progress of mitigation projects/actions from start to finish.

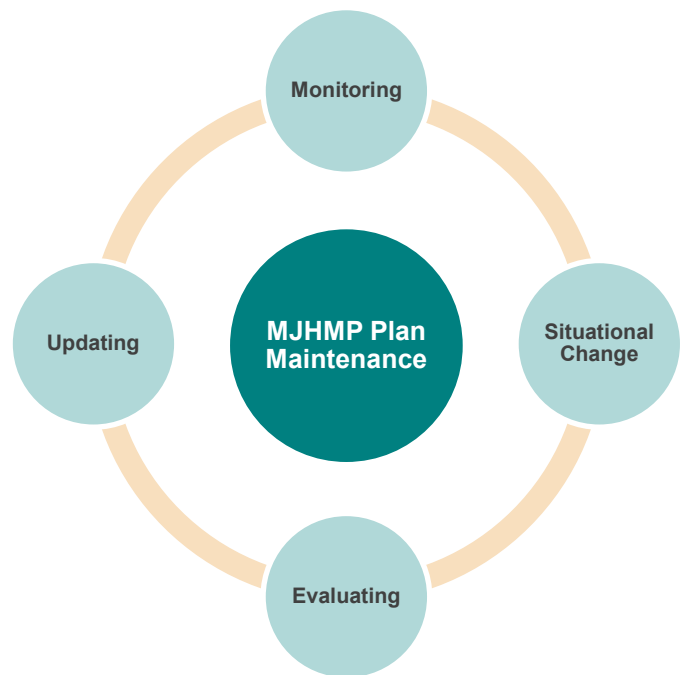
Situational Change: Plan change(s) due to training, drills, exercises, project completions, hazard events, etc.

Plan monitoring can be defined as the ongoing process by which stakeholders obtain regular feedback on the progress being made towards achieving their goals and objectives. In the more limited approach, monitoring may focus on tracking projects and the use of the agency's resources. In the broader approach, monitoring also involves tracking strategies and actions being taken by partners and non-partners, and figuring out what new strategies and actions need to be taken to ensure progress towards the most important results.

A monitoring report will be written and submitted for review to the MPSC/LEPC and after the quarterly MPSC meeting or when triggered by situational change. The monitoring report answers the following questions:

- Is the mitigation project under, over, or on budget?
- Is the mitigation project behind, ahead of, or on schedule?
- Are there any changes in Clark County's capabilities which impact the MJHMP plan?
- Are there any changes in Clark County's hazard risk?
- Impact of the hazard on the vulnerable population in Clark County?
- Has the mitigation project/action has been initiated or its initiation planned?
- Is the current process of prioritizing mitigation projects/actions appropriate and accurate?
- Has the current method of incorporating mitigation project/actions yielded a comprehensive action and project strategy to address seen and unforeseen hazards?
- If applicable, has participation in a mitigation action's collaboration been regular?
- Was a negative result caused directly or indirectly by insufficient levels of public outreach?
- If any, what plan updates occurred, why they occurred, and what is their impact?

The plan maintenance process is cyclical and maintenance items can operate simultaneously within the process.



Plan Evaluation

A plan evaluation is a rigorous and independent assessment of either completed or ongoing activities to determine the extent to which they are achieving stated objectives and contributing to decision making. An evaluation report (see example on the pages 41-42) will be written and submitted to Clark County's MSPC when the situation dictates.

The following situations are typical examples of when an evaluation will be necessary.

- Post hazard event
- Post training event
- Post tabletop or drill exercise

The goal of plan evaluation is meaning to answer questions like “is the current mitigation plan sufficient, helpful or relevant?” are imperative and valuable during the evaluation period.

Significant change or completion of a mitigation project/action (e.g., funding source, responsible party, estimated timeline, and cost estimate)

- An evaluation report will ask the following questions to the previously listed events.
- Do the mitigation objectives and goals continue to address the current hazards?
- Are there new or previously unforeseen hazards?
- Does a change in hazard vulnerability demand a change of or addition of mitigation actions or projects?
- Clark County OEM and Clark County MPSC will review and assess any and all mitigation projects/actions to ensure vulnerable populations are included in those updates.
- Does a change in the mitigation strategy demand a change of or addition of mitigation actions/projects?
- Are current resources appropriate for implementing a mitigation project?
- Was the outcome of a mitigation action/project expected?
- Are there implementation problems?
- Was the public engaged (including agencies that support vulnerable populations) to the point where they were satisfied with current engagement strategies?
- Did the public participate in a number that produced a positive yield on the plan, action, or project?
- Are there coordination problems?

Plan Updating – How Will the Plan Update Occur?

The FEMA Local Mitigation Handbook (2023) emphasizes a plan update as reviewing and revising the plan at least once every five (5) years. Clark County will begin the update process one-year from this plan’s adoption. It will do so under the direction of the County’s Assistant Emergency Manager. In order to have a successful and cross jurisdictional planning process, the following jurisdictions were included in this planning process Clark County Departments, Clark County Unincorporated Areas and the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, and the Tribal Nations of Las Vegas Paiute and Moapa Band of Paiutes, as well as the special districts of, Clark County School District, Southern Nevada Health District, Clark County Water Reclamation District and Las Vegas Valley Water Authority. The County will use the following process to update the MJHMP:

The goal of plan updating is to provide an update, if necessary, if any deficiencies are found during the plan evaluation phase.

- Convene a planning team and complete stakeholder and public outreach within the planning area.
 - **Mitigation Planning Steering Committee Meeting Schedule:** The Clark County LEPC and MPSC is a conduit for all mitigation actions and projects. They are led by CCOME, meet every quarter (February, May, August, and November) and are open to the public. *Note, meetings may only be held via teleconference, please check the agenda of the respective meeting you are attending.* The meetings are held in the Clark County Fire Administration Office, 575 E. Flamingo Road. Members of the LEPC and MPSC come from all jurisdictions and from a wide variety of local agencies and departments as well as various industries and the general public. These meetings will ensure the appropriate status of certain goals (mitigation activities and projects) identified in mitigation strategy are up to date, as required by FEMA, in the next five-year plan update (2028). For more information about the LEPC and MPSC, use this link.
https://www.clarkcountynv.gov/government/departments/fire_department/emergency_management/lepc_agendas_minutes.php
 - **Stakeholder and Public Outreach:** The process of stakeholder and public outreach begin when CCOEM selected staff from participating jurisdictions and stakeholders were invited to participate in the MPSC for the purpose of developing the MJHMP Update. During the plan update process, CCOEM will coordinate and facilitate quarterly meetings within the five-year cycle with stakeholders from the participating jurisdictions which will also include those stakeholders that support FEMA Community Lifelines: , Clark County (incorporated and unincorporated), the Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Tribal Nations of Las Vegas Paiute and Moapa Band of Paiutes, County and participating jurisdiction agencies/departments representing vulnerable populations (i.e. Clark County Senior Services, American Red Cross, and Southern Nevada Homelessness Continuum of Care), neighboring Nevada counties (Lincoln and Nye), neighboring California counties (San Bernadino and Inyo), neighboring Arizona county (Mohave), and plan stakeholders (Clark County Water Reclamation District, Clark County School District, and Las Vegas Valley Water District). These meetings will allow CCOEM, the LEPC Chair, MPSC members, and stakeholders from Clark County (incorporated and unincorporated), the Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Tribal Nations of Las Vegas Paiute and Moapa Band of Paiutes, to gather relevant information needed for the next plan update.
 - **Social Vulnerability Outreach:** Social vulnerability outreach and engagement efforts

in the planning area was difficult to complete due to the COVID-19 pandemic occurring during the planning process of the plan update. The MPSC will target outreach and engagement efforts during the next MJHMP update cycle (2028).

- **Representatives of Vulnerable Communities:** There were members of vulnerable communities that were also jurisdictional representatives that serve and support vulnerable populations in the planning area such as Clark County School District, Clark County Animal Control, Clark County Department of Environment and Sustainability, Clark County Senior Services, Southern Nevada Homelessness Continuum of Care, Southern Nevada Health District, the American Red Cross, Voluntary Organizations Active in Disasters (VOAD), participating jurisdiction Fire & EMS departments, and the Tribal Nations of Las Vegas Paiute and Moapa Band of Paiute.
- Identify new plans, studies, reports, and technical information that pertains to the planning area’s vulnerabilities. Validate or update hazard list; update hazard profiles to include events that occurred since the last plan update; validate or update community assets; update the risk assessment and mitigation strategy based on the new risk assessment; address changes in development and changes in priorities.
- Incorporate information in this plan to help guide and coordinate mitigation activities and decisions for local land use policy in the future. Proactive mitigation planning will help reduce the cost of disaster response and recovery to communities and their residents by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruptions. This plan identifies activities that can be undertaken by both the public and the private sectors to reduce risk to safety, health, and property caused by natural hazards. When new hazard data becomes available, it will be added to the MMHMP. Also, new data will be confirmed or declined at quarterly MPSC meetings.
- Document and describe the plan update process.
 - Typically, a MJHMP update is initiated upon the completion of a plan evaluation and even then, only when the evaluation determines an update is appropriate. For whatever reason, a MJHMP update can be written at any time it is deemed necessary by CCOEM.

Clark County MJHMP Plan Update Schedule

Plan Update Schedule			
Plan Update Steps	When?	How?	Who?
Plan Monitoring	Quarterly	Get status updates on mitigation actions, compile Clark County, NV MJHMP Evaluation Progress Report, and identify any corrections.	Clark County LEPC and MPSC Chairs and Clark County Mitigation Planning Steering Committee (MPSC)
Plan Evaluating	Once a year or after a disaster event.	Review the MJHMP Plan Review Tool Plan Assessment and Overall Plan Progress Report	CCOEM Assistant Manager and MPSC Co-Lead

Plan Update Schedule			
Plan Update Steps	When?	How?	Who?
		document to review how the plan has been carried out so far and record lessons learned throughout the plan monitoring process	
Plan Updating	Every five (5) years, or after a disaster event.	Review the plan and update it as necessary.	CCOEM Assistant Manager and MPSC Co-Lead

Related to Tribal Nations

The Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes will be responsible for reporting for grant funds used in the update process. According to FEMA/DMA 2000 guidelines for mitigation planning, Clark County will begin the update process one-year from this plan’s adoption. It will do so under the direction of the County’s Assistant Emergency Manager. CCOEM will coordinate and facilitate quarterly meetings within the five-year cycle with stakeholders from the participating jurisdictions and the two Tribal Nations:

- Clark County (incorporated and unincorporated)
- Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas
- Tribal Nations of Las Vegas Paiute and Moapa Band of Paiutes
- County and participating jurisdiction agencies/departments representing vulnerable populations (i.e Clark County Senior Services, American Red Cross, and Southern Nevada Homelessness Continuum of Care)
- Neighboring Nevada counties (Lincoln and Nye)
- Neighboring California counties (San Bernadino and Inyo)
- Neighboring Arizona county (Mohave)
- Plan stakeholders (Clark County Water Reclamation District, Clark County School District, and Las Vegas Valley Water District)

These meetings will allow CCOEM, the LEPC Chair, MPSC members, and stakeholders from Clark County (incorporated and unincorporated), the Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Tribal Nations of Las Vegas Paiute and Moapa Band of Paiutes, to gather relevant information needed for the next plan update. These meetings will ensure the appropriate status of certain goals (mitigation activities and projects) identified in mitigation strategy are up to date, as required by FEMA, in the next five-year plan update (2024).

Also, depending on the agency, the Tribal Nations grant disbursement are different. Some funds may be dispersed directly to the tribe’s accounts and some funds are disbursed through a pass through according to BIA protocol.

During close-out, the Tribal Nations (Las Vegas Paiute Tribe and Moapa Band of Paiutes) Finance Departments will confirm that all funds have been drawn down as well as ensure that all expenditures were allowable. Cost match is always done at the beginning of all projects that require a match. This

ensures that before any federal funds are spent, the Tribal Nations (Las Vegas Paiute Tribe and Moapa Band of Paiutes) have met their match obligations. For reimbursement grants, the Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes only ask for reimbursement for amounts outside of the required match. For all progress reports, the Tribal Nations will work with the MPSC to ensure that the required documents have been submitted to the awarding agency. It's the Tribal Nations jobs to ensure that progress reports are submitted on time during the course of the project.

Table 10: Sample-Clark County, NV MJHMP Evaluation Progress Report

2024 CLARK COUNTY, NV, MJHMP- MITIGATION PROJECT PROGRESS REPORT	
Progress Report Period From (Date):	
Project Title:	
Project ID:	
Description of Project	
Implementing Department/Agency	
Supporting Department/Agency:	
Contact Name	
Contact E-Mail	
Contact Phone Number:	
Grant/Finance Administrator:	
Total Project Cost:	
Anticipated Cost Overrun/Underrun:	
Date of Project Approval:	
Project Start Date:	
Anticipated Completion Date:	
SUMMARY OF PROJECT PROGRESS FOR THIS REPORTING PERIOD	
What was accomplished during this reporting period?	
What obstacles, problems or delays did the project encounter, if any?	
How were the problems resolved?	
Does this project affect vulnerable populations like the underserved, homeless, senior citizens, etc.?	

Table 10: Sample Clark County, NV MJHMP Evaluation Progress Report (continued)

2024 CLARK COUNTY, NV, MJHMP- MITIGATION PROJECT PROGRESS REPORT				
MJHMP SECTION	QUESTIONS	YES	NO	COMMENTS
PLANNING PROCESS	Has your county department/agency (or other type of organization) done any public outreach activities regarding the MJHMP or a mitigation project? If yes, please describe.			
	Has your county department/agency (or other type of organization) integrated any of the MJHMP elements into other plans or policies? If yes, please describe.			
HAZARD IDENTIFICATION	Has a disaster occurred in this reporting period that affected your department/agency (or other type of organization)?			
	Do you know of new hazard studies, reports and/or mapping available for Clark County? If so, what are they?			
RISK ASSESSMENT	Does your county department/agency have any new critical assets that should be included in the 2027 MJHMP risk assessment			
	Have there been changes in development trends that could create additional risks?			
MITIGATION STRATEGY	Are there different or additional resources (financial, technical and human) that are now available for mitigation planning?			

Section 3: Planning Area Description

Formed in 1909 in the name of Senator William Andrews Clark, Clark County, NV, is located on the southernmost tip of the State of Nevada and encompasses 7,891.7 square miles of land area and is the sixth County in Nevada by total area and reported a population of 2,265,461 people in the [2020 U. S. Census](#) (It borders the Nevada counties of Lincoln (north) and Nye (west) and the California counties of San Bernadino (south) and Inyo (southwest), and Mohave County in Arizona).

For hazard mitigation planning purposes, Clark County encompasses the jurisdictions of Clark County, NV (incorporated and unincorporated); the cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas; and the Tribal Nations of the Las Vegas Paiute Tribe and Moapa Band of Paiutes.

As written on the County website, Clark County is a dynamic and innovative organization dedicated to providing quality service with integrity, respect, and accountability. Covering an area, the size of New Jersey, Clark is home to the nation’s 7th-busiest airport and the state’s largest public hospital, University Medical Center. The County also provides municipal services to 1 million residents in the unincorporated area. The famed Las Vegas Strip sits at the heart of Clark County, which features unparalleled attractions; Las Vegas boasts more than 147,000 hotel rooms and is among the world’s top convention destinations.

As of 2019, Clark County is the nation’s 11th most populous county in the United States and provides extensive regional services to more than 2.3 million citizens and more than 45.6 million visitors a year. Clark County is the most populous of Nevada’s 17 counties and holds 70 percent of the state’s population. According to the U.S. 2020 Decennial Census, Clark County has 917,656 housing units and 16,307 building permits issued in 2021 ([U.S Census Quick Facts](#)). The median list price for a home in Clark County was reported by MLS of sold properties over the last year (April 2022 – April 2023) is as \$425,000 with a 56.7% homeownership rate (as reported by [data.census.gov](#)).

The following table provides a structural summary by sector for Clark County, as identified by FEMA HAZUS database.

Table 11: Structural Summary, Clark County

Structural Summary							
Jurisdiction	Agriculture	Commercial	Government	Industrial	Residential	Education	Religious
Clark County	\$553,513	\$84,269,222	\$2,844,342	\$15,521,346	\$273,125,235	\$15,258,628	\$3,733,172

Data Source: FEMA HAZUS Database

Related to Education, the Clark County School District (CCSD) was established in 1956 and is the nation’s fifth (5th) largest school district. The school district educates 305,000 students in the County and has one of the top magnet programs in the Country. The [2022-2023 CCSD Pocket Guide](#) indicates that the district operates 372 school programs in 344 CCSD facilities on 337 campuses within the County. More detail on these facilities within the CCSD will be in the [Critical Facilities Summary](#).

Clark County residents and visitors are served and protected by the Clark County Sheriff’s Department, the Las Vegas Metropolitan Police Department, the City of North Las Vegas Police Department, and the City of Henderson Police Department. As mentioned on the [Las Vegas Metropolitan Police Department website](#), prior to July 1, 1973, the police agencies in Clark County consisted of five; namely, the Clark County Sheriff’s Department, City of Las Vegas Police Department, City of North Las Vegas Police Department, City of Henderson Police Department and Boulder City Police Department. The cities policed their incorporated areas and the Sheriff’s Department provided police services to the unincorporated areas of the County of Clark. The Las Vegas Police Department was the largest police agency in the State of Nevada, with approximately 500 personnel (both commissioned and civilian).

The CCOEM’s mission is to mitigate, prepare for, respond to, and recover from emergencies within the County. The mission of the CCOEM is to facilitate and support the resources that will enable Clark County to mitigate, prepare for, respond to, and recover from emergencies. CCOEM provides a single point of coordination for Clark County public safety projects. This includes emergency management planning, preparation activities such as training and exercises, response support coordination during emergencies and coordination of recovery programs following emergencies. In this capacity, CCOEM works closely with Clark County public safety organizations to facilitate a coordinated approach to multi-agency activities.

Clark County residents and visitors are served by a seven-member County Commission, elected from geographic districts on a partisan basis for staggered four-year terms. County commissioners biennially elect a chairperson who serves as the Commission's presiding officer. The Commission, in turn, hires a county manager who is responsible for the administrative operations of the County government. Clark County commissioners serve as "ex-officio" as the governing bodies of the Las Vegas Valley Water District, Clark County Water Reclamation District, University Medical Center of Southern Nevada, Big Bend and Kyle Canyon Water Districts, and the Clark County Liquor and Gaming Licensing Board. The County Manager’s Office is responsible for the executive oversight of the nation’s 11th-largest county, which provides regional services to more than 2.3 million residents and 45 million visitors annually and municipal-like services to more than 1 million residents in the unincorporated County.

Vulnerable residents, like the unhoused and senior citizens, in the County, are supported through Clark County Senior Services and Help Hope Home, the Southern Nevada Homelessness Continuum of Care. The [Clark County Senior Service Unit](#) provides services to low-income seniors and individuals with disabilities. The services offered include homemaker services, adult day care, and long-term care assistance. These programs are income based, and a yearly eligibility determination/re-determination to qualify is required. Social Workers on staff assist clients with questions related to needed services in the community and assess specific homemaker services to remain in their homes. For the unhoused population, [Help Hope Home, the Southern Nevada Homelessness Continuum of Care](#) is comprised of local governments and other agencies, religious organizations, advocacy groups, and others concerned with the issues of homelessness and affordable housing through a coordinated and regional approach to planning service provision. Their recent [2022 Homeless Census](#) found 5,645 people living in shelters or on the streets and estimated that nearly 14,000 people experienced homelessness in Southern Nevada at some point during the year.

The four municipalities within Clark County—the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas —have their own local governing bodies in place. These consist of an elected mayor and city council and an appointed City Manager who oversees the day-to-day operations of their respective city’s functions, e.g., zoning, code enforcement, building permits, site inspections, business licenses, public safety, and others. There are also two (2) Tribal Nations within the County — the Las Vegas Paiute Tribe and the Moapa Band of Paiute Indians. Both tribes have a Tribal Government and department that oversee the day-to-day operations of their respective Tribal Nations.

Table 12: Clark County, Participating Jurisdictions

Clark County, Participating Jurisdictions			
Cities	Clark County Unincorporated Jurisdictions	Special Districts	Tribal Nations
<ul style="list-style-type: none"> • Boulder City • Henderson • Las Vegas • Mesquite • North Las Vegas 	<ul style="list-style-type: none"> • Arden • Cactus Springs • Cottonwood Cove • Coyote Springs • Glendale 	<ul style="list-style-type: none"> • Clark County Water Reclamation District • Clark County School District • Southern Nevada Health District 	<ul style="list-style-type: none"> • Las Vegas Paiute Tribe • The Moapa Band of Paiutes

Clark County, Participating Jurisdictions			
Cities	Clark County Unincorporated Jurisdictions	Special Districts	Tribal Nations
	<ul style="list-style-type: none"> • Jean • Logandale • Mountain Springs • Nelson • Overton • Primm • Sloan • Sutor • Census-designated places include: • Blue Diamond • Bunkerville • Cal-Nev-Ari • Crystal • Enterprise • Fort Mojave Indian Reservation (part) • Goodsprings • Indian Springs • Laughlin • Moapa Town • Moapa Valley • Mount Charleston • Paradise • Sandy Valley • Searchlight • Spring Valley • Summerlin South • Sunrise Manor • Whitney • Winchester 	<ul style="list-style-type: none"> • Las Vegas Valley Water District 	

A brief description of the four aforementioned municipalities, two Tribal Nations, and three- special health district entities participating in this update to the Clark County MJHMP are provided below. Information specific to the hazard mitigation planning efforts of the aforementioned jurisdictions can be found in [Appendix J – Jurisdictional Annex](#). As previously mentioned, the new, FEMA-approved plan will serve the County for a period of five years.

Municipalities

- **Boulder City, NV:** The City of Boulder City is known to be a small town with big adventure. The [Boulder City Visitor Brochure](#) mentions that it’s just beyond the glitz and glam is Boulder City, the town that built [Hoover Dam](#). It doesn’t take long to feel its thrill-seeking spirit and

welcoming charm. But it may take a while to see all of the recreational and outdoor activities. There are so many ways to explore, whether it be by land, water or air. If you're passing through or staying a while.

- **Henderson, NV:** The City of Henderson was officially incorporated on April 16, 1953. According to the city's website, today, the City of Henderson has grown to more than 103 square miles and is the second largest city in Nevada. Henderson is often referred to as having small town values with big city efficiencies. The city's official slogan "Henderson-a Place to Call Home" reflects a community that enjoys small town values while benefiting from big city efficiencies. Henderson is also located just a few miles from Harry Reid International Airport (previously known as McCarran International Airport), and the Henderson Executive Airport, has completed major renovations and serves as a reliever airport to Harry Reid International Airport. With the I-215 highway into Henderson, the City is just minutes away from the famous Las Vegas Strip.
- **Las Vegas, NV:** The City of Las Vegas began with a land auction in 1905 and has grown into a world-class city with a rich history. The history portion of the City of Las Vegas [website](#) mentions that Las Vegas was founded as a city on May 15, 1905, when 110 acres of land situated between Stewart Avenue on the north, Garces Avenue to the south, Main Street to the west, and Fifth Street (Las Vegas Boulevard) to the east, were auctioned off by the railroad company. Also, Las Vegas was incorporated on June 1, 1911. On that day, voters in the unincorporated township of Las Vegas went to the polls and voted on the issue of incorporation.
- **Mesquite, NV:** Since incorporation Mesquite has experienced rapid growth, at one time being named "The fastest growing city in America" for its size. The population stands at 25,000. Per its [website](#), since its incorporation, with this growth has come an increase of businesses and services never before enjoyed by residents of the area. A new hospital, medical and dental clinics brought care that had only been possible by traveling outside the valley. Stores, restaurants, movie theaters, art galleries, golf courses, hotels and casinos are providing employment and services for the lifestyle that has become a trademark of Mesquite. The construction of a new high school, a new middle school and two new elementary schools reflect the increase of young families in the population. Housing developments are creating beautiful neighborhoods for residents of all ages. Access to newly opened land west of Mesquite has been made possible by the addition of a new I-15 interchange encouraging the construction of new light industry. Mesquite has long been a stop on a busy western highway but now it is a destination.
- **North Las Vegas, NV:** The City of North Las Vegas has become one of the fastest growing cities within the State of Nevada. As indicated on its website, <https://www.cityofnorthlasvegas.com/our-city/about-north-las-vegas>, North Las Vegas is a premier place to live, work and play, the City of North Las Vegas leads Southern Nevada in both new home construction and economic development. Our fast-and-faster, business-friendly approach has made the City a top destination nationally for development opportunities. The City of North Las Vegas has become a hub for new job creation and economic diversification, attracting multiple fortune 500 and global brands, including Amazon, Sephora, Ball Corp., Crocs Inc. and Kroger. This success has enabled the city to reinvest in the community with expanded police and fire service, new parks, roads and amenities, and additional programming to serve residents' diverse needs.

Tribal Nations

- **Las Vegas Paiute Tribe:** The Tudu (or Desert People), ancestors of the Las Vegas Paiute Tribe, occupied the territory encompassing part of the Colorado River, most of Southeastern Nevada and parts of both Southern California and Utah. Per their website, <https://www.lvpaiutetribe.com>, the tribe established the Las Vegas Paiute Colony on December 30, 1911, ranch owner Helen J. Stewart deeded 10 acres of her land in downtown Las Vegas to the Paiutes, establishing the Las Vegas Paiute Colony. The Paiutes became a Sovereign Tribal Nation when the Indian Reorganization Act of June 18, 1934, in conjunction with the Las Vegas Paiute Tribal Constitution, approved on July 22, 1970, recognized the Tribe as a Sovereign Nation.
- **Moapa Band of Paiutes:** The Moapa Band of Paiutes resides on the Moapa River Indian Reservation (MRIR) in Clark County, Nevada. The MRIR is situated in the southern part of the state. The Tribe became federally recognized under a Constitution approved by the Secretary of Interior on April 17, 1942. The tribal lands originally set aside in 1873 consisted of two million acres, but in 1875 it was reduced to 1000 acres. In December 1980, an additional 70,000 acres was returned back to the Tribe. The current total land base is 71,954. Moapa Paiutes strive to preserve their legends, songs and dances. (<https://www.moapabandofpaiutes.com/tribal-history>) However, cultural disruption during the past two centuries have threatened the continuation of traditional life. Their [mission statement](#) is to advance the Moapa Band of Paiutes and preserve their homeland by building an independent and self-governing community that provides an opportunity for all people who have made a commitment to this mission.

Special Districts

- **Clark County Water Reclamation District:** Per their website, the Clark County Water District is responsible for the collection, treatment and reclamation of wastewater for more than 240,000 business and residential accounts in Southern Nevada. The District's collection network includes more than 2,200 miles of pipeline and 23 pumping stations to deliver wastewater from homes and businesses to one of six treatment facilities. Their largest treatment facility, the Flamingo Water Resource Center, ensures wastewater is treated to the highest standard allowing the reclaimed water to be discharged back into Lake Mead. Lake Mead is the drinking water source for more than 95% of the population and businesses in Clark County. The stringent treatment standards are set to protect the community's drinking water supply as well as the recreational use of Lake Mead and the downstream communities along the Colorado River. The District operates the Flamingo Water Resource Center and the Laughlin Water Resource Center. The District also operates treatment facilities in Searchlight, Moapa Valley, Blue Diamond and Indian Springs. It is the largest wastewater agency in the State of Nevada.
- **Clark County School District:** The Clark County School District (CCSD) was established in the planning area in 1956. Per their website (<https://www.ccsd.net/>), the CCSD is the number one choice for families and students. As the nation's fifth-largest school district, they educate 305,000 students – offering a variety of nationally recognized programs, including Magnet Schools, Career and Technical Academies, and Advanced Placement programs. CCSD educates 64 percent of the students in Nevada and works closely with community partners and business leaders to educate students to compete in a global economy.
- **Las Vegas Valley Water District:** Per their website, the Las Vegas Valley Water District (LVVWD) (<https://www.lvvwd.com/about/water-district/index.html>) provides reliable, quality water to our desert community for more than 60 years. A not-for-profit utility, LVVWD began

providing water in 1954 to a service area of around 45,000 residents. In the more than 60 years since, change has been the only constant. The Water District has kept pace, building and responsibly maintaining the city's water delivery system and serving customers through periods of extraordinary growth and community development—using sustainable technologies such as [solar power and alternative-fueled fleets](#) to increase efficiencies and manage costs of water delivery in the desert. Today, the district delivers reliable, quality water—[tested and treated](#) in state-of-the-art [facilities](#)—to more than 1.5 million people. In addition to a service area that includes metropolitan Las Vegas and areas of unincorporated Clark County, the LVVWD also serves the communities of [Blue Diamond](#), [Coyote Springs](#), [Jean](#), [Kyle Canyon](#), Laughlin ([Big Bend Water District](#)) and [Searchlight](#). The Clark County Commissioners serve as the [LVVWD Board of Directors](#) and also oversee the additional community water systems.

- Southern Nevada Health District:** The mission of the Southern Nevada Health District is “to assess, protect, and promote the health, the environment, and the well-being of Southern Nevada communities, residents, and visitors.” Per their website (<https://www.southernnevadahealthdistrict.org/>), the Southern Nevada Health District was created in 1962, following statutory authorization from the Nevada State Legislature to combine the county health department and the health departments of several surrounding cities. Pursuant to Nevada Revised Statute ([NRS](#)) [Chapter 439](#) the Health District’s powers and jurisdictions are as follows: prevent and control nuisances; regulate sanitation and sanitary protection of water and food supplies; protect and promote the public health generally in the geographical area subject to the jurisdiction to the health district; and improve the quality of health care services for members of minority groups and medically underserved populations. Today, the Southern Nevada Health District is one of the largest local public health organizations in the United States. The health district serves more than 2.2 million residents, which represents 72 percent of Nevada’s total population. Additionally, the Health District is charged with safeguarding the public health of more than 42 million visitors to Las Vegas each year. In the past decade, the role of public health has expanded to include oversight and participation in areas such as [bioterrorism and disaster and emergency preparedness](#).

The proceeding table provides a Populations Summary (per [the U.S. Census Quick Fact – Clark County, NV](#)) for each jurisdiction participating in the Clark County Multi-Jurisdictional Hazard Mitigation Plan. It should be noted that the recent [2022 Homeless Census](#) found 5,645 people living in shelters or on the streets and estimated that nearly 14,000 people experienced homelessness in Southern Nevada at some point during the year.

Table 13: Population Summary, Clark County

Population Summary		
Jurisdiction	Housing Units	Population
Clark County (including Unincorporated Area)	917,656	2,265,461
Boulder City (City)	7,423	14,885
Henderson (City)	136,325	317,610
Las Vegas (City)	256,713	20,471
Mesquite (City)	11,198	641,903
North Las Vegas (City)	86,353	262,527

Data Source: US Census Bureau

For electric service, there are 26 utility companies in Clark County, Nevada, serving a population of

2,112,436 people in an area of 7,890 square miles. While NV Energy provides much of the population with electric power, there are numerous water and wastewater districts. Key water districts include Clark County Water Reclamation District, Virgin Valley Water District, Las Vegas Valley Water District, Moapa Valley Water District, and the Cities of Las Vegas, North Las Vegas, Henderson, Boulder City, and Mesquite. The following table provides transportation and utility lifeline inventory valued at \$45,121,000 for Clark County, as identified by FEMA HAZUS database.

Table 14: Transportation System Lifeline Inventory, Clark County, NV

Transportation System Lifeline Inventory			
System	Component	#Location/ #Segments	Replacement Value (millions of dollars)
Highway	Bridges	1,109	\$4962.1224
	Segments	208	\$6316.1130
	Tunnels	4	\$91.2461
	Subtotal		\$11369.4815
Railways	Bridges	72	\$346.6800
	Facilities	1	\$2.6330
	Segments	100	\$1243.2012
	Tunnels	0	\$0.000
Subtotal		\$1592.5442	
Light Rail	Bridges	0	\$0.000
	Facilities	0	\$0.000
	Segments	0	\$0.000
	Tunnels	0	\$0.000
Subtotal		\$0.00000	
Bus	Facilities	5	\$10.3503
	Subtotal		\$10.3503
Ferry	Facilities	1	1.3310
	Subtotal		\$1.3310
Port	Facilities	0	\$0.000
	Subtotal		\$0.00000
Airport	Facilities	11	\$1730.2360
	Runways	20	\$231.0910
	Subtotal		\$1961.3270
Total			\$14,935.00

Table 15: Utility System Lifeline Inventory, Clark County, Clark County

Utility System Lifeline Inventory, Clark County			
System	Component	#Location/ #Segments	Replacement Value (millions of dollars)
Portable Water	Distribution Lines	NA	\$395.11101
	Facilities	1	\$36.2970
	Pipelines	0	\$0.000
	Subtotal		\$434.4071

Utility System Lifeline Inventory, Clark County			
System	Component	#Location/ #Segments	Replacement Value (millions of dollars)
Wastewater	Distribution Lines	NA	\$237.0661
	Facilities	17	\$2473.6581
	Pipelines	0	\$0.0000
	Subtotal		\$2710.7242
Natural Gas	Distribution Lines	NA	\$158.0440
	Facilities	2	\$2014.1360
	Pipelines	34	\$1906.0003
	Subtotal		\$2268.1803
Oil Systems	Facilities	0	\$0.0000
	Pipelines	0	\$0.0000
	Subtotal		\$0.0000
Electric Power	Facilities	39	\$24770.3682
	Subtotal		\$24770.3682
Communication	Facilities	50	\$5.4500
	Subtotal		\$5.4500
Total			\$30,186.10

Data Source: FEMA HAZUS Database

Related to the economy of the County, is home to many gaming-related companies. Station Casinos is headquartered in unincorporated Clark County, along with Golden Entertainment, American Casino & Entertainment Properties, Bally Technologies, Cannery Casino Resorts, The Majestic Star Casino, LLC, Ameristar Casinos, Archon Corporation, Boyd Gaming, Las Vegas Sands, MGM Resorts International, Wynn Resorts, DBT Online Inc., Two Plus Two Publishing, Gambler's Book Shop / GBC Press, Millennium Management Group, Navegante Group, Pinnacle Entertainment and Tropicana Entertainment.

Clark County's economy grew at a steady pace prior to the COVID-19 pandemic. Emerging industries that assist the region's economic diversification include information technology, logistics, manufacturing, and healthcare. Though these industries currently represent a smaller portion of the region's economy, their promise for future growth is significant. Likewise, their resiliency in the face of the pandemic-induced economic recession speaks to their role in the region's economy moving forward.

The County's largest employers are:

- Encore Spa & Salon
- Nellis Air Force Base
- Flamingo Las Vegas Hotel and Casino
- MGM Grand Las Vegas
- The Linq Hotel
- Orleans Hotel and Casino
- Las Vegas Sands Corporation
- Mandalay Bay Resort and Casino
- Caesars Palace Las Vegas

Southern Nevada’s diversifying economy has led to notable growth in high-paying occupations such as computer systems design and data processing and hosting. Nevertheless, the region’s economy remains dominated by low-wage and low-skill occupations such as food preparation and serving, and retail sales which are the largest employment sectors in the County. Underemployment remains a challenge for much of the region’s population.

Key indicators include:

- Median household income (in 2020 dollars), - \$61,048
- Per capita income in past 12 months (in 2020 dollars), - \$31,651
- Persons in poverty - 13.2%

A current FEMA-approved Hazard Mitigation Plan will help support such initiatives in Clark County over the next five years, which is the time span of such an important community planning document.

Demographics

Of the 17 counties in the State of Nevada, Clark County is ranked as the 6th largest county in the State and has 7,891.7 square miles of land area. According to the U.S. Census Bureau, the population of Clark County increased from 741,368 in 1990 to an estimated 2,205,207 in 2016. This represents a 197.5% increase over a 26-year period. In 2020, the [U.S. Census Bureau, Decennial Census](#) reported the population of Clark County to be 2,265, 461.

The following table details the population demographics specific to Clark County and its participating jurisdictions.

Table 16: Community Demographics

Community Demographics							
Jurisdiction	Size (Sq. Mi)	Population			% Population Change		
		2000	2010	2020	2000-2010	2010-2020	2000-2020
Clark County including Clark County Unincorporated	7891.65	1,375,765	1,951,269	2,265,461	41.8%	16.1%	64.7%
Boulder City (City)	208.27	14,966	15,023	14,885	0.381%	0.919%	-0.541%
Henderson (City)	106.23	175,381	257,729	317,610	47%	23.23%	81.1%
Las Vegas (City)	141.83	479,137	583,756	641,903	21.83%	9.96%	34%
Mesquite (City)	31.76	9,389	15,276	20,471	62.7%	34%	118%
North Las Vegas (City)	101.28	115,488	216,961	262,527	87.9%	21%	127.3%

Data Source: [U.S. Census Bureau, Nevada: 2010 Population and Housing Unit Count](#); and [U.S. Census Bureau, Profile: data.census.gov](#); Percent of Population Change Calculation Change: <https://www.omnicalculator.com/math/percentage-change#how-to-calculate-the-percent-change>

The 2022 U.S. Census provides the additional population data and information related to age and race origin for Clark County:

Table 17: Additional Population Data - Age and Race Origin

Additional Population Data - Age and Race Origin	
Age /Race	Percentage
Persons under 5 years, percent	6.2%
Persons under 18 years, percent	23.0%
Person 65 years and over	15.1%
Race and Hispanic Origin Data includes	
White alone, percent	68%
Black or African American, alone	13.6%
American Indian and Alaska Native, alone	1.3%
Asian, alone	10%

Data Source: U.S. Census Bureau, Profile: data.census.gov

Table 18: Additional Population Data - Age by Jurisdiction

Jurisdiction	Additional Population Data – Age		
	Persons under 5 years, percent	Persons under 18 years, percent	Persons 65 years and over, percent
Clark County including Clark County Unincorporated	6.0	25.4	14.7
Boulder City (City)	4.5	19.8	29.0
Henderson (City)	4.8	23.5	26.6
Las Vegas (City)	5.9	25.6	14.8
Mesquite (City)	4.0	17.0	42.0
North Las Vegas (City)	7.2	30.3	10.9

Demographics and Hazard Vulnerabilities

Demographic data is crucial to effective hazard mitigation planning. This is especially true for the numbers associated with population and housing, as they, over time, can increase or decrease a planning area’s vulnerabilities to any/all identified natural hazards. For example, a decrease in population and/or the number of housing units generally decreases hazard vulnerabilities for people and structures, while an increase in population and/or the number of housing units generally increases the hazard vulnerabilities of people and structures (particularly those located in hazard-prone areas, e.g., floodplains, wildland urban interface areas or WUIs, etc.).

It is important to note, however, that demographic data can fluctuate or even lag in the short term, i.e., one to two years, for a variety of reasons (economic, political, etc.). This often results in temporary increases in population and, at the same time, temporary decreases in the number of housing units (or vice versa). While these numbers tend to self-correct over time, it is best to analyze data from longer periods, such as ten (10) to twenty (20) years, for mitigation planning purposes.

The following table details the Population Summary/Housing, 2010 vs. 2020 specific to Clark County and its participating jurisdictions and the Tribal Nations represented in the planning area.

Table 19: Population/Housing Summary, Clark County, NV

Population/Housing Summary, Clark County, NV						
Jurisdiction	Population (2010 U.S. Census)	Population (2020 U.S. Census)	% of Population Change (2010-2020)	# of Housing Units (2010 Census)	# of Housing Units (2020 Census)	% of Housing Units (2010 – 2020)
Clark County including Clark County Unincorporated	1,951,269	2,265,461	16.1%	840,343	917,656	9.2%
Boulder City	15,023	14,885	0.919%	7,412	7,423	0.1484%
Henderson	257,729	317,610	23.23%	113,586	136,325	20%
Las Vegas	583,756	641,903	9.96%	243,701	256,713	5.34%

Population/Housing Summary, Clark County, NV

Jurisdiction	Population (2010 U.S. Census)	Population (2020 U.S. Census)	% of Population Change (2010-2020)	# of Housing Units (2010 Census)	# of Housing Units (2020 Census)	% of Housing Units (2010 – 2020)
Mesquite	15,276	20,471	34%	8,911	11,198	25.66%
North Las Vegas	216,961	262,527	21%	76,073	86,353	13.5%

Data Source: [U.S. Census Bureau, Nevada: 2010 Population and Housing Unit Count](#); and [U.S. Census Bureau, Profile: data.census.gov](#); Percent of Population Change Calculation Change: <https://www.omnicalculator.com/math/percentage-change#how-to-calculate-the-percent-change>

Table 20: Population/Housing Summary, Clark County, NV – Tribal Nations

Population/Housing Summary, Clark County, NV – Tribal Nations

Jurisdiction	Population (2017-2021 ACS 5-year Estimates)	# of Housing Units (2017-2021 ACS 5-year Estimates)
Las Vegas Paiute Tribe	111	37
Moapa Band of Paiutes	286	133

Note: On the U. S Census Bureau, My Tribal Area website, the Las Vegas Paiute tribe is mentioned as the Las Vegas Indian Colony, and the Moapa Band of Paiutes is mentioned as the Moapa River Indian Reservation.

Data Source: [U.S. Census Bureau, My Tribal Area, 2017-2021 American Community Survey 5-Year Estimates](#)

DMA 2000 requires that hazard mitigation plans consider socially vulnerable populations. These populations can be more susceptible to hazard events based on several factors, including their physical and financial ability to react to or respond during a hazard and the location and construction quality of their housing. The majority of the socially vulnerable populations reside in the Las Vegas-Henderson-North Las Vegas Metropolitan Area. It is known that any population growth is tied to social vulnerability.

For information about social vulnerability in the planning area, refer to the [Community Outreach](#) section of this plan update. Also, the MPSC was surveyed to provide their input on the growth and development of their communities. In [Appendix D](#), the Expanding and Improving Mitigation Projects section responds to the following jurisdictions: Clark County, the Cities of Boulder City, Henderson, Mesquite, Las Vegas, and North Las Vegas, and the Tribal Nations of the Moapa Band of Paiutes.

Related to the unhoused/homeless population in Clark County, the following infographic provides demographic information from the 2022 Homelessness Census from the [Help Hope Home, the Southern Nevada Homelessness Continuum of Care](#).

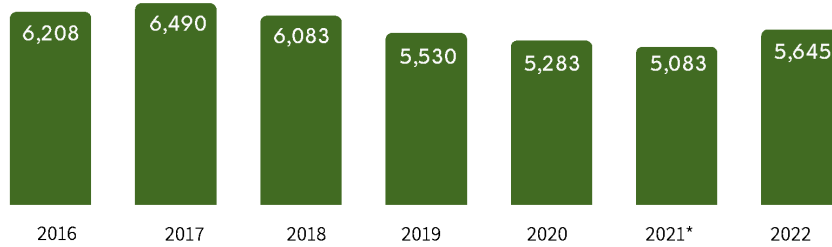
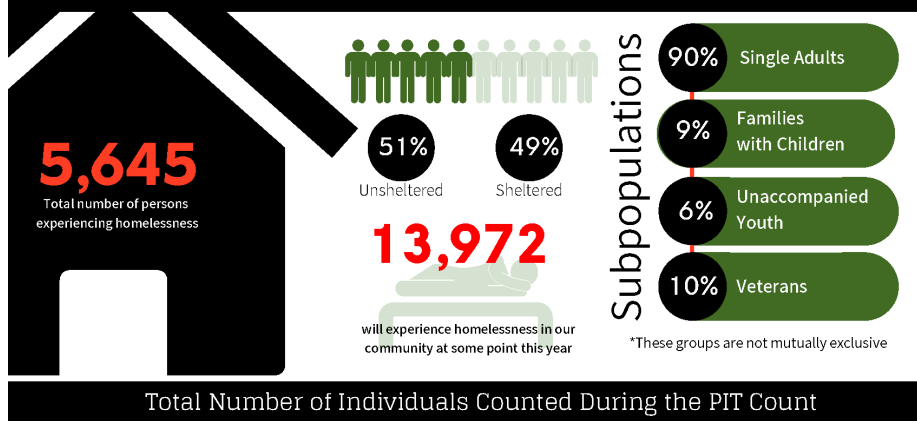


Homelessness in Southern Nevada

2022 Homeless Point-In-Time Count & Survey

Every year during the last 10 days of January, communities across the country conduct comprehensive counts of the local homeless populations in order to measure the prevalence of homelessness in each local Continuum of Care.

The 2022 Southern Nevada Point-in-Time Count was a community-wide effort conducted on February 23, 2022. Due to spikes in cases of COVID-19 leading up to the original January date, U.S. Department of Housing and Urban Development granted the CoC a date change to February.



* Due to the COVID-19 pandemic, the 2021 count required a change in methodology and a random sample of the County was canvassed by teams of service providers and outreach workers. The US Department of Housing and Urban Development (HUD) has strongly recommended to view the 2021 Point-in-Time Count as a stand-alone data set. The findings should not be compared to prior or future PIT count numbers.



Developed in partnership with





2022 Southern Nevada Point-In-Time Results

The 2022 Southern Nevada Point-in-Time Count was a community-wide effort conducted on February 23, 2022.

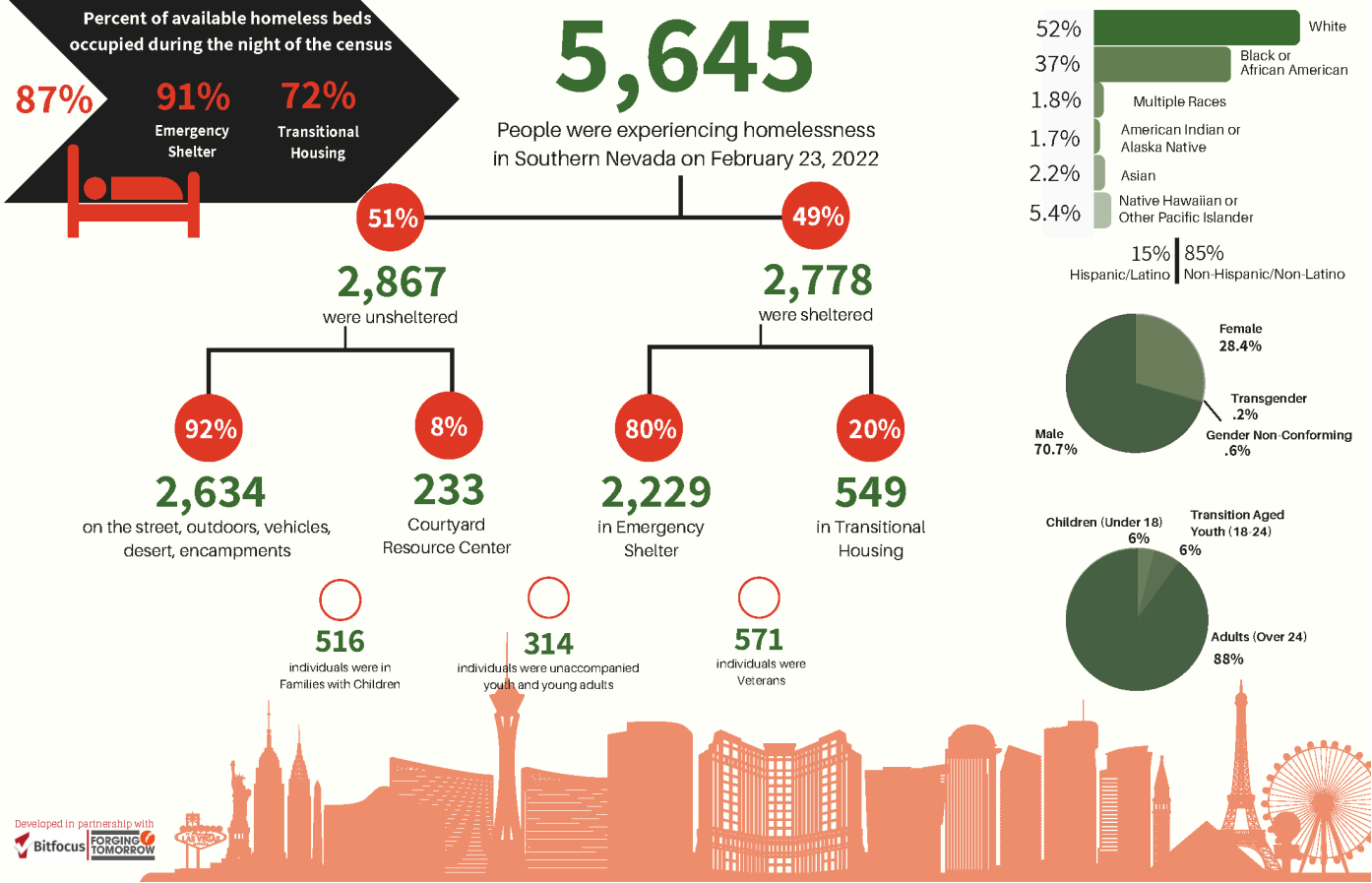
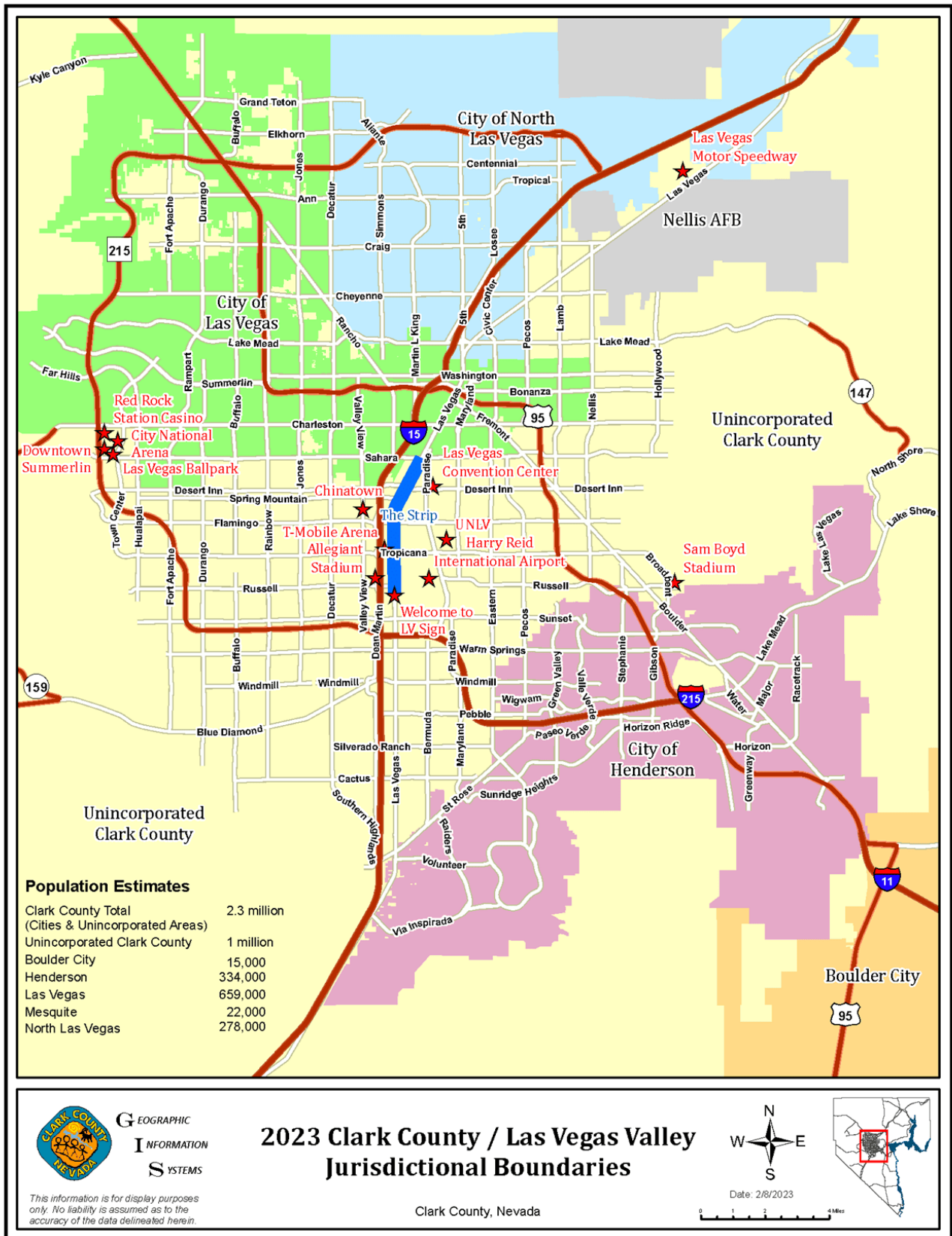
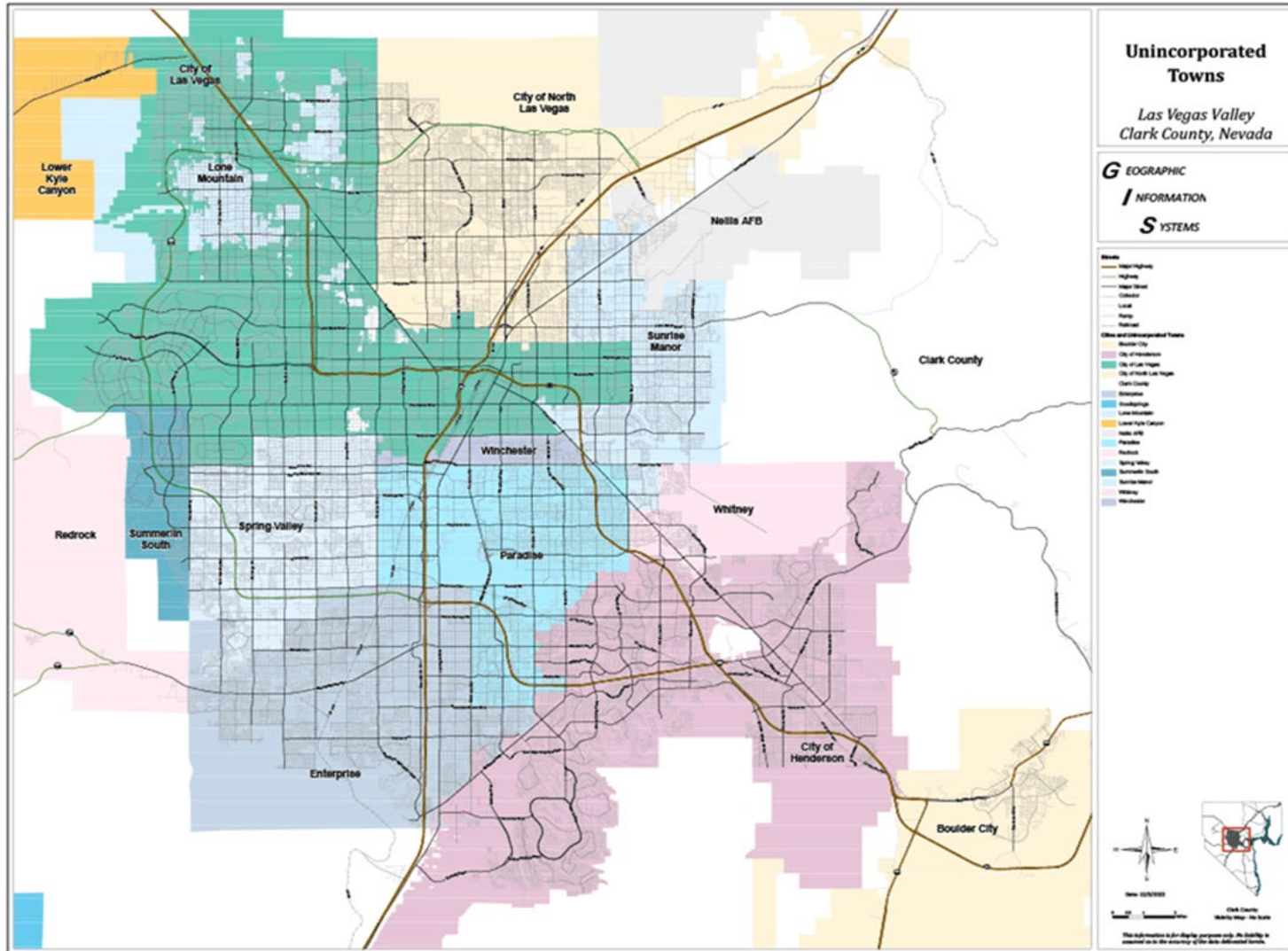


Figure 1: Clark County, NV Overview – Jurisdictional Boundary Map



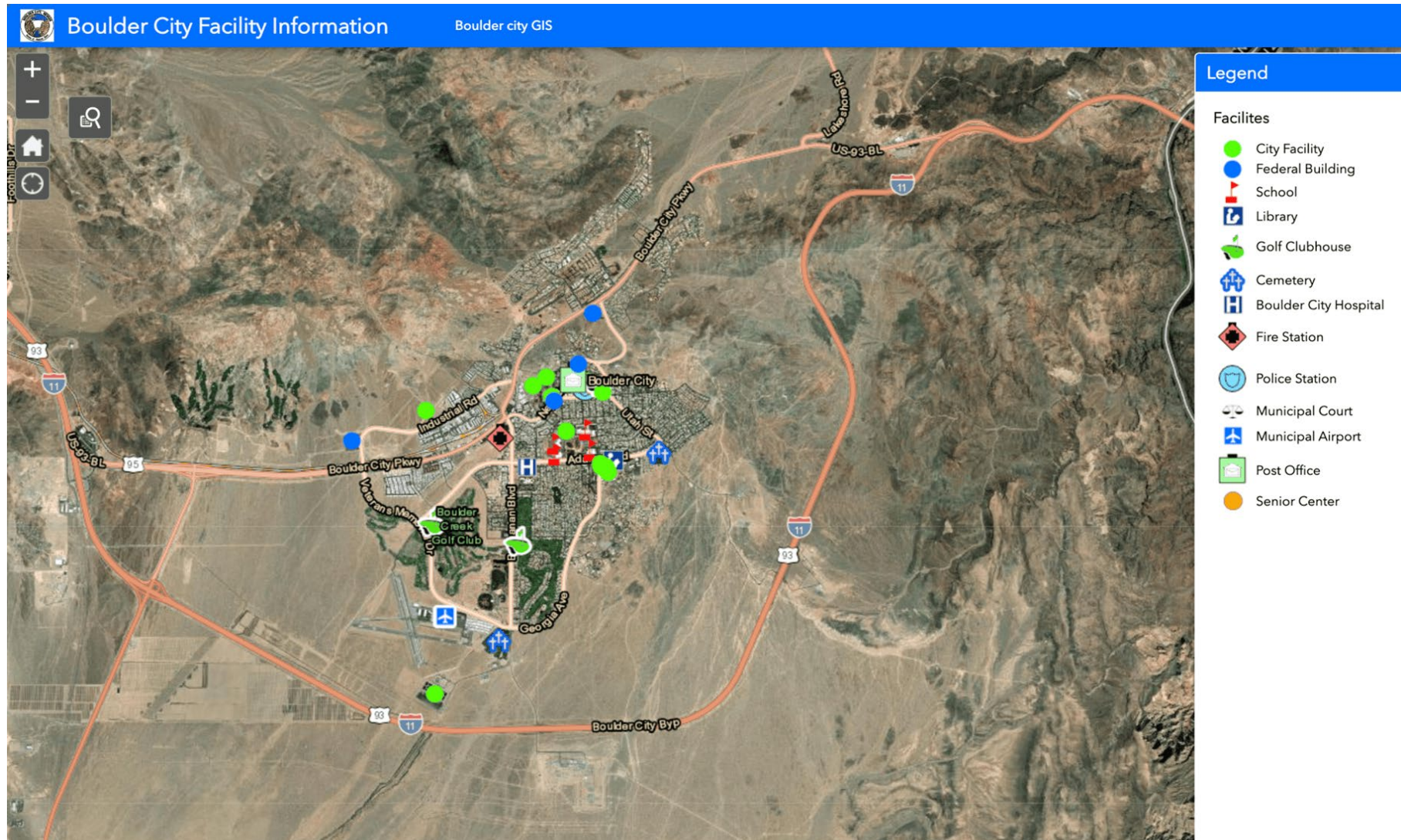
Data Source: Clark County GIS Department

Figure 2: Clark County, NV Unincorporated Township Map



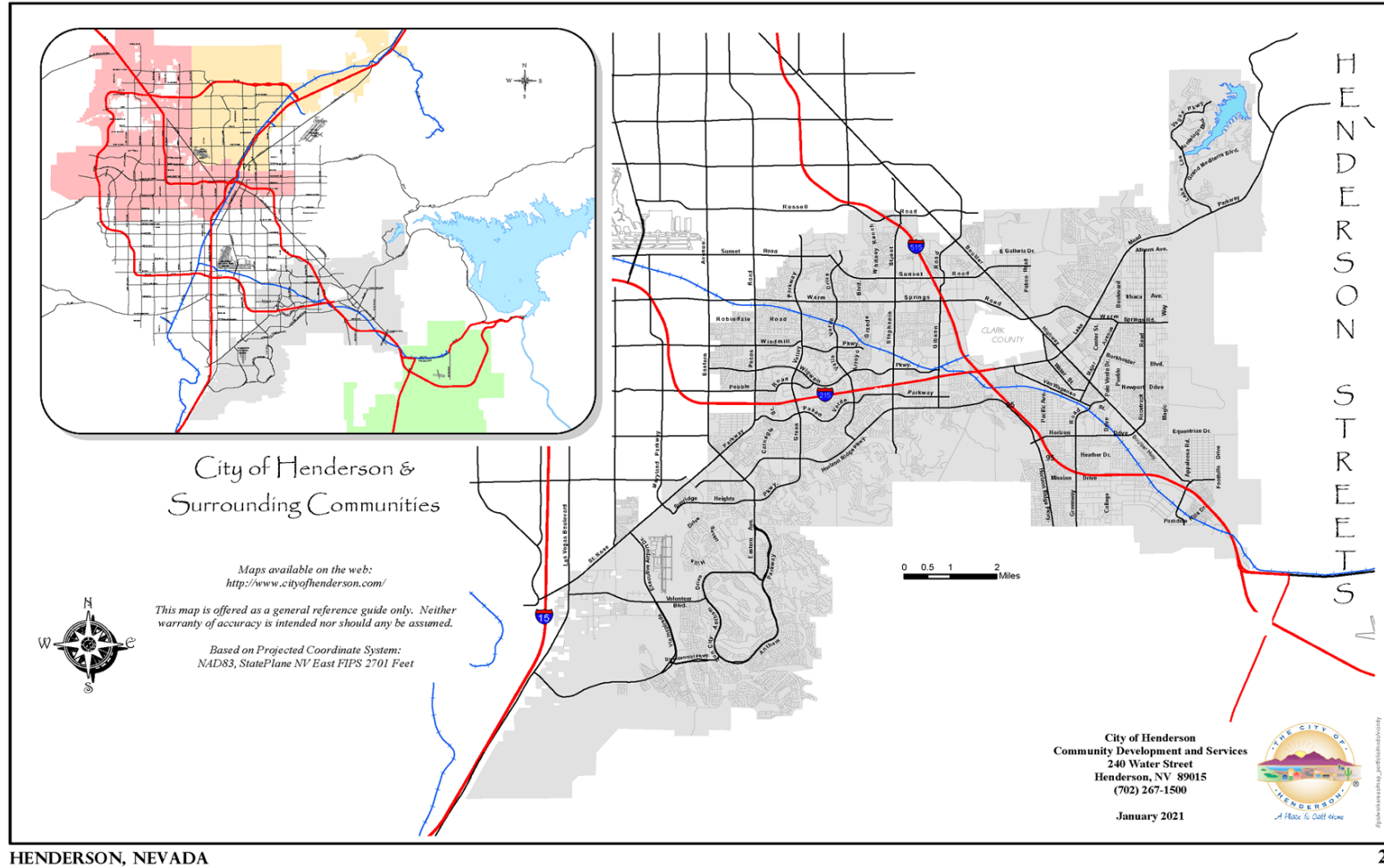
Data Source: [Clark County, NV GIS Department](#)

Figure 3: City of Boulder City Community Profile Map



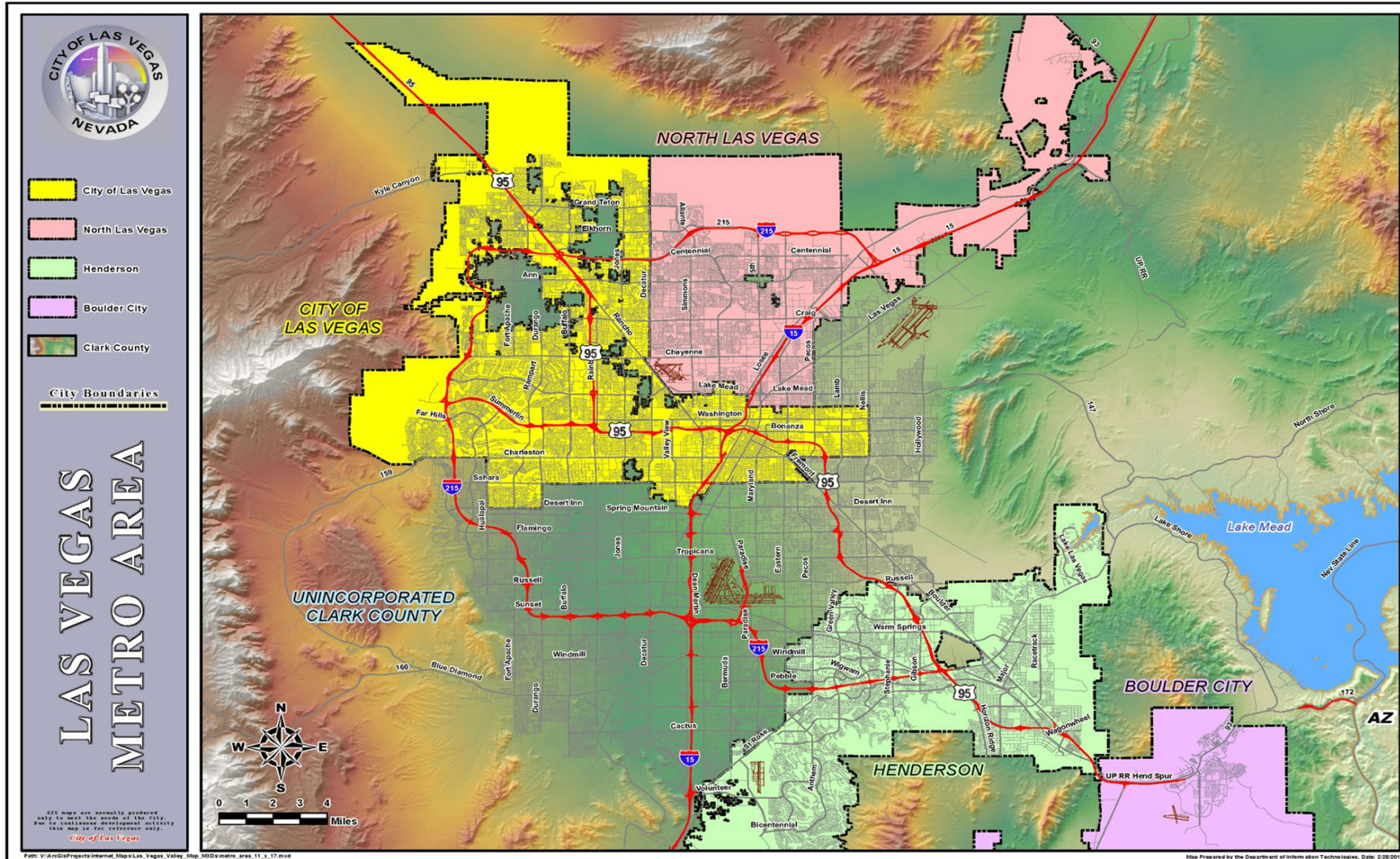
Data Source: [Boulder City GIS Department](#)

Figure 4: City of Henderson, NV Community Profile Map: City Limits Map



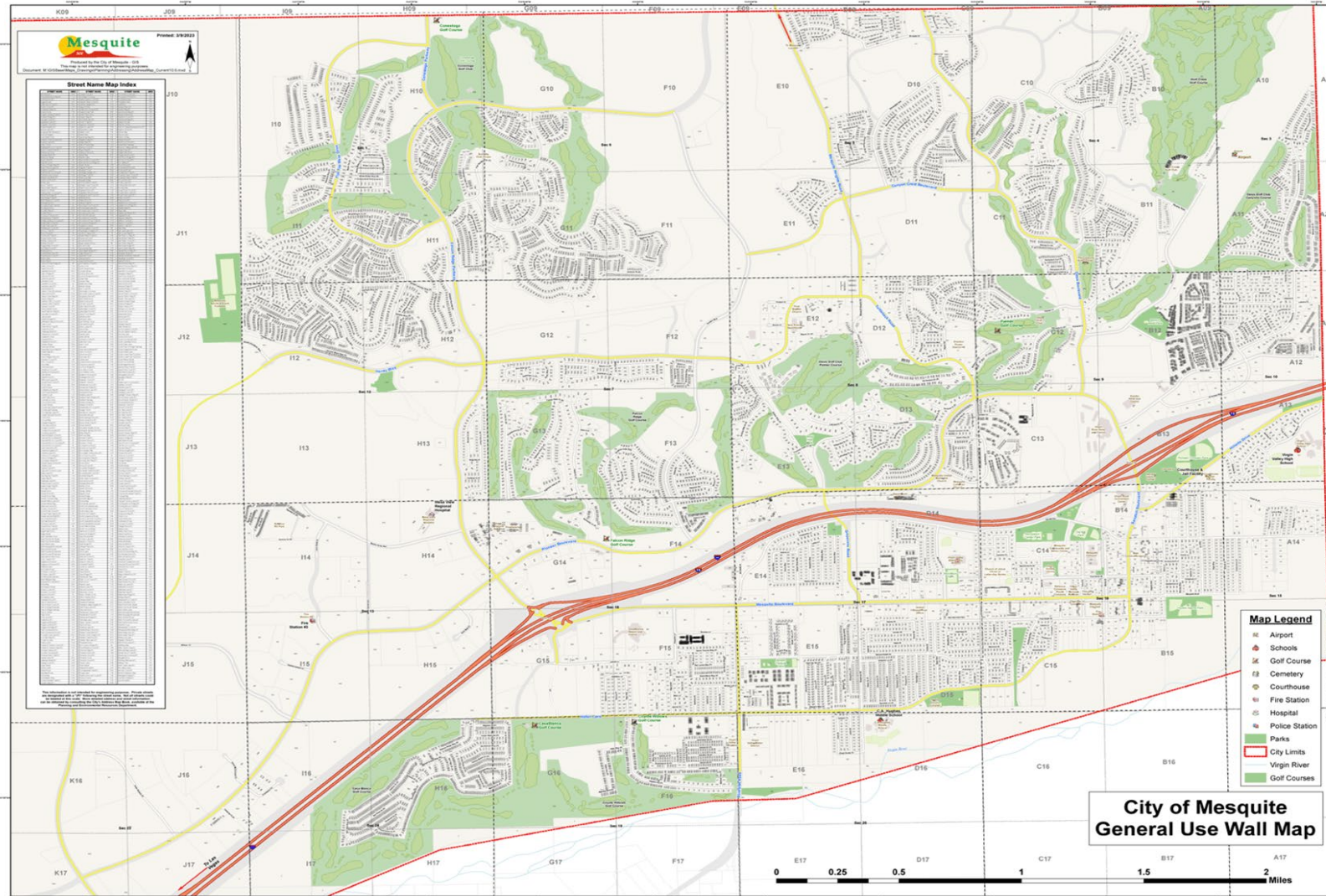
Data Source: [City of Henderson GIS Department](#)

Figure 5: City of Las Vegas Map – Metro Area Map



Data Source: LasVegasNV.gov

Figure 6: City of Mesquite Community Profile Map: General Use Map



Data Source: [City of Mesquite, NV Map Center](#)

Figure 7: City of North Las Vegas Community Profile Map: Full City Map

Data Source: [City of North Las Vegas GIS Department](#)

Figure 8: Las Vegas Paiute Tribe Community Profile Map



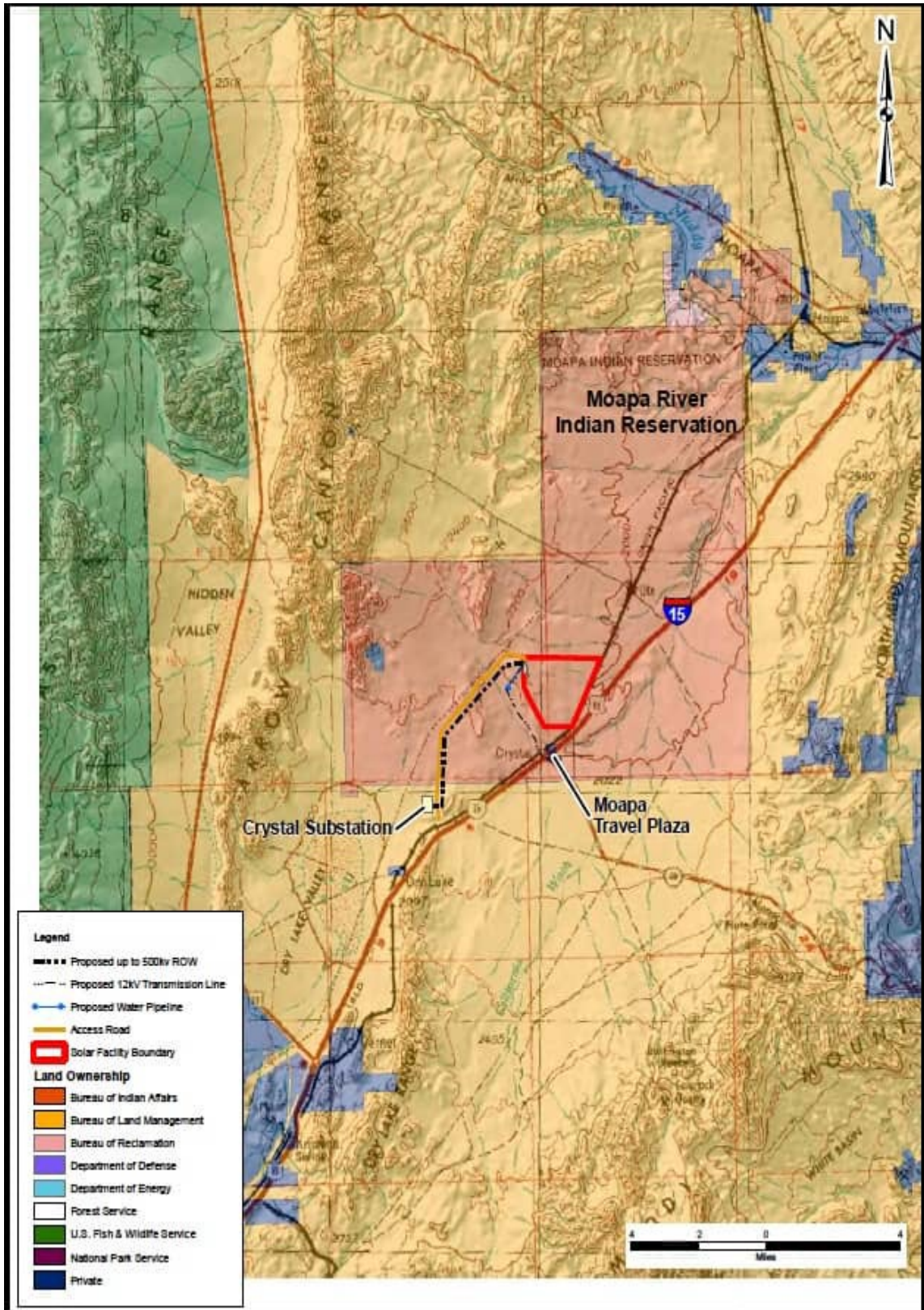
Data Source: [U.S Native American Tribes – Google My Maps](#)

Figure 9: Las Vegas Paiute Tribe Community Profile Map – Paiute Golf Courses – Snow Mountain Area



Data Source: [Paiute – Las Vegas Paiute Golf Resort](#)

Figure 10: Moapa Band of Paiute Tribe Community Profile Map



Data Source: Moapa Band of Paiutes Hazard Mitigation Plan (2015)

Land Use and Development

For land use planning purposes, the County is divided into 11 planning areas: Enterprise, Laughlin, Lone Mountain, Northeast County, Northwest County, South County, Spring Valley, Summerlin South, Sunrise Manor, Whitney, and Winchester/Paradise. To address the unique needs for each planning area, the County maintains area-specific goals, policies, and planned land use maps for each area. These maps can be found in the [Clark County Master Plan, Section 4: Area-Specific Goals and Policies](#).

Historically, the Clark County Master Plan and each planning area land use plan was updated every 5 (five) years, however some planning areas are rapidly growing and changing while others are experiencing less dramatic change. The table below depicts the required update to land use schedule based on planning area.

Table 21: Required Update to Land Use Schedule

	Evolving	Stable
Planning Area	Enterprise Spring Valley	<ul style="list-style-type: none"> • Laughlin • Lone Mountain • Northeast County • Northwest County • South County • Summerlin South • Sunrise Manor • Whitney • Winchester/Paradise
Land Use Update Schedule	Every 3-5 years, or as needed based on potential review triggers	Every 5-10 years, or as needed based on potential review triggers
Potential Review Triggers	<ul style="list-style-type: none"> A significant increase in development proposals from previous year The emergence of unforeseen development pressures (e.g., demolition permits, numerous requests for land use plan amendments) A formal request made by the applicable TAB(s) or CAC(s) Expectation of a transformative public or private project within the planning area 	

Land use categories applied to individual planned land use maps apply countywide. The land use category descriptions that follow are organized in four groups, each with additional organizational sub-categories:

Neighborhoods

- Outlying Neighborhood
- Edge Neighborhood
- Ranch Estate Neighborhood
- Low-Intensity Suburban Neighborhood
- Mid-Intensity Suburban Neighborhood
- Compact Neighborhood
- Urban Neighborhood

Commercial and Mixed-Use

- Neighborhood Commercial
- Corridor Mixed-Use
- Entertainment Mixed-Use

Employment

- Business Employment
- Industrial Employment

Other

- Agriculture
- Open Lands
- Public Use
- Major Projects (incl. Summerlin South)

Additional information on these categorical descriptions and Land Use basics can be found in the Clark County Master Plan, Section 3: Growth Framework. Information specific to development trends of the County and participating jurisdictions can be found in [Appendix J – Jurisdictional Annex](#).

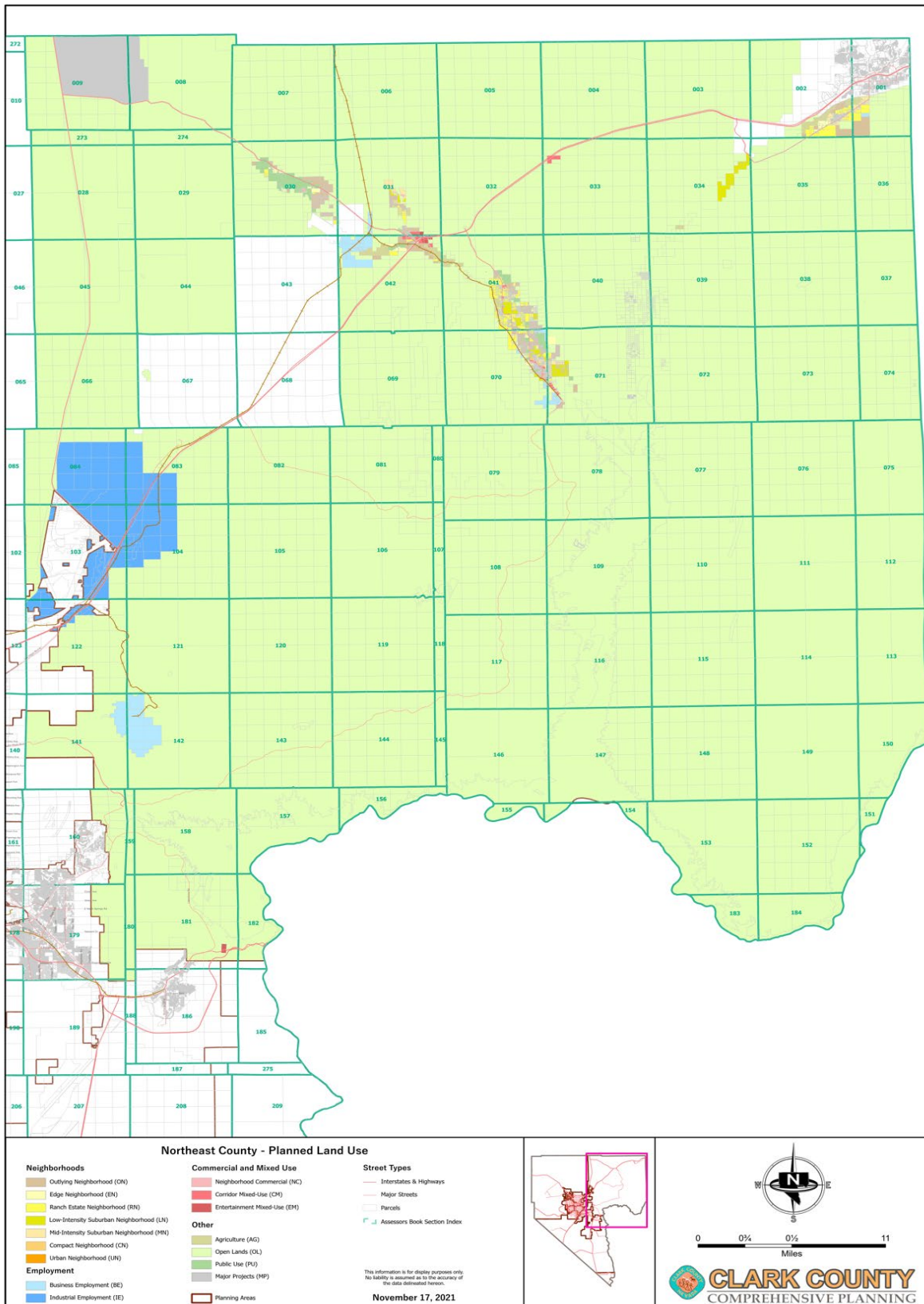
Just as the population of Clark County will continue to grow over the coming years, so too will its efforts to make meaningful, long-term decisions for the safety, well-being, prosperity, and enjoyment of its residents. This includes mitigating the hazards that pose risk to all and/or portions of the planning area. While the increasing growth in the population may have positive effects on the County's economy, it also can increase the hazard vulnerability and is creating new vulnerabilities and risk within the planning area, i.e., Clark County and its participating jurisdictions (which includes Clark County Unincorporated Area and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation).

The County and its participating jurisdictions will be able to focus on addressing current vulnerabilities and risk by further assessing property values, enforcing zoning as well building codes, applying National Flood Insurance Program (NFIP) and other applicable flood standards, etc.

It is important to note that population growth increases a planning area's overall vulnerability to localized hazards while population decline decreases it. Consequently, it is difficult to quantify the exact change in vulnerability in either direction, but it can be depicted as generally directly proportional to the population change itself.

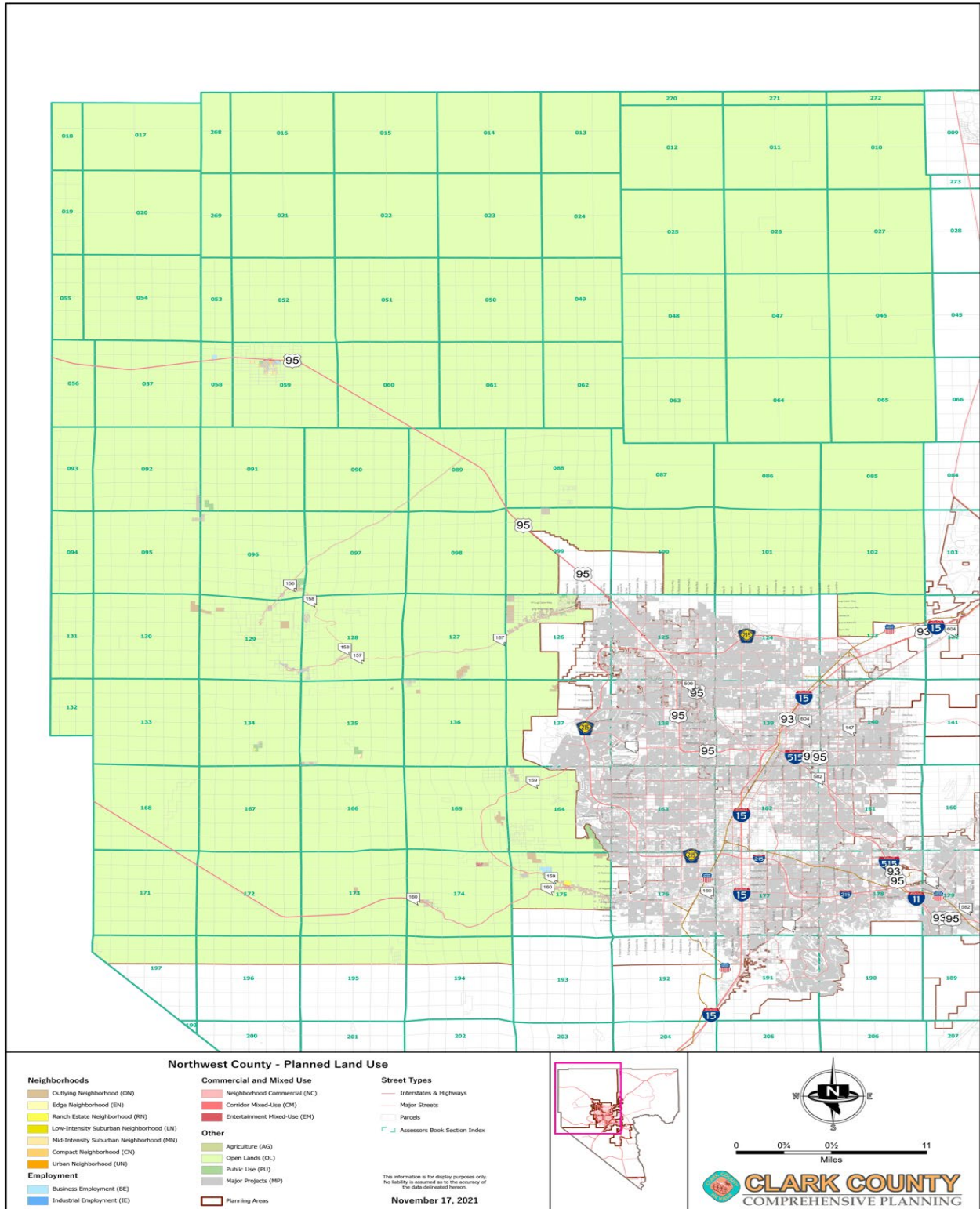
A hazard specific analysis, as it relates to land use and development trends within Clark County, is included within each identified hazard in [Section 4 – Hazard Analysis and Risk Assessment](#).

Figure 11: Clark County, NV Land Use and Development Map – Northeast Planned Land Use



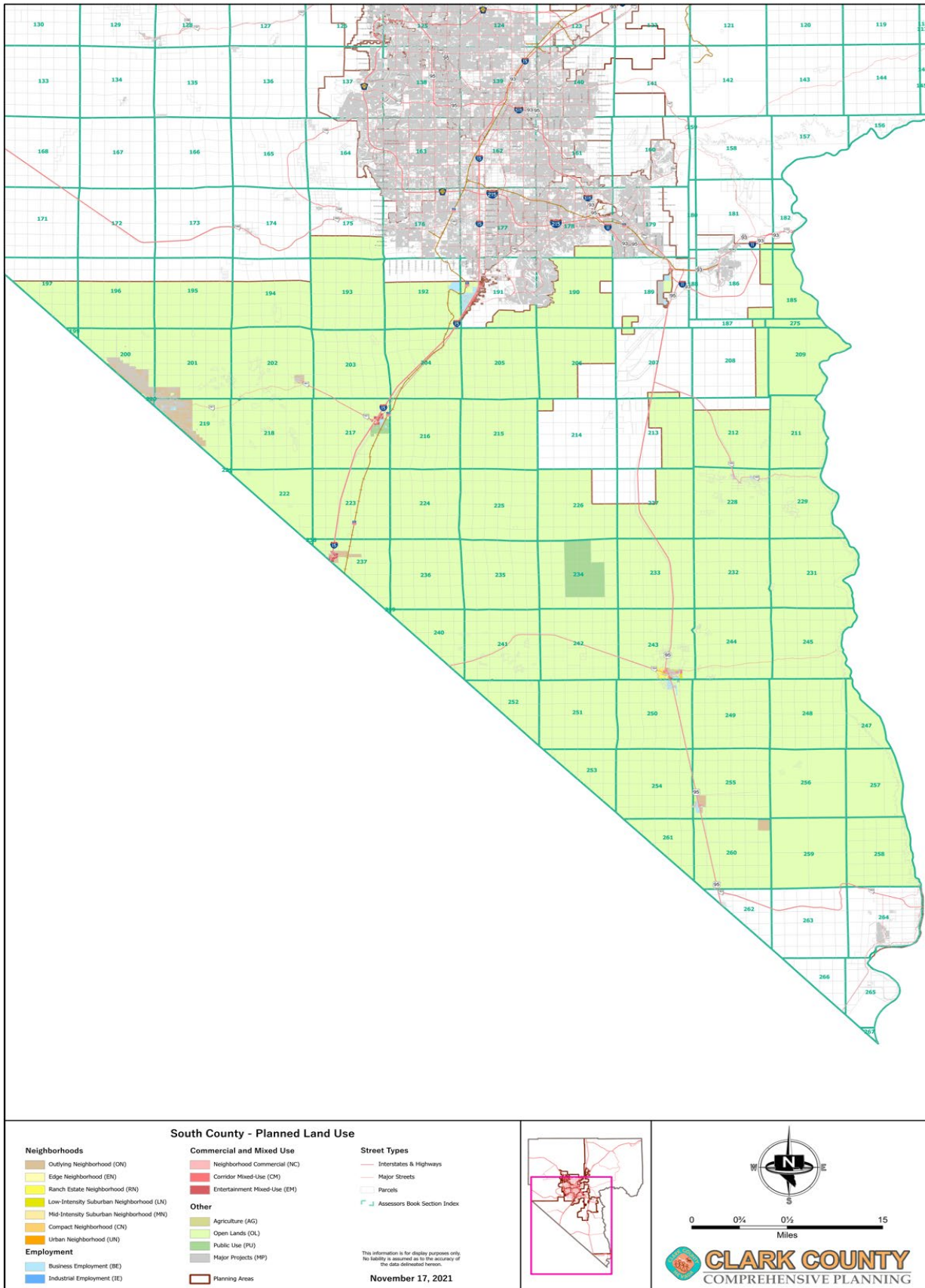
Data Source: [Clark County Comprehensive Planning Department](#)

Figure 12: Clark County, NV Land Use and Development Map – Northwest County Planned Land Use



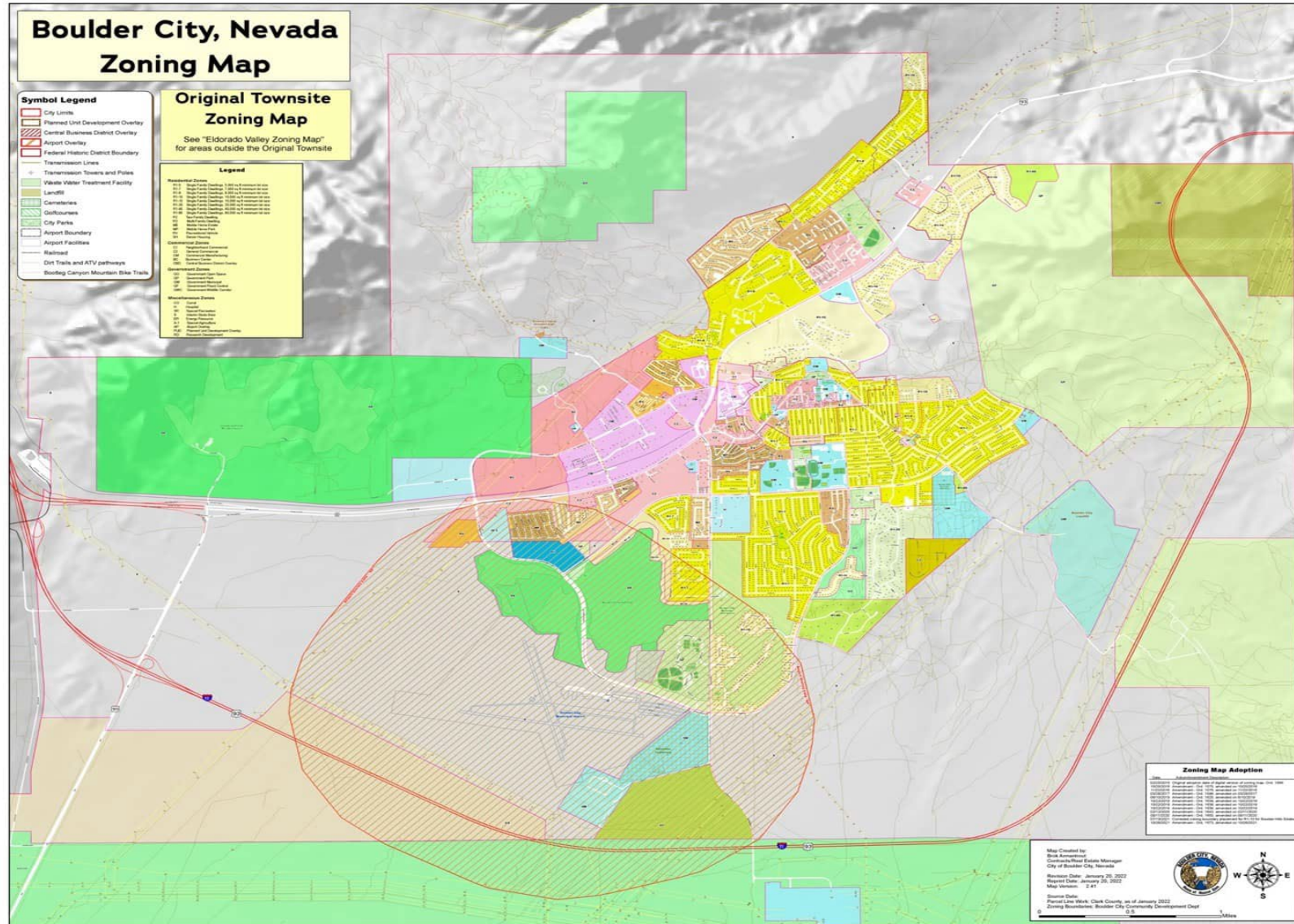
Data Source: [Clark County Comprehensive Planning Department](#)

Figure 13: Clark County, NV Land Use and Development Map – South County Planned Land Use



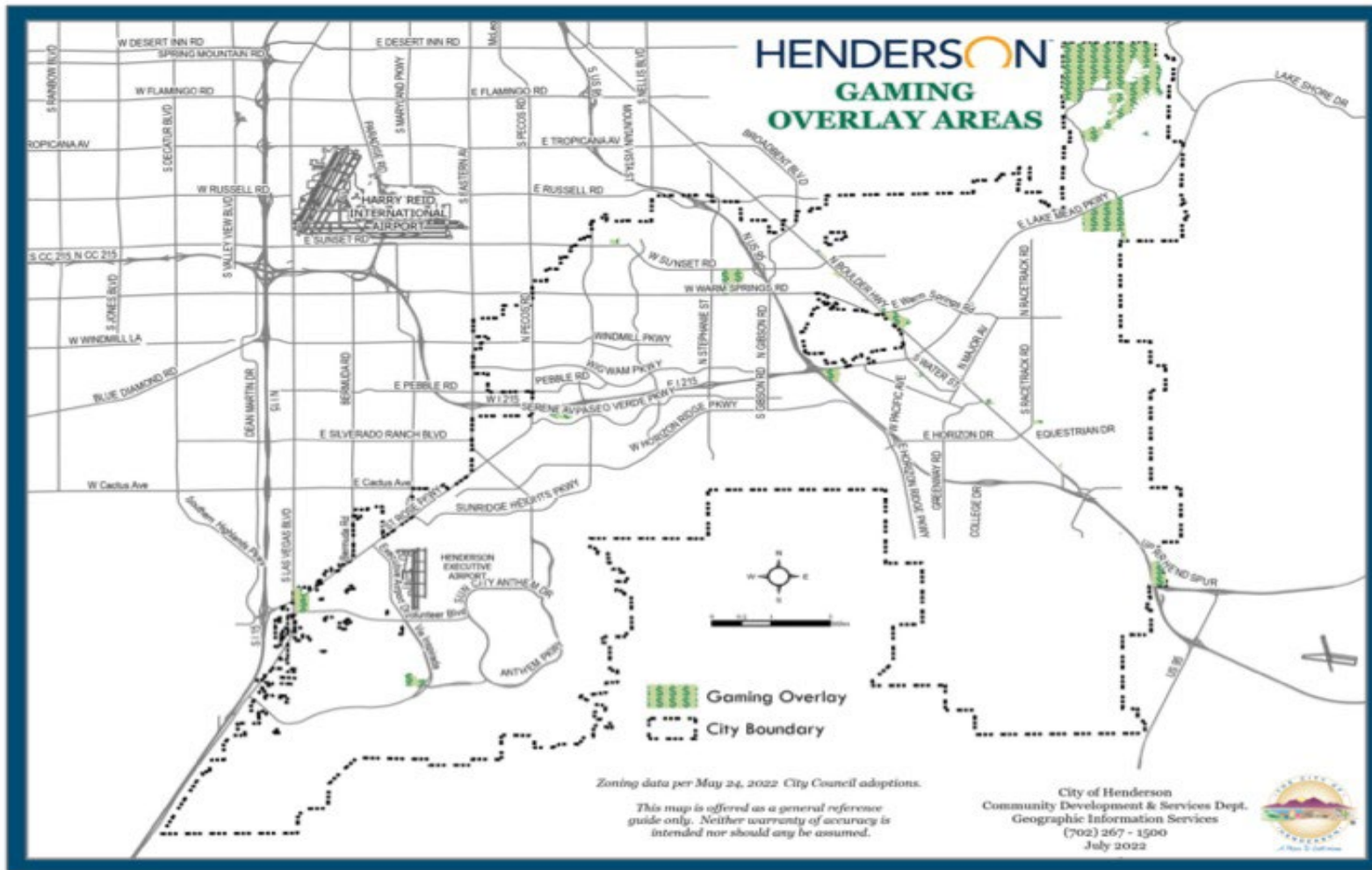
Data Source: [Clark County Comprehensive Planning Department](#)

Figure 14: City of Boulder City Land Use and Planning Map: Full Zoning Map



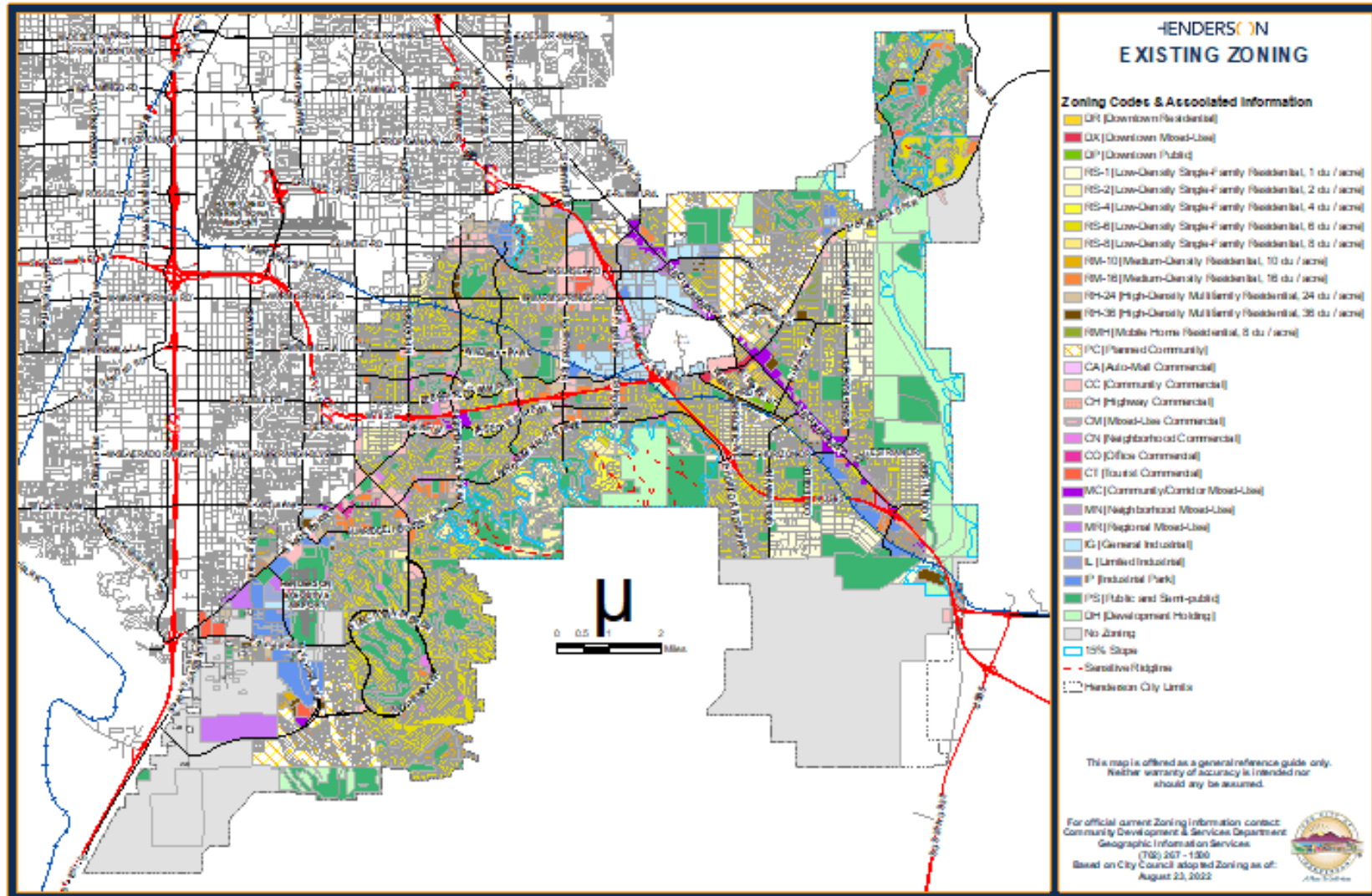
Data Source: [Boulder City Planning Department](#)

Figure 15: City of Henderson Land Use and Planning Map – Gaming Overlay Areas



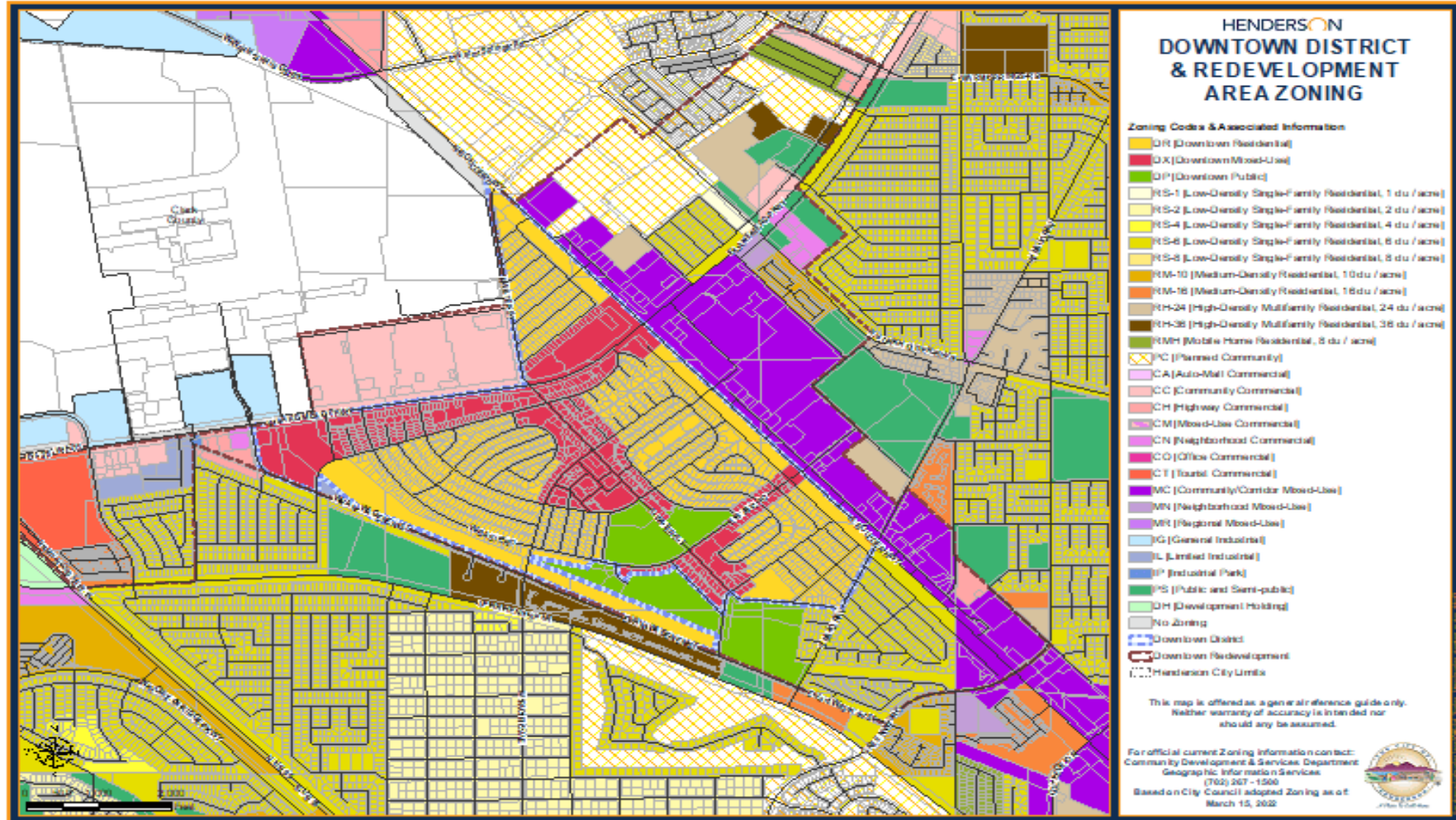
Data Source: [City of Henderson GIS Department](#)

Figure 16: City of Henderson Land Use and Planning Map: Existing Zoning Map



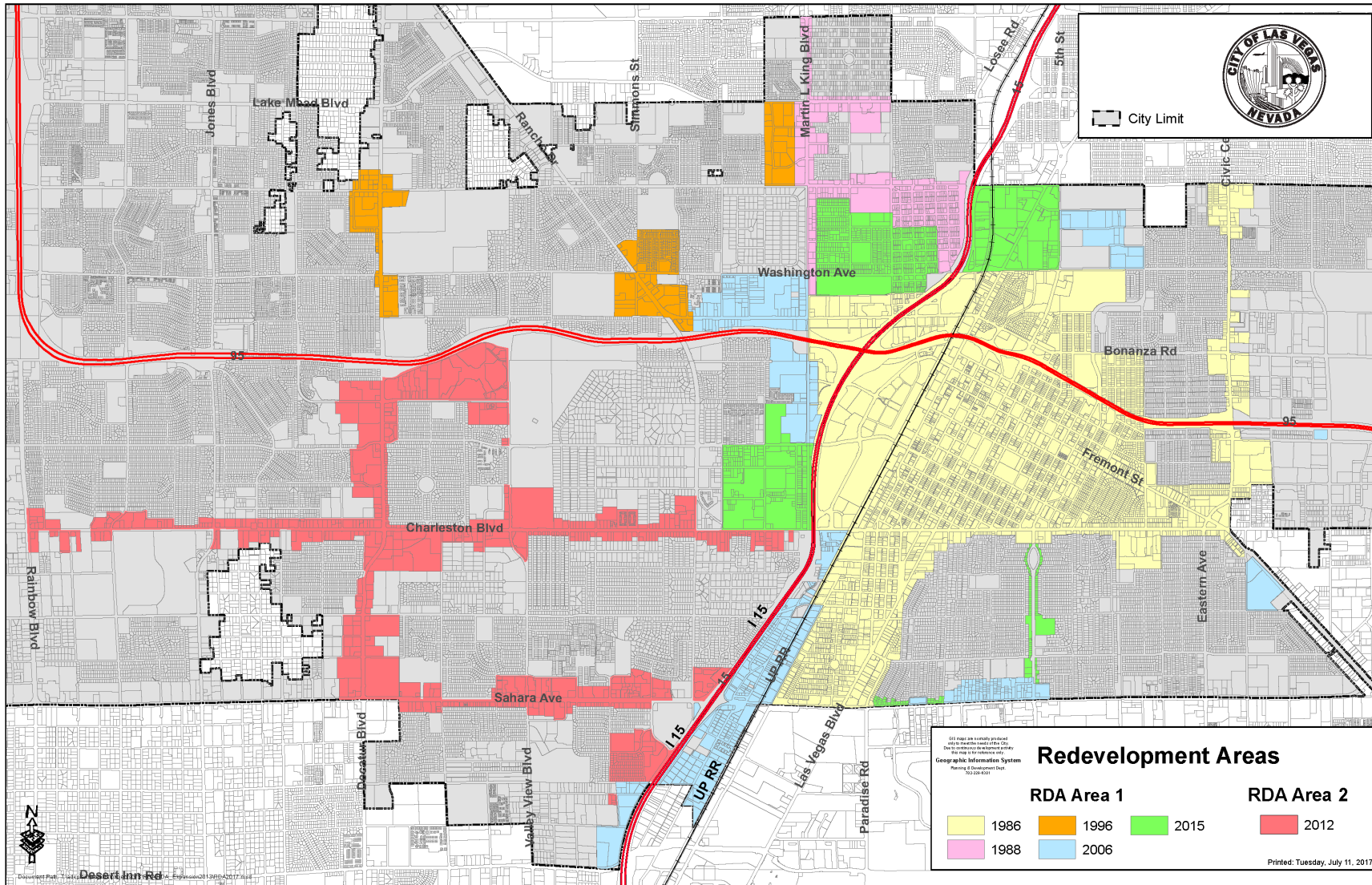
Data Source: [City of Henderson GIS Department](#)

Figure 17: City of Henderson Land Use and Planning Map: Downtown District and Redevelopment Area Zoning Map



Data Source: [City of Henderson GIS Department](#)

Figure 18: City of Las Vegas Land Use Map – Planned Streets and Highways, May 2021



Data Source: LasVegasNV.gov

Figure 19: City of Las Vegas – Gaming Enterprise Map

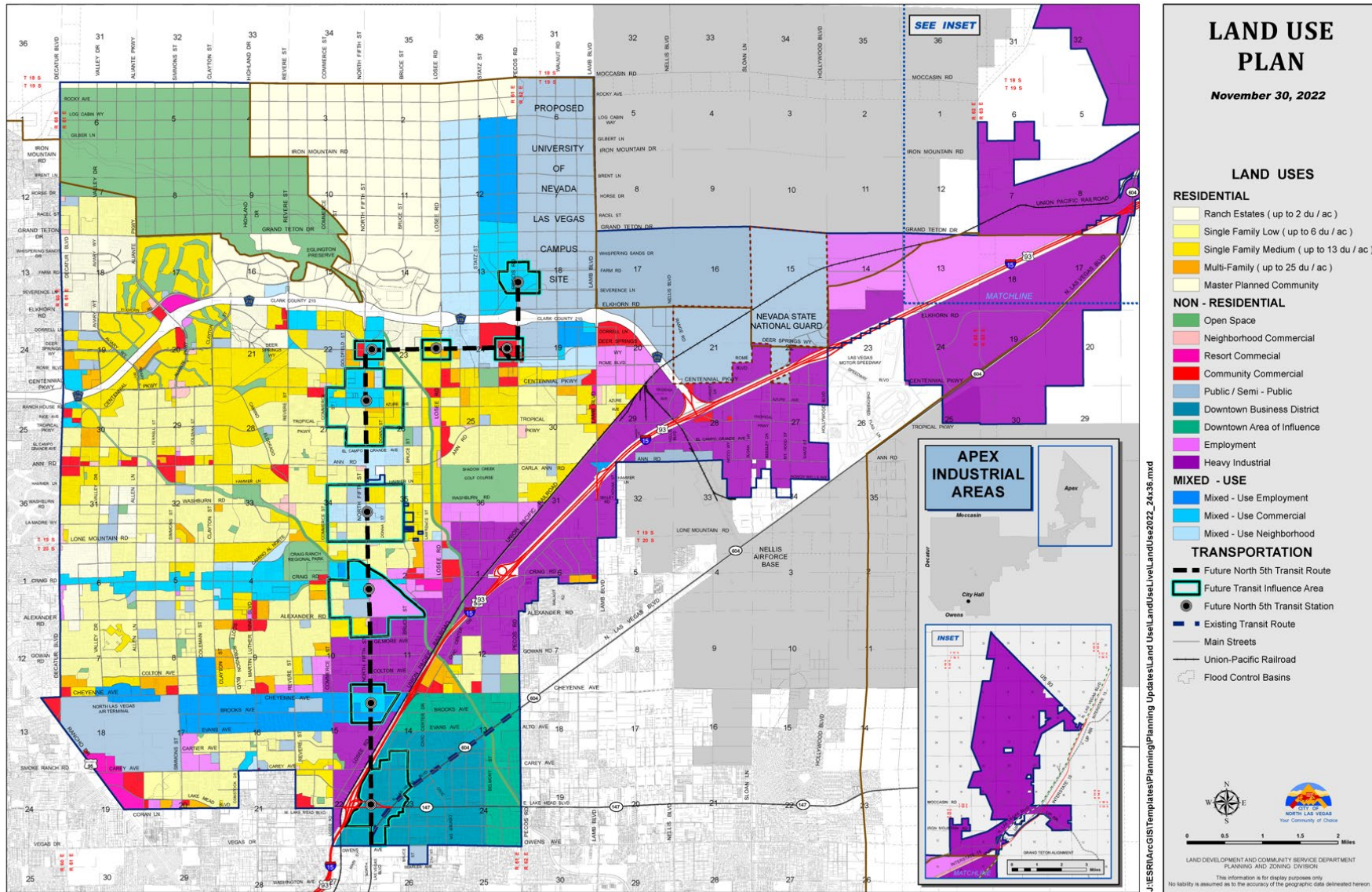
Data Source: LasVegasNV.gov

Figure 20: City of Mesquite Land Use and Planning Map



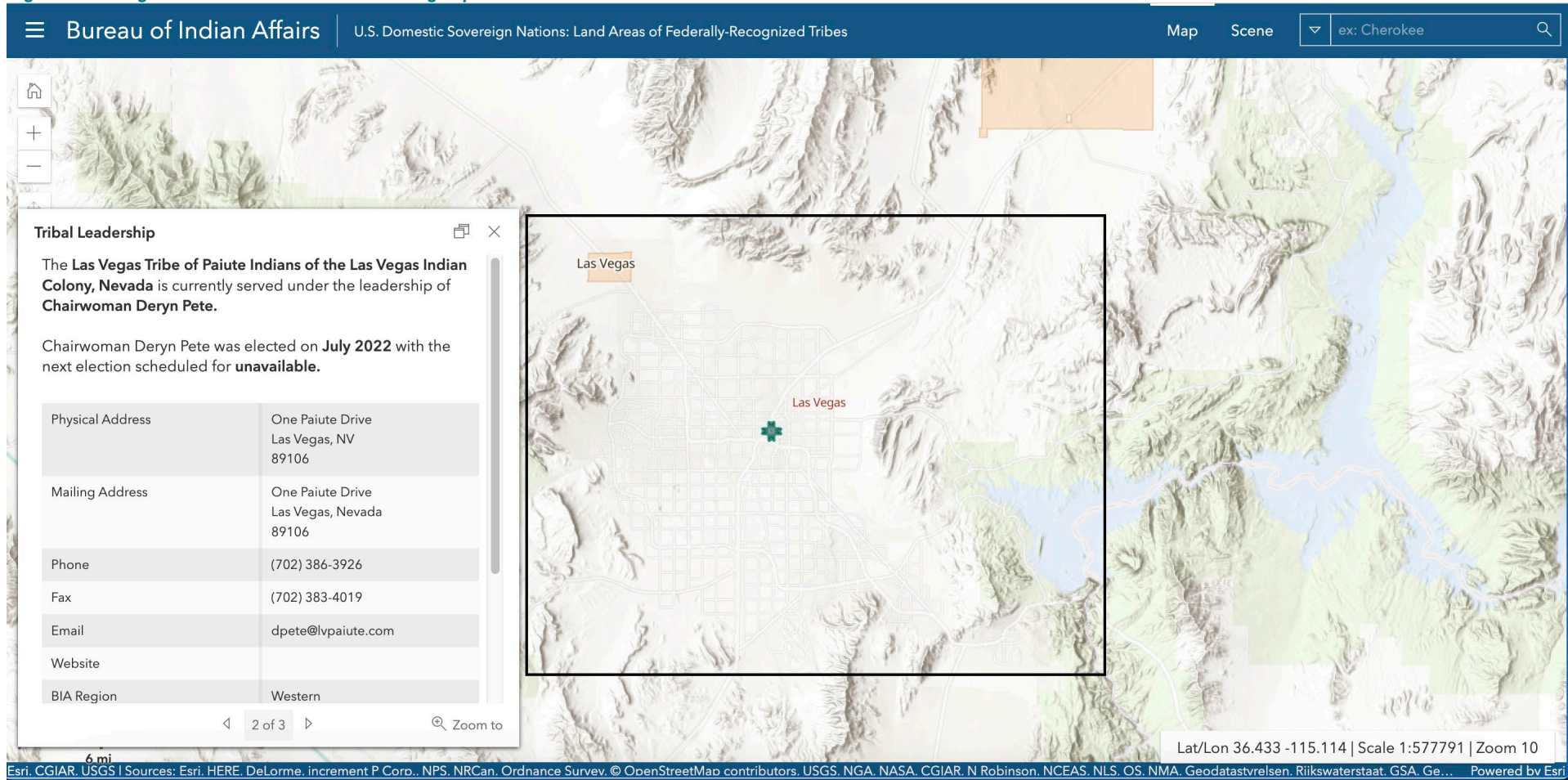
Data Source: [City of Mesquite GIS Department](#)

Figure 21: City of North Las Vegas Land Use and Planning Map



Data Source: [City of North Las Vegas](#)

Figure 22: Las Vegas Paiute Tribe Land Use and Planning Map



Data Source: U.S Department of Interior, Bureau of Indian Affairs (<https://biamaps.doi.gov/indianlands/>)

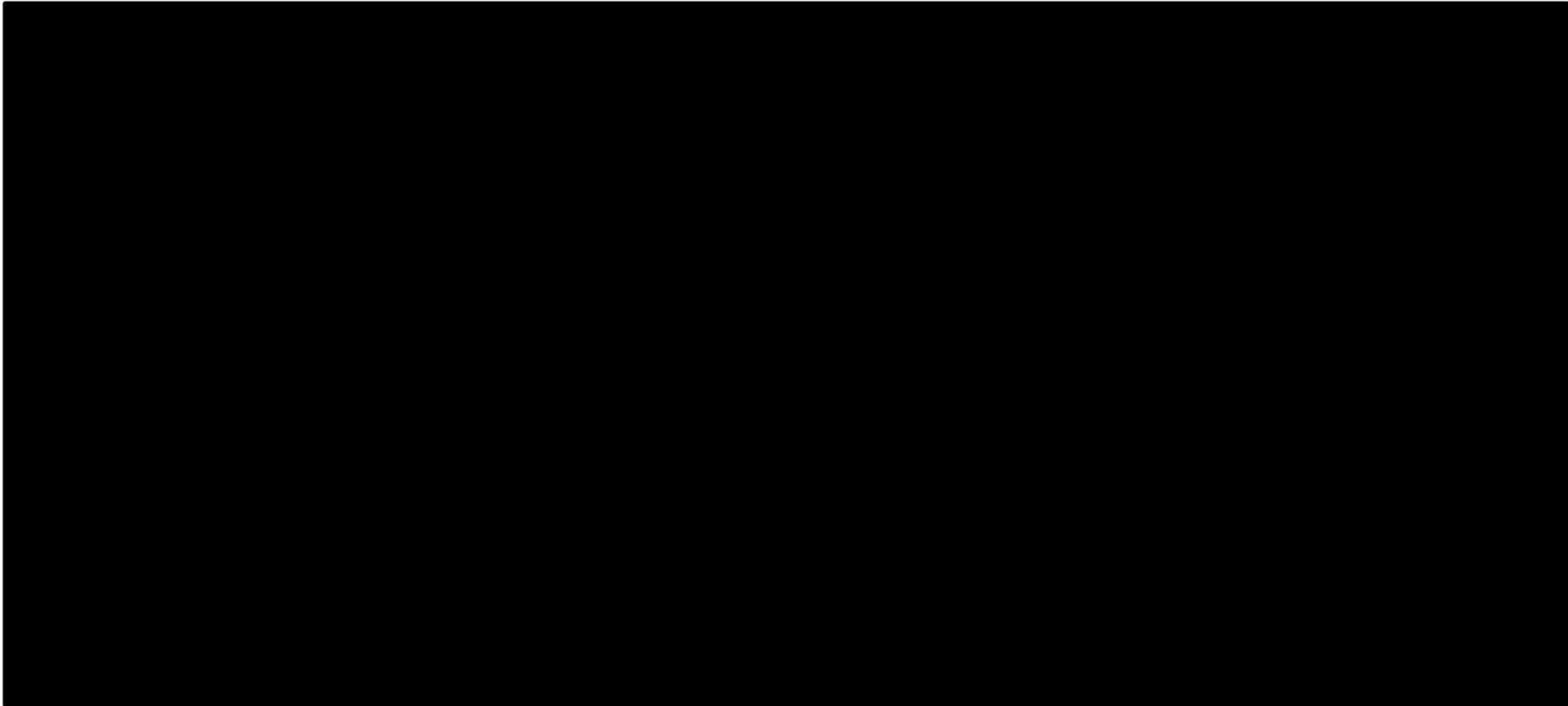
Figure 23: Moapa Band of Paitues Land Use and Planning Map

Data Source: U.S Department of Interior, Bureau of Indian Affairs (<https://biamaps.doi.gov/indianlands/>)

Critical Facilities List

Certain facilities have a net positive value on the community, i.e., they contribute to the public good by facilitating the basic functions of society. These facilities maintain order, public health, and education, and help the economy function. Additionally, there are infrastructure and facilities integral to disaster response and recovery operations. Conversely, some facilities and infrastructure are of extreme importance due to the negative externalities created when they are impacted by a disaster. What fits this definition will vary slightly from community to community, but the definition remains as a guideline for identifying critical facilities and infrastructure. For Clark County and its participating jurisdictions, the table below lists the identified critical facilities and infrastructure. A complete list can be found in [Appendix E – Critical Facilities & Infrastructure](#).

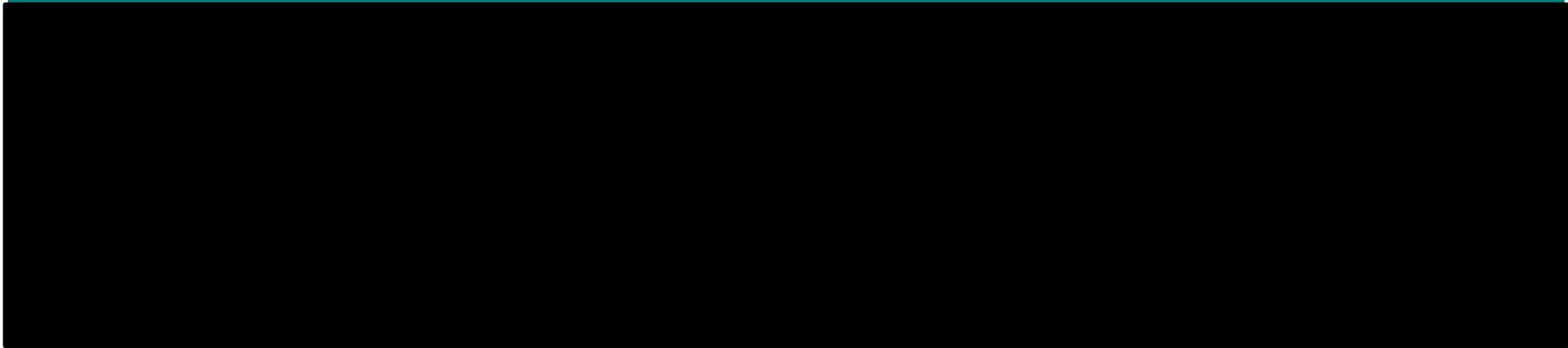
Table 22: Critical Facilities: Clark County and Its Participating Jurisdictions



Critical Facilities: Tribal Nation - Las Vegas Paiute Tribe



Critical Facilities: Tribal Nation – Moapa Band of Paiutes



The following maps, generated by [Clark County Information Technology, GIS Management Office \(GISMO\)](#), reflect critical facilities within the planning area:

Figure 24: Clark County, NV MJHMP Critical Facilities - Infrastructure

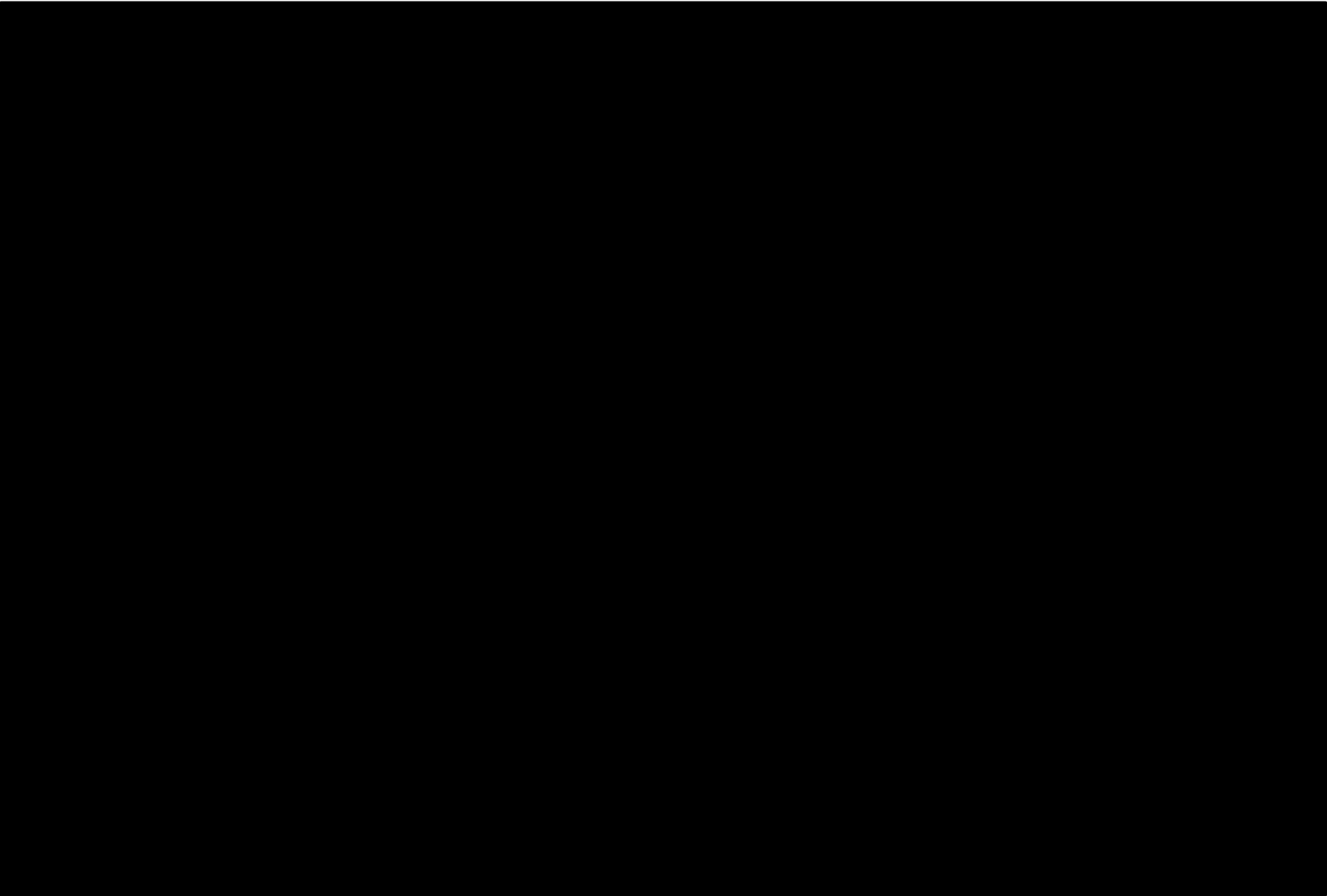


Figure 25: Clark County, NV MJMHP Critical Facilities – Government and Health

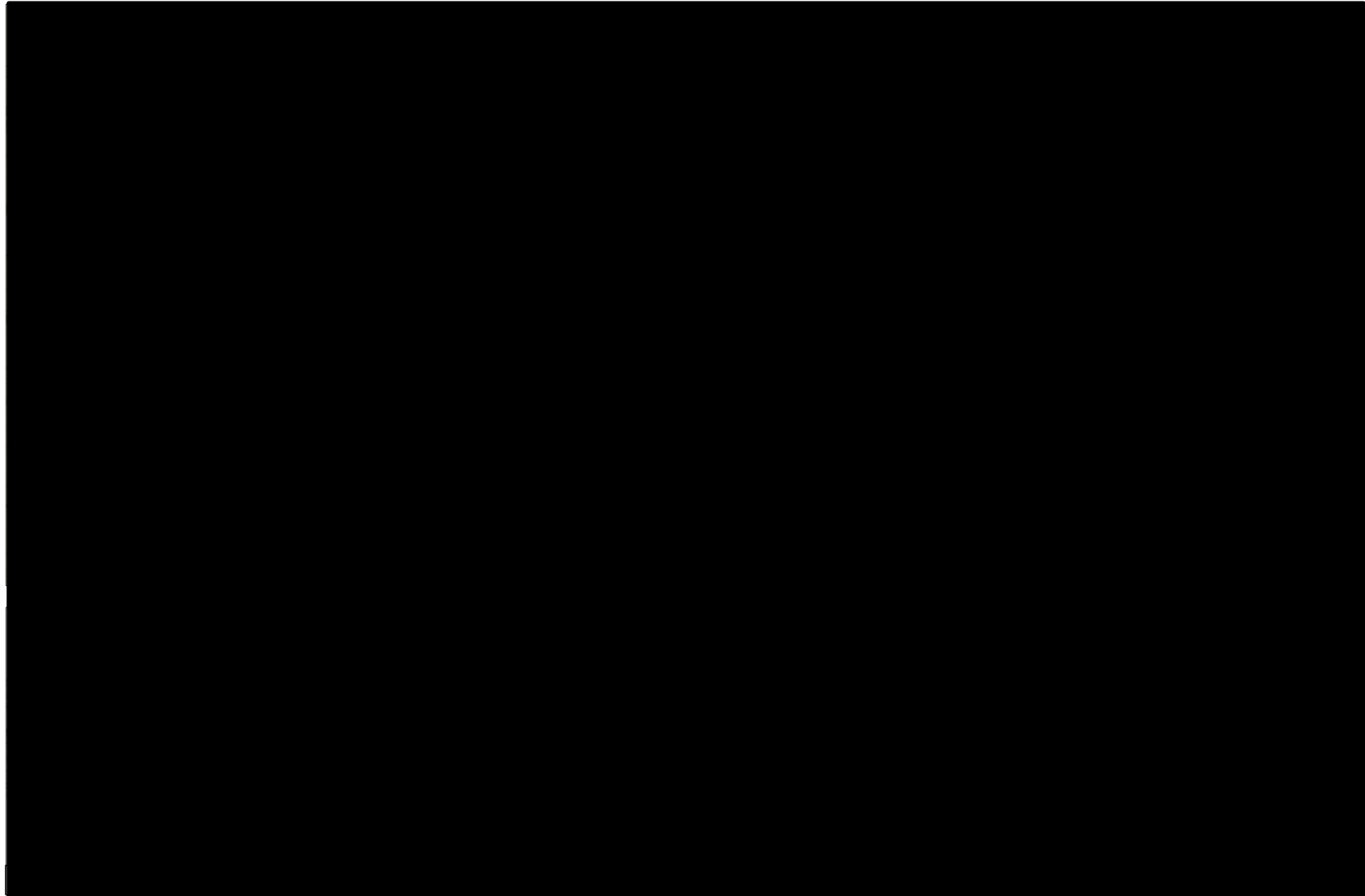


Figure 26: Clark County, NV MJHP Critical Facilities – Cultural Sites and Tourism

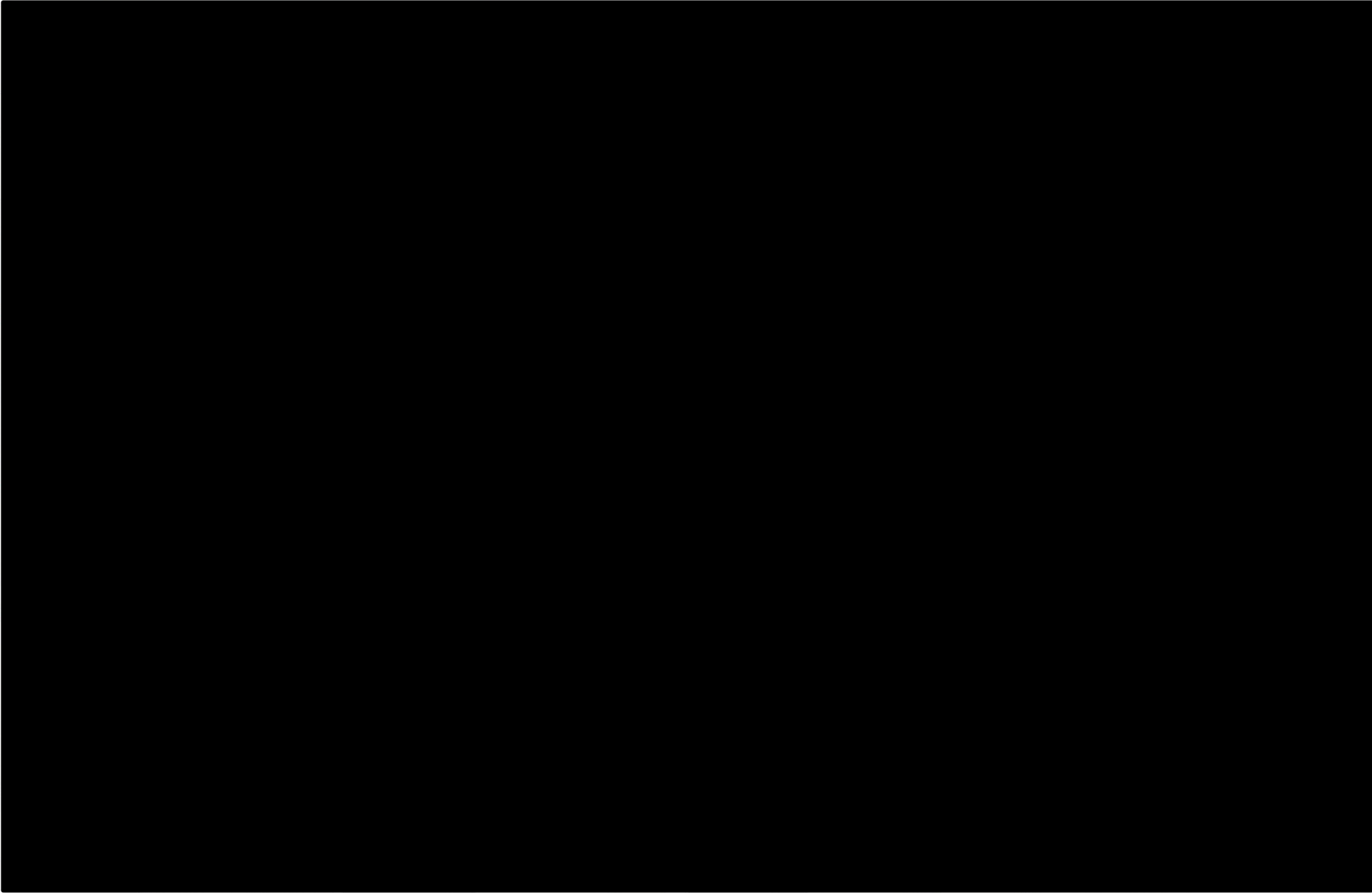


Figure 27: Clark County, NV MJHMP Critical Facilities – Education and Recreation



Section 4: Hazard Analysis and Risk Assessment

Emergency and Disaster Declaration History

The goal of mitigation is to reduce and/or eliminate the future impacts of a hazard, including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. However, mitigation should be based on an assessment of the risk. This Risk Assessment Section evaluates the potential loss from a hazard event by assessing the vulnerability of buildings, infrastructure, and people. It identifies the characteristics and potential consequences of hazards, how much the County and its participating jurisdictions could be affected by a hazard and the impact on the County and participating jurisdictions’ area assets.

A review of recently declared disasters, i.e., from 2018 to the present, provides an overview of the hazards facing Clark County and its participating jurisdictions. This timeframe is referenced because Clark County has a FEMA-approved HMP that expired on August 14, 2023. Since 2018, Clark County and its participating jurisdictions have experienced one (1) presidentially declared disaster. The disaster declaration was epidemic/pandemic. A list of the declared disasters occurring in Clark County and its participating jurisdictions since 2018 is presented in the following table. Smaller events are more frequent and are not reflected in the table. For documentation of the FEMA Disaster Declaration Maps, see [Appendix F – FEMA Presidential Declarations](#).

Table 23: State and Federal Disaster Declarations for Clark County (2018-Present)

Disaster Declaration	Incident Type	Date	Details
Nevada Covid-19 EM-3443-NV	Pandemic (Biological – Infectious Disease)	March 2020	The Governor of Nevada declared a State of Emergency due to the outbreak of COVID-19.
Nevada Covid-19 Pandemic DR-4523 -NV	Pandemic (Biological – Infectious Disease)	April 2020	The President of the United States approved the state’s request for a Presidential Major Disaster Declaration due to the outbreak of COVID-19 in the state.

Records of Disaster Declarations found at: [FEMA Disaster Information](#)

Hazard Identification

Per FEMA Guidance, the first step in developing the Risk Assessment is identifying the hazards that have a reasonable risk of occurring in Clark County and its participating jurisdictions. Proper identification allows for appropriate and well-planned action in order to mitigate the extent and impact of a hazard event. It also helps facilitate emergency response and recovery operations. Further, while not all disaster contingencies can be planned for, applying an all-hazards approach to the mitigation process does yield greater awareness and better preparedness for unforeseen hazard events overall.

The following table lists the fourteen (14) hazards identified in the State of Nevada Enhanced Hazard Mitigation Plan (2018), as well as the justification for their inclusion/exclusion within this Clark County HMP update. Research indicates eleven of the 21 hazards do pose some level of risk to Clark County and/or at least one of its participating jurisdictions. These are, namely, drought, earthquake, epidemic, flood, heat extreme, infestation, severe storms, land subsidence and ground failure, tornado, wildland fire, and windstorm (combined with severe weather). Two additional unnatural or (or human-caused) hazards – hazmat and terrorism/WMD – also pose a risk to Clark County due to the location within the state of Nevada. Clark County is home to the Country's 7th largest airport and world-renowned casinos, which makes it a famous tourism market coupled with major interstate highway and rail transportation routes within the County as a target for terrorism/WMD. For this reason, hazmat and terrorism are included in this HMP update.

Details for each of these thirteen (13) hazards and their potential impact on Clark County and its participating jurisdictions including Tribal Nations are in Hazard Risk Summary Section.

Table 24: Summary of Hazards for 2024, Clark County MJHMP

Summary of Hazards for 2024 Update, Clark County MJHMP					
Hazards	Clark County 2012 MJHMP Update	Clark County 2018 MJHP Update	2018 State of Nevada Enhanced Hazard Mitigation Plan	Nevada Threats & Hazards September 2020	Clark County 2024 MJHMP Update
Natural Hazards					
Climate Change	Excluded	Included	Excluded	Excluded	Included – Disaster History
Drought	Included	Included	Included	Included as Drought	Included – Disaster History
Earthquake	Included	Included	Included	Included as Geohazards – Earthquakes	Included as Geohazards, Earthquake and Seismic Hazards – Disaster History
Excessive Heat	Excluded	Excluded	Included	Included as Extreme Heat	Included as Extreme/Excessive Heat – Disaster History
Flooding	Included as Flood and Flash Flooding	Included as Flood	Includes as Floods, Flooding due to Dam Failure, and Flooding along Ditches and Canals	Included as Floods, Landslides & Debris Flow	Included as Flood, Landslides & Debris Flow, Flood – Included Disaster History
Subsidence	Included	Included as Subsidence and Fissures	Included as Land Subsidence and Ground Failure	Included as Fissures & Subsidence	Included as Fissures & Subsidence – Disaster History

Summary of Hazards for 2024 Update, Clark County MJHMP

Hazards	Clark County 2012 MJHMP Update	Clark County 2018 MJHP Update	2018 State of Nevada Enhanced Hazard Mitigation Plan	Nevada Threats & Hazards September 2020	Clark County 2024 MJHMP Update
Severe Weather	Excluded	Excluded	Included as Severe Weather and Snowfall	Included as Severe Weather	Included as Severe Weather (including Thunderstorms, Lightning, Hail) – Disaster History
Wildfire	Included	Included	Included	Included as Fire, Wildland Urban Interface	Fire, Wildland Urban Interface Included – Disaster History
Human-Caused Hazards					
Dam Failure	Included	Included	Included	Included as Infrastructure, Dam Failure	Included as Infrastructure, Dam Failure
Infestation	Included	Included	Included	Excluded	Included
Epidemic/ Infectious Disease	Included as Epidemic/ Infections Disease	Included as Infections Disease	Included	Included as Infectious Disease – Emerging Disease with Epidemic or Pandemic Potential and Respiratory Virus with Epidemic and Pandemic Potential	Included as Infectious Disease
Hazardous Materials	Excluded	Included as Hazardous Material Events	Included	Included as Chemical, Biological, Radiological, Nuclear & Explosives (CBRNE)	Included as Chemical, Biological, Radiological, Nuclear & Explosives (CBRNE) – Hazardous Materials – Disaster History
Terrorism	Included	Included	Excluded	Included as Terrorism – International Terrorism, Domestic Terrorism, and Complex Coordinated Attack	Included – Disaster History
Utility Failure	Included	Excluded	Excluded	Included as Infrastructure as Power Outage	Excluded

Data Sources: Clark County 2012 MJHMP Update; Clark County 2018 MJHMP Update, 2018 State of Nevada Enhanced Hazard Mitigation Plan; Nevada Threats and Hazards, September 2020 edition

Hazard Risk Profiles

Hazard profiles are outlined in the proceeding sections of the Clark County Hazard Mitigation Plan. For some hazards, the Repetitive Loss (RL) Structures and HAZUS® Models sections are left out due to the lack of applicability to the associated hazard.

Hazard Description

This section describes the general characteristics of the specified hazard.

Location and Extent

This section contains information about the location, i.e., the geographic area(s) within the planning area, that are affected by the hazard, along with the extent (strength and magnitude) of the specific hazard.

Previous Occurrence

This section contains a history of previous hazard events for the profiled hazard.

Methodology

Most of the historical data used in the risk assessment originates from the National Oceanic and Atmospheric Administration/National Centers for Environmental Information (NOAA/NCEI). In most instances, the hazard affects a large geographic area; thus, the hazard data is reported at a county level. This is the best available data for these hazards. The calculations for Previous Occurrences and the Probability of Future Events are also based on county-level data.

Probability of Future Events

Probability of Future Events can be defined in a variety of plans to account for the long term changes in weather patterns of the identified hazards during the hazard mitigation planning process. Calculating future probability is one of many predictors of future occurrences. This section of the 2024 MJHMP update will utilize both Calculated Risk Priority Index (CPRI) and Calculating Future Probability using Qualitative Data to define the probability of future events for Clark County and its participating jurisdictions.

Calculated Priority Risk Index (CPRI)

The risk for each of these hazards was analyzed using a Calculated Priority Risk Index (CPRI). The CPRI examines four criteria for each hazard (probability, magnitude/severity, warning time, and duration), detailed in the [Degree of Risk Chart](#). The overall CPRI ratings take into consideration the Mitigation Planning Steering Committee Member representing the following jurisdictions: Clark County (including Unincorporated Areas), the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas; the Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes; and the Special Districts that include Clark County Water Reclamation District, Clark County School District, Las Vegas Valley Water District, and Southern Nevada Health District. Please note that the CPRI Rating is a subjective measure based on the opinion of the Clark County MPSC members during the planning development portion of the MJHMP update.

Calculated Priority Risk Index (CPRI) Analysis Process

- Hazards are rated 1 to 4 in whole numbers for each CPRI category using definitions in Table 25: Degree of Risk Chart;
- Each category is weighted by a percentage (see Table 25: Degree of Risk Chart). Ratings

and their weighted scores (weight x rating) are captured for each hazard;

- The weighted scores for each hazard are summed up to create a cumulative weighted score. This score represents the comparative risk posed by a hazard where 1–1.9 is low risk (L), 2–2.9 is moderate risk (M), 3–3.9 is high risk (H), and 4 is severe risk (S).

Table 25: Calculated Priority Risk Index-Degree of Risk Chart

CPRI Category	Degree of Risk Chart			Assigned Weight
	Level ID	Description	Index Rating	
Probability	Unlikely	Extremely rare with no documented history of occurrences or events. Annual probability less than 0.001.	1	45%
	Occasional	Rare occurrences with at least one documented or anecdotal historic event. Annual probability of between 0.01 and 0.001.	2	
	Likely	Occasional occurrence with at least two or more documented historical events. Annual probability of between 0.1 and 0.01.	3	
	Highly Likely	Frequent events with a well-documented history of occurrence. Annual probability of greater than 0.1.	4	
Magnitude-Severity	Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid, and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours.	1	30%
	Limited	Slight property damages (between 5% and 25%) of critical and non-critical facilities and infrastructure). Injuries and illnesses do not result in permanent disability, and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than one day and less than one week.	2	
	Critical	Moderate property damages (between 25% and 50%) of critical and non-critical facilities and infrastructures). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than one week and less than one month.	3	
	Catastrophic	Severe property damages (>50%) of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than one month.	4	
Warning Time	> than 24 hours	Population receives greater than 24 hours of warning.	1	15%
	12 to 24 hours	Population receives between 12 and 24 hours of warning.	2	
	6 to 12 hours	Population receives between six and 12 hours of warning.	3	
	< than 6 hours	Population receives less than six hours of warning.	4	
Duration	< than 6 hours	Disaster event will last less than six hours.	1	10%
	6 to 24 hours	Disaster event will last between six and 24 hours.	2	
	24 hrs. to 1 week	Disaster event will last between 24 hours and one week.	3	
	> than 1 week	Disaster event will last more than one week.	4	

The results of the County CPRI are in [Error! Reference source not found.](#) and provide an overall

summary for the planning area. Final hazard selection was based on the individual jurisdiction CPRI, input provided during Steering Committee meetings, and follow-up mitigation activity development. A CPRI for each participant can be found in [Appendix J – Jurisdictional Annexes](#). The process for conducting the CPRI analysis is described below.

Table 26: CPRI Results

Hazard	Category and Weight				Cumulative Weighted Score	Risk Level	
	Probability	Magnitude/Severity	Warning Time	Duration			
Index Rating (R) Weighted Score (WS)	45%	30%	15%	10%			
Avalanche	R	2	2	2	2	2	M
	WS	0.9	0.6	0.3	0.2		
Climate Change	R	4	3	1	4	3.25	H
	WS	1.8	0.9	0.15	0.4		
Dam Failure	R	2	4	4	4	3.1	H
	WS	0.9	1.2	0.6	0.4		
Drought	R	4	3	1	4	3.25	H
	WS	1.8	0.9	0.15	0.4		
Earthquake	R	3	3	4	4	3.25	H
	WS	1.35	0.9	0.6	0.4		
Excessive Heat	R	4	3	1	3	3.15	H
	WS	1.8	0.9	0.15	0.3		
Fire (Wildfire)	R	2	2	4	2	2.3	M
	WS	0.9	0.6	0.6	0.4		
Flood	R	3	3	4	3	3.15	H
	WS	1.35	0.9	0.6	0.3		
High Winds/Tornado	R	4	2	4	2	3.2	H
	WS	1.8	0.6	0.6	0.2		
Severe Weather	R	4	2	3	3	3.15	H
	WS	1.8	0.6	0.6	0.3		
Infestation	R	2	2	1	4	2.15	M
	WS	0.9	0.6	0.15	0.4		
Infectious Disease (Public Health/Pandemic)	R	3	4	1	4	3.1	H
	WS	1.35	1.2	0.15	0.4		
Hazardous Materials	R	3	2	4	3	2.85	M
	WS	1.35	0.6	0.6	0.3		
Fissures & Subsidence	R	2	2	4	4	2.5	M
	WS	0.9	0.6	0.6	0.4		
Terrorism/Active-Shooter	R	2	3	4	4	2.8	M
	WS	0.9	0.9	0.6	0.4		

Table 27 CPRI: Hazard Risk Scoring

Risk Level	Severe	High	Moderate	Low
Rank Score	4.0	3.0 – 3.9	2 – 2.9	1 – 1.9

Each jurisdiction considered which of the analyzed hazards posed a significant enough risk to their specific community to warrant mitigation efforts. Below is a summary of the hazards selected for mitigation by each jurisdiction. These selections are the basis for each jurisdictions’ mitigation strategy. Final hazard selection was based on the individual jurisdiction CPRI, input provided during Planning Team meetings, and follow-up mitigation activity development.

Calculating Future Probability using Qualitative Data

This method describes the likelihood, or probability, of the identified hazard actually occurring within the planning area. The yearly probability number will be derived by dividing the number of recorded events (from data from publications like the U.S. Drought Monitor and the [NCEI/ NOAA Storm Events Database](#)) by the year range used. This case will use the years between the last plan update in 2018 (5 years). If discrete quantitative data is available, a finite probability will be listed. See the table below for additional information to the probability of future events.

Table 28: Probability Categories/Range Per Year

Probability Categories	Unlikely	Occasional	Likely	Highly Likely
Range (Per Year)	0%	1-10%	11-50%	51-100%

Note: Related to Calculating Future Probability using Qualitative Data, the Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiute’s future probability using qualitative data is based off Clark County and its unincorporated areas since the tribal lands falls within the planning area.

Vulnerability and Impact

This section describes the potential impacts of the hazard for each participating jurisdiction and provides an overall summary of each jurisdiction’s vulnerability to the hazard through structures, systems, populations, and community assets that are susceptible to damage/loss from the hazard.

Impact of Climate Change

This section provides a general description of the impact of climate change on that hazard within the participating jurisdictions.

Critical Facilities and Infrastructure

When appropriate, this section details the infrastructure and facilities pertinent to the hazard.

Land Use and Development

This section provides a general description of land use and development trends within the participating jurisdictions.

Unique and Varied Risk

Each jurisdiction’s risk, where it varies from the risks facing the entire planning area, is discussed in this section.

Repetitive Loss Structures

If applicable to the profiled hazard, a description of the location types and estimates for the number of repetitive loss properties will be provided in this section.

HAZUS® Models

If applicable to the profiled hazard, HAZUS® models using version 6.0 may be included in this section of the plan. HAZUS® is a GIS (mapping) tool that allows analysts to create a fictional scenario for the planning area using specific details to show what could happen if that scenario were to occur. This type of mapping is helpful to fill in gaps where there is a lack of historical data. It also allows jurisdictions to visualize which facilities and populations would potentially be affected by the profiled hazard.

(CC) Climate Change

Hazard Description

The earth's climate is changing. The state has warmed about two degrees Fahrenheit (°F) in the last century. Throughout the southwestern United States, heat waves are becoming more common, and snow is melting earlier in spring. In the coming decades, changing climate is likely to decrease the flow of water in the Colorado River, threaten the health of livestock, increase the frequency and intensity of wildland fire, and convert some rangelands to desert.

Our climate is changing because the earth is warming. People have increased the amount of carbon dioxide in the air by 40% since the late 1700s. Other heat-trapping greenhouse gases are also increasing. These gases have warmed the surface and lower atmosphere of our planet about one degree during the last 50 years. Evaporation increases as the atmosphere warms, which increases humidity, average rainfall, and the frequency of heavy rainstorms in many places, but contributes to drought in others. Greenhouse gases are also changing the world's oceans and ice cover. Carbon dioxide reacts with water to form carbonic acid, so the oceans are becoming more acidic. The surface of the ocean has warmed about one degree during the last 80 years.

The U.S. Environmental Protection Agency (EPA) describes climate change as “any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer.”

Many people confuse climate change with global warming, the recent and ongoing rise in global average temperatures near earth's surface. However, global warming represents only one aspect of climate change. The earth's average temperature has risen by 1.4°F over the past century and is projected to rise another 2°F to 11.5°F over the next hundred years. Rising global temperatures have been accompanied by changes in weather and climate. Many places have seen changes in rainfall resulting in more floods, droughts, or intense rain, as well as more frequent and severe heat waves. The planet's oceans and glaciers have also experienced changes. Oceans are warming and becoming more acidic, ice caps are melting, and sea levels are rising. The effects of these indicators include:

- **Greenhouse Gases** – Human activities have increased the emissions of greenhouse gases. As a result of the increase in emissions, average concentrations of heat-trapping gases in the atmosphere are also increasing.
- **Weather and Climate** – Average U.S. and global temperatures are increasing, while attributes of weather and climate, such as precipitation, drought, and tropical cyclone activity, are changing.
- **Oceans** – Average oceanic temperatures are increasing. Sea levels are rising around the world due to thermal expansion and increases from ice melt, and waters are becoming more acidic.
- **Snow and Ice** – Glaciers in the U.S. and around the world are generally shrinking, while snowfall and snow cover in the U.S. have decreased overall. The extent of the Arctic Sea ice is declining.
- **Health and Society** – Warmer temperatures and later fall frosts allow ragweed plants to produce pollen later into the year, potentially prolonging allergy season. The length of ragweed pollen season has increased at ten out of eleven (10/11) locations studied in the central U.S. and Canada since 1995. The change becomes more pronounced from south to north.
- **Ecosystems** – Many areas are experiencing earlier spring events, such as peak stream runoff and flower blooms. Bird migration patterns are changing, and wildland fire zone size has increased.

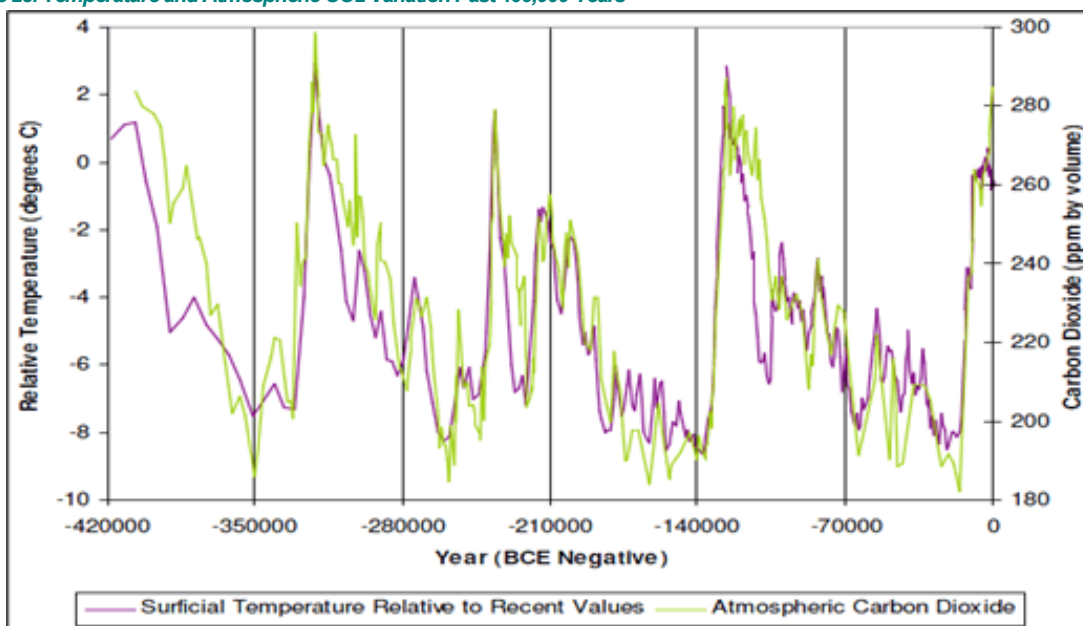
Climate change has occurred throughout the history of the planet. Due to variations in the earth's

inclination to the sun, volcanic activity, and other factors such as asteroid impacts, the amount of solar radiation reaching the earth's surface rises and falls. The temperature of the planet correlates to the amount of solar radiation arriving at the surface and with it the climate.

In relatively recent history, the last glacial period, popularly known as the Ice Age, occurred from c. 110,000 to 12,000 years ago. This most recent glacial period is part of a larger pattern of glacial and interglacial periods known as the Quaternary glaciation (c. 2,588,000 years ago to present). From this point of view, scientists consider this "ice age" to be merely the latest glaciation event in a much larger ice age, one that dates back over two million years and is still ongoing.

During this last glacial period, there were several changes between glacier advance and retreat. The Last Glacial Maximum, the maximum extent of glaciation within the last glacial period, was approximately 22,000 years ago. While the general pattern of global cooling and glacier advance was similar, local differences in the development of glacier advance and retreat make it difficult to compare the details from continent to continent. Generally, the pattern of temperature variation and glaciation has lagged atmospheric carbon dioxide (CO₂) content. depicts global variations during the past 400,000 years as a correlation between temperature and atmospheric CO₂ content in part per million.

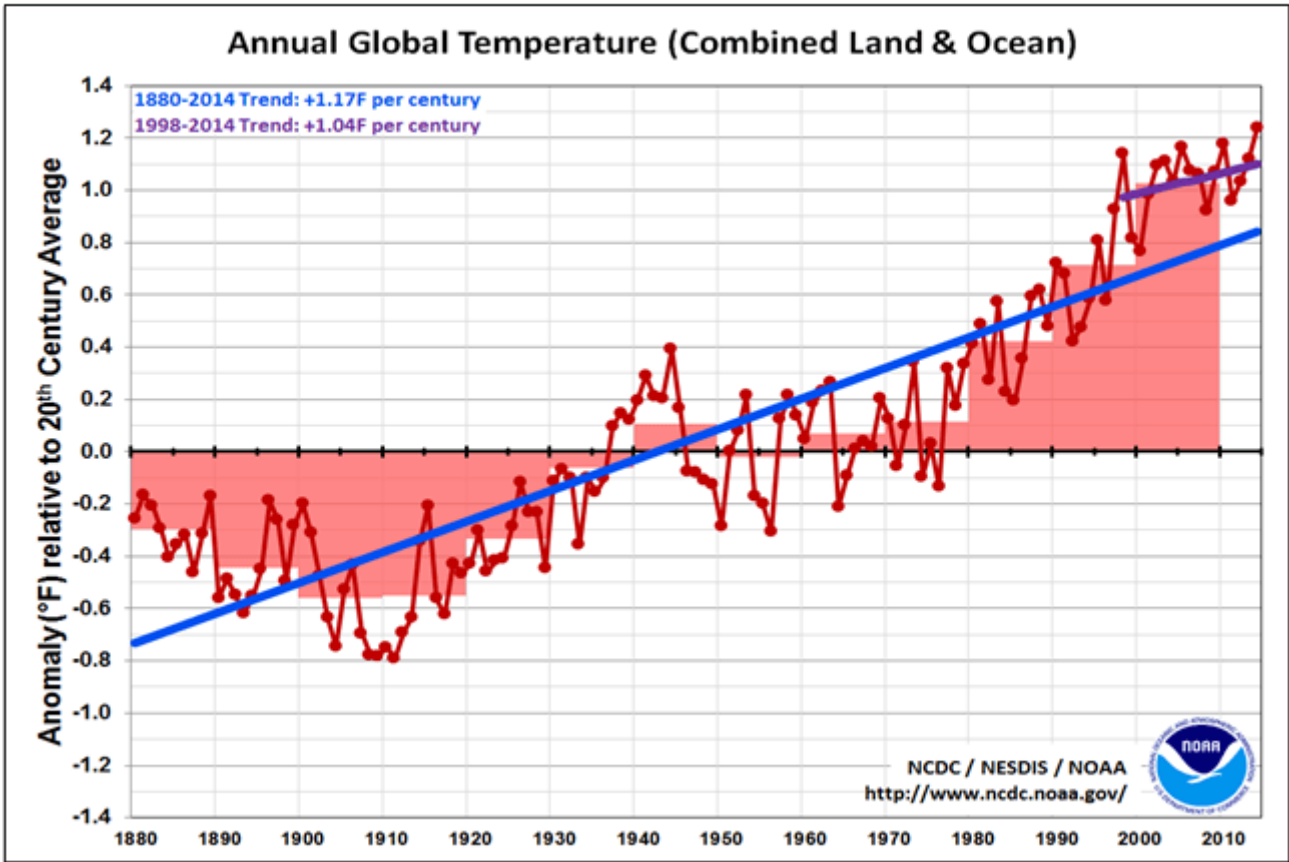
Figure 28: Temperature and Atmospheric CO₂ Variation Past 400,000 Years



Starting 22,000 years ago, the planet has slowly warmed and the glaciers retreated to high northern latitudes and mountains. In the last several decades of this period, human activity has likely led to a rapid increase in atmospheric CO₂ and a matching rise in global temperature. The result has been that climate change may be accelerating. Figure 4.2 provides a graphical depiction of the history of temperature rise.²

² NOAA, 2010, *Global Climate Report*

Figure 29: Annual Global Temperature

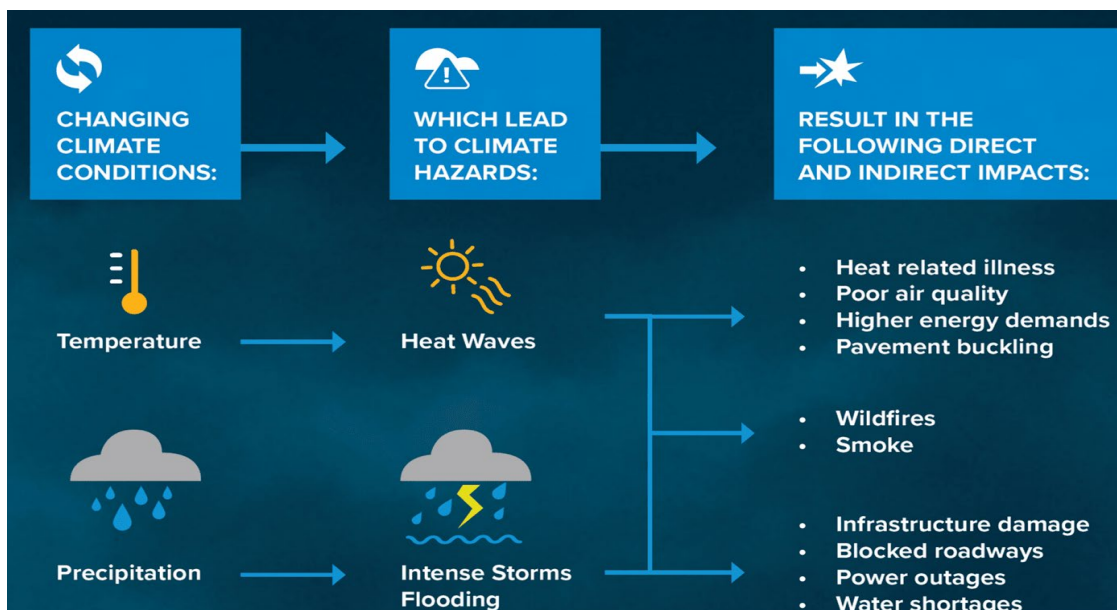


Location and Extent

Warming and climate change are occurring globally with wide variations based on location and latitude. The polar regions have experienced particularly rapid changes in climate with increased ice melt and more sea-ice free days. Climate change affects the entire planning area.

Climate change is likely to affect the entire earth's population. More widespread drought and associated crop failure, movement of invasive species, more frequent wildland fire, increased energy emergencies, and more intense climate events such as storms and extreme heat will occur throughout the County. The [Clark County Sustainability and Climate Plan](#) website mentions the impacts of climate change are very real, and they are upon us. 100% of our state's population is experiencing drought, and Las Vegas is the fastest warming city in the country. The following image depicts climate change in Clark County, NV:

Figure 30: Climate Hazard Conditions and Climate Change



Data Source: [Clark County Sustainability and Climate Plan](#)

Specific likely impacts to the County include:

- Increasing droughts and higher temperatures are likely to affect agricultural products including cattle, dairy, and vegetables. Hot temperatures threaten the health of cows and causes them to eat less, grow more slowly, and produce less milk. Livestock operations could also be impaired by fire, the lack of water, and changes in the landscape from grassland to woody shrubs more typical of a desert. Reduced availability of water would also create challenges for irrigated farms, which account for two-thirds of the water used in the state. The Clark County Climate Vulnerability Assessment indicates the following related to drought and climate change - Clark County is one of the driest counties in the U.S., generally only receiving between 4-8 inches of annual rainfall. Throughout much of 2021, the majority of Clark County experienced “exceptional” drought conditions, as did much of the West due to increasing temperatures and decreasing runoff in the Colorado River Basin driven by climate change. Future climate projections show similar amounts of annual average precipitation, but more pervasive long-term drought conditions (leading to megadrought) and a reduction in snowpack in the Colorado River due to earlier runoff and more precipitation falling as rain instead of snow.
- Wildfires, changing landscapes, higher temperatures, and drought are likely to increase the severity, frequency, and extent of wildfires which could harm property, livelihoods, and human health. The Clark County Climate Vulnerability Assessment states, Climate change is exacerbating wildfire risk in Clark County due to several interrelated factors, including changing precipitation patterns (which causes an intensification of the drying of vegetation and additional fuel for wildfires) and an increase in invasive plants that are more susceptible to wildfire ignition and spreading (e.g., cheatgrass). Research shows that more area will burn when a wet winter is followed by a dry spring and summer, and projections indicate an increase in winter precipitation throughout Nevada, increasing evaporative demand in spring and summer months, and increasing temperatures.
- Flooding impacts to Climate Change, in Clark County, the Climate Vulnerability Assessment indicates, where monsoons are also tied to flash flood events within the County, increasing thunderstorm intensity is expected to result in more-severe flooding risks.¹⁶ Peak daily runoff, the primary source of flash flood risk in Clark County, is expected to increase over time. There are areas of the county—including the Las Vegas metropolitan area—that may experience as much as a 150-200% increase over historical peak daily runoff averages. Though flood management has significantly improved throughout the region in past decades, projected heavier rainfall events still bring some

risks to infrastructure.

- Warmer and drier conditions make forests more susceptible to pests. Drought reduces the ability of trees to mount a defense against attacks from pests such as bark beetles. Temperature controls the life cycle and winter mortality rates of many pests. With higher winter temperatures, some pests can persist year-round and new pests and diseases may become established.
- Hot days can be unhealthy, even dangerous. Certain people are especially vulnerable, including children, the elderly, the sick, and the poor. High air temperatures can cause heat stroke and dehydration and affect people’s cardiovascular, respiratory, and nervous systems. Higher temperatures are amplified in urban settings where paved and other surfaces tend to store heat. Construction crews may have to increasingly operate on altered time schedules to avoid the heat of the day.
- Rising temperatures can increase the formation of ground-level ozone, a key component of smog. Ozone has a variety of health effects, aggravates lung diseases such as asthma, and increases the risk of premature death from heart or lung disease. The U.S. EPA and has been working to reduce ozone concentrations. As the climate changes, continued progress toward clean air will be more difficult.

Previous Occurrence – Climate Change

Climate change is an ongoing occurrence. Essentially, it has occurred, is occurring and will continue to occur for several decades, centuries or longer. Climate change is ongoing. While individual impacts of climate change may be seen as discreet events such as drought or excessive heat, climate change is a continuous process.

Probability of Future Events

Based on the Calculated Priority Risk Index conducted for Clark County there is a **high probability/vulnerability (3.0-3.9) of climate change** in the planning area. Please note that the CPRI Rating is a subjective measure based on the opinion of the Clark County Mitigation Planning Steering Committee members during the planning development portion of the MJHMP update. The following table provides CPRI Rating on climate change for Clark County and its participating jurisdictions.

Table 29: Clark County and Participating Jurisdiction CPRI Rating for Climate Change

Clark County and Participating Jurisdiction CPRI Rating for Climate Change							
Hazard: Climate Change		Category and Weight				CPRI Score	Risk Level
		Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%		
Index Rating (R) Weighted Score (WS)							
Clark County (including Incorporated and Unincorporated Areas)	R	4	3	1	4	3.25	H
	WS	1.8	0.9	0.15	0.4		
Boulder City	R	3	2	1	4	2.5	M
	WS	1.35	0.6	0.15	0.4		
Henderson	R	4	4	1	4	3.55	H
	WS	1.8	1.2	.6	.4		

Clark County and Participating Jurisdiction CPRI Rating for Climate Change							
Hazard: Climate Change	Category and Weight					CPRI Score	Risk Level
	Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%			
Index Rating (R) Weighted Score (WS)							
Las Vegas	R	4	3	1	4	3.25	H
	WS	1.8	0.9	0.15	0.4		
Mesquite	R	4	4	1	4	3.55	H
	WS	1.8	1.2	0.15	0.4		
North Las Vegas	R	4	4	1	4	3.55	H
	WS	1.8	1.2	0.15	0.4		
Special District: Clark County Water Reclamation District	R	4	4	1	4	3.55	H
	WS	1.8	1.2	0.15	0.4		
Special District: Clark County School District	R	3	2	2	4	2.65	M
	WS	1.35	0.6	0.3	0.4		
Special District: Las Vegas Valley Water District/SWNA	R	4	4	1	4	3.55	H
	WS	1.80	1.20	0.15	0.40		
Tribal Nation: Las Vegas Valley Paiute	R	4	4	1	4	3.55	H
	WS	1.8	1.2	0.15	0.4		
Tribal Nation: Moapa Band of Paiutes	R	2	1	1	3	1.65	L
	WS	0.9	0.3	0.15	0.3		

Note: As mentioned above, climate change is an ongoing occurrence and will continue to be an occurrence for the foreseeable future within the County. Based on this fact, the likelihood of a climate change event happening in the planning area is considered highly likely.

As mentioned above, climate change is an ongoing occurrence and will continue to be an occurrence for the foreseeable future within the region. Based on this fact, and the presented qualitative and highly likely quantitative data probability of an annual climate change event happening and the overall hazard priority within the planning area is considered **Highly Likely**.

Vulnerability and Impact

Climate change by itself is not likely to cause potential losses to infrastructure or affect services to populations. Effects that are secondary to climate change such as greater likelihood of flooding due to more frequent storms or more annual days with excess heat are included in the individual hazard such as flood or excess heat. The result is climate change as a standalone hazard is assigned a zero percent loss. The State lists multiple secondary impacts from climate change in the figure below.

Figure 31: Nevada's Climate Strategy

	Heat & Heat Waves	Drought	Loss of Snow	Floods	Wildfire Risk
CLIMATE SCIENCE					
Historical Trends	Increasing temp; Rates of increase are higher in urban areas than rural areas	Increasing evaporative demand; More drought that not in last 10 years	Decrease between 20-60% from 1955-2016	No historical trends; Most recent flooding events are 2017 and 2006	Between 1984-2017, 4 of the 5 years with the largest area burned have occurred since 2005.
Projected Trend & Confidence	Increase in average temp; Increase in frequency and severity of heat waves HIGH Confidence	Increase in frequency and intensity Confident	By the end of this century, projections indicate a potential 30-50% reduction in April snowpacks; Earlier snow melt HIGH Confidence	More frequent flooding; Confident	Increase of invasive species, increasing fire spread; Increase drying of fuels; Increase precipitation variability affecting fuel production HIGH Confidence
IMPACTS					
Public Health	Increased risk of mortality and morbidity; Increase in preterm births	Potential for mental health impacts; Increased dust due to drying and lowered water levels in desert terminal lakes	Greater change of flooding and associated safety risks	Greater risks to public safety, private property, and infrastructure	Wildfire smoke decrease air quality; Increase in respiratory illness; Increases in hospitalizations and emergency room visits
Water Resources	Degradation of water quality; Increased water loss due to higher evaporative demand	Increase in demand and decrease in supply, limiting water availability for all sectors	Loss of a natural reservoir, reduced water storage; More growing days increasing water demand	Decrease in water quality; May limit the ability to capture rainwater for water supply (i.e., too much, too fast)	Potential erosion leading to changes in biogeochemical cycling and water quality
Environment	Species' ranges will shift; Some local extinctions; Negative impacts on wildlife health including higher mortality	Drought impacts to plant health and growth; Potential for plant mortality	Less and earlier-in-the-year availability of surface water and ground water limiting the bioavailability of water	Increased sheet and river bank erosion affecting Riparian habitats	More cheatgrass, loss of native sagebrush further increasing wildfire risk; Loss of forested areas will impact erosion and sedimentation into watersheds; Negatively impacts wildlife species
Recreation & Hospitality	Decrease in time available to be safely outside; Deterrent to attracting visitors	Partial loss of recreational opportunities due to limited snow pack; Dust to negatively impact tourism	Partial loss of recreational opportunities due to decline of snow pack	Flooding impacts in downtown areas of Reno and Las Vegas; Road closures due to flood and landslide risk following wildfire	Increased fire risk and smoke may lead to loss of tourism and recreation during fire season
Ag and Ranching	Health impacts of being outdoors during heat waves; Heat impacts to livestock health and milk production; Longer growing seasons and new crop varieties; Impacts to plant health and crop production; Delayed or reduced production from adapting to shifting seasons and crop performance	Potential decrease on crop yield and production; Decreased forage quantity, range condition; Water hauling needs; Reduction in use of federal land; Increased need of feeding hay; Reduction in land available for production	Earlier and longer duration of irrigation needs due to decrease in run-off later in the season; Reduced irrigation capacity due to lack of water availability; Reduction in rangeland production	Increase erosion and soil loss; Potential crop loss/damage; Damage to water holding and confinement structures; Microbial contamination of crops	Direct livestock losses; Potential impact on forage production due to wildfire-induced changes in vegetation cover including noxious weeds; Crop and forage loss; Federal land permits closed or temporarily closed due to fire; Loss of infrastructure

Vulnerability of Population and Systems

The Clark County Sustainability and Climate Action Plan indicates that for Clark County, an increase in temperatures could lead to more heat-related illness, and strain energy systems as the demand for cooling continues to increase. The State of Nevada and Clark County have put into action the following regulatory measures to mitigate climate change in the planning area:

- The State Governor issued Executive Order 2019-22 which in part requires the administration to identify and evaluate policies and regulatory strategies, including but not limited to those identified pursuant to Senate Bill 254, to achieve reductions in greenhouse gas emissions, consistent with Nevada's commitment as a member of the U.S. Climate

Alliance, across all categories of emission sources, and to further Nevada’s resilience to climate change.

- Assembly Bill 383 provided access to the most technologically advanced appliances while removing the least efficient, energy-guzzling, and water-wasting products from the market. In doing so, it saves tens of millions each year through lower utility electricity bills.
- In February 2021, Clark County adopted its Sustainability and Climate Action Plan. This plan is a comprehensive roadmap aimed at increasing the sustainability of our County’s internal operations and represents the first step in what will be a multi-phased, multi-year effort. More information about the County’s Climate Change efforts can be found online via the All-In Clark County website.

Impact of Climate Change

As described by the National Aeronautics and Space Administration (NASA), climate change is “a long-term change in the average weather patterns that have come to define Earth’s local, regional and global climates.” Many of the hazards identified within this update to Clark County’s MJHMP are, in one way or another, potentially affected by climate change. These include Drought, Excessive Heat, Flood, Earthquake, Infestation, Subsidence and Fissure, and Wildfire. The impact of climate change on the following hazards is included in the Vulnerability section of these hazard profiles in this MJHMP update. This section provides a general description of the impact of climate change on that hazard within Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation).

Critical Facilities and Infrastructure

Climate change could pose a risk to critical facilities and infrastructure within Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation). This is true because the [Clark County Vulnerability Assessment](#) report assesses how hazard-related climate change can not only affect the populations but also can affect the following infrastructure in the County: telecommunication infrastructure, water treatment facilities, wastewater infrastructure, stormwater/flood protection infrastructure, sanitation facilities, and government/emergency management facilities.

A complete list of critical facilities and infrastructure can be found in [Appendix E – Critical Facilities & Infrastructure](#).

Land Use and Development Trends

Climate change is accelerating. The effects of climate change will become more pronounced as the amount of atmospheric greenhouse gasses increases and global temperatures continue to rise. Programs to reduce greenhouse gas emissions have had only a small impact in slowing the quickening pace of gasses release annually. Additionally, the warming effect of greenhouse gasses lags the actual increase in the amount released, meaning that a return to cooler temperatures will occur long after the maximum concentration of gasses takes place and at a slower pace than the increase. Climate change will result in secondary effects to numerous hazards, in most cases increasing their severity or probability of occurring, or both. The effects will be experienced throughout the planning area and represent increased risk compared to the previous 2018 MJHMP.

Unique and Varied Risk

Losses from climate change are difficult to separate from the hazards that it exacerbates such as drought, wildland fire and extreme heat. Losses associated with climate change induced severity and occurrences of these hazards can run into the millions of dollars and result in injuries and fatalities.

Note: The information noted above was obtained by accessing the most available data/datasets. This information represents all the events and extent of the Climate Change hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. The information provided for Clark County also applies to the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas; Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes; and Special Districts representing Clark County School District, Clark County Water Reclamation District, Las Vegas Water District, and Southern Nevada Health District.

Repetitive Loss Structures

Not applicable.

HAZUS® Models

Not applicable.

(DF) Infrastructure, Dam Failure

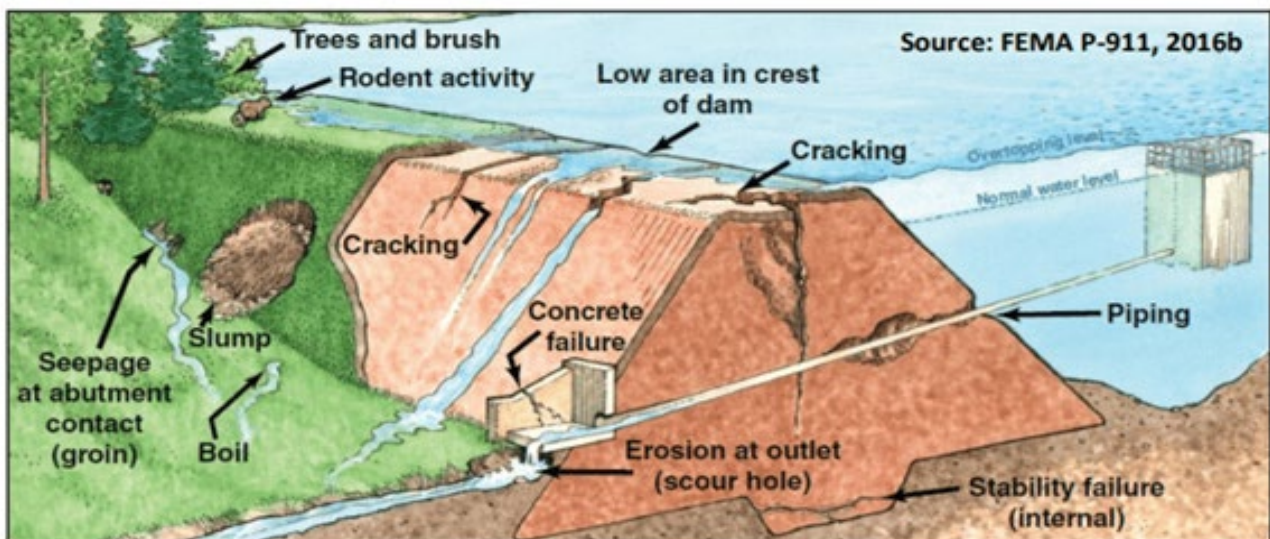
Hazard Description

A dam failure is the structural collapse of a dam that releases the water stored in the impounded reservoir. Dam failures usually result due to the age of the structure, inadequate spillway capacity used in construction, or structural damage caused by an earthquake or flood. When a dam fails, large quantities of water may be suddenly released with a great potential to cause human casualties, economic loss, and environmental damage. This type of disaster is especially dangerous because it can occur suddenly, providing little warning or evacuation time for the downstream communities. The flows resulting from dam failure generally are much larger than the capacity of the downstream channels and therefore lead to extensive flooding. Flood damage occurs because of the momentum of the torrent caused by the sediment-laden water flooding over the channel banks and the impact of debris carried by the flow.

Dam failures are most likely to happen for one of five reasons:

1. Overtopping caused by water spilling over the top of a dam. Overtopping of a dam is often a precursor of dam failure. National statistics show that overtopping due to inadequate spillway design, debris blockage of spillways, or settlement of the dam crest account for approximately 34% of all U.S. dam failures.
2. Foundation Defects, including settlement and slope instability, cause about 30% of all dam failures.
3. Cracking caused by movements like the natural settling of a dam.
4. Inadequate maintenance and upkeep.
5. Piping is when seepage through a dam is not properly filtered, and soil particles continue to progress, and form sink holes in the dam. The following image is an example of a piping failure:

Figure 32: Piping Dam Failure Image



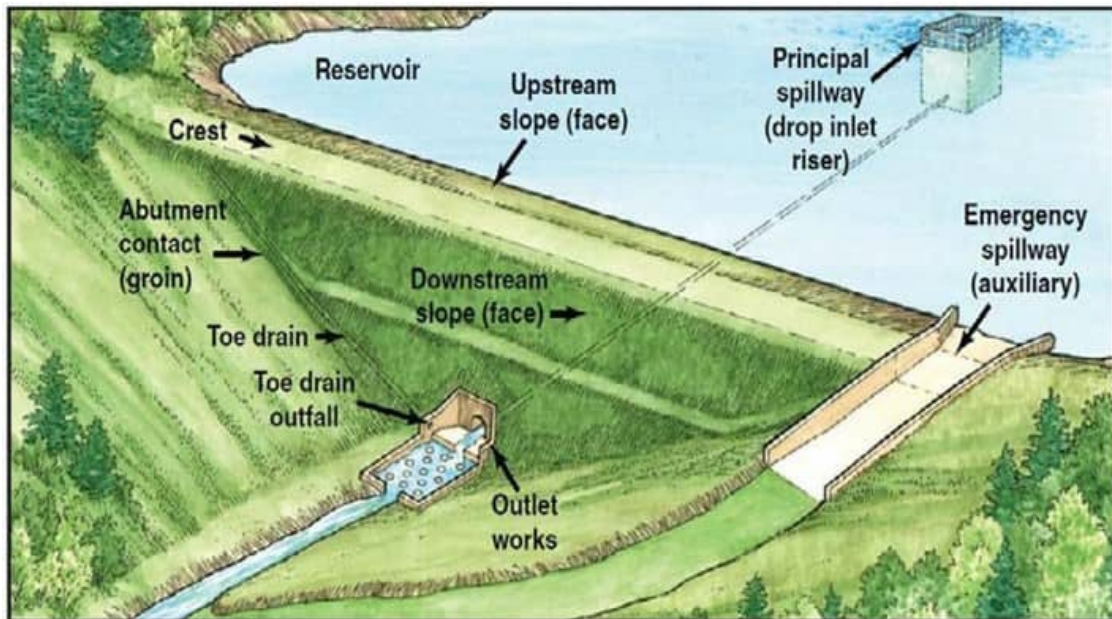
Data Source: [Virginia Department of Conversation and Recreation – Dam Safety Education – Dam Failures](#)

Another 20% of U.S. dam failures have been caused by piping (internal erosion caused by seepage). Seepage often occurs around hydraulic structures, such as pipes and spillways; through animal burrows; around roots of woody vegetation; and through cracks in dams, dam appurtenances, and dam foundations.

There are three classifications of dam failure: hydraulic, seepage, and structural. Following is an explanation of each these failure classifications:

1. **Hydraulic:** This failure is a result of an uncontrolled flow of water over and around the dam structure as well as the erosive action on the dam and its foundation. The uncontrolled flow causing the failure is often classified as wave action, toe erosion, or gulying. Earthen dams are particularly susceptible to hydraulic failure because earthen materials erode more quickly than other materials, such as concrete and steel. This type of failure constitutes approximately 40% of all dam failures. The following image is an example of an earthen dam.
2. **Seepage:** Seepage is the velocity of an amount of water controlled to prevent failure. This occurs when the seepage occurs through the structure to its foundation, where it begins to erode within.
3. **Structural:** A failure that involves the rupture of the dam or the foundation by water movement, earthquake, or sabotage. When weak materials construct dams (large, earthen dams) are the primary cause of this failure. Structural failure occurs with approximately 30% of dam failures.

Figure 33: Typical Type of Earthen Dam Image



Data Source: [FEMA Dam Awareness Fact Sheet – May 2018](#)

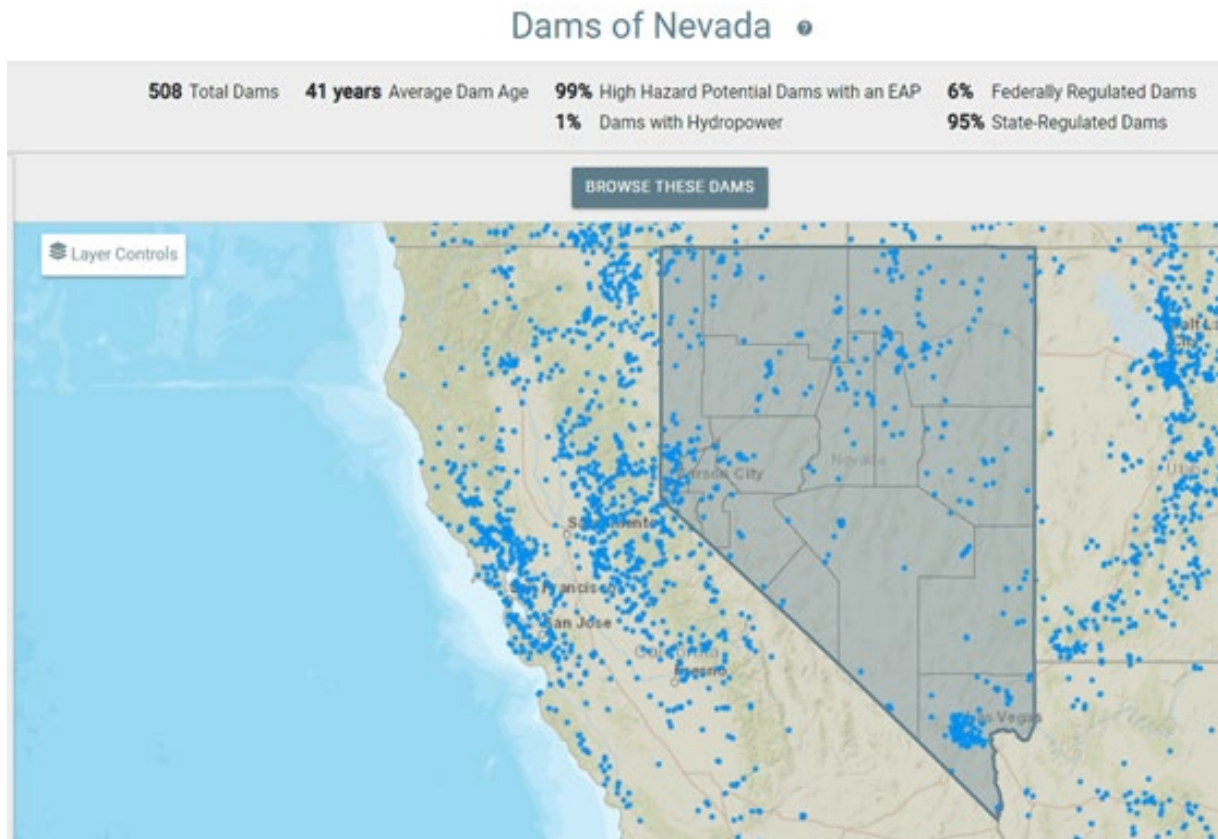
There are now approximately 91,655 dams nationwide with an average age of 61 years. A high number of these dams have received less than favorable Dam Safety Action Classification (DSAC) ratings from the U.S. Army Corps of Engineers (USACE). In fact, [FEMA's National Dam Safety Program Overview fact sheet](#), said there were approximately 15,600 U.S. dams classified as having high-hazard potential (HHP), meaning that their failure could result in loss of life. The [worst dam failure in the United States](#) occurred in 1889 in Johnstown, Pennsylvania, when over 2,200 people died, with many more were left homeless.

According to USACE, dams are unique components of the U.S. infrastructure in that most dams are privately owned. Dam owners are solely responsible for keeping their dams safe and financing maintenance, repairs, and upgrades. Most dams are regulated for safety by state and federal governments, much the same way as are bridges, food, drugs, factories, etc. States regulate most dams in the U.S. (about 70%). The federal government regulates the remaining number.

Location and Extent

The National Inventory of Dams indicates that there are 508 total Dams in the State of Nevada, with an average age being 41 years. However, the Nevada Dam Safety Video produced by the State of Nevada Division of Water Resources (NDWR) mentioned that with annual rainfall of (7) inches a year, Nevada is the driest State in the US. The Nevada Dam Safety Video also mentions that many are surprised that Nevada has over 850 dams spread across the State.

Figure 34: State of Nevada, Summary of Dams



Data Source: [National Inventory of Dams](#)

Dams in Nevada are built for three primary purposes: industrial, flood control, and storage (<http://water.nv.gov/DamTypes.aspx>). The State of Nevada Dam Safety Program guides the types of Dams within the State. The types of dams and their characteristics are as follows:

- **Storage:** This is the stereotypical dam; reservoirs used for recreation or irrigation impoundment are examples of this type. Since water will be impounded on a "permanent" basis, the design of the dam is complicated by the fact that water will eventually seep through the dam and must be controlled. A typical storage dam may be an embankment dam with an impermeable clay core surrounded by a granular shell material. A typical zoned embankment dam will have chimney and blanket drains, corresponding filter zones, outlet works with gates, valves, and a drain, seep water collection system, cut-off trench and possibly several spillways. The capacity of the spillway(s) is dependent upon the downstream hazard potential (defined later in this publication) and the size of the area tributary to the dam. Generally, an embankment dam is constructed of soil, usually derived local to the dam site, and quality control as well as proper placement of the material is crucial to the success of the dam. Specifications must clearly define what types of materials can be used, how they are to be placed and what compactive effort must be exerted on each "lift."
- **Flood Control:** Also referred to as a "detention basin," this structure is built upstream or

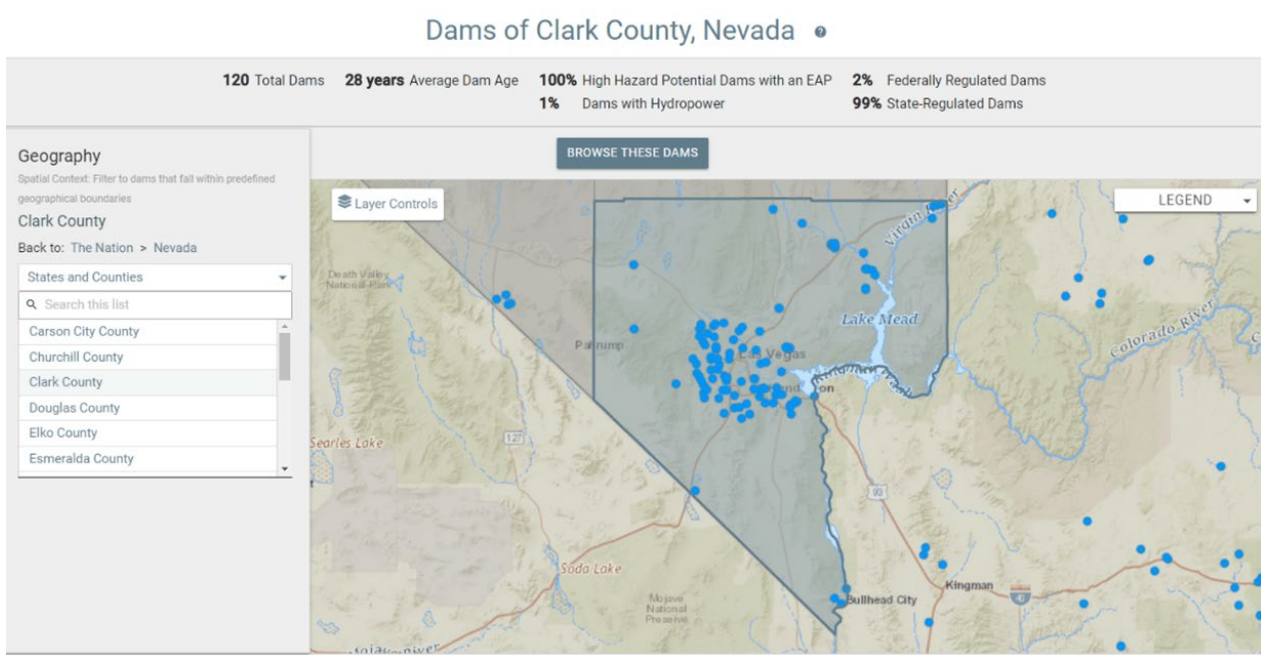
up gradient from a developed area so that an extreme precipitation runoff (flood) is attenuated (reduced) to a manageable level to prevent human or economic loss. Due to the nature of its purpose, a detention basin is categorized as a high hazard structure; thus, the spillway must be designed to pass the probable maximum flood (PMF). Making the design process more challenging, outlet works are usually required to pass some target flow rate established by a local authority (county, city, or town). In many cases, the flow rate is only equivalent to the "25 year" flood. Since a detention basin's primary function is to detain or divert storm flow and reduce downstream flow rates, no gates or valves are allowed on the outlet so that water can never be stored on a long-term basis. Typical retention times in such a basin would be on the order of 24 to 72 hours although some are as long as 5 to 10 days.

- **Tailing:** Although tailings are a mobile material, they are obviously significantly more viscous than water and their physical behavior alters with deposition method and over time. A typical tailings impoundment is lined with high-density polyethylene (HDPE), has a leak detection system and a system of drains beneath the reservoir. Tailings are normally transported as slurry composed of water and tails via pipeline to the reservoir where they are added to the top of previously deposited tails. The water either percolates through the tailings or evaporates, leaving a semi-consolidated mass of tails. Since the inlet is a controlled, the dam is not required to have a spillway, as proper management will not allow the embankment to overtop. A tailings impoundment is designed such that there is enough freeboard to accommodate the probable maximum precipitation storm without overtopping. Most tailings facilities are built in discrete raises or phases on an "as needed" basis. The State Engineer prefers downstream construction for the raises although centerline and upstream raises have been approved as the ability to predict tailings behavior and design methods improve. For an upstream raise to be authorized, the State Engineer must be shown that the tails in the foundation area are sufficiently consolidated, not fully saturated, and suitable for the size of the raise. Liquefaction and slope stability analysis are required, and acceptable factors of safety must be met.

A dam failure within Clark County and its participating jurisdiction(s) could result in significant loss of life and damage to structures, roads, utilities, crops, and livestock. Economic losses could also result from a lowered tax base, lack of utility profits, disruption of commerce and governmental services, and extraordinary public expenditures for food relief and protection.

The National Inventory of Dams indicates 120 total dams in Clark County. Of these dams, the average age is 28 years, and of equal or greater concern, 100 percent are considered high-hazard potential. Given these numbers, the possibility of dam failure and high-velocity flooding clearly exists within the planning area. The following map provides the location of those dams throughout the County.

Figure 35: Clark County, Summary of Dams



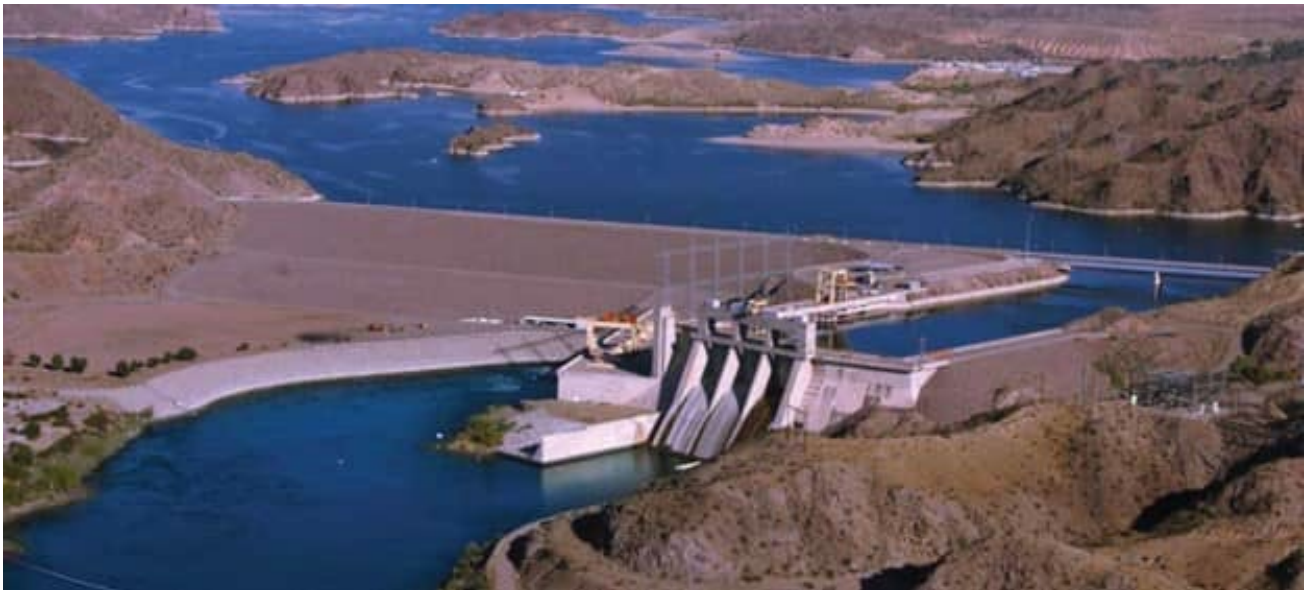
Data Source: [National Inventory of Dams](#)

The previous Clark County HMP (2018) mentions that most of these structures are flood detention basins that are built to protect residential neighborhoods. The County contains two high-profile dams, Hoover Dam and Davis Dam. Hoover Dam is located about 36 miles southeast of Las Vegas, in the Black Canyon of the Colorado River. The [National Park Service](#) describes Hoover Dams as a massive, concrete arch-gravity dam, that is 660 feet thick and wide enough at the crest that traffic on old U.S. 93 coursed right over its top. Some 726 feet in the canyon below, or the equivalent of a 60-story building, the Colorado River lies tamed behind this great concrete wedge, its base as wide as two football fields are long. Hoover Dam stores water that irrigates 2 million acres, not only in the rich

farm fields of Southern California's Imperial Valley, but across the state line in Arizona. Hoover Dam generates enough hydroelectric power to serve 1.3 million people each year, provides municipal water for urban centers including Los Angeles, Phoenix, and Tucson, holds back flood waters, provides storage during drought, and takes more than a little credit for the unabashed growth of the desert Southwest. For all that, Hoover Dam is much more; it is an American icon, a monument to the ingenuity of the nation's engineers and the power of its machines. The Hoover Dam is the symbol of an era when an urban, industrial America reveled in harnessing its natural resources. According to the United States (U.S.) Bureau of Reclamation, the risk of failure for the Hoover Dam is "very, very low." Below is an aerial image of the Hoover Dam produced by [National Geographic](#).



Davis Dam is located near the town of Laughlin, Nevada. This dam is an earth and rock-filled structure designed to control flash floods and generate hydroelectric power. This energy is used in the Southwest to turn the wheels of industry and pump water from wells to irrigate farmlands and water livestock. Below is an image of the Davis Dam provided by the [City of Laughlin, NV](#).



Further downstream along the Colorado River in Arizona, are the Parker Dam and its reservoir, Lake Havasu. The Parker Dam is a concrete arch structure commonly called the “deepest dam in the world”. The [U.S. Bureau of Reclamation](#) mentions that seventy-three percent of the dam's structural height of 320 feet is below the original river bed; only about 85 feet of the dam's structural height is visible (its superstructure rises another 62 feet above the roadway across the top of the dam). Parker Dam has a volume of 380,000 cubic yards of concrete. At its crest, the dam is 856 feet long. Water control is provided by five 50-ft-square gates. Lake Havasu backs up behind the dam for 45 miles and covers more than 20,400 acres (32 square miles). The reservoir's total capacity is 646,200 acre-feet. The Metropolitan Water District's W. P. Whitsett Intake Pumping Plant for the Colorado River Aqueduct is located on the shore of Lake Havasu about two miles upstream from the dam. The aqueduct begins at the intake pumping plant and extends 242 miles to its terminus at Lake Mathews near Riverside, California. About half of the power generated at Parker Dam is reserved by MWD to pump Colorado River water along the Colorado River Aqueduct. The remaining power is marketed to users in California, Nevada, and Arizona by the Western Area Power Administration. By contract, the use of active storage in Lake Havasu to generate power is limited to the elevation between 440 to 450 feet.

In addition to these high-profile dams, numerous detention basins are scattered throughout Clark County to divert and contain seasonal flood waters. Mill ponds that serve to store large quantities of water from mining operations are also of significant concern. Breach of these structures could also present a threat to lives and property throughout the County.

The National Inventory of Dams (NID) database contains information on approximately 91,655 dams in the 50 states and Puerto Rico, with about 30 characteristics reported for each dam, such as: name, owner, river, nearest community, length, height, average storage, max storage, hazard rating, EAP, latitude, and longitude. The FEMA in the [Federal Guidelines for Dam Safety](#) classifies dams as Low, Significant, or High Hazard. The following table provides information related to those classifications:

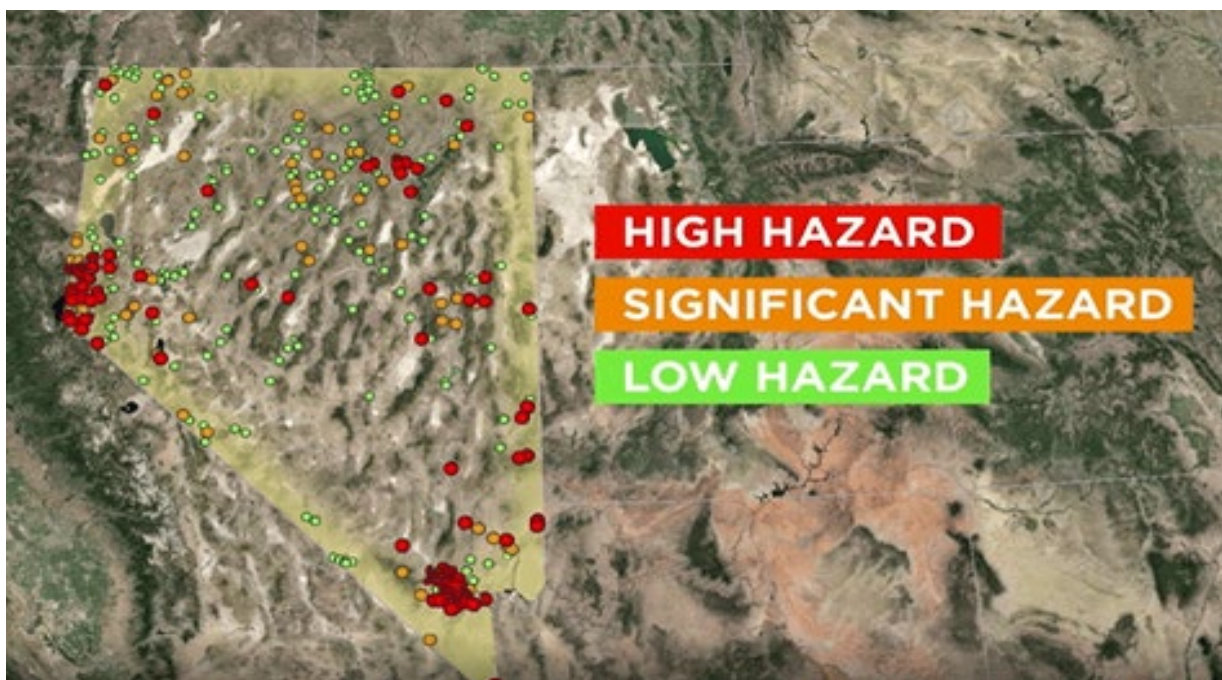
Table 30: Dams Hazards Classifications

Dams Hazard Classifications			
Hazard Potential Classification	Terminology/Definition	Loss of Human Life	Economic, Environmental, Lifeline Losses
Low	Dams assigned the low hazard potential classification are those where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.	None expected	Low and generally limited to owner
Significant	Dams assigned the significant hazard potential classification are those dams where failure or mis-operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be in areas with population and significant infrastructure.	None expected	Yes
High	Dams assigned the high hazard potential classification are those where failure or mis-operation will probably cause loss of human life.	Probable. One or more expected	Yes (but not necessary for this classification)

Data Source: [Association of State Dam Safety Officials](#) and [FEMA Federal Guidelines for Dam Safety \(2004\)](#)

The [Nevada Dams and Dam Safety program](#), which the State of Nevada Division of Water Resources regulates, aims to avoid dam failure and thus prevent loss of life and destruction of property. It is responsible for the careful review of new dam applications, on-site inspection of the dams being built, review of as-built drawings and QA/QC reports, and finally, through periodic visual inspections of the structures themselves. The following map shows the locations of the low, significant, and high hazard classified dams within the State overseen as part of the Dam Safety program.

Figure 36: Map of Dam Classifications in the State of Nevada



Data Source: [State of Nevada Dam Safety Video](#)

According to the Nevada Division of Water Resources (NDWR), there are 67 high-hazard structures in Clark County. The previous Clark County HMP (2018) states that a high-hazard designation does not reflect a dam’s condition, but rather its potential for destruction in the event of an actual failure. As for February 2017, NDWR stated that approximately 90 percent of the high-hazard dams in Nevada are in satisfactory condition, the highest rating state inspectors give (<https://www.reviewjournal.com/local/local-nevada/nevada-california-incidents-highlight-vulnerability-of-nevadas-650-plus-dams/>).

The following table provide a summary of the dams within the County and its participating jurisdictions, and their classifications as documented by the Nevada Dam Database.

Table 31: Summary of Dams, Clark County, NV, as of January 25, 2023

Summary of Dams – High Hazard, Clark County, NV						
National ID	State ID	Name	Stream	Legal Desc	Owner	High Hazard (H)
NV10910	J-729	BLUE DIAMOND BUSINESS CENTER DETENTION BASIN DAM #1	Blue Diamond Wash	216 S18 E64 20CC	BLUE DIAMOND BUSINESS CENTER	H
NV10928	J-744	SKYE CANYON DETENTION BASIN 2 DAM		222 S13 E71 21	CENTURY COMMUNITIES	H
NV10895	J-728	SKYE CANYON DETENTION BASIN 1 DAM	N/A	212 S19 E59 12B	CENTURY COMMUNITIES	H
NV10161	J-360	HEMENWAY VALLEY FLOOD CONTROL DAM	HEMENWAY WASH	215 S23 E64 04AB	CITY OF BOULDER CITY	H
NV10583	J-536	AARON WAY DETENTION BASIN DAM	HEMENWAY WASH-TR	215 S22 E64 33CA	CITY OF BOULDER CITY	H
NV10619	J-564	NORTH RAILROAD DETENTION BASIN DAM	UNNAMED WASH	167 S23 E64 07DB	CITY OF BOULDER CITY	H
NV10647	J-575	BOOTLEG DETENTION BASIN DAM	HEMENWAY WASH-TR	215 S23 E64 06D	CITY OF BOULDER CITY	H
NV10930	J-360	TRAIL HEAD DETENTION BASIN DAM	N/A	215 S23 E64 5DA	CITY OF BOULDER CITY PUBLIC WORKS	H
NV10911	J-730	PITTMAN NORTH DETENTION BASIN DAM	PITTMAN WASH	212 S23 E310 09	CITY OF HENDERSON	H
NV10648	J-576	SOUTH EDGE EAST 1 HEADWORKS DETENTION BASIN DAM	PITTMAN WASH-TR	212 S23 E61 25B	CITY OF HENDERSON	H
NV10618	XJ-563	CORNERSTONE DETENTION DAM	LAS VEGAS WASH-TR	212 S22 E61 16AB	CITY OF HENDERSON	H
NV10670	J-599	NORTHEAST C-1 DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S22 E63 10BA	CITY OF HENDERSON	H
NV10426	J-402	MISSION HILLS DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S22 E63 33C	CITY OF HENDERSON	H
NV10518	J-681	EQUESTRIAN DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S22 E63 22CC	CITY OF HENDERSON	H
NV10528	J-498	EAST C-1 DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S22 E63 23A	CITY OF HENDERSON	H
NV10530	J-497	PITTMAN PARK DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S22 E62 09D	CITY OF HENDERSON	H
NV10543	J-504	PITTMAN ANTHEM DETENTION BASIN DAM	PITTMAN WASH-TR	212 S23 E62 20B	CITY OF LAS VEGAS	H

Summary of Dams – High Hazard, Clark County, NV

National ID	State ID	Name	Stream	Legal Desc	Owner	High Hazard (H)
NV10550	J-516	BLACK MOUNTAIN DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S22 E62 36D	CITY OF LAS VEGAS	H
NV10575	J-531	PIONEER DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S22 E62 11DC	CITY OF LAS VEGAS	H
NV10577	J-533	MCCULLOUGH HILLS PARK DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S23 E62 06AB	CITY OF LAS VEGAS	H
NV10419	J-677	ANGEL PARK SOUTH DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S20 E60 32A	CITY OF LAS VEGAS	H
NV10461	J-433	LONE MOUNTAIN DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S20 E60 07BA	CITY OF LAS VEGAS	H
NV10416	J-396	KYLE CANYON DETENTION DAM	LAS VEGAS WASH-TR	212 S19 E59 13	CITY OF LAS VEGAS	H
NV10151	J-375	GOWAN DETENTION NORTH DAM	LAS VEGAS WASH-TR	212 S20 E60 10CD	CITY OF LAS VEGAS	H
NV10156	J-388	OAKEY DETENTION DAM	LAS VEGAS WASH-TR	212 S21 E60 02CA	CITY OF LAS VEGAS	H
NV00224	J-677	ANGEL PARK NORTH DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S20 E60 29	CITY OF LAS VEGAS	H
NV00233	J-540	MEADOWS DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S20 E61 32BB	CITY OF LAS VEGAS	H
NV10604	J-550	FORT APACHE DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S19 E60 19DA	CITY OF LAS VEGAS	H
NV10652	J-577	ANN ROAD DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S19 E59 26DB	CITY OF LAS VEGAS	H
NV10634	J-375	GOWAN DETENTION SOUTH DAM	LAS VEGAS WASH-TR	212 S20 E60 15BA	CITY OF LAS VEGAS	H
NV10635	J-385	MEADOWS NORTH BASIN DAM	LAS VEGAS WASH-TR	212 S20 E60 15BD	CITY OF LAS VEGAS	H
NV10639	J-584	RANCHO DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S19 E60 28DA	CITY OF LAS VEGAS	H
NV10784	J-632	FLOYD LAMB PARK SOUTH ENHANCEMENT EMBANKMENT DAM	NONE	212 S19 E60 03	CITY OF LAS VEGAS	H
NV10887	J-711	LONE MOUNTAIN-BELTWAY DETENTION BASIN DAM	GOWAN WATERSHED	212 S20 E59	CITY OF LAS VEGAS	H
NV10935	J-632	FLOYD LAMB PARK NORTH ENHANCEMENT EMBANKMENT DAM	NONE	212 S19 E60 03	CITY OF LAS VEGAS	H
NV10656	J-582	ABBOTT WASH DETENTION BASIN DAM	ABBOT WASH	222 S13 E70 08C	CITY OF MESQUITE	H
NV10657	J-583	PULSIPHER WASH DETENTION BASIN DAM	PULSIPHER WASH	222 S13 E70 13A	CITY OF MESQUITE	H
NV10160	J-367	TOWN WASH DAM	TOWN WASH	222 S13 E71 09BD	CITY OF MESQUITE	H
NV10150	J-356	CAREY/LAKE MEAD DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S20 E61 20BA	CITY OF NORTH LAS VEGAS	H
NV10163	J-364	LAS VEGAS WASH UPPER DETENTION	LAS VEGAS WASH	212 S19 E60 01B	CITY OF NORTH LAS VEGAS	H

Summary of Dams – High Hazard, Clark County, NV

National ID	State ID	Name	Stream	Legal Desc	Owner	High Hazard (H)
		BASIN DAM				
NV10420	J-208	NORTH LAS VEGAS DETENTION BASIN DAM	LAS VEGAS WASH	212 S19 E61 14	CITY OF NORTH LAS VEGAS	H
NV10511	J-473	LAS VEGAS WASH LOWER DETENTION BASIN DAM	LAS VEGAS WASH	212 S19 E61 33AC	CITY OF NORTH LAS VEGAS	H
NV10584	J-538	CHEYENNE PEAKING DETENTION BASIN DAM	LAS VEGAS WASH-TR	212 S20 E61 12CC	CITY OF NORTH LAS VEGAS	H
NV10881	XJ-318	NLV AIR TERMINAL DETENTION BASIN 1	LAS VEGAS WASH-OS	212 S20 E61 17BC	CLARK COUNTY DEPARTMENT OF AVIATION	H
NV10145	J-406	MCCARRAN AIRFIELD DETENTION DAM	LAS VEGAS WASH-TR	212 S21 E61 35DD	CLARK COUNTY DEPARTMENT OF AVIATION	H
NV10862	J-708	F-3 DETENTION BASIN DAM (SUMMERLIN V16A BLM DETENTION BASIN	FLAMINGO TROPICANA WASH	212 S22 E59 01 DB	CLARK COUNTY PUBLIC WORKS	H
NV10789	J-631	FLAMINGO WASH LOWER DETENTION BASIN DAM	FLAMINGO WASH	212 S21 E60 24D	CLARK COUNTY PUBLIC WORKS	H
	JS-173	Blue Diamond Turning Basin	Blue Diamond Wash	212 S22 E60 17A	CLARK COUNTY PUBLIC WORKS	H
NV10947	J-760	FAIRGROUNDS-WHIPPLE DETENTION BASIN DAM	N/A	220 S15 E67 23AD	CLARK COUNTY PUBLIC WORKS	H
	JS-305	BRIDGE CANYON DEBRIS BASIN		213 32S 66E L3	CLARK COUNTY PUBLIC WORKS	H
NV10956	J-772	JIM MCGAUGHEY DETENTION BASIN DAM		212 S20 E62 26BA	CLARK COUNTY PUBLIC WORKS	H
NV10959	J-776	TROPICANA AND UNIVERSITY CENTER DETENTION BASIN DAM	FLAMINGO WASH	T21S R61E SENW Section 27	CLARK COUNTY PUBLIC WORKS	H
NV10934	J-474	SILVERADO RANCH DETENTION BASIN DAM		212 S22 E61 30aa	CLARK COUNTY PUBLIC WORKS	H
NV10526	J-488	WINDMILL WASH DETENTION BASIN DAM	VIRGIN RIVER-TR	222 S13 E70 36BA	CLARK COUNTY PUBLIC WORKS	H
NV10558	J-514	DESERT INN DETENTION LOWER DETENTION DAM	LAS VEGAS WASH-TR	212 S22 E61 21DA	CLARK COUNTY PUBLIC WORKS	H
NV10429	J-404	VAN BUSKIRK CHANNEL DETENTION BASIN - SITE A DAM	LAS VEGAS WASH-TR	212 S21 E61 23DD	CLARK COUNTY PUBLIC WORKS	H
NV10429	J-426	HIKO SPRINGS DETENTION BASIN DAM	HIKO SPRINGS WASH	213 S32 E66 16C	CLARK COUNTY PUBLIC WORKS	H
NV10447	J-422	CONFLUENCE DETENTION BASIN DAM	RANGE WASH & SLOAN CHANNEL	212 S20 E62 10DC	CLARK COUNTY PUBLIC WORKS	H
NV10456	J-319	FLAMINGO WASH UPPER DETENTION	FLAMINGO	212 S21 E60	CLARK COUNTY	H

Summary of Dams – High Hazard, Clark County, NV

National ID	State ID	Name	Stream	Legal Desc	Owner	High Hazard (H)
		BASIN DAM	WASH	28CD	PUBLIC WORKS	
NV10162	J-256	RED ROCK DETENTION DAM	RED ROCK WASH	212 S21 E59 03D	CLARK COUNTY PUBLIC WORKS	H
NV10640	J-587	THE LAKES DETENTION BASIN DAM	DUCK CREEK	212 S22 E60 26CB	CLARK COUNTY PUBLIC WORKS	H
NV10658	J-552	DUCK CREEK RAILROAD DETENTION BASIN DAM	DUCK CREEK-TR	212 S22 E59 25	CLARK COUNTY PUBLIC WORKS	H
NV10606	J-520	UPPER DUCK CREEK INTERIM DETENTION BASIN DAM	DUCK CREEK-TR	212 S22 E59 25	CLARK COUNTY PUBLIC WORKS	H
NV10562	J-561	TROPICANA DETENTION BASIN DAM	TROPICANA WASH	212 S21 E61 31BD	CLARK COUNTY PUBLIC WORKS	H
NV10617	J-646	INDIAN SPRINGS DETENTION BASIN DAM	UNNAMED WASH	161 S16 E56 08C	CLARK COUNTY PUBLIC WORKS	H
NV10621	J-645	R-4 DETENTION DAM	LAS VEGAS WASH-TR	212 S21 E59 22AA	CLARK COUNTY PUBLIC WORKS	H
NV10622	J-567	BLUE DIAMOND UPPER DETENTION DAM	LAS VEGAS WASH-TR	212 S22 E59 13DA	CLARK COUNTY PUBLIC WORKS	H
NV10625	J-567	F-4 DETENTION BASIN DAM	TROPICANA WASH-TR	212 S22 E60 07D	CLARK COUNTY PUBLIC WORKS	H
NV10768	J-641	LOWER BLUE DIAMOND DETENTION DAM	DUCK CREEK-TR	212 S22 E60 12D	CLARK COUNTY PUBLIC WORKS	H
NV10770	J-643	F-1 DAM DETENTION BASIN	FLAMINGO WASH	212 S21 E59 26A	CLARK COUNTY PUBLIC WORKS	H
NV10771	J-644	F-2 DAM DETENTION BASIN	FLAMINGO WASH-TR	212 S21 E59 36B	CLARK COUNTY PUBLIC WORKS	H
NV10731	J-612	TROPICANA NORTH BRANCH DETENTION BASIN DAM	TROPICANA WASH	212 S21 E61 30AC	CLARK COUNTY PUBLIC WORKS	H
NV10157	XJ-206	MONTE CARLO DAM NO 2	DRY WASH	213 S32 E66 29A	COLORADO ENVIRONMENT	H
NV10158	XJ-207	MONTE CARLO DAM NO 3	DRY WASH	213 S32 E66 20DD	COLORADO ENVIRONMENT	H
NV10672	J-734	COYOTE SPRINGS DETENTION BASIN 1-2 DAM	PAHRANAGAT WASH	210 S13 E63 17	COYOTE SPRINGS NEVADA, LLC	H
NV10952	J-766	GRAND PARK DETENTION BASIN DAM	GOWAN	SE, NW, SEC 22, T. 20, R 59 E	HOWARD HUGHES CORPORATION	H
NV10499	J-770	SUMMERLIN DETENTION BASIN #5 DAM	RED ROCK WASH-TR	212 S20 E59 28D	HOWARD HUGHES CORPORATION	H
NV10547	XJ-510	SUMMERLIN TEMPORARY DETENTION BASIN	FLAMINGO WASH-TR	212 S21 E59 24B	HOWARD HUGHES CORPORATION	H
NV10674	XJ-602	KYLE CANYON GATEWAY DETENTION BASIN 1	LAS VEGAS WASH-TR	212 S19 E59 12	KYLE ACQUISITION GROUP	H

Summary of Dams – High Hazard, Clark County, NV

National ID	State ID	Name	Stream	Legal Desc	Owner	High Hazard (H)
NV10675	XJ-605	KYLE CANYON GATEWAY DETENTION BASIN 2	LAS VEGAS WASH-TR	212 S19 E59 12	KYLE ACQUISITION GROUP	H
NV10676	XJ-605	KYLE CANYON GATEWAY DETENTION BASIN 3	LAS VEGAS WASH-TR	212 S19 E59 12	KYLE ACQUISITION GROUP	H
NV10908	J-375	GOWAN DETENTION MIDDLE DAM	LAS VEGAS WASH	212 S20 E60 15B	LAS VEGAS PUBLIC WORKS	H
NV00113	J-079	BOWMAN DAM	MUDDY RIVER-OS	220 S15 E67 22A	MUDDY RIVER IRRIGATION DISTRICT	H
NV10159	J-144	SPRING MOUNTAIN RANCH DAM	BLUE DIAMOND WASH-TR	212 S22 E58 03AB	NEVADA DCNR PARKS	H
NV10797	J-665		LAS VEGAS WASH-OS	212 S22 E62 11A	NV ENVIRONMENTAL RESPONSE TRUST	H
NV10671	J-734	COYOTE SPRINGS DETENTION BASIN 1 DAM	PAHRANAGAT WASH-TR	210 S13 E63 20	PARDEE HOMES OF NEVADA	H
NV10672	J-734	COYOTE SPRINGS DETENTION BASIN 2 DAM	PAHRANAGAT WASH-TR	210 S13 E63 17	PARDEE HOMES OF NEVADA	H
NV00157	XNV00157	MOHAVE GENERATION EVAPORATION POND NO 2	COLORADO RIVER-OS	213 S32 E66 23A	SOUTHERN CALIFORNIA EDISON	H
NV00158	XNV00158	MOHAVE GENERATION EVAPORATION POND NO 3	COLORADO RIVER-OS	213 S32 E66 23Aa	SOUTHERN CALIFORNIA EDISON	H
NV10601	JS-246	BOSTICK WEIR 5.4 DAM	LAS VEGAS WASH-TR	212 S22 E63 22A	SOUTHERN NEVADA WATER AUTHORITY	H
NV10859	J-705	GW-1 POND DAM	N/A	212 S22 E62	TITANIUM METALS CORPORATIONS	H
NV10122		HOOVER DAM	COLORADO RIVER	215 S22 E65 29AD	USDI BUREAU OF RECLAMATION-LOS ANGELES DISTRICT	H

Table 32: Summary of Dams – Significant and Low Hazard, Clark County, NV

Summary of Dams – Significant and Low Hazard, Clark County, NV						
National ID	State ID	Name	Stream	Legal Desc	Owner	Hazard Significant (S) and Low (L)
NV10927	J-743	SLOAN QUARRY WATER STORAGE POND DAM	N/A	212 23S 60E 13	Aggregate Industries SWR, INC.	S
NV10418	J-398	WEST RANGE WASH DIVERSION DIKE DAM	WEST RANGE WASH	212 S19 E61 12	CITY OF NORTH LAS VEGAS	S
NV10948	J-761	SPEEDWAY DETENTION BASIN #2 DAM	OFF-STREAM	212 019S 062E 26	CITY OF NORTH LAS VEGAS	S
NV10630	XJ-565	RUSSELL ROAD TEMPORARY DETENTION BASIN	LAS VEGAS WASH-TR	212 S21 E61 26CD	CLARK COUNTY DEPARTMENT OF AVIATION	S
NV00166	XNV00166	MILL 2 POND D	MUDDY RIVER-OS	220 S16 E67 11CD	EAGLE VIEW CONTRACTORS;U.S.D.I. BUREAU OF RECLAMATION BC	S
NV00167		MILL 2 POND E DAM	MUDDY RIVER-OS	220 S16 E67 11CB	EAGLE VIEW CONTRACTORS;U.S.D.I. BUREAU OF RECLAMATION BC	S
NV00140	XNV00140	MILL 2 POND A	MUDDY RIVER-OS	220 S16 E67 11DB	EAGLE VIEW CONTRACTORS;U.S.D.I. BUREAU OF RECLAMATION BC	S
NV00164	XNV00164	MILL 2 POND B	MUDDY RIVER-OS	220 S16 E67 11DB	EAGLE VIEW CONTRACTORS;U.S.D.I. BUREAU OF RECLAMATION BC	S

Data Source: [State of Nevada Division of Water Resource, Nevada Dam Database](#)

Previous Occurrence – Infrastructure, Dam Failure

The State of Nevada Enhanced Hazard Mitigation Plan (2018) mentions that in Nevada's history, there have not been any incidents resulting in dam failure emergency or disaster declarations which will include no declarations for Clark County. The previous Clark County MJHMP (2018) states that although there were no dam failure declarations in the County, there are have been the following incidents on record:

- In 2005, rainfall runoff overtopped the Schroeder Dam in Beaver Dam State Park located in eastern Nevada by one foot. The top surface of the dam was not damaged, but the downstream face of the dam was severely eroded. Erosion in several of the gullies may have reached as far as the core material. The dam was an earth-fill dam with a 35-foot concrete spillway on the east side. Prior to this event the dam was considered a low-hazard dam.
- In 2006, failure of the Rogers Dam occurred as a result of very high flows in the Humboldt River. Concrete control sections of the dam were undermined making it useless. The concrete portion of the dam was completely undercut by four to five feet allowing the river to flow unimpeded underneath the dam. No injuries or property damage was reported. The main result of the Rogers Dam failure was that the reservoir behind the dam has been

diverted into a canal which provides water to 60 percent of the ranches in the valley, representing about 20,000 acres of land.

- On September 9, 2014, three dams on the Moapa Indian Reservation and three dams off the reservation breached. The dam failures contributed to major damages to the Moapa Band of Paiutes reservation lands and infrastructure.

Many dams in Nevada suffer from poor design or encroachment of development into the potential floodplain below the dam. As a result, many dams fail to pass an Inflow Design Flood (IDF) inspection commensurate with their hazard potential and size. There is no record of dams located in or affecting Clark County that have this deficiency.

Probability of Future Events, Infrastructure, Dam Failure

The previous Clark County MJHMP (2018) mentions Dam failure can result from numerous natural or human activities. Earthquakes, internal erosion, improper siting, structural and design flaws, or rising floodwaters can all result in the collapse or failure of a dam. A dam failure may also be a result of the age of the structure or inadequate spillway capacity. While it has been mentioned that a number of dams have failed to pass an IDF inspection, the State has taken an active role in remediating the deficient dams. Calculated Priority Risk Index (CPRI) conducted for Clark County and its participating jurisdictions, there is a **high probability (rank score of 3.0-3.9) of infrastructure, dam failure** for the planning area. Please note that the CPRI Rating is a subjective measure based on the opinion of the Clark County MPSC members during the planning development portion of the MJHMP update. The following table provides CPRI Rating on Infrastructure, Dam Failure for Clark County and its participating jurisdictions.

Table 33: Clark County and Participating Jurisdiction CPRI Rating for Infrastructure, Dam Failure

Clark County and Participating Jurisdiction CPRI Rating for Infrastructure, Dam Failure							
Hazard: Infrastructure, Dam Failure		Category and Weight				CPRI Score	Risk Level
		Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%		
Index Rating (R) Weighted Score (WS)							
Clark County (including Incorporated and Unincorporated Areas)	R	2	4	4	4	3.1	H
	WS	0.9	1.2	0.6	0.4		
Boulder City	R	1	1	1	1	1	L
	WS	0.45	0.3	0.15	0.1		
Henderson	R	2	2	2	3	2.10	M
	WS	.9	.6	.3	.3		
Las Vegas	R	2	3	2	3	2.4	M
	WS	0.9	0.9	0.3	0.3		
Mesquite	R	2	4	4	4	3.1	H
	WS	0.9	1.2	0.6	0.4		

Clark County and Participating Jurisdiction CPRI Rating for Infrastructure, Dam Failure							
Hazard: Infrastructure, Dam Failure	Category and Weight					CPRI Score	Risk Level
	Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%			
Index Rating (R) Weighted Score (WS)							
North Las Vegas	R	1	4	4	4	2.65	M
	WS	0.45	1.2	0.6	0.4		
Special District: Clark County Water Reclamation District	R	1	1	3	1	1.3	L
	WS	0.45	0.30	0.45	0.10		
Special District: Clark County School District	R	1	2	2	2	1.55	L
	WS	0.45	0.6	0.3	0.2		
Special District: Las Vegas Valley Water District/SWNA	R	1	2	2	2	1.55	L
	WS	0.45	0.60	0.30	0.20		
Tribal Nation: Las Vegas Valley Paiute	R	1	1	1	1	1	L
	WS	0.45	0.3	0.15	0.1		
Tribal Nation: Moapa Band of Paiutes	R	4	3	4	3	3.6	H
	WS	1.8	0.9	0.6	0.3		

Calculating future probability is not the only predictor of future occurrences. In the last five years, Clark County and its participating jurisdictions do not have any documented cases of dam failure incidences. Although the County has experienced occurrences that were listed in its HMP update (2018), the likelihood of a infrastructure, dam failure event happening in the planning area is considered **occasional**.

Vulnerability and Impact

Clark County and its participating jurisdictions (which included the Clark County Unincorporated areas and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) have recorded no incident of dam failure since the last mitigation plan update (2018). Still, a dam failure could have a tremendous impact on the planning area, including the environment, much like a flood event.

The State of Nevada, Division of Water Resources, Nevada Dam Database, did not have any incidences of infrastructure dam failure records related to incidents for the participating jurisdictions in the planning area - the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas. The [Nevada Dams and Dam Safety Program](#), which the State of Nevada Division of Water Resources (NDWR) regulates, aims to avoid dam failure and thus prevent loss of life and destruction of property.

It is impossible to meet the following planning element requirements for the following reasons: the data in Tables 30-31 of this hazard profile provides the dam's name, stream, and owner, along with their classification of low, significant, and high-hazard dams. The information provided by this database does not give the dam's actual location (address, city, state, and zip code) within the planning area's jurisdiction, therefore using the CPRI Risk Rating, which is a subjective measure

based on the opinion of the Clark County MPSC members, during the planning development portion of this MJHMP update and qualitative probability of future events for the overall County for this hazard profile. Because of this, all participating jurisdictions' infrastructure dam failure events, are included under Clark County. Individual jurisdictional vulnerability and impact data is unavailable.

Note: The following information was obtained by accessing the most available data/data sets. This information represents all the events and extent of the Dam Failures hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. This data includes locations of dams within the County from the Summary of Dams for the State Dam Safety program. The information provided for Clark County also applies to the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas; Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes; and Special Districts representing Clark County School District, Clark County Water Reclamation District, Las Vegas Water District, and Southern Nevada Health District.

Vulnerability of Facilities

Facilities during a dam failure will have a similar vulnerability to a flood event in the planning area. As mentioned in the flooding section of this plan update, critical facilities and infrastructure can be rendered unusable or permanently destroyed, producing a significant impact on a jurisdiction's ability to conduct day-to-day operations. Also, like a flood, a dam failure can cause considerable damage to residential and/or commercial structures that can irrevocably damage a community and its economy by creating economic hardship.

Clark County and its participating jurisdictions' critical structures are valued at \$395,335,458.

Vulnerability of Population

The greatest vulnerability of a jurisdiction's population is the inability to predict a dam failure due to it being uncontrollable by humans. Clark County and its participating jurisdictions (which included the Clark County Unincorporated area and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) have a total population of 2,265,461 in 840,343 housing units that would be at risk for a dam failure in the planning area.

Impact of Climate Change

Climate change is not likely to have a primary impact on dam failure. Potential increases in the intensity of storm events may result in greater runoff and raise the likelihood of a dam being overtopped.

Critical Facilities and Infrastructure

All critical facilities and infrastructure within the planning area are equally at risk of a dam failure incident. This is especially true for homes, businesses, and critical facilities that in close proximity to a dam. A complete list of critical facilities and infrastructure can be found in [Appendix E – Critical Facilities & Infrastructure](#).

Land Use and Development

Dam failure places downstream populations at risk. In addition to the flow of water released from the reservoir, the inundation stream picks up large debris which results in a scouring effect that compounds damage. The flood protection afforded by dams in the County has encouraged development of lands immediately downstream of the structures. However, prohibition of development in these areas is not feasible. Instead, public awareness measures such as notices on final plats and public education on dam safety are mitigation efforts employed by local county and city/town officials.

Unique and Varied Risk

As dams continue to age, there is an increased potential of failure due to undesirable woody vegetation on the embankment, deteriorating concrete, and other structural factors that can cause issues over time. A failure could cause widespread flooding, putting the entire planning area at risk, particularly those living near dam. Fortunately, with the Nevada Dams and Dam Safety Program, which the State of Nevada Division of Water Resources, regulates provides monitoring and compliance of the dams within the Clark County, the probability of failure is unlikely.

Table 34: Unique and Varied Risk – Infrastructure, Dam Failure

Unique and Varied Risk – Infrastructure, Dam Failure	
Jurisdiction	Risk Characteristics
Clark County	Low risk with continued inspection and maintenance on dams within the planning area

Repetitive Loss Structure

Not applicable.

HAZUS® Models

Not applicable.

(D) Drought

Hazard Description

Drought originates from a deficiency of precipitation over an extended period, usually one or more seasons. Drought can result in a water shortage for some activity, group, or environmental sector. Drought is a complex natural hazard, which is reflected in the following four definitions commonly used to describe it:

- **Agricultural** – drought is defined principally in terms of naturally occurring soil moisture deficiencies relative to water demands of plant life, usually arid crops.
- **Hydrological** – drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
- **Meteorological** – drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- **Socioeconomic** – drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. It may also be called a water management drought.

Figure 37: Drought Conditions in Las Vegas



Photo Source: [Las Vegas Review-Journal](#)

Periods of drought can have a major impact and consequences on a region's environment, agriculture, health, and economy. Although the climate is a primary contributor to hydrological drought, other factors such as changes in land use (e.g., deforestation), land degradation, and dam construction all affect the basin's hydrological characteristics. Since hydrologic systems interconnect regions, the impact of meteorological drought may extend well beyond the borders of the precipitation-deficient area. The effects vary depending on vulnerability and regional characteristics. Changes in land use upstream may alter hydrologic characteristics such as infiltration and runoff rates, resulting in more variable streamflow and a higher incidence of hydrologic drought downstream. These incidences can reduce water quality through a decreased ability for natural rivers and streams to dilute pollutants and decrease contamination. The most common effects are diminished crop yields, increased erosion, dust storms, ecosystem damage, reduced ability to produce electricity that limits water flow through hydroelectric dams, the shortage of water for industrial production, and increased risk of wildfires.

Droughts are regularly monitored by multiple federal agencies using a number of different indices and classifications. Among them are the U.S. Drought Monitor, the Palmer Drought Index, and the Standardized Precipitation Index, as described next. The U.S. Drought Monitor summarizes drought conditions across the U.S. and Puerto Rico and is developed and maintained by the National Drought Mitigation Center (www.drought.unl.edu). Often described as a mix of science and art, the map is updated weekly by combining a variety of drought databases and indicators and local expert input into a single composite drought indicator.

The Palmer Drought Severity Index (PDSI) is the primary indicator of drought for the U.S. Drought Monitor. PDSI is a commonly used index that measures the severity of drought for agriculture and water resource management. In other words, It uses temperature and precipitation data to circulate water supply and demand, incorporates soil moisture, and is considered most effective for unirrigated cropland. It primarily reflects long-term drought and has been used extensively to initiate drought relief. However, the PDSI needs to be considered consistent enough to characterize the risk of drought nationwide (FEMA, 1997) and is not well suited to the dry, mountainous areas in the western U.S.

The Standard Participation Index (SPI) is also used by The National Drought Mitigation Center (NDMC) to identify emerging drought months sooner than the PDSI. It is computed on various time scales to monitor moisture supply conditions. The SPI is the number of standard deviations in the precipitation value that would deviate from the long-term mean.

The table below provides is the drought severity classification table by [The U.S. Drought Monitor](#). This table shows the ranges, like PDSI and SPI, for each indicator for each dryness level.

Figure 38: Drought Classification Chart

Drought Classification

Category	Description	Possible Impacts	Ranges				
			Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	<p>Going into drought:</p> <ul style="list-style-type: none"> short-term dryness slowing planting, growth of crops or pastures <p>Coming out of drought:</p> <ul style="list-style-type: none"> some lingering water deficits pastures or crops not fully recovered 	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	<ul style="list-style-type: none"> Some damage to crops, pastures Streams, reservoirs, or wells low, some water shortages developing or imminent Voluntary water-use restrictions requested 	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	<ul style="list-style-type: none"> Crop or pasture losses likely Water shortages common Water restrictions imposed 	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	<ul style="list-style-type: none"> Major crop/pasture losses Widespread water shortages or restrictions 	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	<ul style="list-style-type: none"> Exceptional and widespread crop/pasture losses Shortages of water in reservoirs, streams, and wells creating water emergencies 	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

Data Source: [Drought Monitor](#)

Drought is a persistent problem across the nation, as evidenced by its widespread presence in 2018. Early in the year (February 2018), the U.S. Drought Monitor reported that 38.4% of the continental U.S. was in drought. That was the highest percentage since the 40% recorded in May 2014. Additionally, consider there is technically no longer a “fire season” for the State of California, as it has become a tinderbox for drought-related wildfires year-round. Other states across the country are, unfortunately, following suit. The State of Nevada is no stranger to drought. As mentioned in the 2018 State of Nevada Enhanced Mitigation plan, drought has been a major cause of economic and environmental damage throughout the history of the State of Nevada.

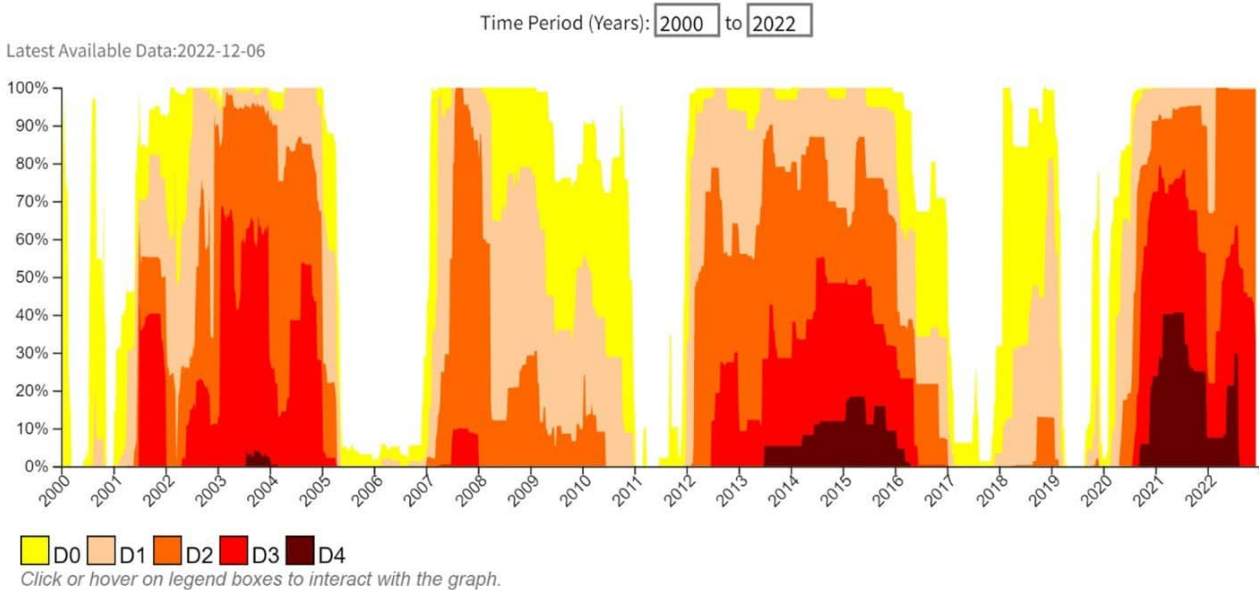
Location and Extent

Per the [U.S. Drought Monitor](#), since 2000, the most prolonged drought duration in the State of Nevada lasted 269 weeks beginning on December 27, 2011, and ending on February 14, 2017.

Figure 39: Drought in Nevada from 2000-2002

2000 - Present (Weekly)

The U.S. Drought Monitor (USDM) is a national map released every Thursday, showing parts of the U.S. that are in drought. The USDM relies on drought experts to synthesize the best available data and work with local observers to interpret the information. The USDM also incorporates ground truthing and information about how drought is affecting people, via a network of more than 450 observers across the country, including state climatologists, National Weather Service staff, Extension agents, and hydrologists. [Learn more.](#)



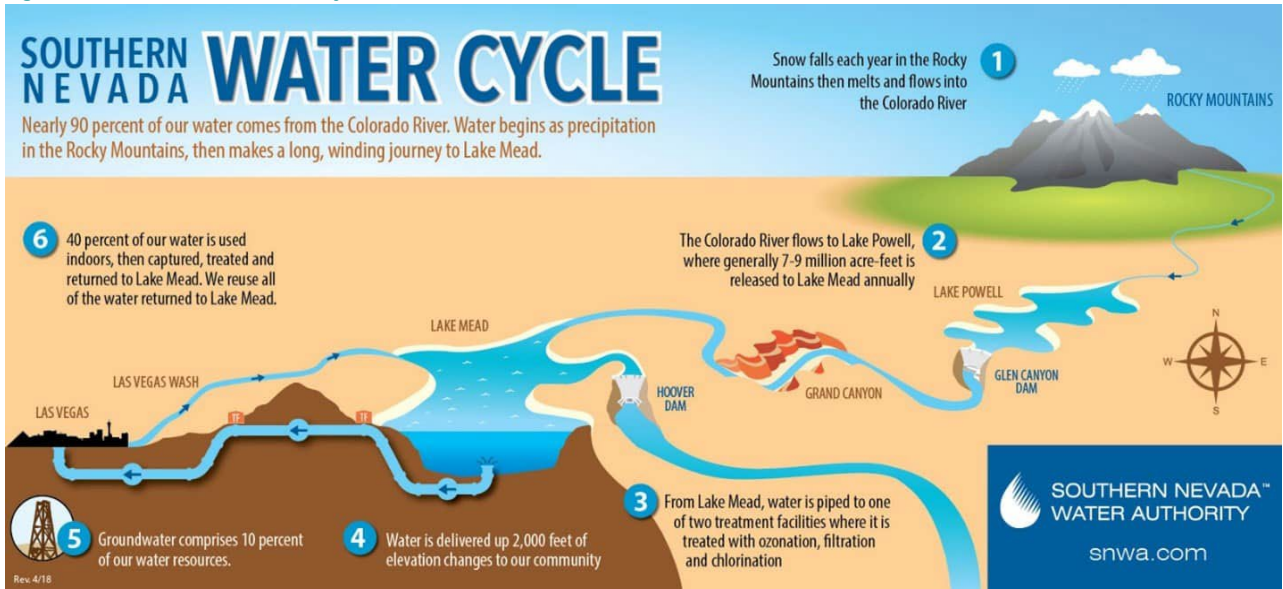
Data Source: [Drought.gov](#)

The most intense drought period occurred on July 7, 2021, which affected 40.63% of Nevada's land. In the year 2000, NOAA/NCEI recorded 0 events of drought for Clark County; however, the previous 2012 HMP states that from 2002 through the beginning of 2010, Nevada, and Clark County, were in a prolonged period of drought. Implications from this drought include an increased risk of wildfires and water shortages as reservoirs drop to their lowest recorded levels.

Drought typically does not have a direct impact on critical facilities and infrastructure. However, possible losses/impacts to critical facilities and infrastructure can include the loss of critical functions due to low water supply levels. Severe drought can negatively impact drinking water supplies. Should a public water system be affected, the losses could total into millions if water must be purchased and shipped from other locations. Severe drought could also pose a significant risk to public health if water sources become scarce or, worse, contaminated. This is especially true for those who get their water from private wells. Per the Centers for Disease Control and Prevention (CDC), viruses, such as E. coli and salmonella, as well as protozoa and bacteria, can pollute groundwater and surface water when rainfall decreases. Additionally, acute respiratory and gastrointestinal illnesses are more easily spread from person to person when a perceived or real lack of available water compromises hand washing.

As stated in the Clark County's previous MJHMP (2012), nearly 70 percent of Nevada's total water supply is derived from surface water, with 90 percent of water for the Las Vegas region coming from the Colorado River. However, Nevada only receives 1.8 percent of the water drawn from the river. The flows of the Colorado River are dependent on snowmelt and runoff in the Rocky Mountains of the Upper Colorado River Basin. The figure below illustrates the Water Cycle that occurs in Southern Nevada.

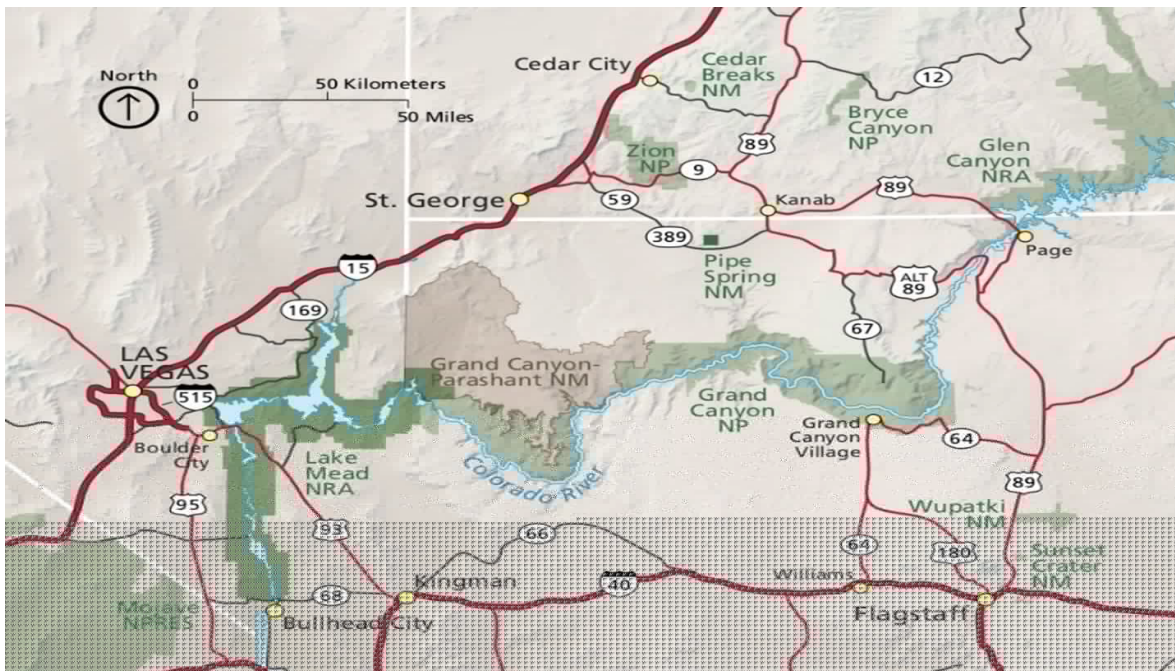
Figure 40: Southern Nevada Water Cycle



Data Source: [Southern Nevada Water Authority](https://www.snwa.com)

Below-average snowpack in the Colorado Rocky Mountains results in below-average runoff to the Colorado River. Lake Mead and Lake Powell are the two primary storage reservoirs in the Colorado River system. The Southern Nevada Water Authority indicates that the Colorado River pools behind the Hoover Dam to create Lake Mead. This lake is the source of 90% of Southern Nevada's water and is under constant scrutiny to ensure the quality of the water (<https://www.snwa.com/water-quality/watershed/lake-mead.html>). The previous Clark County HMP plan (2012) states that since 1999, the elevation of Lake Mead has declined by more than 75 feet or approximately three water years of allocation for the state of California. Lake Powell is also at historic low levels, with only 40 percent of its water storage available. The last decade saw drought conditions reduce Colorado River system inflows to 69 percent of average, and Lake Mead water storage has declined by more than 50 percent.

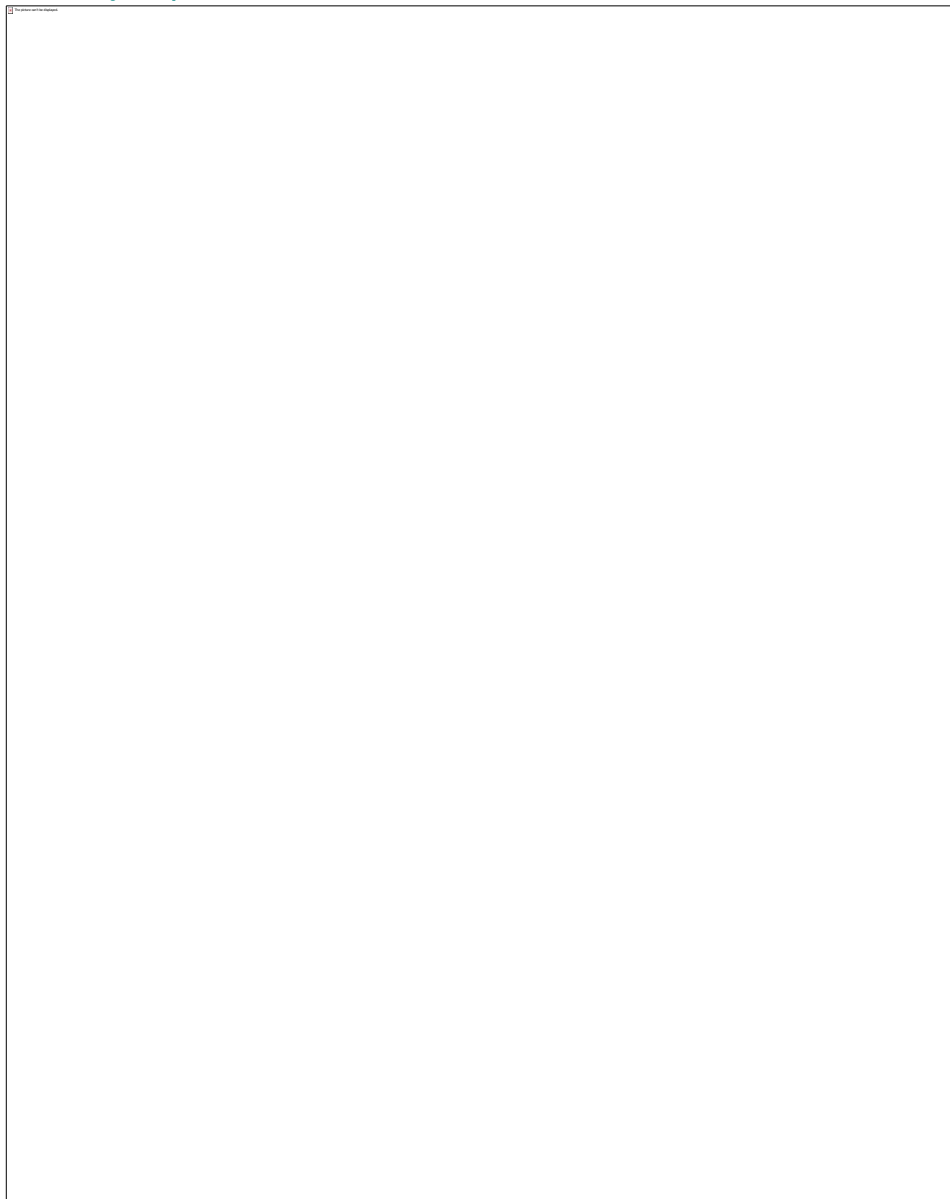
Figure 41: Lake Mead (NV) Regional Map



Data Source: [National Park Maps](https://www.nps.gov)

Also, groundwater provides the remainder of the water supply used in Nevada. In Las Vegas, groundwater pumping occurs primarily in the summer months as a supplement to meet peak water use demands. The [Las Vegas Groundwater Management program](#) indicates that about 10% of Southern Nevada's water supply comes from groundwater sources. For instance, most of the wells in the Las Vegas area draw water from the confined aquifer system, which is several hundred feet thick. Because this is the essential part of the aquifer system, it's sometimes called the "principal" aquifer. The member agencies of the SWNA supporting the waters issues in Clark County and its participating agencies are as follows: [Big Bend Water District \(Laughlin\)](#), [Boulder City](#), [Clark County Water Reclamation District, Henderson](#), Las Vegas, [Las Vegas Water Valley District](#) (Metropolitan Las Vegas and areas of unincorporated Clark County, the communities of Blue Diamond, Coyote Springs, Jean, Kyle Canyon, and Searchlight), [North Las Vegas](#). The following maps show the SNWA and how they support Clark County and their participating jurisdictions. The Southern Nevada Water Authority (SNWA) is the regional water purveyor for Clark County and its participating jurisdictions.

Figure 42: SWNA Purveyor Map



Data Source: [2023 Water Resource Plan](#), Southern Nevada Water Authority

Figure 43: Clark County Water Reclamation District Map



Data Source: [Clark County Water Reclamation District](#)

As stated previously, drought affects people and infrastructure and can exacerbate other climate hazards like drought within the planning area. Those areas that experience severe or extreme drought, can also increase an area's vulnerability to wildfire due to dry vegetation. Dry, hot, and windy weather combined with dry vegetation and a spark, whether through human intent, accident, or lightning, can trigger a blaze. The [Clark County Climate Vulnerability Assessment \(2022\)](#) indicates that Southern Nevadans are no strangers to drought, as it has increased in duration and intensity since the start of the 21st century.

In March 2022, Drought.gov (<https://www.drought.gov/drought-status-updates/california-nevada-drought-status-update-3-15-22>) indicated that after a soggy start, California and Nevada remain in a

drought as wet weather comes to a close. January and February 2022 were the driest for much of the California and Nevada region for those two months. The dry January and February decreased the odds of reaching normal water year precipitation and have led to the continuation of drought throughout the region. As of December 14, 2022, according to U.S Drought Monitor, 100% of the State of Nevada is abnormally dry, and 99.5% is in severe drought, including Clark County.

Figure 44: Drought Conditions for the State of Nevada and Clark County, NV, December 2022

Data Source: [U.S. Drought Monitor/Drought.gov](https://www.drought.gov)

Related to the Standardized Participation Index (SPI), a drought event occurs any time the SPI is continuously negative and reaches an intensity of -1.0 or less. The event ends when the SPI becomes positive. Each drought event, therefore, has a duration defined by its beginning and end and intensity for each month the event continues. The positive sum of the SPI for all the months within a drought event can be termed the drought's magnitude. As shown in the Figures below, the 24-month SPI through the end of November 2022 and the 30-day percent of normal precipitation maps show Clark County experiencing minimal precipitation and moderately dry.

Figure 45: 24-Month Standardized Precipitation Index, U.S. – December 2020-November 2022

Data Source: [NOAA/NCEI](#)

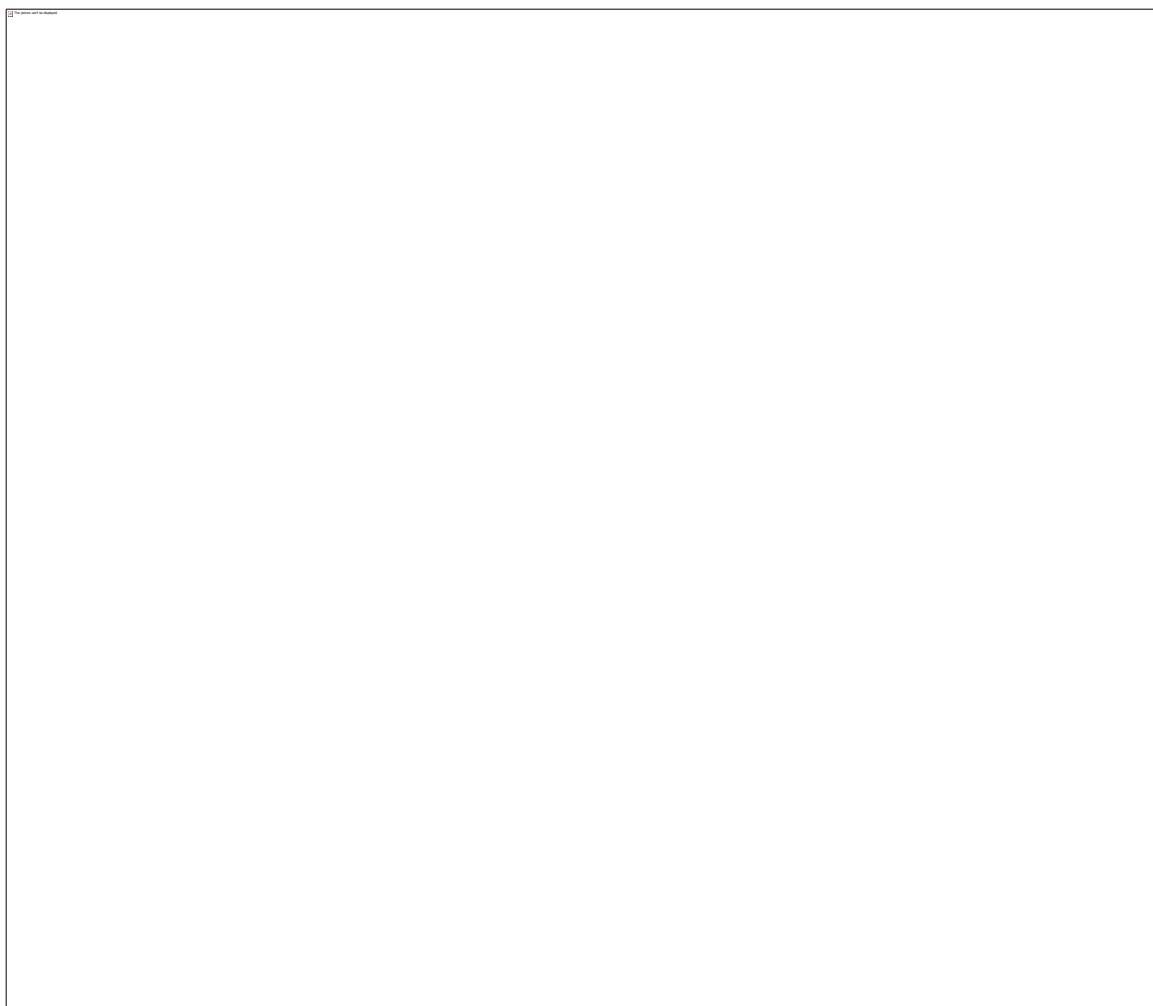
Figure 46: 30-day Percent of Normal Precipitation – Clark County, NV



Data Source: [Drought.gov](#)

As well, due to the nature of drought conditions, all participating jurisdictions within Clark County are expected to be impacted equally due to moderate to extreme drought conditions. An illustration of this impact can be seen in the following map of US Drought Outlook:

Figure 47: Drought Conditions for the State of Nevada and Clark County, NV, December 2022



Data Source: [U.S. Drought Monitor/Drought.gov](https://www.drought.gov)

Previous Occurrence

As previously mentioned, this plan update to the Clark County MJHMP (August 2018) covers a date range from January 1, 2018, to the present. At the time of this plan update, the Drought Monitor, Weeks in Drought report indicated that Clark County and its participating jurisdictions experienced D0-D2, severe drought conditions from 2017-2022 and “extreme drought conditions (D3-4) from 2021-2022 with the consecutive number of weeks in drought being 760 weeks.

Understanding the Data

The US Drought Monitor provides weekly updates on the status of Drought throughout the United States. Data can be pulled for a specific County only. City/Town/Tribal data is not able to be calculated. Typically, impacts from a Drought are across the entire County, not a particular jurisdiction. The data provides percentages to indicate how bad the Drought is for that locale. The table below provides the number of days in a Drought level. It’s important to note the impact may be a partial percentage or full. It is possible to be in more than one Drought level at the same time.

Year	DO	D1	D2	D3	D4	Total
2000	29	3	0	0	0	32
2001	20	0	0	0	0	20
2002	9	7	11	35	0	62
2003	0	0	44	45	5	94
2004	0	33	52	44	0	129
2005	52	1	0	0	0	53
2006	52	44	0	0	0	96
2007	9	43	51	38	0	141
2008	40	52	13	0	0	105
2009	47	20	3	0	0	70
2010	48	8	2	0	0	58
2011	30	0	0	0	0	30
2012	28	33	42	0	0	103
2013	39	52	52	0	0	143
2014	13	37	52	26	0	128
2015	52	52	52	42	0	198
2016	45	22	8	0	0	75
2017	19	4	0	0	0	23
2018	47	52	39	0	0	138
2019	27	23	9	2	0	61
2020	10	7	14	16	6	53
2021	0	1	19	22	50	92
2022	0	8	38	43	13	102
2023	25	15	28	10	0	78
Total Drought Events						2,084

Data Source: U.S Drought Monitor (<https://droughtmonitor.unl.edu/DmData/DataDownload/ComprehensiveStatistics.aspx>)

Probability of Future Events, Drought

Calculating future probability is one of many predictors of future occurrences. Based on the Calculated Priority Risk Index (CPRI) conducted for Clark County and its participating jurisdictions, there is a **high probability (rank score of 3.0-3.9)** of drought for the planning area. Please note that the CPRI Rating is a subjective measure based on the opinion of the Clark County MPSC members during the planning development portion of the MJHMP update. The following table provides CPRI Rating for Drought for Clark County and its participating jurisdictions.

Table 35: Clark County and Participating Jurisdiction – CPRI Rating for Drought

Clark County and Participating Jurisdiction CPRI Rating for Drought							
Hazard: Drought	Category and Weight				CPRI Score	Risk Level	
	Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%			
Index Rating (R) Weighted Score (WS)							
Clark County (including Incorporated and Unincorporated Areas)	R	4	3	1	4	3.25	H
	WS	1.8	0.9	0.15	0.4		
Boulder City	R	4	3	1	4	3.25	H
	WS	1.8	0.9	0.15	0.4		
Henderson	R	4	4	4	4	4.0	S
	WS	1.8	1.2	.6	.4		
Las Vegas	R	4	3	1	4	3.25	H
	WS	1.8	0.9	0.15	0.4		
Mesquite	R	4	3	1	4	3.25	H
	WS	1.8	0.9	0.15	0.4		
North Las Vegas	R	4	4	4	4	4	S
	WS	1.8	1.2	0.6	0.4		
Special District: Clark County Water Reclamation District	R	4	3	1	4	3.25	H
	WS	1.8	0.9	0.15	0.4		
Special District: Clark County School District	R	3	3	1	4	2.8	M
	WS	1.35	0.9	0.15	0.4		
Special District: Las Vegas Valley Water District/SWNA	R	4	4	1	4	3.55	H
	WS	1.8	1.20	0.15	0.4		
Tribal Nation: Las Vegas Valley Paiute	R	4	3	3	4	3.55	H
	WS	1.8	0.9	0.45	0.4		
Tribal Nation: Moapa Band of Paiutes	R	4	3	1	4	3.25	H
	WS	1.8	0.9	0.15	0.4		

Note: Though participating in the planning process, at the time of this update, the CPRI data for the City of Mesquite was not received. Therefore, the CPRI rating for the City of Mesquite is the same rating as Clark County due to the city being within the planning area.

Drought Quantitative Probability of Future Events

Clark County and its participating jurisdictions can expect a drought event with a 9060.8% probability per year, or 90.60 events per year, based upon Table 26: Probability Categories. This number was derived by dividing the number of recorded events by the year range used. Calculating future probability is not the only predictor of future occurrences, see table below. The qualitative chance of a drought for Clark County and its participating jurisdictions is considered **highly likely**.

Probability of Future Events, Drought, Clark County, NV	
Event Year	Event Count
2000	32
2001	20
2002	62
2003	94
2004	129
2005	53
2006	96
2007	141
2008	105
2009	70
2010	58
2011	30
2012	103
2013	143
2014	128
2015	198
2016	75
2017	23
2018	138
2019	61
2020	53
2021	92
2022	102
2023	78
Total Recorded Events =	2084
Total Years =	23
Yearly Probability =	9060.8%

Vulnerability and Impact

Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) experienced 760 weeks of consecutive drought in 2018-present; the range and magnitude were between "slightly dry" and "extremely dry," making it vulnerable to drought conditions now and in the future. Therefore, based on the Clark County Climate Vulnerability Assessment, drought could pose a risk to critical facilities and/or infrastructure in Clark County or its participating jurisdictions. However, no standardized methodology exists for estimating losses due to drought and drought does not generally have a direct impact on critical and non-critical facilities and building stock. A direct correlation to loss of human life due to drought is improbable for the County. The following information provides updated vulnerability and impact of drought for each jurisdiction in the planning area:

- **Boulder City:** The City of Boulder City's drought probability is based on the overall probability score of "highly likely" for Clark County. This is based on the drought data included in the Previous Occurrence and Probability of Future Events sections in this hazard profile as provided by the US Drought Monitor. The US Drought Monitor provides weekly updates on the status of droughts throughout the United States. Data can only be pulled for a specific County. City/Town/Tribal data cannot be individually calculated. Typically, impacts from a Drought are across the entire County, not a particular jurisdiction. The City of Boulder City resides in Clark County; therefore, this probability is based on County-wide data. In reference to population growth: "The City of Boulder City has experienced a 0.919% growth in population. With the recent growth, Boulder City now has many more residents since the last HMP update. At the same time, Boulder City is seeing an increased aging population with 29.0% of residents being above the age of 65. These groups are most at risk to the impacts of drought conditions. Related to the impacts of drought, Clark County, which includes the City of Boulder City, has experienced 760 consecutive weeks of drought. As mentioned above, the US Drought Monitor data only provided drought status, and not the impacts related to deaths and loss of property or crop damage. The previous Clark County MJHMP (2018) mentions drought vulnerability impacts, which include a water supply shortfall, often referred to as a water management drought, and an increase in wildfire risk in the County's wildland urban-interface areas. Drought conditions have impacted the City of Boulder City as a whole. The City currently has water conservation efforts in place that include water schedules and working with Southern Nevada Water Authority to ensure they stay within their water conversation goals. More information about these efforts can be found here: <https://www.bcnv.org/295/Water-Conservation-Watering-Schedule>.
- **Henderson:** The City of Henderson's drought probability is based on the overall probability score of "highly likely" for Clark County. This is based on the drought data included in the Previous Occurrence and Probability of Future Events sections in this hazard profile as provided by the US Drought Monitor. The US Drought Monitor provides weekly updates on the status of droughts throughout the United States. Data can only be pulled for a specific County. City/Town/Tribal data cannot be individually calculated. Typically, impacts from a Drought are across the entire County, not a particular jurisdiction. The City of Henderson resides in Clark County; therefore, this probability is based on County-wide data. In reference to population growth: "The City of Henderson has experienced a 23.23% growth in population. With the recent growth, Henderson now has many more residents since the last HMP update. At the same time, Henderson is seeing an increased aging population with 26.6% of residents being above the age of 65. These groups are most at risk to the impacts of drought conditions. Related to the impacts of drought, Clark County, which includes the City of Henderson, has experienced 760 consecutive weeks of drought. As mentioned above, the US Drought Monitor data only provided drought status, and not the impacts related to deaths and loss of property or crop damage. The previous Clark County MJHMP (2018) mentions drought vulnerability impacts, which include a water supply shortfall, often referred to as a water management drought, and an increase in

wildfire risk in the County's wildland urban-interface areas. Drought conditions have impacted the City of Henderson as a whole. As mentioned on the City's website, "Water Conservation is a priority of Henderson." The website indicated that drought and climate change have caused Lake Mead to drop, and the federal government has issued a tier two water shortage declaration, reducing the amount of water Southern Nevada is allowed to draw from the lake. The City is asking all residents to protect and extend the primary water supply, providing tips and tools for residents here: <https://www.cityofhenderson.com/government/departments/utility-services/water-conservation>.

- **Las Vegas:** The City of Las Vegas' drought probability is based on the overall probability score of "highly likely" for Clark County. This is based on the drought data included in the Previous Occurrence and Probability of Future Events sections in this hazard profile as provided by the US Drought Monitor. The US Drought Monitor provides weekly updates on the status of droughts throughout the United States. Data can only be pulled for a specific County. City/Town/Tribal data cannot be individually calculated. Typically, impacts from a Drought are across the entire County, not a particular jurisdiction. The City of Las Vegas resides in Clark County; therefore, this probability is based on County-wide data. In reference to population growth: "The City of Las Vegas has experienced a 9.96% growth in population. With the recent growth, Las Vegas now has many more residents since the last HMP update. At the same time, Las Vegas is seeing an increased aging population with 14.80% of residents being above the age of 65. These groups are most at risk to the impacts of drought conditions. Related to the impacts of drought, Clark County, which includes the City of Las Vegas, has experienced 760 consecutive weeks of drought. As mentioned above, the US Drought Monitor data only provided drought status, and not the impacts related to deaths and loss of property or crop damage. The previous Clark County MJHMP (2018) mentions drought vulnerability impacts, which include a water supply shortfall, often referred to as a water management drought, and an increase in wildfire risk in the County's wildland urban-interface areas. Drought conditions have impacted the City of Las Vegas as a whole.

The City of Las Vegas Government mentions that the City of Las Vegas plays a crucial role in the conservation and management of the water supply for its residents and businesses by supporting regional management efforts by the Southern Nevada Water Authority (SNWA), City policies and Drought Restrictions, and development standards. Since 2008, the City has reduced its water consumption from 1.47 billion gallons to 1.18 billion gallons in 2016. These savings were achieved through the replacement of more than forty acres of grass with synthetic turf at City sports fields and parks. City landscaping and facility xeriscaping utilize drought tolerant plants and public art. Over 75 million gallons of water per day have been recycled at the city's wastewater treatment plants and used at golf courses around the valley or returned to Lake Mead. In the community, water use has declined from approximately 350 gallons per person per day (GPCD) in 1990 to less than 220 GPCD today. Southern Nevada will soon surpass the region's 2035 goal to reduce consumption through conservation to 199 GPCD. Overall Colorado River water consumption has decreased by 40 billion gallons despite an increase of 500,000 residents over the last decade. The City of Las Vegas Sustainability Resource document mentions useful links and information for residents to help water conservation efforts.

- **Mesquite:** The City of Mesquite's drought probability is based on the overall probability score of "highly likely" for Clark County. This is based on the drought data included in the Previous Occurrence and Probability of Future Events sections in this hazard profile as provided by the US Drought Monitor. The US Drought Monitor provides weekly updates on the status of droughts throughout the United States. Data can only be pulled for a specific County. City/Town/Tribal data cannot be individually calculated. Typically, impacts from a Drought are across the entire County, not a particular jurisdiction. The City of Mesquite resides in Clark County; therefore, this probability is based on County-wide data. In reference to population growth, The City of Mesquites has experienced a 34% growth in population. With the recent growth, Mesquite now has many more residents since the

last HMP update. At the same time, Mesquite is seeing an increased aging population with 42.0% of residents being above the age of 65. These groups are most at risk to the impacts of drought conditions. Related to the impacts of drought, Clark County, which includes the City of Mesquite, has experienced 760 consecutive weeks of drought. As mentioned above, the US Drought Monitor data only provided drought status, and not the impacts related to deaths and loss of property or crop damage. The previous Clark County MJHMP (2018) mentions drought vulnerability impacts, which include a water supply shortfall, often referred to as a water management drought, and an increase in wildfire risk in the County's wildland urban-interface areas. Drought conditions have impacted the City of Mesquite as a whole. The City of Mesquite falls un the Virgin Valley Water District which has a water conservation plan that is enforced at all times whether under drought conditions or during years of sufficient precipitation. More information about Mesquites' water conservation efforts can be found here: <https://vwdnv.com/our-water/water-conservation/>.

- **North Las Vegas:** The City of North Las Vegas' drought probability is based on the overall probability score of "highly likely" for Clark County. This is based on the drought data included in the Previous Occurrence and Probability of Future Events sections in this hazard profile provided by the US Drought Monitor. The US Drought Monitor provides weekly updates on the status of droughts throughout the United States. Data can only be pulled for a specific County. City/Town/Tribal data cannot be individually calculated. Typically, impacts from a Drought are across the entire County, not a particular jurisdiction. The City of North Las Vegas resides in Clark County; therefore, this probability is based on County-wide data. In reference to population growth, the City of North Las Vegas has experienced a 21% growth in population. With the recent growth, North Las Vegas now has many more residents since the last HMP update. At the same time, Las Vegas is seeing an increased aging population with 10.9% of residents being above the age of 65. These groups are most at risk to the impacts of drought conditions. Related to the impacts of drought, Clark County, which includes the City of North Las Vegas, has experienced 760 consecutive weeks of drought. As mentioned above, the US Drought Monitor data only provides drought status, and not the impacts related to deaths and loss of property or crop damage. The previous Clark County MJHMP (2018) mentions drought vulnerability impacts, which include a water supply shortfall, often referred to as a water management drought, and an increase in wildfire risk in the County's wildland urban-interface areas. Drought conditions have impacted the City of North Las Vegas as a whole. North Las Vegas mentions that using water efficiently is a way of life and an important responsibility that each of us here in Southern Nevada share. The City of North Las Vegas is committed to managing water resources efficiently and ensuring a reliable water supply for future generations. For more information about the City of North Las Vegas water conservation efforts can be found here: <https://www.cityofnorthlasvegas.com/residents/water/water-conservation?locale=en>.

The impact of drought on water conservation efforts for each participating jurisdictions can be seen through their mitigation actions in the tables presented in [Section 5 - Mitigation Action/Prioritization in this plan](#). Each participating jurisdiction included water conservation as a project or actions to minimize the impacts of this hazard in their communities.

Vulnerability of Population

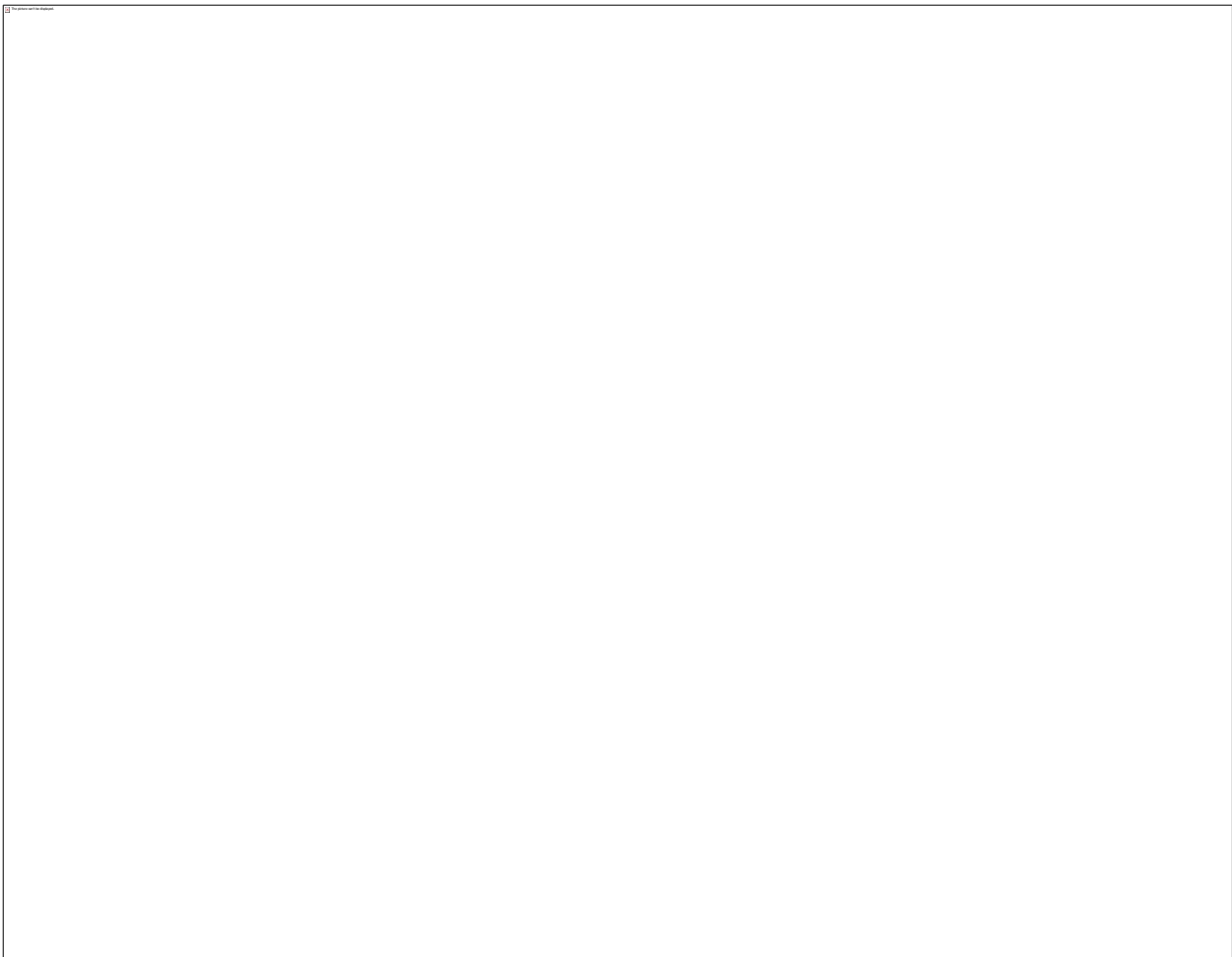
Drought itself poses no direct injury or death for Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation). However, a drought could pose a risk to the vulnerable populations within the planning area. The FEMA National Risk Index map provides data on social vulnerability and community resilience related to hazards. Both of these factors impact the vulnerability of a population for a hazard event like drought. FEMA National Risk Index defines [Social Vulnerability](#) as the susceptibility of social groups to the adverse impacts of natural hazards, including death, injury, loss, or disruption of livelihood. FEMA defines [Community Resilience](#) as the ability for a community to prepare for anticipated natural hazards, adapt to changing conditions, and

withstand and recover rapidly from disruption. The scoring of these FEMA National Risk Index categories are for all hazards, including drought are as follows:

- **Community Resilience:** the higher community resilience score results in a lower risk index score. The Community Resilience score for Clark County is 49.9, meaning communities within the County have a Very Low ability to prepare for anticipated natural hazards, adapt to conditions, and withstand and recover rapidly from disruptions compared to the rest of the U.S.
- **Social Vulnerability:** a higher social vulnerability score results in a higher Risk Index score. Social groups in Clark County, NV, have a Relatively High susceptibility to the adverse impacts of natural hazards compared to the rest of the U.S. The Social Vulnerability score for Clark County is 48.59

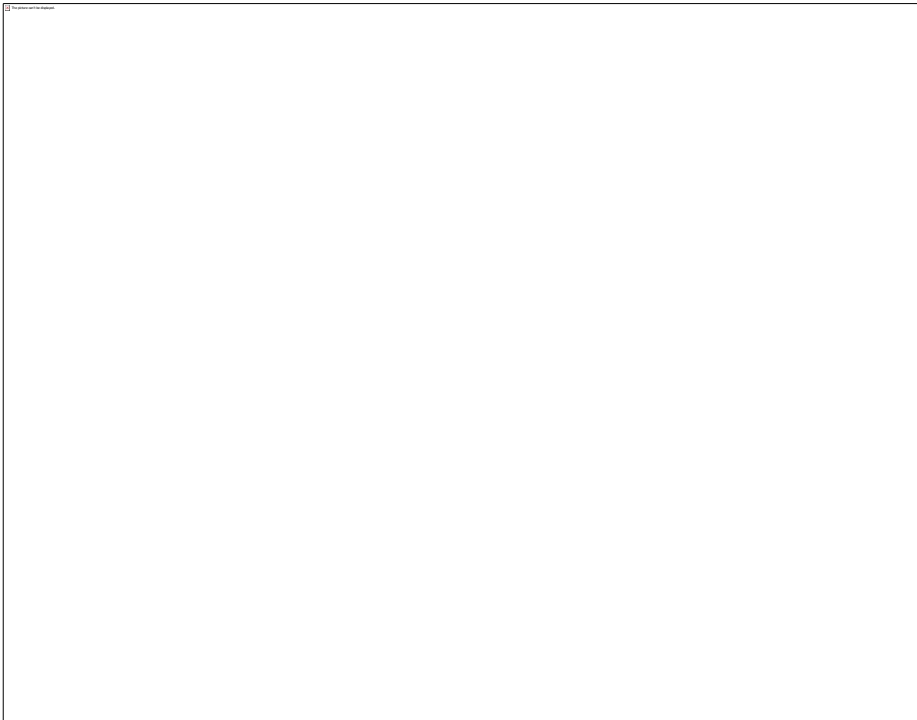
The following maps provide a snapshot of community resilience and social vulnerability scoring related to all hazards including drought for Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation).

Figure 48: FEMA National Risk Index Maps, Social Vulnerability - Clark County, NV



Data Source: [The FEMA National Risk Index](#)

Figure 49: FEMA National Risk Index Maps, Community Resilience Map – Clark County, NV



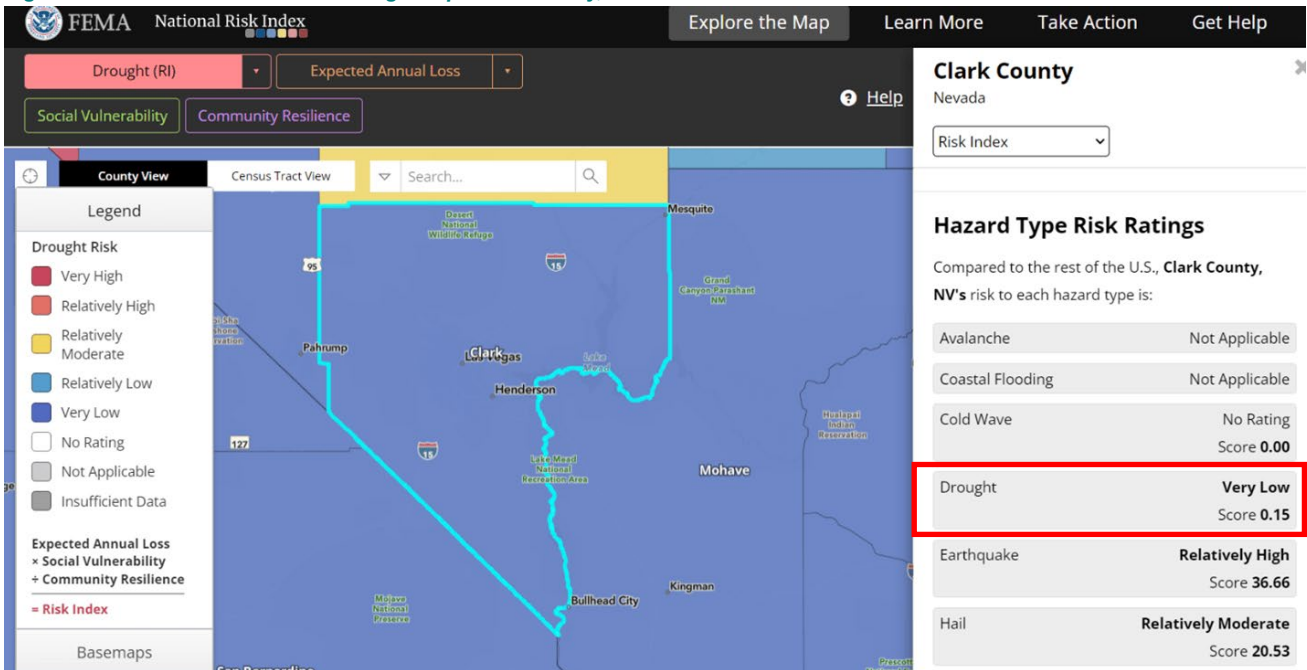
Data Source: [The FEMA National Risk Index](#)

Also, all residents of Clark County are at risk due to lack of water and the needs for water conservation during a drought event. The Clark County Climate Vulnerability Study mentions the following related to drought and housing populations within Clark County: Housing development, including much-needed affordable housing development, could be affected by demand-management strategies triggered by water shortages. Housing can also increase water usage, exacerbating drought exposure and impacts, though high-density housing tends to be more efficient. Additionally, options to significantly temper water usage can be challenging, especially housing in rural areas. The moderate-high sensitivity and low-moderate adaptive capacity of Clark County's housing system compounds the sensitivity of its residents, especially low- and fixed-income, unhoused, or rural residents.

Vulnerability of System

Drought can have a significant effect on a planning areas agriculture and tourism economies. The FEMA National Risk Index. All jurisdictions throughout Clark County are susceptible to drought effects, including water usage and damage to crops/vegetation. Drought, however, can significantly affect a jurisdiction's agriculture and tourism economies. Farmers will struggle to grow crops and feed livestock if the precipitation levels are below normal. The FEMA National Risk Index for Natural Hazards is an online mapping system that identifies communities most at risk to 18 natural hazards. Related to drought, In the National Risk Index, a Drought Risk Index score and rating represent a community's relative risk for Droughts compared to the rest of the United States. Clark County has a drought risk score of **0.15 (very low)** compared to the rest of the Country. The map below illustrates that score visually.

Figure 50: FEMA National Risk Index Drought Map – Clark County, NV



Data Source: [The FEMA National Risk Index](#)

Impact of Climate Change

Climate change is affecting drought conditions in the State of Nevada, including Clark County and its participating jurisdictions. Climate change is already profoundly impacting Nevada water resources, as evidenced by changes in snowpack, sea level, and river flows. These changes are expected to continue in the future, and more precipitation will likely fall as rain instead of snow. This potential change in weather patterns will add additional challenges for water supply reliability.

The snowpack from the Sierra and Rocky Mountains provides as much as a third of Nevada's water supply by accumulating snow during wet winters and releasing it slowly during the spring and summer when the need is the greatest. Warmer temperatures will cause snow to melt faster and earlier, making it more challenging to store and use. Because of this, the [Clark County Climate Vulnerability Assessment](#) indicates that the County is projected to experience more extreme long-term drought conditions like megadroughts (multi-decadal droughts 30-40 years long) will become more likely. All in all, the climate changes issues related to drought have significant implications for the current and future residents and visitors of Clark County.

Critical Facilities and Infrastructure

Drought has the potential to pose a risk to all critical facilities and infrastructure within Clark County and its participating jurisdictions. However, since Clark County and its participating jurisdictions have experienced 760 consecutive weeks of drought, so too have all facilities. Therefore, all facilities listed in [Appendix E Critical Facilities & Infrastructure](#) have been operationally and sustainability affected based on the fact that water is an essential need to keep facilities and infrastructure going like in healthcare or schools. The following critical facilities and infrastructure for each participating jurisdiction (Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas) are illustrated on Maps 23-24 within this MJHMP update.

A complete list of all county critical facilities and infrastructure can be found in [Appendix E – Critical Facilities & Infrastructure](#).

Land Use and Development

Two areas that affect Land Use and Development Trends concerning drought events are the impact of agriculture and water conservation. Droughts impact individuals (farm owners, tenants, and farm laborers), the agricultural industry, other agriculture related sectors, and other industries such as tourism and recreation. There is increased danger of forest and wildland fires. Loss of forests and trees increases erosion, causing serious damage to aquatic life, irrigation, and power development by heavy silting of streams, reservoirs, and rivers.

Combinations of low precipitation and unusually high temperatures could occur over several consecutive years. Intensified by such conditions, extreme wildland fires could break out throughout the County, increasing the need for water. Surrounding communities, also in drought conditions, could increase their demand for water supplies relied upon by the planning partnership, causing social and political conflicts. If such conditions persisted for several years, the economy of the County could experience declines, especially in water-intensive industries such as agriculture. Instead, drought vulnerability is primarily measured by its potential impact to certain sectors of the County economy and natural resources to include:

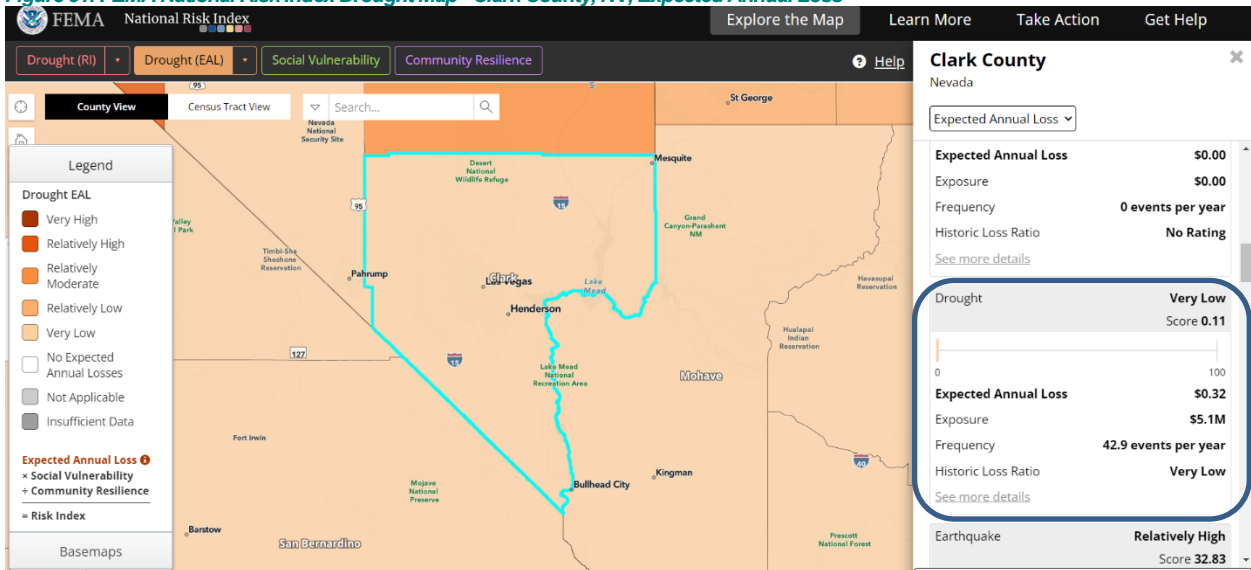
- Crop and livestock agriculture
- Municipal and industrial water supply
- Recreation/tourism
- Wildlife and wildlife habitat

The Drought Risk Index score on the FEMA National Risk Index website states the [drought expected annual loss score](#) (represents the average economic loss in dollars resulting from natural hazards each year). The rating also represents a community's relative level of expected agriculture loss each year due to droughts compared to the rest of the United States. For Clark County and its participating jurisdictions the expected loss of data related to drought is as follows:

- Expected Annual Loss Score: 0.11 – Very Low
- Expected Annual Loss: \$0.32
- Exposure: \$5.1 M
- Frequency: 42.9 events per year
- Historic Loss Ratio: Very Low

The following map illustrates the expected annual loss for drought in the planning area:

Figure 51: FEMA National Risk Index Drought Map - Clark County, NV, Expected Annual Loss



The previous Clark County MJHMP (2018) mentions drought vulnerability impacts include a shortfall of water supply, often referred to as a water management drought, and an increase in wildfire risk in the County's wildland urban-interface areas. Also, sustained drought conditions will also have secondary impacts to other hazards such as fissures, flooding, subsidence and wildland fire. Since the last plan update, water conservation due to drought conditions has been a significant trend for Clark County and its participating jurisdictions'. Extended drought may weaken and dry the grasses, shrubs, and trees of wildland fire areas, making them more susceptible to ignition. Drought also tends to reduce the vegetative cover in watersheds, and hence decrease the interception of rainfall and increase the flooding hazard. Subsidence and fissure conditions are aggravated when lean surface water supplies force the pumping of more groundwater to supply the demand without the benefit of recharge from normal rainfall. Since the last plan update (2018), representatives within the County have worked towards ensuring water conservation efforts in the planning area to stretch the available water supply within the community. In 2019, the [Upper Basin and Lower Basin Drought Contingency Plans](#) were signed to address the ongoing historic drought in the Colorado River Basin in which the County lies. The plans were designed to reduce for ongoing drought and the impact of declining water levels in Lake Mead and Lake Powell. More information about the Drought Contingency Plans can be found here (<https://www.usbr.gov/dcp/>).

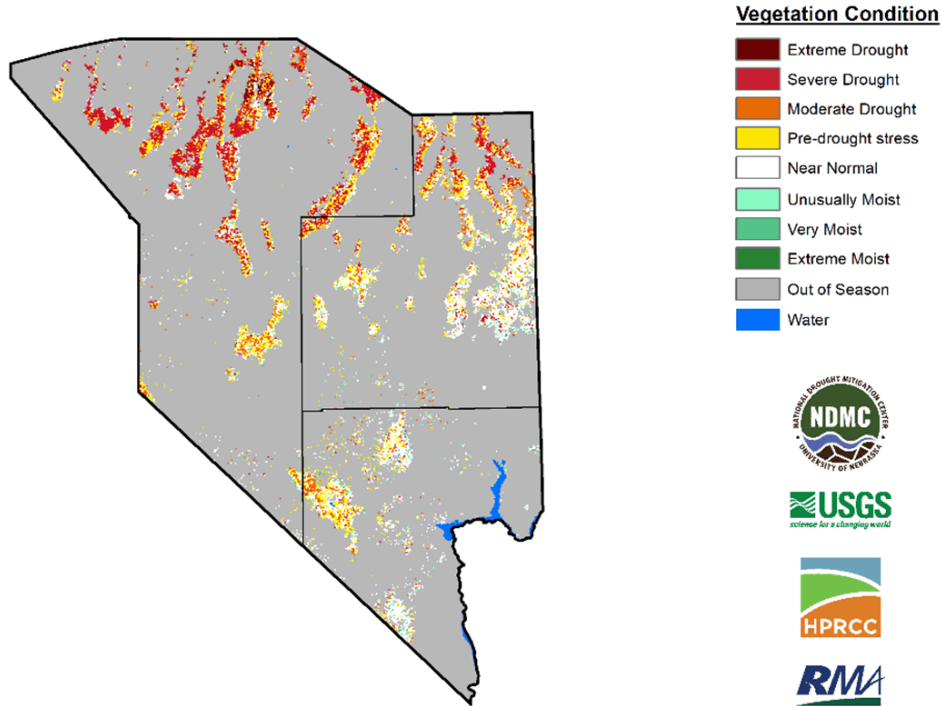
Unique and Varied Risk

Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) have significant agricultural vegetation areas at risk to drought. The Vegetation Drought Response Index, or VegDRI, is a bi-weekly depiction of vegetation stress across the contiguous United States. VegDRI is a fine resolution (1-km²) index based on remote sensing data and incorporates climate and biophysical data to determine the cause of vegetation stress. Development of the VegDRI map and associated products is a joint effort by the National Drought Mitigation Center (NDMC), the U.S. Geological Survey's (USGS) National Center for Earth Resources Observation and Science (EROS), and the High Plains Regional Climate Center (HPRCC). Figure 48 illustrates the VegDRI results for Clark County and its participating jurisdictions for December 18, 2022.

Figure 52: Vegetation Drought Response Index Map, Region 3 Nevada

Vegetation Drought Response Index Complete: Nevada, Region 3

December 18, 2022



Data Source: [Vegetation Drought Response Index - VegDRI](#)

To show the unique and varied risk to drought in the planning area, the [2012 Census of Agriculture](#) indicates that Clark County contained 252 farms, covering 15,620 acres of land. Crop sales accounted for \$3,291,000 and livestock sales accounted for \$3,535,000 in 2012. As of the [2017 Census of Agriculture](#), Clark County contains 179 farms. This version of the Census of Agriculture did not include data for total acres data was withheld. The footnote indicated that this information was not included to avoid disclosing data for individual operations. Crop sales for the County accounted for \$11,416,000 in 2017. If a severe drought affects Clark County and its participating jurisdictions in the future, the losses could be as much as \$12,651,000. This number represents the total market value of agriculture products sold (crops and livestock) from the [2017 Census of Agriculture for Clark County](#).

Note: The above noted information was obtained by accessing the most available data/datasets. This information represents all the events and extent of the Drought hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. The information provided for Clark County also applies to the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas; Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes; and Special Districts representing Clark County School District, Clark County Water Reclamation District, Las Vegas Water District, and Southern Nevada Health District.

Repetitive Loss Structure

Not applicable.

HAZUS® Models

Not applicable.

(GE) Geohazards, Earthquake, and Seismic Hazards

Hazard Description

An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. For hundreds of millions of years, the forces of plate tectonics have shaped the earth as the huge plates that form the earth's surface move slowly over, under, and past each other. Sometimes the movement is gradual. At other times, the plates are locked together, unable to release the accumulating energy. Earthquakes can strike suddenly, without warning. Earthquakes can occur at any time of the year and at any time of the day or night. On a yearly basis, 70 to 75 damaging earthquakes occur throughout the world earthquakes occur in the middle of plates. Ground shaking from earthquakes can collapse buildings and bridges; disrupt gas, electric, and phone service; and sometimes trigger landslides, avalanches, flash floods, fires, and huge, destructive ocean waves (tsunamis). Buildings with foundations resting on unconsolidated landfill and other unstable soil, and trailers and homes not tied to their foundations are at risk because they can be shaken off their mountings during an earthquake. When an earthquake occurs in a populated area, it may cause deaths and injuries and extensive property damage.



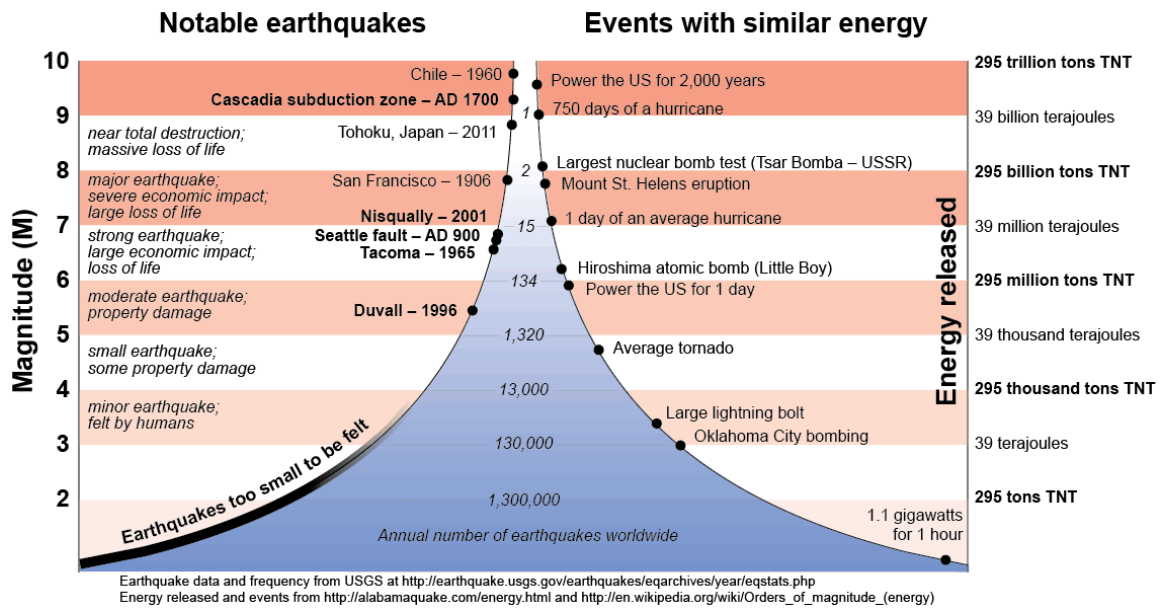
Earthquake in NV Photo Source: [The Nevada Independent](#)

There are numerous characteristics measured when observing earthquake activity; however, four of them—force, depth, peak ground acceleration and the distance to the epicenter—are most influential in determining damage. Two scales are used when referring to earthquake activity: the Richter Scale, which estimates the total force of the earthquake; and the Modified Mercalli Intensity Scale, which categorizes the observed damage from the earthquake.

The Richter scale is often used to rate the strength of an earthquake and is an indirect measure of seismic energy released. The previous Clark County HMP update (2012) mentions that the scale is logarithmic, with each one-point increase corresponding to a ten-fold increase in the amplitude of the seismic shock waves generated by the earthquake. However, in actual energy released, each one-point increase on the Richter scale corresponds to about a 32-fold increase in energy released. Therefore, a magnitude (M) 7.0 earthquake is 100 times (10×10) more powerful than an M5 earthquake and releases 1,024 times (32×32) the energy. The measurements of the Richter Scale using the following USGS illustration of earthquake energy and frequency illustration:

Figure 53: Earthquake Frequency and Energy from USGS

Earthquake energy and frequency



Data Source: [Washington State Department of Natural Resources](#)

The Modified Mercalli Intensity (MMI) scale, as shown in Table 36 quantifies the intensity of ground shaking. Intensity in this scale is a function of distance from the epicenter (the closer a site is to the epicenter, the greater the intensity at that site), ground acceleration, duration of ground shaking, and degree of structural damage. The MMI rates earthquake severity by the amount of damage and perceived shaking.

Table 36: Modified Mercalli Intensity Scale

MMI Value Shaking Severity		Summary Damage	Description
I	Micro	Little to none	Not felt except by few under especially favorable conditions.
II	Minor	Little to none	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III	Minor	Hanging objects move	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration similar to the passing of a truck. Duration estimated.
IV	Light	Hanging objects move	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed. Walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Light	Pictures move	Felt by nearly everyone. Many awakened. Some dishes and windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Moderate	Objects fall	Felt by all, many frightened. Some heavy furniture moved. Few instances of fallen plaster. Damage slight.
VII	Strong	Nonstructural damage	Damage negligible in buildings of good design and construction, slight to moderate in well-built ordinary structures. Considerable damage in poorly built or badly designed structures. Some chimneys broken.
VIII	Very strong	Moderate damage	Damage is slight in specially designed structures. Considerable damage in ordinary buildings with partial collapse. Damage is great in poorly built structures. Fall of chimneys, walls, factory stacks, columns, monuments. Heavy furniture overturned.
X	Very violent	Extreme damage	Damage is considerable in specially designed structures. Well-designed frame structures thrown out of plumb. Damage is great in substantial buildings, with partial collapse. Buildings shifted off foundations.
XI	Very violent	Extreme damage	Some well-built wooden structures destroyed. Most masonry and frame structures destroyed with foundations. Rails bent.
XII	Very violent	Total damage	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.

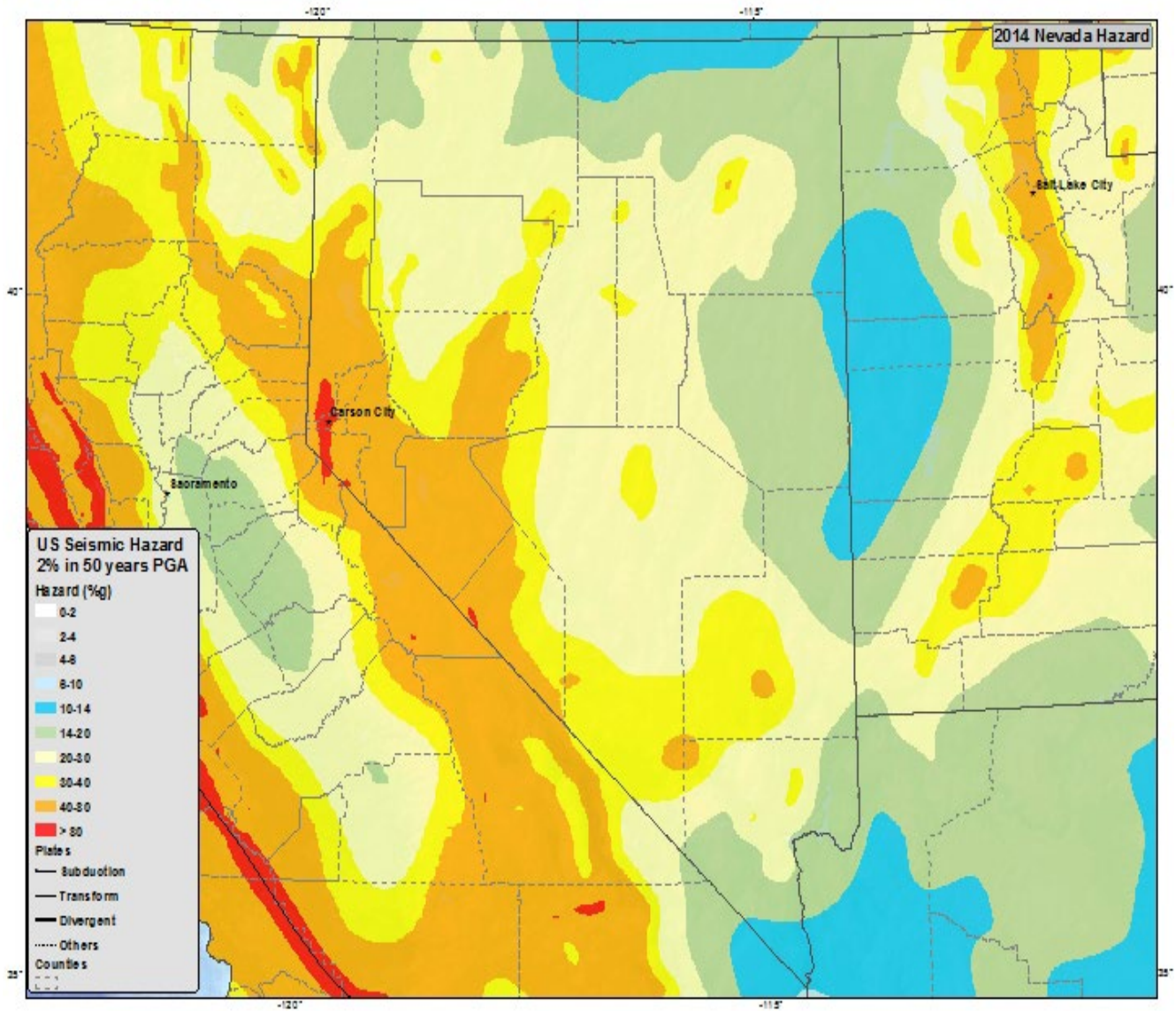
Data Source: United States Geological Survey, 2016

Earthquakes can last from a few seconds to over five minutes; they may also occur as a series of tremors over several days. The actual movement of the ground in an earthquake is seldom the direct cause of injury or death. Casualties generally result from falling objects and debris, because the shocks shake, damage or demolish buildings and other structures. Disruption of communications, electrical power supplies and gas, sewer and water lines should be expected. In addition, ground shaking, landslides, liquefaction, and amplification are the specific hazards associated with earthquakes. The severity of these hazards depends on several factors, including soil and slope conditions, proximity to the fault, earthquake magnitude and depth, and the type of earthquake:

- **Ground Shaking** – Ground shaking is the motion felt on the earth's surface caused by seismic waves from an earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter. Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.
- **Amplification** – Soils and soft sedimentary rocks near the earth's surface can modify ground shaking caused by earthquakes. One of these modifications is amplification. Amplification increases the magnitude of the seismic waves generated by the earthquake. The amount of amplification is influenced by the thickness of geologic materials and their physical properties. Buildings and other structures built on soft and unconsolidated soils can face greater risk. Amplification can also occur in areas with deep sediment-filled basins and ridge tops.
- **Earthquake-Induced Landslides** – Earthquake-induced landslides are secondary earthquake hazards that occur from ground shaking. They can destroy the roads, buildings, utilities, and other critical facilities necessary to respond and recover from an earthquake and are common in areas with steep slopes.
- **Liquefaction** – Liquefaction, a secondary earthquake hazard, occurs when ground shaking causes wet granular soils to change from solid to liquid. This results in the loss of soil strength and ability to support the weight. Buildings and their occupants are at risk when the ground can no longer support these buildings and structures. In some cases, this ground may be subject to liquefaction, depending on the depth of the water table. Liquefaction occurs primarily in saturated and loose, fine- to medium-grained soils in areas where the groundwater table lies within 50 feet of the ground surface. The previous Clark County MJHMP update (2012) mentions that liquefaction was a new secondary earthquake hazard for Las Vegas Valley at the time of that plan update.

According to the [U.S. Geological Survey \(USGS\)](#), it is estimated that there are 500,000 detectable earthquakes in the world each year; 100,000 of those can be felt, and 100 of them cause damage. The [2018 State of Nevada Enhanced Mitigation Plan](#) states the State of Nevada is one of the most seismically active states in the Union. It ranks in the top three states subject to the largest earthquakes over the last 150 years, with only Alaska and California having experienced more events. Figures 49-50 shows the locations of magnitude ≥ 4 earthquakes in Nevada and adjacent parts of California from the 1840's to 2015. The following map shows the history of earthquakes in Nevada greater than magnitude ≥ 4 :

Figure 54: 2014 Seismic Hazard Map - Nevada



Data Source: [USGS](https://www.usgs.gov)

Figure 55: Earthquakes in Nevada ≥4

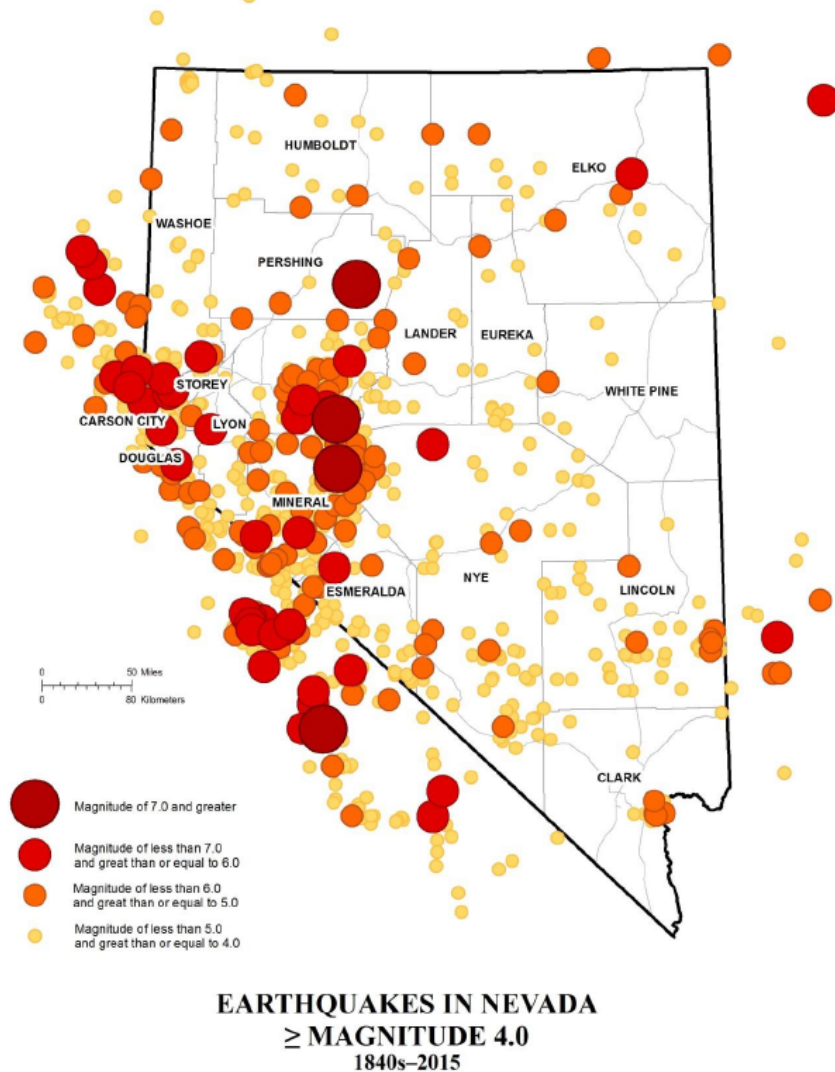


Figure 3-13. Earthquakes of magnitude ≥4 in Nevada and Adjacent States, 1840s-2015.

Data Source: [The 2018 State of Nevada Enhanced Hazard Mitigation Plan](#)

Earthquakes are much less common in the eastern United States than in California, with most events imperceptible by the public. This leads to a dangerous complacency that may be unwarranted.

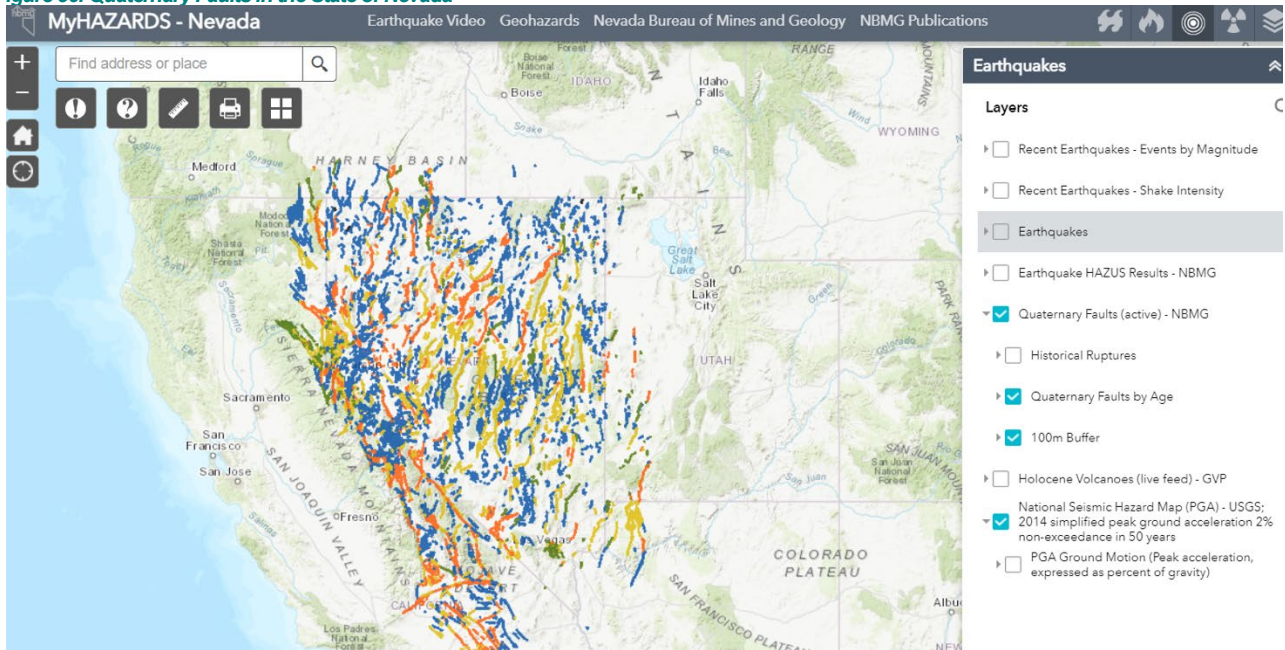
Location and Extent

According to the [Great Nevada Shake Out](#), the State of Nevada is in “earthquake country”. It lies within the Basin and Range Province, one of the most seismically active regions in the United States. Nevada, along with California and Alaska are the top three states that are subject to the largest earthquakes over the last 150 years. As mentioned in the State of Nevada Enhanced Hazard Mitigation Plan (2018) the Nevada Seismological Laboratory (Seismo Lab) records between 8,000 and 17,000 background earthquakes each year in Nevada. The largest earthquakes were over magnitude 7 and shook the entire state. More than 25 Nevada communities have experienced damage from earthquakes during this same period, at least eight of these communities experienced repetitive earthquake damage, and every community has felt significant shaking.

Based on seismicity, the State of Nevada experiences two natural earth forces that cause stress,

which creates earthquakes: extension and force. The State of Nevada Enhanced Hazard Mitigation Plan (2018) mentions that extension occurs throughout Nevada and force occurs from the boundary between the Pacific Plate and the North American plate. The North American Plate is located primarily along the coast of California (where there is also an earthquake hazard). This boundary displays lateral motion and creates strike-slip faults. About a fifth of this plate boundary motion is accommodated in western Nevada in a region known as the Walker Lane belt. This region has experienced large strike-slip and normal dip-slip earthquakes. The following map illustrates the USGS's current active fault within the State of Nevada.

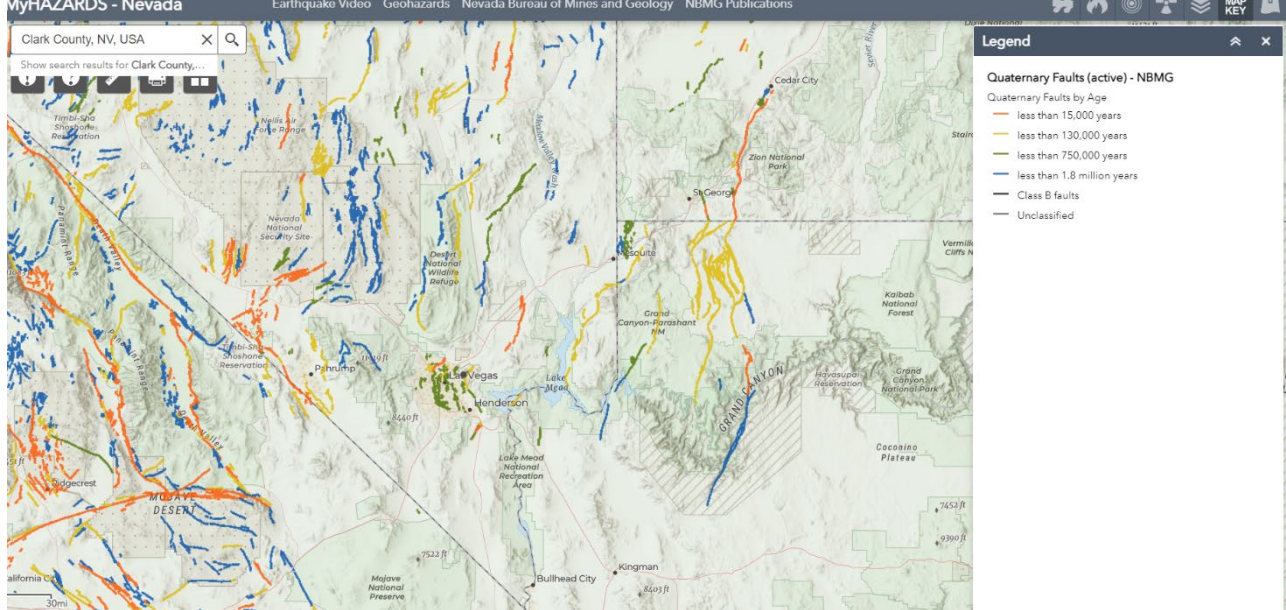
Figure 56: Quaternary Faults in the State of Nevada



Data Source: [My Hazards Nevada - Nevada Bureau of Mines and Geology](#)

Clark County lies in the Las Vegas basin. This area also experiences shaking due to distant earthquakes in western and northern Nevada, southern California, and western Utah. Earthquakes in western and northern Nevada and western Utah ranging from M5.0 to 6.0 were widely felt throughout the basin in 1902, 1916, and 1966. The [Great Nevada Shake Out](#) mentions that earthquakes in Clark County are created by tectonic extension, that is pulling the land apart and forms normal faults, and lateral motion from the Pacific-North American plate-boundary, that forms strike-slip faults. When an earthquake occurs on a normal fault, the ground is offset vertically, with one side dropping down and the other side going up. An example of a normal fault would be the fault that bounds the western side of Frenchman Mountain, just east of Las Vegas. Earthquakes along strike-slip faults, such as the Stateline fault in Pahrump Valley, have horizontal movement. The following map shows the current fault maps for Clark County and its participating jurisdictions.

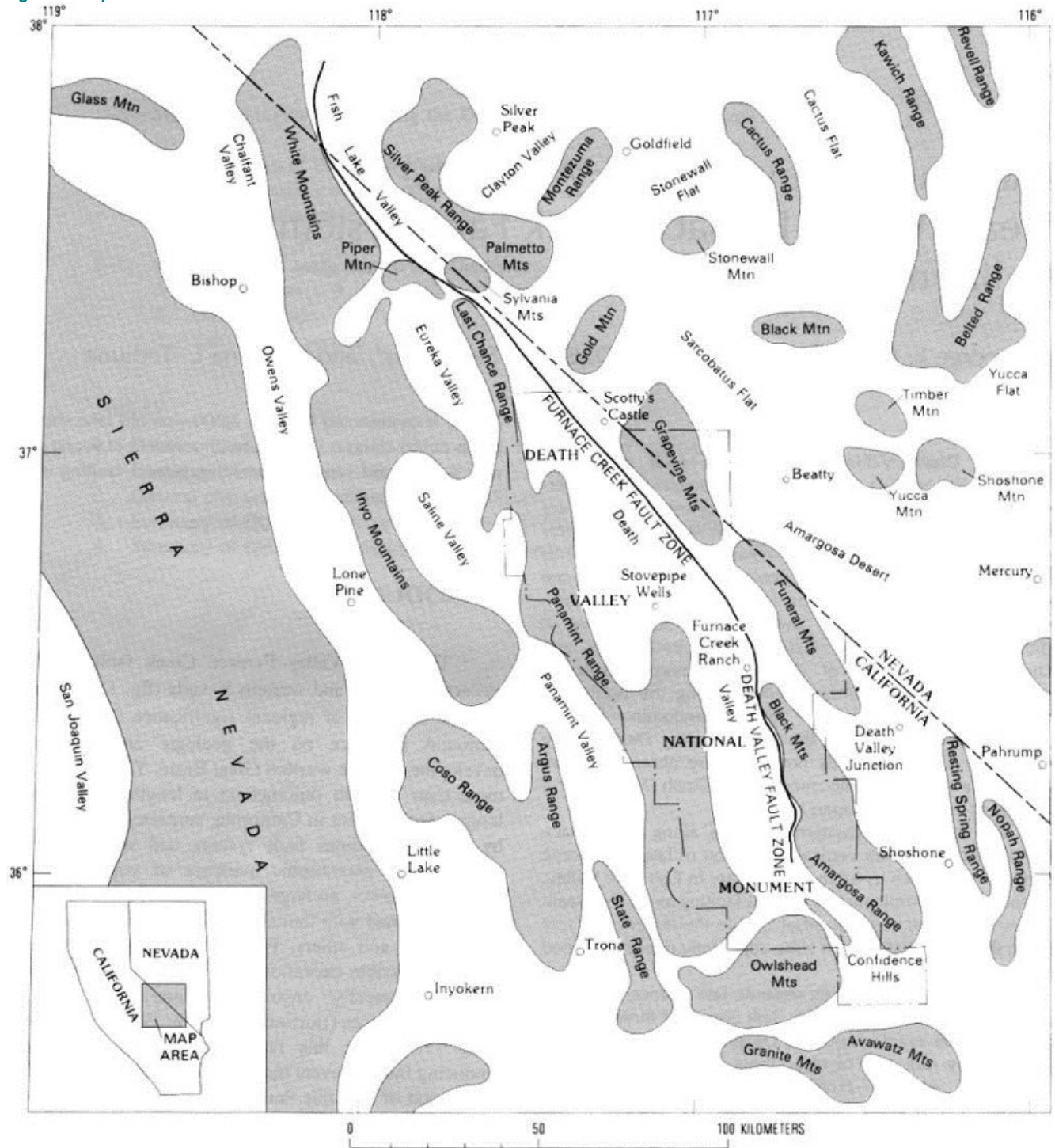
Figure 57: Quaternary Faults in Clark County, NV



Data Source: [My Hazards Nevada - Nevada Bureau of Mines and Geology](#)

The magnitude of any earthquake is directly related to the length of the rupture of the earthquake producing fault. Length of the fault does not predict the measure of ground movement. Ground movement and resulting shaking is determined by the depth of the earthquake hypocenter, directionality of the rupture propagation and amplifying or dampening effects of the geomorphology of soils of the affected region. The relatively small M6.3 earthquake that struck Christchurch, New Zealand in 2011 resulted in severe damage and loss of life due to its very shallow hypocenter. Distance from the fault lessens potential ground shaking subject to the factors previously cited. The previous HMP plan update (2018), states despite the large amount of seismic activity within Nevada, experts continue to identify Furnace Creek Fault in Death Valley California as the highest most likely seismic threat to Clark County. The illustration below is a map from the [1991 Geological Survey Bulletin](#) about the location of the Furnace Creek Fault within California and Nevada:

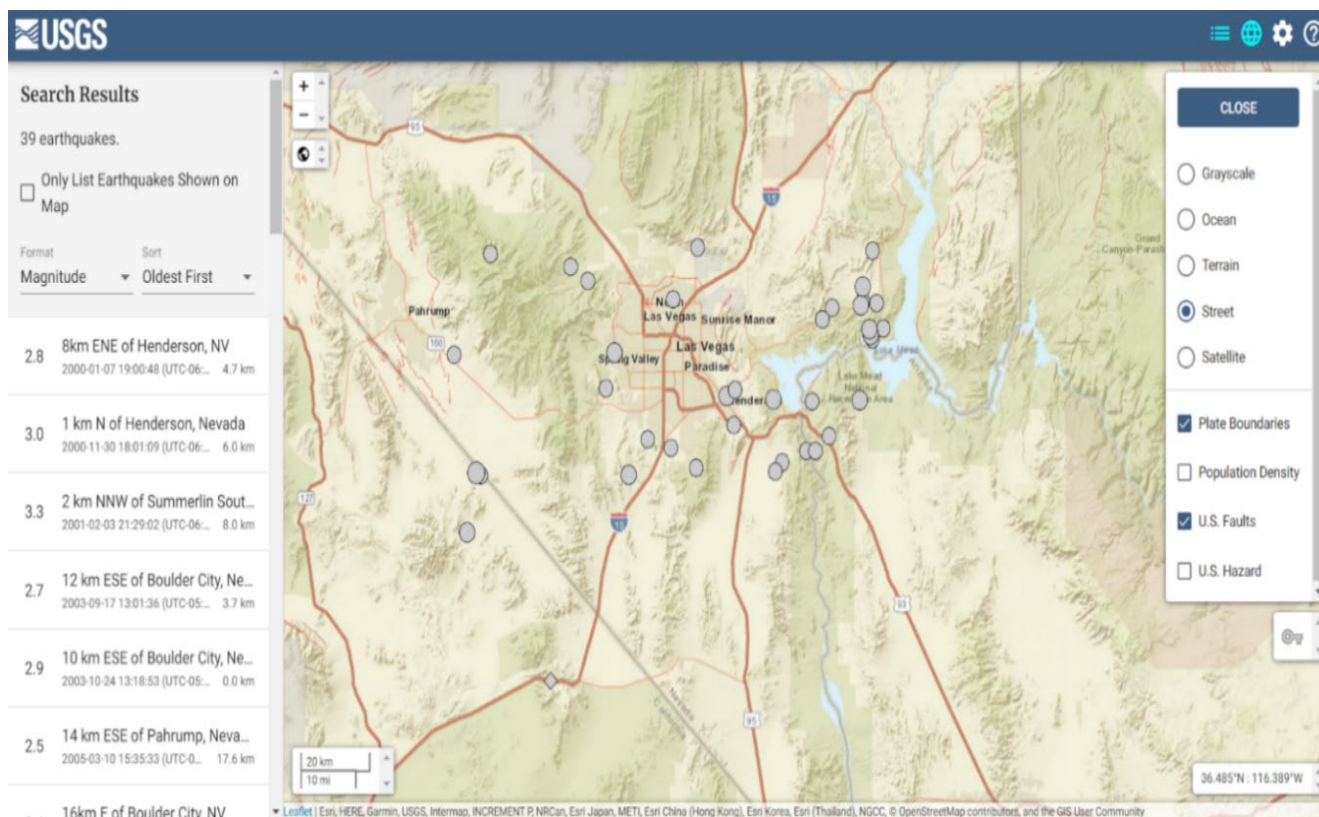
Figure 58: Map of the Furnace Creek Fault - 1991



Data Source: [USGS Geological Survey Bulletin](#)

Earthquakes large enough to cause damage can be felt in most, if not all, of Nevada's counties. An online query of the [USGS database](#) for 39 earthquakes greater than 2.5 in intensity from 2000-2022 within the planning areas revealed the greatest activity around the greater Las Vegas-Henderson metropolitan area. There were 39 earthquake events in the planning area from January 1, 2000 - December 22, 2022. The following maps provides an illustration of that activity:

Figure 59: Clark County, NV, Earthquake >2.5 Intensity, January 1, 2000 – December 2022



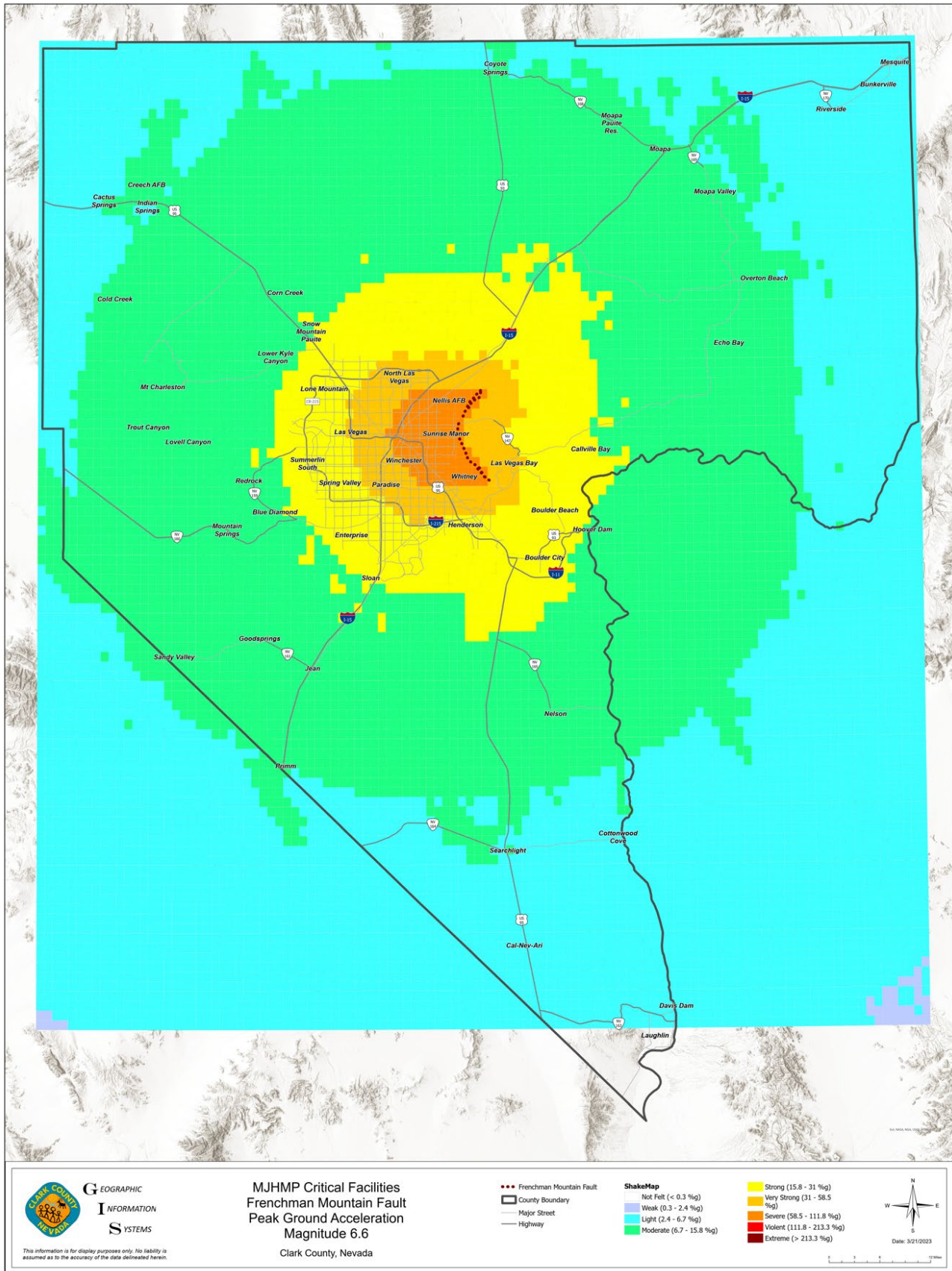
Data Source: [USGS](#)

The analysis completed by CONSTANT Associates provides an assessment of the severity a Magnitude 6.6 Earthquake over the Frenchman Mountain Fault within the planning area.

Figure 60: Clark County, Earthquake: Spectral Accelerations at 0.3s Period

Data Source: CONSTANT Associates and Clark County GIS Department

Figure 61: Clark County, Earthquake: Peak Ground Acceleration Map



Data Source: CONSTANT Associates and Clark County GIS Department

Figure 62: Clark County, Earthquake: Peak Ground Velocity Map

Data Source: CONSTANT Associates and Clark County GIS Department

Previous Occurrence

The previous Clark County HMP (2018) indicates The Las Vegas basin also experiences shaking due to distant earthquakes in western and northern Nevada, southern California, or western Utah. Earthquakes in western and northern Nevada and western Utah ranging from M5.0 to 6.0 were widely felt throughout the basin in 1902, 1916, and 1966. More recently, the 1992 Landers earthquake (M7.3) and the 1999 Hector mine earthquake (M7.1), which occurred more than 100 miles away, were felt strongly throughout the valley. As mentioned above, since the plan update (January 1, 2018 – December 23, 2022), the United States Geological Survey (USGS) reports there have been thirty-nine (39) earthquakes in or around the planning area.

In order to gain a better understanding of previous occurrences, and accurately calculate quantitative future probability, the following information was taken into consideration. From January 1, 1950, to August 31, 2023, the USGS reported over 400 earthquake events in the planning area. **Note: When pulling the data, the number of events in the query were for the dates of 2014-2023.**

Clark County

The following information was obtained by accessing the USGS Latest Earthquake Events Database <https://earthquake.usgs.gov/earthquakes/map/?extent=12.29707,-144.22852&extent=57.65716,-45.79102>. This information represents all the events and extent of the earthquake hazard experienced by Clark County, including the unincorporated portion of the County as well as jurisdictions and tribal lands located within, and is the only source of data accessible.

USGS Earthquake Previous Occurrence Data – Clark County, NV including the Unincorporated areas						
Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2014-11-06T23:21:09.410Z	38 km ENE of Indian Springs, Nevada	earthquake				
2014-11-06T23:21:39.242Z	33 km NNW of Indian Springs, Nevada	earthquake				
2014-11-07T00:34:04.488Z	13 km SW of Moapa Valley, Nevada	earthquake				
2014-11-07T00:38:15.107Z	55 km NNW of Indian Springs, Nevada	earthquake				
2014-11-07T00:41:44.870Z	29 km N of Moapa Town, Nevada	earthquake				
2014-11-07T00:43:25.070Z	9 km NNW of Nellis Air Force Base, Nevada	earthquake		1.1		

USGS Earthquake Previous Occurrence Data – Clark County, NV including the Unincorporated areas

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2014-11-07T00:45:27.612Z	42 km NW of Moapa Town, Nevada	earthquake				
2014-11-07T00:51:06.677Z	9 km ENE of Whitney, Nevada	earthquake				
2014-11-07T01:04:47.582Z	17 km NNE of Moapa Town, Nevada	earthquake				
2014-11-07T01:06:39.250Z	19 km N of Summerlin South, Nevada	earthquake				
2014-11-07T01:06:50.740Z	42 km NW of Indian Springs, Nevada	earthquake				
2014-11-07T01:06:50.816Z	35 km NW of Indian Springs, Nevada	earthquake				
2014-11-07T01:06:50.847Z	39 km NW of Indian Springs, Nevada	earthquake				
2014-11-07T01:06:51.492Z	37 km NW of Indian Springs, Nevada	earthquake				5
2014-11-07T01:06:51.499Z	37 km NNW of Indian Springs, Nevada	earthquake				
2014-11-07T01:06:51.506Z	37 km NW of Indian Springs, Nevada	earthquake				1
2014-11-07T01:06:51.922Z	39 km NW of Indian Springs, Nevada	earthquake				
2014-11-07T01:06:51.973Z	38 km NW of Indian Springs, Nevada	earthquake				
2014-11-07T01:06:51.975Z	33 km NW of Indian Springs, Nevada	earthquake				
2014-11-07T01:07:09.039Z	14 km SSW of Moapa Valley, Nevada	earthquake				

USGS Earthquake Previous Occurrence Data – Clark County, NV including the Unincorporated areas

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2015-05-02T14:06:13.040Z	7 km SSW of Moapa Valley, Nevada	earthquake	4.2	9.9	0.26	16
2016-01-28T19:32:44.720Z	6km ENE of Paradise, NV	earthquake	6.2	31.61	0.081	5
2016-01-28T19:44:17.950Z	3km NNW of Winchester, NV	earthquake	7.79	31.61	0.149	10
2016-01-28T19:45:28.680Z	34km N of Laughlin, NV	earthquake	5.5	31.61	0.075	6
2016-01-28T19:53:04.510Z	14km SSE of Henderson, NV	earthquake	5.05	31.61	0.035	4
2016-01-28T19:57:12.160Z	6km SSE of Paradise, NV	earthquake	1.95	31.61	0.171	4
2016-01-29T01:17:53.380Z	32 km NNW of Indian Springs, Nevada	earthquake				
2016-01-29T01:47:31.870Z	33 km NW of Indian Springs, Nevada	earthquake				
2016-01-29T21:53:39.620Z	18 km SSW of Mount Charleston, Nevada	earthquake				
2016-02-01T21:36:45.010Z	22km NNW of Nellis Air Force Base, NV	earthquake	2.24	31.61	0.182	5
2016-02-02T18:49:27.720Z	33 km E of Indian Springs, Nevada	earthquake				
2016-02-03T00:55:54.100Z	4km E of Winchester, NV	earthquake				5
2016-02-03T02:51:10.970Z	28km NNE of Nellis Air Force Base, NV	earthquake	99	31.61	0.169	4
2016-02-03T03:03:09.770Z	20 km NW of Sandy Valley, Nevada	earthquake				

USGS Earthquake Previous Occurrence Data – Clark County, NV including the Unincorporated areas

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2016-02-03T03:06:39.620Z	17 km SSW of Mount Charleston, Nevada	earthquake				
2016-02-03T03:19:32.540Z	3 km WSW of Whitney, Nevada	earthquake				
2016-02-03T03:41:01.660Z	44 km NE of Indian Springs, Nevada	earthquake				
2016-02-03T19:16:06.200Z	39km WSW of Summerlin South, NV	earthquake				73
2016-02-03T21:09:36.920Z	38 km NW of Indian Springs, Nevada	earthquake		2		
2016-02-03T22:06:48.960Z	58 km NNW of Indian Springs, Nevada	earthquake				1
2016-02-03T22:41:27.640Z	15km SSE of Enterprise, NV	earthquake				19
2016-02-04T03:47:21.720Z	18 km NW of Mount Charleston, Nevada	earthquake		4.1		
2016-02-04T05:36:16.610Z	55 km NNW of Indian Springs, Nevada	earthquake				
2016-02-09T19:59:28.216Z	38km NNE of Nellis Air Force Base, Nevada	earthquake				4
2016-02-09T21:00:16.343Z	21km NNW of Laughlin, Nevada	earthquake		0.021		5
2016-02-09T22:34:33.882Z	17km NNE of Nellis Air Force Base, Nevada	earthquake				2
2016-02-09T22:35:24.465Z	47km ENE of Nellis Air Force Base, Nevada	earthquake				1
2016-02-09T23:12:45.203Z	16 km NW of Sandy Valley, Nevada	earthquake				

USGS Earthquake Previous Occurrence Data – Clark County, NV including the Unincorporated areas

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2016-02-09T23:16:48.476Z	19 km W of Sandy Valley, Nevada	earthquake				
2016-02-09T23:29:34.702Z	36km SW of Summerlin South, Nevada	earthquake				0
2016-02-09T23:32:32.164Z	18 km WNW of Sandy Valley, Nevada	earthquake				
2016-02-10T02:50:03.300Z	16 km W of Sandy Valley, Nevada	earthquake				
2016-02-10T06:24:01.582Z	32km WSW of Summerlin South, Nevada	earthquake				55
2016-02-10T06:38:55.324Z	13 km NNW of Sandy Valley, Nevada	earthquake				
2016-02-10T10:16:37.981Z	19 km WNW of Sandy Valley, Nevada	earthquake				
2016-02-10T13:32:12.525Z	15 km WNW of Sandy Valley, Nevada	earthquake				
2016-02-10T19:59:33.796Z	14 km N of Indian Springs, Nevada	earthquake				
2016-02-11T00:18:50.119Z	18 km WNW of Sandy Valley, Nevada	earthquake				
2016-02-11T21:49:35.973Z	13 km NW of Indian Springs, Nevada	earthquake				
2016-02-12T15:04:28.661Z	15 km NW of Indian Springs, Nevada	earthquake				
2016-02-12T23:40:02.208Z	28 km ESE of Indian Springs, Nevada	earthquake				
2016-02-13T05:25:38.877Z	15 km WNW of Indian Springs, Nevada	earthquake				

USGS Earthquake Previous Occurrence Data – Clark County, NV including the Unincorporated areas

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2016-02-16T06:24:15.839Z	42 km NW of Indian Springs, Nevada	earthquake				
2016-02-17T11:20:26.472Z	37 km NW of Indian Springs, Nevada	earthquake				1
2016-03-09T04:45:55.660Z	6 km S of Enterprise, Nevada	earthquake				
2016-03-10T02:30:34.273Z	50km ENE of Nellis Air Force Base, NV	earthquake	3.66	31.61	0.082	4
2016-03-14T20:23:40.014Z	12km SE of Enterprise, NV	earthquake	17.31	31.61	0.122	3
2016-04-01T19:41:56.260Z	30km SW of Summerlin South, NV	earthquake	1.93	31.61		20
2016-04-01T19:42:27.959Z	39km NW of Primm, NV	earthquake	99	31.61		0
2016-04-01T20:02:13.925Z	54 km NNW of Indian Springs, Nevada	earthquake				1
2016-04-01T21:55:00.833Z	38 km NW of Indian Springs, Nevada	earthquake				
2016-04-02T04:09:57.147Z	30km N of Laughlin, NV	earthquake	6.71	31.61	0.271	7
2016-04-02T10:44:03.009Z	32km ENE of Nellis Air Force Base, NV	earthquake	13.79	31.61	0.278	5
2016-04-02T14:03:49.730Z	36 km NW of Indian Springs, Nevada	earthquake				
2016-04-02T17:34:48.044Z	14 km WNW of Sandy Valley, Nevada	earthquake				
2018-04-24T16:58:08.904Z	16 km ENE of Mount Charleston, Nevada	earthquake		6.3		

USGS Earthquake Previous Occurrence Data – Clark County, NV including the Unincorporated areas

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2018-04-24T16:58:33.100Z	27 km WNW of Indian Springs, Nevada	earthquake		1.3	0.16	21
2018-04-24T21:09:54.983Z	35 km WSW of Moapa Town, Nevada	earthquake		2.3		
2018-04-24T21:37:32.193Z	34 km WNW of Indian Springs, Nevada	earthquake		1.1		
2018-04-24T21:46:34.821Z	44 km NW of Moapa Town, Nevada	earthquake		0		
2018-04-24T22:10:12.995Z	2 km NNW of Summerlin South, Nevada	earthquake		0		
2018-04-24T22:18:45.214Z	18 km NNW of Moapa Valley, NV	earthquake		0		
2018-04-24T21:09:54.983Z	35 km WSW of Moapa Town, Nevada	earthquake		2.3		
2018-04-24T22:20:20.914Z	34 km NW of Indian Springs, Nevada	earthquake		2.9		
2018-04-24T22:24:10.734Z	30 km NW of Indian Springs, Nevada	earthquake		2.4		
2018-04-24T22:34:16.609Z	20 km SE of Moapa Valley, Nevada	earthquake		0		
2018-06-29T20:48:39.089Z	46 km NW of Moapa Town, Nevada	earthquake		2.1	0.25	14
2018-06-30T00:02:04.689Z	12 km NW of Mount Charleston, Nevada	earthquake		1.9	0.23	20
2018-07-02T18:10:59.773Z	20 km E of Mount Charleston, Nevada	earthquake		1.5	0.28	19
2018-07-02T18:38:17.527Z	27 km NW of Indian Springs, Nevada	earthquake		1.2	0.39	18

USGS Earthquake Previous Occurrence Data – Clark County, NV including the Unincorporated areas

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2018-07-02T18:44:06.683Z	24 km NE of Indian Springs, Nevada	earthquake		2.3	0.33	19
2018-07-02T18:52:04.318Z	27 km NW of Indian Springs, Nevada	earthquake		1.2	0.18	20
2018-07-24T21:24:41.034Z	23 km NNE of Indian Springs, Nevada	earthquake		2.7	0.18	22
2018-07-25T01:46:03.529Z	23 km NW of Indian Springs, Nevada	earthquake		11	0.28	13
2018-07-02T18:38:17.527Z	27 km NW of Indian Springs, Nevada	earthquake		1.2	0.39	18
2018-07-25T01:46:03.529Z	23 km NW of Indian Springs, Nevada	earthquake		11	0.28	13
2019-02-09T19:02:16.040Z	14 km NW of Sandy Valley, Nevada	earthquake		1.2	0.35	24
2019-07-05T14:26:17.112Z	15 km WNW of Sandy Valley, Nevada	earthquake		1.3	0.33	17
2019-09-06T14:25:12.040Z	38 km NNW of Nellis Air Force Base, Nevada	earthquake		1.8	0.2	30
2021-06-19T21:24:59.040Z	35 km SSE of Moapa Valley, Nevada	earthquake		6.1	0.43	11
2018-07-25T01:46:03.529Z	23 km NW of Indian Springs, Nevada	earthquake		11	0.28	13
2021-07-13T22:09:54.470Z	14 km ENE of Goodsprings, Nevada	earthquake		1.4	0.22	6
2021-08-07T22:07:13.040Z	19 km NNW of Indian Springs, Nevada	earthquake		1.6	0.37	27
2021-08-24T21:35:35.040Z	20 km NNW of Indian Springs, Nevada	earthquake		0.3	0.58	20

USGS Earthquake Previous Occurrence Data – Clark County, NV including the Unincorporated areas

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2021-09-18T03:26:40.734Z	14 km ENE of Goodsprings, Nevada	earthquake		1.6	0.24	4
2021-12-04T14:29:24.040Z	25 km NE of Nellis Air Force Base, Nevada	earthquake		1.1	0.4	10
2022-06-17T09:36:43.749Z	34 km SSW of Moapa Valley, Nevada	earthquake		5.6	0	1
2022-06-22T08:07:08.387Z	27 km NW of Indian Springs, Nevada	earthquake		1.1	0.15	16
2022-08-06T04:10:24.861Z	36 km NNW of Nellis Air Force Base, Nevada	earthquake		2.5	0.65	5
2022-08-06T11:55:28.720Z	31 km NNE of Nellis Air Force Base, Nevada	earthquake		3.1	0.22	3
2023-08-30T21:08:56.040Z	32 km SSE of Moapa Valley, Nevada	earthquake		12.4	0.68	6

Data Source: USGS

Boulder City

The following information was obtained by accessing the USGS Latest Earthquake Events Database <https://earthquake.usgs.gov/earthquakes/map/?extent=12.29707,-144.22852&extent=57.65716,-45.79102>. This information represents all the events and extent of the earthquake hazards experienced by Boulder City, and is the only source of data accessible.

USGS Earthquake Previous Occurrence Data – Boulder City						
Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2014-11-06T23:21:37.611Z	10 km ENE of Boulder City, Nevada	earthquake				
2014-11-07T00:29:04.087Z	5 km N of Boulder City, Nevada	earthquake				
2014-11-07T00:29:04.105Z	4 km SE of Boulder City, Nevada	earthquake				
2014-11-07T00:31:23.148Z	2 km NE of Boulder City, Nevada	earthquake				
2014-11-07T00:32:41.970Z	12 km NE of Boulder City, Nevada	earthquake				
2014-11-07T00:32:48.630Z	2 km NE of Boulder City, Nevada	earthquake				
2014-11-07T00:36:01.102Z	14 km NNE of Boulder City, Nevada	earthquake				
2014-11-07T00:37:00.556Z	17 km E of Boulder City, Nevada	earthquake				
2014-11-07T00:37:28.960Z	20 km NE of Boulder City, Nevada	earthquake				
2014-11-07T00:41:40.864Z	12 km SW of Boulder City, Nevada	earthquake				
2014-11-07T00:41:46.515Z	12 km SW of Boulder City, Nevada	earthquake				
2014-11-07T00:41:48.590Z	10 km SW of Boulder City, Nevada	earthquake				

USGS Earthquake Previous Occurrence Data – Boulder City

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2014-11-07T00:41:59.776Z	4 km SSW of Boulder City, Nevada	earthquake				
2014-11-07T00:42:11.861Z	7 km SW of Boulder City, Nevada	earthquake				
2014-11-07T00:42:27.940Z	10 km SW of Boulder City, Nevada	earthquake				
2014-11-07T00:42:29.322Z	5 km SSE of Boulder City, Nevada	earthquake				
2014-11-07T00:43:19.764Z	2 km E of Boulder City, Nevada	earthquake				
2014-11-07T00:43:56.963Z	17 km ENE of Boulder City, Nevada	earthquake				
2014-11-07T00:45:05.370Z	10 km SSW of Boulder City, Nevada	earthquake				
2016-01-28T17:53:45.850Z	18km NE of Boulder City, NV	earthquake				8
2016-01-28T17:53:46.330Z	18km NE of Boulder City, NV	earthquake				3
2016-01-28T19:31:58.720Z	24km NE of Boulder City, NV	earthquake	3.51	31.61	0.065	12
2016-01-28T19:32:06.030Z	16km E of Boulder City, NV	earthquake	8.67	31.61	0.081	4
2016-01-28T19:35:39.740Z	4km W of Boulder City, NV	earthquake	10.65	31.61	0.035	4
2016-01-28T20:02:10.710Z	30km E of Boulder City, NV	earthquake	99	31.61	0.089	5
2016-01-29T01:27:28.780Z	20 km ENE of Boulder City, Nevada	earthquake				

USGS Earthquake Previous Occurrence Data – Boulder City

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2016-02-01T19:59:05.180Z	35km ENE of Boulder City, NV	earthquake	7.12	31.61	0.353	3
2016-02-01T21:38:10.820Z	41km ENE of Boulder City, NV	earthquake	5.38	31.61	0.299	13
2016-02-02T18:26:31.780Z	13km S of Boulder City, NV	earthquake	6.41	31.61		7
2016-02-02T20:39:34.820Z	19km NNE of Boulder City, NV	earthquake				3
2016-02-02T21:00:27.160Z	4 km N of Boulder City, Nevada	earthquake				
2016-02-02T21:16:28.770Z	10 km E of Boulder City, Nevada	earthquake				
2016-02-02T22:18:37.280Z	47km E of Boulder City, NV	earthquake				1
2016-02-02T23:06:10.140Z	8km NNE of Boulder City, NV	earthquake				10
2016-02-03T00:20:39.100Z	17km N of Boulder City, NV	earthquake				9
2016-02-03T02:25:45.540Z	13km SE of Boulder City, NV	earthquake	4.39	31.61		20
2016-02-04T03:52:42.980Z	18km ENE of Boulder City, NV	earthquake				4
2016-02-01T21:38:10.820Z	41km ENE of Boulder City, NV	earthquake	5.38	31.61	0.299	13
2016-02-02T20:39:34.820Z	19km NNE of Boulder City, NV	earthquake				3
2016-02-12T00:26:14.445Z	3 km SW of Boulder City, Nevada	earthquake				

USGS Earthquake Previous Occurrence Data – Boulder City

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2016-02-12T18:41:42.510Z	39 km NE of Boulder City, Nevada	earthquake				
2016-02-12T18:45:30.643Z	15 km ESE of Boulder City, Nevada	earthquake				
2016-02-13T02:39:58.292Z	20 km SE of Boulder City, Nevada	earthquake				
2016-03-08T20:21:48.231Z	16km E of Boulder City, NV	earthquake	2.12	31.61	0.074	32
2016-03-08T20:43:04.093Z	29km NNE of Boulder City, NV	earthquake	15.79	31.61		0
2016-03-10T00:56:49.576Z	56km ENE of Boulder City, NV	earthquake	3.08	31.61	0.056	6
2016-03-10T01:01:50.555Z	35km NE of Boulder City, NV	earthquake	4.78	31.61	0.153	3
2016-03-10T01:03:10.507Z	42km ENE of Boulder City, NV	earthquake	4.19	31.61	0.159	8
2016-03-10T02:31:08.334Z	54km ENE of Boulder City, NV	earthquake	5.61	31.61	0.011	3
2016-02-12T00:26:14.445Z	3 km SW of Boulder City, Nevada	earthquake				
2016-03-10T03:47:31.036Z	50km NE of Boulder City, NV	earthquake	8.8	7.25	0.091	9
2016-03-10T04:03:53.419Z	32 km NNE of Boulder City, Nevada	earthquake				
2016-03-10T05:17:06.978Z	45km NE of Boulder City, NV	earthquake	1.91	31.61	0.04	1
2016-03-10T09:51:49.620Z	41km NE of Boulder City, NV	earthquake	5.14	31.61	0.117	11

USGS Earthquake Previous Occurrence Data – Boulder City

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2016-03-10T15:31:17.409Z	51km ENE of Boulder City, NV	earthquake	9.3	8.17	0.108	26
2016-03-10T17:21:18.051Z	38km ENE of Boulder City, NV	earthquake	6.88	10.18		0
2016-03-10T17:28:11.013Z	52km NE of Boulder City, NV	earthquake	5	31.61	0.113	11
2016-03-10T17:37:13.485Z	13 km ENE of Boulder City, Nevada	earthquake				
2016-03-10T19:06:13.652Z	39km NE of Boulder City, NV	earthquake	2.45	31.61	0.016	5
2016-03-10T22:40:35.900Z	46km ENE of Boulder City, NV	earthquake	2.26	31.61		0
2016-03-11T00:15:07.303Z	56km NE of Boulder City, NV	earthquake	3.7	31.61	0.162	9
2016-03-14T20:17:54.307Z	39km NE of Boulder City, NV	earthquake	11.01	20.41	0.113	13
2016-04-01T23:30:27.978Z	25km ENE of Boulder City, NV	earthquake	3.47	31.61		50
2018-06-04T20:43:44.000Z	39km ENE of Boulder City, NV	earthquake	99	31.61	0.054	10
2018-06-04T20:43:45.000Z	3km SW of Boulder City, NV	earthquake	5.44	31.61	0.174	12
2018-07-25T01:44:49.911Z	35 km NE of Boulder City, Nevada	earthquake		0		
2018-07-25T01:45:19.865Z	37 km NE of Boulder City, Nevada	earthquake		21.9	0	1
2022-07-26T04:16:55.048Z	7 km SSE of Boulder City, Nevada	earthquake		2.5	0.17	2

USGS Earthquake Previous Occurrence Data – Boulder City

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2022-08-05T18:34:38.370Z	35 km NE of Boulder City, Nevada	earthquake		0		

Data Source: USGS

Henderson

The following information was obtained by accessing the USGS Latest Earthquake Events Database <https://earthquake.usgs.gov/earthquakes/map/?extent=12.29707,-144.22852&extent=57.65716,-45.79102>. This information represents all the events and extent of the earthquake hazards experienced by the City of Henderson, and is the only source of data accessible

USGS Earthquake Previous Occurrence Data – Henderson

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2014-11-07T00:42:11.373Z	2 km NE of Henderson, Nevada	earthquake				
2014-11-07T00:39:40.809Z	21 km SSW of Henderson, Nevada	earthquake				
2016-01-28T18:21:03.650Z	4km SE of Henderson, NV	earthquake				8
2016-02-03T01:30:11.140Z	6km ESE of Henderson, NV	earthquake	9.42	31.61	0.224	8
2016-02-16T04:13:40.534Z	7km E of Henderson, Nevada	earthquake				7
2016-03-08T17:24:11.390Z	15km SSW of Henderson, NV	earthquake	1.87	31.61	0.085	36
2016-02-16T16:55:35.617Z	1 km N of Henderson, Nevada	earthquake				

USGS Earthquake Previous Occurrence Data – Henderson

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2016-04-02T01:18:01.714Z	8km ENE of Henderson, NV	earthquake	1.97	31.61		0
2018-06-28T21:09:20.928Z	5 km SSE of Henderson, Nevada	earthquake		6.8	0.31	2

Data Source: USGS

Las Vegas

The following information was obtained by accessing the USGS Latest Earthquake Events Database <https://earthquake.usgs.gov/earthquakes/map/?extent=12.29707,-144.22852&extent=57.65716,-45.79102>. This information represents all the events and extent of the earthquake hazards experienced by the City of Las Vegas, and is the only source of data accessible.

USGS Earthquake Previous Occurrence Data – Las Vegas

Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2016-02-01T22:10:57.610Z	38km NW of Las Vegas, NV	earthquake	6.86	31.61	0.293	6
2016-02-03T01:35:59.570Z	12km NNW of Las Vegas, NV	earthquake	5.03	31.61		0
2016-04-02T00:47:05.231Z	37km NW of Las Vegas, NV	earthquake	6.06	31.61		0

Data Source: USGS

Mesquite

The following information was obtained by accessing the USGS Latest Earthquake Events Database <https://earthquake.usgs.gov/earthquakes/map/?extent=12.29707,-144.22852&extent=57.65716,-45.79102>. This information represents all the events and extent of the earthquake hazards experienced by the City of Mesquite, and is the only source of data accessible.

USGS Earthquake Previous Occurrence Data – Mesquite						
Date	Place	Type	Horizontal Error	Depth Error	magError	magNst
2016-01-28T19:36:19.530Z	53km WNW of Mesquite, NV	earthquake	15.83	31.61	0.193	13
2016-01-28T19:40:34.730Z	44km SW of Mesquite, NV	earthquake	6.69	31.61	0.097	9
2016-01-29T01:44:53.780Z	63km W of Mesquite, NV	earthquake	5.91	31.61	0.383	4
2016-02-01T19:51:14.120Z	54km WSW of Mesquite, NV	earthquake	2.5	31.61	0.23	2
2016-02-02T18:41:44.230Z	69km S of Mesquite, NV	earthquake	2.13	31.61		16
2016-02-11T21:34:17.809Z	51km W of Mesquite, Nevada	earthquake	8.35	31.61		0
2016-03-12T01:38:41.987Z	16 km SSE of Moapa Valley, Nevada	earthquake				
2016-03-11T04:57:43.549Z	50km W of Mesquite, NV	earthquake	11.87	31.61	0.127	19
2016-03-12T05:55:37.096Z	27km SW of Mesquite, NV	earthquake	11.4	7.03	0.08	7
2016-04-01T21:51:59.163Z	48km S of Mesquite, NV	earthquake	5.35	31.61		0

Data Source: USGS

Probability of Future Events, Earthquake

As mentioned in the previous Clark County HMP (2018), in the Las Vegas Valley, Seismologists say there is a roughly 1 in 10 chance that an M 6.0 earthquake — one large enough to cause significant damage — will strike the valley in the next 50 years. However, calculating future probability is one of many predictors of future occurrences. Based on the Calculated Priority Risk Index (CPRI) conducted for Clark County and its participating jurisdictions, there is a **high probability (rank score of 3.0-3.9)** of earthquakes for Clark County.

Please note that the CPRI Rating is a subjective measure based on the opinion of the Clark County MPSC members during the planning development portion of the MJHMP update. The following table provides CPRI Rating for earthquakes related to Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation).

Table 37: Clark County and Participating Jurisdiction CPRI Rating for Geohazards - Earthquake and Seismic Hazard

Clark County and Participating Jurisdiction CPRI Rating for Geohazards – Earthquake and Seismic Hazard							
Hazard: Geohazards – Earthquake and Seismic Hazard	Category and Weight				CPRI Score	Risk Level	
	Probability 45%	Magnitude/Severity 30%	Warning Time 15%	Duration 10%			
Index Rating (R) Weighted Score (WS)							
Clark County (including Incorporated and Unincorporated Areas)	R	3	3	4	4	3.25	H
	WS	1.35	0.9	0.6	0.4		
Boulder City	R	1	2	4	4	2.05	M
	WS	0.45	0.6	0.6	0.4		
Henderson	R	3	3	4	4	3.25	H
	WS	1.35	.9	.6	.4		
Las Vegas	R	4	3	4	4	3.7	H
	WS	1.8	0.9	0.6	0.4		
Mesquite	R	3	3	4	4	3.25	H
	WS	1.35	0.9	0.6	0.4		
North Las Vegas	R	2	4	4	4	3.1	H
	WS	0.9	1.2	0.6	0.4		
Special District: Clark County Water Reclamation District	R	2	4	4	1	2.8	M
	WS	.9	1.2	.6	.1		
Special District: Clark County School District	R	3	3	4	2	3.05	H
	WS	1.35	0.9	0.6	0.2		
Special District: Las Vegas Valley Water District/SWNA	R	1	4	4	4	2.65	M
	WS	0.45	1.20	0.60	0.40		
Tribal Nation: Las Vegas	R	4	3	4	4	3.7	H

**Clark County and Participating Jurisdiction
CPRI Rating for Geohazards – Earthquake and Seismic Hazard**

Hazard: Geohazards – Earthquake and Seismic Hazard		Category and Weight				CPRI Score	Risk Level
		Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%		
Index Rating (R) Weighted Score (WS)							
Valley Paiute	WS	1.8	0.9	0.6	0.4		
Tribal Nation: Moapa Band of Paiutes	R	2	1	4	1	1.9	L
	WS	0.9	0.3	0.6	0.1		

Note: Though participating in the planning process, at the time of this update CPRI data for the City of Mesquite was not received. Therefore, the CPRI rating for the City of Mesquite is the same rating as Clark County due to the city being within the planning area.

Clark County Quantitative Probability of Future Events

Related to quantitative probability of future events, Clark County and its participating jurisdictions can expect an earthquake event with 1160% probability per year or 11.60 events per year, as indicated in the table below. This number is based on historical numbers from USGS data as mentioned in the [Previous Occurrence](#) section of this hazard profile. Calculating future probability is not the only predictor of future occurrences. As such, and according to [Table 28: Probability Categories](#), the qualitative chance of an earthquake impacting the planning area is **highly likely**.

Note, Clark County, including North Las Vegas, the unincorporated areas, and Tribal Nations of Las Vegas Paiute and Moapa Band of Paiutes can expect an earthquake event with a 1160% probability each year. This number was derived by dividing the number of recorded events by the year range used.

Probability of Future Events, Earthquake, Clark County, NV (including Unincorporated Areas, North Las Vegas, and the Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes)

Event Year	Event Count
2014	19
2015	1
2016	54
2017	0
2018	18
2019	3
2020	0
2021	10

Probability of Future Events, Earthquake, Clark County, NV (including Unincorporated Areas, North Las Vegas, and the Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes)

Event Year	Event Count
2022	10
2023	1
Total Recorded Events =	116
Total Years =	10
Yearly Probability =	1160%*

*Note: The USGS Latest Events database did not have any incidences of earthquake events for the City of North Las Vegas and Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes.
Data Source: USGS*

Boulder City

The City of Boulder City can expect a earthquake event with 650% probability per year or 6.5 events per year, as indicated in the table below. This number is based on historical numbers from USGS data as mentioned in the Previous Occurrence section of this hazard profile. This number is based on historical numbers from USGS data as mentioned in the [Previous Occurrence](#) section of this hazard profile. Calculating future probably is not the only predictor of future occurrences. As such, and according to [Table 28: Probablity Categories](#), the qualitative chance of a earthquake impacting the planning area is **highly likely**.

Note, The City of Boulder City, earthquake probability percentage was derived by dividing the number of recorded events by the year range used.

Probability of Future Events, Earthquake, Boulder City

Event Year	Event Count
2014	20
2015	0
2016	41
2017	0
2018	2
2019	0
2020	0
2021	0
2022	3

Probability of Future Events, Earthquake, Boulder City	
Event Year	Event Count
2023	1
Total Recorded Events =	65
Total Years =	10
Yearly Probability =	650%*

*Note: The City of Boulder City can expect an earthquake event with a 650% probability each year. This number was derived by dividing the number of recorded events by the year range used. Calculating future probability is not the only predictor of future occurrences. The qualitative chance of a thunderstorm impacting the planning area is highly likely.
Data Source: USGS*

Henderson

The City of Henderson can expect a earthquake event with 90% probability per year or a .90 event per year, as indicated in the table below. This number is based on historical numbers from USGS data as mentioned in the [Previous Occurrence](#) section of this hazard profile. According to [Table 28: Probability Categories](#), The City of Henderson has a **highly likely** risk of experiencing an earthquake event.

Note, The City of Henderson, earthquake probability percentage was derived by dividing the number of recorded events by the year range used.

Probability of Future Events, Earthquake, Henderson	
Event Year	Event Count
2014	2
2015	0
2016	6
2017	0
2018	1
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	9

Probability of Future Events, Earthquake, Henderson	
Event Year	Event Count
Total Years =	10

Las Vegas

The City of Las Vegas can expect a earthquake event with 30% probability per year or a .33 event per year, as indicated in the table below. This number is based on historical numbers from USGS data as mentioned in the [Previous Occurrence](#) section of this hazard profile. According to [Table 28: Probability Categories](#), The City of Las Vegas has a **likely** risk of experiencing an earthquake event.

Note, The City of Las Vegas, earthquake probability percentage was derived by dividing the number of recorded events by the year range used.

Probability of Future Events, Earthquake, Las Vegas	
Event Year	Event Count
2014	0
2015	0
2016	3
2017	0
2018	0
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	3
Total Years =	10

Data Source: USGS

Mesquite

The City of Mesquite can expect a earthquake event with 30% probability per year or a .30 event per year, as indicated in the table below. This number is based on historical numbers from USGS data as mentioned in the [Previous Occurrence](#) section of this hazard profile. According to [Table 28: Probability Categories](#), The City of Mesquite has a **likely** risk of experiencing an earthquake event.

Note, The City of Mesquite, earthquake probability percentage was derived by dividing the number of recorded events by the year range used.

Probability of Future Events, Earthquake, Las Vegas	
Event Year	Event Count
2014	0
2015	0
2016	3
2017	0
2018	0
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	3
Total Years =	10

Data Source: USGS

Vulnerability and Impact

Since an earthquake cannot be predicted, the entire planning area, i.e., Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation), is vulnerable to an earthquake incident occurring within or even outside County/State lines. Related to quantitative probability of future events for earthquakes, the data for this hazards profile is based on data in the Previous Occurrence portion of this hazard profile. The following information provides updated vulnerability and impact of Geohazards, Earthquake, and Seismic Hazards for each jurisdiction in the planning area:

- Boulder City:** As noted above, the City of Boulder City can expect an earthquake event with 650% probability per year or 6.50 events per year. This number is based on historical numbers from USGS data as mentioned in the [Previous Occurrence](#) section of this hazard profile. Calculating future probably is not the only predictor of future occurrences. As such, and according to [Table 28: Probability Categories](#), the qualitative chance of an earthquake impacting the planning area is **highly likely**.

With regards to population growth, the City of Boulder City has experienced a 0.919% growth in population. With the recent growth, Boulder City now has many more residents. At the same time, Boulder City is seeing an increased aging population with 29.0%

residents above the age of 65. These groups are most at risk to the impact of earthquake conditions. Also, there was a 0.15% increase of housing units between 2010 and 2020. These units were built to the latest seismic codes. As mentioned in the Boulder City Capabilities Assessment for this plan update, Boulder City uses the 2018 ICC codes, 2018 U-codes, and NFPA 72 are all adequately enforced. More information regarding the City of Boulder City building codes can be found online at [Building Codes and Regulations | City of Boulder \(bouldercolorado.gov\)](https://www.bouldercolorado.gov/building-codes-and-regulations) related to the impact of earthquakes on the planning area, USGS only provides the number of earthquakes that occurred in the jurisdiction and not the number of deaths or damage sustained to property and crops. Boulder City has included the following mitigation projects/actions to limit the impacts of earthquakes in their community:

- With the goal of providing additional emergency power, installing equipment such as generators for new and existing critical facilities to operate continuously but cannot do so for long durations of power outage from hazards that include earthquake. This project will help the City of Boulder City support its residents, especially their vulnerable populations in the event of a hazard event like earthquake. For more details about this mitigation project can be found the [City of Boulder City's Mitigation Project/Action Prioritization Tables](#) in this plan update.
- **Henderson:** As noted above, the City of Henderson can expect an earthquake event with 90% probability per year or a .90 event per year. This number is based on historical numbers from USGS data as mentioned in the Previous Occurrence section of this hazard profile. According to Table 26: Probability Categories, The City of Henderson has a **highly likely** risk of experiencing an earthquake event. Also, with population growth: Henderson has experienced a 23.23% growth in population. With the recent growth, Henderson now has many more residents. At the same time, Henderson is seeing an increased aging population with 26.6% residents above the age of 65. These groups are most at risk to the impact of earthquake conditions. Also, there was a 20% increase of housing units between 2010 and 2020. These units were built to the latest seismic codes.

As mentioned in the Henderson Capabilities Assessment for this plan update, Henderson uses 2018-2021 IBC Code Suite. More information for the City of Henderson Building Codes can be found on the City of Henderson's website and also here. Related to the impact of earthquakes on the planning area, USGS only provides the number of earthquakes that occurred in the jurisdiction and not the number of deaths or damage sustained to property and crops. Henderson has included the following mitigation projects/actions to limit the impacts of earthquakes in their community:

- Continue to update and validate the Clark County Unreinforced Masonry (URM) Inventory Database by undertaking the following activities: complete screening for structures that were not able to be screened during this phase of the project; expand the scope of project to include screening of URMs within the incorporated cities in Clark County; prepare a GIS enabled map layer showing the validated database of URM structures; work collectively with state and local officials to determine the next appropriate step in mitigating the potential hazards associated with URM structures.
- As mentioned above, there was a 20% increase of housing units between 2010 and 2020. These units were built to the latest seismic codes. However, we have aging critical infrastructure that need to be retrofitted to withstand a potentially large event. The City has included the Critical Facilities & Infrastructure or Replacement project that will seismically retrofit or replace critical facilities and infrastructure that are categorized as structurally deficient and are located in strong to very strong ground shaking areas and/or are necessary to use during and/or immediately after a disaster or emergency. Retrofit existing potable water reservoirs with seismic couplings at inlet and outlet connections. This project will help the City of Henderson support its residents, especially their vulnerable populations in the event of a hazard event like earthquake. With the goal of providing additional emergency power, installing equipment such as generators for new and existing

critical facilities to operate continuously but cannot do so for long durations of power outage from hazards that include earthquake.

- More details about this mitigation project can be found the City of Henderson's Mitigation Project/Action Prioritization Tables in this plan update.
- **Las Vegas:** As noted above, the City of Las Vegas can expect an earthquake event with 30% probability per year or a .30 event per year. This number is based on historical numbers from USGS data as mentioned in the [Previous Occurrence](#) section of this hazard profile. According to [Table 28: Probability Categories](#), The City of Las Vegas has a **likely** risk of experiencing an earthquake event. Also, with population growth: Las Vegas has experienced a 9.96% growth in population. With the recent growth, Las Vegas now has many more residents. At the same time, Las Vegas is seeing an increased aging population with 14.8% residents above the age of 65. These groups are most at risk to the impact of earthquake conditions. Also, there was a 5.34% increase of housing units between 2010 and 2020. These units were built to the latest seismic codes. As mentioned in the Las Vegas Capabilities Assessment for this plan update, The 2021 International Building Code (IBC) and International Fire Code (IFC) were adopted in September 2022. The effective date of these codes is March 23, 2023. More information for the City of Las Vegas Building Codes can be found here. Related to the impact of earthquakes on the planning area, USGS only provides the number of earthquakes that occurred in the jurisdiction and not the number of deaths or damage sustained to property and crops. Henderson has included the following mitigation projects/actions to limit the impacts of earthquakes in their community:
 - Emergency Power (Shelter Generators): Provide additional emergency power, such as a generator equipment, for new and existing critical facilities to operate continuously but cannot do so for long durations of power outage. Two shelter locations have been identified with a need for back-up power improvements. At least two new trailer mounted diesel generator sets with quick connection cables and temporary fencing will be required. These shelter locations will help provide safety for the residents of Las Vegas; the vulnerable population follow during an earthquake.
 - Hazard Economic Recovery Framework: To lessen economic severity of all types of hazards, develop a comprehensive economic recovery framework that's context sensitive and adaptable to a variety of hazard scenarios like earthquakes. This project is being carried over to complete from the 2018 MJHMP update.
 - Hazard Prevention Framework: Develop hazard prevention, mitigation, vulnerability, and recovery frameworks that apply to hazards. This project is being carried over to complete from the 2018 MJHMP update.
 - More details about this mitigation project can be found in the City of Las Vegas Mitigation Project/Action Prioritization Tables in this plan update.
- **Mesquite:** As noted above, the City of Mesquite can expect an earthquake event with 30% probability per year or a .30 event per year, as indicated in the table above. This number is based on historical numbers from USGS data as mentioned in the [Previous Occurrence](#) section of this hazard profile. According to [Table 28: Probability Categories](#), The City of Mesquite has a **likely** risk of experiencing an earthquake event. Also, with population growth: Mesquite has experienced a 34% growth in population. With the recent growth, Mesquite now has many more residents. At the same time, Mesquite is seeing an increased aging population with 42% residents above the age of 65. These groups are most at risk to the impact of earthquake conditions. Also, there was a 25.67% increase of housing units between 2010 and 2020. These units were built to the latest seismic codes. As mentioned in the Mesquite Capabilities Assessment for this plan update, the IBC 2018 Code, the City will be working to adopt 2004 IBC Code Suite. These codes are adequately enforced. More information for the City of Mesquite Building Codes can be found here [Currently Adopted Building Codes \(mesquitenv.gov\)](#). Related to the impact of earthquakes on the planning area, USGS only provides the number of earthquakes that occurred in the

jurisdiction and not the number of deaths or damage sustained to property and crops. Mesquites has included the following mitigation projects/actions to limit the impacts of earthquakes in their community:

- Damage Assessment Forms for Flooding and Earthquake: Provide training for building inspector to properly perform building assessment after earthquakes or floods.
- Recreation Center Backup Power Supply: Provide backup power supply to the Recreation Center as the identified shelter facility to operate independently. These recreation center shelter locations will help provide safety for the residents of Mesquite and the vulnerable population follow during an earthquake.
- Senior Center Backup Power Supply: Provide backup power supply to the Senior Center as the identified shelter facility to operate independently. These shelter locations will help provide safety for the residents of Mesquite, primarily the aging populations follow during an earthquake.
- More details about this mitigation project can be found in the City of Las Vegas Mitigation Project/Action Prioritization Tables in this plan update.

- **North Las Vegas:** The City of North Las Vegas earthquake probability is based on the overall probability score of **highly likely** for Clark County which is 1160% or 11.60 events per year. This is due to no available data from USGS for North Las Vegas.

Also, with population growth: North Las Vegas has experienced a 21% growth in population. With the recent growth, North Las Vegas now has many more residents. At the same time, North Las Vegas is seeing an increased aging population with 10.9% residents above the age of 65. These groups are most at risk to the impact of earthquake conditions. Also, there was a 13.5% increase of housing units between 2010 and 2020. These units were built to the latest seismic codes. As mentioned in the North Las Vegas Capabilities Assessment for this plan update, The 2018 IBC Code Suite. Yes, codes are adequately enforced. ICC, yes enforced. For more information about the City of North Las Vegas Building Codes can be found here. Related to the impact of earthquakes on the planning area, USGS only provides the number of earthquakes that occurred in the jurisdiction and not the number of deaths or damage sustained to property and crops. North Las Vegas has included the following mitigation projects/actions to limit the impacts of earthquakes in their community:

Emergency Power: Provide additional emergency power, such as a generator equipment, for new and existing critical facilities to operate continuously but cannot do so for long durations of power outage. Emergency Generators for Critical Infrastructure and Sheltering Facilities. These shelter locations will help provide safety for the residents of North Las Vegas; the vulnerable population follow during an earthquake.

- More details about this mitigation project can be found in the City of Las Vegas Mitigation Project/Action Prioritization Tables in this plan update.

The impact of Geohazards, Earthquake, and Seismic Hazards can be seen in the upcoming Vulnerability section of this hazards profile: Vulnerability of Facilities, People, Systems, and Critical Facilities and Infrastructure. The data show this hazards impacts is taken from the HAZUS® - Earthquake Global Risk Report developed by CONSTANT Associates. This analysis depicts the scenario of a 6.6M earthquake near the Frenchman Mountain Fault affecting Clark County and its participating jurisdictions. Because of the type of HAZUS® run, all jurisdictional data is included in the numbers seen below.

Vulnerability of Facilities

Clark County's vulnerability to earthquake is varied throughout the county as noted in the County and participating jurisdictions CPRI and qualitative probability score in Section 4.3.4 – Probability of Future Events. Building to modern seismic building codes can be an influencing factor in saving lives in the event of an earthquake in the planning area. [FEMA](#) mentions that some provisions within the IBC, IRC, and IEBC are intended to ensure that structures can adequately resist seismic forces during an

earthquake. The [2020 NEHRP Provisions Volume I](#) and [II](#) along with FEMA's companion documents titled [Earthquake Resistant Design Concepts – FEMA P-749](#) are valuable resources for the technical and non-technical explanation background based on past earthquake events.

Clark County and its participating jurisdictions critical structures are valued at \$395,335,458. Since earthquakes can threaten the entire planning, all municipal structures are considered exposed and vulnerable. The analysis based on a Magnitude 6.6 Earthquake over the Frenchman Mountain Fault completed by CONSTANT Associates estimates approximately 90,396 buildings will be at least moderately damaged which is over 12.0% of the building in the planning area. The following table provides a breakdown of these values by facility type.

Table 38: Expected Building Damage by Occupancy

Expected Building Damage by Occupancy					
Occupancy Type	None	Slight	Moderate	Extensive	Complete
Agriculture	654.86	165.51	142.94	59.73	10.96
Commercial	23963.94	8461.96	9114.17	4063.32	756.61
Education	586.21	180.74	179.99	76.96	13.09
Government	541.16	186.47	256.97	136.45	30.95
Industrial	4390.82	1505.79	1810.17	887.90	173.32
Other Residential	28554.64	11712.27	9337.19	3662.18	661.72
Religion	879.54	305.11	315.18	139.59	24.59
Single Family	473918.82	133308.17	49927.48	8056.83	558.70
Total	553,490	155,826	71,084	17,083	2,320

Data Source: HAZUS® Earthquake Global Risk Report for Clark County produced by CONSTANT Associates

Table 39: Expected Building Damage by Building Type (All Design Levels)

Expected Building Damage by Occupancy					
Design Levels	None	Slight	Moderate	Extensive	Complete
Wood	486344.74	141512.55	51402.41	6841.04	449.75
Steel	6332.27	1889.84	2736.70	1284.10	334.10
Concrete	6289.46	2368.47	2336.43	1081.94	172.83
Precast	4723.80	1516.88	2459.33	16624.86	287.10
Reinforced Masonry (RM)	20412.14	4596.85	6659.61	3665.50	366.42

Expected Building Damage by Occupancy					
Design Levels	None	Slight	Moderate	Extensive	Complete
Unreinforced Masonry (URM)	1225.59	680.20	740.57	405.75	193.05
Manufactured Home (MH)	8161.99	3261.21	4422.04	2179.78	426.70
Total	553,490	155,826	71,084	17,083	2,320

Data Source: HAZUS® Earthquake Global Risk Report for Clark County produced by CONSTANT Associates

Vulnerability of Population

The entire population of Clark County is vulnerable to the hazard of earthquake. Clark County has a total population of 2,265,461 with 840,343 housing units, all of which are highly vulnerable and at-risk to earthquakes.

The FEMA National Risk Index map provides data on social vulnerability and community resilience related to hazards. Both of these factors impact the vulnerability of a population for a hazard event like earthquake. FEMA National Risk Index defines [Social Vulnerability](#) as the susceptibility of social groups to the adverse impacts of natural hazards, including death, injury, loss, or disruption of livelihood. FEMA defines [Community Resilience](#) as the ability for a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruption. The scoring of these FEMA National Risk Index categories are for all hazards, including geohazards and earthquake are as follows:

- **Community Resilience:** the higher community resilience score results in a lower Risk Index score. The Community Resilience score for Clark County is 49.9, meaning communities within the County have a Very Low ability to prepare for anticipated natural hazards, adapt to conditions, and withstand and recover rapidly from disruptions compared to the rest of the U.S.
- **Social Vulnerability:** a higher social vulnerability score results in a higher Risk Index score. Social groups in Clark County, NV, have a Relatively High susceptibility to the adverse impacts of natural hazards compared to the rest of the U.S. The Social Vulnerability score for Clark County is 48.59.

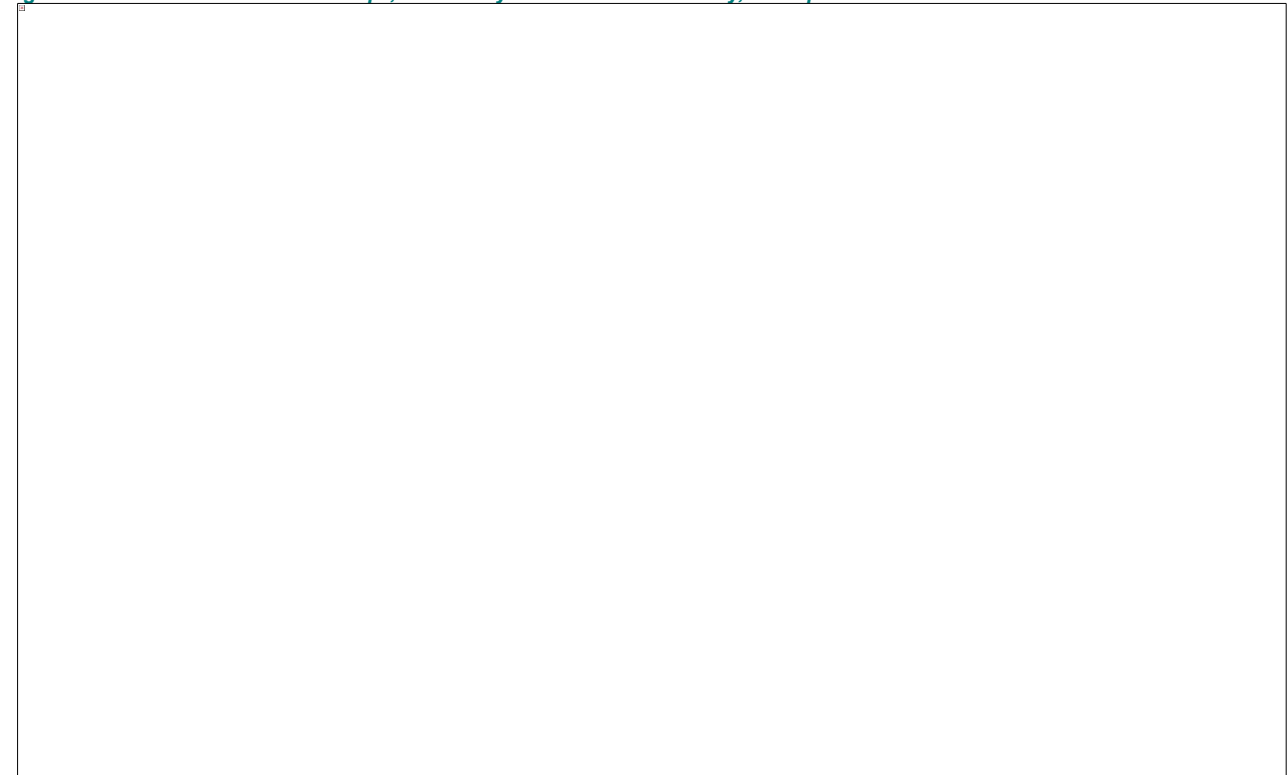
The following maps provide a snapshot of community resilience and social vulnerability scoring related to all hazards including earthquake for Clark County and its participating jurisdictions (which includes the Clark County Unincorporated areas, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation).

Figure 63: FEMA National Risk Index Maps, Social Vulnerability - Clark County, NV



Data Source: [The FEMA National Risk Index](#)

Figure 64: FEMA National Risk Index Maps, Community Resilience - Clark County, NV Map

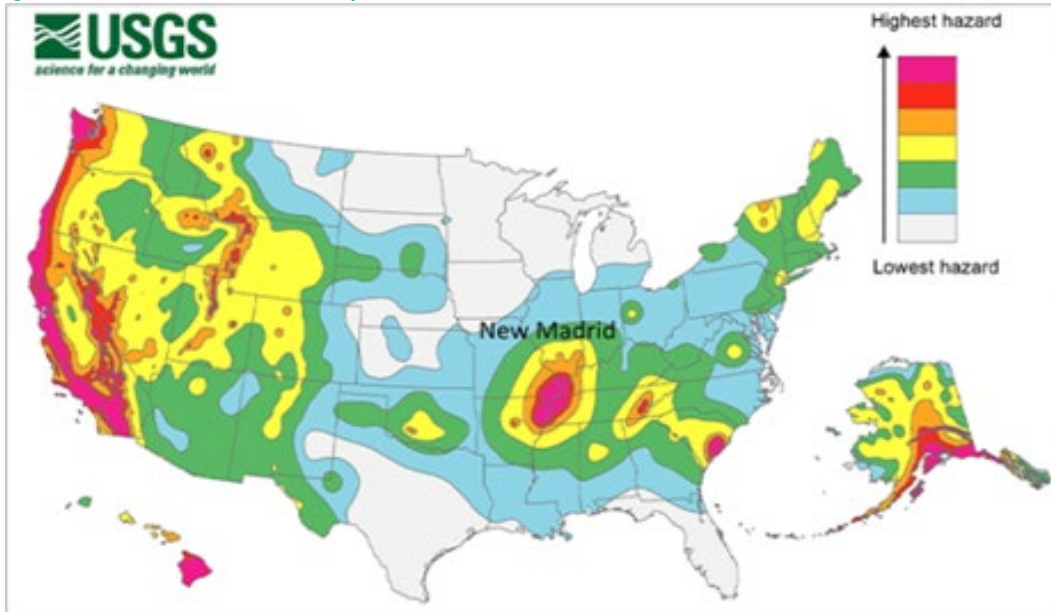


Data Source: [The FEMA National Risk Index](#)

Vulnerability of System

All of the County is vulnerable to seismic incidents. The map below depicts that most of the County is at moderately to low risk. The following [USGS map](#) depicts that most of the County is at moderate risk.

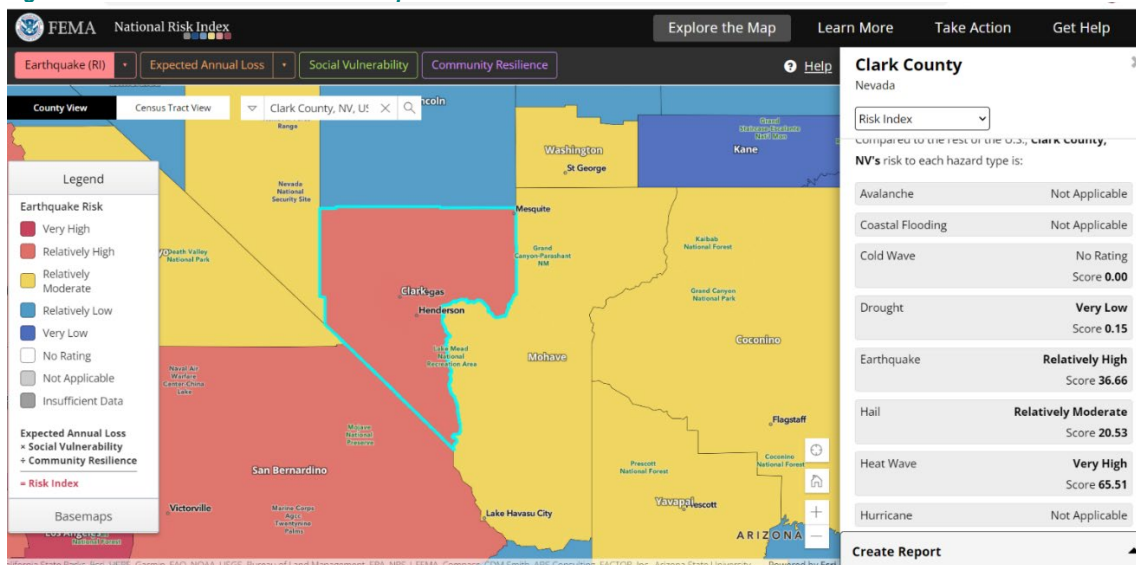
Figure 65: 2014 U.S. Seismic Hazard Map



Data Source: [USGS](#)

The previous Clark County HMP (2018) mentions, similar to the 2012 HMPs vulnerability analysis, all of Clark County is vulnerable to shaking from an earthquake; 98.7 percent of the County (7,961.5 square miles) is located within the strong to very strong shaking range for an earthquake. According to the USGS, very strong shaking has the potential for moderate damage. The remaining 1.3 percent of the County, an area northeast of North Las Vegas, is located in the severe shaking range which could cause moderate to severe damage. However, there are no residents or buildings in the area of severe shaking. The FEMA National Risk Index for Natural Hazards is an online mapping system that identifies communities most at risk to 18 natural hazards. Related to earthquake, an earthquake risk index score and rating represent a community's relative risk for earthquakes when compared to the rest of the United States. Clark County has an earthquake risk score of 36.66 (relatively high) compared to the rest of the Country. The map below illustrates that score visually.

Figure 66: FEMA National Risk Index Earthquake



Impact of Climate Change

Climate change does not have a correlation to seismic activity.

Critical Facilities and Infrastructure

Earthquakes can pose a risk to critical facilities and infrastructure within Clark County and its participating jurisdictions. The community assets like critical facilities and infrastructure within the planning area can be vulnerable to even a small magnitude earthquake. A complete list of critical facilities and infrastructure can be found in [Appendix E – Critical Facilities & Infrastructure](#).

Vulnerability of Facilities, Critical Facilities Inventory

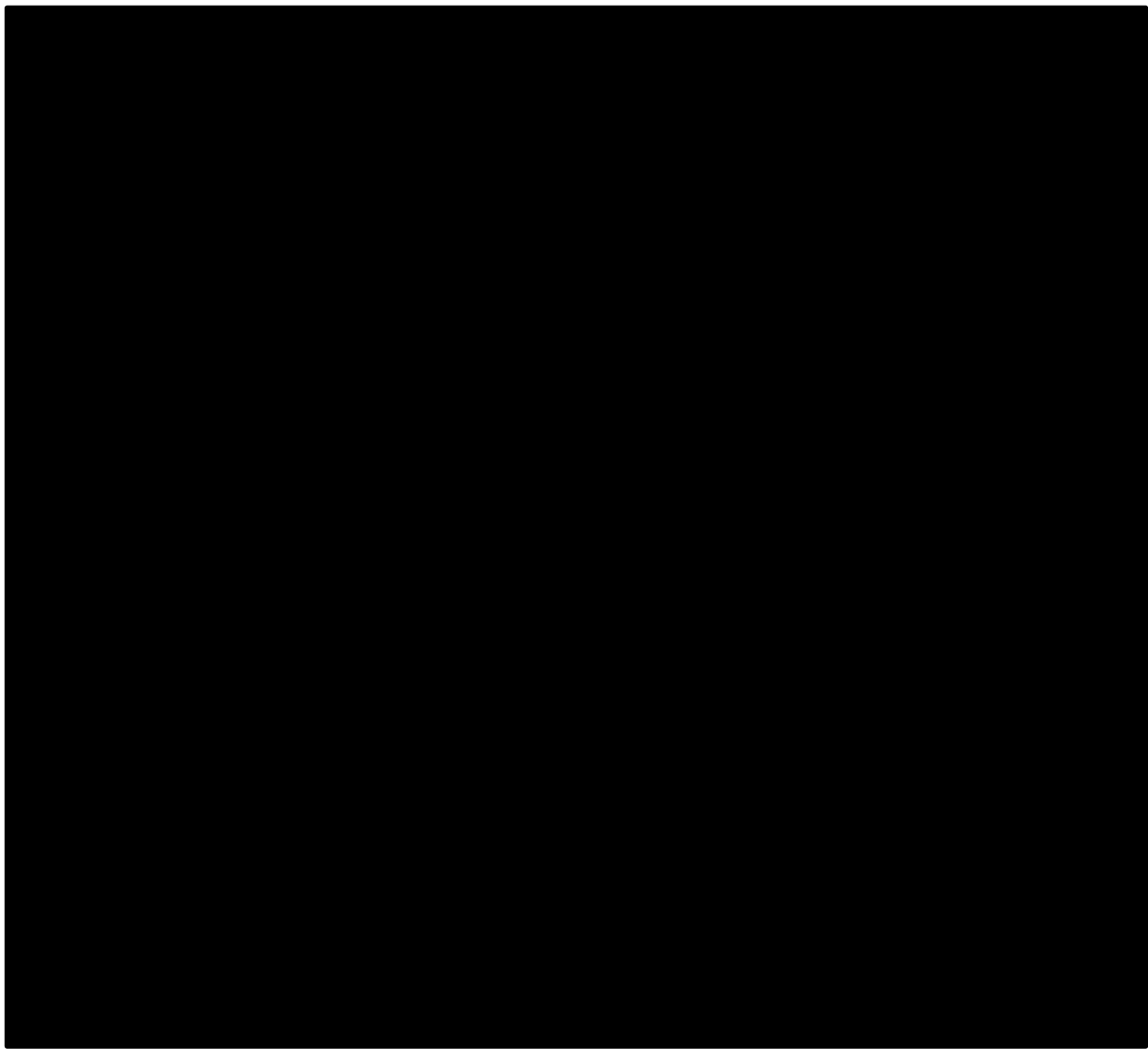
According to HAZUS® - Earthquake Global Risk Report, an analysis depicting the scenario of a 6.6M earthquake near the Frenchman Mountain Fault affecting Clark County and its participating jurisdictions. Such impacts can include structural and utility failure and loss of facility functionality. This information is from the HAZUS® - Earthquake Global Risk Report, developed by CONSTANT Associates.

Shelter Requirements

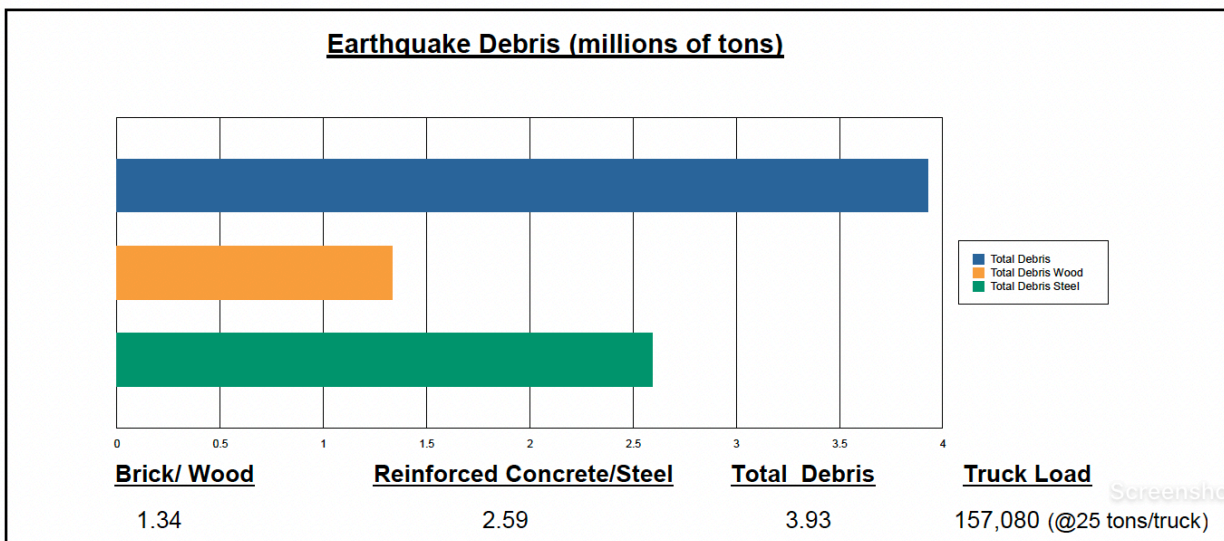
HAZUS® estimates the number of households expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary shelters. Displaced households represent 16,195 individuals within the planning area of which 10,887 may require temporary public shelter. This information is from the HAZUS® - Earthquake Global Risk Report provided by CONSTANT Associates.

Building-Related Losses

Building losses are broken into two categories: direct building and business interruption. Direct building losses are the estimated costs to repair or replace damage to the building and its contents. Business interruption losses are associated with the inability to operate a business because of the damage sustained during the earthquake. The following is a summary of losses associated with building losses related to earthquake for the planning area:

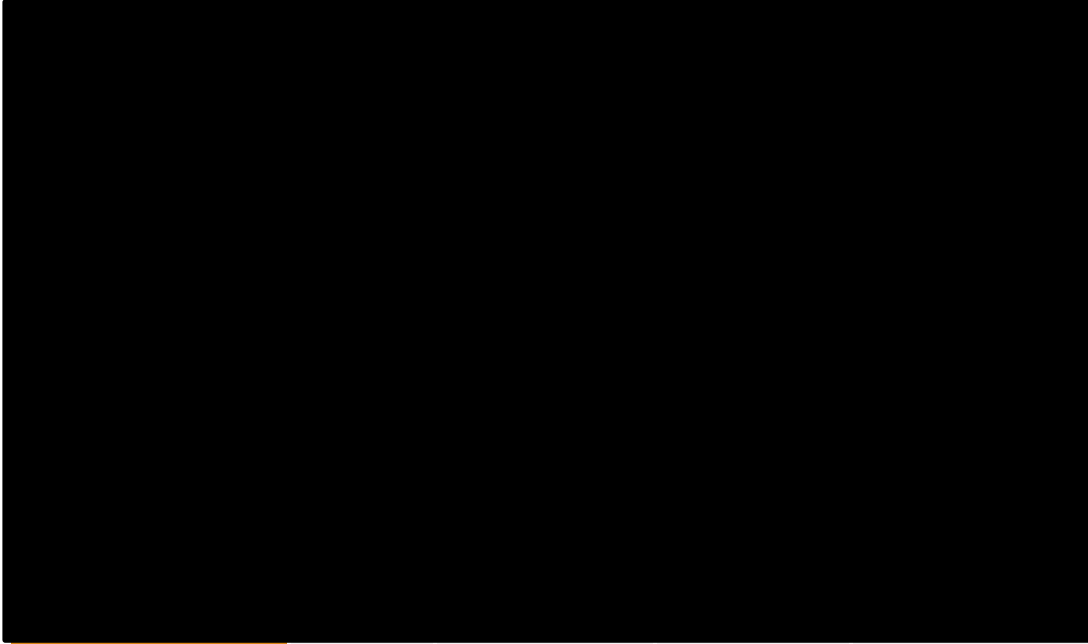


Earthquake has the potential to inflict significant damage to Clark County. HAZUS® Analysis by CONSTANT Associates, estimated that 3,927,000 tons of debris may be generated from an earthquake event. If this debris tonnage is converted to an estimated number of truckloads, it will require 157,080 truckloads to remove the debris generated by the earthquake. The following graph illustrates the breakdown of earthquake debris by debris type.



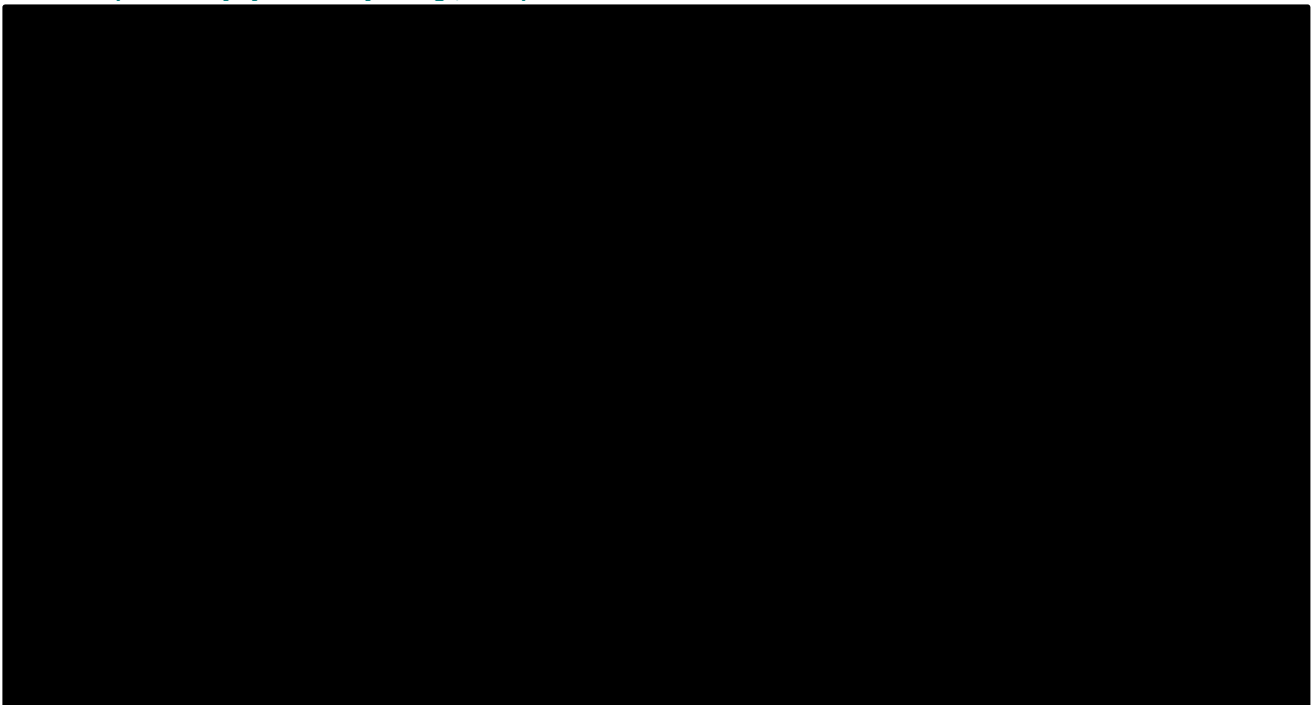
Also, earthquakes can cause minimal damage or complete destruction to facilities, transportation and utility systems, taking them offline for days to years depending upon the resources available after an event. Clark County's critical facilities are valued at \$395,335,458 and transportation and utility lifelines systems are valued at \$45,121,000. Since earthquakes threaten the entire planning area, all structures are considered exposed and vulnerable.

Table 40: Expected Damage to Essential Facilities, Earthquake

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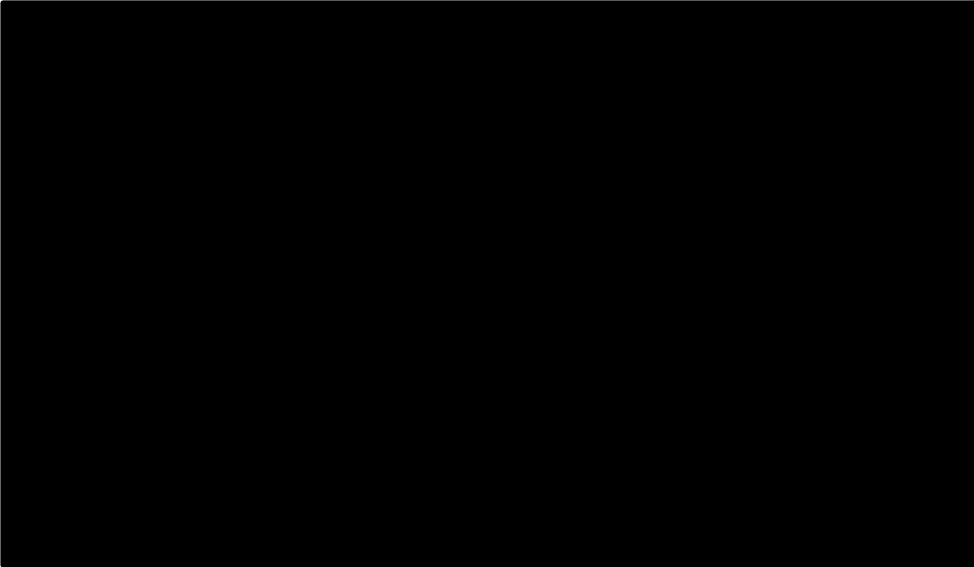
Data Source: HAZUS® Earthquake Global Risk Report for Clark County produced by CONSTANT Associate

Table 41: Expected Utility System Facility Damage, Earthquake

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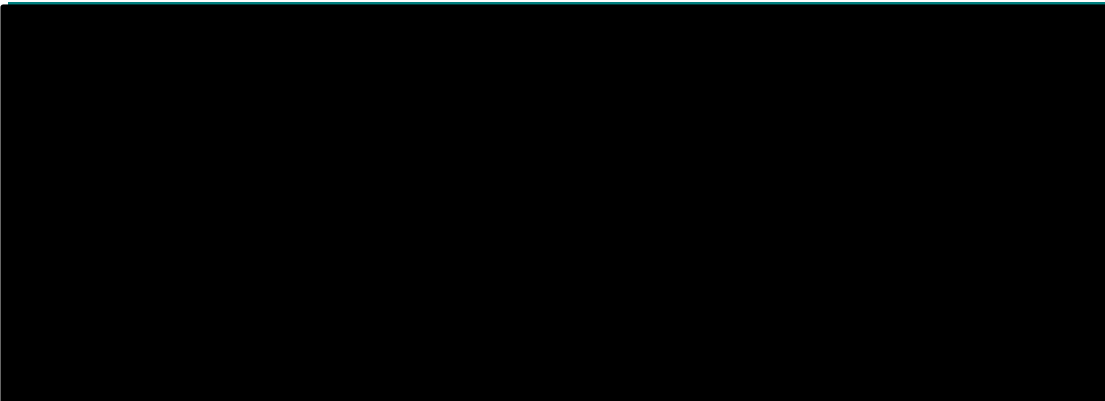
Data Source: HAZUS® Earthquake Global Risk Report for Clark County produced by CONSTANT Associates

Table 42: Expected Utility System Pipeline Damage (Site Specific), Earthquake

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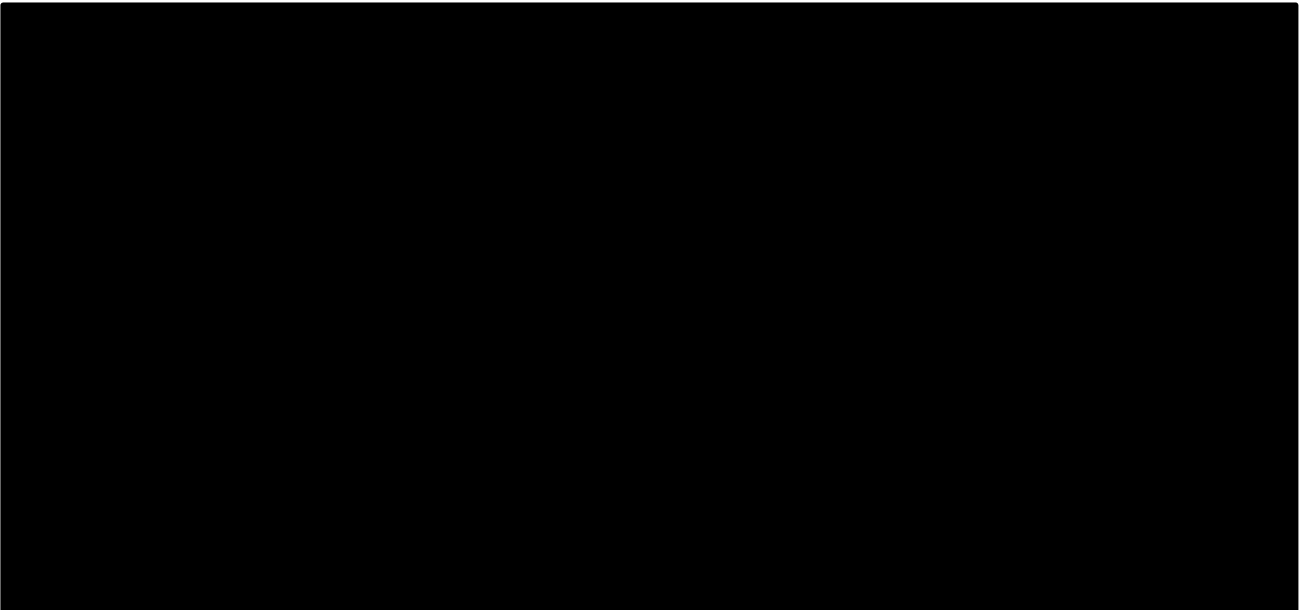
Data Source: HAZUS® Earthquake Global Risk Report for Clark County produced by CONSTANT Associates

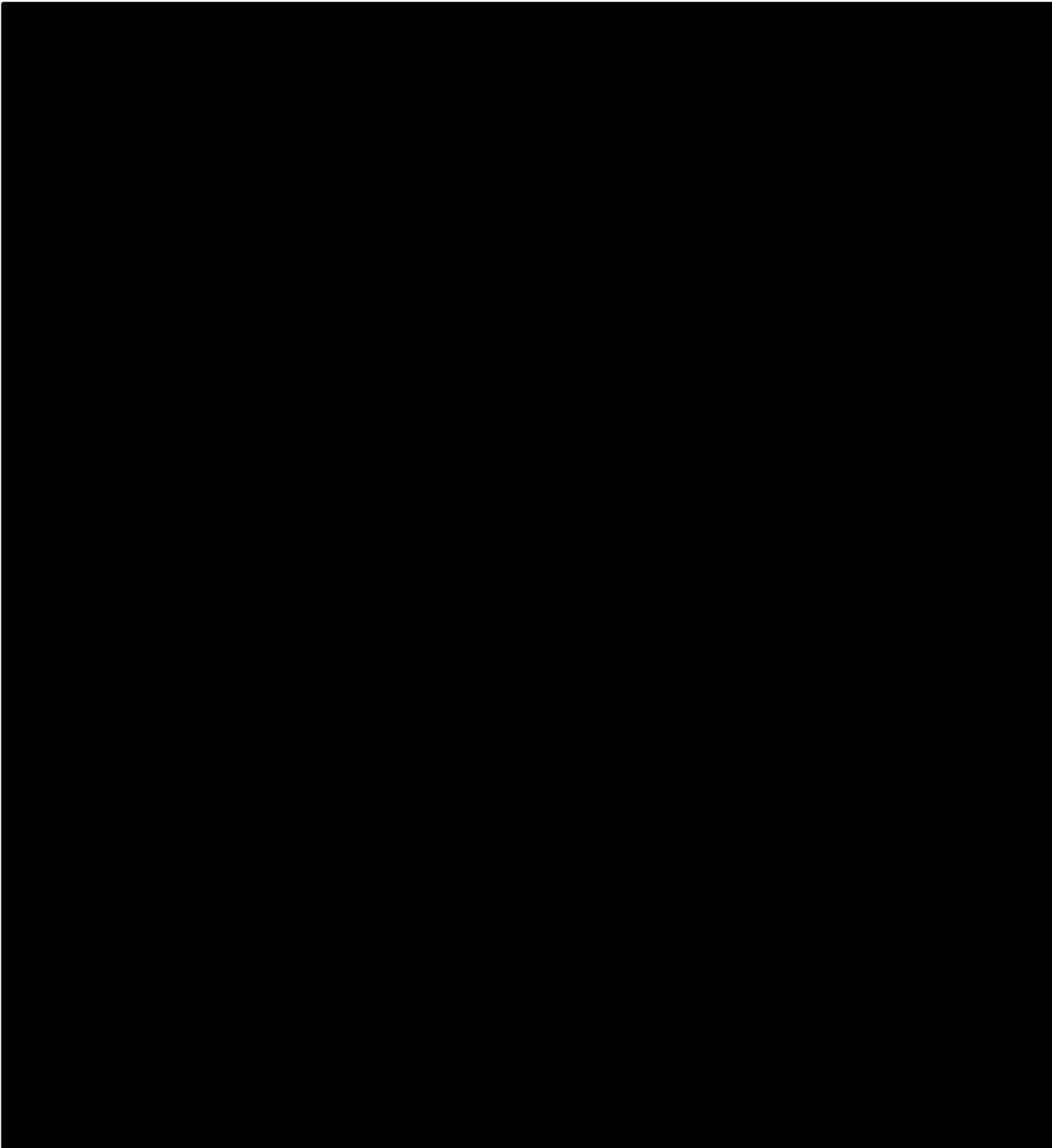
Table 43: Expected Portable Water and Electric Power System Performance, Earthquake

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Data Source: HAZUS® Earthquake Global Risk Report for Clark County produced by CONSTANT Associates

Table 44: Expected Damage to Transportation Systems, Earthquake

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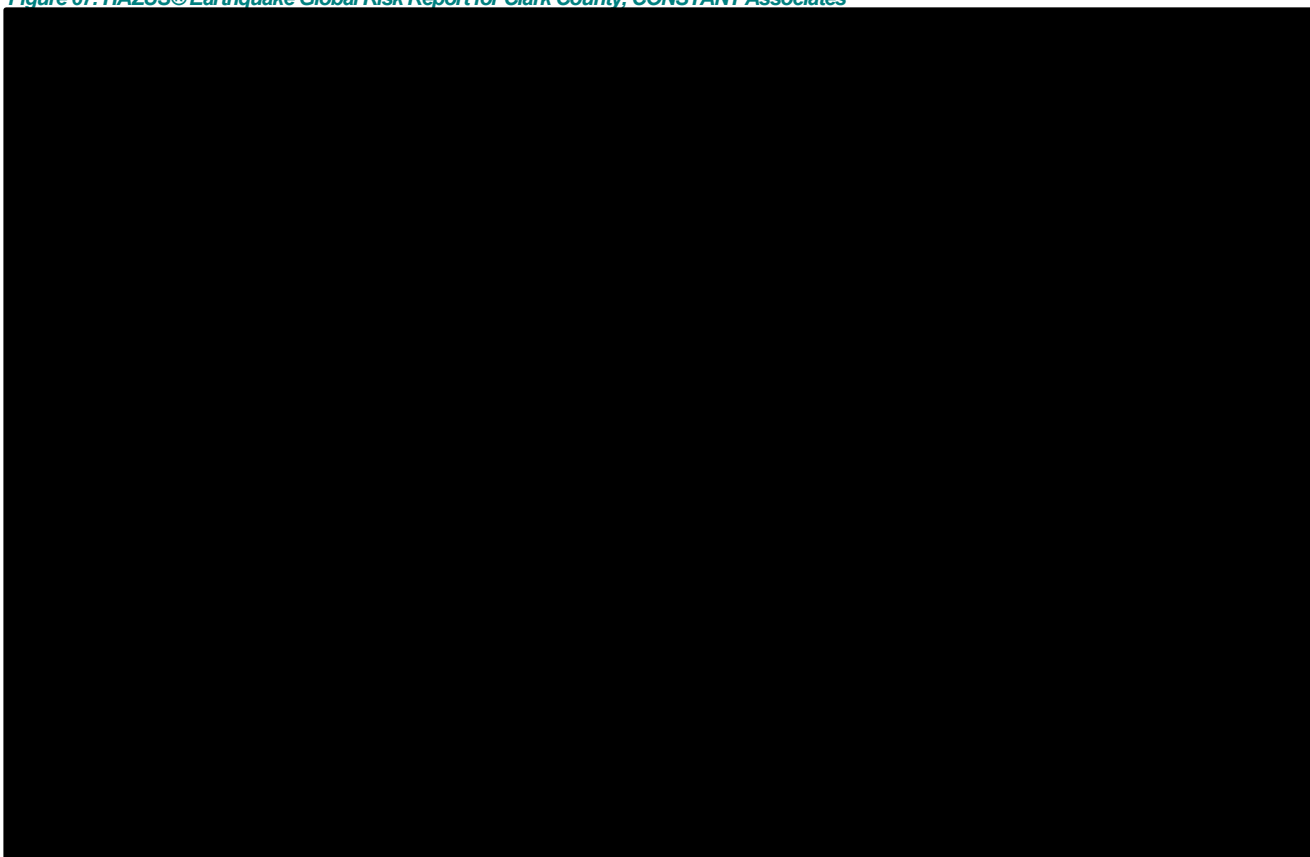


Notes: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Data Source: HAZUS® Earthquake Global Risk Report for Clark County produced by CONSTANT Associates

The following map illustrates estimated transportation lifeline damage from the scenario within the planning area:

Figure 67: HAZUS® Earthquake Global Risk Report for Clark County, CONSTANT Associates



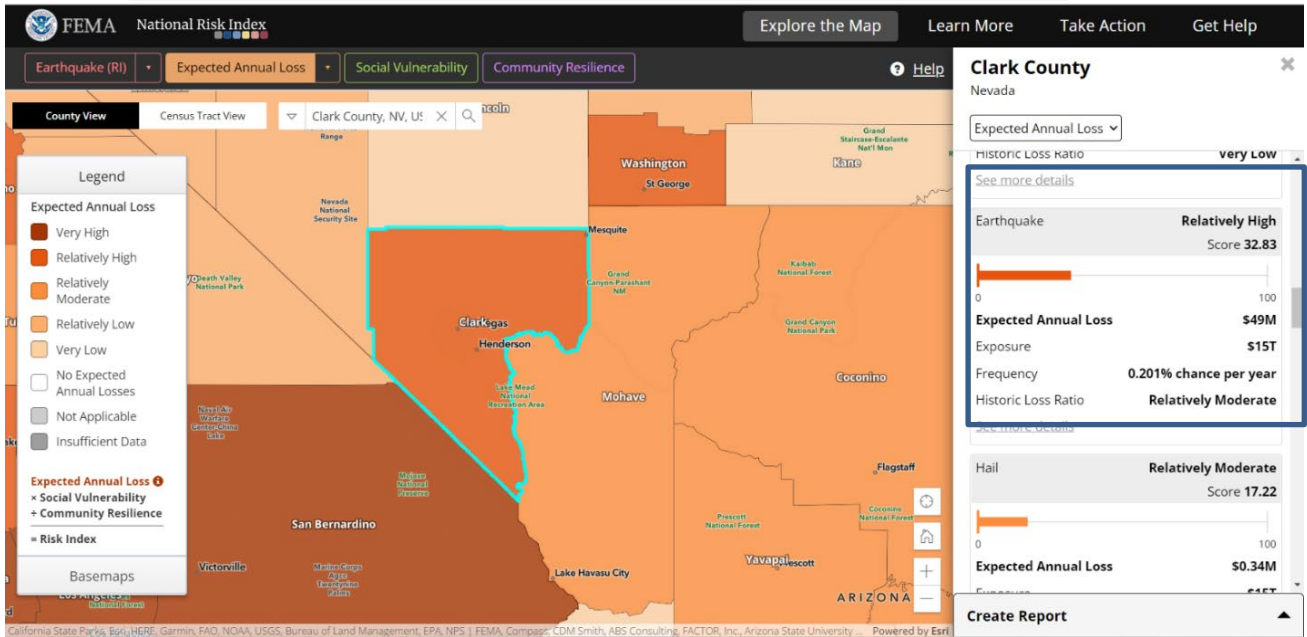
Land Use and Development

Currently, Clark County and its participating jurisdictions have no land use or development trends related to earthquakes. However, the Earthquake Risk Index score on the FEMA National Risk Index website states the [earthquake expected annual loss score](#) (represents the average economic loss in dollars resulting from natural hazards each year) and rating represent a community's relative level of expected building and population loss each year due to Earthquakes when compared to the rest of the United States. For Clark County and their participating jurisdictions, the expected loss of data related to earthquake is as follows:

- Expected Annual Loss Score: 32.83 – relatively high
- Expected Annual Loss: \$49 M
- Exposure: \$15T
- Frequency: 0.201% chance
- Historic Loss Ratio: Relatively Moderate

The following map illustrates the expected annual loss for earthquake in the planning area:

Figure 68: FEMA National Risk Index Earthquake Annual Expected Loss



Data Source: [FEMA National Risk Index](#)

Unique and Varied Risk

The entire planning area has the potential to be affected by the profiled hazard, whether directly or indirectly. There are no significant differences between Clark County and its participating jurisdictions in terms of risks and vulnerabilities associated with earthquakes. Earthquakes potentially can negatively affect all of Clark County. As mentioned above, all of the County is vulnerable to seismic incidents.

Note: The above information was obtained by accessing the most available data/datasets. This information represents all the events and extent of the Geohazards, Earthquake, and Seismic hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. The information provided for Clark County also applies to the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas; Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes; and Special Districts representing Clark County School District, Clark County Water Reclamation District, Las Vegas Water District, and Southern Nevada Health District.

Repetitive Loss Structure

Not applicable.

HAZUS® Models

A Magnitude 6.6 Frenchman Mountain Fault Earthquake was modeled in Figures 60-62, 67 and Tables 40-44.

(EH) Extreme/Excessive Heat

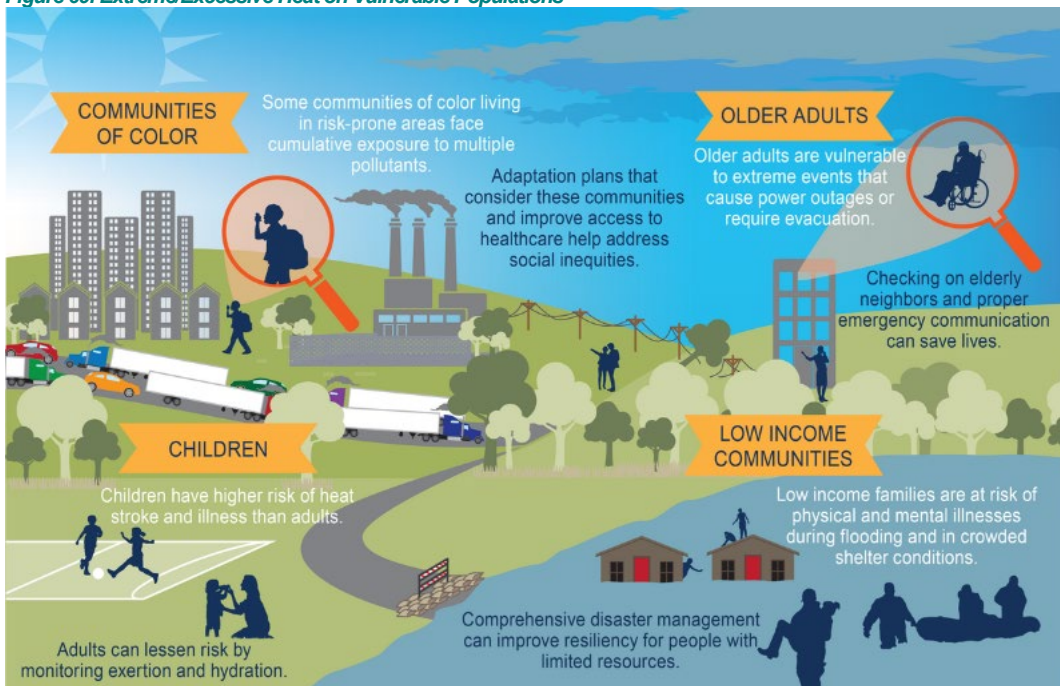
Hazard Description

The [National Weather Service](https://www.weather.gov/) (NWS) indicates that two or more consecutive days with unusually high or Extreme/Excessive Heat conditions is referred to as a heat wave. Extreme/Excessive Heat is defined as a period of high heat and humidity with temperatures above 90 degrees for at least two or three days. The summer can cause much hotter and/or more humid temperatures than average. However, some areas of the country can experience hotter temperatures than others. Also, humid and muggy conditions can make it seem hotter than it really is

(https://www.cdc.gov/disasters/extremeheat/heat_guide.html).

Extreme/Excessive Heat can cause an increased heat related illness within a community. The State of Nevada Enhanced Mitigation Plan (2018) mentions that excessive heat during the night time hours can be a predictors of heat related illness. The CDC mentions that though heat-related illnesses are preventable, around 618 people in the United States are killed by Extreme/Excessive Heat each year. Heat waves are also predicted to cause two to three times more heat-related deaths by the mid-century. Heat-related illnesses include heat cramps, heat exhaustion, and life-threatening heat stroke. Heat-related illness results from the “body’s inability to dissipate heat produced by metabolic activity, often as a result of increased ambient temperature .” Heat.gov indicates that extreme temperatures associated with heat waves can make everyone uncomfortable. High temperatures can also become a health concern when combined with conditions such as high humidity, sun exposure, stagnant air, and poor air quality. Socially vulnerable communities will experience the worst of these effects; these include impacts on individuals with access and functional needs, aging populations, the elderly, children, people with chronic illness, and those sensitive to heat exposure. The following infographic provides a visual description of how these communities are affected by Extreme/Excessive Heat conditions.

Figure 69: Extreme/Excessive Heat on Vulnerable Populations



Data Source: [Heat.gov](https://www.heat.gov/)

When combined with populations with inequities, such as poverty, housing, and language limitations, these populations are at a higher risk of heat-related illness and death.

Related to infrastructure, The [National Weather Service](https://www.weather.gov/) indicates that Extreme/Excessive Heat also

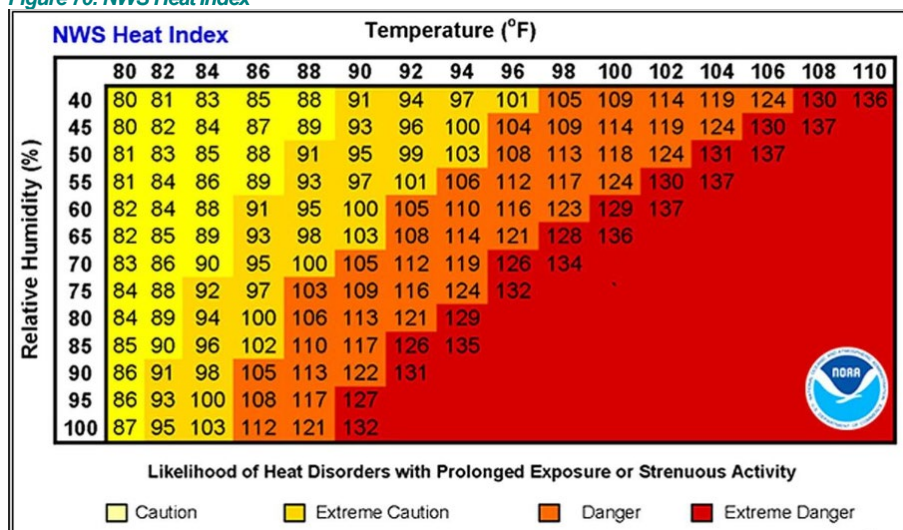
impacts our infrastructure - from transportation to utilities to clean water and agriculture. High heat can deteriorate and buckle pavement, warp or buckle railway tracks, and exceed certain types of aircraft operational limits. Electricity usage increases as air conditioning and refrigeration units in homes and offices work harder to keep indoors cooler. Transmission capacity across electric lines is reduced during high temperatures, further straining the electrical grid. Water resources are also tested as conventional power plants require large quantities of water for cooling, crops may need increased water consumption, and people increase water consumption to stay hydrated and cool. Heat can have lasting impacts as crops may be damaged, reducing production, which leads to short supply and or increased cost to the farmers and consumers.

Location & Extent

Southern Nevada has among the hottest climates in the U.S. and has been identified as one of the fastest-warming regions in the country. The State of Nevada Enhanced Mitigation Plan (2018) mentions that Las Vegas is located in a broad desert valley in extreme southern Nevada extending over about 600 square miles elongated from northwest to southeast. Mountains surrounding the valley rise 2,000 to 10,000 feet above the valley floor. The valley is bounded on the north by the Sheep Range, while Boulder City and the Lake Mead National Recreation Area are considered its southern extent. To the west are the Spring Mountains, which include Mt. Charleston, the region's highest peak at 11,918 feet. Several smaller ranges line the valley's eastern rim, including the Muddy Mountains, the Black Mountains, and the Eldorado Range.

Official weather observations in the planning area began in 1937 at what is now Nellis Air Force Base. In late 1948, the U.S. Weather Bureau moved to McCarran Field, now Harry Reid International Airport (McCarran). To measure Extreme/Excessive Heat temperatures, the NWS has a system to initiate alert procedures (advisories, watches, and warnings) when high temperatures are expected to impact public safety significantly. The heat index as depicted in the image illustrates how the heat-humidity combination makes the air feel. As relative humidity increases, the air seems warmer than it actually is because the body is less able to cool itself via the evaporation of sweat.

Figure 70: NWS Heat Index



Data Source: [National Weather Service](#)

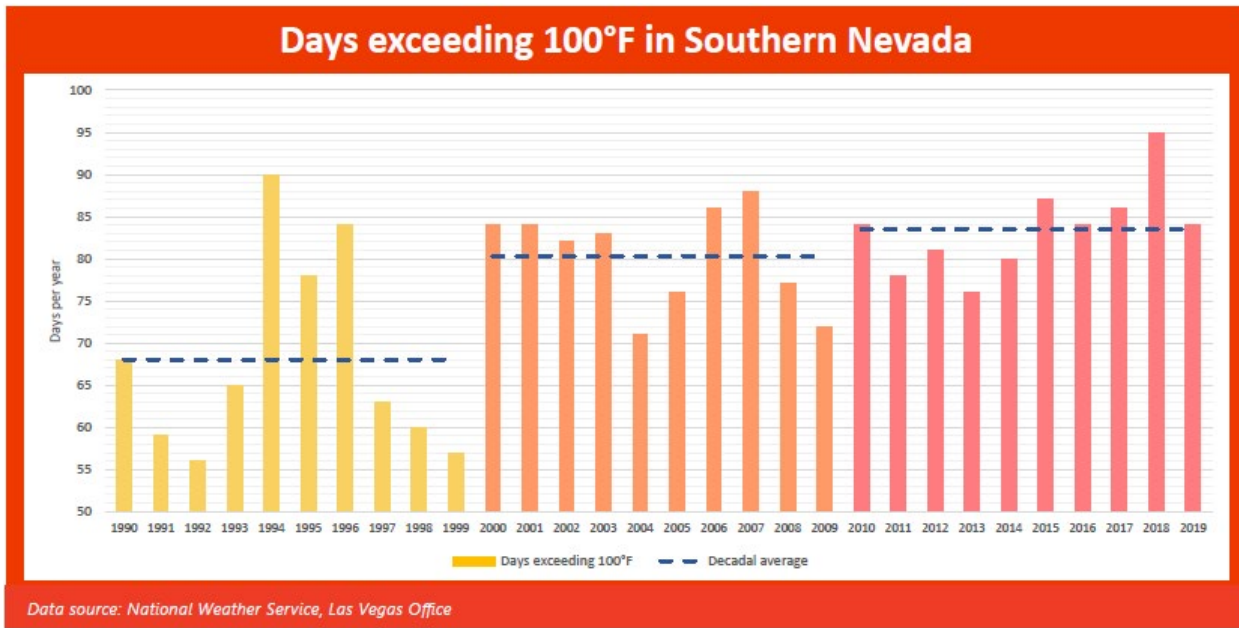
As the heat index rises, so do health risks. Specifically:

- When the heat index is 90°F, heat exhaustion is possible with prolonged exposure and/or physical activity.
- When it is 90° to 105°F, heat exhaustion is probable with the possibility of sunstroke or heat cramps with prolonged exposure and/or physical activity.
- When it is 105° to 129°F, sunstroke, heat cramps or heat exhaustion is likely, and heatstroke

is possible with prolonged exposure and/or physical activity.

- When it is 130°F and higher, heatstroke and sunstroke are extremely likely with continued exposure. Physical activity and prolonged exposure to the heat increase the risks.

The [Nevada State Climate Office at the University of Nevada at Reno](#) mentions in the southern part of Nevada, average high temperatures range from the 50s in the winter to nearly 100°F in July and August. Those are monthly averages. Daily high temperatures can be higher, like the state record high temperature of 125°F. Recent research predicts the region will experience a significant increase in the frequency and intensity of Extreme/Excessive Heat events in the coming decades. The following figure provides the number of days exceeding 100° in Southern Nevada:



Data Source: [Stay Cool Clark County – ClarkCountyNV.gov](#)

Previous Occurrence, Extreme/Excessive Heat

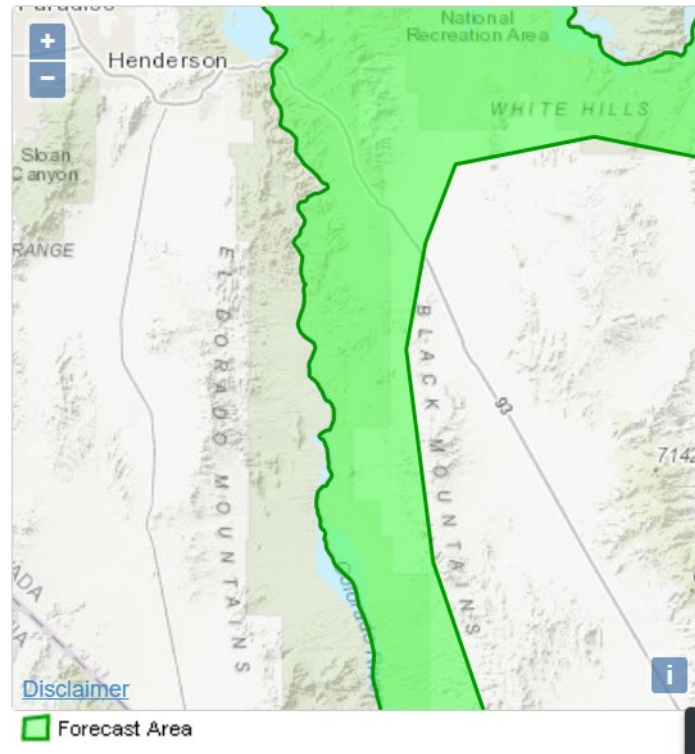
[Stay Cool in Clark County](#) mentions extreme heat days—days with temperatures exceeding 106° F—are projected to increase in Clark County. Currently, we experience about four extreme heat days per year. By 2064, that number could increase to 23 – 30 extreme heat days.

To gain a better understanding of previous occurrences and accurately calculate future probability, the following information was taken into consideration. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the extreme/excessive heat hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible.

Note: The NOAA/NCEI Storm Events Database identifies the location of the extreme/excessive heat events within County into the following zones: Northeast Clark County, Western Clark and Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation Area, and Southern Clark County.

Clark County, Boulder City

Table 45: Lake Mead/Lake Mohave National Recreation Area, National Weather Service, Excessive Heat



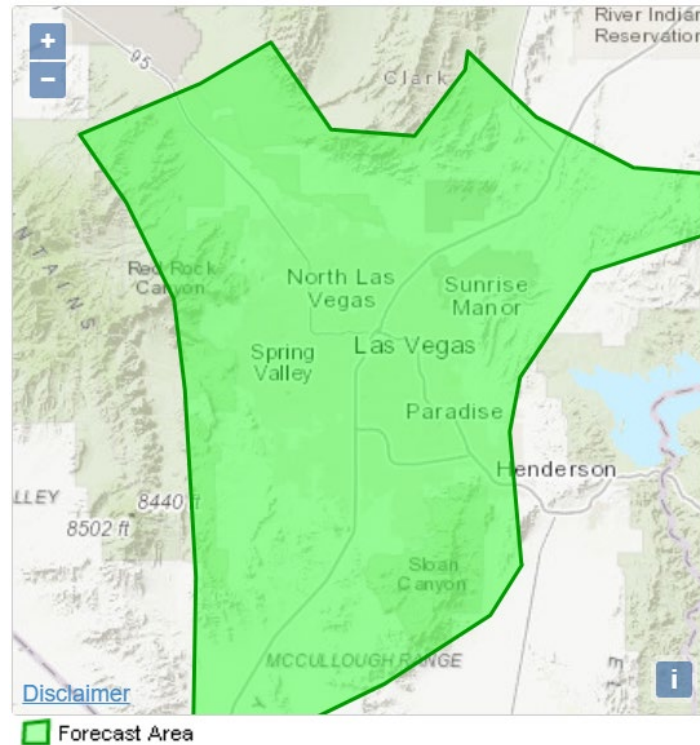
Date	Deaths	Injuries	Property Damage	Extent/Impact Description
6/28/2013	1	5	0	Excessive Heat Warning criteria were reached each day from June 28th through 30th and continued into July. Six people were overcome by heat in the Lake Mead National Recreation area, including one fatality.
7/1/2013	0	0	0	One person died in Laughlin of heat related causes during the prolonged heat wave.
7/22/2016	2	0	0	Two people died of heat related causes during the same heat wave which claimed 26 lives in Las Vegas.
6/11/2019	0	0	0	Excessive Heat Warning criteria were reached for three days.
8/3/2019	0	0	0	Excessive Heat Warning criteria were reached in the Lake Mead National Recreation Area.
8/14/2019	0	0	0	Excessive Heat Warning criteria were reached in the Lake Mead National Recreation Area.

Date	Deaths	Injuries	Property Damage	Extent/Impact Description
8/20/2019	0	0	0	Excessive Heat Warning criteria were reached in the Lake Mead National Recreation Area.
8/26/2019	0	0	0	Excessive Heat Warning criteria were reached in the Lake Mead National Recreation Area. The event continued into September.
9/1/2019	0	0	0	Excessive Heat Warning criteria were reached in the Lake Mead National Recreation Area. The event began in August.
9/3/2019	0	0	0	Excessive Heat Warning criteria were reached in the Lake Mead National Recreation Area.
5/27/2020	0	0	0	Excessive Heat Warning criteria were reached for three straight days.
6/3/2020	0	0	0	Excessive Heat Warning criteria were reached for two straight days.
7/11/2020	0	0	0	Excessive Heat Warning criteria were reached three days in a row.
7/30/2020	0	0	0	Excessive Heat Warning criteria were reached on the last two days of the month. The event continued into August.
8/1/2020	0	0	0	Excessive Heat Warning criteria were reached for one more day. The event began in July.
8/14/2020	0	0	0	Excessive Heat Warning criteria were reached for eight straight days.
8/24/2020	0	0	0	Excessive Heat Warning criteria were reached for four straight days.
9/4/2020	0	0	0	Excessive Heat Warning criteria were reached for four straight days.
6/2/2021	0	0	0	Excessive Heat Warning criteria were reached four days in a row.
6/14/2021	0	0	0	Excessive Heat Warning criteria were reached seven days in a row.
7/7/2021	0	0	0	Excessive Heat Warning criteria were reached six days in a row.
8/3/2021	0	0	0	Excessive Heat Warning criteria were reached three days in a row.
8/26/2021	0	0	0	Excessive Heat Warning criteria were reached five days in a row.
9/6/2021	0	0	0	Excessive Heat Warning criteria were reached four days in a row.
9/12/2021	0	0	0	Excessive Heat Warning criteria were reached two days in a row.
6/9/2022	0	0	0	Excessive Heat Warning criteria were reached four days in a row.
7/21/2022	0	0	0	Excessive Heat Warning criteria were reached two days in a row.
8/30/2022	0	0	0	Excessive Heat Warning criteria were reached two days in a row. The event continued into September.
9/1/2022	0	0	0	This event began in August. Excessive Heat Warning criteria were reached on each of the first four days of September, and the event continued beyond.
9/5/2022	0	0	0	This event began in August and continued through early September.

Data Source: The National Weather Service/NOAA Storm Events Database

Clark County, Las Vegas, North Las Vegas, Henderson, Las Vegas Paiute Tribe

Table 46: Las Vegas Valley Zone, National Weather Service, Excessive Heat



Date	Deaths	Injuries	Property Damage	Extent/Impact Description
5/13/2007	0	0	0	An 84-year-old woman died of hyperthermia on May 13th in Las Vegas. The exact time of death is unknown.
8/10/2007	1	0	0	Hot desert temperatures claimed a life.
6/5/2010	1	0	0	One person died of heat-related causes two days after the excessive heat conditions ended.
7/15/2010	6	0	0	Strong high pressure pushed temperatures in the Mojave Desert over Excessive Heat Warning levels. Six people died in the Las Vegas Valley from the 18th through the 20th from the effects of the excessive heat.
8/23/2011	1	0	0	High temperatures in Las Vegas reached Excessive Heat Warning criteria for four straight days. One man died due to complications from the heat.
8/29/2011	0	0	0	High temperatures reached Excessive Heat Warning criteria in Las Vegas for two straight days.
6/1/2012	0	0	0	Temperatures in Las Vegas exceeded the daily Excessive Heat Warning criterion of 107F.
7/11/2012	1	0	0	One man died of heat complications.

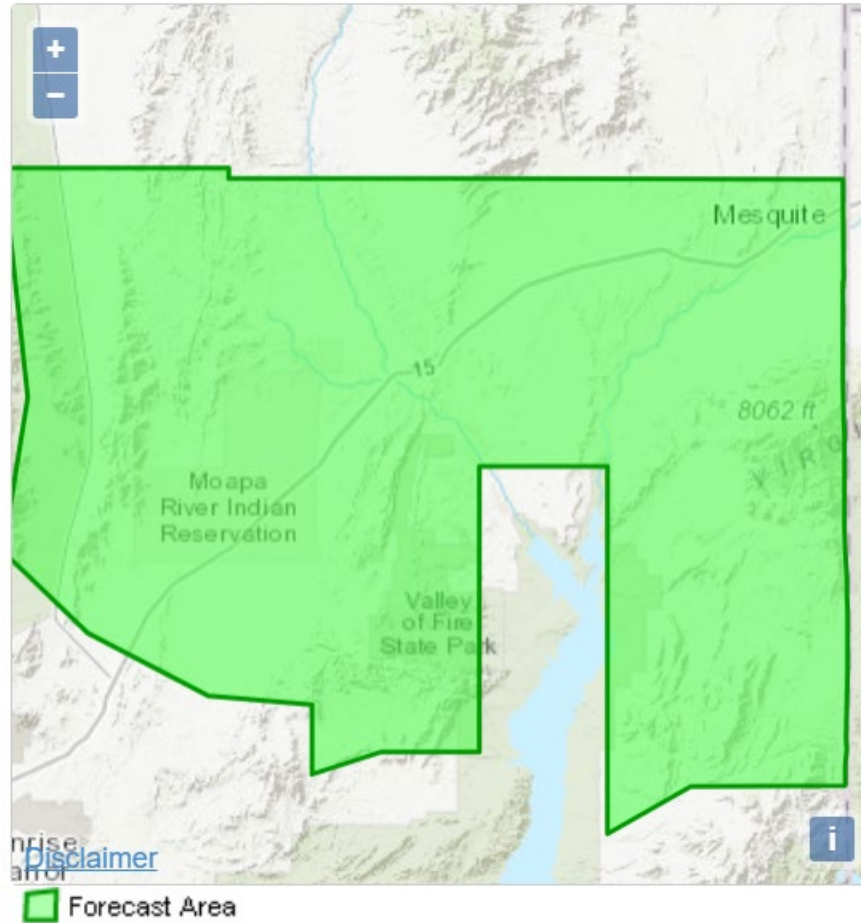
Date	Deaths	Injuries	Property Damage	Extent/Impact Description
8/9/2012	0	0	0	The temperature at McCarran Airport (KLAS) reached 112 degrees.
6/6/2013	1	3	0	Temperatures reached Excessive Heat Warning criteria for four consecutive days. One person died and three others were injured.
6/28/2013	2	353	25000	Excessive Heat Warning criteria were reached each day from June 28th through 30th and continued into July. Hundreds of people were overcome by heat in the Las Vegas Valley, including two fatalities. The heat also knocked out power to 132 customers for less than two hours on the afternoon of the 29th.
7/1/2013	27	213	0	Excessive Heat Warning criteria were reached each day from the 1st through the 4th. Hundreds of people were overcome by the heat. An unusually high mortality rate persisted until July 11th, by which time 39 people had died (including two in June). Another man died in September after being found unresponsive on July 5th.
7/1/2014	3	0	0	The high temperature reached 112F at McCarran Airport in Las Vegas.
7/13/2014	0	0	0	Excessive Heat Warning criteria were reached in Las Vegas as the high temperature reached 112F.
7/23/2014	0	0	0	Las Vegas reached Excessive Heat Warning criteria with a high temperature of 112F.
6/19/2015	1	17	0	Temperatures in Las Vegas reached Excessive Heat Warning levels on five days during the 12-day period and were just below criteria for the remainder of the period. McCarran Airport had never before recorded a low of 90 degrees or higher in June; three such days occurred during this period.
8/16/2015	1	0	0	Las Vegas reached Excessive Heat Warning criteria two days in a row with highs of 110F. Two people died a few days later of heat-related causes.
9/12/2015	1	0	0	Las Vegas briefly reached the Excessive Heat Warning criteria at the end of a prolonged period of above normal temperatures. Two people died a few days later of heat-related causes.
6/3/2016	9	0	0	High temperatures in Las Vegas ranged from 105F to 109F for six days, with five of the six reaching 107F or higher. The excessive heat caused or contributed to ten deaths.
6/19/2016	9	0	0	Temperatures reached Excessive Heat Warning levels June 19th through the 21st, and then persisted just below those levels through the 29th. The heat caused or contributed to nine direct and eight indirect fatalities from the 20th through the 29th.
7/22/2016	13	0	0	Temperatures in Las Vegas reached Excessive Heat Warning levels on seven of eight days from the 22nd through the 29th. There were 13 direct and 13 indirect heat related fatalities from the 23rd through the 31st.
6/17/2017	15	0	0	Eighteen people died of heat-related causes in the Las Vegas Valley.
7/6/2017	11	0	0	Excessive heat criteria were reached in Las Vegas from the 6th through the 8th. From the 6th through the 10th, 20 people died of heat related causes.
7/15/2017	10	0	0	Fourteen people died of heat related causes in Las Vegas from the 15th through the 18th, following a day of excessive heat on the 15th.
6/4/2018	2	0	0	Temperatures reached Excessive Heat Warning levels in Las Vegas on the 4th. Four people died of heat related causes from the 4th through the 8th.
6/12/2018	2	0	0	Temperatures reached Excessive Heat Warning levels on the 12th and 13th. Four people died in Las Vegas of heat related causes on the 13th and 14th.
6/21/2018	2	0	0	Temperatures reached Excessive Heat Warning levels on the 21st through 23rd. Two people died of heat related causes on the 21st.
7/6/2018	8	0	0	Nine people died in Las Vegas of heat related causes from July 6th through 10th.
7/24/2018	14	0	0	Excessive heat lasted for five days in Las Vegas. Seventeen people died in Las Vegas of heat related causes during and in the immediate aftermath of the excessive heat.
8/6/2018	4	0	0	Excessive Heat Warning criteria were reached in Las Vegas for three days. During this time and in the two days

Date	Deaths	Injuries	Property Damage	Extent/Impact Description
				immediately following, ten people died of heat related causes.
6/11/2019	5	0	0	Excessive Heat Warning criteria were reached for three days. Eight people died during and immediately following the excessive heat.
7/29/2019	0	0	0	Excessive Heat Warning criteria were reached in Las Vegas. One person died two days later of heat related causes.
8/3/2019	0	0	0	Excessive Heat Warning criteria were reached in the Las Vegas Valley.
8/14/2019	0	0	0	Excessive Heat Warning criteria were reached in the Las Vegas Valley.
8/20/2019	0	0	0	Excessive Heat Warning criteria were reached in the Las Vegas Valley.
8/26/2019	0	0	0	Excessive Heat Warning criteria were reached in the Las Vegas Valley. The event continued into September.
9/1/2019	0	0	0	Excessive Heat Warning criteria were reached in the Las Vegas Valley. The event began in August.
9/4/2019	0	0	0	Excessive Heat Warning criteria were reached in the Las Vegas Valley.
5/27/2020	0	0	0	Excessive Heat Warning criteria were reached for three straight days.
6/4/2020	0	0	0	Excessive Heat Warning criteria were reached for one day.
7/11/2020	0	0	0	Excessive Heat Warning criteria were reached three days in a row.
7/30/2020	0	0	0	Excessive Heat Warning criteria were reached on the last two days of the month. The event continued into August.
8/1/2020	0	0	0	Excessive Heat Warning criteria were reached for one more day. The event began in July.
8/14/2020	0	0	0	Excessive Heat Warning criteria were reached for eight straight days.
8/25/2020	0	0	0	Excessive Heat Warning criteria were reached for three straight days.
9/4/2020	0	0	0	Excessive Heat Warning criteria were reached for four straight days.
6/2/2021	0	0	0	Excessive Heat Warning criteria were reached four days in a row.
6/14/2021	0	0	0	Excessive Heat Warning criteria were reached seven days in a row.
7/7/2021	0	0	0	Excessive Heat Warning criteria were reached six days in a row.
8/4/2021	0	0	0	Excessive Heat Warning criteria were reached two days in a row.
8/28/2021	0	0	0	Excessive Heat Warning criteria were reached three days in a row.
9/6/2021	5	0	0	Excessive Heat Warning criteria were reached four days in a row. Seven people died of heat related causes.
6/9/2022	4	0	0	Excessive Heat Warning criteria were reached three days in a row. Twelve people died in Las Vegas during and immediately following the heat wave.
7/21/2022	3	0	0	Excessive Heat Warning criteria were reached two days in a row. Three people died of heat-related causes during and immediately after the excessive heat event.
8/30/2022	1	0	0	Excessive Heat Warning criteria were reached two days in a row. The event continued into September. One person died of heat related injuries suffered in August.
9/1/2022	4	0	0	This event began in August. Excessive Heat Warning criteria were reached on each of the first four days of September, and the event continued beyond.
9/5/2022	1	0	0	This event began in August and continued through early September.

Data Source: The National Weather Service/NOAA Storm Events Database

Clark County, Mesquite, Moapa River Indian Reservation

Table 47: Northeast Clark Zone, National Weather Service, Excessive Heat



Date	Deaths	Injuries	Property Damage	Extent/Impact Description
6/12/2018	1	0	0	Temperatures reached Excessive Heat Warning levels on the 12th and 13th. One person died northeast of Glendale of heat related causes on the 13th.
8/14/2019	0	0	0	Excessive Heat Warning criteria were reached in northeast Clark County.
8/26/2019	0	0	0	Excessive Heat Warning criteria were reached in northeast Clark County. The event continued into September.

Date	Deaths	Injuries	Property Damage	Extent/Impact Description
9/1/2019	0	0	0	Excessive Heat Warning criteria were reached in northeast Clark County. The event began in August.
5/27/2020	0	0	0	Excessive Heat Warning criteria were reached for three straight days.
6/4/2020	0	0	0	Excessive Heat Warning criteria were reached for one day.
7/11/2020	0	0	0	Excessive Heat Warning criteria were reached three days in a row.
7/30/2020	0	0	0	Excessive Heat Warning criteria were reached on the last two days of the month. The event continued into August.
8/1/2020	0	0	0	Excessive Heat Warning criteria were reached for one more day. The event began in July.
8/14/2020	0	0	0	Excessive Heat Warning criteria were reached for eight straight days.
8/25/2020	0	0	0	Excessive Heat Warning criteria were reached for three straight days.
9/4/2020	0	0	0	Excessive Heat Warning criteria were reached for four straight days.
6/2/2021	0	0	0	Excessive Heat Warning criteria were reached four days in a row.
6/14/2021	0	0	0	Excessive Heat Warning criteria were reached seven days in a row.
7/7/2021	0	0	0	Excessive Heat Warning criteria were reached six days in a row.
8/4/2021	0	0	0	Excessive Heat Warning criteria were reached two days in a row.
8/28/2021	0	0	0	Excessive Heat Warning criteria were reached three days in a row.
9/6/2021	0	0	0	Excessive Heat Warning criteria were reached four days in a row.
6/9/2022	0	0	0	Excessive Heat Warning criteria were reached three days in a row.
7/21/2022	0	0	0	Excessive Heat Warning criteria were reached two days in a row.
8/30/2022	0	0	0	Excessive Heat Warning criteria were reached two days in a row. The event continued into September.
9/1/2022	0	0	0	This event began in August. Excessive Heat Warning criteria were reached on each of the first four days of September, and the event continued beyond.
9/5/2022	0	0	0	This event began in August and continued through early September.

Data Source: [The National Weather Service/NOAA Storm Events Database](#)

Clark County

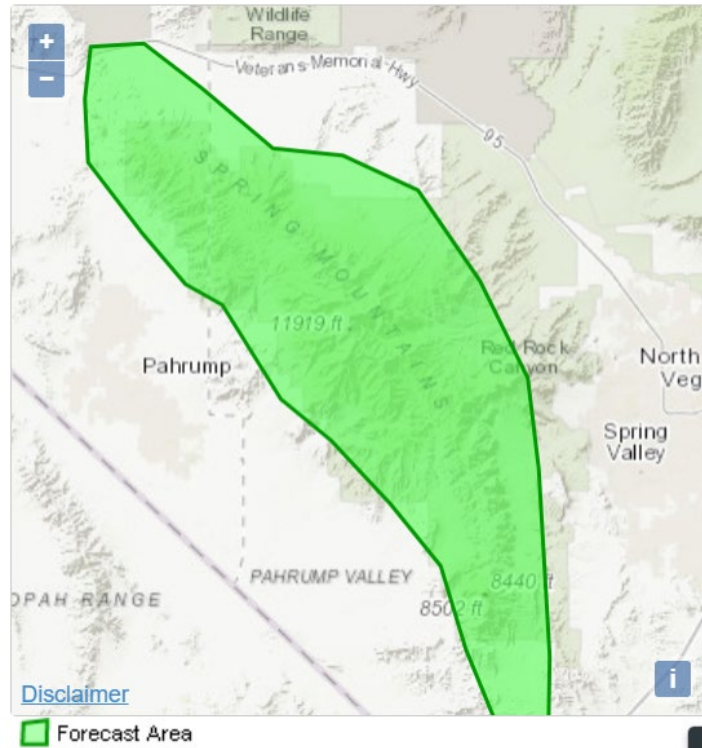
Table 48: Southern Clark Zone, National Weather Service, Excessive Heat

Date	Deaths	Injuries	Property Damage	Extent/Impact Description
8/14/2019	0	0	0	Excessive Heat Warning criteria were reached in southern Clark County.
8/20/2019	0	0	0	Excessive Heat Warning criteria were reached in southern Clark County.
8/26/2019	0	0	0	Excessive Heat Warning criteria were reached in southern Clark County. The event continued into September.
9/1/2019	0	0	0	Excessive Heat Warning criteria were reached in southern Clark County. The event began in August.
5/27/2020	0	0	0	Excessive Heat Warning criteria were reached for three straight days.
7/11/2020	0	0	0	Excessive Heat Warning criteria were reached three days in a row.
7/30/2020	0	0	0	Excessive Heat Warning criteria were reached on the last two days of the month. The event continued into August.
8/1/2020	0	0	0	Excessive Heat Warning criteria were reached for one more day. The event began in July.
8/14/2020	0	0	0	Excessive Heat Warning criteria were reached for seven straight days.
8/25/2020	0	0	0	Excessive Heat Warning criteria were reached for three straight days.
9/4/2020	0	0	0	Excessive Heat Warning criteria were reached for four straight days.
6/14/2021	0	0	0	Excessive Heat Warning criteria were reached seven days in a row.
7/7/2021	0	0	0	Excessive Heat Warning criteria were reached six days in a row.
8/4/2021	0	0	0	Excessive Heat Warning criteria were reached two days in a row.
8/29/2021	0	0	0	Excessive Heat Warning criteria were reached on one day.
9/6/2021	0	0	0	Excessive Heat Warning criteria were reached three days in a row.
6/9/2022	0	0	0	Excessive Heat Warning criteria were reached three days in a row.
7/21/2022	0	0	0	Excessive Heat Warning criteria were reached two days in a row.
8/30/2022	0	0	0	Excessive Heat Warning criteria were reached two days in a row. The event continued into September.
9/1/2022	0	0	0	This event began in August. Excessive Heat Warning criteria were reached on each of the first four days of September, and the event continued beyond.
9/5/2022	0	0	0	This event began in August and continued through early September.

Data Source: [The National Weather Service/NOAA Storm Events Database](#)

Clark County

Table 49: Spring Mountains Zone, National Weather Service, Excessive Heat

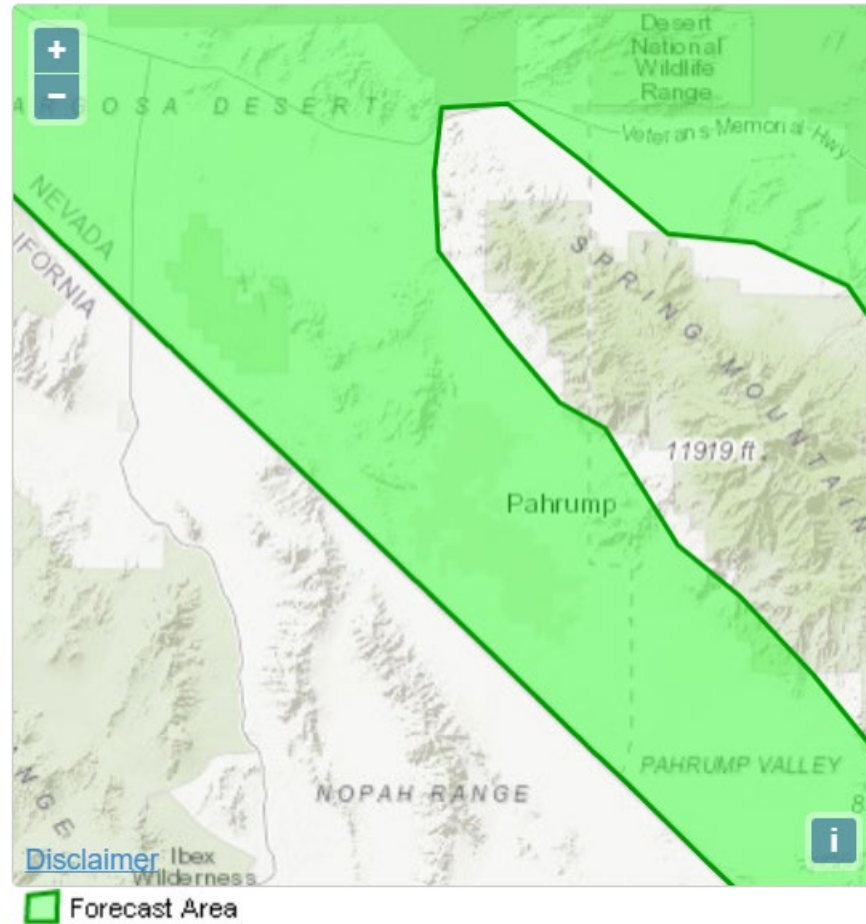


Date	Deaths	Injuries	Property Damage	Extent/Impact Description
9/6/2021	0	0	0	Excessive Heat Warning criteria were reached three days in a row.

Data Source: The National Weather Service/NOAA Storm Events Database

Clark County

Table 50: Western Clark/Southern Nye Zone, National Weather Service, Excessive Heat



Date	Deaths	Injuries	Property Damage	Extent/Impact Description
6/11/2019	0	0	0	Excessive Heat Warning criteria were reached for three days.
8/3/2019	0	0	0	Excessive Heat Warning criteria were reached in western Clark and southern Nye counties.
8/14/2019	0	0	0	Excessive Heat Warning criteria were reached in western Clark and southern Nye counties.
8/20/2019	0	0	0	Excessive Heat Warning criteria were reached in western Clark and southern Nye counties.

Date	Deaths	Injuries	Property Damage	Extent/Impact Description
8/26/2019	0	0	0	Excessive Heat Warning criteria were reached in western Clark and southern Nye counties. The event continued into September.
9/1/2019	0	0	0	Excessive Heat Warning criteria were reached in western Clark and southern Nye counties. The event began in August.
5/27/2020	0	0	0	Excessive Heat Warning criteria were reached for three straight days.
6/4/2020	0	0	0	Excessive Heat Warning criteria were reached for one day.
7/11/2020	0	0	0	Excessive Heat Warning criteria were reached three days in a row.
7/30/2020	0	0	0	Excessive Heat Warning criteria were reached on the last two days of the month. The event continued into August.
8/1/2020	0	0	0	Excessive Heat Warning criteria were reached for one more day. The event began in July.
8/14/2020	0	0	0	Excessive Heat Warning criteria were reached for eight straight days.
8/25/2020	0	0	0	Excessive Heat Warning criteria were reached for three straight days.
9/4/2020	0	0	0	Excessive Heat Warning criteria were reached for four straight days.
6/2/2021	0	0	0	Excessive Heat Warning criteria were reached four days in a row.
6/14/2021	0	0	0	Excessive Heat Warning criteria were reached seven days in a row.
6/27/2021	0	0	0	Excessive Heat Warning criteria were reached for two days.
7/7/2021	0	0	0	Excessive Heat Warning criteria were reached seven days in a row.
8/4/2021	0	0	0	Excessive Heat Warning criteria were reached two days in a row.
8/15/2021	0	0	0	Excessive Heat Warning criteria were reached two days in a row.
8/28/2021	0	0	0	Excessive Heat Warning criteria were reached three days in a row.
9/6/2021	0	0	0	Excessive Heat Warning criteria were reached four days in a row.
6/9/2022	0	0	0	Excessive Heat Warning criteria were reached three days in a row.
7/21/2022	0	0	0	Excessive Heat Warning criteria were reached two days in a row.
8/30/2022	0	0	0	Excessive Heat Warning criteria were reached two days in a row. The event continued into September.
9/1/2022	0	0	0	This event began in August. Excessive Heat Warning criteria were reached on each of the first four days of September, and the event continued beyond.
9/5/2022	0	0	0	This event began in August and continued through early September.
6/11/2019	0	0	0	Excessive Heat Warning criteria were reached for three days.
8/3/2019	0	0	0	Excessive Heat Warning criteria were reached in western Clark and southern Nye counties.
8/14/2019	0	0	0	Excessive Heat Warning criteria were reached in western Clark and southern Nye counties.
8/20/2019	0	0	0	Excessive Heat Warning criteria were reached in western Clark and southern Nye counties.
8/26/2019	0	0	0	Excessive Heat Warning criteria were reached in western Clark and southern Nye counties. The event continued into September.

Date	Deaths	Injuries	Property Damage	Extent/Impact Description
9/1/2019	0	0	0	Excessive Heat Warning criteria were reached in western Clark and southern Nye counties. The event began in August.
5/27/2020	0	0	0	Excessive Heat Warning criteria were reached for three straight days.
6/4/2020	0	0	0	Excessive Heat Warning criteria were reached for one day.
7/11/2020	0	0	0	Excessive Heat Warning criteria were reached three days in a row.
<i>Data Source: The National Weather Service/NOAA Storm Events Database</i>				

Probability of Future Events, Extreme/Excessive Heat

Calculating future probability is one of many predictors of future occurrences. Based on the Calculated Priority Risk Index (CPRI) conducted for Clark County and its participating jurisdictions, there is a **high probability (rank score of 3.0-3.9)** of extreme/excessive heat for the planning area. Please note that the CPRI Rating is a subjective measure based on the opinion of the Clark County MPSC members during the planning development portion of the MJHMP update. The following table provides CPRI Rating on extreme/excessive heat for Clark County and its participating jurisdictions.

Table 51: Clark County and Participating Jurisdiction CPRI Rating for Extreme/Excessive Heat

Clark County and Participating Jurisdictions CPRI Rating for Extreme/Excessive Heat							
Hazard: Extreme/Excessive Heat	Category and Weight					CPRI Score	Risk Level
	Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%	Index Rating (R) Weighted Score (WS)		
Clark County (including Incorporated and Unincorporated Areas)	R	4	3	1	3	3.15	H
	WS	1.8	0.9	0.15	0.3		
Boulder City	R	4	3	2	3	3.3	H
	WS	1.8	0.9	0.3	0.3		
Henderson	R	4	4	4	4	4	S
	WS	1.8	1.2	.15	.4		
Las Vegas	R	4	2	1	3	2.85	M
	WS	1.8	0.6	0.15	0.3		
Mesquite	R	4	3	1	3	3.15	H
	WS	1.8	0.9	0.15	0.3		
North Las Vegas	R	4	2	1	2	2.75	M
	WS	1.8	0.6	0.15	0.2		
Special District: Clark County Water Reclamation District	R	4	3	1	3	3.15	H
	WS	1.8	0.90	.15	.30		
Special District: Clark County School District	R	3	2	2	3	2.55	M
	WS	1.35	0.6	0.3	0.3		
Special District: Las Vegas Valley Water District/SWNA	R	4	2	2	3	3.00	H
	WS	1.80	0.60	0.30	0.30		
Tribal Nation: Las Vegas Valley Paiute	R	4	2	3	4	3.25	H
	WS	1.8	0.6	0.45	0.4		
Tribal Nation: Moapa Band of Paiutes	R	4	4	2	3	3.6	H
	WS	1.8	1.2	0.3	0.3		

Note: Although the City of Mesquite participated in the planning process, at the time of this update, the CPRI data for the City of Mesquite was not received. Therefore, the CPRI rating for the City of Mesquite is the same rating as Clark County due to the city being within the planning area.

Extreme/Excessive Heat Quantitative Probability of Future Events

As noted above, to gain a better understanding of previous occurrences and accurately calculate future probability, the following information was taken into consideration. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the extreme/excessive heat hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible.

Note: The NOAA/NCEI Storm Events Database identifies the location of the extreme/excessive heat events within County into the following zones: Northeast Clark County, Western Clark and Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation Area, and Southern Clark County.

Based on the information obtained from the NOAA/NCEI, only 160 extreme/excessive heat incidents occurred in Clark County between January 1, 2017, and May 31, 2023. Clark County and its participating jurisdictions which include Clark County Unincorporated areas, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation can expect a extreme/excessive heat event with 941.18% probability per year or 9.41 events per year, as indicated in Table 52 (below). This number is based on historical events. As such, and according to the probability range table, extreme/excessive heat is **highly likely** for Clark County and its participating jurisdictions.

Table 52: Probability of Future Events, Extreme/Excessive Heat – Clark County, NV

Probability of Future Events, Extreme/Excessive Heat, Clark County, NV	
Event Year	Event Count
2007	2
2008	0
2009	0
2010	2
2011	2
2012	3
2013	5
2014	3
2015	3
2016	4
2017	3
2018	7

Probability of Future Events, Extreme/Excessive Heat, Clark County, NV

Event Year	Event Count
2019	34
2020	39
2021	33
2022	23
2023	0
Total Recorded Events =	160
Total Years =	17
Yearly Probability =	941.18%*

*Note: * Clark County and its participating jurisdictions can expect an extreme/excessive heat event with 941.18% probability each year. This number was derived from the number of recorded events by the year range used. Calculating future probability is not the only predictor of future occurrences. The qualitative chance of an extreme/excessive heat event impacting the planning area is highly likely.*

Data Source: NOAA/NCEI Storm Events Database

Vulnerability and Impact

Clark County and its participating jurisdictions are vulnerable to extreme/excessive heat events. To gain a better understanding of previous occurrences and to accurately calculate future probability, the following information was taken into consideration. Information was obtained by accessing the NOAA database.

<https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the extreme/excessive heat hazard experienced in Clark County, including the jurisdictions located within, and is the only source of accessible data.

Note: The NOAA/NCEI Storm Events Database identifies the location of the extreme/excessive heat events within County into the following zones: Northeast Clark County, Western Clark and Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation Area, and Southern Clark County.

Based on the information obtained from the NOAA/NCEI, only 160 extreme/excessive heat incidents occurred in Clark County between January 1, 2017, and May 31, 2023. Clark County and its participating jurisdictions can expect at least one extreme/excessive heat event with 941.18% probability per year or 9.41 events per year, as indicated in Table 51 (above). This number is based on historical events. As such, and according to the probability range table, extreme/excessive heat is “**highly likely**” for Clark County and its participating jurisdictions. The following information provides updated vulnerability and impact of extreme/excessive heat for each jurisdiction in the planning area:

- Boulder City:** The City of Boulder City’s extreme/excessive heat probability is based on the Lake Mead/Lake Mohave National Recreation Area which includes Clark County and Boulder City. This zone, as indicated by the NOAA/NCEI Storm Events Database, identifies the location of the extreme/excessive heat events within County into the following zones: Northeast Clark County, Western Clark and Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation Area, and Southern Clark County. The City of Boulder City resides in Clark County;

therefore, this probability is based on County-wide data. Also, in reference to population growth, the City of Boulder City has experienced a 23.23% growth in population. With the recent growth, Boulder City now has many more residents since the last HMP update. At the same time, Boulder City is seeing an increased aging population with 29.0% of residents being above the age of 65. These groups are most at risk to the impacts of extreme/excessive heat conditions. Since 1950, the Lake Mead/Lake Mohave National Recreational Area Zone which includes Boulder City, had five (5) deaths and three (3) injuries directly resulting from extreme/heat. It is expected that with increased population and the increasing effects of climate change, this may lead to an increase in deaths in the future. The most at risk are the area's vulnerable populations, which include seniors and those experiencing homelessness.

- **Henderson:** The City of Henderson's extreme/excessive heat probability is based on the Las Vegas Valley Zone which includes Clark County, Las Vegas, North Las Vegas, Henderson, and Las Vegas Paiute Tribe. This zone as indicated by the NOAA/NCEI Storm Events Database which identifies the location of the extreme/excessive heat events within County into the following zones: Northeast Clark County, Western Clark and Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation Area, and Southern Clark County. Also, with population growth, the City of Henderson has experienced a 0.919% growth in population. With the recent growth, Henderson now has many more residents. At the same time, Henderson is seeing an increased aging population with 26.6% residents above the age of 65. These groups are most at risk to the impact of extreme/excessive heat conditions. Since 1950, the Las Vegas Valley Zone which includes the City of Henderson had 168 deaths and 586 injuries directly resulting from extreme/heat. It is expected that with increased population and the increasing effects of climate change, may lead to an increase in deaths in the futures. The most vulnerable populations, including seniors and those experiencing homelessness, are most at risk.

- **Las Vegas:** The City of Las Vegas's extreme/excessive heat probability is based on the Las Vegas Valley Zone which includes Clark County Las Vegas, North Las Vegas, Henderson, and Las Vegas Paiute Tribe. This zone as indicated by the NOAA/NCEI Storm Events Database identifies the location of the extreme/excessive heat events within County into the following zones: Northeast Clark County, Western Clark and Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation Area, and Southern Clark County.

Also, with population growth, the City of Las Vegas has experienced a 9.96% growth in population. With the recent growth, Las Vegas now has many more residents. At the same time, Las Vegas is seeing an increased aging population with 14.8% residents above the age of 65. These groups are most at risk to the impact of extreme/excessive heat conditions. Since 1950, the Las Vegas Valley Zone which includes the City of Las Vegas had 168 deaths and 586 injuries directly resulting from extreme/heat. It is expected that with increased population and the increasing effects of climate change, may lead to an increase in deaths in the futures. The most vulnerable populations, including seniors and those experiencing homelessness, are most at risk.

- **Mesquite:** The City of Mesquite's extreme/excessive heat probability is based on the Northeast Clark Zone which includes Clark County, Mesquite and Moapa River Indian Reservation (Moapa Band of Paiutes). This zone as indicated by the NOAA/NCEI Storm Events Database identifies the location of the extreme/excessive heat events within County into the following zones: Northeast Clark County, Western Clark and Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation Area, and Southern Clark County.

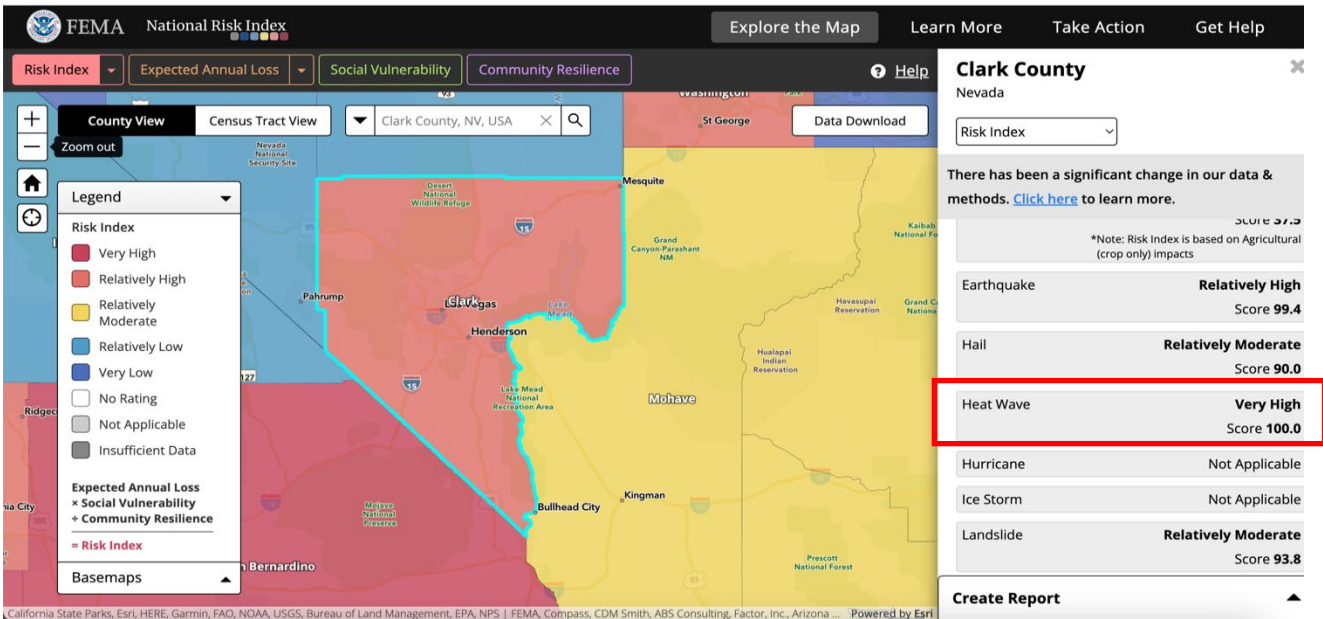
Mesquite has experienced a 34% growth in population. With the recent growth, Mesquite now has many more residents. At the same time, Mesquite is seeing an increased aging population with 42% residents above the age of 65. These groups are most at risk to the impact of extreme/excessive heat conditions. Since 1950, the Northeast Valley Zone which includes Clark County, Mesquite and the Moapa River Indian Reservation had one death

however no injuries or property damage directly resulting from extreme/heat. It is expected that with increased population, the increasing effects of climate change may lead to an increase in deaths in the futures. The most vulnerable populations, including seniors and those experiencing homelessness, are most at risk.

- **North Las Vegas:** The City of North Las Vegas's extreme/excessive heat probability is based on the Las Vegas Valley Zone which includes Clark County Las Vegas, North Las Vegas, Henderson, and Las Vegas Paiute Tribe. This zone as indicated by the NOAA/NCEI Storm Events Database identifies the location of the extreme/excessive heat events within County into the following zones: Northeast Clark County, Western Clark and Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation Area, and Southern Clark County. Also, with population growth, the City of North Las Vegas has experienced a 21% growth in population. With the recent growth, North Las Vegas now has many more residents. At the same time, North Las Vegas is seeing an increased aging population with 10.9% residents above the age of 65. These groups are most at risk to the impact of extreme/excessive heat conditions. Since 1950, the Las Vegas Valley Zone which includes North Las Vegas had 168 deaths and 586 injuries directly resulting from extreme/heat. It is expected that with increased population and the increasing effects of climate change, may lead to an increase in deaths in the futures. The most vulnerable populations, including seniors and those experiencing homelessness, are most at risk.

The FEMA National Risk Index for Natural Hazards is an online mapping system that identifies communities most at risk to 18 natural hazards. Related to Extreme/Excessive Heat, according to the National Risk Index, a Heat Wave is a period of abnormally and uncomfortably hot and unusually humid weather typically lasting two or more days with temperatures outside the historical averages for a given area. The Heat Wave Risk Index score and rating represent a community's relative risk for Heat Waves, when compared to the rest of the United States. Clark County has a Heat Wave risk score of **100.0 (very high)** compared to the rest of the Country. The map below illustrates that score visually.

Figure 71: FEMA National Risk Index Drought Map – Clark County, NV, Extreme/Excessive Heat (Heat Wave)



Data Source: [The FEMA National Risk Index](#)

Vulnerability of Facilities

Critical facilities are not vulnerable to extreme heat. However, excessive heat can drive individuals with inadequate means of staying cool to seek refuge in facilities to keep cool. These facilities, known as cooling centers, may be pre-identified critical facilities or become vital to protect individuals, especially within the community’s vulnerable population, from the effects of extreme heat.

Vulnerability of Population

Extreme/Excessive Heat could pose a risk to the vulnerable population within the planning area. Due to the Urban Heat Island (UHI) effect, some of the neighborhoods within the planning area are hotter than others. Although our extreme temperatures impact our vulnerable residents the most, everyone is exposed to extreme heat here in Clark County ([Stay Cool in Clark County](#)). These events can impact individuals with access and functional needs, including aging populations, older adults, children, people with chronic illness, and those sensitive to heat exposure. The following infographic visually describes the component of heat vulnerability within the Clark County and its participating jurisdictions.

Figure 72: Extreme/Excessive Heat on Vulnerable Populations



Data Source: [Regional Transportation of Southern Nevada \(RTC\)](#)

In the last five years, Clark County recorded 56 fatalities from extreme/excessive heat events. Still, of the County's total population of 2,265,461, all are considered vulnerable and could pose a risk to the socially vulnerable populations within the planning area. To illustrate the vulnerability that extreme/excessive heat has on the County, the Southern Nevada Extreme Heat Vulnerability Webmap was developed to identify areas within the region with populations most vulnerable to extreme heat. This webmap is a component of an extreme heat vulnerability study completed by Metropolitan Planning Organization (MPO) staff within the Regional Transportation of Southern Nevada (RTC).

Figure 73: Southern Nevada Extreme Heat Vulnerability Web Map

Data Source: [Regional Transportation of Southern Nevada \(RTC\)](#)

The Clark County, Climate Vulnerability Study, mentions how extreme/excessive will affect the people

and communities within Clark County related to housing, schools, correctional and detention centers, and critical health facilities:

- **Housing:** "Under extreme heat conditions, there is an increased energy and utility cost burden on the housing system due to demand for cooling. Further, state law currently does not have clear standards for heating and cooling in housing and few energy, cooling, and weatherization programs are specific to Clark County."
- **Schools:** "Extreme heat may negatively impact learning, physical health, mental health, socio-personal development, mood, and compliance. Excessive heat limits access to outdoor spaces, and impacts those who walk, roll, or bike to school. Increasing temperatures negatively impact school infrastructure, operations, and programming as higher temperatures cause increased demand for cooling that strains older HVAC systems or increases the risk of power outage, with health and safety implications. Clark County School District (CCSD) is well positioned to successfully adapt to future conditions through available and anticipated funding resources, staffing capacity, programmatic initiatives, and ongoing partnerships. Through the current Capital Improvement Program (2015-2025) and the recently developed Sustainability, Energy, and Environmental Services Department, the district is renovating facilities with sustainability in mind."
- **Correctional Facilities and Detention Centers:** "Excessive heat is a great concern for incarcerated and detained individuals, as well as staff, threatening physical and mental health, socio-personal development, mood, and compliance. Increasing temperatures strain these facilities by increasing utility costs and power outages, which in turn have health and safety implications. High temperatures also strain older and inefficient HVAC systems in many older facilities, leading to moderate-high sensitivity and moderate adaptive capacity."
- **Critical Health Facilities:** "The increase in heat-related illnesses, including cardiovascular and respiratory stresses, puts additional stress on critical health facilities and healthcare workers. Frontline communities are generally more sensitive groups to the impacts of extreme heat. Disruptions to power systems during extreme heat events can have a significant impact on the functionality of health care facility operations, storage and access to essential medications, and medical treatments of individuals."

The FEMA National Risk Index map provides data on social vulnerability and community resilience related to hazards. Both of these factors impact the vulnerability of a population to a hazard event like extreme/excessive heat. FEMA National Risk Index defines [Social Vulnerability](#) as the susceptibility of social groups to the adverse impacts of natural hazards, including death, injury, loss, or disruption of livelihood. FEMA defines [Community Resilience](#) as the ability for a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruption. The scoring of these FEMA National Risk Index categories are for all hazards, including extreme/excessive heat, are as follows:

- **Community Resilience:** the higher community resilience score results in a lower risk index score. The Community Resilience score for Clark County is **49.9**, meaning communities within the County have a Very Low ability to prepare for anticipated natural hazards, adapt to conditions, and withstand and recover rapidly from disruptions compared to the rest of the U.S.
- **Social vulnerability:** a higher social vulnerability score results in a higher Risk Index score. Social groups in Clark County, NV, have a Relatively High susceptibility to the adverse impacts of natural hazards compared to the rest of the U.S. The Social Vulnerability score for Clark County is **48.59**.

The following maps provide a snapshot of community resilience and social vulnerability scoring related to all hazards, including extreme/excessive heat for Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area and Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation).

Figure 74: FEMA National Risk Index Maps, Social Vulnerability and Community Resilience - Clark County, NV

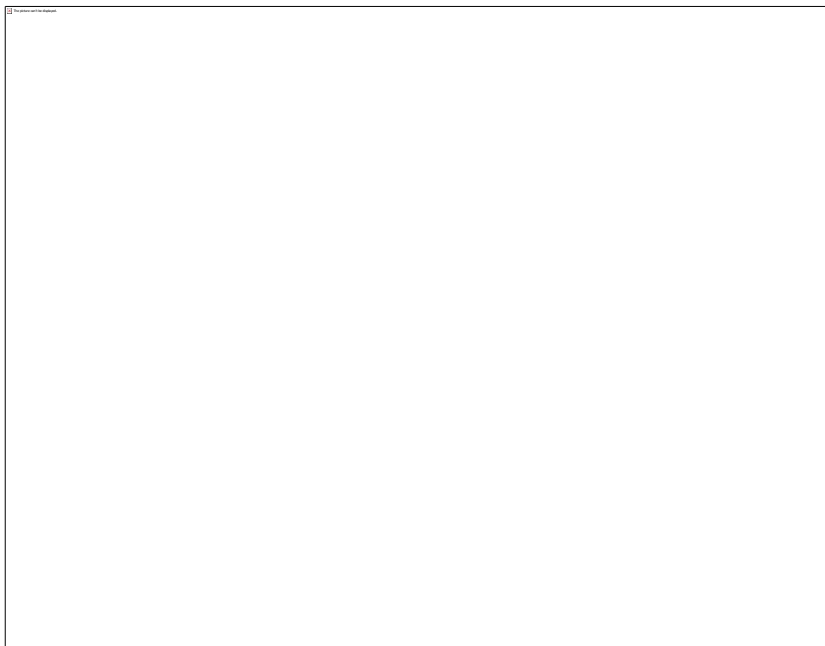
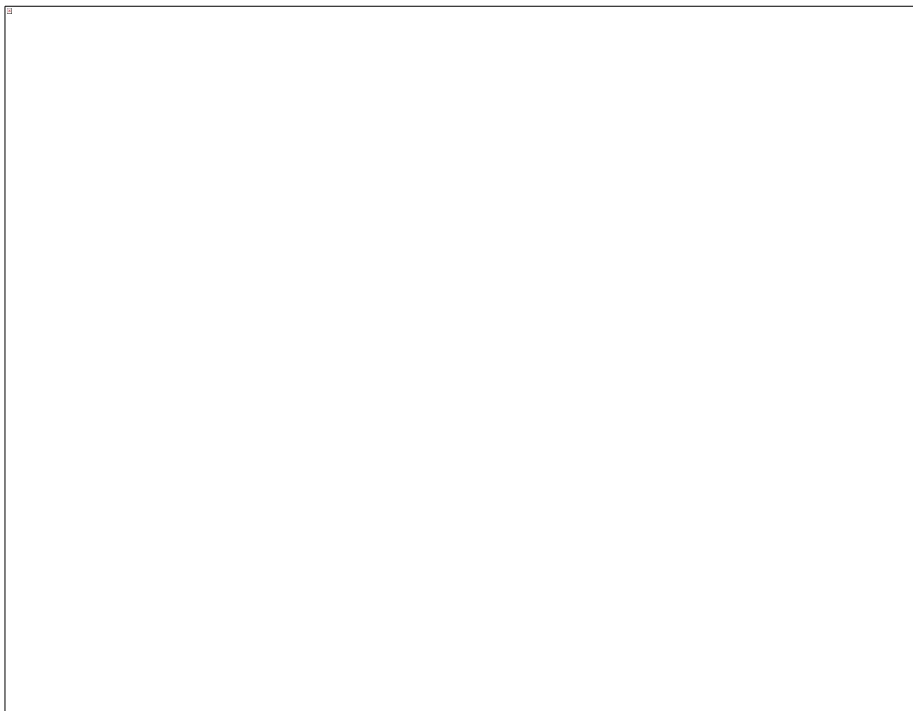


Figure 75: FEMA National Risk Index Maps, Community Resilience Map – Clark County, NV



Data Source: [The FEMA National Risk Index](#)

Impact of Climate Change

Climate change is resulting in more annual days with excessive heat. More areas in the County will likely be affected by excessive heat more often, more severely, and for more extended periods. As stated in this section, [Stay Cool in Clark County](#) mentions extreme heat days—days with temperatures exceeding 106° F—are projected to increase in Clark County—currently, the County experience about four extreme/excessive heat days per year. By 2064, that number could increase to 23 – 30 extreme heat days. Increasing the daily temperature means less "cooling off" occurs at night. Hotter temperatures increase the likelihood and severity of wildland fires.

Critical Facilities & Infrastructure

While extreme heat does not pose a direct risk to critical facilities, it does pose a risk to mechanical and electrical infrastructure. The increase in heat can cause failure of components which are heat intolerant. The [Regional Transportation of Southern Nevada \(RTC\)](#) mentions that “Increasing temperatures in the region are associated with and contribute to a host of negative impacts – from poorer air quality to added wear and tear on infrastructure. But, most importantly, studies have found a clear link between increasing temperatures and increasing heat-related deaths and hospitalizations.” The following critical facilities and infrastructures for each participating jurisdiction (Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas) are illustrated on Maps 24-24 within this MJHMP updates. A complete list of critical facilities and infrastructure can be found in [Appendix E – Critical Facilities & Infrastructure](#).

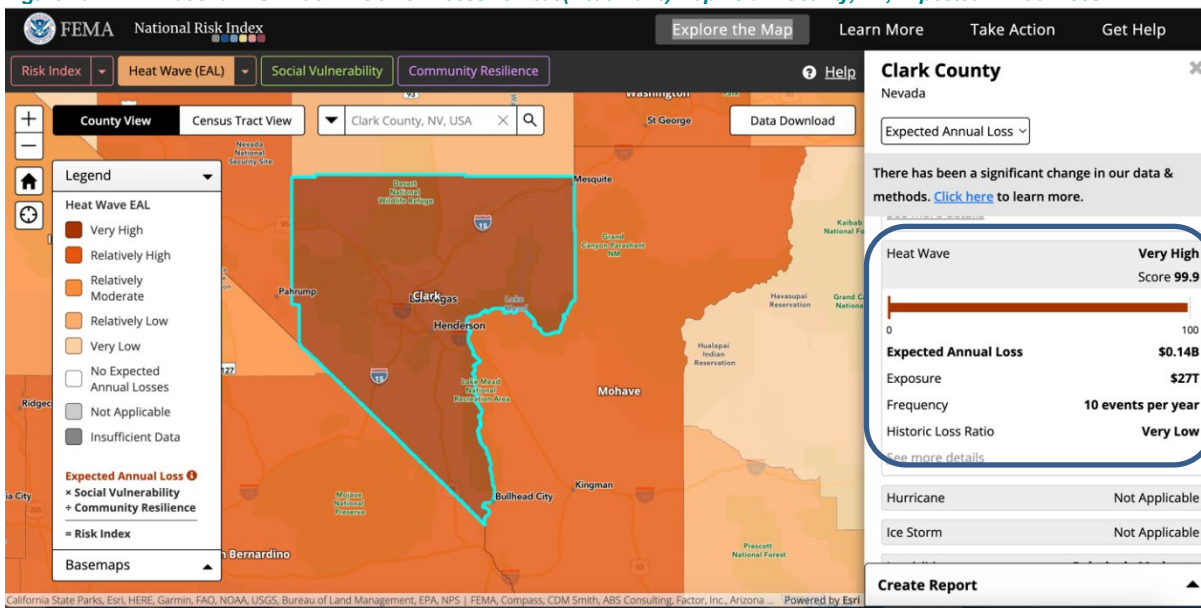
Land Use & Development

As the population in the County continues to grow and as the general climate becomes warmer, more people will be exposed to extreme/excessive heat, which will occur more frequently. Since the last MJHMP update (2018), the risk associated the excessive heat has increased. The Heatwave Heat Risk Index score on the FEMA National Risk Index website states the [heat wave expected annual loss score](#) and rating represent a community's relative level of expected building and population loss each year due to heat waves when compared to the rest of the United States. For Clark County and its participating jurisdictions the expected loss of data related to drought is as follows:

- Expected Annual Loss Score: 99.9 – Very High
- Expected Annual Loss: \$0.14B
- Exposure: \$27T
- Frequency: 10 events per year
- Historic Loss Ratio: Very Low

The following map illustrates the expected annual loss for extreme/excessive heat (heat wave) in the planning area:

Figure 76: FEMA National Risk Index Extreme/Excessive Heat (Heat Wave) Map - Clark County, NV, Expected Annual Loss



Data Source: [The FEMA National Risk Index](#)

The entire planning area is likely to experience additional days of excessive heat. Within the planning, areas are increasingly vulnerable to extreme heat's short- and long-term effects. Structures such as buildings, roads, and other infrastructure absorb and re-emit the sun's heat more than natural landscapes such as forests and water bodies. More development will expose more areas and people to the heat island effect.

Unique & Varied Risk

The [Regional Transportation Commission of Southern Nevada](#) indicates that Southern Nevada, has among the hottest climates in the U.S. and has been identified as one of the fastest-warming regions in the country. Clark County and its participating jurisdictions are more susceptible to extreme/excessive heat events. Extreme/excessive heat events in the planning area are due to the heat island effect. The City of Las Vegas ranked as the most intense urban heat island in the United States in both daytime and nighttime metrics between 2004 and 2013 ([The Urban Heat Effect, UNLV Libraries](#)).

Note: *The reference related to the Urban Heat Effect, UNLV Libraries is the most recent available related to urban heat island and there is no new data information available at the time of this plan update.*

Increasing regional temperatures are associated with and contribute to negative impacts – from poorer air quality to added wear and tear on infrastructure. But, most importantly, studies have found a clear link between increasing temperatures and increasing heat-related deaths and hospitalizations.

Note: The above information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the Extreme/Excessive Heat hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. Also, the information provided for Clark County also applies to the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas; Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes; and Special Districts representing Clark County School District, Clark County Water Reclamation District, Las Vegas Water District, and Southern Nevada Health District.

Repetitive Loss Structure

Not applicable to the identified hazard.

HAZUS® Models

Not applicable to the identified hazard.

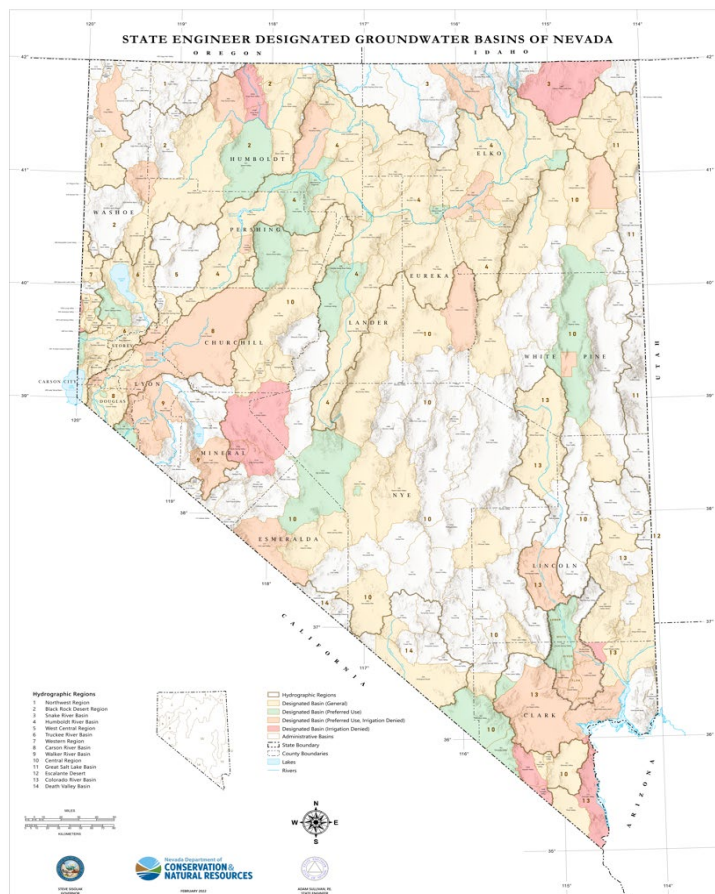
(FS) Fissures & Subsidence

Hazard Description

The [National Oceanic and Atmospheric Administration \(NOAA\)](#) defines subsidence as the sinking of the ground because of underground material movement—is most often caused by the removal of water, oil, natural gas, or mineral resources out of the ground by pumping, fracking, or mining activities. [USGS](#) further states land subsidence occurs when large amounts of groundwater have been withdrawn from certain types of rocks, such as fine-grained sediments. The rock compacts because the water is partly responsible for holding the ground up. When the water is withdrawn, the rocks fall in on itself.

Groundwater is one of the essential resources in a planning area. The 2018 Nevada Enhanced Hazard Mitigation Plan mentions, in the southwestern United States, agricultural and urban areas that depend on groundwater pumping are prone to land subsidence. Non-recoverable land subsidence occurs when declining water levels lead to inelastic water compaction. With Nevada being one of the driest states, with an average of fewer than 10 inches of rain a year in the U.S., groundwater can supplement rainfall. The map below is the designated groundwater basin in the State by the ([Nature Conservancy](#)). A lesser amount of subsidence occurs with the recoverable compression of course-grained sands and gravel deposits. A common feature that accompanies subsidence is earth fissures, which are tension cracks in the sediment above the water table (aquifers). The map below is the designated groundwater basins in the State by the [Nevada Division of Water Resources](#).

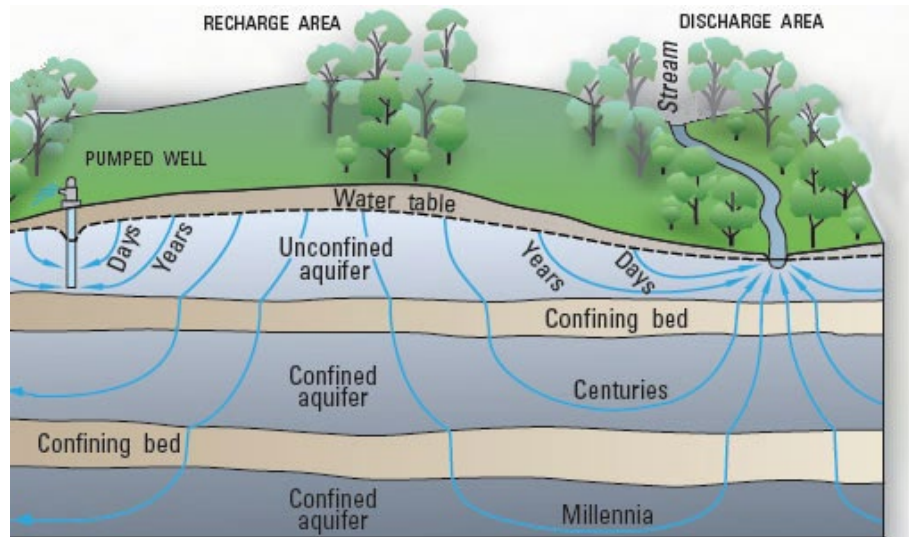
Figure 77: Designed Groundwater Basins in the State of Nevada



Data Source: [Nevada Division of Water Resources](#)

An aquifer, as defined by [USGS](#), is when a water-bearing rock readily transmits water to wells and springs. Wells can be drilled into the aquifers and water can be pumped out. Precipitation eventually

adds water (recharge) into the porous rock of the aquifer. The rate of recharge is not the same for all aquifers, though, and that must be considered when pumping water from a well. Pumping too much water too fast draws down the water in the aquifer and eventually causes a well to yield less and less water and even run dry. The following illustration is an example of a typical groundwater flow that will recharge aquifers like the Great Basin region of the United States by [USGS](#).



Data Source: Conceptual groundwater flow diagram (Source: [USGS](#))

The 2018 Nevada Hazard Mitigation Plan states aquifers in Nevada are composed primarily of three major hydrogeologic units which are as follows:

- Alluvial aquifers: the material that makes up the valleys between mountain ranges and mostly consists of gravels, sands, silts, and clays.
- Carbonate aquifer: mainly made up of limestone and dolomite. These rocks comprise many mountain ranges in eastern and southern Nevada and underlie the alluvial aquifer in places. The Basin and Range carbonate-rock aquifers are the type of groundwater aquifers found in the state of Nevada. The following is a map of the [Basin and Range Aquifers](#) that can be found in the Southwestern United States.
- Other permeable bedrock: this is the third major aquifer type in Nevada that consists of volcanic rock and makes up many mountain ridges and underlies the alluvial aquifer in much of western and Northern Nevada.

Figure 78: Basin and Range Aquifers in the United States



The Basin and Range aquifers consist of primarily unconsolidated basin-fill sand and gravel, but fractured carbonate rocks also underlie some basins and form important aquifers.

EXPLANATION	
■	Basin and Range basin-fill aquifers
■	Basin and Range carbonate-rock aquifers

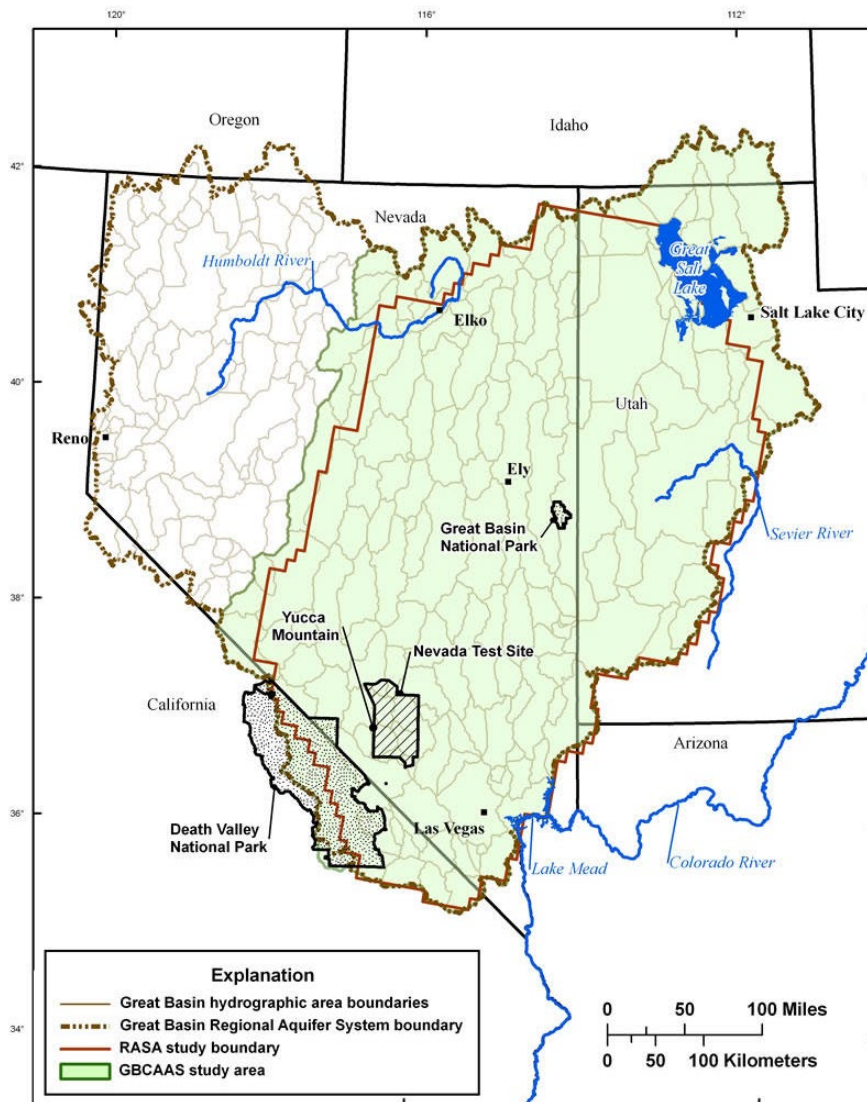
Data Source: [USGS](#)

Other parts of the state are also affected by subsidence or more rapid ground failure due to mine dewatering or the presence of underground mine workings adjacent to populated areas. You may not notice land subsidence too much because it can occur over large areas rather than in a small spot, like a sinkhole. That doesn't mean that subsidence is not a big event — states like California, Texas, and Florida have suffered damage to the tune of hundreds of millions of dollars over the years. The Nevada Enhanced Hazard Mitigation Plan mentions the history of subsidence problems within the State have developed in the Las Vegas Valley, however is now recognized in other parts of the State like Douglas, Nye, Storey, and Washoe Counties as a risk.

Location and Extent

As mentioned in the previous section, [Basin and Range carbonate-rock aquifers](#) are the type of groundwater aquifers found in the state of Nevada. The Basin and Range basin-fill aquifers underlie an area of 148,000 square miles in Nevada, California, Arizona, Utah, and adjacent States. The aquifers are a substantial source of groundwater for public supply, ranking fourth in the Nation for this use and providing about 1 billion gallons per day; the aquifers are also ranked tenth for domestic-supply use at about 64 million gallons per day and ranked fourth for irrigation use at about 4.5 billion gallons per day ([USGS](#)). The urban areas in the U.S. covering this aquifer is Salt Lake City, Phoenix, Reno, and Las Vegas. The following map show the aquifer and its location in more detail:

Figure 79: Great Basin Carbonate and Alluvial Aquifer System Map



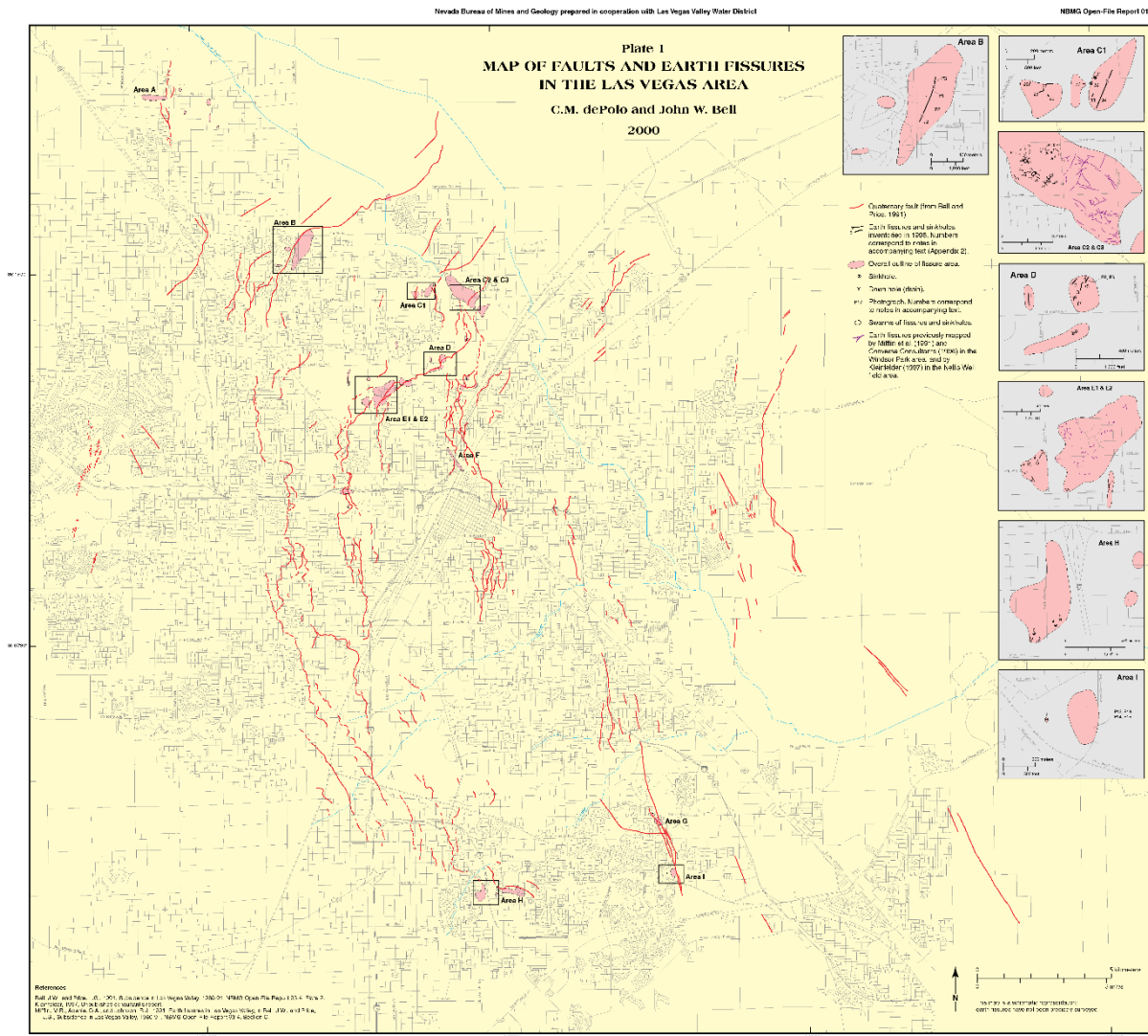
Data Source: [USGS](#)

The southern part of the State which includes Clark County is particularly vulnerable to land subsidence due to groundwater extraction. The major aquifer under Las Vegas Valley is an alluvial aquifer. Below the alluvial aquifer, at least on the western side of the valley, is the carbonate aquifer. Over-pumping (taking more water out than is naturally recharged from snow melt and rainwater) of the alluvial aquifer has caused subsidence problems in Las Vegas and Pahrump Valleys.

The [Nevada Bureau of Mines and Geology](#) mention the following about subsidence in the Las Vegas Valley. Subsidence due to underground fluid withdrawal can be another problem. The main area of the state suffering from this is the Las Vegas Valley. Las Vegas (Spanish for "the marshes") naturally contained areas of a high-water table and artesian springs, and was a stopping off point on the Old Spanish Trail. After an aborted effort by the Latter-Day Saints to settle the area in the 1850s, ranches were reestablished by the late 19th century. Las Vegas was founded in 1905 as a railroad town and has since grown into a gambling mecca of almost a million people and continues to grow explosively. Las Vegas Valley receives less than 8 inches of precipitation annually, and despite receiving a share of the water from Lake Mead, gets most of its water from wells. The large removal of groundwater from the generally unconsolidated alluvial sediments underlying Las Vegas has resulted in surface subsidence of locally as much as 6 feet since the 1930s. This has also resulted in local fissuring of the ground.

The previous Clark County MJHMP (2018) mentions that while a broad regional primary subsidence bowl occupies the central portion of the Las Vegas Valley, three localized secondary subsidence bowls are superimposed on this area, and are located in the central (downtown), southern (Las Vegas Strip) and the northwestern part of the valley. From 1963 to 1980, the primary bowl had subsided more than 49 cm and the secondary bowls had subsided as much as 79 cm. Studies indicate the same patterns and trends of movement have continue to occure since 1980. It has been noted that fissures have been observed in the County, primarily, Las Vegas Valley since 1925. In the Las Vegas Valley, eight zones of fissuring exist and are “closely coincident” with known or inferred geologic faults. The following map shows the locations of those faults and fissures in the Las Vegas Valley area.

Figure 80: Maps of Faults and Earths Fissures in the Las Vegas Area



Data Source: [Nevada Bureau of Mines and Geology](#)

The State HMP (2018) mentions land subsidence can be caused by actions other than over drafting of water. Mining, hydrocompaction, and underground fluid withdrawal (water, oil, or other fluid) can cause this hazard and result in land surface displacements and fissures. Within Clark County, primarily the Las Vegas Valley area, has seen more impacts and issues, including subsidence, vertical aquifer-system deformation, and earth fissuring that have caused millions of dollars of damage and might have altered boundaries of flood-prone areas.

Previous Occurrence

The previous Clark County HMP (2018) indicates subsidence in the Las Vegas Valley has been geodetically monitored since 1935. Monitoring showed that the center of the valley (near downtown Las Vegas) had subsided as much as 3.4 feet by 1963. The following monitoring period revealed that from 1963 - 1987 the downtown area sunk another 2.8 feet and other nearby areas subsided more than 5.0 feet.

Probability of Future Events, Fissure and Subsidence

Based on the Calculated Priority Risk Index (CPRI) conducted for Clark County and its participating jurisdictions, there is a **moderate probability (rank score of 2.0-2.9)** of subsidence for the planning area. Please note that the CPRI Rating is a subjective measure based on the opinion of the Clark County MPSC members during the planning development portion of the MJHMP update. The following table provides CPRI Rating for earthquakes related to Clark County and its participating jurisdictions.

Table 53: Clark County and Participating Jurisdictions CPRI Rating for Fissures and Subsidence

Clark County and Participating Jurisdictions CPRI Rating for Fissures and Subsidence							
Hazard: Geohazards – Fissures & Subsidence	Category and Weight				CPRI Score	Risk Level	
	Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%			
Index Rating (R) Weighted Score (WS)							
Clark County (including Incorporated and Unincorporated Areas)	R	2	2	4	4	2.5	M
	WS	0.95	0.6	0.6	0.4		
Boulder City	R	1	1	1	1	1	L
	WS	0.45	0.3	0.15	0.1		
Henderson	R	3	3	4	4	3.25	H
	WS	1.35	0.9	0.6	0.4		
Las Vegas	R	2	2	1	2	1.85	L
	WS	0.9	0.6	0.15	0.2		
Mesquite	R	2	2	4	4	2.5	M
	WS	0.95	0.6	0.6	0.4		
North Las Vegas	R	1	1	4	3	1.65	L
	WS	0.45	0.3	0.6	0.3		
Special District: Clark County Water Reclamation District	R	2	2	4	1	2.2	M
	WS	0.9	0.6	0.6	0.1		
Special District: Clark County School District	R	2	2	2	3	2.1	M
	WS	0.9	0.6	0.3	0.3		
Special District: Las Vegas	R	1	2	4	3	1.95	L

Clark County and Participating Jurisdictions CPRI Rating for Fissures and Subsidence							
Hazard: Geohazards – Fissures & Subsidence		Category and Weight				CPRI Score	Risk Level
		Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%		
Index Rating (R) Weighted Score (WS)							
Valley Water District/SWNA	WS	0.45	0.60	0.60	0.30		
Tribal Nation: Las Vegas Valley Paiute	R	2	2	1	2	1.85	L
	WS	0.9	0.6	0.15	0.2		
Tribal Nation: Moapa Band of Paiutes	R	2	1	3	3	1.95	L
	WS	0.9	0.3	0.45	0.3		

Note: Though participating in the planning process, at the time of this update CPRI data for the City of Mesquite was not received. Therefore, the CPRI rating for the City of Mesquite is the same rating as Clark County due to the city being within the planning area.

Calculating future probability is not the only predictor of future occurrences. The previous Clark County MJHMP plan (2018) states that land subsidence and the creation of fissures will continue to occur in the Las Vegas Valley as long as the net annual groundwater withdrawal continues to exceed the net annual recharge. Even if the region can reduce the net annual groundwater withdrawal to the level of net annual recharge, subsidence may continue for years after equilibrium is achieved because of a lag in sediment response.

In the last five years, Clark County and its participating jurisdictions do not have any documented cases of subsidence incidences. Although the County has experienced occurrences that were listed in its HMP update (2018), the likelihood of a subsidence event happening in the planning area is considered **occasional**.

Communities that are located near the Las Vegas Valley area are more vulnerable to subsidence due to their location on top of the alluvial aquifer within the planning area. The major subsidence impacts are property damage, including but not limited to structural collapse, injuries, fatalities, and reduction of useable land. Accordingly, the hazards may create the need for control measures and the stabilization of structures that are built in that portion of the County.

Vulnerability and Impact

Vulnerability of Population

Subsidence(s) currently pose some risk to the residents of Clark County, primarily those who reside in the Las Vegas Valley area, where the City of Las Vegas is located, which is above the major alluvial aquifer. Additionally, based on previous occurrences, subsidence will likely occur within the planning area and/or adversely affect the County's population, primarily the cities within the Las Vegas Valley (major cities of Las Vegas, Henderson, and North Las Vegas). Since the cities of Mesquite is located in the far eastern portion of the county and Boulder City is located in the southeastern portion of the county they should not be impacted by this hazard as the cities noted above.

- **Henderson:** In reference to population growth, the City of Henderson has experienced a 23.23% growth in population. With the recent growth, Henderson now has many more residents since the last HMP update. At the same time, Henderson is seeing an increased aging population with 26.6% of residents being above the age of 65. These groups are most at risk to the impact of fissures and subsidence conditions. Also, there was a 20%

increase of housing units between 2010 and 2020. These units were built to the latest seismic codes. As mentioned in the Henderson Capabilities Assessment for this plan update, Henderson uses 2018-2021 IBC Code Suite. More information for the City of Henderson Building Codes can be found on the City of Henderson's website and also [here](#).

- **Las Vegas:** With population growth, the City of Las Vegas has experienced a 9.96% growth in population. With the recent growth, Las Vegas now has many more residents. At the same time, Las Vegas is seeing an increased aging population with 14.8% residents above the age of 65. These groups are most at risk to the impact of earthquake conditions. Also, there was a 5.34% increase of housing units between 2010 and 2020. These units were built to the latest seismic codes. As mentioned in the Las Vegas Capabilities Assessment for this plan update, The 2021 International Building Code (IBC) and International Fire Code (IFC) were adopted in September 2022. The effective date of these codes is March 23, 2023. More information for the City of Las Vegas Building Codes can be found [here](#).
- **North Las Vegas:** With population growth, the City of North Las Vegas has experienced a 21% growth in population. With the recent growth, North Las Vegas now has many more residents. At the same time, North Las Vegas is seeing an increased aging population with 10.9% residents above the age of 65. These groups are most at risk to the impact of earthquake conditions. Also, there was a 13.5% increase of housing units between 2010 and 2020. These units were built to the latest seismic codes. As mentioned in the North Las Vegas Capabilities Assessment for this plan update, The 2018 IBC Code Suite. Yes, codes are adequately enforced, including International Code Council (ICC). For more information about the City of North Las Vegas Building Codes can be found [here](#).

Vulnerability of System

Subsidence currently poses a risk in the planning area with a more significant risk to the vital systems such as roads and other infrastructure within the Las Vegas Valley, home to the Cities of Las Vegas, Henderson, and North Las Vegas. As mentioned in the previous Clark County HMP (2018), Subsidence and fissure impacts include: residential structure and critical infrastructure failure and serviceability problems; increased flood risk in low-lying areas; and long-term damage to groundwater aquifers and aquatic ecosystems.

Impact of Climate Change

The 2018 Nevada Enhanced Hazard Mitigation Plan states that due to Nevada's history of new development and pressures on water systems related to climate change, the State, which includes Clark County and its participating jurisdictions, will most likely see more subsidence problems.

Critical Facilities and Infrastructure

Fissure and Subsidence has the potential to pose a risk to critical facilities and infrastructure within Clark County and its participating jurisdictions. Therefore, all facilities listed in Appendix E (Critical Facilities & Infrastructure) could be operationally and sustainability affected based on the fact that water is an essential need to keep facilities and infrastructure going like in healthcare or schools. The following critical facilities and infrastructure for each participating jurisdiction (Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas) are illustrated on [Figures 23-24](#) within this MJHMP update.

A complete list of all county critical facilities and infrastructure can be found in [Appendix E – Critical Facilities & Infrastructure](#)

Land Use and Development

The 2018 Nevada Enhanced Mitigation Plan that Clark County is working to mitigate the subsidence hazard within the planning area. As part of its building code, the Clark County building department has a requirement to conduct special geotechnical investigations near any earth fissures and faults to avoid building directly over these features. Click [here](#) for more information about the Investigating Potential Surface Fault Rupture & Land Subsidence Hazards codes in Clark County, NV.

Unique and Varied Risk

Clark County and its participating jurisdictions (which included the Clark County Unincorporated areas and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) have significant areas within the County, primarily the Las Vegas Valley, that is at risk of subsidence.

Note: The above information was obtained by accessing the most available data/datasets from NOAA database. <https://www.ncdc.noaa.gov/stormevents> and USGS. This information represents all the events and extent of the Fissures & Subsidence hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. The information provided for Clark County also applies to the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas; Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes; and Special Districts representing Clark County School District, Clark County Water Reclamation District, Las Vegas Water District, and Southern Nevada Health District.

Repetitive Loss Structure

Not applicable.

HAZUS® Models

Not applicable.

(FL) Flood, Landslide, and Debris Flow - Flooding

Hazard Description

Floods are the second most common and widespread of all-natural disasters faced by the County and its Special Districts. Most communities in the United States have experienced some flooding during or after spring rains, heavy thunderstorms, winter snow thaws, or summer thunderstorms.

A flood, as defined by the National Flood Insurance Program, is: "A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is the policyholder's property) from:

- Overflow of inland or tidal waters, or
- Unusual and rapid accumulation or runoff of surface waters from any source, or
- Collapse or subsidence of land along the shore of a lake or a similar body of water due to erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels."



Flash Floods in Clark County, NV
Photo Source: [Clark County Government Website](#)

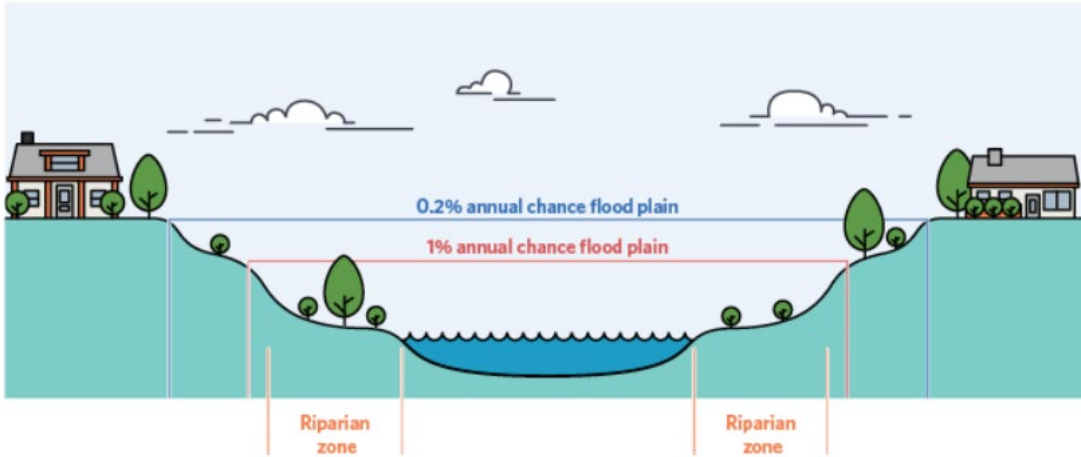
Floods can rise slowly or quickly but generally develop over hours or days. Inland flooding, also known as "urban flooding" or "flash flooding," can be caused by intense, short-term rain or moderate rainfall over several days, which can overwhelm existing drainage infrastructure. Other factors that affect the dynamics of this type of flood include slope, width, and vegetation in place along the watercourse banks. The slope that a flash flood traverses has a definite relationship to the overall speed at which the water will travel. The incline on which the water moves affects the width of the flooding area. Generally, the faster the water moves, the narrower that channel will be created since the water digs the channel deeper as it flows. When water flows over the shallower slope, it spreads out more, decreasing its potential to cause mass damage but still considered dangerous. Finally, the type of vegetation located along the flood's path can prevent further erosion of the channel banks. A structure that lies along a flood channel with no surrounding vegetation is at risk of having its foundation undercut, which can cause structural damage, or in some cases, a building's complete collapse. Riverine or alluvial flooding occurs when excessive rainfall over an extended period causes a river to exceed its capacity. Typical flooding causes, both inland and riverine, include tropical cyclonic systems, frontal systems, and isolated thunderstorms, combined with other environmental variables such as changes to the physical environment, topography, ground saturation, soil types, basin size, drainage patterns, and vegetative cover. The rate of onset and duration of flooding events depends on the type of flooding (typical flood or flash flood). The spatial extent of a flooding event depends on the amount of water overflow but can usually be mapped because of existing floodplains.

Mitigation includes any activities that prevent an emergency, reduce the chance of an emergency from happening, or lessen the damaging effects of unavoidable emergencies. Investing in mitigation measures now, such as: engaging in floodplain management activities, constructing barriers such as levees, and purchasing flood insurance, will help reduce the amount of structural damage to structures and financial loss from building and crop damage should a flood or flash flood occur. The standard for flooding is the 1% annual chance of flood, commonly called the 100-year flood, and 0.2% annual chance of flood, called a 500-year flood, are used to classify flooding by the Federal Emergency Management Agency. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the FEMA National Flood Insurance Program (NFIP).

Figure 81: What is a Floodplain Diagram

What is a flood plain?

Flood plains are areas near streams and rivers that experience repeated flooding. They reduce floodwaters' energy and flow speed and provide storage for floodwater.



Data Source: [Pew Trust](#)

The NFIP aims to reduce the impact of flooding on private and public structures. It provides affordable enforcement of floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Overall, the program reduces the socio-economic impact of disasters by promoting the purchase and retention of general risk insurance and flood insurance.

The adverse impacts of flooding can include structural damage; agricultural crop loss; the death of livestock; loss of access to critical facilities due to roads being washed out or overtopped; unsanitary conditions resulting from materials such as dirt, oil, solvents, and chemicals being deposited during the recession; infestations of disease-carrying mosquitoes; mold and mildew, which pose a severe health risk to small children and the elderly; and temporary backwater effects in sewers and drainage systems. Raw sewage is a breeding ground for bacteria, such as *E. coli* and other disease-causing agents. A boil order may need to be issued to protect people and animals from contaminated water. Of equal concern is the long-term psychological effect that flooding has on the people impacted by it. They must contend with the loss of life, property, livelihood, etc., as they cope with the aftermath. The clean-up can take months. The cost to restore a home may be too much, especially for the unprepared or uninsured. Plus, there is the looming fear that it may flood again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

According to [FEMA](#), out of the total 4,717 federally declared disasters in the U.S. from May 2, 1953 - December 23, 2022, water and flooding account for 823 Presidential declared disasters in the United States. Unfortunately, the risks from future floods are significant, given the expanded development in coastal areas and floodplains, unabated urbanization, land-use changes, and climate change. Because of this, flooding may intensify in many regions across the country, even in areas where total precipitation is projected to decline.

Location and Extent

Various factors, including topography, weather characteristics (e.g., the amount of rainfall and snowmelt each year), development, and geology, come into play when considering the hazards of flooding within the planning area. The types of flooding of most concerns for Clark County and its participating jurisdictions are channel flooding, sheet flooding, alluvial fan flooding, and flash flooding. The previous Clark County HMP (2018) provides the following descriptions of these types of flooding:

- Channel flooding is characterized by lateral channel migration during major flows, which results in abrupt changes in the horizontal alignment or location of the channel. Other characteristics include localized channel bed and bank-scour in addition to the potential for over-bank flow inundation.
- Sheet flooding is characterized by channel having minimal capacity, water flowing across broad areas at relatively shallow depths, and gently sloping terrain. Damage from these events includes localized scour and deposition of extensive amounts of sediments and debris typically associated with sheet flow. If the depth of the water is high enough, water may encroach into low-lying structures within the floodplain.
- Alluvial fan flooding refers to flooding occurring on the surface of an alluvial fan or similar landform characterized by high-velocity flows, active erosion processes, sediment transportation and deposition, and unpredictable flow paths. Flow depths with alluvial fan flooding are generally shallow with damage resulting from inundation, variable flow paths, localized scour and the deposition of debris. Alluvial flooding is potentially more dangerous than riverine flooding due to its unpredictable nature resulting in difficulties associated with threat identification.
- Flash flooding is characterized by the time scale in which it develops: a flash flood generally develops in less than six hours. Flash flood waters also move at very fast speeds and have the power to move boulders, tear out trees, and destroy both buildings and transportation infrastructure. During a flash flood, walls of water can reach heights of 10 to 20 feet. This combination of power and suddenness makes flash floods particularly dangerous. They are likely to occur in areas with steep slopes and sparse vegetation. These floods arise when storms produce a high volume of rainfall in a short period, over a watershed where runoff collects quickly as well as in the mountain areas resulting in the massive melting of the snowpack leading to heavy run off. They are likely to occur in areas with steep slopes and sparse vegetation. They often strike with little warning and are accompanied by high velocity flow.

For this MJHMP update (2024), the hazard of flooding pertains to precipitation and runoff-related events like alluvial fan floods and flash floods. The State of Nevada Enhanced Hazard Mitigation Plan (2018) mentions that floods occur along streams and arroyos (usually dry stream channels) that do not have classic floodplains. Because much of Nevada is part of the Great Basin (an area of internal drainage in which streams are not connected to rivers that flow to the ocean), flood waters commonly drain into the following: interior lakes (i.e. Walker Lake at the terminus of the Walker River, Pyramid Lake at the terminus of Truckee River), wetland area (i.e., Carson Since at the terminus of both the Carson and Humboldt Rivers), or playas (normally dry lake beds, such as Roach Lake, south of Las Vegas, where a new airport is planned).

The Flood Insurance Study of Clark County, NV, and incorporated areas indicate that the County is bordered to the west by Nye County, the north by Lincoln County, the east by the Colorado River and Mohave County, AZ, and to the south by San Bernadino and Inyo Counties in California. The County covers the geographic areas that include the unincorporated areas of the County, like the Laughlin, Las Vegas Valley, and Moapa Valleys. The incorporated cities of Las Vegas, North Las Vegas, Henderson, Boulder City, and Mesquite are the counties' populated areas. Clark County is situated on the southern tip of Nevada and served by a network of primary and secondary highways, including U.S. Interstates 15, 215, and 515; U.S. Highway Routes 95 and 93; and Clark County Road 15. [Flash Flooding](#) in Southern Nevada occurs most often during July – September however, flash flooding is unpredictable and, therefore, can happen anywhere and anytime inside the planning area. In many cases, a flash flood can move through an area a mile from where rain has occurred, thereby increasing people's damage within the flood's path. This type of flooding can be challenging to predict and occur with little or no warning. The 2018 Flood Insurance Study for Clark County mentions the typical flood-producing storm causing flooding problems in Clark County are associated with summer thunderstorms of short duration and high intensity which result in significant runoff rates. These storms result from topical depressions that approach Clark County from the south or southeast. Summer or winter general storms of longer duration and lower intensity have not contributed to significant discharges in the past.

Within the County, the surface hydrology of the Colorado River Basin is marked by complex flow patterns in the alluvial fans of the valley, with areas of concentrated but frequently shifting flows. The dynamic drainage pattern, topography, and soils of the alluvial fan are generally more conducive to sheeting runoff than channelized flow. Consequently, pronounced gullies and ravines rarely develop and flash flood the Las Vegas Valley and are the only perennial stream in the Las Vegas Valley and one of few in the entire County. The other primary surface waters within the County include Virgin River, Muddy River, Muddy Springs, Colorado River, Lake Mead, and Lake Mojave.

The Las Vegas Valley is an externally draining basin. The general drainage pattern of the corridor includes a collection of precipitation runoff from tributaries located on alluvial fill from the Sheep Mountains, Spring Mountains, and alluvial fans north of the City of North Las Vegas to the Upper Las Vegas Wash. These flows are then conveyed to the southeast end of the valley and eventually to the Las Vegas Wash and the Colorado River Basin via Lake Mead.

The Las Vegas Wash is the primary channel through which the Las Vegas Valley's excess water returns to Lake Mead. Accounting for less than 2 percent of the water in Lake Mead, the water flowing through Wash consists of urban runoff, shallow groundwater, stormwater, and releases from the valley's four water reclamation facilities. The heaviest flow occurs during the winter when precipitation falls and evapotranspiration rates are lowest. Colorado River water is the source of 90 percent of Clark County's drinking water. Water is diverted from the Colorado River at Lake Mead.

The following table shows the complete list of hydrologic regions and basins in the planning area from the State of Nevada Division of Water Resources (<http://water.nv.gov/hydrographicregions.aspx>):

Table 54: Clark County Hydrographic Regions and Basins – Central Region and Colorado River Region

Clark County Hydrographic Regions and Basins – Central Region and Colorado River Region				
Hydrographic Basin/Sub Basin Name	Counties	Nearest Cities	Square Miles	Acres
Central Region (Hydrographic Region 10)				
Frenchman Flat	Nye; Lincoln; Clark	Mercury	463	293620
Indian Springs Valley	Clark; Lincoln; Nye	Indian Springs	655	419200
Pahrump Valley	Clark; Nye	Pahrump; Las Vegas	789	504960
Mesquite Valley (Sandy Valley)	Clark	Goodsprings; Las Vegas	236	151040
Ivanpah Valley/Southern Part	Clark	Jean; Roach; Goodsprings	73	46720
Jean Lake Valley	Clark	Jean; Goodsprings	96	61440
Hidden Valley	Clark	Henderson; Jean	34	21760
Eldorado Valley	Clark	Boulder City; Searchlight	530	339200
Three Lakes Valley – Northern Part	Lincoln; Clark	Indian Springs	298	190720
Tikapoo Valley/ Southern	Lincoln; Clark	Alamo; Indian Springs	391	250240

Clark County Hydrographic Regions and Basins – Central Region and Colorado River Region

Hydrographic Basin/Sub Basin Name	Counties	Nearest Cities	Square Miles	Acres
Central Region (Hydrographic Region 10)				
Part				

Colorado River Region – Hydrographic Region 13

Hydrographic Basin/Sub-Basin Name	Counties	Nearest Cities	Sq Miles	Acres
Lower Meadow Valley Wash	Lincoln; Clark	Caliente; Moapa	979	626560
Coyote Springs Valley	Lincoln; Clark	Moapa; Alamo	657	420480
Three Lakes Valley – Southern Part	Clark	Indian Springs	311	299040
Las Vegas Valley	Clark	Las Vegas; Henderson;	1546	1000960
Ado River Valley	Clark	Laughlin; Boulder City	563	3603250
Piute Valley	Clark	Searchlight	338	216320
Black Mountains Area	Clark	Boulder City; Overton	630	403200
Garnet Valley	Clark	North Las Vegas; Moapa	156	99840
Hidden Valley	Clark	North Las Vegas; Moapa	80	51200
California Wash	Clark	Moapa	318	203520
Muddy River Springs Area	Clark; Lincoln	Moapa; Overton	91	58240
Lower Moapa Valley	Clark; Lincoln	Logandale; Overton	252	161280
Virgin River Valley	Lincoln; Clark	Mesquite; Bunkerville	907	580480
Gold Butte Area	Clark	Overton; Logandale	533	341120
Greasewood Area	Clark	Bunkerville; Overton	108	69120

Data Source: [State of Nevada Division of Water Resources](#)

The previous Clark County HMP (2018) mentions that in the north-central and north-eastern portions

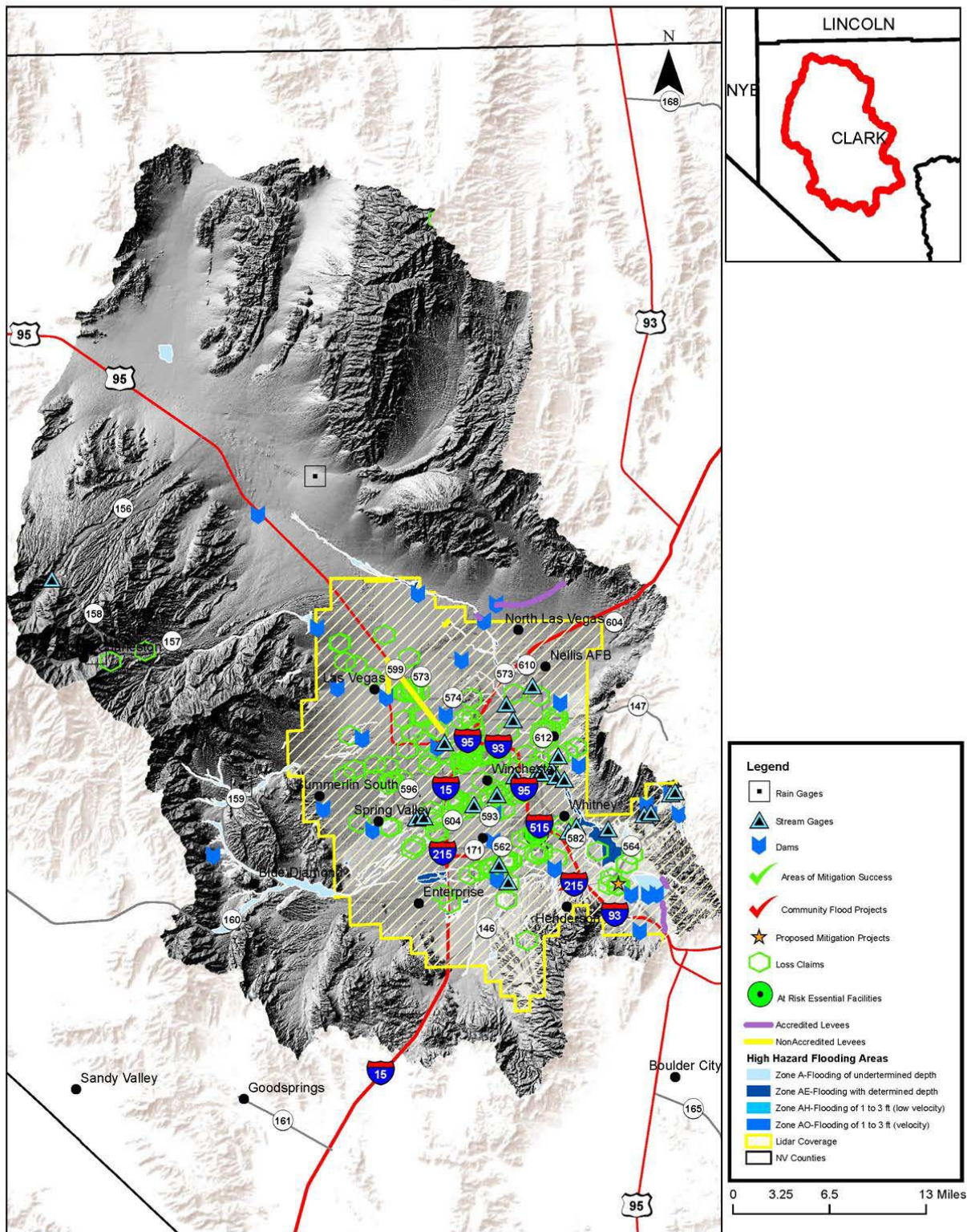
of Clark County, many of the flood-prone areas are associated with the tributaries leading into Lake Mead, such as the Muddy River that flows through the communities of Overton and Logandale, and the Virgin River that runs along the southern boundary of the city of Mesquite. In the desert basins of central and southern Clark County, natural runoff channels, or washes, focus the sheet flow across desert pavement. Because of these topographic phenomena the probability of floods occurring in Clark County communities is relatively high. Contributing to this dispersion type is an urbanization and sprawl pattern that has spread development onto the washes and sediment piedmonts. In addition, runoff from monsoon thunderstorms can quickly overtop a wash, thereby flooding adjacent areas. The following maps show the major watersheds/tributaries within the planning area.

Figure 82: Watershed Map – Las Vegas Wash

Watershed Name:

Las Vegas Wash

2



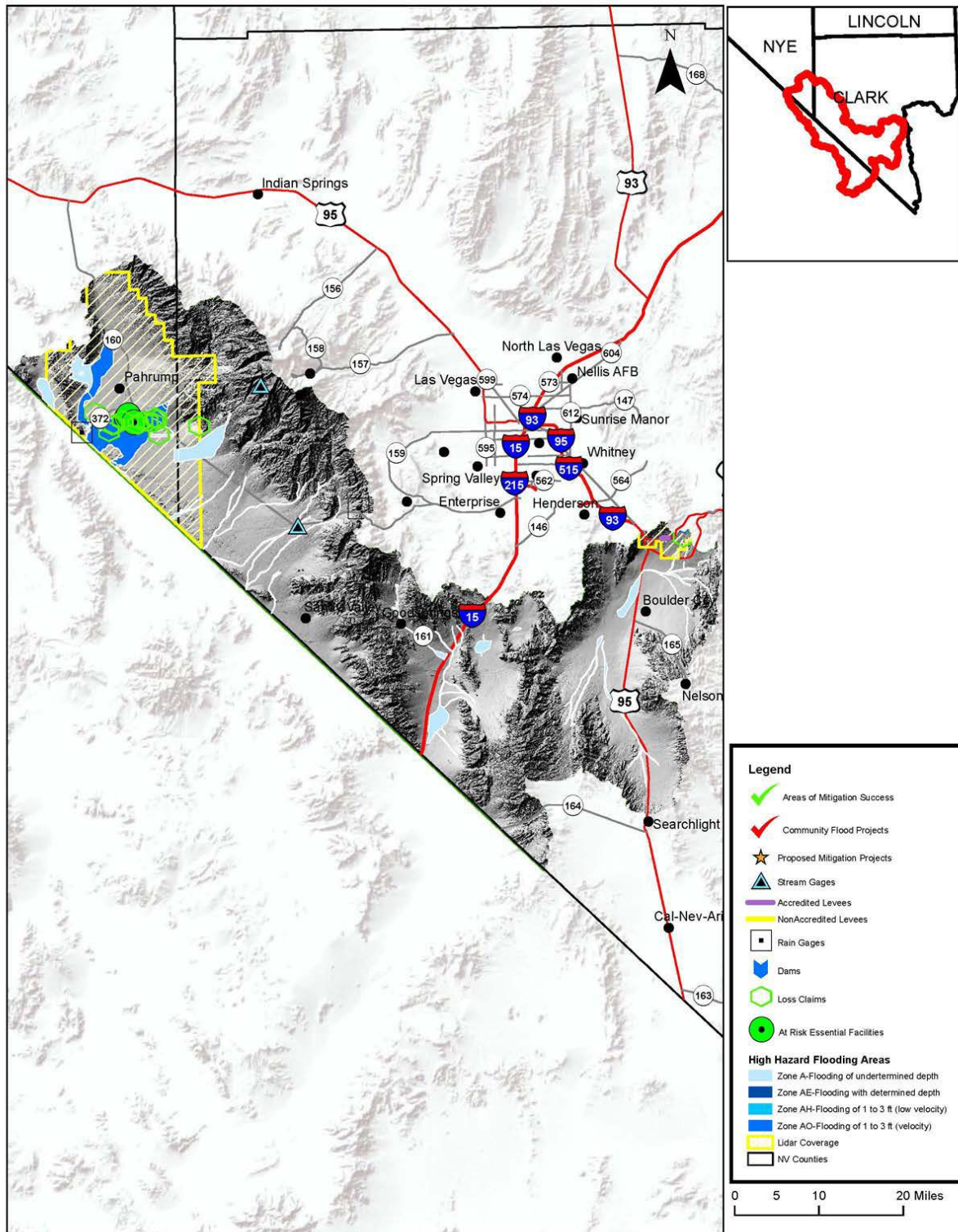
Data Source: [Nevada Risk Portfolio, September 2013](#)

Figure 83: Watershed Map – Ivanpah – Pahrump Valleys

Watershed Name:

Ivanpah-Pahrump Valleys

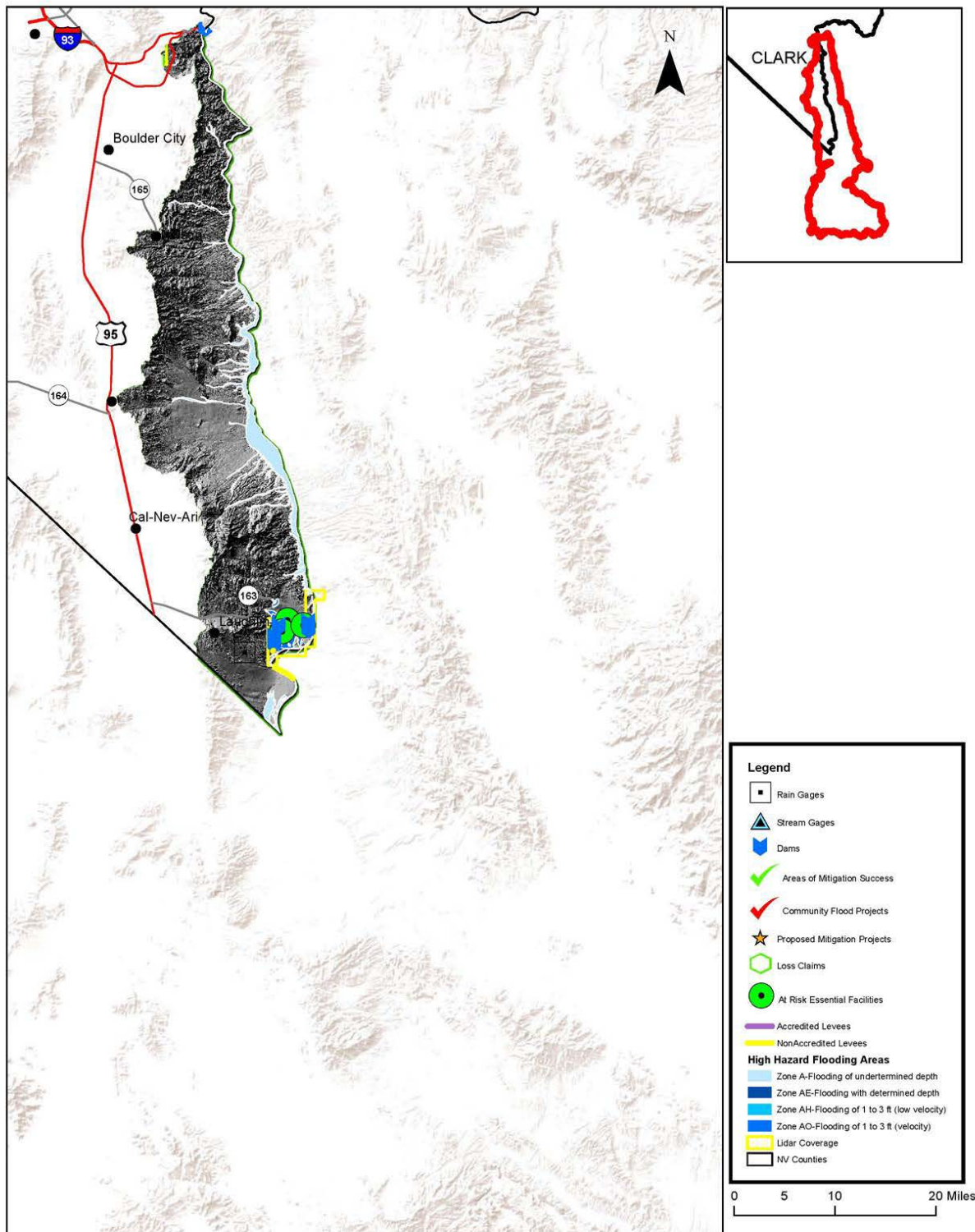
14



Data Source: [Nevada Flood Risk Portfolio, September 2013](#)

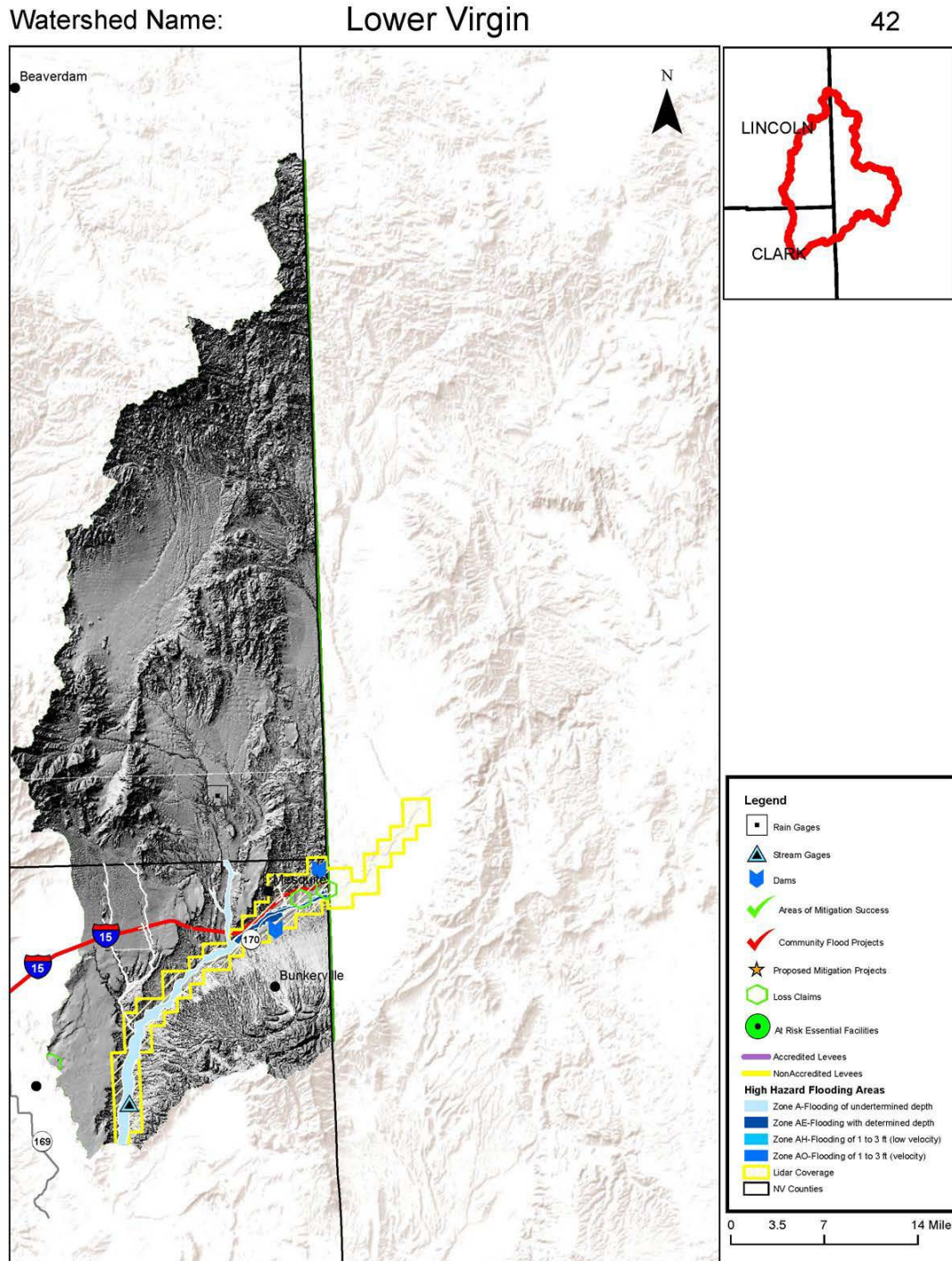
Figure 84: Watershed Map – Havasu-Mohave Lakes

Watershed Name: **Havasu-Mohave Lakes** 58



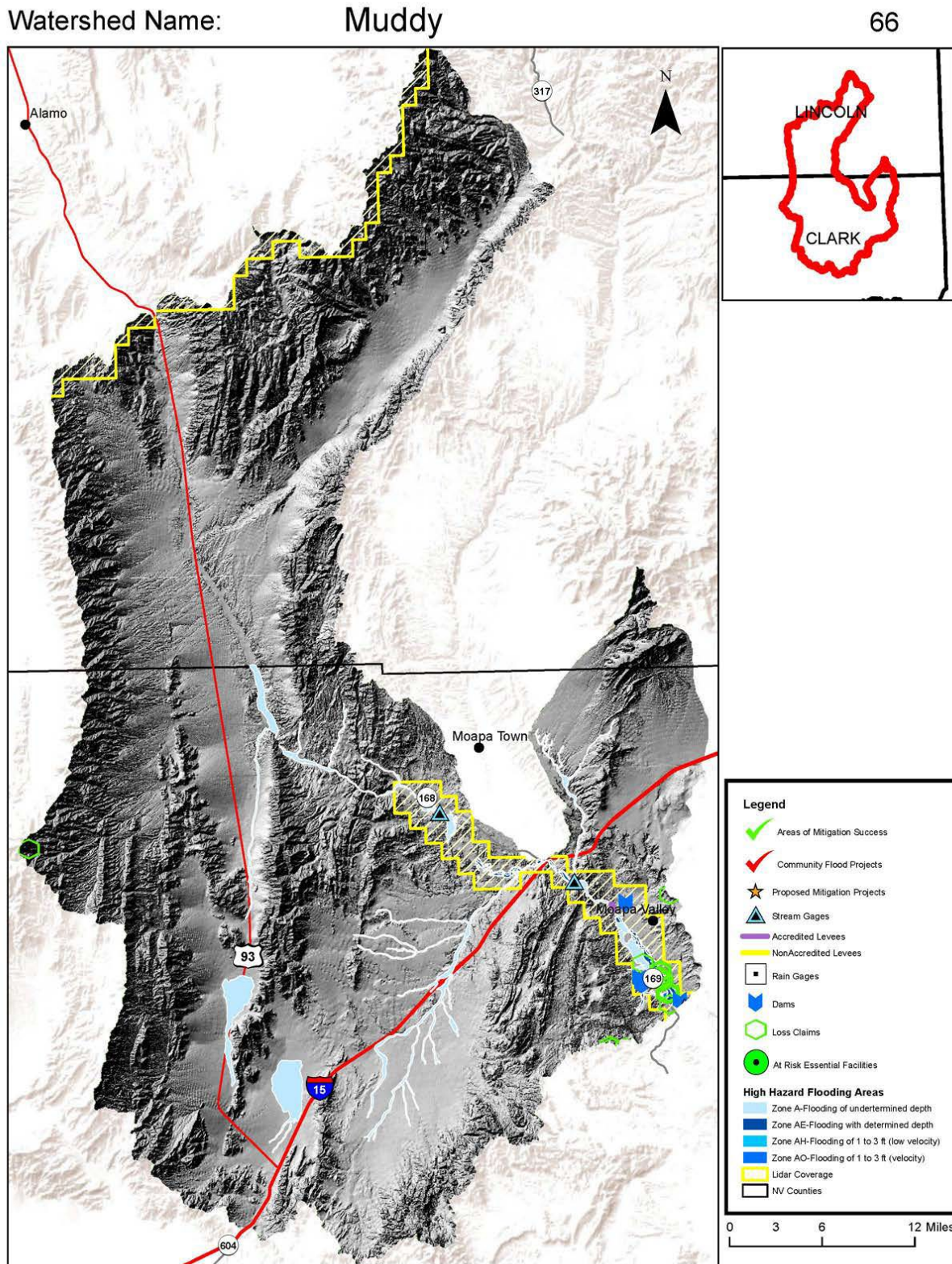
Data Source: [Nevada Flood Risk Portfolio, September 2013](#)

Figure 85: Watershed Map – Lower Virgin



Data Source: [Nevada Flood Risk Portfolio, September 2013](#)

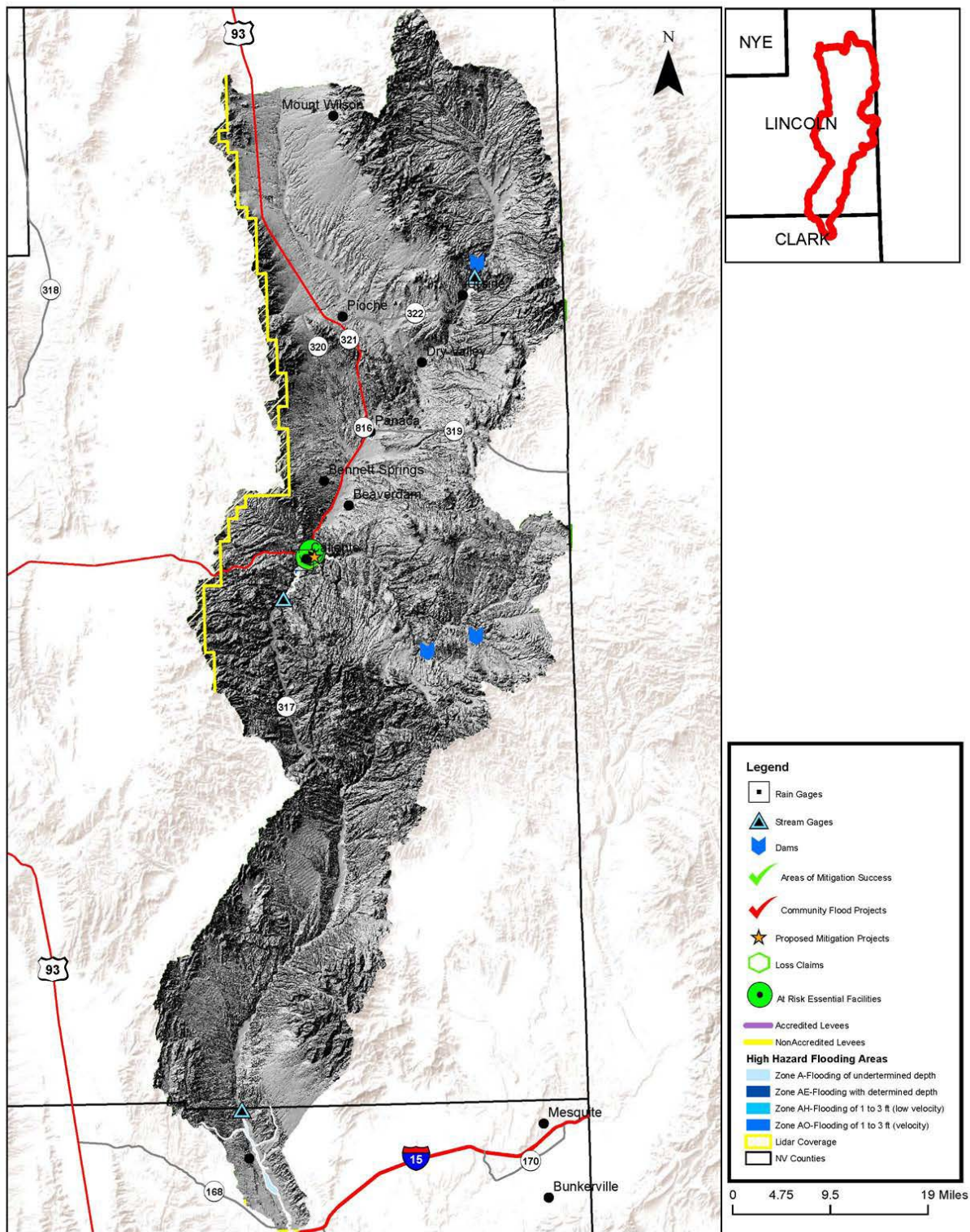
Figure 86: Watershed Map - Muddy



Data Source: [Nevada Flood Risk Portfolio, September 2013](#)

Figure 87: Watershed Map – Meadow Valley Wash

Watershed Name: Meadow Valley Wash 74

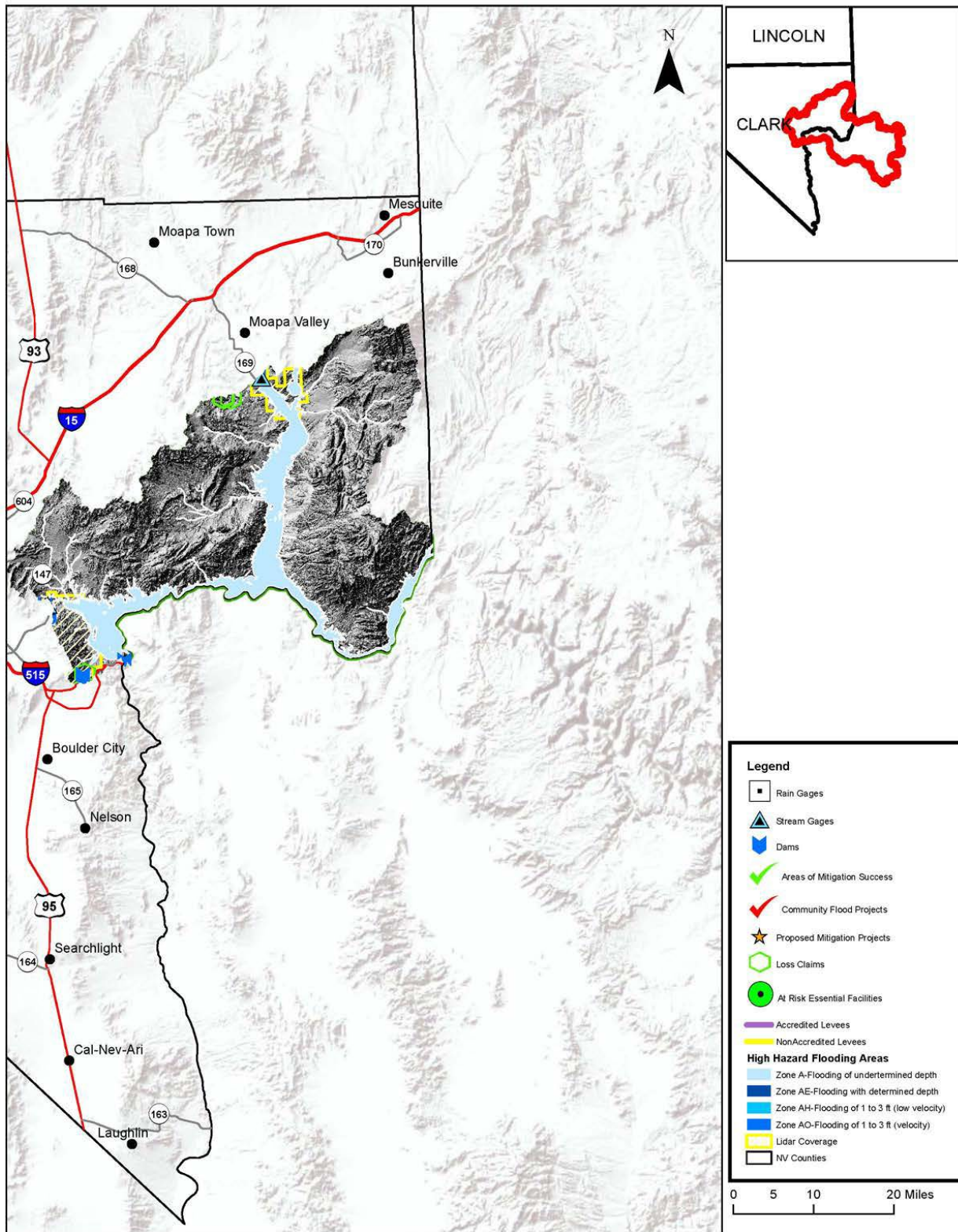


Data Source: [Nevada Flood Risk Portfolio, September 2013](#)

Figure 88: Watershed Map – Lake Mead

Watershed Name: Lake Mead

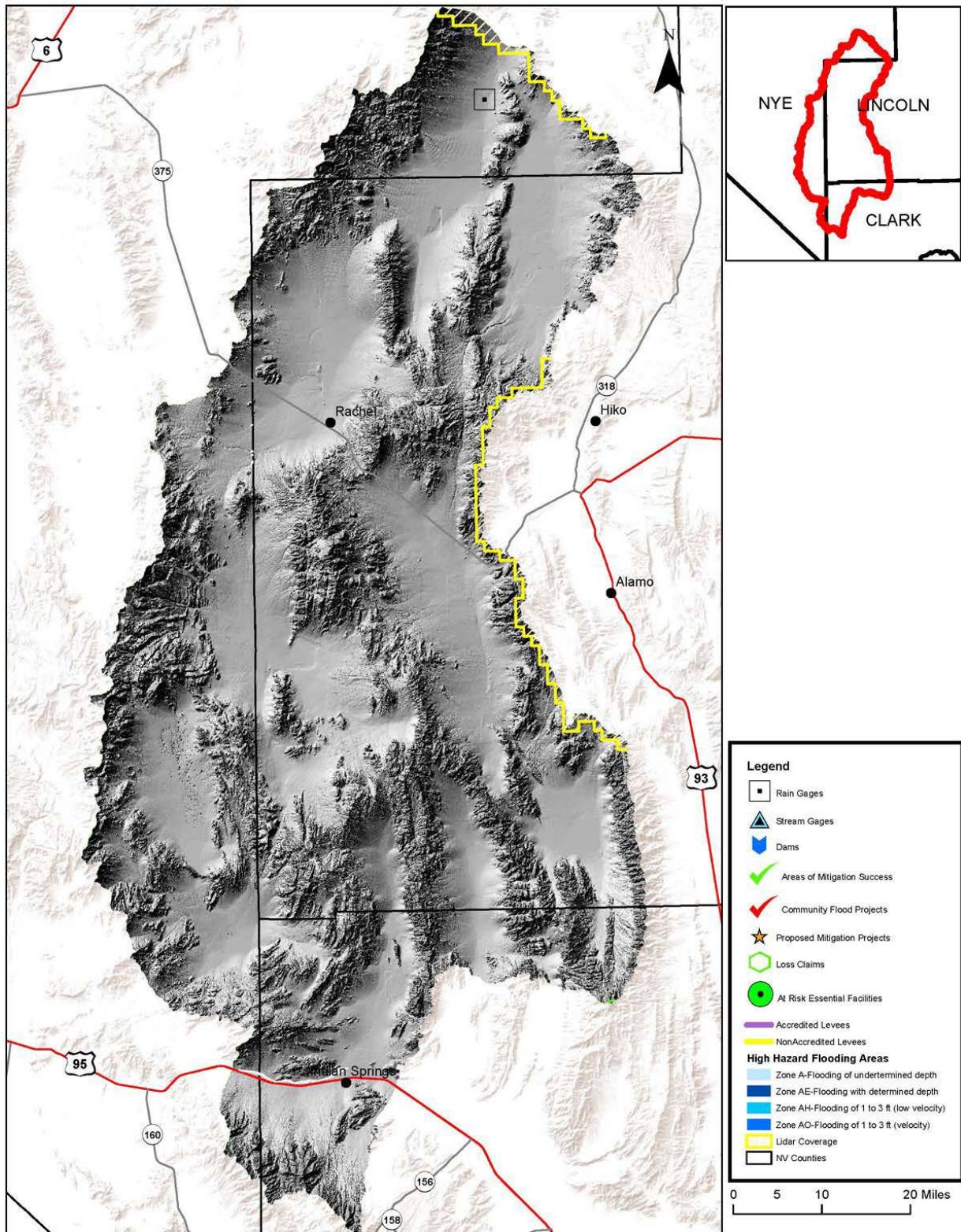
82



Data Source: [Nevada Flood Risk Portfolio, September 2013](#)

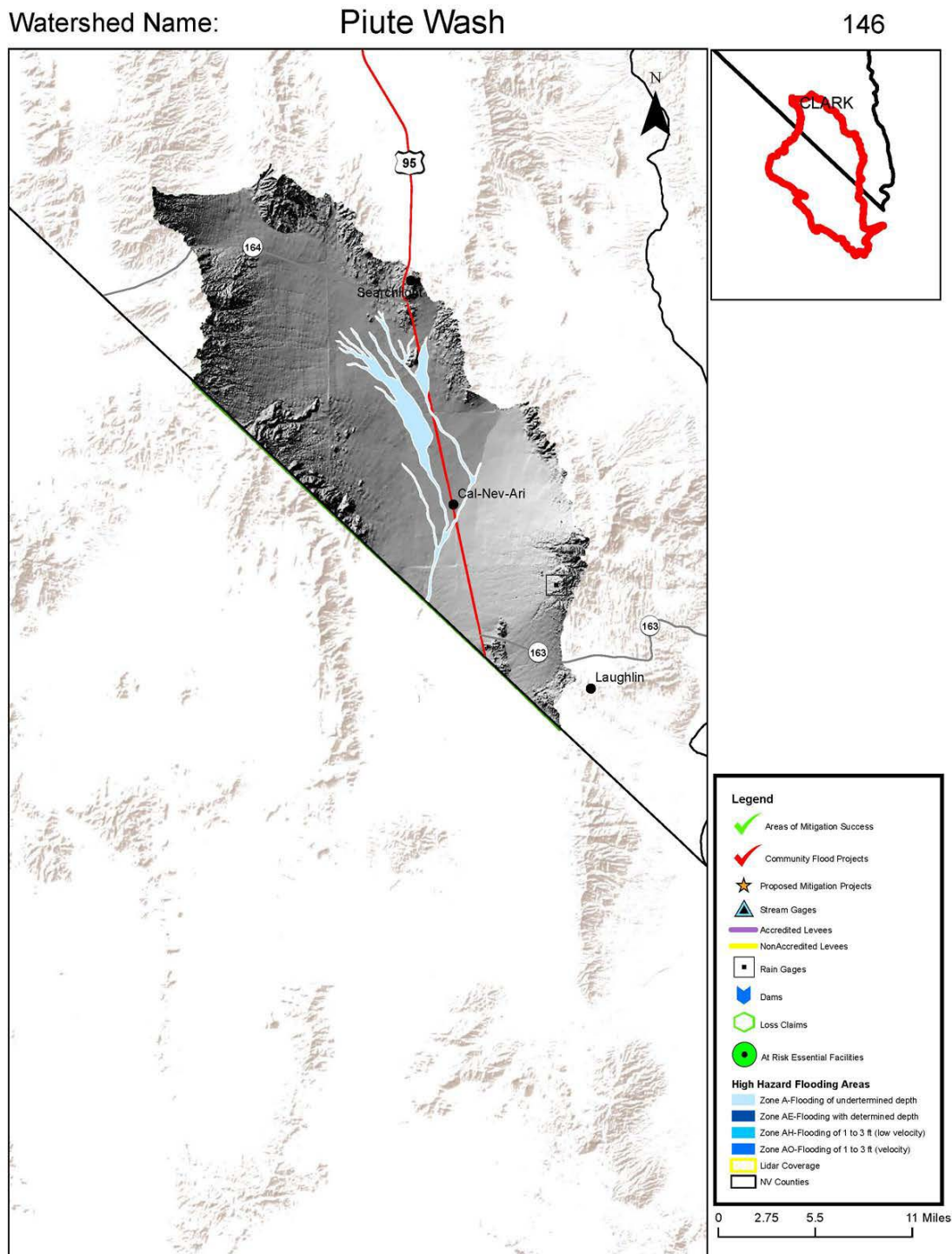
Figure 89: Watershed Map – Sand Spring – Tikaboo Valleys

Watershed Name: Sand Spring-Tikaboo Valleys 130



Data Source: [Nevada Flood Risk Portfolio, September 2013](#)

Figure 90: Watershed Map – Piute Wash



Data Source: [Nevada Flood Risk Portfolio, September 2013](#)

The historical crest data and corresponding maps for the Clark County stream gauge locations can be found in [Appendix G – Clark County, NV: Flooding, Storm Gauges and Historical Crest Data](#). The following table shows the current USGS Streamflow Data for Rivers/Lake/Streams within Clark County.

Current Conditions – Streamflow Data for Clark County, NV

Station Number	Station Name	Long-Term mean flow 12/28	Gage height, feet	Discharge, ft 3/s
09415090	VIRGIN RV AT MESQUITE, NV	--	4.56	129
09415900	MUDDY SPGS AT LDS FARM NR MOAPA, NV	7.60	1.40	7.60
09415908	PEDERSON E SPGS NR MOAPA, NV	.17	5.45	0.10
09415910	PEDERSON SPGS NR MOAPA, NV	.18	9.35	0.09
09415915	WARM SPGS W INFLOW NR MOAPA, NV	3.50	22.16	3.32
09415920	WARM SPGS W NR MOAPA, NV	3.60	0.87	3.23
09415927	WARM SPGS CONFL AT IVERSON FLUME NR MOAPA, NV	5.80	7.28	4.37
09416000	MUDDY RV NR MOAPA, NV	43.0	1.81	40.2
09418700	MEADOW VALLEY WASH NR ROX, NV	1.70	26.04	2.50
09419000	MUDDY RV NR GLENDALE, NV	47.0	6.96	44.9
09419530	VIRGIN RV BLW CONF OF MUDDY RV NR OVERTON, NV	199	11.55	122
09419550	ROGERS SPNG NR OVERTON BEACH, NV	1.60	0.56	1.62
09419625	CORN CK SPGS AT NATIONAL FISH & WILDLIFE HDQRS, NV	.33	2.60	0.35
09419665	SLOAN CHANNEL AT CHARLESTON BLVD NR LAS VEGAS, NV	--	11.31	--
094196781	FLAMINGO WASH AT NELLIS BLVD NR LAS VEGAS, NV	16.0	11.15	5.86
094196783	LV WASH BLW FLAMINGO WASH CONFL NR LAS VEGAS, NV	36.0	16.08	8.12
094196784	LAS VEGAS WASH AT VEGAS VALLEY DR NR LAS VEGAS, NV	65.0	1.83	Rat
09419679	LAS VEGAS WASTEWAY NR E LAS VEGAS, NV	210	6.48	232
09419696	DUCK CK AT BROADBENT BLVD AT E LAS VEGAS, NV	20.0	3.74	16.1
09419698	LV WASH BLW DUCK CK CONF NR HENDERSON, NV	269	5.60	177
09419700	LAS VEGAS WASH AT PABCO RD NR	301	5.90	210

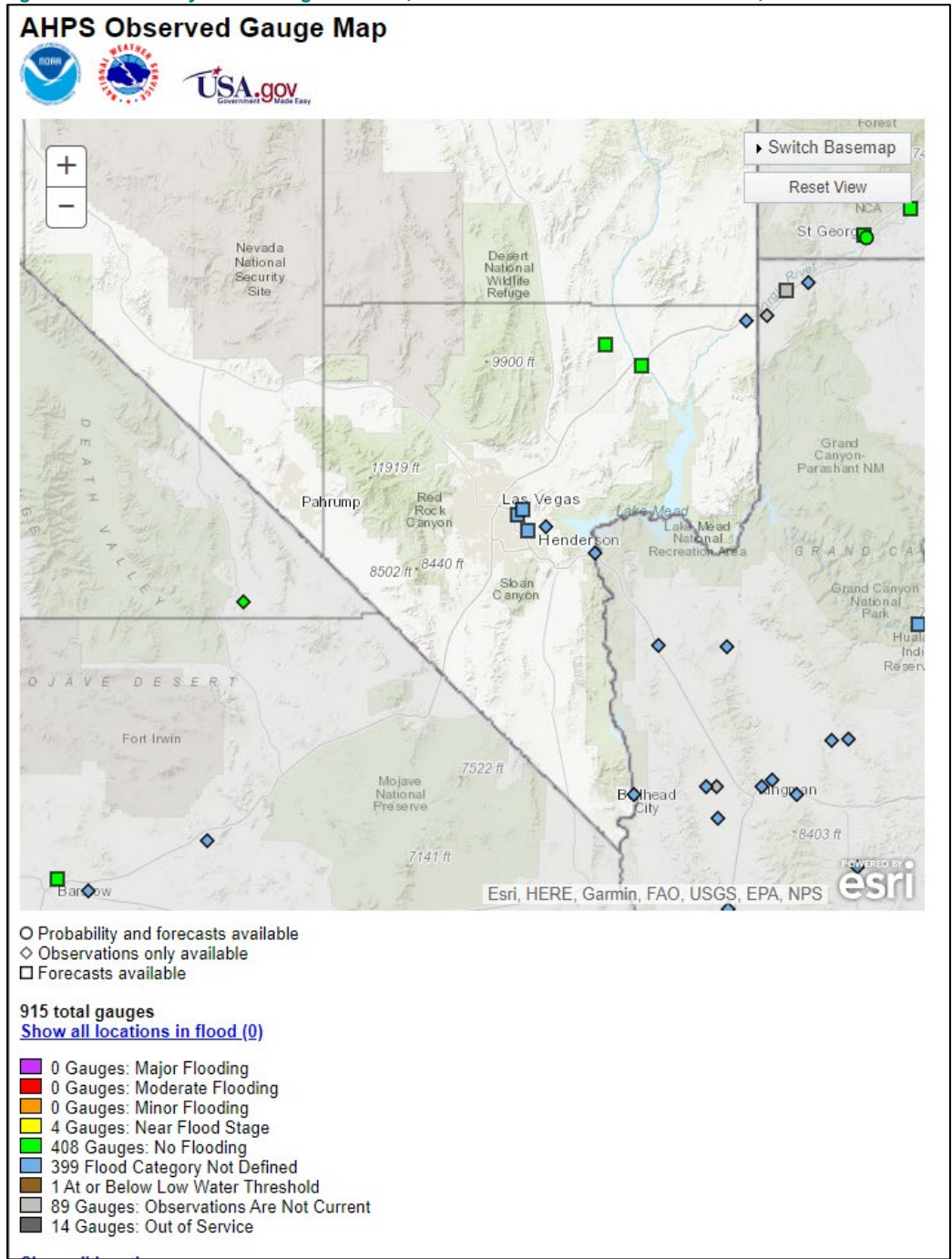
Current Conditions – Streamflow Data for Clark County, NV

Station Number	Station Name	Long-Term mean flow 12/28	Gage height, feet	Discharge, ft 3/s
	HENDERSON, NV			
09419740	C-1 CHANNEL NR WARM SPGS RD AT HENDERSON, NV	.32	9.72	0.00
09419745	C-1 CHANNEL ABV MOUTH NR HENDERSON, NV	-- .004	33.75 --	-- 0.00
09419747	LV WASH ABV BOSTICK WEIR NR HENDERSON, NV	296	5.04	173
09419749	LV WASH ABV HOMESTEAD WEIR NR HENDERSON, NV	318	5.94	175
09419753	LV WASH ABV THREE KIDS WASH BLW HENDERSON, NV	284	33.99	215
09419756	LAS VEGAS WASH OVERFLOW AT LAKE LAS VEGAS INLET	9.30	26.46	0.00
09419800	LV WASH BLW LAKE LAS VEGAS NR BOULDER CITY, NV	224	4.63	225
09421500	COLORADO RV BLW HOOVER DAM, AZ-NV	--	42.76	--
09423000	COLORADO RIVER BELOW DAVIS DAM, AZ-NV	9,090	Dis	Dis
355906115 492601	162 S23 E55 05BAAB1 STUMP SPRING	--	15.03	0.00003
360310115 303201	163 S22 E58 07ADDA1 RAINBOW SPRING	.020	8.81	Rat
360956115 432801	162 S20 E56 31DADA1 KIUP SPRING	.010	11.00	0.01
361600114 163301	223 S19 E69 22BCAA1 QUAIL SPRING	--	19.38	0.006
362734114 124201	RED ROCK SPRINGS OUTFLOW NR LAKE MEAD, NV	--	23.17	0.015

Data Source: USGS National Water Information, Current Conditions for Nevada – Streamflow:
https://waterdata.usgs.gov/nv/nwis/current/?type=flow&group_key=county_cd

Note: The data status codes within the in a few sections of this table are the following: Rat – Rating being developed or revised; Dis – Data-collection discontinued

Figure 91: Clark County Stream Gauge Locations, Non-Storm Conditions as of December 28, 2022



Data Source: [National Weather Service](#)

In terms of the extent, or range of magnitude, floods can vary greatly in the planning area from localized drainage to dangerous flash floods with significant depths and high velocities. According to the [2011 Clark County Flood Insurance Study](#), “ the streams or portions of streams, studied by detailed methods in the incorporated communities include the following: Hemenway Wash studied from the mouth upstream to Lakeview Drive extended; Georgia Avenue Wash studied from the corporate limits to the north end of Sierra Vista Place; approximately 1 mile of the upstream end of Wash C, which flows from near the intersection of Utah Street and Adams Boulevard to the corporate limits of Boulder City; Wash D, which crosses U.S. Highway 93 1.3 miles west of the junction with Nevada Highway studied from U.S. Highway 93 downstream 0.4 mile; Wash B, which parallels U.S. Highway 93 (Business); Las Vegas Wash from Nellis Boulevard extending northward to Owens Avenue and from approximately 200 feet downstream of Lake Mead Boulevard to Las Vegas Wash northwesterly from its confluence with Las Vegas Wash to approximately 1,000 feet south of Lone

Mountain Road; Union Pacific Overflow from its confluence with Unnamed Tributary of Las Vegas Wash to its confluence with Las Vegas Wash; Las Vegas Creek from its confluence with Las Vegas Wash to Las Vegas Boulevard North, a distance of 3.4 miles; Pulsipher Wash from the edge of the Virgin River floodplain and ending just above Interstate 15; and alluvial fan flooding within the City of Henderson

The following tables provide information related to the peak discharges included in the 2011 Clark County Flood Insurance Study – Summary of Discharges.

Table 3. Summary of Discharges

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet per Second)			
		10-Year	50-Year	100-Year ²	500-Year
Alluvial Fan In Eastern Henderson	5.54	370	2,200	3,600	– ¹
Alluvial Fan In Western Henderson	76.0	1,490	13,300	23,370	– ¹
Abbott Wash At Interstate 15	7.16	– ¹	– ¹	3,334	– ¹
Blue Diamond Fan At Apex	69.5	2,010	8,800	14,820	42,550
Bridge Canyon Wash At Apex	7.3	650	2,680	4,430	12,240
Colorado River At Laughlin	169,300	– ¹	– ¹	40,000 ²	– ¹
Dripping Springs Wash At Apex	4.5	460	1,910	3,150	8,710
Duck Creek At Interstate 15	– ³	– ¹	– ¹	1,326	– ¹
Upstream of Lower Duck Creek Detention Basin	119.8	– ¹	– ¹	4,826	– ¹
Downstream of Lower Duck Creek Detention Basin	119.8	– ¹	– ¹	3,395	– ¹
At Mountain Vista Avenue	158.5	– ¹	– ¹	6,195	– ¹
At Boulder Highway	164.8	– ¹	– ¹	8,562	– ¹
Duck Creek Tributary At Interstate 15	– ³	– ¹	– ¹	5,100	– ¹
Duck Creek South Channel Above Silverado Ranch Boulevard	6.7	– ¹	– ¹	5,700	– ¹

¹Discharge not available

²Established by the Colorado River Floodway Protection Act, Public Law 99-450

³Flow affected by upstream overflows, diversions, or obstructions; drainage area does not apply

Table 3. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet Per Second)			
		10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Georgia Avenue Wash					
At Buchman Boulevard	1.98	263	781	1,285	4,300
At Mendota Drive	0.95	177	459	727	2,000
At Cross Section E	0.45	68	189	310	1,000
Hemenway Wash					
At Cross Section C	2.86	290	635	815	1,380
At Cross Section E	1.06	80	195	260	420
Hiko Springs Wash					
At Apex	17.9	1,220	5,070	8,370	23,130
Las Vegas Creek					
At Las Vegas Boulevard	13	640	1,280	1,570	2,420
At Confluence with Las Vegas Wash	14	660	1,300	1,600	2,450
Las Vegas Wash					
Just below Losee Road	- ¹	- ¹	- ¹	6,730	- ¹
Approximately 400 feet downstream of Interstate 15	- ²	- ¹	- ¹	9,136	- ¹
Approximately 750 feet upstream of East Cheyenne Avenue	- ²	- ¹	- ¹	6,977	- ¹
Just downstream of Owens Boulevard	- ²	- ¹	- ¹	8,155	- ¹
At confluence of Las Vegas Creek	- ²	- ¹	- ¹	11,314	- ¹
Just downstream of Stewart Street	- ²	- ¹	- ¹	12,754	- ¹
Just downstream of Las Vegas Boulevard	- ²	- ¹	- ¹	7,573	- ¹
Just downstream of Nellis Boulevard	- ²	- ¹	- ¹	13,515	- ¹
Approximately 1,200 feet upstream of confluence of Sloan Channel	- ²	- ¹	- ¹	18,672	- ¹
Approximately 250 feet downstream of Lake Mead Boulevard	- ²	- ¹	- ¹	7,800	- ¹
At Desert Inn Road	- ²	- ¹	- ¹	18,718	- ¹

¹ Data Not Available

² Flow affected by upstream overflows, diversions, or obstructions; drainage area does not apply.

Table 3. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet Per Second)			
		10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Las Vegas Wash (Cont'd)					
Approximately 850 feet upstream of divergence of Las Vegas Split Flow 1	— ¹	— ¹	— ¹	18,798	— ¹
Just downstream of divergence of Las Vegas Split Flow 2	— ¹	— ¹	— ¹	5,682	— ¹
Approximately 1,200 feet downstream of convergence of Las Vegas Split Flow 2	— ¹	— ¹	— ¹	20,690	— ¹
Just downstream of divergence of Las Vegas Split Flow 3	— ¹	— ¹	— ¹	11,752	— ¹
Approximately 5,300 feet downstream of convergence of Las Vegas Split Flow 3	— ¹	— ¹	— ¹	22,530	— ¹
Las Vegas Wash Split Flow 1					
Just downstream of divergence from Las Vegas Wash	— ¹	— ¹	— ¹	8,907	— ¹
Las Vegas Wash Split Flow 2					
Just downstream of divergence from Las Vegas Wash	— ¹	— ¹	— ¹	4,210	— ¹
Las Vegas Wash Split Flow 3					
Just downstream of divergence from Las Vegas Wash	— ¹	— ¹	— ¹	8,938	— ¹
Middle Branch Blue Diamond Wash					
At Union Pacific Railroad	— ²	— ¹	— ¹	1,961	— ¹
At Interstate 15	97.5	— ¹	— ¹	1,462	— ¹
Muddy River					
At Cooper Avenue	4,035	5,250	14,750	21,300	45,900
Downstream of Wells Siding	3,950	5,270	14,800	21,400	45,500
Upstream of confluence with Meadow Valley Wash	1,360	3,620	10,900	16,000	34,400

¹ Data Not Available

² Flow affected by upstream overflows, diversions, or obstructions; drainage area does not apply.

Table 3. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet Per Second)			
		10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
North Branch Blue Diamond Wash					
At Union Pacific Railroad	– ²	– ¹	– ¹	244	– ¹
At Interstate 15	7.8	– ¹	– ¹	1,290	– ¹
Overton Wash					
At Upstream Limit of Detailed Study	21.7	2,170	4,510	5,680	8,200
Pulsifier Wash					
At Leavitt Lane	4.9	– ¹	– ¹	2,100	– ¹
Upstream of Interstate 15	4.7	– ¹	– ¹	3,100	– ¹
Southwest Unnamed Wash					
At Apex	3.9	260	1,070	1,770	4,890
Tropicana Wash – Central Branch					
At Flamingo Wash	20.1	– ¹	– ¹	4,473	– ¹
Upstream of Airport Wash	12.1	– ¹	– ¹	3,320	– ¹
Downstream of Koval Road	11.0	– ¹	– ¹	3,320	– ¹
Just upstream of Interstate 15	3.6	– ¹	– ¹	1,545	– ¹
Just downstream of Union Pacific Railroad	1.5	– ¹	– ¹	750	– ¹
Downstream of Tropicana Wash – North Branch	1.3	– ¹	– ¹	1,582	– ¹
Upstream of Union Pacific Railroad	1.5	– ¹	– ¹	1,818	– ¹
Breakout Upstream of Union Pacific Railroad	1.5	– ¹	– ¹	1,068	– ¹
Downstream of Tropicana Wash – South Branch	0.1	– ¹	– ¹	121	– ¹
At Jones Boulevard	0.3	– ¹	– ¹	189	– ¹
Tropicana Wash – North Branch					
Above confluence with Tropicana Wash – Central Branch	1.0	– ¹	– ¹	1,352	– ¹
Just downstream of Hacienda Avenue	0.5	– ¹	– ¹	833	– ¹
Just downstream of South Decatur Boulevard	0.8	– ¹	– ¹	1,270	– ¹
At Jones Boulevard	0.4	– ¹	– ¹	240	– ¹
Just upstream of the confluence with Tributary No.2	0.9	– ¹	– ¹	821	– ¹
Tropicana Wash – South Branch					
Above Jones Boulevard	0.3	– ¹	– ¹	340	– ¹

¹ Data Not Available

² Flow affected by upstream overflows, diversions, or obstructions; drainage area does not apply.

Data Source: [FEMA Flood Map Center](#)

Note from Clark County Flood Insurance Study: Estimates of flood discharges for the alluvial fan analysis in the City of Henderson were based on published USGS data and Peak discharge-frequency relationships for the Colorado River were based on operating procedures for the Hoover Dam (Reference 20) and USBR information (Reference 14). These discharges were adopted for the Bullhead City study area. The 100-year peak discharge is equivalent to the "levee design flood" used by the USBR. The 10-, 50-, and 500-year peak discharge relationships were based on operating procedures for Hoover Dam and additional information provided by the USBR.

Clark County's previous HMP (2018) states that Clark County and its participating jurisdictions (Unincorporated Clark County, the City of Boulder City, the City of Henderson, the City of Las Vegas, the City of Mesquite, and the City of North Las Vegas) participate in the National Flood Insurance Program (NFIP). The initial FIRM dates were initiated for the planning area on the following dates:

- Clark County (CID number 320003), September 29, 1989
- Boulder City (CID number 320004), September 16, 1981
- Henderson (CID number 320005), June 15, 1982
- Las Vegas (CID number 325276), September 30, 1980
- Mesquite (CID number 320035), September 28, 1980
- North Las Vegas (CID number 320007), January 16, 1981
- Fort Mojave Indian Tribe (CID number 320036), the tribe has been included in the Community Status Book under Clark County, however, their entry is under California CID 060743, because their mailing address is in the state of California.

The FEMA Community Status Book Report for Communities participating in the NFIP (<https://www.fema.gov/cis/NV.pdf>) still indicates the digital FIRMs for Clark County and its participating jurisdictions were updated on the following dates:

- Clark County (including Clark County Unincorporated Areas and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) (CID number 320003), City of Boulder City (CID number 320004), City of Henderson (CID number 320005), City of Las Vegas (CID number 325276), and City of North Las Vegas (CID number 320007), November 16, 2011
- City of Mesquite (CID number 320035), December 4, 2007

For more information about the NFIP/CRS Status for Clark County and its participating jurisdictions can be found in [Section 5 under "National Flood Insurance Program Participation"](#).

The Nevada Flood Risk Portfolio states that high-risk flood zones, also known as Special Flood Hazard Areas (SFHAs), are delineated on Flood Insurance Rate Maps (FIRMs) to represent areas subject to inundation by the base (1-percent-annual chance) flood. Structures located with the SFHA have a 26 percent change of flooding during the life of a standard 30-year mortgage. The [FEMA Risk Rating 2.0: Equity in Action](#) allows FEMA to provide individuals and communities with information to make more informed decisions on purchasing flood insurance, initiating, and informing appropriate mitigation options to help lower flood insurance rates. The current rating methodology has not changed since the 1970s. Over the years, technology has evolved and so has FEMA's understanding of flood risk. Risk Rating 2.0 allows FEMA to calculate premiums more equitably across all policyholders based on the value of their home and individual property's flood risk.

Figure 92: [FEMA, National Rate Analysis](#)

Data Source: [FEMA, April 2022](#)

Related to the SFHA, the following table provides premium change analysis for the SFHA Count and % SFHA by County by FEMA:

Table 55: SFHA Count, Clark County, NV

FEMA Risk Rating 2.0 - Equity In Action																								
First Year Change by State and County - Count of SFH Policies																								
NV	County	Green bar											Blue Bar	Dk. Blue Bar	Grey bar								Total	
		< - \$100	\$-100 to \$-90	\$-90 to \$-80	\$-80 to \$-70	\$-70 to \$-60	\$-60 to \$-50	\$-50 to \$-40	\$-40 to \$-30	\$-30 to \$-20	\$-20 to \$-10	\$-10 to \$0	\$0 to \$10	\$10 to \$20	\$20 to \$30	\$30 to \$40	\$40 to \$50	\$50 to \$60	\$60 to \$70	\$70 to \$80	\$80 to \$90	\$90 to \$100		> \$100
	Clark County	41	10	6	5	6	10	16	11	14	42	121	1,552	13	2									1,849
NV Total		318	51	69	78	96	124	104	88	100	188	362	6,426	154	44	1							8,203	

Data Source: FEMA: https://www.fema.gov/sites/default/files/documents/fema_risk-rating-county-breakdown-nevada_2021.xlsx

Table 56: SFH % by County, Clark County, NV

FEMA Risk Rating 2.0 - Equity In Action																							
First Year Change by State and County – Percent of SFH Policies																							
NV	County	Green bar											Blue Bar	Dk. Blue Bar	Grey bar								Total
		< - \$100	\$-100 to \$-90	\$-90 to \$-80	\$-80 to \$-70	\$-70 to \$-60	\$-60 to \$-50	\$-50 to \$-40	\$-40 to \$-30	\$-30 to \$-20	\$-20 to \$-10	\$-10 to \$0	\$0 to \$10	\$10 to \$20	\$20 to \$30	\$30 to \$40	\$40 to \$50	\$50 to \$60	\$60 to \$70	\$70 to \$80	\$80 to \$90	\$90 to \$100	
	Clark County	2.2%	0.5%	0.3%	0.3%	0.3%	0.5%	0.9%	0.6%	0.8%	2.3%	6.5%	83.9%	0.7%	0.1%								
NV Total		3.9%	0.6%	0.8%	1.0%	1.2%	1.5%	1.3%	1.1%	1.2%	2.3%	4.4%	78.3%	1.9%	44	0.0%							

Data Source: FEMA: https://www.fema.gov/sites/default/files/documents/fema_risk-rating-county-breakdown-nevada_2021.xlsx

For Clark County, the previous Clark County HMP plan (2018) mentions that "approximately 5.2 percent of Clark County's land mass (417.1 square miles) is located in the SFHA, which is concentrated along the Virgin, Muddy, and Colorado rivers, in the eastern and southern portions of the County. Every incorporated jurisdiction within Clark County is mapped for the SFHA. In the 2012 Clark County HMP's vulnerability analysis, 15.2 percent of the population and 12.4 percent of the residential buildings within the County were located in the SFHA whereas the 2018 HMP vulnerability analysis shows only 10.4 percent of people and 10.7 percent of residential buildings located in the SFHA hazard area." The following information provide flood sources, the most current available SFHA data, and flood insurance rate zones developed for Clark County. The following data provides mapped special flood hazard areas and flood study verification (CNMS) from the [Nevada Flood Risk Portfolio – Flood Hazard and Flood Risk in Nevada’s Watersheds, September 2013](#):

A. Las Vegas Wash (including Clark County, City of Henderson, City of Las Vegas, and City of North Las Vegas) – SFHA Summary

Mapped Special Flood Hazard Areas and Flood Study Verification (CNMS)							
Area of SFHA RISK Zones (Sq Miles)				CNMS Line Stats- (Stream Miles)			
A	AE	AO	AH		A	151.4	
288	47.90	1	0		AE	61.9	
Area of SFHA RISK Zones (Acres)					AO	0	
A	AE	AO	AH		AH	0	
184,348	30,656	0	0	CNMS Verification- (Stream Miles)			
					Valid	77.1	
					Unverified	41.5	
					Unknown	94.8	
					Being Studied	0	

NOTES:

The Clark County Regional Flood Control District

Data Source: [Nevada Flood Risk Portfolio – Flood Hazard and Flood Risk in Nevada’s Watersheds, September 2023](#)

B. Havasu-Mojave Lakes (including Clark County and the City of Laughlin) – SFHA Summary

Mapped Special Flood Hazard Areas and Flood Study Verification (CNMS)							
Area of SFHA RISK Zones (Sq Mi)				CNMS Line Stats- (Stream mi)			
A	AE	AO	AH		A	149.6	
33.10	2	25	0		AE	21.9	
Area of SFHA RISK Zones (Acres)					AO	16.1	
A	AE	AO	AH		AH	0	
21,161	1,286.0	16,003	0	CNMS Verification- (Stream mi)			
					Valid	123.1	
					Unverified	37.9	
					Unknown	26.6	
					Being Studied	0	

NOTES:

Laughlin Rainstorm you tube video Keyword search: Laughlin, NV after major storm

Data Source: [Nevada Flood Risk Portfolio – Flood Hazard and Flood Risk in Nevada’s Watersheds, September 2013](#)

C. Ivanpah- Pahrump Valleys (including Clark County) – SFHA Summary

Data Source: [Nevada Flood Risk Portfolio – Flood Hazard and Flood Risk in Nevada's Watersheds, September 2013](#)

D. Lower Virgin (including the City of Mesquite) – SFHA Summary

Data Source: [Nevada Flood Risk Portfolio – Flood Hazard and Flood Risk in Nevada's Watersheds, September 2013](#)

E. Muddy (including Clark County) – SFHA Summary

Data Source: [Nevada Flood Risk Portfolio – Flood Hazard and Flood Risk in Nevada's Watersheds, September 2013](#)

F. Meadow Valley Wash (including Clark County) – SFHA Summary

Data Source: [Nevada Flood Risk Portfolio – Flood Hazard and Flood Risk in Nevada's Watersheds, September 2013](#)

G. Lake Mead (including Clark County) – SFHA Summary

Data Source: [Nevada Flood Risk Portfolio – Flood Hazard and Flood Risk in Nevada’s Watersheds, September 2013](#)

H. Sandy Springs -Tikaboo Valleys (including a portion of Clark County) – SFHA Summary

Data Source: [Nevada Flood Risk Portfolio – Flood Hazard and Flood Risk in Nevada’s Watersheds, September 2013](#)

I. Piute Wash (including Clark County) – SFHA Summary

Data Source: Nevada Flood Risk Portfolio – Flood Hazard and Flood Risk in Nevada’s Watersheds, September 2013

The following table explains the Floodplain Insurance Rate Map (FIRM) flood zone classifications associated with Figures 93-100 on the proceeding pages. All Clark County and its participating jurisdictions (which include Clark County Unincorporated Areas, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) FEMA DFIRM Maps can be found in [Appendix F: FEMA FIRM Maps](#).

Table 57: FEMA Flood Zone Classifications

FEMA Flood Zone Classifications		
Risk Area Classification	Zone	Description
High Risk Area	A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones. (100-Year Floodplain)
High Risk Area	AE	An area inundated by 1% annual chance of flooding. The base floodplain where base flood elevations are provided. AE Zones is now used on new format FIRMs instead of A1-A30 Zones. (100-Year Floodplain)
Moderate to Low-Risk Area	Shaded X	Area of moderate flood hazard, usually the area between the limits of 100-year and 500-year floods. Areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood. An area inundated by 0.2% annual chance flooding.
Moderate to Low-Risk Area	Unshaded X	Area of minimal flood hazard, usually depicted on FIRMS as above the 500-year flood level. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.
Undetermined Risk Area	D	Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.

Note: For the following FEMA National Flood Hazard Layer (NFHL) maps, the A and AE zones have been combined as they are both considered 100-year floodplain.

Data Source: FEMA Flood Zone Classifications: <https://snmapmod.snco.us/fmm/document/fema-flood-zone-definitions.pdf>

Figure 93: Clark County, NV – 100-year flood zone map with Critical Facilities Layers

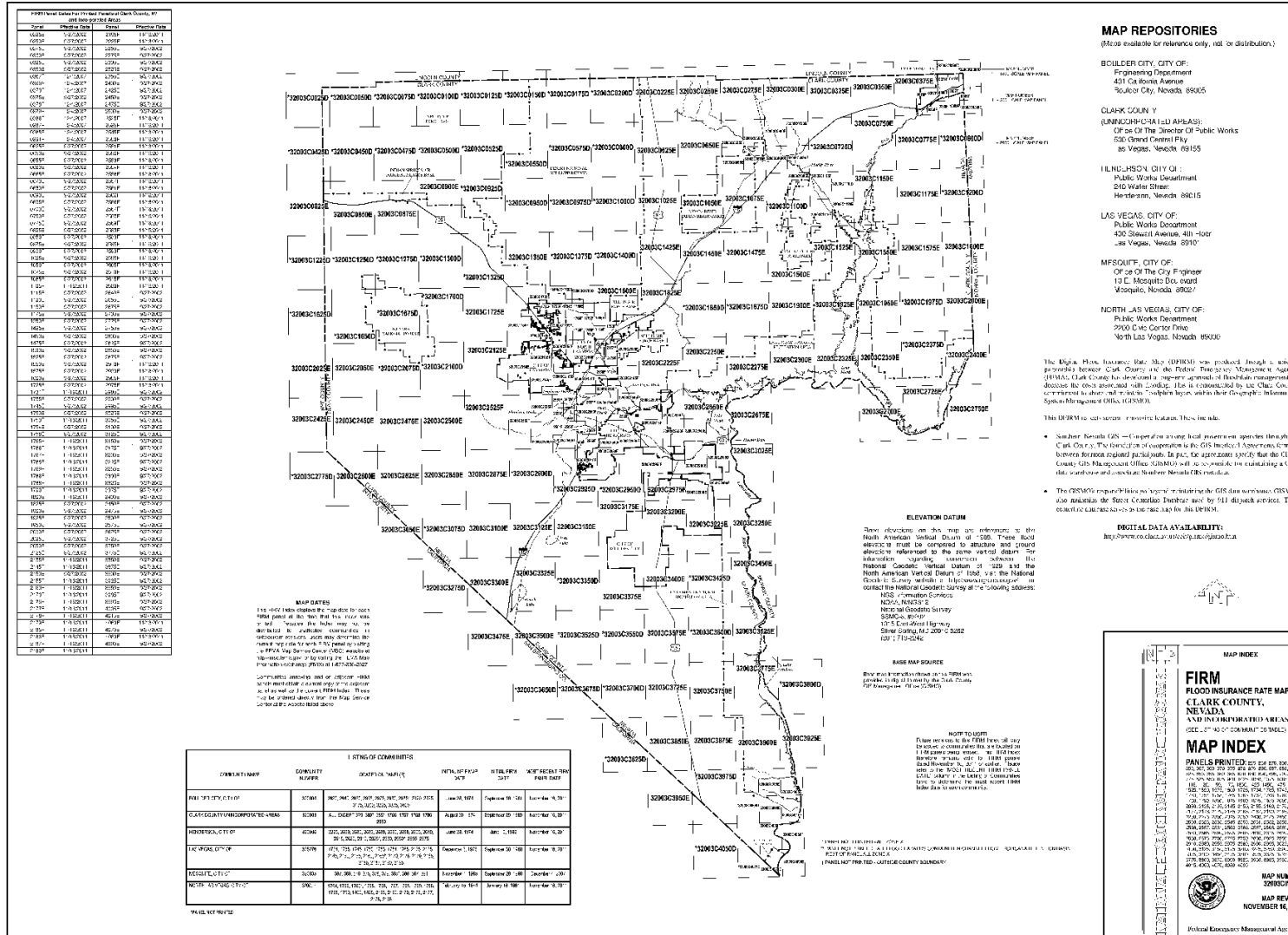


Data Source: Clark County GISMO Department

Figure 94: Clark County, NV –500-year flood zone map with Critical Facilities Layers

Data Source: Clark County GISMO Department

Figure 95: FEMA FIRM Map: Clark County, NV including all jurisdictions and Clark County Unincorporated



Data Source: FEMA Flood Map Service Center

Figure 96: FEMA FIRM Map: Boulder City, NV

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PAIR LAYOUT

SPECIAL FLOOD HAZARD AREAS

- White: Base Flood Elevation (BFE) Zone A, V, XE
- Light Blue: With BFE or Depth Zone A, C, D, O, XE, VE, XZ
- Red: Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- Orange: 0.2% Annual Chance Flood Hazard, Areas of 1% Annual Chance Flood with average depth less than one foot or with drainage areas of less than one square mile. Zone F
- Dark Grey: River Corridors 1% Annual Chance Flood Hazard. Zone F
- Light Orange: Area with Reduced Flood Risk due to Levee. See Notes. Zone F
- Yellow: Area with Flood Risk due to Levee. Zone D

OTHER AREAS

- Blue Screen: Area of Minimal Road Hazard. Zone F
- Blue Line: Effective IOMR
- Light Orange: Area of Uncontrolled Road Hazard. Zone D

GENERAL STRUCTURES

- Black Dashed Line: Channel, Culvert, or Storm Sewer
- Black Dotted Line: Levee, Dike, or Retention Wall

OTHER FEATURES

- Blue Line: Cross Sections with 1% Annual Chance
- Blue Line: 17.6: Water Surface Elevation
- Blue Line: Coastal Trenches
- Blue Line: Base Flood Elevation Line (BFE)
- Red Line: Limit of Study
- Yellow Line: Jurisdiction Boundary
- Blue Line: Coastal Trenches, Baseline
- Blue Line: Profile Baseline
- Blue Line: Hydrographic Feature

MAP PANELS

- Green Box: Digital Data Available
- Light Green Box: No Digital Data Available
- Green Box with X: Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is the version described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was updated on 11/4/2023 at 10:10 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL effective information may change or become superseded by new data over time.

This map/image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map coordinate data, community identifiers, FIRM panel number, and FIRM effective date. Map images for unimaged and unmapped areas should be used for regulatory purposes.

Data Source: [FEMA Flood Map Center](https://www.fema.gov/flood-maps)

Figure 97: FEMA FIRM Map: Henderson, NV

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, X3
		With BFE Elevation Zone A, X, Y, Z, VE, VZ
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chertic Flood Hazard, Areas of 1% Annual Chertic Flood with average depth less than one foot, or with drainage areas of less than one square mile. Zone X
		Future Conditions 1% Annual Chertic Flood Hazard. Zone X
		Area with Reduced Flood Risk due to levee. See Notes. Zone X
		Area with Flood Risk due to levee. Zone X
OTHER AREAS		Area of Minimal Flood Hazard. Zone X
		Effective 10 MRs
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer Levee, Dike, or Retention
		Levee, Dike, or Retention
OTHER FEATURES		Cross Sections with 1% Annual Chertic
		Water Surface Elevation
		Original Tract
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is provided as described below. The base map shall comply with FEMA's base map accuracy standards.

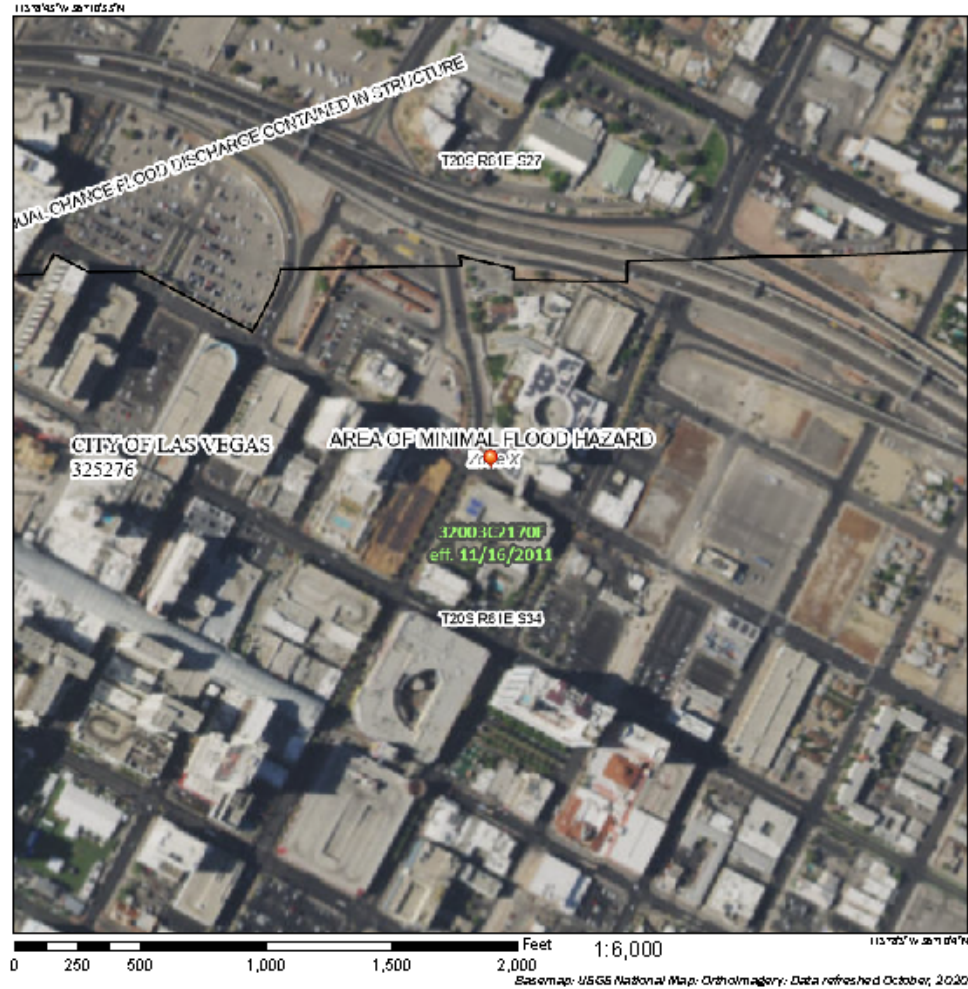
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was updated on 1/14/2025 at 10:55 AM and does not reflect changes or corrections subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: Base map imagery, flood zone labels, legend, scale bar, map coordinate data, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unretrofit areas cannot be used for regulatory purposes.

Data Source: [FEMA Flood Map Service Center](#)

Figure 98: FEMA Firm Map: Las Vegas, NV

National Flood Hazard Layer FIRMette



Legend

SEE THE REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		With Base Flood Elevation (BFE) Zone A, X, AE
		With BFE and Depth Zone A, X, AE, VE, AP
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot, or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee, See Notes, Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective IDWRs
		Area of Unconfined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Outfall, or Storm Sewer Levee, Dike, or Roadwall
OTHER FEATURES		Cross Sections with 1% Annual Chance
		Water Surface Elevation
		Casual Tractee
		Base Flood Elevation Line (BFE)
		Link of Study
		Jurisdiction Boundary
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not as described below. The base map does not comply with FEMA's base map accuracy standards.

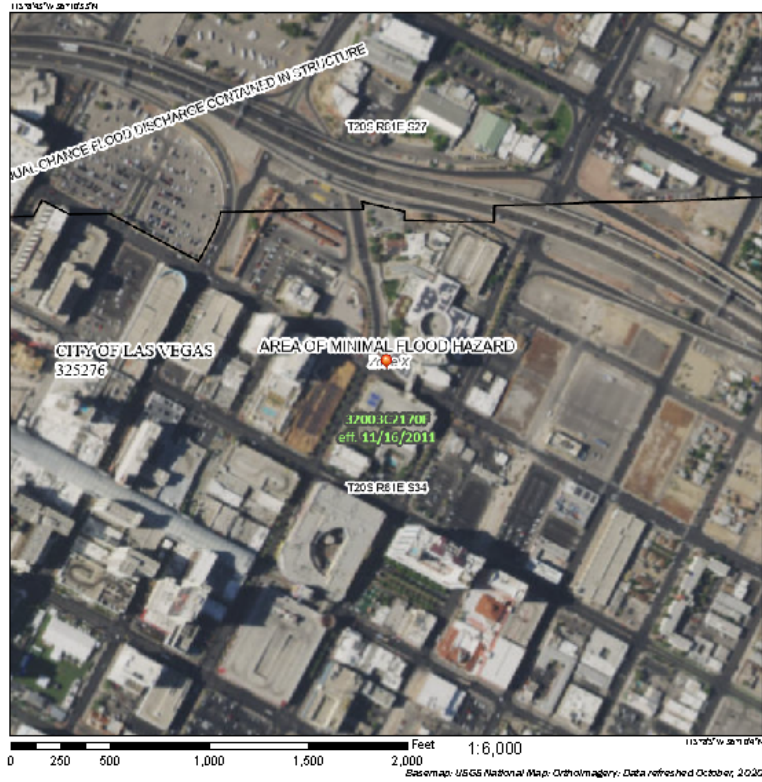
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was captured at 11/16/2023 at 10:59 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: Base map imagery, flood zone labels, legend, scale bar, map control icons, copyright information, FIRM panel number, and FIRM effective date. Map images for unmapped and unorthorectified areas cannot be used for regulatory purposes.

Data Source: [FEMA Flood Map Service Center](#)

Figure 99: FEMA Risk Map – Mesquite, NV

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- With Base Flood Elevation (BFE) Zone A-V, A99
- With BFE and Depth Zone A-C, A9, A99, A97
- Regulatory Flowway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% Annual Chance Flood with average depth less than one foot or with average areas of less than one square mile Zone C
- Areas Designated 1% Annual Chance Flood Hazard Zone D
- Area with Reduced Flood Risk due to Levee, See Notes, Zone E
- Area with Flood Risk due to Levee Zone D

ROSCREEN

- Area of Minimal Road Hazard Zone C
- Effective US HWs
- Area of Unclassified Road Hazard Zone D

OTHER AREAS

- Channel, Culvert, or Storm Sewer Levee, Dike, or Retention Wall

GENERAL STRUCTURES

- Cross Sections with 1% Annual Chance
- Water Surface Elevation
- Channel Transition
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Channel Transition, Baseline
- Profile Baseline
- Hydrographic Feature

OTHER FEATURES

- Digital Data Available
- No Digital Data Available
- Unmapped

MAP PANELS

- The pin displayed on the map is an approximate point selected by the user and does not represent an exclusive property location.

DISCLAIMERS:

This map complies with FEMA's standards for the use of digital flood maps. It is the user's responsibility to verify the accuracy of the data. The information shown on this map is for informational purposes only and does not constitute an offer of insurance or any other financial product. The information shown on this map is for informational purposes only and does not constitute an offer of insurance or any other financial product. The information shown on this map is for informational purposes only and does not constitute an offer of insurance or any other financial product.

NOTICE:

This map is not to be used for any other purpose than the one for which it was prepared. The information shown on this map is for informational purposes only and does not constitute an offer of insurance or any other financial product. The information shown on this map is for informational purposes only and does not constitute an offer of insurance or any other financial product.

Data Source: FEMA Flood Map Service Center

Figure 100: FEMA FIRM Map – North Las Vegas, NV

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FISRY PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone A, V, X2
- With BFE and Depth Zone A, C, D, X1, X2, X3
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% Annual Chance Flood with average depth less than one foot, or with drainage areas of less than one square mile, Zone F
- Future Conditions 1% Annual Chance Flood Hazard, Zone F
- Area with Reduced Flood Risk due to Levee, See Notes, Zone F
- Area with Flood Risk due to Levee, Zone D

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard, Zone F
- Effective LGMRs
- Area of Unincorporated Flood Hazard, Zone D

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer Levee, Dike, or Roadwall

OTHER FEATURES

- 20.2 Cross Sections with 1% Annual Chance
- 17.4 Water Surface Elevation
- 3 Channel Transverse
- Base Flood Elevation Line (BFE)
- Limits of Study
- Jurisdiction Boundary
- Channel Transverse, Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS

- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is the only one described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was updated on 1/4/2025 at 10:47 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, copyright identifier, FIRM panel number, and FIRM effective date. Map images for unmapped and unincorporated areas should be used for regulatory purposes.

Data Source: [FEMA Flood Map Service Center](#)

Previous Occurrence

In the past, there has been a history of flood events within Clark County. The State of Nevada Enhanced Hazard Mitigation Plan (2018) mentions in its Summary of Major Flooding in Southern Nevada that the first significant flooding event in the planning area was on March 31, 1906. This flood impacted the Las Vegas Valley; it experienced a flooding event that moved 70 miles of track, bridges, and fills were swept away and related to estimated losses; no property damage estimates were available. As the previous Clark County HMP plan (2012) mentioned, "recorded floods in Clark County date back almost one hundred years. From 1905-1975, there have been 184 different flooding events that resulted in damages to private property and public facilities. Since 1960, the area has experienced at least 11 floods costing more than a million dollars each. In that same period, 31 lives were lost in 21 separate flash flood events. Since 1965, four Presidential Disaster Declarations have been issued for flood events affecting Clark County."

To gain a better understanding of previous occurrences and accurately calculate future probability, the following information was taken into consideration. From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncei.noaa.gov/stormevents/) recorded 245 flood (flood/flash flood) events in Clark County (including its participating jurisdiction and Clark County Unincorporated Area and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation). The following information was obtained by accessing the NOAA database.

<https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the flood experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible.

Clark County, NV

Table 58: Flood Events, Clark County, NV, NOAA/NCEI Database

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
ALUNITE	10/4/2010	Flash Flood	0	0	2000	U.S. Highway 93/95 was closed at Railroad Pass due to flooding.
ALUNITE	7/31/2012	Flash Flood	0	0	1000	Six inches of muddy water flowed through the intersection of Wagon Wheel and Boulder Highway.
ALUNITE	8/20/2014	Flash Flood	0	0	3000	Swift water flowed across Patti Ann Woods Drive just west of College Drive, mud and rocks from a vacant lot washed onto Horizon Ridge Parkway near Nautical Street, and baseball sized rocks washed onto Horizon Drive at Horizon Ridge Parkway.
ALUNITE	8/3/2016	Flash Flood	0	0	5000	Highway 93 was flooded just south of Railroad Pass Casino. Two cars were stuck in water up to the hoods.
ALUNITE	7/19/2017	Flash Flood	0	0	2000	The southbound Highway 95 off ramp at Wagon Wheel Dr in Henderson was closed due to flooding, and water and mud washed over roads near Equestrian Dr and Magic Way.
ALUNITE	7/12/2018	Flash Flood	0	0	1000	The underpass at Highway 95 and Wagon Wheel was flooded.
APEX	10/18/2015	Flash	0	0	2000	Interstate 15 was closed at mile marker 60 to remove debris from flooding.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
		Flood				
APEX	7/25/2022	Flash Flood	0	0	1000	Las Vegas Blvd flooded underneath I-15.
ARDEN	8/18/2012	Flash Flood	0	0	2000	The following intersections had flowing water with mud and rocks: Rainbow and Landberg, Jo Rae and Jones, and Silverado Ranch and Decatur.
ARDEN	8/31/2013	Flash Flood	0	0	2000	Water three feet deep flowed across Dean Martin Drive at Cactus Avenue, and the intersection of Cactus and Bermuda was also impassable.
ARDEN	7/7/2014	Flash Flood	0	0	1000	Six to 12 inches of water flowed over Durango Drive at and north of Blue Diamond Road. The Blue Diamond Channel ALERT recorded 1.10 inches of rain in 30 minutes.
ARDEN	7/31/2019	Flash Flood	0	0	1000	Six to eight inches of water flowed through the intersection of Blue Diamond and Rainbow.
ARDEN	7/31/2019	Flood	0	0	25000	Several hours after a thunderstorm, water flowing through a wash overcame a berm and spilled into a neighborhood. Cars were stranded, and the water was waist deep in places. Water neared, but did not enter, homes. It took until the next morning for the water to recede (thus, this event continued into August).
ARDEN	8/1/2019	Flood	0	0	0	This event began in July and continued into August. The details of the event are included in July's publication.
ARDEN	7/26/2021	Flash Flood	0	0	1000	The intersection of Blue Diamond Road and Rainbow Boulevard was closed due to flooding.
ARDEN	7/25/2022	Flash Flood	0	0	2000	Water covered the intersections of Blue Diamond and Rainbow, and Blue Diamond and Pioneer.
ARDEN	7/25/2022	Flash Flood	0	0	2000	Flooded roads near the intersection of Decatur and Silverado Ranch stranded 15 to 20 cars.
ARDEN	7/28/2022	Flash Flood	0	0	25000	Multiple intersections were flooded, large rocks washed into a road near Mountains Edge, and water poured into at least two casinos through the ceilings and walls.
ARROWHEAD	9/8/2014	Flood	0	0	3000000	The Muddy River flooded Moapa, Logandale, and Overton. A total of 139 homes and the Cooper Street Bridge were damaged.
ARROWHEAD	7/18/2021	Flash Flood	0	0	1000	Water flowed over Interstate 15 near Moapa, causing traffic to be diverted.
BLUE DIAMOND	7/13/1999	Flash Flood	0	0	0	Approximately 1.5 inches of rain fell in the Red Rock Canyon area, just west of Las Vegas, with over an inch of rainfall recorded in a 30 minute period. The resulting runoff flooded roads around the Red Rock scenic loop and forced closures in nearby Calico Basin.
BLUE DIAMOND	12/20/2010	Flash Flood	0	0	0	Bonnie Springs Road and Arroyo Road were closed due to flooding.
BLUE DIAMOND	7/5/2011	Flash Flood	0	0	25000	Roads leading into Bonnie Springs and Spring Mountain Ranch State Park were washed out by flooding. A co-op observer in the area reported 1.73 inches of rain.
BLUE DIAMOND	8/30/2012	Flash Flood	0	0	1000	One foot of water flowed over both Bonnie Springs Road and the Spring Mountain Ranch State Park access road just west of Highway 159.
BLUE DIAMOND	10/11/2012	Flash Flood	0	0	1000	The main road to Spring Mountain Ranch State Park flooded near the park entrance.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
BLUE DIAMOND	10/11/2012	Flash Flood	0	0	1000	Water and debris were crossing Arroyo Road in Blue Diamond.
BLUE DIAMOND	8/31/2013	Flash Flood	0	0	1000	Highway 159 was closed at Highway 160 due to flooding.
BLUE DIAMOND	7/6/2014	Flash Flood	0	0	1000	Four to six inches of water and mud flowed across a side road.
BLUE DIAMOND	8/4/2014	Flash Flood	0	0	5000	Highway 159 was closed by flooding and debris. Spring Mountain Ranch State Park was also closed.
BLUE DIAMOND	8/4/2014	Flash Flood	0	0	1000	Arroyo Road was flooded 8-12 inches deep.
BLUE DIAMOND	9/7/2014	Flash Flood	0	0	2000	Lots of mud and rocks washed onto Tropicana between Hualapai and Fort Apache.
BLUE DIAMOND	9/8/2014	Flash Flood	0	0	1000	Arroyo Road was closed due to flooding.
BLUE DIAMOND	7/6/2015	Flash Flood	0	0	10000	Water and rocks flowed over several roads, and at least seven swift water rescues occurred. Up to 1.13 inches of rain fell in one hour.
BLUE DIAMOND	10/18/2015	Flash Flood	0	0	1000	Over six inches of rapidly flowing water was reported at the entrance to Spring Mountain Ranch State Park.
BLUE DIAMOND	6/30/2016	Flash Flood	0	0	1000	A debris flow covered Highway 159 near Bonnie Springs.
BLUE DIAMOND	2/18/2017	Flash Flood	0	0	1000	The Red Rock Scenic Loop and the access roads to Bonnie Springs Ranch and Spring Mountain State Park were all closed due to flooding.
BLUE DIAMOND	7/12/2018	Flash Flood	0	0	1000	Flooding closed the entrance to Spring Mountain Ranch State Park.
BLUE DIAMOND	7/29/2018	Flash Flood	0	0	2000	Flash flooding affected Highway 159.
BLUE DIAMOND	3/6/2019	Flash Flood	0	0	1000	Bonnie Springs Rd was closed due to flooding.
BLUE DIAMOND	3/15/2023	Flood	0	0	1000	Water flowed over Spring Mountain Ranch Road.
BRACKEN	8/25/2008	Flash Flood	0	0	0	Torrey Pines Drive was flooded south of Desert Inn Road.
BRACKEN	1/21/2010	Flash Flood	0	0	0	A Las Vegas television station reported at least six inches of water in the intersection of Decatur and Oakey.
BRACKEN	1/21/2010	Flash Flood	0	0	0	Several roads were flooded both west and east of the Las Vegas Strip.
BRACKEN	9/14/2011	Flash Flood	0	0	20000	Two drivers had to be rescued from the southbound off ramp of the 215 Beltway at Flamingo Road when they got trapped in standing water 3-4 feet deep.
BRACKEN	7/5/2014	Flash Flood	0	0	10000	A swift water rescue was performed at the intersection of Decatur and Oakey when a car drove into deep water in the intersection.
BRACKEN	9/8/2014	Flash	0	0	5000	Several swift water rescues took place near and west of Fort Apache and Russell. At

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
		Flood				least six inches of water, mud, and rocks flowed over Tropicana and Grand Canyon.
BRACKEN	9/8/2014	Flash Flood	0	0	1000	Rapidly flowing water flooded the parking garage of the Quad Resort on the Las Vegas Strip. One construction worker was swept away but was not injured.
BRACKEN	8/4/2017	Flash Flood	1	0	10000	Six people were rescued from the Flamingo Wash behind the Linq Hotel, and roads were closed in the area due to flooding. Two people were swept into the Flamingo Wash near Boulder Highway. One man, who had been rescuing people from the wash, was killed.
BRACKEN	8/10/2022	Flash Flood	0	0	1000	Charleston Blvd was flooded one to one and a half feet deep near Jones.
BUNKERVILLE	9/8/1998	Flash Flood	0	0	30000	Thunderstorm winds caused damage to six homes...including one roof blown away. Also, heavy rain showers produced flash flooding which swept mud and water through several homes.
BUNKERVILLE	7/28/2006	Flash Flood	0	0	0	Flooding on the road from Bunkerville to Virgin Peak. Graders had to move mud and debris off the road, and some asphalt was washed away. Relayed from wildfire crews through Incident Meteorologist on site.
CACTUS SPGS	8/13/2015	Flash Flood	0	0	2000	Deep rushing water left debris along Highway 95 from mile marker 125 to 127.
CACTUS SPGS	7/18/2021	Flash Flood	0	0	10000	Flash flooding in Cold Creek washed out the shoulders of some roads.
CALLVILLE BAY	10/4/2010	Flash Flood	0	0	1000000	An 8 to 10 foot wall of water slammed into the Callville Bay Marina, destroying much of the marina, rendering many roads in the area impassable, and destroying several power poles and cross arms.
CALLVILLE BAY	10/20/2010	Flash Flood	0	0	1000	Water and debris flowed down a wash into the Callville Bay area.
CALLVILLE BAY	8/22/2012	Flash Flood	0	0	1000	Six to eight inches of water were running across Northshore Road near mile marker 7.
CALLVILLE BAY	10/5/2015	Flash Flood	0	0	15000	Boxcar Cove Road, Crawdad Cove Road, and Callville Bay Road were damaged and closed due to flash flooding.
CALLVILLE BAY	7/19/2018	Flash Flood	0	0	1000	Northshore Road was closed due to flooding.
CALLVILLE BAY	7/12/2021	Flash Flood	0	0	100000	Flash flooding left a few feet of debris over the access road, damaged the headwalk from the shore to the docks, and damaged the sewage lift station.
CALLVILLE BAY	8/12/2021	Flash Flood	0	0	2000	Water and debris were over Northshore Road near mile marker 8.
CAL-NEV-ARI	7/28/2006	Flash Flood	0	0	0	Water and mud over two intersections in Laughlin.
CAL-NEV-ARI	7/28/2006	Flash Flood	0	0	0	Water covered some roads.
CAL-NEV-ARI	8/19/2014	Flash Flood	0	0	2000	Several roads were impassable in Cal-Nev-Ari. A spotter measured 2.10 inches of rain.
CAL-NEV-ARI	8/26/2016	Flash	0	0	2000	Highway 95 was closed near Highway 163 to clear flood debris from the road.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
		Flood				
CHARLESTON PARK	9/3/1997	Flash Flood	0	0	10000	Heavy rain triggered mud slides in Kyle Canyon which deposited debris on State Route 157. A report was also received of mud and debris on Wheeler Pass Road in the Spring Mountains. Equipment was dispatched to clear the roads. The Nevada Division of Forestry reported about 2 inches of rain in Kyle Canyon between 7 am and noon PST.
CHARLESTON PARK	7/15/2012	Flash Flood	0	0	5000	Several large boulders washed onto Kyle Canyon Road near the Spring Mountain Visitor Center.
CHARLESTON PARK	9/10/2012	Flash Flood	0	0	20000	Rocks and dirt washed over Deer Creek Highway, and several secondary roads off of Lee Canyon Road were washed out.
CHARLESTON PARK	8/18/2013	Flash Flood	0	0	10000	Water overtopped a small bridge near the Fletcher View Trailhead just south of Mount Charleston, rendering the bridge impassable. Harris Springs Road was also impassable at mile marker 8 due to flooding. Up to a foot of debris was deposited around picnic tables in the Kyle Canyon picnic area. Ash filled water flowed through several yards in the Rainbow subdivision.
CHARLESTON PARK	8/25/2013	Flash Flood	0	0	3000000	Very heavy rain on the Carpenter One burn area produced major flash flooding. 18 swift water rescues took place. Numerous roads were closed by flooding, including Kyle Canyon Road (which was washed away) and Highway 95. Water, mud, and firefighting foam covered many streets in northwest Las Vegas for three days as the Kyle Canyon Detention Basin slowly drained. Much of the Las Vegas Paiute Golf Resort was heavily damaged.
CHARLESTON PARK	8/30/2013	Flash Flood	0	0	1000000	Heavy rain on the Carpenter One burn area led to major flash flooding. Trout Canyon Road was destroyed, and a nearly completed water line was destroyed as well. Highway 160 was closed near the Tecopa turnoff due to water and mud on the road. The next morning, there was standing water seven feet deep in the highway median, with trees, mud, ash, and debris mixed in.
CHARLESTON PARK	9/1/2013	Flash Flood	0	0	1000000	Heavy rain on the Carpenter One burn area produced major flash flooding. Several homes in the Rainbow subdivision on Mount Charleston were damaged by flowing water and debris estimated to be five feet deep, and over 30 residents had to be helped from their homes. Highway 157 was closed due to flooding in the Rainbow Canyon area. Highway 160 was closed at Tecopa Road due to flooding. Several inches of water and mud flowed over roads in the area of Grand Teton and Hualapai Way in the northwest corner of the Las Vegas Valley.
CHARLESTON PARK	9/11/2013	Flash Flood	0	0	2000	Rain on the Carpenter One burn area caused water and debris to flow across roads in the Rainbow Canyon subdivision.
CHARLESTON PARK	7/7/2014	Flash Flood	0	0	2000	Water, mud, and rocks flowed over Kyle Canyon Road.
CHARLESTON PARK	7/16/2014	Flash Flood	0	0	1000	Water up to six inches deep flowed through the Rainbow Canyon subdivision.
CHARLESTON PARK	7/28/2014	Flash Flood	0	0	1000000	Major flash flooding occurred downstream of the Carpenter One burn area. Water and debris five feet deep came down Rainbow Canyon. Six homes were damaged, including two with major damage. Rainbow Canyon Road was damaged, as were

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
						utility lines and a water pipe.
CHARLESTON PARK	7/24/2017	Flash Flood	0	0	100000	A wall of water, mud, rocks, debris, and small trees flowed down Lee Canyon Wash and overwhelmed culverts. Water and debris closed Highway 156 near mile marker 2.
CHARLESTON PARK	8/4/2017	Flash Flood	0	0	50000	Water and debris washed out Harris Springs Road, flowed along Highway 157 and Lovell Canyon Road, and through the Forest Service Campground and the Rainbow Subdivision. Flooding also closed Highway 160 at Tecopa Road, stranding about 100 cars on the highway until the water receded.
CHARLESTON PARK	8/29/2017	Flash Flood	0	0	5000	One person at Fletcher View Campground had to be rescued by firefighters, and debris covered roads in a subdivision.
CHARLESTON PARK	7/30/2018	Flash Flood	0	0	10000	There was substantial flash flooding in the Kyle Canyon campground off Highway 157, and water six to eight feet deep flowed down the diversion channel in Rainbow Canyon.
COTTONWOOD LNDG	8/15/1998	Flash Flood	0	0	0	Heavy rain showers produced flash flooding which temporarily closed U.S. Highway 95 near Searchlight and the access road to Cottonwood Cove on Lake Mohave. No serious damage was reported.
COTTONWOOD LNDG	8/14/2005	Flash Flood	0	0	0	Flash flood buried a large SUV at Cottonwood Cove.
COTTONWOOD LNDG	7/25/2007	Flash Flood	0	0	0	Roads were flooded at the campground at Cottonwood Cove.
COTTONWOOD LNDG	8/8/2008	Flash Flood	0	0	1000	Three inches of water flooded a resort building. The water receded quickly.
COTTONWOOD LNDG	8/19/2014	Flash Flood	0	0	1000	Six Mile Cove Road was impassable due to flooding.
CRYSTAL	8/22/2012	Flash Flood	0	0	200000	Significant flash flooding affected much of Valley of Fire State Park. Mud and debris flowed over roads in at least ten places in the park. White Dome Road was undercut and washed out. In addition, Exit 75 off Interstate 15 was washed out.
CRYSTAL	9/11/2012	Flash Flood	0	0	50000	Two feet of water flowed over a section of White Dome Road, and Valley of Fire State Park was evacuated and closed. In addition, Interstate 15 was closed due to flooding of the California Wash (near mile marker 75).
CRYSTAL	9/4/2013	Flash Flood	0	0	2000	About 9 inches of mud covered the road to Valley of Fire State Park.
CRYSTAL	8/21/2014	Flash Flood	0	0	1000	Valley of Fire Highway was flooded just south of Interstate 15.
CRYSTAL	9/26/2014	Flash Flood	0	0	2000	Water and large rocks were flowing across Highway 93 six miles south of Coyote Springs, and water was also starting to come over the road half a mile north of Coyote Springs.
CRYSTAL	9/26/2014	Flash Flood	0	0	1000	Water flowed over Valley of Fire Highway just off Interstate 15.
CRYSTAL	10/5/2015	Flash Flood	0	0	1000	A foot of flowing water closed Valley of Fire Road.
CRYSTAL	10/18/2015	Flash	0	0	2000	Valley of Fire Highway and I-15 Exit 75 were closed due to flooding.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
		Flood				
CRYSTAL	4/10/2016	Flash Flood	0	0	1000	Water and mud flowed over Valley of Fire Highway.
CRYSTAL	8/22/2016	Flash Flood	0	0	2000	Valley of Fire Road was closed due to flooding and debris.
DRY LAKE	10/18/2015	Flash Flood	0	0	5000	Highway 93 was closed due to severe flooding.
EAST LAS VEGAS	9/8/2008	Flash Flood	0	0	0	Flash flooding affected Boulder Hwy. at Flamingo, and the Flamingo onramp to Interstate 515 on the east side of Las Vegas. Some flooding was also reported on the north Strip, and at the intersection of Sahara and Maryland just east of the north Strip.
EAST LAS VEGAS	10/4/2011	Flash Flood	0	0	30000	Spotters reported flowing water on Stephanie Street between Russell and Sunset, as well as on Marks Street between Warm Springs and American Pacific. Broadcast media reported that the intersection of Tropicana and Jimmy Durante flooded so quickly that several drivers were stranded in their cars, and had to be rescued. The heavy rain also damaged the soccer fields at Sam Boyd Stadium Park.
EAST LAS VEGAS	8/9/2012	Flash Flood	0	0	1000	Six inches of water along with rocks and debris flowed across the intersection of Tropicana and Stephanie.
EAST LAS VEGAS	7/20/2013	Flash Flood	0	0	1000	One to two feet of water flowed down Harmon Rd. between Sandhill and Boulder Highway. The on-ramp from Flamingo to northbound highway 95 was closed due to flooding.
EAST LAS VEGAS	9/2/2013	Flash Flood	0	0	2000	Six to 18 inches of water with mud and debris flowed down Sunset Road from Mountain Vista to Arroyo Grande.
EAST LAS VEGAS	8/4/2016	Flash Flood	0	0	1000	The Flamingo Road on ramps to Highway 95 were closed due to flooding.
EAST LAS VEGAS	8/4/2016	Flood	0	0	0	Water flowed over Tropicana Avenue near the Highway 95 interchange. The road was still passable.
EAST LAS VEGAS	1/9/2018	Flash Flood	0	0	1000	Stephanie Street was closed at Monson Channel due to flooding.
EAST LAS VEGAS	7/14/2018	Flash Flood	0	0	2000	Flooding closed all the ramps at Highway 95 and Flamingo, and also affected several other intersections in the area.
EAST PORTION	8/16/2000	Flash Flood	0	0	8000	Heavy rain caused flash flooding of Boxcar...Government...West End...and Gypsum Washes. A Jeep Wrangler had fallen into Boxcar wash and received damage.
GARNET	8/22/2016	Flash Flood	0	0	1000	Mud and debris were on Interstate 15 at Exit 64.
GLENDALE	7/8/1999	Flash Flood	0	0	0	The Nevada Highway Patrol reported four feet of water running over State Route 168 three miles east of U.S. Highway 95. The road was blocked for a couple hours stranding a few cars.
GLENDALE	7/5/2001	Flash Flood	0	0	0	Heavy rains from thunderstorms produced flash flooding over parts of Mohave county. Area washes were running around a foot deep and some flooding was reported on area roads.
GOODSPGS	9/1/1997	Flash	0	0	20000	Heavy rain fell over extreme southwest Clark County producing flash flooding between

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
		Flood				Goodsprings and Sandy Valley. Several areas of State Route 161 were washed out, especially in the vicinity of Columbia Pass (five miles southwest of Goodsprings). A spotter reported 1.2 inches of rain in the Sandy Valley.
GOODSPGS	8/22/2012	Flash Flood	0	0	5000	Several roads in Sandy Valley were flooded with water and debris.
GOODSPGS	10/11/2012	Flash Flood	0	0	2000	Several roads in Sandy Valley had mud washed onto them.
GOODSPGS	8/24/2013	Flash Flood	0	0	1000	Several inches of water with rocks and debris flowed over Pahrump Road near Sandy Valley.
GOODSPGS	9/8/2014	Flash Flood	0	0	500000	Cars were stuck in water and mud on Columbia Pass outside Sandy Valley. More than half of the dirt roads in Sandy Valley were damaged.
GOODSPGS	8/13/2015	Flash Flood	0	0	1000	Several inches of water, mud, and debris flowed through yards and a horse farm.
INDIAN SPGS	9/3/1997	Flash Flood	0	0	20000	Thunderstorms over northwest Clark County dumped locally heavy rain which flooded the Indian Springs School. Water was a few inches deep inside some of the hallways and classrooms.
INDIAN SPGS	7/17/2008	Flash Flood	0	0	0	U.S. Highway 95 was washed out at Clark County mile marker 112.
INDIAN SPGS	8/4/2014	Flash Flood	0	0	1000	Two lanes of Highway 95 were flooded with several inches of water.
JEAN	7/6/2001	Flash Flood	0	0	0	Heavy rain from thunderstorms produced 1.38 inches of rain in an hour. Significant flooding of area roads was noted.
JEAN	7/27/2014	Flash Flood	0	0	5000	Flash flooding covered several lanes of Interstate 15 near Jean, forcing traffic into the median. Highway 161 from Jean to Goodsprings was closed, and rocks and mud also washed onto secondary roads.
JEAN	6/30/2016	Flash Flood	0	0	1000	Twelve to 18 inches of water flowed over Highway 161.
JEAN	7/13/2018	Flash Flood	0	0	5000	Highway 161 was closed west of I-15, and three people were trapped in a vehicle.
JEAN ARPT	8/18/2013	Flash Flood	0	0	1000	Water flowed over a road near the Jean Airport.
LAUGHLIN	8/7/2010	Flash Flood	0	0	1000	Eight inches of water and debris flowed across Aha Macav Parkway.
LAUGHLIN	7/31/2012	Flash Flood	0	0	150000	Numerous roads were covered with water, mud and boulders. The Laughlin-Bullhead City bridge flooded. Water got into the lobbies of some of the casino hotels.
LAUGHLIN	8/25/2013	Flash Flood	0	0	10000	Several roads were flooded in the Laughlin area, with one swift water rescue reported.
LAUGHLIN	7/6/2014	Flash Flood	0	0	5000	Parts of Needles Highway washed out just north of the NV/CA border.
LAUGHLIN	8/19/2014	Flash Flood	0	0	1000	Needles Highway was closed from Casino Drive to the California state line.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
LAUGHLIN	7/17/2015	Flash Flood	0	0	1000	At least six inches of water flowed through the intersection of Casino Drive and Highway 163, and the intersection of Thomas Edison and Bruce Woodbury was closed due to flooding.
LAUGHLIN	10/18/2015	Flash Flood	0	0	20000	Nevada Telephone Cove Road was closed due to flooding, and damage occurred in the Christmas Tree Pass backcountry area.
LAUGHLIN	7/2/2016	Flash Flood	0	0	1000	Casino Drive was covered in mud.
LAUGHLIN	8/26/2016	Flash Flood	0	0	1000	Water, rocks, and debris were over Casino Drive near the Old Town Saloon.
LAUGHLIN	3/15/2023	Flash Flood	0	0	15000	Water and debris flooded Bruce Woodbury Drive, Needles Highway, Casino Drive, and the Edgewater parking lot and garage. The floor of the Tropicana Casino also flooded.
LOGANDALE	10/14/2006	Flash Flood	0	0	0	Floodwaters and boulders were washing across roads.
LOGANDALE	8/8/2010	Flash Flood	0	0	20000	Delayed-onset flash flooding caused by heavy rain one to two hours earlier washed out two streets and left at least two others impassable.
LOGANDALE	10/4/2010	Flash Flood	0	0	5000	Approximately one foot of water was rushing through the intersection of Gubler and Heyer streets. The roadbed was beginning to wash away.
LOGANDALE	7/25/2017	Flash Flood	0	0	1000	The intersection of Lyman Street and Bert Circle was flooded and closed.
LOGANDALE	7/14/2018	Flash Flood	0	0	20000	Numerous roads in Overton and Logandale were flooded.
LOGANDALE	7/17/2018	Flash Flood	0	0	25000	Flooding covered several roads with water and debris in and near Logandale and Overton.
LOGANDALE	6/29/2021	Flash Flood	0	0	1000000	Major flooding in Logandale and Overton due to heavy rainfall and flow on the Muddy River. Evacuations, sandbag operations, and at least two water rescues occurred. Water was four to five feet deep in some neighborhoods, railroad tracks were closed due to flood damage, many roads were flooded, and there were power outages.
MEAD LAKE	8/14/1998	Flash Flood	0	0	100000	Damaging winds and severe flash flooding ripped through the western part of Lake Mead. Las Vegas Bay Marina's service dock and main access dock were blown apart resulting in approximately 100 gallons of fuel spilled. Callville Bay Marina also sustained substantial damage from the winds. Flash flooding washed out all approved roads near Callville Bay and produced major erosion around culverts along a section of North Shore Road. Washes between Las Vegas Bay and Callville Bay were filled bank-to-bank with up to 16 feet of water. 30 people at Boxcar Wash (near Callville Bay) were temporarily stranded and had to be rescued by Park Rangers due to flash flooding.
MEAD LAKE	9/11/1998	Flash Flood	0	0	50000	Severe thunderstorms pounded the Las Vegas Valley and Lake Mead for a few hours producing golfball size hail, a small tornado and widespread flash flooding. Large hail began falling shortly before 11 am PST and numerous hail reports came in for the next couple hours with some episodes causing damage to several automobiles. A small tornado tore the roof off a Henderson warehouse and destroyed a large block wall at a

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
						service station a short distance away. Heavy rain fell mainly on the east side of the metro area with amounts up to 1.85 inches in a two hour period. As a result, flash flooding filled streets and washes and trapped several motorists although no serious injuries occurred. The heavy rain damaged about one acre of the 750 acre Sunrise Landfill and carried significant amounts of debris into the Las Vegas wash. The Clark County School District activated the "shelter-in-place" policy for school children at approximately 30 schools around the area. Children were not bussed home until after flooding had subsided."
MEAD LAKE	9/11/1998	Flash Flood	0	0	20000	Heavy rain fell over the area from the north shore of Lake Mead to Moapa causing widespread flash flooding. Several sections of road were washed out between Echo Bay and Las Vegas Bay and the Valley of Fire State Park was forced to close due to road flooding both in and out of the park. In Moapa, a dairy farm suffered flood damage and volunteer firefighters narrowly rescued a man before his van was swept away and submerged by flood waters.
MEAD LAKE	7/27/2013	Flash Flood	0	0	10000	St. Thomas Road was completely washed out.
MEAD LAKE	8/19/2014	Flash Flood	0	0	1000	Moapa Valley Blvd. was flooded just south of the Simplot plant.
MEAD LAKE	10/18/2015	Flash Flood	0	0	5000	Three feet of water from Overton Wash flowed over Highway 169.
MEAD LAKE	1/6/2016	Flash Flood	0	0	5000	Old St. Thomas Road was closed due to flood damage.
MEAD LAKE	5/7/2016	Flash Flood	0	0	1000	Highway 169 was impassable due to about a foot of water over the road.
MEAD LAKE	7/18/2021	Flash Flood	0	0	0	The Overton Wash flooded Highway 169 about two feet deep.
MOUNT CHARLESTON	7/20/2009	Flash Flood	0	0	0	Water, rocks and debris washed over roads on Mount Charleston. A rain gage measured 1.14 inches of rain in one hour.
MOUNT CHARLESTON	12/19/2010	Flash Flood	0	0	1000	A small mudslide carried debris into one lane of Kyle Canyon Road.
MOUNT CHARLESTON	1/21/2012	Flash Flood	0	0	1000	Several rocks washed onto Deer Creek Highway.
MOUNT CHARLESTON	7/12/2013	Flash Flood	0	0	50000	Major flash flooding affected the Carpenter One burn scar. Four feet of water flowed down Harris Springs Canyon, water and debris flowed over and closed Kyle Canyon Road, and mud and debris eventually flowed 20 miles down the mountain onto a few streets in the northwest corner of the Las Vegas Valley.
MOUNT CHARLESTON	7/6/2014	Flash Flood	0	0	5000	Flash flooding knocked the gate to the Griffith Peak trailhead off its hinges and blocked Harris Springs Road with debris.
MOUNT CHARLESTON	8/3/2014	Flash Flood	0	0	20000	Harris Springs Road and some secondary roads in lower Kyle Canyon were washed out.
MOUNT CHARLESTON	9/8/2014	Flash Flood	0	0	5000	Corn Creek Road was washed out.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
MOUNT CHARLESTON	9/8/2014	Flash Flood	0	0	5000	Deer Creek Road was washed out between mile markers 2 and 4.
MOUNT CHARLESTON	7/31/2015	Flash Flood	0	0	10000	Two feet of mud flowed through the pavilion area of Camp Stimpson, forcing 150 campers to leave. Trees and debris washed onto Highway 156 in Lee Canyon, closing the road. An automated gage nearby measured 2.15 inches of rain, including 1.99 inches in one hour.
MOUNT CHARLESTON	10/18/2015	Flash Flood	0	0	20000	Several backcountry roads in the Desert National Wildlife Refuge were flooded and damaged.
MOUNT CHARLESTON	8/3/2016	Flash Flood	0	0	5000	Flood waters undermined the road and damaged a guard rail on Highway 158.
MOUNT CHARLESTON	7/12/2018	Flash Flood	0	0	5000	Flooding damaged Highway 158 near Highway 156.
MOUNT CHARLESTON	8/16/2018	Flash Flood	0	0	1000	Highways 158 and 156 were closed due to flooding.
MOUNT CHARLESTON	8/23/2020	Flash Flood	0	0	2000	Deer Creek Road was closed in both directions due to flooding and a rock slide.
MOUNTAIN SPGS	8/7/2008	Flash Flood	0	0	50000	In the town of Mountain Springs, three feet of water flooded one business, one house was flooded, and a road was damaged. In addition, Highway 160 was closed at Highway 159 due to water, mud and a boulder on the road.
MOUNTAIN SPGS	12/20/2010	Flash Flood	0	0	0	Mud flowed onto Highway 160 near mile marker 22.
MOUNTAIN SPGS	9/12/2022	Flash Flood	0	0	2000	Six to eight inches of water plus mud and debris covered the northbound lanes of Hwy 160.
NELSON	7/21/1998	Flash Flood	0	0	15000	Flood waters washed out two access roads in the Lake Mead National Recreation Area. Eldorado Canyon and Aztec Wash roads were closed for a few weeks while debris was removed, and repairs were made.
NELSON	8/9/2006	Flash Flood	0	0	0	Two inches of rain fell at Nelson Landing in about an hour. Four cars were stuck in mud on Placer Rd.
NELSON	7/7/2011	Flash Flood	0	0	2000	Mud and rocks were across Highway 95 near mile marker 46.
NELSON	7/12/2013	Flash Flood	0	0	100000	Highway 165 was washed out just past the town of Nelson, with 14 cars stranded beyond the washout. The debris flow down the canyon was 100 feet wide and six feet deep. A public bathroom structure was filled halfway with mud.
NELSON	8/3/2014	Flash Flood	0	0	2000	Highway 165 was closed due to water and debris.
NELSON	8/7/2015	Flash Flood	0	0	2000	Portions of Highway 165 were washed out between mile markers 11 and 13.
NELSON	8/26/2016	Flash Flood	0	0	10000	Highway 95 was closed from mile marker 36 to 39, and Cottonwood Cove Road was damaged and closed by flooding.
NELSON	8/22/2018	Flash Flood	0	0	2000	Dirt berms were damaged and rocks the size of basketballs were washed onto the road.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
NELSON	11/20/2019	Flash Flood	0	0	20000	Eagle Wash Road (a dirt road) was obliterated by flooding and will have to be resurfaced. Nelson Landing Turnaround will also have to be repaired.
NELSON	7/31/2022	Flash Flood	0	0	1000	A video showed flooding on Hwy 95 south of the solar farms.
NELSON	8/10/2022	Flash Flood	0	0	1000	Highway 95 was closed due to flooding.
NELSON	8/10/2022	Flash Flood	0	0	5000	Highway 165 was closed from Highway 95 to Nelson due to flooding in multiple locations.
Not provided	9/2/2003	Flood	0	0	0	Runoff from a thunderstorm east of Pahrump caused Highway 160 to become submerged under 3 feet of water. Several drivers had to be rescued after attempting to drive through the water.
Not provided	7/17/2004	Flood	0	0	0	Heavy rains in the Las Vegas valley helped to produce flooding of area roadways.
Not provided	1/11/2005	Flood	0	0	0	No information provided.
Not provided	2/20/2005	Flood	0	0	0	Heavy rains caused the Muddy River to overflow its banks and cover several roads in the Logandale area.
OVERTON	9/11/1998	Flash Flood	0	0	0	Heavy rain fell over the area from the north shore of Lake Mead to Moapa causing widespread flash flooding. Several sections of road were washed out between Echo Bay and Las Vegas Bay and the Valley of Fire State Park was forced to close due to road flooding both in and out of the park. In Moapa, a dairy farm suffered flood damage and volunteer firefighters narrowly rescued a man before his van was swept away and submerged by flood waters.
OVERTON	9/12/1998	Flash Flood	0	0	100000	Heavy rainfall over southeast Lincoln County and northeast Clark County produced major flash flooding in the Muddy River and California Wash which caused considerable damage to roads and homes in Moapa, Hidden Valley and Overton. A total of about 220 people had to be evacuated from the three communities and many homes suffered major flood damage. Flood waters in the Muddy river also completely washed out the Gubler Street bridge. No injuries were reported.
OVERTON	7/9/1999	Flash Flood	0	0	0	Heavy rain filled the California Wash which flooded State Route 169 between Interstate 15 and the Valley of Fire State Park. Park rangers reported that the road remained closed for almost two hours.
OVERTON ECHO BAY ARP	10/20/2010	Flash Flood	0	0	40000	A car and trailer were floated down a wash, and debris was washed onto Northshore Rd.
OVERTON ECHO BAY ARP	12/22/2010	Flash Flood	0	0	10000	Nearly every wash in Valley of Fire State Park flowed over roads, covering them with rocks and mud. The park was closed for a day while equipment cleared and graded the roads.
OVERTON ECHO BAY ARP	8/19/2014	Flash Flood	0	0	2000	Gravel and debris washed over Northshore Road, and the road to St. Thomas was also closed.
OVERTON ECHO BAY	4/9/2016	Flash Flood	0	0	2000	Mud and large rocks washed over Northshore Road near mile marker 27.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
ARP						
OVERTON MUNI ARPT	8/22/2012	Flash Flood	0	0	1000	Highway 169 was closed near Whitmore Street due to flash flooding.
OVERTON MUNI ARPT	8/14/2015	Flash Flood	0	0	1000	The intersection of Gubler and Heyer was flooded with water, rocks, and debris.
PARADISE	7/3/2011	Flash Flood	0	1	200000	The same thunderstorm which caused widespread wind damage also caused serious flash flooding. One man who was rescued from a flooded wash suffered minor injuries. Several swift water rescues were needed near the intersection of Warm Springs and Pecos, and at least three feet of water covered the intersection of Warm Springs and Eastern, with several cars abandoned in the water. A spotter in Henderson measured 0.73 inch in one hour.
PITTMAN	8/14/2012	Flash Flood	0	0	2000	Water, rocks, and mud were on the roads near the intersection of Arroyo Grande and Horizon Ridge.
PITTMAN	7/18/2021	Flash Flood	0	0	1000	One foot of water flowed over the intersection of Boulder Highway and Sunset.
PITTMAN	7/22/2021	Flash Flood	0	0	10000	Warm Springs was closed between Arroyo Grande and Valle Verde, water covered the intersection of Sunset and Stephanie, and the onramp from Sunset onto Interstate 515 southbound was flooded a foot deep with two cars stalled.
RED ROCK CANYON	12/19/2010	Flash Flood	0	0	0	Two people and a dog were rescued after getting stuck behind flooded washes.
RED ROCK CANYON	12/20/2010	Flash Flood	0	0	20000	Flash flooding closed Highway 159 as well as the Red Rock Canyon Scenic Drive.
RED ROCK CANYON	8/25/2012	Flash Flood	0	0	10000	The Red Rock Scenic Loop was flooded and closed. One vehicle was nearly swept away.
RED ROCK CANYON	10/11/2012	Flash Flood	0	0	10000	Part of the Red Rock Scenic Loop was washed out.
RED ROCK CANYON	10/11/2012	Flash Flood	0	0	1000	Several inches of water and debris were over Highway 159.
RED ROCK CANYON	8/31/2013	Flash Flood	0	0	10000	Heavy rain on the Carpenter One burn area led to three feet of water flowing at the intersection of Grand Canyon and Grand Teton.
RED ROCK CANYON	9/11/2013	Flash Flood	0	0	1000	Water and rocks flowed across Calico Basin Road just north of Highway 159.
RED ROCK CANYON	10/5/2015	Flash Flood	0	0	2000	Mud and rocks washed onto roads in Calico Basin.
RED ROCK CANYON	10/18/2015	Flash Flood	0	0	2000	Rocks and debris blocked Scenic Loop Road.
RED ROCK CANYON	6/30/2016	Flash Flood	1	1	20000	Several intersections were inundated with fast flowing water and debris, and eight swift water rescues occurred. Two people were killed (one direct and one indirect), and one person was injured.
RED ROCK CANYON	12/24/2016	Flood	0	0	1000	Red Rock Canyon was closed due to flooding.

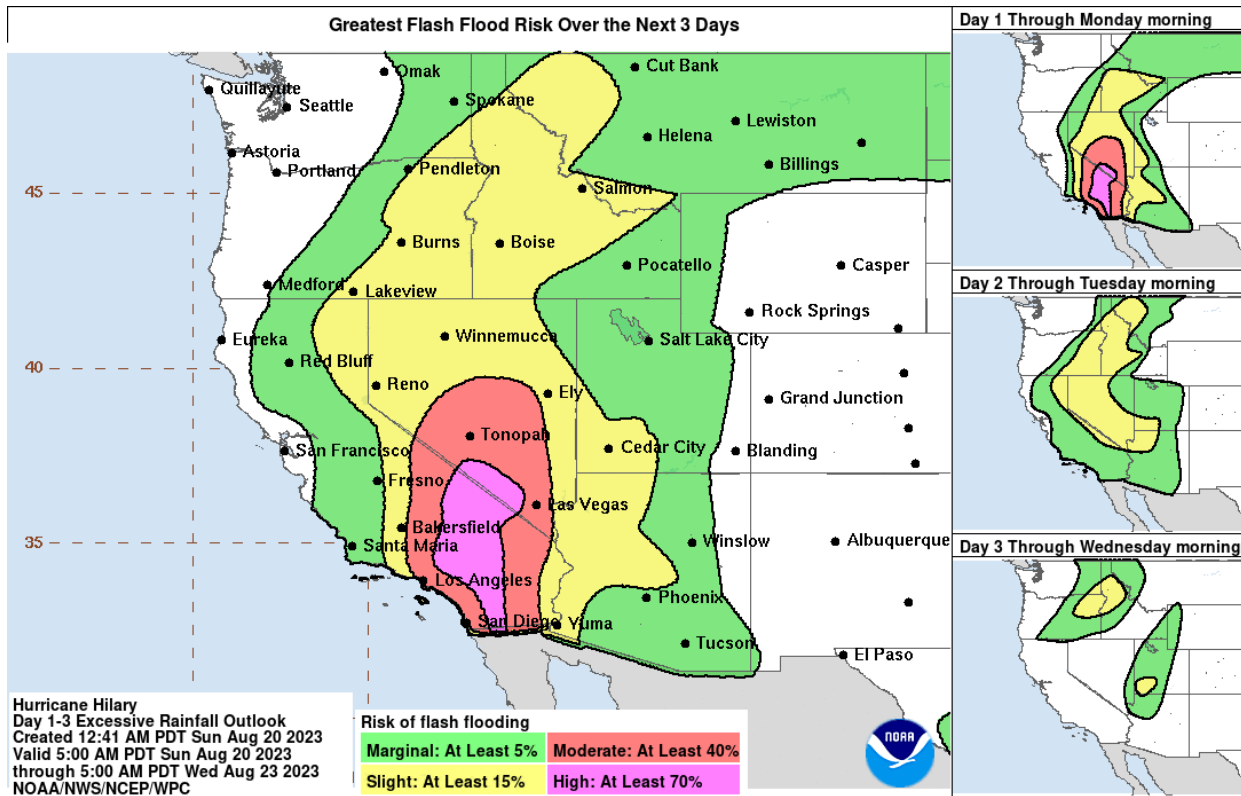
Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
RED ROCK CANYON	2/14/2019	Flash Flood	0	0	1000	The Red Rock Scenic Loop was closed due to water flowing over the road at mile marker 12.
RED ROCK CANYON	3/6/2019	Flash Flood	0	0	1000	Highway 159 was closed from the Red Rock Scenic Loop entrance to just west of Charleston Blvd due to flooding.
RED ROCK CANYON	7/26/2021	Flash Flood	0	0	2000	Water, mud, boulders, and debris flowed over Calico Basin Road.
RED ROCK CANYON	12/24/2021	Flash Flood	0	0	1000	Highway 159 was closed due to flooding.
RED ROCK CANYON	3/15/2023	Flash Flood	0	0	2000	Moderate rain in the higher elevations plus melting snow flooded Highway 159 in multiple places between Calico Basin Road and Blue Diamond Road.
ROACH	8/23/2009	Flash Flood	0	0	0	Nipton Road (NV Highway 164) was closed due to flooding.
ROACH	9/8/2017	Flash Flood	0	0	5000	Nipton Road was closed to Highway 95 due to flooding. This event continued into California.
ROACH	8/15/2018	Flash Flood	0	0	2000000	Flooding caused major damage to Nipton Road between mile markers 2 and 6. The road will be closed for months.
SANDY	8/4/2016	Flood	0	0	0	Mud and gravel washed onto Sandy Valley Road. The road was still passable.
SEARCHLIGHT	8/15/1998	Flash Flood	0	0	0	Heavy rain showers produced flash flooding which temporarily closed U.S. Highway 95 near Searchlight and the access road to Cottonwood Cove on Lake Mohave. No serious damage was reported.
SEARCHLIGHT	8/25/1998	Flash Flood	0	0	40000	A large area of Highway 164 was flooded west of Searchlight. Road crews reported several miles of debris and shoulder erosion. It was estimated that road repairs would take a couple of weeks.
SEARCHLIGHT	9/9/1998	Flash Flood	0	0	5000	Heavy rain showers dropped nine-tenths (0.90) of an inch of rain within an hour. The runoff eroded roads and yards around Searchlight.
SEARCHLIGHT	7/15/1999	Flash Flood	0	0	0	Early in the evening, thunderstorms began to produce rainfall amounts in the vicinity of Searchlight of over one inch per hour. A weather spotter observed two feet of water across a nearby surface road around 6:30 p.m. PDT. By 7:30 p.m. PDT, 2.20 inches of rain had been recorded in Searchlight. After a short break, thunderstorms redeveloped and dumped an additional eight-tenths (0.80) of an inch during the late evening.
SEARCHLIGHT	8/16/2000	Flash Flood	0	0	3000	Strong thunderstorms moved through Searchlight, NV producing flash flooding that closed Searchlight Highway for several hours.
SEARCHLIGHT	8/3/2008	Flash Flood	0	0	0	Highway 164 was closed from the Highway 95 intersection to the CA-NV state line due to a road washout.
SEARCHLIGHT	7/13/2012	Flash Flood	0	0	1000	Nipton Road was closed west of Searchlight.
SEARCHLIGHT	8/31/2013	Flash Flood	0	0	1000	Water, mud, and small rocks flowed through the parking lot of the Searchlight Nugget casino.
SEARCHLIGHT	9/4/2013	Flash Flood	0	0	1000	Multiple low water crossings on Cottonwood Cove Road were filled with swift water.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
SEARCHLIGHT	7/18/2017	Flash Flood	0	0	25000	Cottonwood Cove Road was inundated and undercut by flooding.
SEARCHLIGHT	7/19/2017	Flash Flood	0	0	2000	Water and debris flowed over Cottonwood Cove Road.
SEARCHLIGHT	7/25/2017	Flash Flood	0	0	10000	Nipton Road was closed in both directions near Searchlight, and Cottonwood Cove Road was closed due to extensive flooding.
SEARCHLIGHT	8/1/2022	Flash Flood	0	0	1000	Westbound Highway 164 was closed due to flooding.
SEARCHLIGHT	8/1/2022	Flash Flood	0	0	1000	Highway 95 was closed in both directions due to flooding.
SEARCHLIGHT ARPT	9/8/2017	Flash Flood	0	0	1000	Cottonwood Cove Road was closed due to flooding.
SLOAN	8/22/2012	Flash Flood	0	0	1000	Up to a foot of water ran down a road in Sloan.
SUNRISE MANOR	10/20/2010	Flash Flood	0	0	100	One foot of water was flowing through the intersection of Owens Ave. and Christy Ln.
VALLEY OF FIRE	7/6/2015	Flash Flood	0	0	5000	Roads in Valley of Fire State Park were closed due to flooding. The co-op observer reported 0.95 inch of rain in 15 minutes.
VALLEY OF FIRE	5/7/2016	Flash Flood	0	0	1000	Valley of Fire Highway was impassable due to fast flowing water over a 100 yard long section of the road.
VALLEY OF FIRE	5/7/2016	Flash Flood	0	0	2000	Mud and debris washed onto North Shore Road near mile marker 46. St. Thomas Road was also closed due to flooding.
VALLEY OF FIRE	7/9/2018	Flash Flood	0	0	20000	Several roads in Valley of Fire State Park were closed by flash flooding. Most were cleared by the next morning.
VALLEY OF FIRE	7/11/2021	Flash Flood	0	0	1000	Valley of Fire Highway flooded just west of the park.
VALLEY OF FIRE	7/25/2021	Flash Flood	0	0	2000	Flooding left debris across Valley of Fire Highway.
VICTORY VLG	8/13/2015	Flash Flood	0	0	25000	Several streets were covered with water, mud, and debris. At least one car stalled in the water. Water leaked through the roof of the Golden Nugget Casino onto the table games area.
VICTORY VLG	7/25/2022	Flash Flood	0	0	2000	Mud and debris covered Lake Mead Pkwy near Lake Las Vegas Pkwy.
WANN	9/13/2011	Flash Flood	0	0	250000	Flash flooding affected much of the Las Vegas Valley. Water flowed through the intersections of numerous streets, with one described as a rushing river. Rocks, debris and mud covered some roads. Four feet of water and mud flooded the first floor of a home after a sound wall in the back yard failed. One swift water rescue was performed.
WANN	8/22/2016	Flash Flood	0	0	100000	Several swift water rescues occurred on the north side of the Las Vegas Valley. Multiple vehicles were stuck in flooding at Las Vegas Blvd and Cheyenne, and Craig Road was flooded over the sidewalks between Interstate 15 and Losee Road. Highway 215 was closed from Range Road to Lamb Blvd. The Nellis AFB main gate

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
						was closed for over 12 hours due to debris.
WANN	1/9/2018	Flash Flood	0	0	1000	Cheyenne Ave. was closed at and east of Las Vegas Blvd. due to flooding.
WANN	2/14/2019	Flash Flood	0	0	1000	The intersection of Las Vegas Boulevard and Cheyenne was closed due to flooding.
WANN	9/28/2022	Flash Flood	0	0	1000	Three drivers were rescued after their cars stalled in water, and Nellis Blvd was closed due to the flooding.
WEST CENTRAL PORTION	7/7/2001	Flash Flood	0	0	0	Strong thunderstorms produced heavy rain which closed Spring Mountain Ranch State Park. The park service recorded 1.38 inches of rain in a two hour period.
WINCHESTER	9/11/2011	Flash Flood	0	0	100000	A few inches of water flooded the Circus Circus Adventuredome, a foot or more of water flooded homes on 15th Street between Charleston and Fremont, a car near Alexander and Losee was stranded in water up to its windows, and a few inches of water got into the Cannery Casino and the attached movie theater. In addition, several cars in the Cannery parking lot were flooded.

Data Source: NOAA/NCEI Storm Events Database

Most recently Tropical Storm Hilary moved across Southern California on August 20, 2023. With Clark County, in the path of the potential Tropical Storm, the County declared a state of emergency prior to landfall based on the potential impacts of heavy rain and strong wind across the Las Vegas area. (<https://www.cbsnews.com/news/tropical-storm-hilary-las-vegas-state-of-emergency-clark-county/>). Related to flooding, forecasters said the storm was expected to produce 3 to 6 inches of rainfall, with maximum amounts of 10 inches, across portions of Baja California, with the possibility of flash flooding. The same rain totals were forecast for parts of Southern California and Southern Nevada (which included Clark County), according to the [hurricane center](https://www.cbsnews.com/news/hurricane-hilary-path-and-timeline-heres-when-and-where-the-storm-is-projected-to-hit-california/). (<https://www.cbsnews.com/news/hurricane-hilary-path-and-timeline-heres-when-and-where-the-storm-is-projected-to-hit-california/>) The following image depicts the anticipated flood risk for Clark County by Tropical Storm Hilary.



Source: CBS News, Hilary path and timeline: Here's when and where the storm is projected to hit California, August 21, 2023

(<https://www.cbsnews.com/news/hurricane-hilary-path-and-timeline-heres-when-and-where-the-storm-is-projected-to-hit-california/>)

Following Hilary's impact as a Tropical Storm, the storm dumped nearly eight (8) inches of rain near Las Vegas leaving roads covered in mud and caused road damage in some areas of the planning area. Most of the damage from flooding occurred in the Upper Kyle Canyon, Mount Charleston and Spring Mountain Recreation Area of the County. The following image is from the [County's Twitter account \(@ClarkCountyNV\)](#) as they updated residents on recovery efforts.

← Post

Clark County Nevada ✓
@ClarkCountyNV

Mt. Charleston #Update

Due to flooding damage and cleanup, the closure order for the Spring Mountains National Rec. Area has been extended indefinitely by the @forestservice.

Please don't go up there - let responders do the necessary work to help residents and make repairs.



Source: Clark County, NV Twitter Page (<https://twitter.com/ClarkCountyNV>)

← Post

Clark County Nevada ✓
@ClarkCountyNV

A long cleanup ahead on @GoMtCharleston after rains brought by #Hilary did widespread damage. A #FlashFlood Warning is still in effect. Upper Kyle Canyon & Mt. Charleston had 7 inches of rain, 8 inches in Kyle Canyon.

Amazing images from our Mt. Charleston Fire Protection Dist.



Clark County FD and 6 others

5:08 PM · Aug 21, 2023 · 132.6K Views

Boulder City

From January 1, 1950, to May 31, 2023, NOAA/NCEI recorded 12 flood (flood/flash flood) events in the City of Boulder City. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the flood experienced by Boulder City, including the jurisdictions located within, and is the only source of data accessible.

Table 59: Flood Events, Boulder City, NV, NOAA/NCEI Database

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
BOULDER CITY	8/10/1997	Flash Flood	0	1	4500000	Boulder City and the nearby Lake Mead National Recreation Area were also hit hard by heavy rain producing thunderstorms. Water and debris swept across Highway 93, between Railroad Pass and Boulder City, taking several vehicles off the road but sparing all occupants from injury. Flood waters also eroded roads, drainage canals and damaged many buildings in Boulder City. One man almost drowned in a drainage culvert but was rescued and hospitalized. The storms and floods ravaged the west side of Lake Mead battering marinas, eroding beaches and washing out roads. The recreation area was closed by 1:25 pm PST as access to Hemenway Launch, Boulder Beach and Lake Mead Marina was cut off by flooding. Over 500 people were held captive within the park until the flood waters subsided. Damage was estimated at over one million dollars for Lake Mead and about 3.4 million dollars for Boulder City. The Governor declared Boulder City a disaster area along with Henderson.
BOULDER CITY	8/28/1997	Flash Flood	0	1	50000	The Boulder City Police Department reported flood waters had closed Georgia Street and Riviera Court and Buchanan and Broadmore. Also, an 11-year-old boy was caught in a drainage ditch by flood waters and had to be rescued. The exact time was unknown. He escaped with only minor injuries. The flood waters also damaged the Georgia Avenue drainage channel and washed away dirt fill which set back repair efforts to roads from a recent flash flood event.
BOULDER CITY	7/6/2006	Flash Flood	0	2	0	Highway 93 was covered with water and debris, leading to two vehicle accidents with a total of two injuries (indirect).
BOULDER CITY	12/22/2010	Flash Flood	0	0	1000	Water, rocks and mud-covered Highway 93 near the Hacienda Casino.
BOULDER CITY	7/7/2011	Flash Flood	0	0	5000	Mud and debris flowed across Highway 93 and also Pacifica Way in Boulder City.
BOULDER CITY	9/16/2011	Flash Flood	0	0	5000	Numerous streets were flooded in Boulder City.
BOULDER CITY ARPT	8/22/2012	Flash Flood	0	0	5000	Multiple streets in Boulder City were closed due to water and debris.
BOULDER CITY	8/3/2014	Flash Flood	0	0	2000	Debris washed over Lakeshore Road.
BOULDER CITY	8/14/2014	Flash Flood	0	0	1000	Over six inches of water flowed over Lakeshore Road north of the Lake Mead National Recreation Area entrance, forcing the road to be closed.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
BOULDER CITY	8/14/2014	Flash Flood	0	0	2000	Rocks and mud flowed down Isabel Street at Robinson Lane.
BOULDER CITY	9/26/2014	Flash Flood	0	0	1000	Six to eight inches of water flowed over several roads in Boulder City.
BOULDER CITY	7/25/2021	Flash Flood	0	0	10000	Lakeshore Road and Boulder Beach Frontage Road were covered with two feet of debris, including basketball sized rocks, due to flash flooding.

Data Source: NOAA/NCEI Storm Events Database

Henderson

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 12 flood (flood/flash flood) events in the City of Henderson. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the flood experienced by Henderson, including the jurisdictions located within, and is the only source of data accessible.

Table 60: Flood Events, Henderson, NV, NOAA/NCEI Database

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
HENDERSON	7/14/1996	Flash Flood	0	0	0	Heavy rain showers caused flash flooding of roads in Henderson's Green Valley area.
HENDERSON	8/8/1997	Flash Flood	0	0	5000	A brief episode of severe thunderstorms disrupted the afternoon in the Las Vegas Valley. Damaging winds downed power poles and heavy rain caused minor flash flooding. 11,500 homes lost electricity for about four hours and at least one home received minor flood damage. Also, the roof of one home caught fire from a lightning strike but was extinguished before major damage occurred.
HENDERSON	8/10/1997	Flash Flood	1	4	4000000	In addition to strong winds and large hail, redeveloping severe thunderstorms produced heavy downpours which resulted in severe flash flooding in the southeast Las Vegas Valley. In Henderson, raging flood waters turned roads into rivers up to three and four feet deep. Water and mud slides closed many roads, including U.S. Highway 95, for several hours. One man was drowned when a strong current swept him under his vehicle as he tried to move it off his neighborhood street. Rescue workers performed a number of swift water rescues until as late as 8:30 pm PST. Four people were hospitalized. Flooding also resulted in the release of titanium dioxide gas (non-toxic) at the TIMET plant. Extensive damage to roads and buildings prompted the Governor to declare Henderson a disaster area.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
HENDERSON	2/6/1998	Flood	0	0	10000	A wet Pacific Storm produced moderate to heavy rainfall over the Las Vegas Valley for a few hours during the evening. The resulting storm runoff filled some underpasses, drainage culverts and washes. Firefighters had to rescue a driver from one vehicle which was submerged near Oakey and Western. Two other vehicles were caught in drainage waters near Duck Creek Wash and Boulder Highway and the occupants had to be rescued.
HENDERSON	7/9/1998	Flash Flood	0	1	10000	Heavy rain producing thunderstorms formed over the southeast side of the Las Vegas Valley during a two hour period. At the onset of the storms, a lightning strike set fire to a large house which completely destroyed the structure. Over one inch of rainfall led to flash flooding which forced the closure of several streets in Henderson and East Las Vegas. One car was stranded and damaged by flood waters early in the afternoon and another car was caught in flood waters in the Las Vegas Wash during the evening, long after the thunderstorms had ended.
HENDERSON	7/9/1998	Flash Flood	0	0	0	Heavy rain producing thunderstorms formed over the southeast side of the Las Vegas Valley during a two hour period. At the onset of the storms, a lightning strike set fire to a large house which completely destroyed the structure. Over one inch of rainfall led to flash flooding which forced the closure of several streets in Henderson and East Las Vegas. One car was stranded and damaged by flood waters early in the afternoon and another car was caught in flood waters in the Las Vegas Wash during the evening, long after the thunderstorms had ended.
HENDERSON	9/8/1998	Flash Flood	0	0	10000	A severe thunderstorm rapidly developed over the south end of the Las Vegas Valley and moved north focusing damaging winds and heavy rain mainly across the eastern half of the metro area. High winds toppled trees in Henderson and downed power lines which blocked both north and southbound lanes of Interstate 15 for about 40 minutes just north of the Warm Springs overpass. Rainfall amounts of 0.75 to 1.20 inches fell in less than 30 minutes in many locations producing widespread street flooding and full washes. Flooding also caused minor damage to some homes in Henderson.
HENDERSON	7/6/2001	Flash Flood	0	0	10000	Heavy rain from strong thunderstorms closed many roads throughout Henderson. 1.22 inches of rain was recorded in an hour and several motorists were stranded after their car engines stalled.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
HENDERSON	7/28/2005	Flash Flood	0	0	0	One foot of water in apartments in the Green Valley area.
HENDERSON	7/28/2005	Flash Flood	0	0	0	Water two feet deep in the intersection of Sunset and Annie Oakley. Two people rescued from a car stuck in the water.
HENDERSON	8/14/2005	Flash Flood	0	0	0	Part of a road washed out. One swift water rescue.
HENDERSON	7/20/2013	Flash Flood	0	0	40000	Two feet of water flowed down Greenway Road near Mission. Two houses were flooded.

Data Source: NOAA/NCEI Storm Events Database

Las Vegas

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 60 flood (flood/flash flood) events in the City of Las Vegas. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the flood experienced by Las Vegas, including the jurisdictions located within, and is the only source of data accessible.

Table 61: Flood Events, Las Vegas, NV, NOAA/NCEI Database

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
LAS VEGAS MC CARRAN	7/14/1996	Flash Flood	0	1	10000	Heavy thunderstorm rains in Kyle Canyon caused flash flooding which injured and trapped a hiker. Also, numerous rock and mud slides blocked and damaged some roads.
LAS VEGAS	7/28/1997	Flood	0	0	0	Thunderstorms rolling through the Las Vegas Valley produced lightning and winds which interrupted power to approximately 4,100 people for a few hours. Also, locally heavy rain caused street flooding and water filled drainages. One car had to be pulled out of water at an underpass.
LAS VEGAS	8/9/1997	Flood	0	0	0	Severe thunderstorms rolled across the western part of Las Vegas producing damaging winds and hail. Several power poles were snapped along Charleston Blvd., a trailer was destroyed and signs and roofs in the area received damage from both the wind and hail. 19,000 homes lost power for a few hours. The storms also produced local street flooding with rainfall amounts up to 0.73 inches in 15 minutes.
LAS VEGAS	9/3/1997	Flash Flood	0	0	0	Thunderstorms produced flooding which forced numerous road closures in northwest Las Vegas between the hours of 12:30 and 5:30 pm PST. The northbound and southbound lanes of U.S. Highway 95 were closed near Summerlin Parkway and Rainbow Blvd. due to water and debris covering the road. Other closures included: Summerlin Parkway, U.S. 95 and Jones underpass, U.S. 95 and Gowan Road, and the Charleston underpass.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
LAS VEGAS	9/3/1997	Flash Flood	0	0	0	Flamingo Wash was running quite full and as a result major flooding was reported through the Imperial Palace Hotel and Casino parking garage. The hotel is built over Flamingo Wash.
LAS VEGAS	9/25/1997	Flood	0	0	0	A considerably weakened Hurricane Nora was barely a tropical storm by the time its remnants reached southern Nevada. It still managed to produce over an inch of rain in many southern Nevada locations even though the core of the storm tracked across Arizona. The drenching only produced minor street flooding in Las Vegas and the Pahrump Valley. Access to some outlying homes in Pahrump was cut off as flooded dirt roads became impassable.
LAS VEGAS	2/6/1998	Flood	0	0	5000	A wet Pacific Storm produced moderate to heavy rainfall over the Las Vegas Valley for a few hours during the evening. The resulting storm runoff filled some underpasses, drainage culverts and washes. Firefighters had to rescue a driver from one vehicle which was submerged near Oakey and Western. Two other vehicles were caught in drainage waters near Duck Creek Wash and Boulder Highway and the occupants had to be rescued.
LAS VEGAS	7/20/1998	Flash Flood	1	0	50000	Severe thunderstorms moved into the Las Vegas Valley and nearby Lake Mead bringing wind gusts in excess of 60 mph and heavy showers which dumped between 1.50 and 2.25 inches of rain overnight. Several marinas on Lake Mead suffered extensive wind damage and numerous roads were washed out. In the Las Vegas Valley, heavy rain and flooding produced the majority of damage. Major flooding began in the early morning of July 20 and kept washes filled for several hours with numerous swift water rescues performed during the period. One man apparently died of a heart attack while rescue personnel were trying to remove him from his car. Rapidly accumulating water and a clogged drainage system caused the roof of the Palace Station Hotel and Casino to collapse...causing millions of dollars in damage. A few hours later, the same hotel and casino caught fire when it was struck by lightning.
LAS VEGAS	7/21/1998	Flash Flood	0	0	30000	A series of thunderstorms dumped heavy rain on the Las Vegas Valley producing significant street flooding and flowing washes. Three occupants of a car caught in flood waters at Desert Inn and Durango had to be rescued by the fire department. Another person drove a luxury car into deep water at the intersection of Pecos and Twain Avenue, essentially totaling the vehicle. She escaped without injury. Several other streets and intersections were inundated for a few hours.
LAS VEGAS	9/8/1998	Flash Flood	0	0	0	A severe thunderstorm rapidly developed over the south end of the Las Vegas Valley and moved north focusing damaging winds and heavy rain mainly across the eastern half of the metro area. High winds toppled trees in Henderson and downed power lines which blocked both north and southbound lanes of Interstate 15 for about 40 minutes just north of the Warm Springs overpass. Rainfall amounts of 0.75 to 1.20 inches fell in less than 30 minutes in many locations producing widespread street flooding and full washes. Flooding also caused minor damage to some homes in Henderson.
LAS VEGAS	9/11/1998	Flash	0	0	250000	Severe thunderstorms pounded the Las Vegas Valley and Lake Mead for a few

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
		Flood				hours producing golf ball size hail, a small tornado and widespread flash flooding. Large hail began falling shortly before 11 am PST and numerous hail reports came in for the next couple hours with some episodes causing damage to several automobiles. A small tornado tore the roof off a Henderson warehouse and destroyed a large block wall at a service station a short distance away. Heavy rain fell mainly on the east side of the metro area with amounts up to 1.85 inches in a two hour period. As a result, flash flooding filled streets and washes and trapped several motorists although no serious injuries occurred. The heavy rain damaged about one acre of the 750 acre Sunrise Landfill and carried significant amounts of debris into the Las Vegas wash. The Clark County School District activated the shelter-in-place" policy for school children at approximately 30 schools around the area. Children were not bussed home until after flooding had subsided."
LAS VEGAS	4/30/1999	Flood	0	1	0	Another in a series of spring storms left significant amounts of precipitation across extreme southern Nevada. The Las Vegas Valley received amounts between one-half (0.50) and three-quarters (0.75) of an inch of rain which filled washes around the metro area with one or two feet of water and flooded some underpasses and low-lying intersections. One person had to be rescued from the Flamingo Wash but only received minor injuries. The Spring Mountains received 10 to 12 inches of snow on previous snowpack, but temperatures were too warm for any significant accumulations on paved roads.
LAS VEGAS	7/8/1999	Flash Flood	1	0	25000000	<p>One of the worst flash flood events this century inundated the Las Vegas Valley damaging roads and buildings, sweeping away vehicles and bringing the entire city almost to a standstill from late morning through late afternoon. The storms slowly drifted to the east producing rainfall amounts over 1.5 inches across a substantial part of the metro area and some localized amounts topping 3 inches. The downpours forced closure of McCarran International Airport for about one hour and arriving planes were diverted to Los Angeles. Most of the rain ended by noon, but not before heavy runoff turned surface roads and washes into raging rivers carving a path of destruction toward the lower east side.</p> <p>Early during the event, a roof collapsed on a motorcycle dealership under a heavy downpour but that was only a precursor to more significant damage to come throughout the day. Hundreds of motorists were forced to abandon their vehicles and helplessly watch as their cars were partially submerged or carried away. Numerous homeowners could do nothing but save a few items as flood waters poured into ground level floors and basements. Perhaps the most graphic display of property destruction occurred at the Miracle Mile Mobile Home Park which is located near the edge of Flamingo Wash on the east side of the valley. The rushing water eroded the unlined banks so extensively that at least one mobile home fell into the wash and four others were destroyed. Electricity was knocked out for a few hours to 2,500 customers and some gas lines were broken by the</p>

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
						force of the water. The Las Vegas Strip also saw significant flooding with the most notable damage occurring in the Forum Shops at Caesar's Palace where two feet of water damaged over 60 stores and forced evacuation of the luxury shopping mall. Over 200 hundred swift water rescues were performed before flood waters receded and it is remarkable that only one drowning occurred. A homeless man's body was pulled from debris in the Flamingo Wash early in the afternoon. Several Clark County Flood Control gauges recorded water levels in area washes and the Gowan Detention Basin filled up to 22 feet deep, one foot below its capacity. An estimated \$25 million dollars in damage occurred to both public and private property. On July 20, President Clinton declared the event a federal disaster.
LAS VEGAS	7/13/1999	Flood	0	0	0	No information provided.
LAS VEGAS	9/12/1999	Flash Flood	0	0	5000	Thunderstorms developed over the Las Vegas Valley along a line extending northeast from Henderson to the Spring Mountains. Locally heavy rain fell causing low-lying areas in Las Vegas to flood. At least one person had to be rescued from their car which was caught in water near Charleston and Interstate 15. Red Rock Canyon also experienced flash flooding which submerged roads and covered them with large rocks.
LAS VEGAS	9/12/1999	Flash Flood	0	0	0	Thunderstorms developed over the Las Vegas Valley along a line extending northeast from Henderson to the Spring Mountains. Locally heavy rain fell causing low-lying areas in Las Vegas to flood. At least one person had to be rescued from their car which was caught in water near Charleston and Interstate 15. Red Rock Canyon also experienced flash flooding which submerged roads and covered them with large rocks.
LAS VEGAS	2/21/2000	Flood	0	0	0	An exceptionally moist and unstable Pacific storm produced rain showers and thunderstorms over southern Nevada early President's Day morning. Within just a few hours, over an inch of rain had fallen on parts of the west side of the Las Vegas Valley and area washes began to gradually fill with water. Showers continued to fall through the morning and left from three-quarters (0.75) to over an inch of rain at most recording stations within the metro area. The Charleston Underpass filled with water and pools formed in many low-lying intersections causing some vehicles to stall.
LAS VEGAS	8/29/2000	Flash Flood	0	0	200000	Heavy rainfall in and around the Las Vegas Valley caused flash flooding through much of the town. Rainfall amounts of 1-2 inches had fallen in just under 2 hours over many parts of the Valley. Several roads were closed and 10-15 swift water rescues where performed. Several homes received damage due to water running through them.
LAS VEGAS	10/27/2000	Flood	0	0	0	Heavy rains moved through Las Vegas producing street flooding over many parts of the valley. Several roads were closed due to the flooding.
LAS VEGAS	7/6/2001	Flash Flood	0	0	0	Strong thunderstorms produced heavy rain across much of the Las Vegas valley. Many roads around town were flooded and impassable.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
LAS VEGAS	11/30/2002	Flash Flood	1	1	0	A fast moving rain storm produced just over half an inch of rain over north Las Vegas. The runoff in the cities drainage system caused flash flooding which trapped four homeless men. One man drowned and another was injured.
LAS VEGAS	8/19/2003	Flash Flood	0	0	2000000	A thunderstorm produced intense rainfall over the northwest portion of the Las Vegas valley with several automated and personal rain gauges recorded between 3 and 5 inches of rain in less than an hour. Many roads became completely impassable with nearly 60 swift water rescues being preformed. Several homes and businesses were severely damaged from flooding including the local chapter of the American Red Cross. Highway 95 was closed between Rainbow and Jones for several hours after becoming completely submerged.
LAS VEGAS	1/3/2005	Flash Flood	0	0	0	Heavy rain throughout Las Vegas caused several roads to become flooded and were closed by the city.
LAS VEGAS	1/11/2005	Flash Flood	0	0	0	Heavy rains in Las Vegas caused several roads to become flooded in a short amount of time. There were several swift water rescues preformed and many roads were closed throughout the city.
LAS VEGAS	2/20/2005	Flash Flood	0	0	0	Heavy rains caused flash flooding in western Las Vegas with several roads flooded. Many of the roads were impassable and washed out in places.
LAS VEGAS	2/21/2005	Flash Flood	0	0	25000	Heavy rains in the Las Vegas valley flooded a local cemetery damaging several grave sites.
LAS VEGAS	7/28/2005	Flash Flood	0	0	0	Curb to curb flooding at the intersection of Cheyenne and Rainbow.
LAS VEGAS	10/18/2005	Flash Flood	0	0	0	Areas of Boulder Highway under water. Also reported by media.
LAS VEGAS	10/14/2006	Flash Flood	0	0	0	Flooding closed U.S. Highway 95 at the Decatur Blvd. intersection. The highway was closed for eight hours.
LAS VEGAS	8/2/2007	Flash Flood	0	0	0	State Route 159 was covered with mud and rocks west of Interstate 215.
LAS VEGAS	8/27/2007	Flash Flood	0	0	500000	Flash flooding resulted in 22 swift water rescues in less than three hours. Floodwaters knocked down a 45-foot stretch of stucco wall behind an apartment complex, inundating garages with two feet of water. Many homes had water in them. The damage figure is an estimate.
LAS VEGAS	9/22/2007	Flash Flood	0	0	0	Mount Charleston had flooding and debris over roads, with a couple of subdivisions blocked off.
LAS VEGAS HNDRSN SKY	8/7/2008	Flash Flood	0	0	200000	Flash flooding affected much of East Las Vegas and the Green Valley section of Henderson. At least five swift water rescues occurred, and many roads were covered by floodwaters which ranged up to two feet deep. At least one building - a convenience store - was also flooded. Two gages in the Green Valley section of Henderson measured between 1.10 and 1.30 inches of rain in 30 minutes.
(LAS)MCCARRAN/LAS VE	8/25/2008	Flash Flood	0	0	0	Several roads were flooded in the Green Valley section of Henderson.
LAS VEGAS N AIR TERM	12/22/2010	Flash Flood	0	0	50000	Mud and rocks washed onto portions of Grand Teton Drive between Buffalo Drive and Decatur Boulevard. Several inches of water also covered portions of Farm

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
						Road.
LAS VEGAS N AIR TERM	7/14/2012	Flash Flood	0	0	1000	Three feet of standing water covered Buffalo near Grand Teton.
LAS VEGAS N AIR TERM	7/14/2012	Flash Flood	0	0	1000	One swift water rescue was performed.
LAS VEGAS N AIR TERM	7/14/2012	Flash Flood	0	0	3000	Water and rocks were over El Capitan Way between Gilmore and Alexander.
LAS VEGAS N AIR TERM	7/31/2012	Flash Flood	0	0	1000	Mud and rocks were washed onto the 215 Beltway at Lone Mountain Road.
LAS VEGAS N AIR TERM	8/17/2012	Flash Flood	0	0	1000	Water six to eight inches deep flowed through the intersection of Washington and Michael.
LAS VEGAS N AIR TERM	8/22/2012	Flash Flood	1	0	5000000	Significant flash flooding affected much of the Las Vegas Valley. Numerous roads were closed, and several people were rescued from cars. A church was damaged by three feet of water when a retaining wall collapsed. Several people were rescued from washes. One man died when he fell into the Pittman Wash and was swept downstream.
LAS VEGAS HNDRSN SKY	9/5/2012	Flash Flood	0	0	10000	Flash flooding affected Sunridge Heights Parkway between Seven Hills and Pecos Ridge, as well as Executive Airport Road at Volunteer Blvd. A large amount of mud, rocks and water washed through the parking lot of an apartment complex in Seven Hills.
LAS VEGAS N AIR TERM	9/11/2012	Flash Flood	1	0	20000000	Major flash flooding affected much of the Las Vegas Valley. Numerous roads were closed due to water, mud, and rocks; and several people had to be rescued from vehicles. Many vehicles in parking lots were submerged in muddy water. Many homes, condos, and businesses flooded, and three dogs drowned in one home. Water got into buildings on the UNLV campus as well as a middle school and the MGM Grand Garden Arena. One landscaper died when flood waters swept him off his front-end loader.
LAS VEGAS N AIR TERM	10/11/2012	Flash Flood	0	0	50000	Flash flooding affected much of the Las Vegas Valley. Numerous streets were flooded, and at least one freeway on ramp was closed. Water entered one home, and there were at least four swift water rescues.
LAS VEGAS HNDRSN SKY	7/7/2013	Flash Flood	0	0	1000	Six inches of water flowed down Maryland Pkwy. between Cactus and Silverado Ranch, and in the intersection of Eastern and Silverado Ranch.
LAS VEGAS N AIR TERM	7/19/2013	Flash Flood	0	0	50000	A cluster of thunderstorms dumped rain over the Las Vegas Valley for over an hour, and also produced widespread wind damage. Numerous roads were covered with water and debris, there were at least two swift water rescues, and part of the casino floor of Caesars Palace was flooded.
LAS VEGAS N AIR TERM	7/20/2013	Flash Flood	0	0	1000	Sand and small rocks washed onto several roads near Decatur and 215 North, and six inches of water flowed through the intersection of Centennial Pkwy. and 5th Street.
LAS VEGAS HNDRSN SKY	8/18/2013	Flash Flood	0	0	1000	Six to seven inches of water flowed through the intersection of Serene Ave. and Maryland Pkwy.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
LAS VEGAS HNDRSN SKY	8/18/2013	Flash Flood	0	0	1000	At least six inches of water flowed across Sunridge Heights Parkway.
LAS VEGAS N AIR TERM	9/6/2013	Flash Flood	0	0	2000	Two to three inches of water, mud, and rocks washed across the 215 Beltway at Ann Road, and also over Cliff Shadows Parkway between Lone Mountain and Alexander.
LAS VEGAS N AIR TERM	8/4/2014	Flash Flood	0	0	25000	Water was several inches deep at the intersection of Twain and Decatur. A swift water rescue occurred at Decatur and Oakey. A large section of concrete block wall was knocked down by floodwaters. A car stalled in the water at Rainbow and Hacienda. Water was several inches deep over the intersection of Koval and Winnick. 143 weather related accidents were reported.
LAS VEGAS N AIR TERM	8/4/2014	Flash Flood	0	0	100000	Part of Highway 157 was washed out. Highway 95 was closed at Clark County mile marker 99, with 30 cars stranded and some washed off the road. Everyone was rescued.
LAS VEGAS N AIR TERM	8/4/2014	Flash Flood	0	0	1000	Over a foot of water flowed rapidly down Grand Teton Drive.
LAS VEGAS N AIR TERM	9/26/2014	Flash Flood	0	0	10000	Several drivers were stranded in water 1-2 feet deep at Rancho and Alexander.
LAS VEGAS N AIR TERM	9/26/2014	Flash Flood	0	0	1000	The intersection of Decatur Rd. and Horse Dr. was impassable due to flooding.
LAS VEGAS N AIR TERM	10/5/2015	Flash Flood	0	0	50000	Several roads were flooded up to a foot deep, some with mud and large rocks. One swift water rescue was performed. 1274 customers lost power, and NHP responded to 76 vehicle crashes. Rain totals were as high as 2.80 inches.
(LAS)MCCARRAN/LAS VE	4/9/2016	Flash Flood	0	0	25000	Water 1-1.5 feet deep flowed into a house near W. Lake Mead Blvd. and N. Tonopah Dr. A patio awning in North Las Vegas collapsed under the weight of heavy rain. Water 6-12 inches deep flowed over several streets around the valley.
LAS VEGAS N AIR TERM	7/25/2017	Flash Flood	0	0	10000	Water 1.5 to two feet deep ran through the streets of the Elk Ridge subdivision, and debris washed onto Maggie Road.
LAS VEGAS HNDRSN SKY	7/20/2018	Flash Flood	0	0	1000	St. Rose Parkway was flooded at Eastern Avenue.
LAS VEGAS N AIR TERM	3/12/2020	Flash Flood	0	0	1000	There were approximately 12 to 15 swift water rescues in the Las Vegas Valley, including at least one which occurred on normally dry ground. Cheyenne Ave was closed between Pecos Rd and Lamb Blvd due to flooding.
LAS VEGAS N AIR TERM	9/13/2022	Flash Flood	0	0	1000	The intersection of Farm Rd and Grand Canyon Dr was flooded.

Data Source: NOAA/NCEI Storm Events Database

Mesquite

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 4 flood (flood/flash flood) events in the City of Mesquite. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the flood experienced by Las Vegas, including the jurisdictions located within, and is the only source of data accessible.

Table 62: Flood Events, Mesquite, NV, NOAA/NCEI Database

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
MESQUITE	8/30/2008	Flash Flood	0	0	0	Several roads in the northeast part of Mesquite were flooded up to 18 inches deep. Mud and rocks were also washed onto some roads.
MESQUITE	12/21/2010	Flood	0	0	1000000	Flooding on the Virgin River damaged a golf course and two homes in Mesquite, as well as a diversion dam for an irrigation canal and 200 feet of reinforced concrete pipes which served as the outlet from a detention basin.
MESQUITE	9/11/2012	Flash Flood	0	0	2000	Three inches of water along with mud and debris flowed down Mesa Blvd.
MESQUITE	8/3/2017	Flash Flood	0	0	1000	Six inches of water flowed over the road.

Data Source: NOAA/NCEI Storm Events Database

Tribal Lands: Moapa Band of Paiutes

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 27 flood (flood/flash flood) events in and near the Tribal Lands of the Moapa Band of Paiutes. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the flood experienced by Moapa Band of Paiutes, including the jurisdictions located within, and is the only source of data accessible.

Table 63: Flood Events, Moapa Band of Paiutes, NV, NOAA/NCEI Database

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
MOAPA	9/8/1998	Flash Flood	0	0	10000	Approximately 15 homes and trailers were severely damaged by thunderstorm winds estimated at 80 to 90 mph. Flash flooding also occurred and caused some roadway erosion.
MOAPA	9/11/1998	Flash Flood	0	0	25000	Heavy rain fell over the area from the north shore of Lake Mead to Moapa causing widespread flash flooding. Several sections of road were washed out between Echo Bay and Las Vegas Bay and the Valley of Fire State Park was forced to close due to road flooding both in and out of the park. In Moapa, a dairy farm suffered flood damage and volunteer firefighters narrowly rescued a man before his van was swept away and submerged by flood waters.
MOAPA	9/12/1998	Flash Flood	0	0	500000	Heavy rainfall over southeast Lincoln County and northeast Clark County produced major flash flooding in the Muddy River and California Wash which caused considerable damage to roads and homes in Moapa, Hidden Valley and Overton. A total of about 220 people had to be evacuated from the three communities and many homes suffered major flood damage. Flood waters in the Muddy river also completely washed out the Gubler Street bridge. No injuries were reported.
MOAPA	11/7/2004	Flash Flood	0	0	0	A trained spotter in Moapa reported 4 feet of water over Hidden Valley Rd.
MOAPA	1/21/2010	Flash Flood	0	0	0	Ranch Road in Moapa was closed west of Highway 168 due to flooding.
MOAPA	8/18/2010	Flash Flood	0	0	10000	NV Hwy. 168 was closed by flash flooding near the intersection of U.S. Hwy. 93.
MOAPA	12/22/2010	Flood	0	0	500000	The Pahrnagat Wash and Muddy River both flooded. Warm Springs Road near Moapa was flooded 2-3 feet deep, a foot of water flowed through the intersection of Gubler and Heyer streets in Logandale, Northshore Drive was flooded west of Overton Beach, water 6 feet deep flowed across Cooper Street in Overton, and the Muddy River crested 7.3 feet above flood stage in Glendale. Cooper Street was closed until December 28th.
MOAPA	8/21/2012	Flash Flood	0	0	10000	Water, rocks, and small bushes flowed across Highway 93 south of Coyote Springs, rendering the road impassable.
MOAPA	9/11/2012	Flash Flood	0	0	50000	Highway 169 in Overton was closed near the Overton Wash, 1.5 feet of water flowed over Highway 168 in Moapa as well as Warm Spring Loop Road, and there were multiple road closures in Logandale.
MOAPA	8/3/2014	Flash Flood	0	0	5000	Several roads in Moapa were flooded and covered with mud.
MOAPA	8/19/2014	Flood	0	0	1000	The California Wash flooded and closed Hidden Valley Road.

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
MOAPA	8/19/2014	Flood	0	0	1000	The Pahrnatagat Wash flooded and closed Warm Springs Road.
MOAPA	9/7/2014	Flood	0	0	5000	Numerous roads were impassable in the Moapa River Indian Reservation area due to flooding on the Muddy River.
MOAPA	9/8/2014	Flash Flood	0	0	2000	Highway 168 was closed from Coyote Springs to Moapa due to flooding.
MOAPA	9/8/2014	Flash Flood	0	1	6,000,000	Major flash flooding affected the Moapa, Logandale, and Mesquite areas. Several local roads were washed out and some were covered with five feet of silt. At least 20 homes were damaged, and many people were evacuated. Parts of the Union Pacific railroad track were washed out. The parking lot of a power generating plant was filled with six feet of flood water. Interstate 15 suffered major damage and was closed for days. Cars floated down the highway, and one person was injured when he jumped in to help the occupants of a minivan which was swept over a 10-15 foot drop. Four earthen dams were breached in the area.
MOAPA	9/26/2014	Flash Flood	0	0	1000	Warm Springs Road was flooded and impassable. The spotter measured 1.67 inches of rain, most of which fell in 45 minutes.
MOAPA	9/26/2014	Flood	0	0	2000	Flooding on the Muddy River closed Highway 168 5 miles NW of Moapa.
MOAPA	9/27/2014	Flood	0	0	500,000	Highways 168, 169, and 170 were all closed due to flooding. Interstate 15 southbound was damaged and closed at mile marker 114.
MOAPA	10/5/2015	Flash Flood	0	0	2000	Up to 3.5 feet of water flowed over Hidden Valley Road at the California Wash.
MOAPA	10/18/2015	Flash Flood	0	0	10,000	Hidden Valley Road was closed due to 4.5 feet of water flowing over the road.
MOAPA	8/22/2016	Flash Flood	0	0	4,000	Warm Springs Road and Ranch Road were closed due to flooding and debris.
MOAPA	1/9/2018	Flash Flood	0	0	1,000	Ranch Road was closed south of Highway 168 due to flooding.
MOAPA	7/14/2021	Flash Flood	0	0	1,000	Highway 168 was closed from Interstate 15 to Highway 93 due to flooding.
MOAPA	7/18/2021	Flash Flood	0	0	1,000	Hidden Valley Road was closed at the Muddy River crossing due to flooding.
MOAPA	9/13/2022	Flash Flood	0	0	1,000	One lane of Hwy 93 was flooded just south of Hwy 168.
MOAPA	9/13/2022	Flash Flood	0	0	100,000	Significant road flooding occurred in Moapa, Moapa Valley, Overton, and Valley of Fire State Park. The Overton co-op observer measured 1.89 inches of rain, including 0.80 inch in 20 minutes. Multiple vehicles were stuck in Valley of Fire.
MOAPA	3/15/2023	Flood	0	0	2,000	The Muddy River flooded Warm Springs Road with water, mud, and debris.

Data Source: NOAA/NCEI Storm Events Database

North Las Vegas

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 2 flood (flood/flash flood) events in and near the North Las Vegas. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the flood experienced by North Las Vegas, including the jurisdictions located within, and is the only source of data accessible.

Table 64: Flood Events, North Las Vegas, NV, NOAA/NCEI Database

Location	Date	Event Type	Deaths	Injuries	Property Damage	Extent/Impact Description
NORTH LAS VEGAS	8/14/1998	Flash Flood	0	0	0	An intense cluster of thunderstorms produced high winds, locally heavy rain and an impressive lightning display as they rolled through the Las Vegas Valley. Several roofs were blown off mobile homes on east Craig Road in North Las Vegas and gusts up to 72 mph were measured at Apex. Firefighters had to rescue at least five motorists stranded by flash flood waters in the area of Cheyenne Avenue and Las Vegas Boulevard. Lightning strikes damaged several transformers, temporarily cutting electricity to about 7,200 people. Lightning also struck a home in the northwest area of Summerlin causing minor damage.
NORTH LAS VEGAS	10/18/2005	Flash Flood	0	0	0	Curb-to-curb flooding at the intersection of Nellis and Tropicana.

Data Source: NOAA/NCEI Storm Events Database

Probability of Future Events, Flooding, Landslides, and Debris Flow

The Calculated Priority Risk Index (CPRI) conducted for Clark County and its participating jurisdictions, there is a **high probability (rank score of 3.0-3.9) of flooding for the planning area**. Please note that the CPRI Rating is a subjective measure based on the opinion of the Clark County MPSC members during the planning development portion of the MJHMP update. The following table provides CPRI Rating for flooding, landslides, and debris flow related to Clark County and its participating jurisdictions.

Table 65: Clark County and Participating Jurisdiction CPRI Rating for Flooding, Landslides, and Debris Flow

Clark County and Participating Jurisdiction CPRI Rating for Flooding, Landslides, and Debris Flow							
Hazard: Flooding, Landslides, and Debris Flow	Category and Weight					CPRI Score	Risk Level
	Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%			
Index Rating (R) Weighted Score (WS)							
Clark County (including Incorporated and Unincorporated Areas)	R	3	3	4	3	3.15	H
	WS	1.35	0.9	0.6	0.3		
Boulder City	R	2	2	4	1	3.1	M
	WS	0.9	0.6	0.5	0.1		
Henderson	R	3	3	3	3	3	H
	WS	1.35	.9	.45	.3		
Las Vegas	R	4	4	3	3	3.75	H
	WS	1.8	1.2	0.45	0.3		
Mesquite	R	3	3	4	3	3.15	H
	WS	1.35	0.9	0.6	0.3		
North Las Vegas	R	3	3	3	3	3	H
	WS	1.35	0.9	0.45	0.3		
Special District: Clark County Water Reclamation District	R	3	4	4	1	3.25	H
	WS	1.35	1.2	0.6	0.1		
Special District: Clark County School District	R	3	2	2	2	2.45	M
	WS	1.35	0.6	0.3	0.2		
Special District: Las Vegas Valley Water District/SWNA	R	2	2	3	2	2.15	M
	WS	0.9	0.6	0.45	0.2		

Clark County and Participating Jurisdiction CPRI Rating for Flooding, Landslides, and Debris Flow							
Hazard: Flooding, Landslides, and Debris Flow	Category and Weight					CPRI Score	Risk Level
	Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%			
Index Rating (R) Weighted Score (WS)							
Tribal Nation: Las Vegas Valley Paiute	R	4	4	1	4	3.55	H
	WS	1.8	1.2	0.15	0.4		
Tribal Nation: Moapa Band of Paiutes	R	4	4	3	3	3.75	H
	WS	1.8	1.2	0.45	0.3		

Note: Though participating in the planning process, at the time of this update CPRI data for the City of Mesquite was not received. Therefore, the CPRI rating for the City of Mesquite is the same rating as Clark County due to the city being within the planning area.

Clark County – Quantitative Probability of Future Events, Flood

Based on the information obtained from the NOAA/NCEI, only 60 incidents of flood (flood/flash flooding) occurred in Clark County between January 1, 1950, and September 30, 2022. Clark County and its participating jurisdictions including the Las Vegas Paiute Tribe can expect a flooding (flood/flash flood) event with 335.61% probability per year or 3.35 events per year, as indicated in the table directly below. This number is based on historical events.

Note: Clark County and its participating jurisdictions can expect a flood (flood/flash flood) event with a 335.61% probability each year. This number was derived by dividing the number of recorded events by the year range used. Calculating future probability is not the only predictor of future occurrences. The qualitative chance of a flood impacting the planning area is highly likely.

Table 66: Probability of Future Events, Flooding, Landslides, and Debris Flow – Clark County, NV

Probability of Future Events, Flooding Landslides, and Debris Flow, Clark County, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Clark County, NV

Event Year	Event Count
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Clark County, NV

Event Year	Event Count
1978	0
1979	0
1980	0
1981	0
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	11

Probability of Future Events, Flooding Landslides, and Debris Flow, Clark County, NV

Event Year	Event Count
1999	4
2000	2
2001	3
2002	0
2003	1
2004	1
2005	3
2006	5
2007	1
2008	6
2009	2
2010	16
2011	6
2012	22
2013	20
2014	31
2015	20
2016	22
2017	12
2018	16
2019	8

Probability of Future Events, Flooding Landslides, and Debris Flow, Clark County, NV	
Event Year	Event Count
2020	1
2021	13
2022	13
2023	3
Total Recorded Events =	245
Total Years =	73
Yearly Probability =	335.61%

Data Source: NOAA/NCEI Storm Events Database

Boulder City – Quantitative Future Probability, Flood

The City of Boulder City can expect a flood/flash flood event with 16.43% probability per year or 0.1643 event per year, as indicated in the table below. This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Boulder City has a **likely** risk of experiencing a flash flood/flood event.

Table 67: Probability of Future Events, Flooding, Landslides, and Debris Flow – Boulder City, NV

Probability of Future Events, Flooding Landslides, and Debris Flow, Boulder City, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Boulder City, NV

Event Year	Event Count
1958	0
1959	0
1960	0
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Boulder City, NV

Event Year	Event Count
1979	0
1980	0
1981	0
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	1
1998	0
1999	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Boulder City, NV

Event Year	Event Count
2000	0
2001	0
2002	0
2003	0
2004	0
2005	0
2006	1
2007	0
2008	0
2009	0
2010	1
2011	2
2012	1
2013	0
2014	4
2015	0
2016	0
2017	0
2018	0
2019	0
2020	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Boulder City, NV	
Event Year	Event Count
2021	1
2022	0
2023	0
Total Recorded Events =	12
Total Years =	73
Yearly Probability =	16.43%

Data Source: NOAA/NCEI Storm Events Database

Henderson – Quantitative Future Probability, Flood

The City of Henderson can expect a flood/flash flood event with 16.43% probability per year, or a 0.1643 event per year, as indicated in the table below. This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Henderson has a **likely** risk of experiencing a flash flood/flood event.

Table 68: Probability of Future Events, Flooding, Landslides, and Debris Flow – Henderson, NV

Probability of Future Events, Flooding Landslides, and Debris Flow, Henderson, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Henderson, NV

Event Year	Event Count
1959	0
1960	0
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Henderson, NV

Event Year	Event Count
1980	0
1981	0
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	1
1997	2
1998	4
1999	0
2000	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Henderson, NV

Event Year	Event Count
2001	1
2002	0
2003	0
2004	0
2005	3
2006	0
2007	0
2008	0
2009	0
2010	0
2011	0
2012	0
2013	1
2014	0
2015	0
2016	0
2017	0
2018	0
2019	0
2020	0
2021	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Henderson, NV	
Event Year	Event Count
2022	0
2023	0
Total Recorded Events =	12
Total Years =	73
Yearly Probability =	16.43%

Data Source: NOAA/NCEI Storm Events Database

Las Vegas – Quantitative Future Probability, Flood

The City of Las Vegas can expect a flood/flash flood event with 82.19% probability per year, or a .8219 event per year, as indicated in the table below. This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Las Vegas has a **highly likely** risk of experiencing a flash flood/flood event.

Table 69: Probability of Future Events, Flooding, Landslides, and Debris Flow – Las Vegas, NV

Probability of Future Events, Flooding Landslides, and Debris Flow, Las Vegas, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Las Vegas, NV

Event Year	Event Count
1960	0
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Las Vegas, NV

Event Year	Event Count
1981	0
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	1
1997	5
1998	5
1999	7
2000	3
2001	1

Probability of Future Events, Flooding Landslides, and Debris Flow, Las Vegas, NV

Event Year	Event Count
2002	1
2003	1
2004	0
2005	6
2006	1
2007	2
2008	1
2009	0
2010	1
2011	0
2012	9
2013	6
2014	5
2015	1
2016	1
2017	1
2018	1
2019	0
2020	1
2021	0
2022	1

Probability of Future Events, Flooding Landslides, and Debris Flow, Las Vegas, NV	
Event Year	Event Count
2023	0
Total Recorded Events =	60
Total Years =	73
Yearly Probability =	82.19%

Data Source: NOAA/NCEI Storm Events Database

Mesquite – Quantitative Future Probability, Flood

The City of Mesquite can expect a flood/flash flood event with 5.479% probability per year, or a .0547 event per year, as indicated in the table below. This number is based upon historical events. According to [Table 28: Probability Categories](#), the City of Mesquite has an **occasional** risk of experiencing a flash flood/flood event.

Table 70: Probability of Future Events, Flooding, Landslides, and Debris Flow – Mesquite, NV

Probability of Future Events, Flooding Landslides, and Debris Flow, Mesquite, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Mesquite, NV

Event Year	Event Count
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Mesquite, NV

Event Year	Event Count
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	0
1999	0
2000	0
2001	0
2002	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Mesquite, NV

Event Year	Event Count
2003	0
2004	0
2005	0
2006	0
2007	0
2008	1
2009	0
2010	1
2011	0
2012	1
2013	0
2014	0
2015	0
2016	0
2017	1
2018	0
2019	0
2020	0
2021	0
2022	0
2023	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Mesquite, NV	
Event Year	Event Count
Total Recorded Events =	4
Total Years =	73
Yearly Probability =	5.479%

Data Source: NOAA/NCEI Storm Events Database

North Las Vegas – Quantitative Future Probability, Flood

The City of North Las Vegas as can expect a flood/flash flood event with 2.73% probability per year, or a .0273 event per year, as indicated in the table below. This number is based on historical events. According to [Table 28: Probability Categories](#), the City of North Las Vegas has an **occasional** risk of experiencing a flash flood/flood event.

Table 71: Probability of Future Events, Flooding, Landslides, and Debris Flow – North Las Vegas, NV

Probability of Future Events, Flooding Landslides, and Debris Flow, North Las Vegas, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0

Probability of Future Events, Flooding Landslides, and Debris Flow, North Las Vegas, NV

Event Year	Event Count
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0
1982	0

Probability of Future Events, Flooding Landslides, and Debris Flow, North Las Vegas, NV

Event Year	Event Count
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	1
1999	0
2000	0
2001	0
2002	0
2003	0

Probability of Future Events, Flooding Landslides, and Debris Flow, North Las Vegas, NV

Event Year	Event Count
2004	0
2005	1
2006	0
2007	0
2008	0
2009	0
2010	0
2011	0
2012	0
2013	0
2014	0
2015	0
2016	0
2017	0
2018	0
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	2

Probability of Future Events, Flooding Landslides, and Debris Flow, North Las Vegas, NV	
Event Year	Event Count
Total Years =	73
Yearly Probability =	2.73%

Data Source: NOAA/NCEI Storm Events Database

Tribal Nation: Moapa Band of Paiutes/Moapa Unincorporated Area – Quantitative Future Probability, Flood

The Tribal Nation of the Moapa Band of Paiutes/Moapa Unincorporated Area can expect a flood/flash flood event with 36.9% probability per year, or a .369 event per year, as indicated in the table directly below. This number is based on historical events. According to [Table 28: Probability Categories](#), the Moapa Band of Paiutes/Moapa Unincorporated Area has a **likely** risk of experiencing a flash flood/flood event.

Table 72: Probability of Future Events, Flooding, Landslides, and Debris Flow – Tribal Lands: Moapa Band of Paiutes/Moapa Unincorporated Area, NV

Probability of Future Events, Flooding Landslides, and Debris Flow, Tribal Lands: Moapa Band of Paiutes/Moapa Unincorporated Area, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Tribal Lands: Moapa Band of Paiutes/Moapa Unincorporated Area, NV

Event Year	Event Count
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Tribal Lands: Moapa Band of Paiutes/Moapa Unincorporated Area, NV

Event Year	Event Count
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	3
1999	0
2000	0
2001	0
2002	0

Probability of Future Events, Flooding Landslides, and Debris Flow, Tribal Lands: Moapa Band of Paiutes/Moapa Unincorporated Area, NV

Event Year	Event Count
2003	0
2004	1
2005	0
2006	0
2007	0
2008	0
2009	0
2010	3
2011	0
2012	2
2013	0
2014	9
2015	2
2016	1
2017	0
2018	1
2019	0
2020	0
2021	2
2022	2
2023	1

Probability of Future Events, Flooding Landslides, and Debris Flow, Tribal Lands: Moapa Band of Paiutes/Moapa Unincorporated Area, NV

Event Year	Event Count
Total Recorded Events =	27
Total Years =	73
Yearly Probability =	36.9%

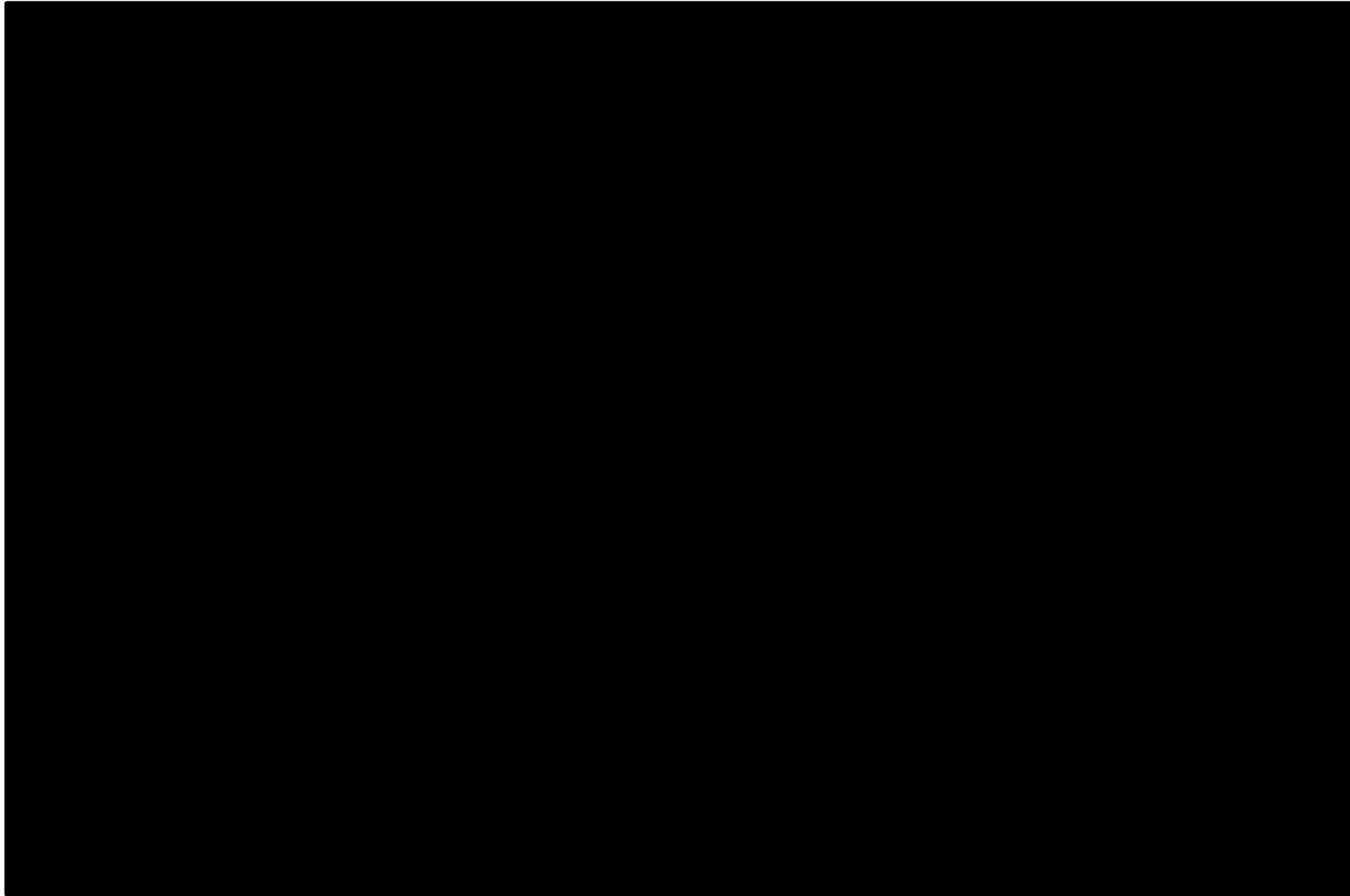
Data Source: NOAA/NCEI Storm Events Database

Vulnerability and Impact

Figures 93-100 in the Location and Extent section for Flooding, Landslides, and Debris Flow within this MJHMP update, depicts Clark County exposure to 100-year floodplains. The likelihood of flooding is equal throughout each participating jurisdiction, and the overall annual probability for the areas is 3.35 events per year. According to [Table 28: Probability Categories](#), the overall probability for flooding is considered to be “**highly likely**”.

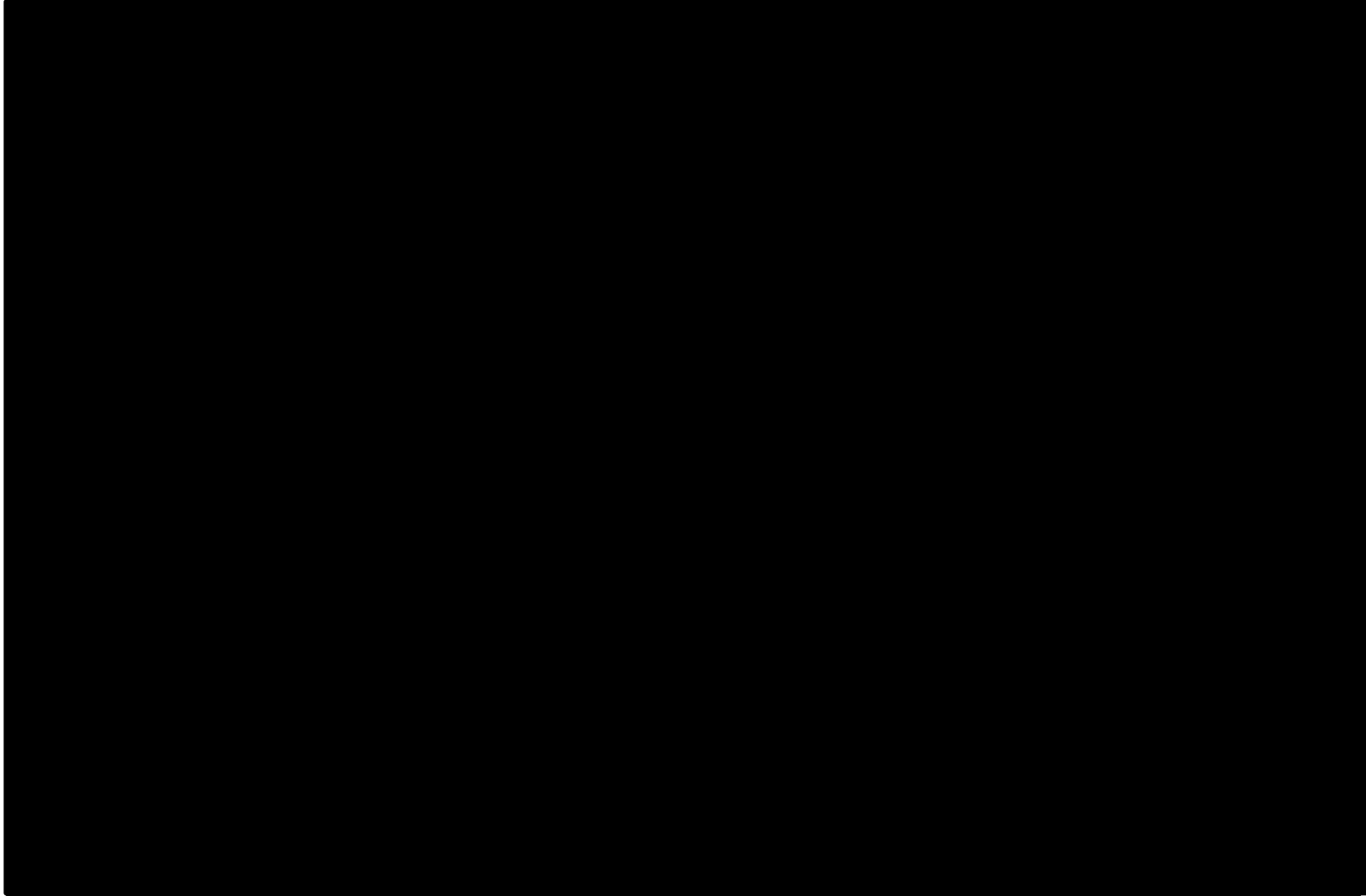
The impacts of Flooding, Landslides, and Debris Flow - Flooding can be seen in the following vulnerability sections of this hazards profile: Vulnerability of Facilities, People, Systems, and Critical Facilities and Infrastructure. The data shown in this hazards impact statement is taken from the HAZUS®, version 6.0, was used to perform the analysis for Clark County using essential facility data for Clark County Office of Emergency Management & Homeland Security. The analysis was completed by CONSTANT Associates. For this hazard, the risk assessment data and maps involved were from an analysis of 1% annual chance flood event (100-Year Flood) and 0.2% annual chance flood event (500-Year Flood). Because of the type of HAZUS® run, all jurisdictional data is included in the numbers seen below.

Figure 101: Clark County, NV – 100-year flood zone map with Critical Facilities Layers



Data Source: Clark County GISMO Department

Figure 102: Clark County, NV – 500-year flood zone map with Critical Facilities Layers

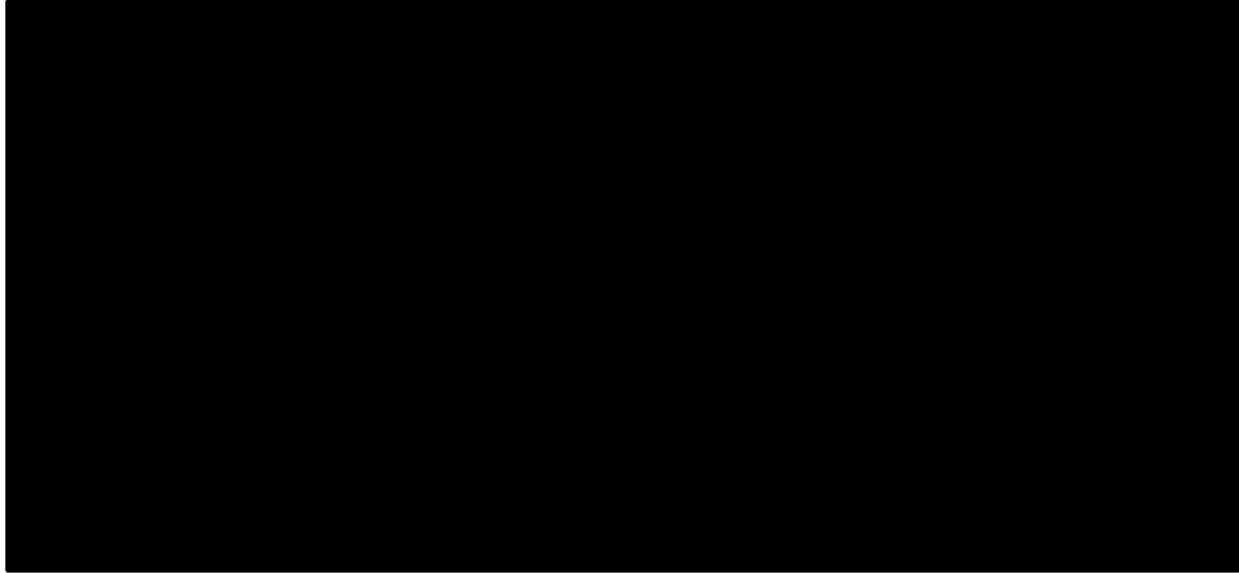


Data Source: Clark County GISMO Department

Vulnerability of Facilities, Critical Facilities Inventory

A HAZUS® analysis was performed to determine critical facility locations relative to the SFHAs. Using GIS, the Digital Flood Insurance Flood Rate Map (DFIRM) flood zones were overlaid on the critical facility location data. Figure 101: Clark County, NV – 100-year flood zone map with Critical Facilities Layers and Figure 102: Clark County, NV –500-year flood zone map with Critical Facilities Layers show critical facility locations and 100-year flood depths within Clark County. Aside from the essential facilities at risk, there are many critical facilities at risk. Additional information is provided in the table below.

Table 73: Expected Damage to Essential Facilities, 1% Riverine Flood and 0.2% Riverine Flood



Note: HAZUS® indicated the following "If this report displays all zeros or is blank, two possibilities can explain this: 1.) None of the essential facilities were flooded in the scenario. This can be checked by mapping the inventory data on the depth grid. 2.) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Data Source: HAZUS® Flood Global Risk Report for Clark County produced by CONSTANT Associates

Shelter Requirements

HAZUS® estimated the number of households that are expected to be displaced from their homes due to flood and associated potential evacuation. HAZUS® also estimates the number of displaced people who will require accommodations in temporary public shelters. The model estimates related to the 100-year and 500-year flooding within the planning area:

- **100-year flood within the Clark County – Las Vegas Area:** 61,969 households (or 185,906 people) will be displaced due to flooding. Displacement includes households evacuated from within or near the inundated area(s). Of these 25,023 (out of a total population of 2,260,510) may require temporary, public sheltering.
- **100-year flood within the Clark County, Northeast Area:** 1,361 households (or 4,082 people) will be displaced due to flooding. Displacement includes households evacuated from within or near the inundated area(s). Of these 300 (out of a total population of 2,260,510) may require temporary, public sheltering.
- **500-year flood within the Clark County – Las Vegas Area:** 112,945 households (or 338,836 people) will be displaced due to flooding. Displacement includes households evacuated from within or near the inundated area(s). Of these 40,963 (out of a total population of 2,260,510) may require temporary, public sheltering.

- **500-year flood within the Clark County, Northeast Area:** 1,938 households (or 5,815 people) will be displaced due to flooding. Displacement includes households evacuated from within or near the inundated area(s). Of these 380 (out of a total population of 2,260,510) may require temporary, public sheltering.

The shelter requirements information is from the hazard risk analysis (HAZUS®: Flood Global Risk Reports for Clark County, NV NE and Clark County, NV – Las Vegas Area provided by CONSTANT Associates.

Building-Related Losses

Building losses are broken into two categories: direct building and business interruption. Direct building losses are the estimated cost to repair or replace damage to the building and its contents. Business interruption losses also include the temporary living expenses for those displaced from their homes because of flooding.

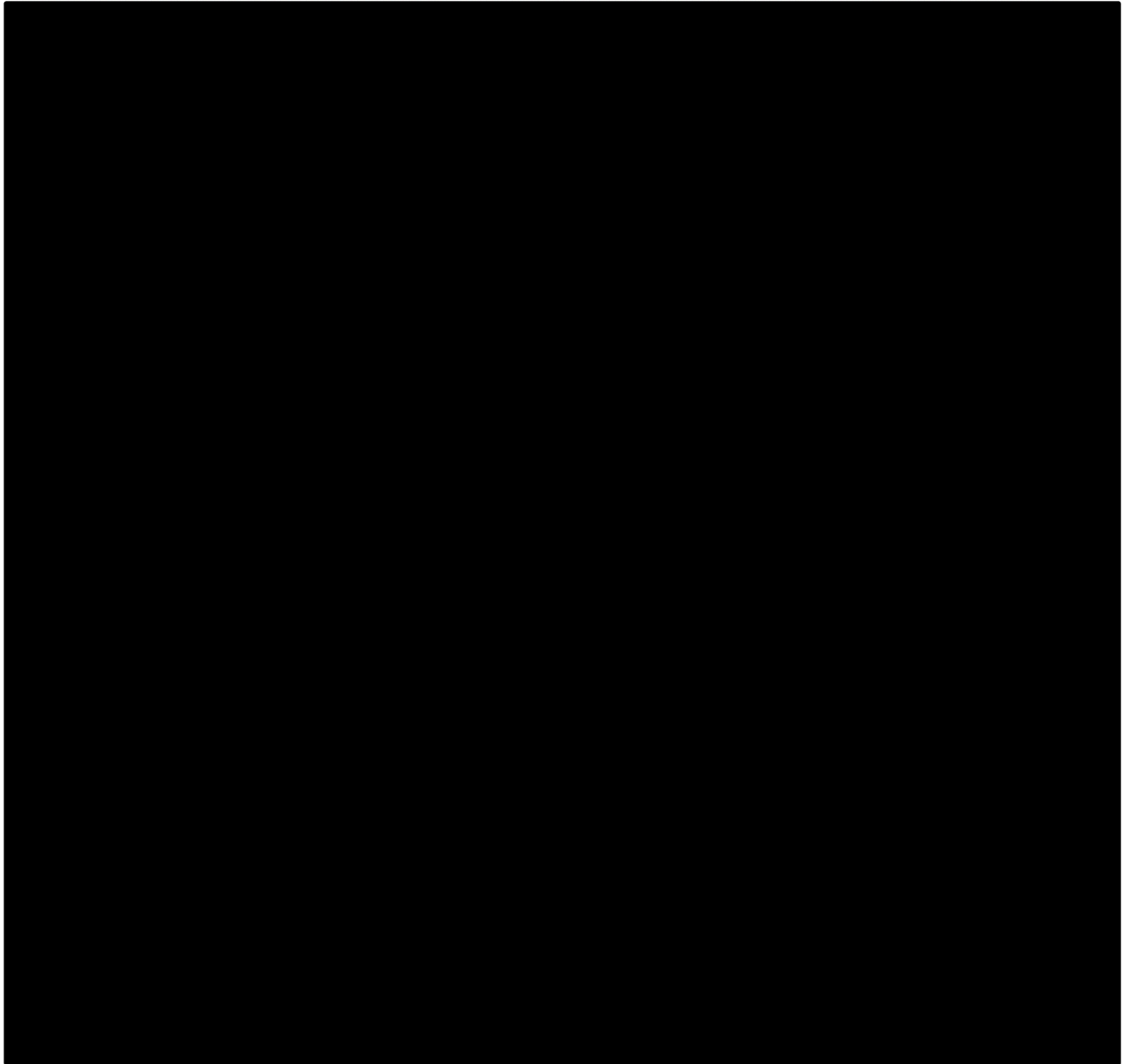
Clearly, severe flooding has the potential to inflict significant damage in Clark County. Analysis by CONSTANT Associates the following estimates the amount of debris that may be generated from a 100-year 1% flood and 500-year 0.2% flood within the planning area:

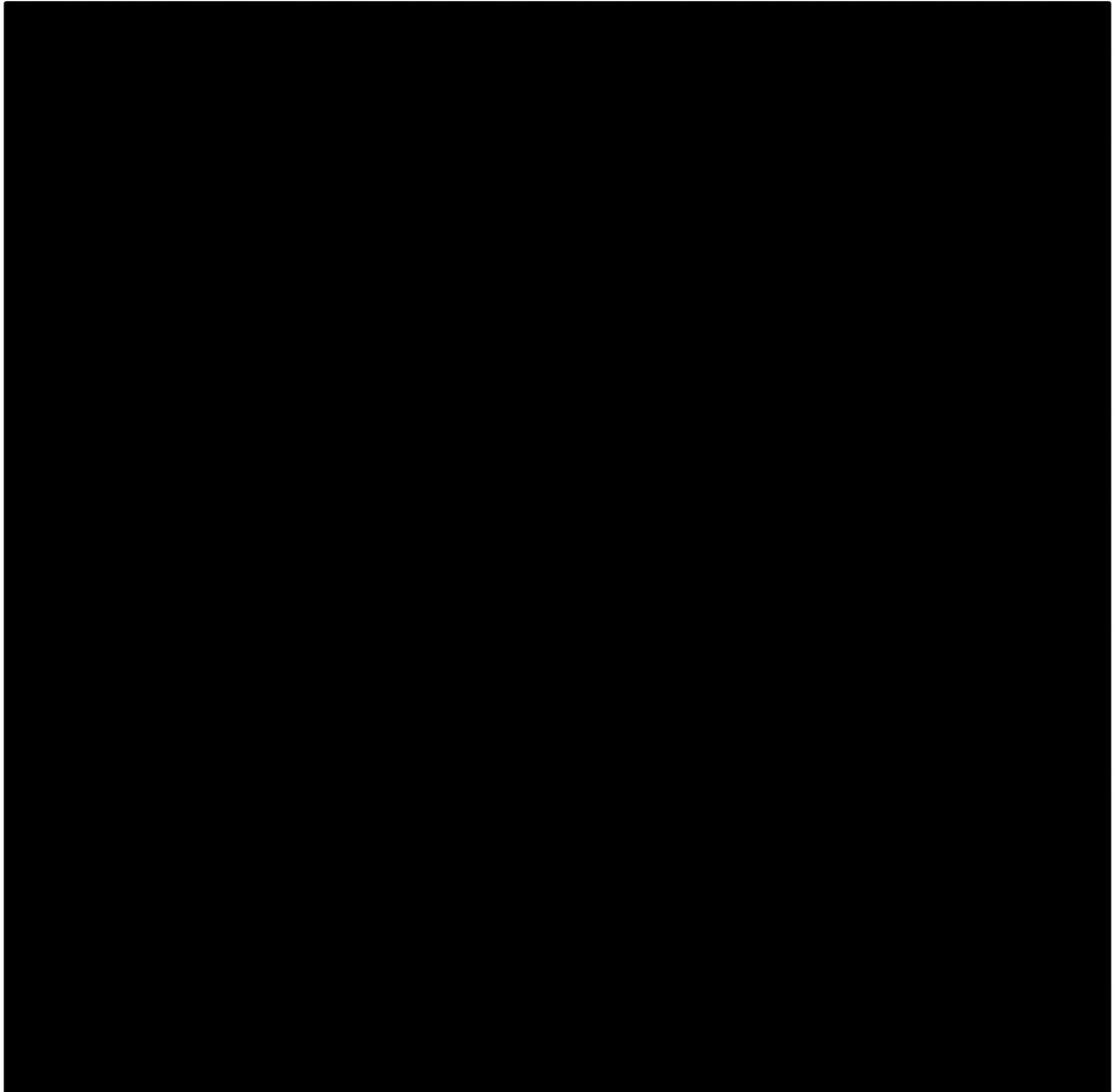
- **100-year flood within the Clark County – Las Vegas Area:** the model estimates that 39,977 tons of debris may be generated from a 100-year riverine flood in Clark County – Las Vegas area.
- **100-year flood within the Clark County, Northeast Area:** the model estimates that 3,733 tons of debris may be generated from a 100-year riverine flood in Clark County – Northeast area.
- **500-year flood within the Clark County – Las Vegas Area:** the model estimates that 102,748 tons of debris may be generated from a 500-year riverine flood in Clark County – Las Vegas area. **500-year flood within the Clark County, Northeast Area:** the model estimates that 8,878 tons of debris may be generated from a 100-year riverine flood in Clark County – Northeast area.

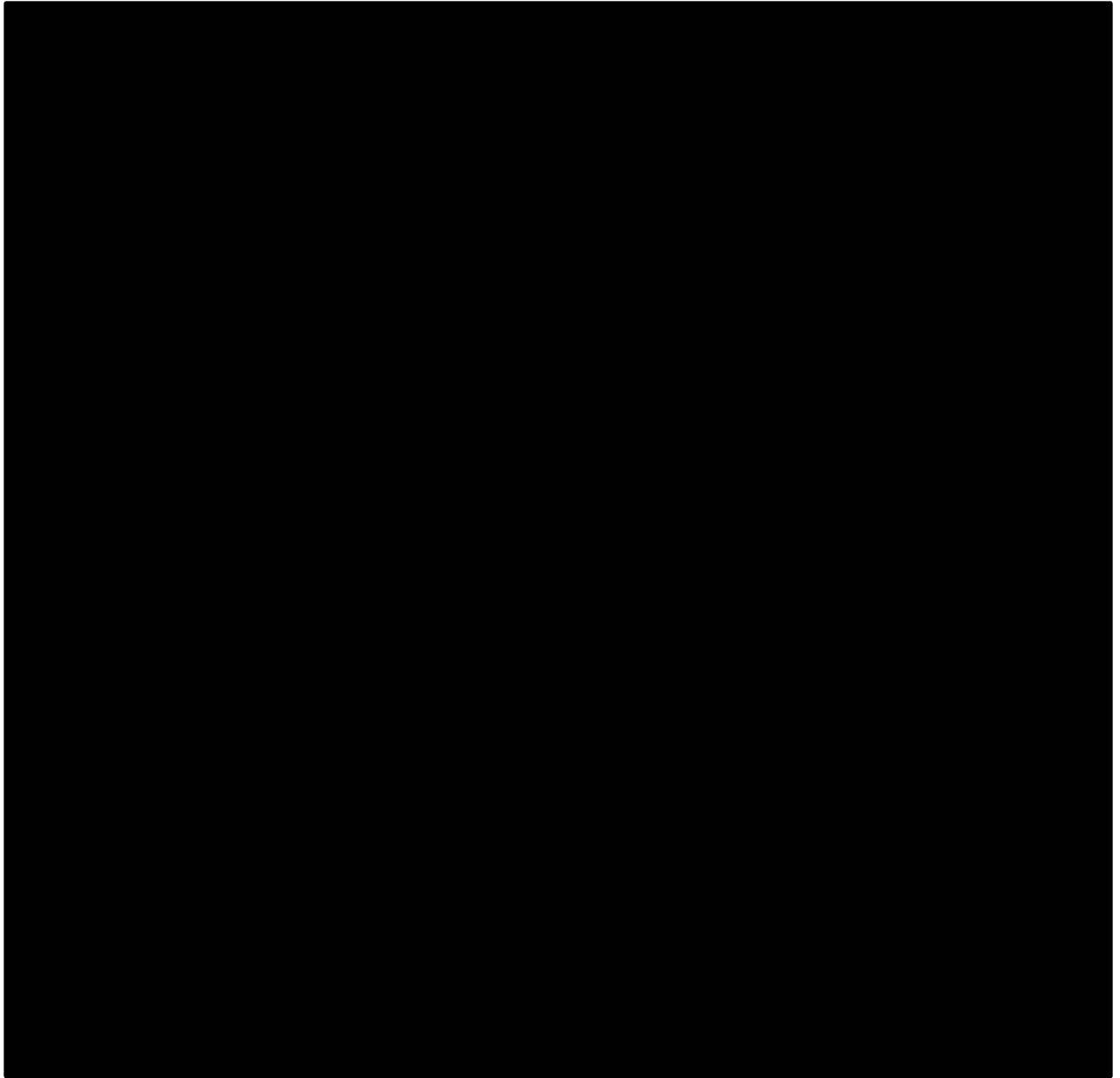
Smaller floods caused by heavy rains and inadequate drainage capacity will occur more frequently than 100-year floods and continue to be problematic for the County. Fortunately, damage from them will not be nearly as costly.

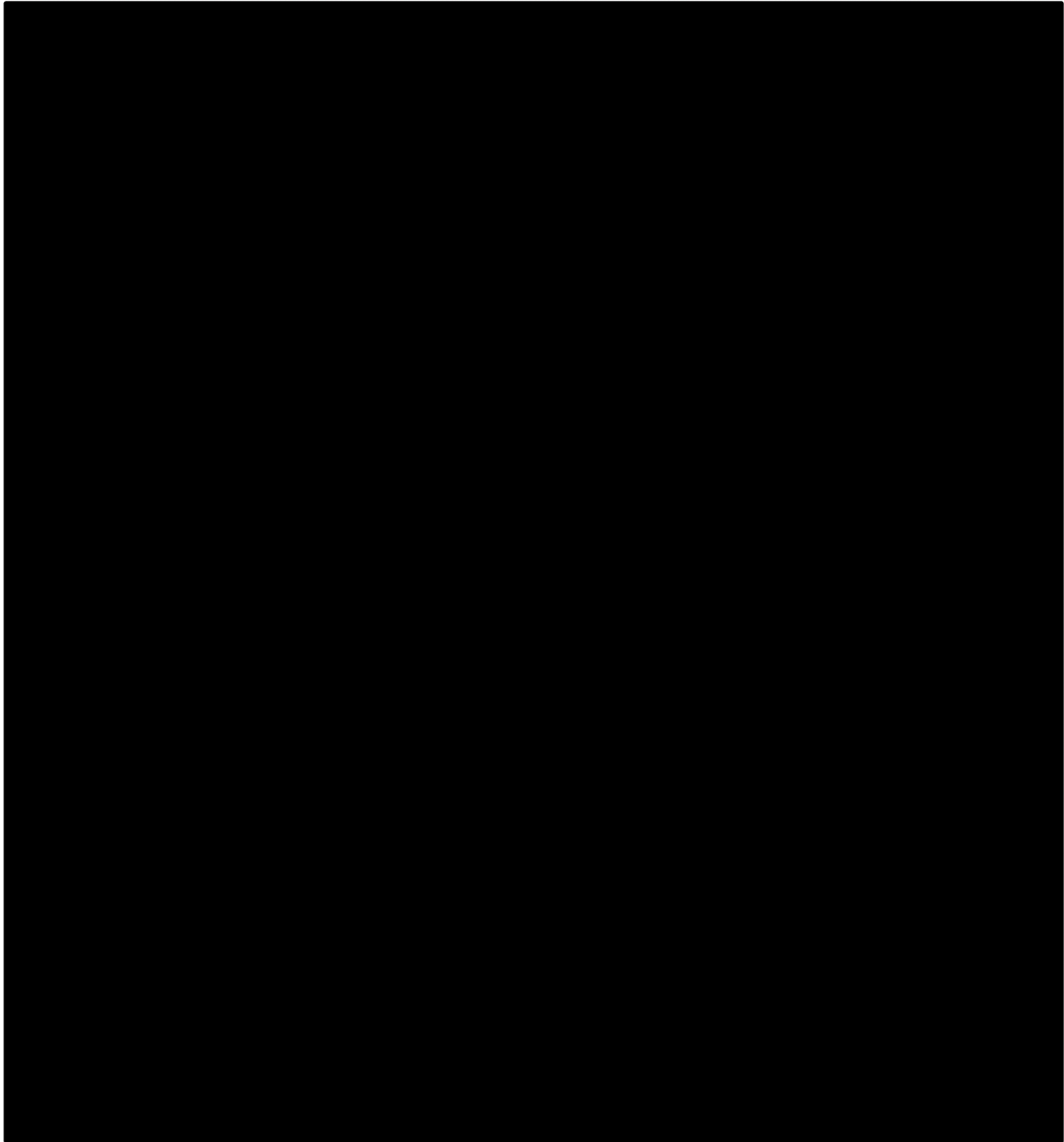
Flooding can cause minimal or complete destruction to facilities, taking them offline for days to years depending upon the resources available after an event. Clark County and its participating jurisdictions have incurred \$1,343,000 in property damage from flooding/flash flooding from 2018 to present.

*Table 74: 1% Riverine Building Losses and 0.2% Riverine Building Losses for Clark County, Las Vegas and Clark County – Northeast Area:
Clark County, Las Vegas Area, 100-year Flood*









Vulnerability of Populations

If evacuation orders are not heeded flood waters rise quickly, enough residents within the planning area can be swept away by floodwater currents, become trapped on rooftops or other points of high elevations, and even sustain injury or death. Depending upon the conditions, this will expose them to the elements and deprive them of basic needs and services.

As previously described in the Vulnerability of Facilities, Critical Facilities Inventory section of this hazard profile, flooding will, directly and indirectly, impact people, infrastructure, natural systems, and the economy significantly. In the event of a flooding event in the planning area, still water that is long-lasting and slow to drain will encourage the growth of mold and other bio-hazardous materials, rendering a facility unusable. Extra care, assessment, and sanitization are required before residents can re-inhabit a facility, or they may face serious health concerns. Hospitals housing vulnerable populations can take longer to evacuate. Additionally, the potential presence of mold after a flood requires extra care before Clark County's population can re-inhabit a hospital or long-term care facility.

Clark County has 0 recorded fatalities from flood/flash flood events in the last five years. Still, of the planning area's total population of 2,265,461, all are considered vulnerable and at risk of flooding, whether alluvial fan, riverine, or flash. However, flooding could pose a risk to the vulnerable populations within the planning area. The following information provides updated vulnerability and impact of flooding for each jurisdiction in the planning area:

- **Boulder City:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](#) recorded 12 flood (flood/flash flood) events in the City of Boulder City. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the flood experienced by Boulder City, including the jurisdictions located within, and is the only data source accessible. The City of Boulder City can expect a flood/flash flood event with a 16.43% probability per year, or 0.1646 events per year, as indicated in Table 66 (above). This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Boulder City has a “**likely**” risk of experiencing a flash flood/flood event.

In reference to population growth, Boulder City has experienced a 0.919% growth in population. With the recent growth, Boulder City now has many more residents since the last HMP update. At the same time, Boulder City is seeing an increased aging population with 29.0% residents being above the age of 65 and there was a 0.15% increase of housing units between 2010 and 2020. Since 1950, Boulder City has had four injuries directly resulting from flooding. It is expected that with increased population and the increasing effects of climate change, flooding (flash/flood) events will increase, meaning the timing of floods will get shorter (*source: [The New York Times](#)*). In contrast, the magnitude gets higher, which may lead to increased injuries and deaths in the future. The most vulnerable populations, including seniors and those experiencing homelessness, are the most at risk for flooding.

- **Henderson:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](#) recorded 12 flood (flood/flash flood) events in the City of Henderson. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the flood experienced by Henderson, including the jurisdictions located within, and is the only source of data accessible. The City of Henderson can expect a flood/flash flood event with 16.43% probability per year, or a 0.1646 event per year, as indicated in Table 67 (above). This number is based on historical events. According to [Table 28: Probability Categories](#),

the City of Henderson’s flooding probability is categorized as a “**likely**” for experiencing a flash flood/flood event.

In reference to population growth, Henderson has experienced a 23.23% growth in population. With the recent growth, Henderson now has many more residents since the last HMP update. At the same time, Henderson is seeing an increased aging population with 26.6% residents being above the age of 65 and there was a 20% increase of housing units between 2010 and 2020. Since 1950, Henderson has had one (1) death and four (4) injuries directly resulting from flooding. It is expected that with increased population and the increasing effects of climate change, flooding (flash/flood) events will increase, meaning the timing of floods will get shorter (*source: [The New York Times](#)*). In contrast, the magnitude gets higher, which may lead to increased injuries and deaths in the future. The most vulnerable populations, including seniors and those experiencing homelessness, are most at risk for flooding.

- **Las Vegas:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](#) recorded 60 flood (flood/flash flood) events in the City of Las Vegas. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the floods experienced by Las Vegas, including the jurisdictions located within, and is the only source of data accessible. The City of Las Vegas can expect a flood/flash flood event with 82.19% probability per year, or 0.8219 events per year, as indicated in Table 68 (above). This number is based on historical events. According to [Table 26: Probability Categories](#), the probability of the City of Las Vegas experiencing a flash flood/flood event is “**highly likely**”.

Related to population growth, Las Vegas has experienced a 9.96% growth in population. With the recent growth, Las Vegas now has many more residents. At the same time, the City of Las Vegas is seeing an increased aging population with 14.8% of residents being above the age of 65 and there was a 5.34% increase of housing units between 2010 and 2020. Since 1950, Las Vegas has had five (5) deaths and three (3) injuries directly resulting from flooding. It is expected that with increased population and the increasing effects of climate change, flooding (flash/flood) events will increase, meaning the timing of floods will get shorter (source: [The New York Times](#)). In contrast, the magnitude gets higher, which may lead to increased injuries and deaths in the future. The most vulnerable populations, including seniors and those experiencing homelessness, are most at risk for flooding.

- **Mesquite:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](#) recorded four (4) flood (flood/flash flood) events in the City of Mesquite. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the flood experienced by Mesquite, including the jurisdictions located within, and is the only source of data accessible. The City of Mesquite can each expect a flood/flash flood event with 5.479% probability per year, or a 0.0547 event per year, as indicated in Table 69 (below). This number is based on historical events. According to [Table 26: Probability Categories](#), the City of Mesquite has an “**occasional**” risk of experiencing a flash flood/flood event.

Related to population growth, Mesquite has experienced a 34% growth in population. With the recent growth, Mesquite now has many more residents since the last HMP update. At the same time, the City of Mesquite is seeing an increased aging population with 26.6% of residents being above the age of 65 and there was a 20% increase of housing units between 2010 and 2020. Since 1950, Mesquite did not have a recorded

death or injury directly resulting from flooding. It is expected that with increased population and the increasing effects of climate change, flooding (flash/flood) events will increase, meaning the timing of floods will get shorter (source: [The New York Times](#)). In contrast, the magnitude gets higher, which may lead to increased injuries and deaths in the future. The most vulnerable populations, including seniors and those experiencing homelessness, are most at risk for flooding.

- **North Las Vegas:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](#) recorded 2 flood (flood/flash flood) events in and near the North Las Vegas. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the flood experienced by North Las Vegas, including the jurisdictions located within, and is the only source of data accessible. The City of North Las Vegas as can each expect a flood/flash flood event with 2.73% probability per year, or a 0.0273 event per year, as indicated in Table 70 (below). This number is based on historical events. According to [Table 26: Probability Categories](#), the City of North Las Vegas has an “occasional” risk of experiencing a flash flood/flood event. With population growth, North Las Vegas has experienced a 21% growth in population. With the recent growth, North Las Vegas now has many more residents since the last HMP update. At the same time, the City of North Las Vegas is seeing an increased aging population with 10.9% residents being above the age of 65 and there was a 13.5% increase of housing units between 2010 and 2020. Since 1950, North Las Vegas did not have a recorded death or injury directly resulting from flooding. It is expected that with increased population and the increasing effects of climate change, flooding (flash/flood) events will increase, meaning the timing of floods will get shorter (source: [The New York Times](#)). In contrast, the magnitude gets higher, which may lead to increased injuries and deaths in the future. The most vulnerable populations, including seniors and those experiencing homelessness, are most at risk for flooding.

The Clark County Climate Vulnerability Study mentions how flooding will affect the people and communities within Clark County related to housing, schools, correctional and detention centers, and critical health facilities:

- **Housing:** “The majority of Clark County’s at-risk people and property exist in the Las Vegas Wash, which contains Las Vegas, North Las Vegas, and Henderson. Though not heavily populated, housing in rural areas may be significantly impacted by flooding because there are often fewer resources available for response and recovery. This includes areas alongside the Muddy River (which flows through Overton and Logandale) and the Virgin River (which runs along the southern boundary of Mesquite), much of which is within the County’s Special Flood Hazard Area (SFHA). Lastly unhoused residents (especially those living in stormwater infrastructure) face acute risk of no-notice flash flood events. There is increased need for shelters, communication, rescue, and care during these events.”
- **Schools:** “While not all schools are equal risk of flooding impacts because of the variations of topography and urbanization across the County, flooding can pose transportation and mobility issues for those traveling to school facilities. Flood can also disrupt school operations, interfering with programming, causing school delays, or even causing school closures.”
- **Correctional Facilities and Detention Centers:** “Existing facilities experience few flood impacts during heavy rain events. That said facilities in lower lying areas are especially at risk for flash flooding impacts. Similarly, flood impacts are worse in rural areas compared to urban areas.”

- **Critical Health Facilities:** “While flash flooding can be costly, there is generally not a significant impact to public health. Most critical facilities in Clark County are located safely outside of flood hazard areas; yet flash floods can temporarily restrict access to critical health and emergency service, especially for rural areas. These events can also reduce the ability of healthcare workers and emergency responders to access affected areas.”

The FEMA National Risk Index map provides data on social vulnerability and community resilience related to hazards. Both of these factors impact the vulnerability of a population for a hazard event like flooding. FEMA National Risk Index defines [Social Vulnerability](#) as the susceptibility of social groups to the adverse impacts of natural hazards, including death, injury, loss, or disruption of livelihood. FEMA defines [Community Resilience](#) as the ability for a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruption. The scoring of these FEMA National Risk Index categories are for all hazards, including drought are as follows:

- **Community Resilience:** the higher community resilience score results in a lower risk index score. The Community Resilience score for Clark County is 49.9, meaning communities within the County have a Very Low ability to prepare for anticipated natural hazards, adapt to conditions, and withstand and recover rapidly from disruptions compared to the rest of the U.S.
- **Social Vulnerability:** a higher social vulnerability score results in a higher Risk Index score. Social groups in Clark County, NV, have a Relatively High susceptibility to the adverse impacts of natural hazards compared to the rest of the U.S. The Social Vulnerability score for Clark County is 48.59

The following maps provide a snapshot of community resilience and social vulnerability scoring related to all hazards including flooding for Clark County and its participating jurisdictions.

Figure 103: FEMA National Risk Index Maps, Social Vulnerability - Clark County, NV



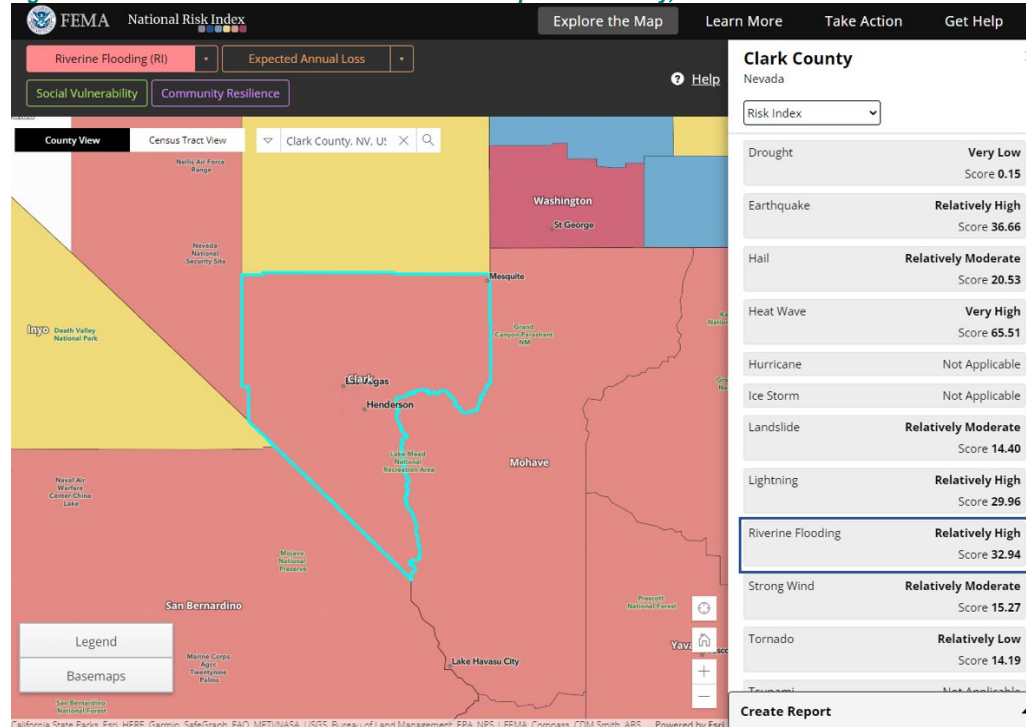
Data Source: [The FEMA National Risk Index](#)

Vulnerability of Systems

Critical facilities and infrastructure can be rendered unusable or permanently destroyed, significantly impacting a jurisdiction's ability to conduct its day-to-day operations. Considerable damage to residential and/or commercial structures can damage a community and its economy by creating economic hardship. If a chemical facility is severely impacted, stored chemicals can potentially wash away with the floodwater and have detrimental effects on the local environment.

The FEMA National Risk Index. All jurisdictions throughout Clark County are susceptible to flooding (flash /flood). The FEMA National Risk Index for Natural Hazards is an online mapping system that identifies communities most at risk to 18 natural hazards. Related to flooding – riverine flooding, In the National Risk Index, a Riverine Flooding Risk Index score and rating represent a community's relative risk for Riverine Flooding compared to the rest of the United States. Clark County has a riverine flooding risk score of 32.94 (relatively high) compared to the rest of the Country. The map below illustrates that score visually.

Figure 104: FEMA National Risk Index Riverine Flood Map – Clark County, NV



Data Source: [The FEMA National Risk Index](#)

Impact of Climate Change

The Clark County, Climate Vulnerability Study, mentions that four main climate hazards, which include flooding, will, directly and indirectly, impact people, infrastructure, natural systems, and the economy significantly. The illustration below illustrates how climate change can affect hazards like flooding within the planning area.

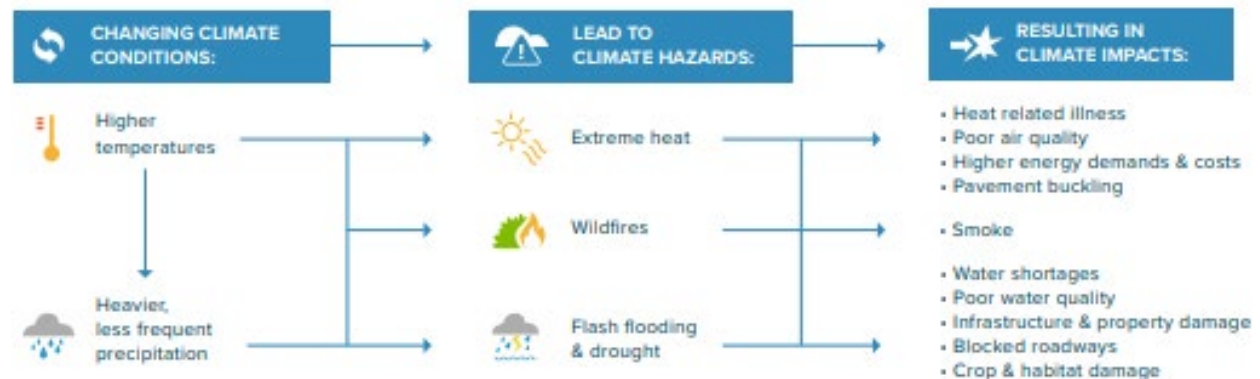


Illustration Source: [Clark County, NV Climate Vulnerability Assessment](#)

The upcoming sections of the Vulnerability and Risk related to flooding provide information on how climate change will affect populations, systems, critical facilities & infrastructure, and land

use & development trends.

Critical Facilities and Infrastructure

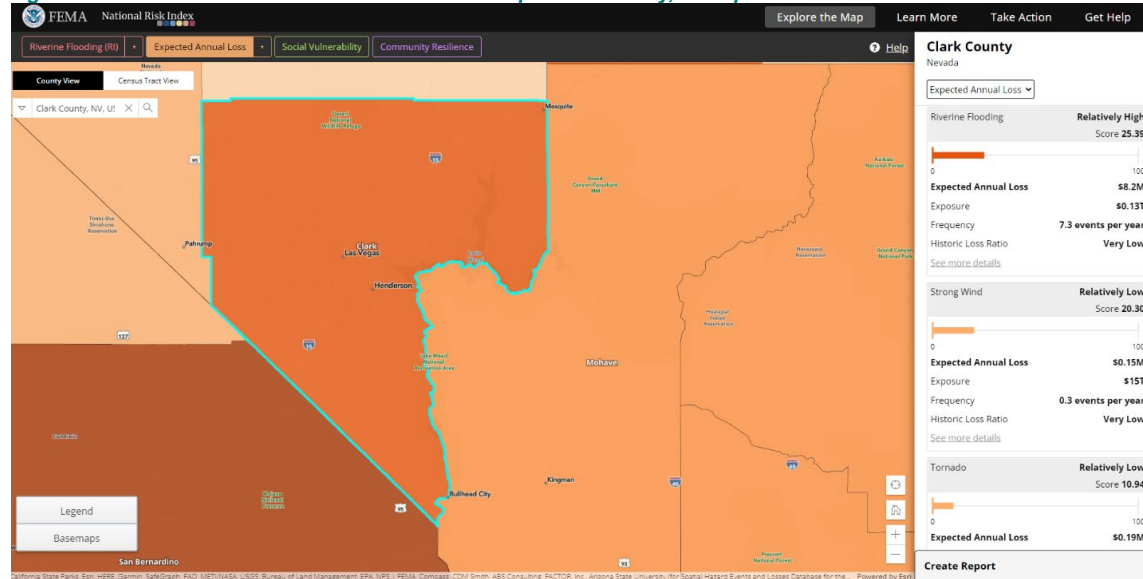
All critical facilities and infrastructure are at risk of flooding (flash/flood) since it can indiscriminately affect the planning area. A complete list of critical facilities and infrastructure can be found in [Appendix E – Critical Facilities & Infrastructure](#).

Also, the National Risk Index scores provided by FEMA analyze potential exposure and estimated losses within the planning area related to flooding. For flooding, the National Risk Index uses the [Riverine Flood Exposure value](#) to represent community building values (in dollars), population (in both people and population equivalence), and agriculture value (in dollars) exposed to Riverine Flooding. [Exposure](#) is a natural consequence factor for Annual Expected Loss, the natural hazard component of the National Risk Index. A jurisdiction with a higher exposure value will result in higher Expected Annual Loss and Risk Index scores. Clark County's Expected Annual Loss rating related to riverine flooding is 25.39, which is relatively high compared to the rest of the country. The other exposure data related to expected loss for riverine flooding is as follows:

- Expected Annual Loss: \$8.2M
- Exposure: \$0.13T
- Frequency: 7.3 events per year
- Historic Loss Ratio: Very Low

The following map illustrates the expected annual loss for riverine flooding in the planning area:

Figure 105: FEMA National Risk Index Riverine Flood Map – Clark County, NV Expected Annual Loss



Data Source: [The FEMA National Risk Index](#)

Land Use and Development

The [Clark County, NV Economic Development website](#) mentions that Clark County encompasses 8,000 square miles and 2.3 million residents —accounting for 70% of Nevada’s population and making it Nevada’s largest county. It is also the nation’s 14th largest county, responsible for nearly half a million visitors to Southern Nevada annually as the 7th most frequented region in America. The previous Clark County HMP (2018) mentions contributing to this dispersion type is an urbanization and sprawl pattern that has spread development onto the washes and sediment piedmonts. In addition, runoff from monsoon thunderstorms can quickly overtop a wash, thereby flooding adjacent areas. With its growing population within the major cities of the county and in the unincorporated portion of the county and continued urbanization, all of Clark County is at risk of some type of flooding (riverine, flash, or alluvial fan). This is especially true for future development within the County’s many 100-year and 500-year floodplains, or SFHAs. New construction in unmapped areas prone to flooding may further increase vulnerabilities and potential losses. However, Clark County’s current land-use regulations require the consideration of flood hazards during the development review process electronically via the [Clark County Regional Flood Control District website](#).

Unique and Varied Risk

In Clark County, flooding (flash/flood) can affect the entire planning area or only a portion, or portions, of it. Unfortunately, there is no accurate method of predicting the location or extent of a flash flood’s impact— namely, whether it will affect one participating jurisdiction, any number of, or all participating jurisdictions. Further, it is not possible to predict any varying probability between the participating jurisdictions, except for different risk as it is proportionate to a participating jurisdiction’s demographics. Logically, participating jurisdictions with a more significant population are at a higher risk than involving jurisdictions with a lower population.

Although this plan update addresses vulnerability to flooding, without the possibility of being able to calculate all components of risk at a jurisdictional level, each jurisdiction’s likelihood of experiencing flash flooding is not possible to calculate. Based on the NFIP FIRM, Clark County, Clark County – Unincorporated, and the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas are at risk for flooding (flash/riverine/alluvial fan).

Table 75: Unique & Varied Risk, Clark County, NV Flooding

Unique & Varied Risk, Clark County, NV Flooding	
<i>Jurisdiction</i>	<i>Risk Characteristics</i>
Clark County including the unincorporated portions of the County and the Tribal Land of Las Vegas Paiute Tribe and Moapa Band of Paiutes	Parts of the jurisdiction are in a 100-year floodplain.
City of Boulder City	Parts of the jurisdiction are in a 100-year floodplain.
City of Henderson	Parts of the jurisdiction are in a 100-year floodplain.
City of Las Vegas	Parts of the jurisdiction are in a 100-year floodplain.
City of Mesquite	Parts of the jurisdiction are in a 100-year floodplain.
City of North Las Vegas	Parts of the jurisdiction are in a 100-year floodplain.

Note: The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the Flood hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. Also, the information provided for Clark County also applies to the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas; Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes; and Special Districts representing Clark County School District, Clark County Water Reclamation District, Las Vegas Water District, and Southern Nevada Health District.

Repetitive Loss Structure

Clark County’s previous HMP (2018) mentioned that according to FEMA Region IX, as of June 2018, there are a total of 25 Repetitive Loss (RL) properties located in Unincorporated Clark County; with 52 losses equaling \$1,705,220. In the city of Henderson, there are two RL properties, with four losses equaling \$20,837. In the city of Las Vegas there are eight RL properties, with 24 losses totaling \$805,563.

However, as of December 5, 2022, there are Repetitive Loss (RL) properties, and subsequently, NFIP-insured properties within Clark County. The following table, provided by the State of Nevada Division of Emergency Management (NVDEM), indicates the locations, number of losses, and number of policies.

Community Name	Community Number	Mitigated	Occupancy 1	Cumulative Building Payment	Cumulative Contents Payment	Total Paid	Is NFIP Repetitive Loss Flag	Is NFIP Severe Repetitive Loss Flag	Is FMA Repetitive Loss Flag	Is FMA Severe Repetitive Loss Flag	Not Repetitive Loss Flag
BOULDER CITY, CITY OF	320004	NO	SINGLE FMLY (OLD METHODOLOGY)	13935.24	0	13935.24	N	N	N	N	Y
CLARK COUNTY *	320003	YES	OTHR-NONRES (OLD METHODOLOGY)	28766.95	41685.05	70452	Y	N	N	N	N
CLARK COUNTY *	320003	YES	OTHR-NONRES (OLD METHODOLOGY)	161390.46	124196.3	285586.76	Y	N	N	N	N
CLARK COUNTY *	320003	YES	OTHR-NONRES (OLD METHODOLOGY)	45544.51	16686.43	62230.94	Y	N	N	N	N
CLARK COUNTY *	320003	YES	OTHR-NONRES (OLD METHODOLOGY)	27508.25	0	27508.25	Y	N	N	N	N
CLARK COUNTY *	320003	YES	OTHR-NONRES (OLD METHODOLOGY)	175771.66	0	175771.66	Y	N	Y	N	N
CLARK COUNTY *	320003	NO	SINGLE FMLY (OLD METHODOLOGY)	7189.04	10493.23	17682.27	Y	N	N	N	N
CLARK COUNTY *	320003	NO	SINGLE FMLY (OLD METHODOLOGY)	38459.6	0	38459.6	Y	N	N	N	N
CLARK COUNTY *	320003	YES	SINGLE FMLY (OLD METHODOLOGY)	3173.52	0	3173.52	Y	N	N	N	N
CLARK COUNTY *	320003	NO	SINGLE FMLY (OLD METHODOLOGY)	44707.05	11752.47	56459.52	Y	N	N	N	N
CLARK COUNTY *	320003	NO	SINGLE FMLY (OLD METHODOLOGY)	78828.05	29216.55	108044.6	N	N	N	N	Y
CLARK COUNTY *	320003	YES	SINGLE FMLY (OLD METHODOLOGY)	52139.03	0	52139.03	Y	N	N	N	N

Community Name	Community Number	Mitigated	Occupancy 1	Cumulative Building Payment	Cumulative Contents Payment	Total Paid	Is NFIP Repetitive Loss Flag	Is NFIP Severe Repetitive Loss Flag	Is FMA Repetitive Loss Flag	Is FMA Severe Repetitive Loss Flag	Not Repetitive Loss Flag
CLARK COUNTY *	320003	YES	SINGLE FMLY (OLD METHODOLOGY)	30475.51	0	30475.51	Y	N	N	N	N
CLARK COUNTY *	320003	YES	SINGLE FMLY (OLD METHODOLOGY)	63068.79	6347.09	69415.88	Y	N	N	N	N
CLARK COUNTY *	320003	YES	SINGLE FMLY (OLD METHODOLOGY)	60008.2	35816.62	95824.82	Y	N	N	N	N
CLARK COUNTY *	320003	YES	SINGLE FMLY (OLD METHODOLOGY)	8758.38	1981.32	10739.7	Y	N	N	N	N
CLARK COUNTY *	320003	YES	SINGLE FMLY (OLD METHODOLOGY)	76391.12	22955.87	99346.99	Y	N	N	N	N
CLARK COUNTY *	320003	YES	SINGLE FMLY (OLD METHODOLOGY)	10100.82	11935.59	22036.41	Y	N	N	N	N
CLARK COUNTY *	320003	NO	SINGLE FMLY (OLD METHODOLOGY)	100511.4	90111.55	190622.95	Y	N	N	N	N
CLARK COUNTY *	320003	NO	SINGLE FMLY (OLD METHODOLOGY)	209020.56	102179.02	311199.58	Y	N	N	N	N
CLARK COUNTY *	320003	NO	SINGLE FMLY (OLD METHODOLOGY)	75552.07	6180.88	81732.95	Y	N	N	N	N
CLARK COUNTY *	320003	NO	SINGLE FMLY (OLD METHODOLOGY)	35502.68	6422.7	41925.38	Y	N	N	N	N
HENDERSON, CITY OF	320005	YES	SINGLE FMLY (OLD METHODOLOGY)	6442.62	4968.19	11410.81	N	N	N	N	Y
HENDERSON, CITY OF	320005	NO	SINGLE FMLY (OLD METHODOLOGY)	9426.19	0	9426.19	Y	N	N	N	N

Community Name	Community Number	Mitigated	Occupancy 1	Cumulative Building Payment	Cumulative Contents Payment	Total Paid	Is NFIP Repetitive Loss Flag	Is NFIP Severe Repetitive Loss Flag	Is FMA Repetitive Loss Flag	Is FMA Severe Repetitive Loss Flag	Not Repetitive Loss Flag
LAS VEGAS, CITY OF	325276	YES	SINGLE FMLY (OLD METHODOLOGY)	10156.76	0	10156.76	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	YES	SINGLE FMLY (OLD METHODOLOGY)	14607.13	0	14607.13	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	YES	OTHR-NONRES (OLD METHODOLOGY)	5381.09	1332	6713.09	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	NO	SINGLE FMLY (OLD METHODOLOGY)	71336.57	34991.86	106328.43	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	YES	SINGLE FMLY (OLD METHODOLOGY)	4820.42	0	4820.42	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	YES	SINGLE FMLY (OLD METHODOLOGY)	6351.69	14378.14	20729.83	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	YES	SINGLE FMLY (OLD METHODOLOGY)	4271.16	408	4679.16	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	NO	OTHR-NONRES (OLD METHODOLOGY)	0	39633.9	39633.9	N	N	N	N	Y
LAS VEGAS, CITY OF	325276	YES	OTHR-NONRES (OLD METHODOLOGY)	103353.28	116445	219798.28	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	YES	OTHR-NONRES (OLD METHODOLOGY)	0	23786.4	23786.4	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	YES	OTHR-NONRES (OLD METHODOLOGY)	0	112460.01	112460.01	Y	Y	N	Y	N
LAS VEGAS, CITY OF	325276	NO	SINGLE FMLY (OLD METHODOLOGY)	17975.75	1893.5	19869.25	Y	N	N	N	N

Community Name	Community Number	Mitigated	Occupancy 1	Cumulative Building Payment	Cumulative Contents Payment	Total Paid	Is NFIP Repetitive Loss Flag	Is NFIP Severe Repetitive Loss Flag	Is FMA Repetitive Loss Flag	Is FMA Severe Repetitive Loss Flag	Not Repetitive Loss Flag
LAS VEGAS, CITY OF	325276	NO	OTHR-NONRES (OLD METHODOLOGY)	57007.85	59843.93	116851.78	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	NO	BUSI-NONRES (OLD METHODOLOGY)	244270.67	54773.56	299044.23	Y	Y	N	Y	N
LAS VEGAS, CITY OF	325276	NO	SINGLE FMLY (OLD METHODOLOGY)	7358.35	0	7358.35	Y	N	N	N	N

HAZUS® Models

HAZUS®, version 6.0, was used to perform the analysis for Clark County using essential facility data for Clark County Office of Emergency Management & Homeland Security. The analysis was completed by CONSTANT Associates. For this hazard, the risk assessment data and maps involved were from an analysis of 1% annual chance flood event (100-Year Flood) and 0.2% annual chance flood event (500-Year Flood).

(SW) Severe Weather (Including Thunderstorms, Lightning, Hail, Wind, and Tornadoes)

Hazard Description

Meteorologists generally define severe weather as any aspect of the weather that poses risk to life and/or property and requires the intervention of authorities. Severe weather can happen at any time, and in any part of the country, and may present itself in a variety of ways. Severe weather usually applies to local, intense, and often damaging storms such as thunderstorms, hailstorms, and tornadoes, but can also describe more widespread events such as tropical systems. This section provides general and historical information about three specific severe weather elements affecting the planning area: Thunderstorms, Lightning, Wind, and Tornadoes.

Thunderstorms

Thunderstorms form when warm, moist air near the Earth's surface is forced upward through some catalyst (convection or frontal weather system). As the air rises, it cools, condenses, and forms cumulonimbus clouds that can reach up to 40,000 feet in altitude. When the rising air reaches its dew point, water droplets (rain) and ice (hail) form and begin falling the long distance through the clouds towards the ground. As the droplets fall, they collide with other droplets and become larger. The falling droplets create a downdraft of air that spreads out at the Earth's surface, resulting in strong, oftentimes damaging winds. The collision of the water and ice particles in the cloud(s) form a large electrical field, discharging as dangerous cloud-to-ground or ground-to-cloud lightning.

There are four ways in which thunderstorms can organize: single cell, multi-cell cluster, multi-cell lines (squall lines), and supercells. The average single-cell thunderstorm develops rapidly, is approximately 15 miles in diameter, and lasts less than 30 minutes at a single location. Multi-cell clusters and multi-cell lines, which can also form relatively quickly, can travel for distances exceeding 600 miles. Supercells are usually associated with severe weather phenomena. Regardless of the type of thunderstorm, warm, humid conditions are most favorable for their development.

A thunderstorm is classified as "severe" by NWS when it contains one or more of the following: hail one inch or greater, winds gusting in excess of 50 knots (57.5 mph), and/or a tornado. In these instances, Severe Thunderstorm Watches or Severe Thunderstorm Warnings will be issued by the national/local weather authorities.

A Severe Thunderstorm Watch is issued by NOAA's Storm Prediction Center when conditions are favorable for severe thunderstorms. A watch can cover parts of a state or several states. A Severe Thunderstorm Warning, on the other hand, is issued by local NOAA NWS Forecast office meteorologists and is specific to a designated area. Warnings, which can cover parts of counties or even several counties, mean severe weather has been reported by spotters or indicated by radar and that there is a serious threat to life and property.

According to NOAA, many hazardous weather events are associated with thunderstorms. Under the right conditions, rainfall from thunderstorms causes flash flooding, which kills more people each year than hurricanes, tornadoes, or lightning. Lightning is responsible for many fires around the world each year and causes fatalities. Hail up to the size of softballs damages cars and windows, and kills livestock caught out in the open. Strong (up to more than 120 mph) straight-line winds associated with thunderstorms knock down trees, power lines and mobile homes. Tornadoes (with winds up to about 300 mph) can destroy all but the best-built man-made

structures.

Lightning

Lightning is one of the more dangerous weather hazards in the United States. The NWS describes lightning as a giant spark of electricity in the atmosphere or between the atmosphere and the ground. As the rapid discharge between positive and negative regions of a thunderstorm, lightning flashes are composed of a series of strokes (with an average of about four). The length and duration of each lightning strike vary, but typically average around 30 microseconds. People and objects can be directly struck by lightning, or damage can occur indirectly when the current (up to 100 million volts of electrical potential) passes through or near them.

Per the NWS, lightning strikes the U.S. about 25 million times a year, killing an average of 51 people and accounting for hundreds of injuries including serious burns. Interestingly, lightning is hotter than the surface of the sun and can reach temperatures around 50,000° Fahrenheit. Lightning is also responsible for millions of dollars of property damage annually, including damage to buildings, communications systems, powerlines, and electrical systems. Moreover, lightning causes forest and brush fires, as well as deaths and injuries to livestock and other animals.

According to the National Lightning Safety Institute (NLSI), lightning triggers more than 26,000 fires in the U.S. each year. The Institute estimates property damage, increased operating costs, production delays, and lost revenue from lightning and secondary effects to be \$6-7 billion dollars/year.

Hail

Hail, which is associated with thunderstorms, forms when updrafts carry raindrops into extremely cold areas of the atmosphere and form ice. The frozen precipitation falls to the ground when it becomes heavy enough to overcome the strength of the updraft. Hailstones can range from the size of a pea to the size of a grapefruit, and they can span a variety of shapes, though most are spherical. They are usually less than two inches in diameter and can fall at speeds of 120 mph.

The largest recorded hailstone in the U.S. was nearly as big as a volleyball and fell on July 23, 2010, in Vivian, South Dakota. It was eight inches in diameter and weighed almost two pounds.

On average, hail causes nearly \$1 billion in damage in the U.S. each year to crops and property including automobiles, aircraft and structures. According to the NOAA's Severe Weather database, there were 6,045 major hailstorms in 2017 resulting in \$1.8 billion in property and crop damage. Hail also poses a safety threat to both humans and animals. In fact, NOAA estimates that 24 people in the U.S. are injured each year with some injuries significant enough to send them to the hospital.

Wind

Naturally occurring, wind is simply moving air that is caused by differences in air pressure within the Earth's atmosphere. Air under high pressure moves toward areas of low pressure. The greater the difference in pressure, the faster the air flows. The definitions of the three wind types addressed in this section, come from the NOAA/NCEI Storm Data Preparation document:

- High Wind: Sustained, non-convective winds of 40 mph or greater lasting for one hour or longer, or winds (sustained or gusts) of 58 mph for any duration on a widespread or localized basis.
- Strong Wind: Non-convective winds gusting less than 58 mph, or sustained winds less than 40 mph, resulting in a fatality, injury, or damage.
- Thunderstorm Wind: Winds, arising from convection (occurring within 30 minutes of

lightning being observed or detected), with speeds of at least 58 mph, or winds of any speed (non-severe thunderstorm winds below 58 mph) producing a fatality, injury, or damage.

- Downbursts, including dry or wet microbursts or macrobursts, are classified as Thunderstorm Wind events. In some cases, the downburst may travel several miles from the parent thunderstorm, or the parent thunderstorm may have dissipated. A gustnado is a small and usually weak whirlwind that forms as an eddy in thunderstorm outflows. It does not connect with any cloud-base rotation and is not a tornado. Since their origin is associated with cumuliform clouds, gustnadoes are classified as Thunderstorm Wind events.

Tornadoes

A tornado is a violent, dangerous, rotating column of air that is in contact with both the surface of the earth and a cumulonimbus cloud or, in rare cases, the base of a cumulus cloud. Often referred to as a twister or a cyclone, they can strike anywhere and with little warning. Tornadoes come in many shapes and sizes but are typically in the form of a visible condensation funnel, whose narrow end touches the earth and is often encircled by a cloud of debris and dust. Tornadoes are usually born in “supercell” thunderstorms and present certain physical signs that include a dark, greenish sky, large hail, and a powerful train-like roar.

Tornadoes have been known to lift and move objects weighing more than three tons, toss homes more than 300 feet from their foundations, and siphon millions of tons of water. However, less spectacular damage is much more common.

Tornadoes can also generate a tremendous amount of flying debris. If wind speeds are high enough, airborne debris can be hurled at buildings with enough force to penetrate windows, roofs, and walls. Most tornado-related injuries or deaths are caused by flying debris.

Violent tornadoes comprise only about two percent of all tornadoes, but they cause 70 percent of all tornado deaths and may last an hour or more. While tornado forecasters cannot provide the same kind of warning that hurricane watchers can, they can do enough to help save lives. Today the average warning time for a tornado alert is 13 minutes.

Until 2007 the Fujita Tornado Scale ranked the severity of tornadoes. The Fujita scale assigned a numerical F value, F0 through F5, based on the wind speeds and estimated damage. Since 2007 the U.S. switched over to the Enhanced Fujita Scale. The altered scale adjusted the wind speed values per F level and introduced a rubric for estimating damage. An EF0 tornado could lightly damage structures to the extent they would become unsafe to use until repaired. An EF1 or larger tornado could destroy the entire neighborhood, town, or city or damage any number of structures to the point where they would be unusable for at least a year.

Location & Extent

Severe weather is common across the U.S., including the State of Nevada. Severe weather is not spatially confined to any particular location in Nevada. Therefore, the entire State of Nevada, including Clark County, is equally at risk of severe weather, namely thunderstorms, lightning, hail, wind, and even tornadoes. Recently, the planning area has seen thunderstorm incidences that can spawn tornadoes. CrisisReady.com mentions that in Nevada, the Spring, summer, and fall temperatures create a climate ideal for storms, including cloudbursts, strong gusty winds,



Data Source: Vaisala U.S. National Lightning Detection Network, 2021 Annual Lightning Report

monsoons, thunderstorms, lightning, and dust storms, and rarely tornadoes and hail storms.

Lightning can strike where it's not raining or even before the rain reaches the ground! The NOAA National Severe Storms Laboratory (NSSL) states most lightning starts inside a thunderstorm and travels through the cloud. It can then stay within the cloud or continue to travel through the open air and eventually to the ground. There are roughly 5 to 10 times as many flashes that remain in the cloud as there are flashes that travel to the ground, but individual storms may have more or fewer flashes reaching the ground.

During a lightning event, Clark County will likely experience numerous adverse impacts, including damage to critical facilities/infrastructure like utilities, residential and commercial buildings/property, and agricultural losses. There is also a risk of fire due to lightning strikes. According to the Vaisala U.S. National

Lightning Detection Network, the total lightning counts per State in the 2021 report indicates the State of Nevada averaged approximately 730,222 cloud-to-ground lightning flashes per year. Related to lightning count, which includes total lightning pulses (in-cloud and cloud-to-ground pulses), Clark County ranked seven out of 15 in the overall county ratings in 2020 (2020 U.S. Lightning Report). The following table describes the Lightning Activity Intensity Levels as defined by the Vaisala U.S. National Lightning Detection Network.

Table 76: Lightning Activity Intensity Levels

Lightning Intensity Levels	
LAL Level	Description
LAL 1	No thunderstorms
LAL 2	Isolated thunderstorms: Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud-to-ground strikes in a 5-minute period.
LAL 3	Widely scattered thunderstorms: Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud-to-ground strikes in a 5-minute period.
LAL 4	Scattered thunderstorms: Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud-to-ground strikes in a 5-minute period.
LAL 5	Numerous thunderstorms: Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud-to-ground strikes in a 5-minute period.

Data Source: Vaisala U.S. National Lightning Detection Network; [The National Weather Service](#)

The State of Nevada Enhanced Hazard Mitigation (2018) mentions hail can occur as part of a severe thunderstorm. Hail develops within a low-pressure front as warm air rises rapidly in the upper atmosphere and is cooled, forming ice crystals. This cycle continues until the hailstone is too heavy to be lifted by the updraft winds and falls to the earth. The higher the temperature at the earth's surface, the stronger the updraft, thereby increasing the amount of time the hailstones

are developed. As hailstones are suspended longer within the atmosphere, they become larger. Other factors impacting the size of hailstones include:

- storm scale wind profile,
- elevation of freezing level,
- and the mean temperature and relative humidity of the downdraft air.

The following image illustrates how to measure hail based on everyday objects:

Data Source: [The National Weather Service](#)

Hailstones of this size can destroy roofs, break windows, damage vehicles, kill livestock, and injure people resulting in significant financial and personal losses. The proceeding table explains the Modified NOAA/TORRO Hailstorm Intensity Scale.

Table 77: Modified NOAA/TORRO Hailstorm Intensity Scale

Modified NOAA/TORRO Hailstorm Intensity Scale				
Code	Intensity Category	Diameter (inches)	Approximate Size	Typical Damage Impacts
H0	Hard Hail	0.00 – 0.33	Pea	No Damage
H1	Potentially Damaging	0.33 – 0.60	Marble/Mothball	Slight damage to crops
H2	Potentially Damaging	0.60 – 0.80	Dime/Grape	Significant damage to crops
H3	Severe	0.80 – 1.20	Nickel to Quarter	Severe damage to crops,

Modified NOAA/TORRO Hailstorm Intensity Scale				
Code	Intensity Category	Diameter (inches)	Approximate Size	Typical Damage Impacts
				damage to glass and plastic, paint and wood scored
H4	Severe	1.20 – 1.60	Half Dollar	Widespread glass damage, vehicle bodywork damage
H5	Destructive	1.26 – 2.00	Silver Dollar to Golf Ball	Damage to tilted roofs, significant risk to personal injury
H6	Destructive	2.00 – 2.40	Egg	Aircraft bodywork dented; brick walls pitted
H7	Very Destructive	2.40 – 3.00	Tennis Ball	Severe roof damage, risk to serious injuries to persons not protected
H8	Very Destructive	3.00 – 3.50	Baseball to Orange	Severe damage to aircraft bodywork
H9	Super Hailstorms	3.50 – 4.00	Grapefruit	Extensive structural damage, risk of severe injury or fatal injuries to persons not protected
H10	Super Hailstorms	4.00+	Softball and up	Extensive structural damage, risk of severe injury or fatal injuries to persons not protected

Data Source: NOAA/TORRO

Wind events (high wind, strong wind, and thunderstorm wind) are typical in Nevada. Since the last MJHMP NOAA/NCEI update (2018), there have been over 500 recorded Wind events (high wind, strong wind, and thunderstorm wind) in the State. The following illustration provides the conversion for integer values of wind speed in knots to mph.

Knots to MPH WindSpeed Conversion

1 Knot = 1.152 MPH 1 MPH = 0.868 Knot

Knots	MPH	Knots	MPH	Knots	MPH	Knots	MPH
1	1	31	36	61	70	91	105
2	2	32	37	62	71	92	106
3	3	33	38	63	73	93	107
4	5	34	39	64	74	94	108
5	6	35	40	65	75	95	109
6	7	36	41	66	76	96	111
7	8	37	43	67	77	97	112
8	9	38	44	68	78	98	113
9	10	39	45	69	79	99	114
10	12	40	46	70	81	100	115
11	13	41	47	71	82	101	116
12	14	42	48	72	83	102	118
13	15	43	50	73	84	103	119
14	16	44	51	74	85	104	120
15	17	45	52	75	86	105	121
16	18	46	53	76	88	106	122
17	20	47	54	77	89	107	123
18	21	48	55	78	90	108	124
19	22	49	56	79	91	109	126
20	23	50	58	80	92	110	127
21	24	51	59	81	93	111	128
22	25	52	60	82	94	112	129
23	26	53	61	83	96	113	130
24	28	54	62	84	97	114	131
25	29	55	63	85	98	115	132
26	30	56	65	86	99	116	134
27	31	57	66	87	100	117	135
28	32	58	67	88	101	118	136
29	33	59	68	89	103	119	137
30	35	60	69	90	104	120	138

Source: Bluehill.org – Knots to MPH WindSpeed Conversion

Therefore, the entirety of Clark County, including all assets in the planning area, can be considered at risk. This includes its entire population (presently 2,265,461), all critical facilities, buildings (commercial, residential, etc.), and infrastructure. Wind observations or measurements are required to determine the probability of wind damage and the estimation of wind energy. To help with the planning, design, and construction of buildings for residential and commercial purposes, as well as mitigation efforts, the American Society of Civil Engineers (ASCE) calculates Average Hazard Wind Scores. The wind speeds correspond with the assigned hazard score with values ranging from one to five, as shown in the following table.

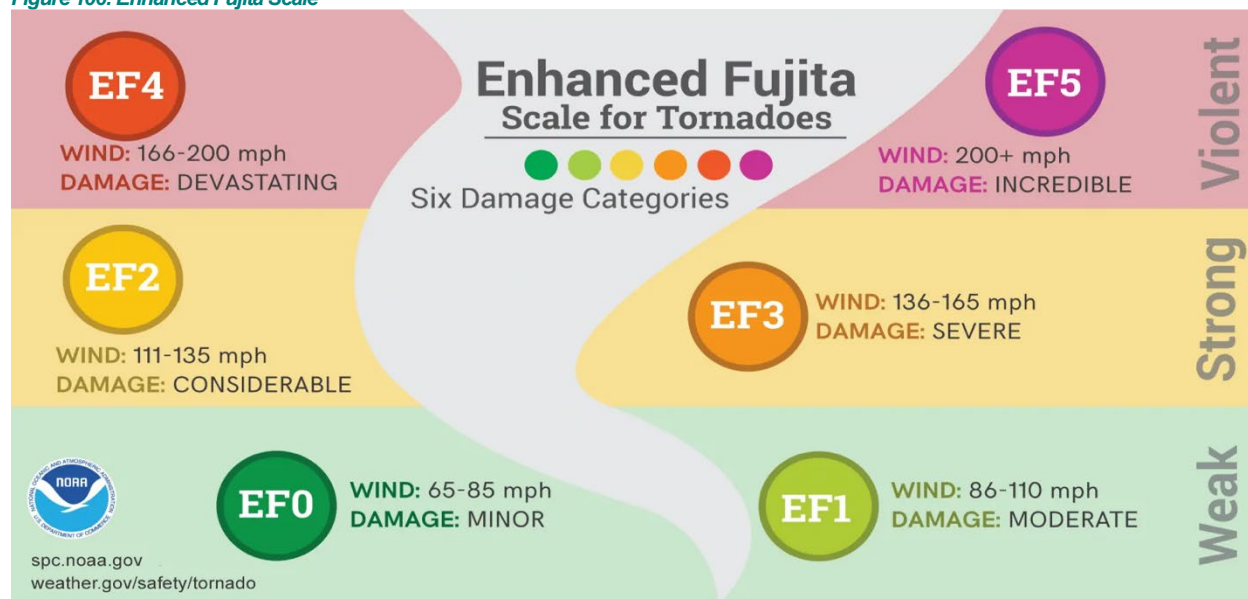
Table 78: ASCE Average Hazard Wind Score (s)

ASCE Average Hazard Wind Scores	
Wind Score (s)	Wind Speeds (mph)
1	<90
2	91-100
3	101-110
4	111-120
5	>120

Data Source: [Vaisala U.S. National Lightning Detection Network](#); [The National Weather Service](#)

Spawned from powerful thunderstorms, Tornadoes are nature’s most violent storms. Tornadoes can cause fatalities and devastate a neighborhood in seconds. Strong downburst (straight-line) winds may also occur due to the same thunderstorm. Hail is commonly found close to tornadoes, as the strongest thunderstorms that spawn tornadoes are formed under atmospheric conditions and are also highly likely to make hail. Every State, including Nevada, is at some risk from this hazard. They can strike anywhere in Clark County and its participating jurisdictions, placing the entire planning area at risk. Some tornadoes are clearly visible, while rain or nearby low-hanging clouds obscure others. Tornadoes develop very quickly and may dissipate just as quickly. Most tornadoes are on the ground for less than 15 minutes. Therefore, the County should expect to experience tornadoes measuring at least EF0 to EF1 on the Enhanced Fujita (EF) Scale, referenced below, but also be prepared for a rare EF3 or worse.

Figure 106: Enhanced Fujita Scale



Data Source: [TexasStormChaser.com](https://www.texasstormchaser.com)

While most severe weather events are limited in their impact, duration, and spatial extent, they remain a hazard of concern in the State of Nevada and the entire planning area. In recent years, severe weather (including thunderstorms, hail, wind, and tornadoes) has become an increased hazard of concern for the planning area. With this shift in mitigation efforts, Clark County MPSC has identified these hazards as a concern and have added them to the plan to include previous occurrences and future probability to identify future mitigation actions related to severe weather in the planning area.

Previous Occurrence, Severe Weather

There has been a history of severe weather (thunderstorms, lightning, hail, wind, and tornadoes) events within Clark County. The following events are summary of the historical events related to this hazard:

- **Thunderstorms, Clark County** – Clark County experienced 270 severe thunderstorm (wind) events between 1963 and 2023. This, on average, is about four severe thunderstorm events per year (4.5/yr.). NOAA/NCEI does not have a specific

classification for thunderstorms. In order to paint a picture of historical occurrences for this event type, heavy rain, and thunderstorms (wind) events were compiled for Clark County from January 1, 2000, to January 31, 2023. According to NOAA/NCEI, there was twenty-one (21) heavy rain event that occurred in this time period for Clark County. Thunderstorm winds, however, turned up more event than heavy rain. NOAA/NCEI reports 158 thunderstorm wind events in Clark County during this particular timeframe. According to NOAA/NCEI, these events caused one (1) death and \$7,061,000 in property damage.

- **Lightning, Clark County** – There were forty-two (42) reported lightning event in Clark County from January 1, 2000 – January 31, 2023. According to NOAA/NCEI, this event five (5) injuries and caused \$3,485,000 in property damage.
- **Hail, Clark County** – Clark County reported forty-two (42) hail events from January 1, 2000 – January 31, 2023, according to NOAA/NCEI. No deaths or injuries, however, \$100,022,000 in property damage were reported from these hail events.
- **Wind, Clark County** – NOAA/NCEI does not have a specific classification for wind. In order to paint a picture of historical occurrences for this event type, strong wind, and high wind events were compiled for Clark County from January 1, 2000, to January 31, 2023. According to NOAA/NCEI, there was 71 strong wind events that occurred in this time period for Clark County. High winds, however, turned up more event than strong wind. NOAA/NCEI reports 71 strong wind events in Clark County during this particular timeframe. According to NOAA/NCEI, these events caused five (5) deaths, injured (24) \$7,008,000 in property damage, and \$100,000 in crop damage.
- **Tornadoes, Clark County** – Clark County reported 2 tornadoes events from January 1, 2000 to January 31, 2023, according to NOAA/NCEI. No damage, injuries, or deaths were reported from these tornado events.

Most recently, the following severe weather events affected the planning area:

- **Thunderstorms:** On July 29, 2022, clean-up efforts were underway in Clark County after a pounding from severe thunderstorms on Thursday night. While they're cleaning up, first responders and the Department of Public Works are also preparing for another round of thunderstorms, county officials said. Friday evening, there's another chance of showers in the valley. (<https://www.ktnv.com/news/clark-county-cleans-up-mess-from-severe-thunderstorms-prepares-for-another-round>)
- **Tornadoes:** A rare tornado warning was issued for part of Nevada Sunday afternoon as a string of thunderstorms rolled into the area. The National Weather Service issued the warning for northeastern Clark County and southeastern Lincoln County until 5:15 p.m. The storm, which was moving northwest of Mesquite, Nevada, was showing rotations that could potentially produce tornados in the area. Videos of 'land spout' tornado(s)' also began circulating online near Littlefield, Arizona, which is about 10 miles north of Mesquite. Residents were asked to seek shelter ahead of the warning. A wind threat is also being monitored for storms moving south from Utah and Lincoln County that could produce damaging winds and heavy rain in Clark County. There is also currently a severe thunderstorm warning issued in the area until 6 p.m. (<https://news3lv.com/news/local/severe-thunderstorms-cause-tornado-warning-to-be-issued-for-northeastern-clark-county>)

Thunderstorm Wind Previous Occurrence

Clark County Thunderstorm Wind

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 173 thunderstorm wind events in Clark County (including its participating jurisdictions and Clark County Unincorporated Area and the Tribal Nation of the Las Vegas Paiute Tribe).

The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the Thunderstorm winds experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 79: Thunderstorm Wind Events, Clark County, NV, NOAA/NCEI Database

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
ALUNITE	8/17/2010	45	0	0	15000	Thunderstorm winds blew a big rig off U.S. Hwy. 95 near the Eldorado Dry Lake Bed.
ALUNITE	7/29/2021	54	0	0	0	After a brief break, another push of monsoon moisture fueled another round of thunderstorms over the Mojave Desert and southern Great Basin. Some storms produced flash flooding, and a couple produced severe wind.
APEX	8/14/1998	63	0	0	0	An intense cluster of thunderstorms produced high winds, locally heavy rain and an impressive lightning display as they rolled through the Las Vegas Valley. Several roofs were blown off mobile homes on east Craig Road in North Las Vegas and gusts up to 72 mph were measured at Apex. Firefighters had to rescue at least five motorists stranded by flash flood waters in the area of Cheyenne Avenue and Las Vegas Boulevard. Lightning strikes damaged several transformers, temporarily cutting electricity to about 7,200 people. Lightning also struck a home in the northwest area of Summerlin causing minor damage.
ARDEN	7/23/2012	54	0	0	0	Another push of monsoon moisture led to more thunderstorms over the Mojave Desert and southern Great Basin. A few storms produced severe weather and/or flash flooding.
ARDEN	7/7/2014	50	0	0	0	This gust occurred at Sierra Vista High School.
ARDEN	7/31/2019	39	0	0	1000	Thunderstorm winds downed two trees at the intersection of Rainbow and Erie in Las Vegas.
ARROWHEAD	6/29/2021	63	0	0	200000	A thunderstorm produced high winds in Moapa and Overton. Five power poles in Overton were snapped, and damage at the fairgrounds included an overturned bank of bleachers at the Rodeo Arena, destruction of six horse stalls and damage to 12 others, damage to barn doors, and an uprooted tree.
ARROWHEAD	7/12/2021	51	0	0	0	Monsoon moisture slowly seeped into the region under the big dome of high pressure which was causing record-breaking temperatures, fueling isolated to

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
						scattered thunderstorms. As the moisture increased, the main thunderstorm impact transitioned from high winds to flash flooding.
ARROWHEAD	7/13/2021	61	0	0	0	Monsoon moisture slowly seeped into the region under the big dome of high pressure which was causing record-breaking temperatures, fueling isolated scattered thunderstorms. As the moisture increased, the main thunderstorm impact transitioned from high winds to flash flooding.
ARROWHEAD	7/27/2022	50	0	0	0	A big push of monsoon moisture immediately followed the excessive heat event, and stormy conditions persisted into August. Several storms produced severe weather and flash flooding.
BRACKEN	9/26/2014	48	0	0	10000	Thunderstorm winds blew a heavy construction barricade into a car, causing significant damage.
BUNKERVILLE	9/8/1998	NP	0	0	20000	Thunderstorm winds caused damage to six homes...including one roof blown away. Also, heavy rain showers produced flash flooding which swept mud and water through several homes.
CALLVILLE BAY	7/3/2011	61	0	0	1000	Thunderstorm winds separated three docks at the Callville Bay marina.
CALLVILLE BAY	7/4/2014	45	0	0	1000	Outflow winds from distant thunderstorms beached two boats, including one house boat.
CALLVILLE BAY	8/22/2016	53	0	0	0	A significant push of monsoon moisture, aided by an approaching upper level trough, brought an outbreak of severe weather and flash flooding.
CALLVILLE BAY	7/26/2018	50	0	0	0	Residual moisture helped fuel spotty thunderstorms over the Mojave Desert. A few storms produced strong winds.
CALLVILLE BAY	8/9/2018	50	0	0	0	Hurricane John triggered a Gulf Surge, bringing scattered thunderstorms to the Mojave Desert, some of which produced severe weather and/or flash flooding.
CALLVILLE BAY	9/5/2019	50	0	0	10000	One boat was swamped, and another was blown into the shore.
CALLVILLE BAY	5/10/2020	30	0	0	20000	Thunderstorm winds capsized a 20-foot boat in Swallow Bay. All 12 people on board were rescued.
CALLVILLE BAY	7/18/2021	43	0	0	1000	Thunderstorm winds grounded a houseboat just outside Callville Bay, necessitating a rescue.
CALLVILLE BAY	8/12/2021	55	0	0	0	Monsoon moisture fueled thunderstorms over the Mojave Desert, many of which produced severe winds and flash flooding.
CAL-NEV-ARI	8/11/1996	52	0	0	0	A thunderstorm wind gust estimated at 60 mph toppled a mature peach tree.
CAL-NEV-ARI	7/12/2002	61	0	0	0	Thunderstorm winds estimated at 70 mph were reported in Cal-Nev-Ari.
CAL-NEV-ARI	8/19/2014	52	0	0	10000	Thunderstorm winds blew down several trees in Cal-Nev-Ari.
Charleston	8/4/1993	78	0	0	0	A thunderstorm produced 78-mph winds, 0.25-inch hail and over 2.00 inches of rain in less than 1 hour at Mt. Charleston.
Cottonwood Cove	6/27/1994	0	0	0	0	A severe thunderstorm produced a peak wind gust of 60 mph in the Cottonwood Cove area of Lake Mead.
COTTONWOOD LNDG	9/1/1997	NP	0	0	10000	Thunderstorms rolling across The Lake Mead National Recreation Area knocked trees down at Cottonwood Cove and dumped heavy rain on Las

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
						Vegas Bay and Callville Bay.
COTTONWOOD LNDG	7/2/2006	50	0	0	0	Dock broken in half by thunderstorm winds.
COTTONWOOD LNDG	7/4/2006	69	0	0	0	One boat dock overturned with a houseboat blown onto it. Numerous reports of significant damage to other docks and boats.
COTTONWOOD LNDG	7/25/2007	52	0	0	0	Thunderstorm winds blew down trees at Cottonwood Cove.
COTTONWOOD LNDG	6/30/2016	56	0	0	0	The first monsoon moisture push of the season led to isolated thunderstorms on the 27th through the 29th, followed by widespread severe weather and flash flooding outbreak on the 30th. The episode continued into July 2nd.
COTTONWOOD LNDG	4/3/2017	56	0	0	0	This gust occurred at Cottonwood Cove.
COTTONWOOD LNDG	7/18/2017	50	0	0	2000	Thunderstorm winds blew down power lines in Cottonwood Cove, and a gust of 58 mph was measured in Searchlight five minutes later.
COTTONWOOD LNDG	9/2/2017	47	0	0	0	Thunderstorms produced strong winds near Cottonwood Cove. A man was killed when he became entangled in the mooring line of a houseboat and dragged under the water.
COTTONWOOD LNDG	7/9/2018	43	0	0	2000	Thunderstorm winds caused minor damage to several trailers, including broken awnings and a broken window due to flying debris.
COTTONWOOD LNDG	8/12/2021	50	0	0	0	Monsoon moisture fueled thunderstorms over the Mojave Desert, many of which produced severe winds and flash flooding.
COTTONWOOD LNDG	9/2/2022	35	1	0	0	A man was swimming near Cottonwood Cove when outflow winds from distant thunderstorms prevented him from making it back to his boat.
CRYSTAL	8/12/2021	58	0	0	0	Monsoon moisture fueled thunderstorms over the Mojave Desert, many of which produced severe winds and flash flooding.
DIKE SIDING	7/9/2018	65	0	0	20000	Several trees and one streetlight blew down. Over 41,000 people were without power.
DIKE SIDING	7/27/2022	52	0	0	100000	Thunderstorms produced a swath of damaging winds across much of the Las Vegas Valley. Trees and power lines were blown down, knocking out power to over 10,000 people in North Las Vegas, and also setting homes on fire.
DRY LAKE	7/12/2012	51	0	0	0	This gust occurred at the Desert National Wildlife Refuge RAWWS.
EAST LAS VEGAS	9/8/2008	43	0	0	15000	Thunderstorm winds damaged carports on two mobile homes and blew down a fence.
EAST LAS VEGAS	7/1/2016	52	0	0	0	Severe weather and flash flooding which began on June 27th with the first monsoon moisture push of the season continued through July 2nd.
EAST LAS VEGAS	8/22/2016	43	0	0	1000	Thunderstorm winds snapped a one-to-two-foot diameter tree at Chaparral High School.
EAST LAS VEGAS	8/2/2017	52	0	0	0	A push of monsoon moisture fueled an outbreak of thunderstorms with severe weather and flash flooding.
EAST LAS VEGAS	7/30/2018	39	0	0	20000	Thunderstorm winds blew trees down onto cars in the intersection of Desert Inn and Cabana.

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
ECHO BAY	7/21/2018	48	0	0	10000	Thunderstorm winds damaged the Echo Bay courtesy dock. This is the same event in which a total of 23 boats were swamped on Lakes Mead, Mohave, and Havasu. Those are documented in Arizona Storm Data.
ERIE	7/17/2017	56	0	0	50000	Approximately 20 trees were blown down, two road signs were damaged, a brick wall and a fence were destroyed, and a wooden structure was destroyed.
GARNET	8/21/2022	61	0	0	0	Persistent moist monsoonal flow fueled scattered thunderstorms over southern Nevada. A few storms produced severe weather.
GOODSPGS	7/18/2015	50	0	0	0	A huge push of monsoon moisture from Hurricane Dolores fueled a major outbreak of flash flooding and severe weather in the Mojave Desert and southern Great Basin.
INDIAN SPGS	7/12/2012	56	0	0	0	This gust occurred at Indian Springs (KINS).
INDIAN SPGS	7/30/2015	61	0	0	0	The Indian Springs ASOS measured a 70-mph gust as well as 1/2 mile visibility in blowing dust.
INDIAN SPGS	7/6/2017	57	0	0	0	Three separate thunderstorm wind gusts, all from different directions, occurred at the Indian Springs (KINS) ASOS. The first was 66 mph at 1642 PST, the second was 60 mph at 1846 PST, and the third was 60 mph at 1916 PST.
INDIAN SPGS	7/10/2017	62	0	0	0	This gust occurred at the Indian Springs ASOS.
INDIAN SPGS	7/25/2021	60	0	0	0	This is a continuation of the July 17-21 Thunderstorms episode, which lasted ten days total.
INDIAN SPGS	9/8/2022	51	0	0	0	Ongoing excessive heat plus a little moisture well ahead of Hurricane Kay fueled isolated thunderstorms over the Mojave Desert. One produced severe weather.
JEAN	7/26/2006	55	0	0	0	Power lines blown down between Primm and Jean.
JEAN	8/23/2013	54	0	0	0	A strong push of monsoon moisture fueled thunderstorms over the Mojave Desert and southern Great Basin for several days, peaking on the 25th. Many storms produced flash flooding, and isolated severe weather also occurred.
JEAN ARPT	7/8/2014	57	0	0	0	This gust occurred 5 miles SW of Jean.
LAUGHLIN	8/9/2012	50	0	8	10000	An eight by 12-foot window was blown out in the Riverside Casino, injuring eight people. Power was also knocked out to residential neighborhoods on the north side of town.
LAUGHLIN	7/1/2015	87	0	0	0	A gust of 73 mph was measured 5 miles WNW of Laughlin, and a gust of 100 mph was measured at the mid-span of the Hoover Dam Bypass Bridge.
LAUGHLIN	7/17/2015	52	0	0	0	A trained spotter estimated thunderstorm winds gusted to 60 mph.
LAUGHLIN	8/26/2016	65	0	0	100000	Trees were blown down, and roofs and siding were damaged in the Laughlin area.
LAUGHLIN	8/11/2018	65	0	0	10000	Thunderstorm winds blew out several windows at the Riverside Hotel and also downed a few trees.

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
LAUGHLIN	9/4/2022	56	0	0	1000	A shed was damaged, and power was knocked out.
LOGANDALE	7/19/1998	52	0	0	0	A weather spotter reported several tree limbs breaking off in thunderstorm winds estimated at 60 mph.
LOGANDALE	8/8/2010	52	0	0	0	A spotter estimated wind gusts to 60 mph, along with pea sized hail and very heavy rain.
LOGANDALE	7/9/2011	45	0	0	40000	Thunderstorm winds blew down four power poles in Logandale, knocking out power to about 500 homes.
LOGANDALE	8/21/2012	50	0	0	2000	Thunderstorm winds blew large rocks into a house and blew down a fence.
LOGANDALE	7/11/2021	48	0	0	5000	Thunderstorm winds blew down multiple trees.
MEAD LAKE	7/14/1996	53	0	0	0	A 61 mph thunderstorm gust was recorded at Echo Bay on Lake Mead. No damage was reported.
MEAD LAKE	7/26/1996	NP	0	0	25000	Strong thunderstorm winds swamped and/or damaged several house boats in the Overton Arm of Lake Mead.
MEAD LAKE	8/9/1997	50	0	0	0	An automated wind sensor at Echo Bay on Lake Mead recorded a gust of 58 mph from thunderstorms over northwest Mohave County, AZ.
MEAD LAKE	9/2/1997	61	0	0	0	The National Park Service reported a wind gust to 70 mph at Callville Bay. Small hail was also observed.
MEAD LAKE	7/19/1998	NP	0	0	1250000	Severe thunderstorms moved into the Las Vegas Valley and nearby Lake Mead bringing wind gusts in excess of 60 mph and heavy showers which dumped between 1.50 and 2.25 inches of rain overnight. Several marinas on Lake Mead suffered extensive wind damage and numerous roads were washed out. In the Las Vegas Valley, heavy rain and flooding produced the majority of damage. Major flooding began in the early morning of July 20 and kept washes filled for several hours with numerous swift water rescues performed during the period. One man apparently died of a heart attack while rescue personnel were trying to remove him from his car. Rapidly accumulating water and a clogged drainage system caused the roof of the Palace Station Hotel and Casino to collapse...causing millions of dollars in damage. A few hours later, the same hotel and casino caught fire when it was struck by lightning.
MEAD LAKE	8/7/1998	NP	0	1	5000	Severe thunderstorms ripped through the Lake Mead National Recreation Area capsizing at least two boats and producing golf ball sized hail near Logandale. A man in a capsized boat at Las Vegas Bay sustained minor injuries and had to be rescued by the Park Service. Six people from another boat near Callville Bay also had to be pulled from the water when their vessel overturned.
MEAD LAKE	8/7/1998	NP	0	0	10000	Severe thunderstorms ripped through the Lake Mead National Recreation Area capsizing at least two boats and producing golf ball sized hail near Logandale. A man in a capsized boat at Las Vegas Bay sustained minor injuries and had to be rescued by the Park Service. Six people from another boat near Callville Bay also had to be pulled from the water when their vessel

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
						overturned.
MEAD LAKE	8/14/1998	NP	0	0	75000	Damaging winds and severe flash flooding ripped through the western part of Lake Mead. Las Vegas Bay Marina's service dock and main access dock were blown apart resulting in approximately 100 gallons of fuel spilled. Callville Bay Marina also sustained substantial damage from the winds. Flash flooding washed out all approved roads near Callville Bay and produced major erosion around culverts along a section of North Shore Road. Washes between Las Vegas Bay and Callville Bay were filled bank-to-bank with up to 16 feet of water. 30 people at Boxcar Wash (near Callville Bay) were temporarily stranded and had to be rescued by Park Rangers due to flash flooding.
MEAD LAKE	8/14/1998	52	0	0	0	Damaging winds and severe flash flooding ripped through the western part of Lake Mead. Las Vegas Bay Marina's service dock and main access dock were blown apart resulting in approximately 100 gallons of fuel spilled. Callville Bay Marina also sustained substantial damage from the winds. Flash flooding washed out all approved roads near Callville Bay and produced major erosion around culverts along a section of North Shore Road. Washes between Las Vegas Bay and Callville Bay were filled bank-to-bank with up to 16 feet of water. 30 people at Boxcar Wash (near Callville Bay) were temporarily stranded and had to be rescued by Park Rangers due to flash flooding.
MEAD LAKE	8/30/1998	61	0	0	1000	The National Park Service reported a 70-mph wind gust and light damage to some boat docks at Las Vegas Bay Marina.
MEAD LAKE	6/24/2000	NP	0	0	10000	A thunderstorm moving through Las Vegas Bay on Lake Mead caused the arm of a dock to break off due to the strong winds and resulting waves.
NELLIS AFB	8/8/1997	52	0	0	0	A brief episode of severe thunderstorms disrupted the afternoon in the Las Vegas Valley. Damaging winds downed power poles and heavy rain caused minor flash flooding. 11,500 homes lost electricity for about four hours and at least one home received minor flood damage. Also, the roof of one home caught fire from a lightning strike but was extinguished before major damage occurred.
NELLIS AFB LAS	7/10/1996	54	0	0	0	Thunderstorm wind gusts to 62 mph were recorded at Nellis AFB.
NELLIS AFB LAS	7/26/1996	50	0	0	0	A 58 mph gust was recorded at Nellis Air Force Base from a nearby thunderstorm. No damage was reported.
NELLIS AFB LAS	7/28/1996	50	0	0	0	Nellis AFB recorded a thunderstorm gust of 58 mph.
NELLIS AFB LAS	8/25/2008	60	0	0	0	Another push of monsoon moisture brought severe thunderstorms and flash flooding to the Mojave Desert.
NELLIS AFB LAS	9/11/2011	52	0	0	0	A spotter estimated 60 mph winds from a thunderstorm.
NELLIS AFB LAS	7/19/2013	62	0	0	2000000	A cluster of severe thunderstorms raked the Las Vegas Valley for over an hour, and also produced widespread flash flooding. Numerous trees were

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
						blown down, including 243 at the Desert Pines Golf Course. Some trees fell onto and damaged buildings and vehicles, and some ripped out gas and water lines as they were uprooted. Numerous power lines blew down, and several buildings were damaged. The peak measured gust occurred at Nellis AFB at the onset of the event.
NELLIS AFB LAS	7/28/2013	55	0	0	0	Mid level dry air pushed in above low-level monsoon moisture, triggering widespread thunderstorms with flash flooding and severe weather.
NELLIS AFB LAS	7/18/2015	50	0	0	0	A huge push of monsoon moisture from Hurricane Dolores fueled a major outbreak of flash flooding and severe weather in the Mojave Desert and southern Great Basin.
NELLIS AFB LAS	8/22/2016	58	0	0	0	Approximately 6900 customers in the area also lost power, although it is unsure whether this was due to wind or lightning.
NELLIS AFB LAS	7/7/2017	53	0	0	0	This gust was measured at Nellis AFB. The fire station door was blown off its track.
NELLIS AFB LAS	7/17/2018	52	0	0	0	After a brief break, another push of monsoon moisture fueled another outbreak of thunderstorms across the Mojave Desert and southern Great Basin. Many storms produced severe weather and flash flooding.
NELLIS AFB LAS	7/19/2018	55	0	0	150000	The peak measured gust occurred at Nellis AFB. Two large trees and several power poles were blown down, trapping people in vehicles on Boulder Highway. There was also roof damage at a mobile home park. Up to 24,000 people were without power.
NELLIS AFB LAS	8/11/2018	65	0	0	150000	Visibility dropped below a quarter mile in dust storm conditions. About 20 trees were blown down, at least one of which landed on a house. At least four power poles were blown down, two carport structures were damaged, shingles were blown off a house, there was damage to the exterior of a casino hotel, and an airplane at Henderson Executive Airport was tipped onto its nose.
Not provided	7/18/1959	0	0	0	0	Not provided.
Not provided	8/25/1959	0	0	0	0	Not provided.
Not provided	8/29/1961	0	0	0	0	Not provided.
Not provided	6/7/1964	80	0	0	0	Not provided.
Not provided	6/26/1964	58	0	0	0	Not provided.
Not provided	5/20/1966	0	0	0	0	Not provided.
Not provided	9/18/1966	51	0	0	0	Not provided.
Not provided	6/30/1968	54	0	0	0	Not provided.
Not provided	8/9/1969	0	0	0	0	Not provided.
Not provided	7/25/1970	50	0	0	0	Not provided.

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
Not provided	7/25/1970	0	0	0	0	Not provided.
Not provided	8/8/1971	50	0	0	0	Not provided.
Not provided	7/16/1972	52	0	0	0	Not provided.
Not provided	5/31/1973	51	0	0	0	Not provided.
Not provided	8/3/1973	87	0	0	0	Not provided.
Not provided	8/20/1973	0	0	0	0	Not provided.
Not provided	7/20/1974	58	0	0	0	Not provided.
Not provided	7/23/1974	50	0	0	0	Not provided.
Not provided	7/27/1975	52	0	0	0	Not provided.
Not provided	9/17/1975	70	0	0	0	Not provided.
Not provided	7/24/1976	52	0	0	0	Not provided.
Not provided	7/26/1976	61	0	0	0	Not provided.
Not provided	7/29/1976	61	0	0	0	Not provided.
Not provided	6/9/1977	55	0	0	0	Not provided.
Not provided	7/24/1977	54	0	0	0	Not provided.
Not provided	8/3/1978	58	0	0	0	Not provided.
Not provided	8/3/1978	52	0	0	0	Not provided.
Not provided	7/23/1980	55	0	0	0	Not provided.
Not provided	7/30/1980	61	0	0	0	Not provided.
Not provided	9/9/1980	0	0	0	0	Not provided.
Not provided	8/9/1981	54	0	0	0	Not provided.
Not provided	8/10/1981	59	0	0	0	Not provided.
Not provided	9/4/1981	58	0	0	0	Not provided.
Not provided	9/10/1982	51	0	0	0	Not provided.
Not provided	9/27/1982	58	0	0	0	Not provided.
Not provided	9/29/1983	60	0	0	0	Not provided.
Not provided	6/30/1984	60	0	0	0	Not provided.
Not provided	6/30/1984	56	0	0	0	Not provided.
Not provided	6/30/1984	51	0	0	0	Not provided.

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
Not provided	7/11/1984	61	0	0	0	Not provided.
Not provided	7/20/1984	61	0	0	0	Not provided.
Not provided	7/20/1984	53	0	0	0	Not provided.
Not provided	7/22/1984	55	0	0	0	Not provided.
Not provided	8/13/1984	56	0	0	0	Not provided.
Not provided	8/13/1984	56	0	0	0	Not provided.
Not provided	7/15/1985	55	0	0	0	Not provided.
Not provided	7/15/1985	56	0	0	0	Not provided.
Not provided	9/27/1985	0	2	0	0	Not provided.
Not provided	5/21/1986	0	0	0	0	Not provided.
Not provided	8/24/1986	52	0	0	0	Not provided.
Not provided	7/28/1987	61	0	0	0	Not provided.
Not provided	9/4/1987	50	0	0	0	Not provided.
Not provided	9/4/1987	52	0	0	0	Not provided.
Not provided	11/5/1987	59	0	0	0	Not provided.
Not provided	8/8/1989	101	0	0	0	Not provided.
Not provided	8/17/1989	75	0	0	0	Not provided.
Not provided	9/3/1990	0	1	1	0	Not provided.
Not provided	10/19/1990	87	0	0	0	Not provided.
Not provided	10/19/1990	0	0	0	0	Not provided.
Not provided	8/21/1992	65	0	0	0	Not provided.
Not provided	8/30/1992	52	0	0	0	Not provided.
Not provided	7/18/1994	0	0	10	50000000	A monsoonal flow fueled scattered severe thunderstorms over southern Clark County. The thunderstorms produced strong winds and heavy rain in Pahrump, Overton, Henderson, Nellis Air Force Base, and Las Vegas. The strongest wind gust of 78 mph was at Nellis Air Force Base and was also the fastest wind speed ever recorded at that site. Numerous structures were damaged in Henderson, Pahrump, and the Las Vegas metropolitan area. Several small airplanes were damaged at local airports, with one plane totally destroyed. A \$4 million sign belonging to the Las Vegas Hilton was destroyed. Debris from the sign fell on several cars, causing some damage, but no injuries. However, flying debris from broken windows and damaged structures did cause numerous minor injuries throughout the Las Vegas

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
						metropolitan area. Two hundred thousand people were without power after the storm, some for over 48 hours.
OVERTON	9/5/1997	NP	0	0	1000	Strong winds from a thunderstorm caused minor damage and peeled shingles from the roof of a Park Service facility at Overton Beach on Lake Mead.
OVERTON	8/1/2004	61	0	0	0	The National Park Service at Echo Bay reported an estimated sustained winds of 40 mph with a gust of 70 mph.
OVERTON	7/29/2005	54	0	0	0	62 mph thunderstorm wind gust at Echo Bay.
OVERTON MUNI ARPT	8/13/2015	51	0	0	0	Another push of monsoon moisture fueled thunderstorms over the eastern portions of the Mojave Desert and southern Great Basin. Some storms produced severe weather and flash flooding.
OVERTON MUNI ARPT	7/14/2018	50	0	0	1000	Thunderstorm winds blew down small trees.
OVERTON MUNI ARPT	7/17/2018	43	0	0	10000	Thunderstorm winds damaged a power pole, causing a power outage.
PARADISE	7/29/2022	43	0	0	20000	Thunderstorm winds blew down several trees, some of which blocked roads, landed on cars, and landed on apartment buildings.
PITTMAN	8/7/2008	52	0	0	10000	Several large trees were blown down in the Green Valley section of Henderson. In addition, many smaller tree limbs were broken off, and pea size hail fell.
PITTMAN	9/1/2016	63	0	0	2000	Thunderstorm winds blew down two large mesquite trees near the intersection of Green Valley and Paseo Verde Parkways. Three stations measured gusts of 61 to 73 mph.
PITTMAN	7/19/2017	35	0	0	10000	Thunderstorm winds blew a tree down through the roof of a house. Gusts were estimated at 30-50 mph.
PITTMAN	9/1/2019	68	0	0	10000	Multiple trees were blown down around the Las Vegas Valley. The peak measured gust occurred near Sam Boyd Stadium.
RED ROCK CANYON	7/1/2016	50	0	0	0	Severe weather and flash flooding which began on June 27th with the first monsoon moisture push of the season continued through July 2nd.
RIVERSIDE	9/9/1998	50	0	0	0	The Laughlin Fire Department reported wind gusts up to 58 mph from a nearby thunderstorm.
RIVERSIDE	7/10/2011	52	0	0	15000	A thunderstorm wind gust blew over a semi-truck on Interstate 15 just south of Exit 112.
ROACH	7/20/2018	65	0	0	0	After a brief break, another push of monsoon moisture fueled another outbreak of thunderstorms across the Mojave Desert and southern Great Basin. Many storms produced severe weather and flash flooding.
SANDY	6/29/2021	50	0	0	0	A push of monsoon moisture fueled thunderstorms over southern Nevada. Several storms produced severe winds and flash flooding.
SANDY	7/25/2021	52	0	0	0	This is a continuation of the July 17-21 Thunderstorms episode, which lasted ten days total.
Searchlight	8/4/1993	60	0	0	0	A thunderstorm produced a gust of 60 mph in Searchlight.

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
SEARCHLIGHT	9/9/1998	52	0	0	0	A weather spotter estimated thunderstorm wind gusts of 60 mph along with six-tenths (0.60) of an inch of rain in less than 30 minutes.
SLOAN	7/1/2015	53	0	0	2000	Thunderstorm outflow winds blew down one tree and split another in half.
SLOAN	8/2/2018	51	0	0	0	Southerly flow pulled moisture into the Desert Southwest, fueling thunderstorms over the Mojave Desert. Many storms produced flash flooding and/or severe weather.
SUNRISE MANOR	6/14/2015	43	0	0	2000	Thunderstorm winds blew out a 7-11 sign at Nellis and Stewart.
VICTORY VLG	8/13/2015	54	0	0	400000	A wooden fence, an awning, a large metal billboard, several trees, and 27 power poles were blown down. Minor roof damage also occurred.
VICTORY VLG	8/19/2022	43	0	0	1000	Thunderstorm winds blew down a tree.
VLY SIDING	7/25/2021	59	0	0	50000	Lawn furniture was destroyed, a security camera was damaged, a mesquite tree fell on a truck, and 14,000 customers lost power.
WANN	7/15/2012	52	0	0	0	A spotter estimated a 60-mph wind gust from the same thunderstorm which produced large hail.
WANN	7/25/2018	43	0	0	2000	Two trees were blown down on the CSN Cheyenne campus.
WANN	7/12/2021	51	0	0	10000	Tree limbs were damaged just east of the Strip, and 7500 customers lost power in North Las Vegas.

Data Source: NOAA/NCEI Storm Events Database

Boulder City Thunderstorm Wind

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 21 thunderstorm wind events in the City of Boulder City. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the Thunderstorm winds experienced by Boulder City, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 80: Thunderstorm Wind Events, Boulder City, NV, NOAA/NCEI Database

me	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
BOULDER CITY	8/10/1997	79	0	0	75000	Intense thunderstorm winds pummeled Boulder City uprooting and snapping numerous trees. The golf course alone reported 40 trees down. The Boulder City airport recorded a peak wind gust of 91 mph.
BOULDER CITY	9/9/1998	50	0	0	0	Thunderstorms moving north across the Las Vegas Valley produced 58 mph winds at the Boulder City airport and damaged some construction signs and roof tiles in the southwest part of Las Vegas.
BOULDER CITY	8/16/2000	NP	0	0	10000	Strong thunderstorm winds blew the roof off of a house in Boulder City.
BOULDER CITY	8/27/2010	61	0	0	300000	An anemometer at the Las Vegas Boat Harbor measured a gust to 70 mph before failing. Several docks, including floating docks and a fueling dock, were damaged, and at least two private boats were damaged.
BOULDER CITY	7/10/2011	52	0	0	100000	Thunderstorm winds broke apart two docks and damaged 20 vehicles, primarily by lofting gravel which broke out windshields.
BOULDER CITY	7/8/2014	50	0	0	50000	Thunderstorm winds over Lake Mead triggered swells up to eight feet that sank at least one vessel. 11 people had to be rescued.
BOULDER CITY	8/14/2014	52	0	0	5000	Thunderstorm winds damaged floating docks at the Las Vegas Boat Harbor.
BOULDER CITY	6/30/2016	51	0	0	5000	Roofing material was torn from a condo 2 miles NNE of Boulder City, and a 59-mph gust was measured at Callville Bay.
BOULDER CITY	8/17/2016	51	0	0	0	Another push of monsoon moisture brought isolated severe weather and flash flooding.
BOULDER CITY	10/3/2018	52	0	0	0	Two sensors measured wind gusts to 60 and 58 mph.

me	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
BOULDER CITY	9/1/2019	65	0	0	10000	The peak gust occurred at 2313 PST. Several houseboats broke loose from their anchors and were pushed onshore, and a floating bathroom was pushed into a dock.
BOULDER CITY	7/12/2021	51	0	0	0	Monsoon moisture slowly seeped into the region under the big dome of high pressure, which was causing record-breaking temperatures, fueling isolated to scattered thunderstorms. As the moisture increased, the main thunderstorm impact transitioned from high winds to flash flooding.
BOULDER CITY	7/25/2021	61	0	0	0	This is a continuation of the July 17-21 Thunderstorms episode, which lasted ten days total.
BOULDER CITY ARPT	8/28/1997	50	0	0	0	A peak wind of 58 mph was recorded at the Boulder City Airport along with small hail and very heavy rain.
BOULDER CITY ARPT	7/28/2013	43	0	0	2000	Thunderstorm outflow winds knocked down two trees in Boulder City.
BOULDER CITY ARPT	8/6/2015	50	0	0	0	A push of monsoon moisture fueled thunderstorms over the Mojave Desert and southern Great Basin. Some storms produced flash flooding and severe weather.
BOULDER CITY ARPT	7/10/2017	50	0	0	0	This gust occurred at the Boulder City Airport.
BOULDER CITY ARPT	8/29/2020	53	0	0	0	A sliver of mid level moisture and instability moved in, triggering a few elevated thunderstorms above hot and dry low level air. One storm produced a severe downburst.
BOULDER CITY ARPT	2/13/2021	50	0	0	0	A fast moving low pressure system brought high winds to portions of the Mojave Desert. These winds were locally enhanced by thunderstorms in the Las Vegas Valley.
BOULDER CITY ARPT	7/11/2021	57	0	0	0	Monsoon moisture slowly seeped into the region under the big dome of high pressure, which was causing record-breaking temperatures, fueling isolated to scattered thunderstorms. As the moisture increased, the main thunderstorm impact transitioned from high winds to flash flooding.
BOULDER JCT	7/28/2013	43	0	0	1000	Thunderstorm outflow winds damaged a vehicle by yanking the door out of the owner's hand, bending the hinge.
BOULDER JCT	7/16/2022	54	0	0	0	A push of monsoon moisture fueled an outbreak of thunderstorms across the Mojave Desert. Some storms produced severe weather and flash flooding.

Henderson Thunderstorm Wind

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 14 thunderstorm wind events in the City of Henderson. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the Thunderstorm winds experienced by Henderson, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 81: Thunderstorm Wind Events, Henderson, NV, NOAA/NCEI Database

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
HENDERSON	7/10/1996	NP	0	0	75000	Microburst winds, estimated at over 60 mph, swept through the vicinity of Black Mountain Golf Course downing many mature trees and several power poles. At least two homes lost parts of their roofs and numerous homes lost shingles or roof tiles. Also, three new homes being framed were knocked down along with several fences and signs.
HENDERSON	7/15/1996	NP	0	0	15000	Thunderstorm winds damaged at least one roof and downed a few trees in the Green Valley area of Henderson.
HENDERSON	8/16/1996	52	0	0	0	A weather spotter estimated thunderstorm winds at 60 mph in the Green Valley area of Henderson. No damage was reported.
HENDERSON	7/28/1997	NP	0	0	5000	Thunderstorms rolling through the Las Vegas Valley produced lightning and winds which interrupted power to approximately 4,100 people for a few hours. Also, locally heavy rain caused street flooding and water filled drainages. One car had to be pulled out of water at an underpass.
HENDERSON	8/10/1997	52	0	0	1000	A skywarn spotter reported large broken tree branches from thunderstorm winds estimated at 60 mph.
HENDERSON	8/10/1997	NP	0	0	15000	Damaging thunderstorm winds downed a 40 foot tree and snapped several power poles leaving up to 9,000 people in Henderson without electrical power for several hours.
HENDERSON	8/10/1997	70	0	0	0	A Skywarn spotter reported winds estimated at 80 mph.
HENDERSON	8/24/1998	52	0	0	0	A thunderstorm developing over the McCullough Range, just south of Green Valley, turned severe as it rolled into Henderson. The Henderson police department reported wind gusts up to 60 mph. Brief heavy rain produced pooling water up to 6 inches deep in some intersections and at the underpass of Lake Mead Drive and Interstate 515. About 3,000 homes and businesses also lost electricity for an hour or two.
HENDERSON	9/8/1998	NP	0	0	2000	A severe thunderstorm rapidly developed over the south end of the Las Vegas Valley and moved north focusing damaging winds and heavy rain mainly across the eastern half of the metro area. High winds toppled trees in Henderson and downed power lines which blocked both north and southbound lanes of Interstate 15 for about 40 minutes just north of the Warm Springs overpass. Rainfall amounts of 0.75 to 1.20 inches fell in less than 30 minutes in many locations producing widespread street flooding and

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
						full washes. Flooding also caused minor damage to some homes in Henderson.
HENDERSON	9/8/1998	70	0	0	0	Wind measuring equipment at the Henderson Executive Airport recorded wind gusts of at least 80 mph. Air traffic control personnel temporarily evacuated the airport tower, but no damage was reported.
HENDERSON	7/12/2002	60	0	0	0	Not provided.
HENDERSON	8/10/2006	50	0	0	0	Numerous trees were blown over near the intersection of Interstate 215 and Stephanie St. Minor flooding also occurred.
HENDERSON	7/7/2014	50	0	0	0	The first seasonal push of monsoon moisture fueled an outbreak of thunderstorms across the Mojave Desert and southern Great Basin. Many storms produced severe weather and flash flooding.
HENDERSON	6/28/2016	43	0	0	1000	Thunderstorm winds destroyed an outdoor gazebo.

Las Vegas Thunderstorm Wind

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 40 thunderstorm wind events in the City of Las Vegas. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the Thunderstorm winds experienced by Las Vegas, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 82: Thunderstorm Wind Events, Las Vegas, NV, NOAA/NCEI Database

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
(LAS)MCCARRAN/LAS VE	6/30/2016	61	0	0	50000	Thunderstorm winds blew down a carport, blew down a large mesquite tree which landed on a house, destroyed fireworks stand, and blew an awning down onto several vehicles.
LAS VEGAS	8/8/1997	NP	0	0	20000	A brief episode of severe thunderstorms disrupted the afternoon in the Las Vegas Valley. Damaging winds downed power poles and heavy rain caused minor flash flooding. 11,500 homes lost electricity for about four hours and at least one home received minor flood damage. Also, the roof of one home caught fire from a lightning strike but was extinguished before major damage occurred.
LAS VEGAS	8/8/1997	50	0	0	0	A brief episode of severe thunderstorms disrupted the afternoon in the Las Vegas Valley. Damaging winds downed power poles and heavy rain caused minor flash flooding. 11,500 homes lost electricity for about four hours and at least one home received minor flood damage. Also, the roof of one home caught fire from a lightning strike but was extinguished before major damage occurred.

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
LAS VEGAS	8/9/1997	NP	0	0	75000	Severe thunderstorms rolled across the western part of Las Vegas producing damaging winds and hail. Several power poles were snapped along Charleston Blvd., a trailer was destroyed and signs and roofs in the area received damage from both the wind and hail. 19,000 homes lost power for a few hours. The storms also produced local street flooding with rainfall amounts up to 0.73 inches in 15 minutes.
LAS VEGAS	7/19/1998	53	0	0	0	Severe thunderstorms moved into the Las Vegas Valley and nearby Lake Mead bringing wind gusts in excess of 60 mph and heavy showers which dumped between 1.50 and 2.25 inches of rain overnight. Several marinas on Lake Mead suffered extensive wind damage and numerous roads were washed out. In the Las Vegas Valley, heavy rain and flooding produced the majority of damage. Major flooding began in the early morning of July 20 and kept washes filled for several hours with numerous swift water rescues performed during the period. One man apparently died of a heart attack while rescue personnel were trying to remove him from his car. Rapidly accumulating water and a clogged drainage system caused the roof of the Palace Station Hotel and Casino to collapse...causing millions of dollars in damage. A few hours later, the same hotel and casino caught fire when it was struck by lightning.
LAS VEGAS	7/24/1998	56	0	0	0	A severe thunderstorm formed near Sloan and moved north into the Las Vegas Valley. Lightning from the storm struck five rescue personnel as they rendered aid to occupants of an overturned truck along Interstate 15 near Sloan. As the storm moved north, outflow winds estimated at 65-70 mph were observed by a NWS meteorologist near Lake Mead Drive and Interstate 15. Before dissipating, the thunderstorm produced another lightning strike which set fire to an apartment building in Henderson.
LAS VEGAS	8/7/1998	53	0	0	0	Not provided.
LAS VEGAS	8/14/1998	57	0	0	0	An intense cluster of thunderstorms produced high winds, locally heavy rain and an impressive lightning display as they rolled through the Las Vegas Valley. Several roofs were blown off mobile homes on east Craig Road in North Las Vegas and gusts up to 72 mph were measured at Apex. Firefighters had to rescue at least five motorists stranded by flash flood waters in the area of Cheyenne Avenue and Las Vegas Boulevard. Lightning strikes damaged several transformers, temporarily cutting electricity to about 7,200 people. Lightning also struck a home in the northwest area of Summerlin causing minor damage.

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
LAS VEGAS	8/30/1998	NP	0	0	20000	High winds knocked down several power lines as thunderstorms rolled across the Las Vegas Valley. Brief power outages resulted throughout the city.
LAS VEGAS	9/8/1998	NP	0	0	3000	A severe thunderstorm rapidly developed over the south end of the Las Vegas Valley and moved north focusing damaging winds and heavy rain mainly across the eastern half of the metro area. High winds toppled trees in Henderson and downed power lines which blocked both north and southbound lanes of Interstate 15 for about 40 minutes just north of the Warm Springs overpass. Rainfall amounts of 0.75 to 1.20 inches fell in less than 30 minutes in many locations producing widespread street flooding and full washes. Flooding also caused minor damage to some homes in Henderson.
LAS VEGAS	9/9/1998	NP	0	0	2000	Thunderstorms moving north across the Las Vegas Valley produced 58 mph winds at the Boulder City airport and damaged some construction signs and roof tiles in the southwest part of Las Vegas.
LAS VEGAS	5/24/2000	57	0	0	15000	Severe thunderstorms developed across the Las Vegas valley through the afternoon. Strong wind gusts were reported with the Las Vegas ASOS reporting a wind gust of 64 mph and a wind gust of 66 mph recorded at the NWS Las Vegas. Several trees were blown down and power outages were reported in Primm, Jean, and Goodsprings, NV. A sign was also blown over on the south end of the strip and visibility was reduced to near zero in blowing dust.
LAS VEGAS	8/19/2003	45	0	0	25000	Winds gusting to 50 mph blew down several trees in northwest Las Vegas. Visibility was reduced to below a quarter mile due to the blowing dust and debris.
LAS VEGAS	7/10/2011	56	0	1	200000	A severe thunderstorm developed near downtown Las Vegas and moved through North Las Vegas. The ASOS at North Las Vegas Airport (KVGX) measured a gust to 64 mph. At least two trees were blown down, one onto a house; numerous power poles and lines were blown down; and one child suffered minor injuries when part of a roof blew off an apartment building, flew into the building next door, and broke two windows and damaged four doors.
LAS VEGAS	9/13/2011	43	0	0	10000	Thunderstorm winds knocked down power lines in downtown Las Vegas.
LAS VEGAS	6/28/2016	48	0	0	1000	Thunderstorm winds destroyed one palm tree, damaged two others, and threw a glass table into a pool.
LAS VEGAS	7/24/2018	43	0	0	2000	Two large trees were blown down.
LAS VEGAS	7/29/2021	51	0	0	0	After a brief break, another push of monsoon moisture fueled another round of thunderstorms over the Mojave Desert and southern Great Basin. Some storms produced flash flooding, and a couple produced severe wind.

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
LAS VEGAS HNDRSN SKY	8/23/2009	50	0	0	3000	The Henderson Airport AWOS measured a 58 mph wind gust at 527 PM. 13 minutes later, the same thunderstorm blew down three 15-foot tall mesquite trees at the intersection of Pecos and Pebble.
LAS VEGAS HNDRSN SKY	8/26/2010	40	0	0	5000	A carport on a mobile home was damaged.
LAS VEGAS HNDRSN SKY	7/3/2011	54	0	0	1000000	Thunderstorm winds caused damage in a large area of the Las Vegas Valley. The AWOS at Henderson Executive Airport measured a gust to 62 mph. The storm also blew over several mobile homes, blew down numerous trees (one of which damaged a car), blew down several power poles and lines, causing power outages for at least 10,000 people, and destroyed at least one firework stand.
LAS VEGAS HNDRSN SKY	8/11/2017	59	0	0	0	A weak push of monsoon moisture triggered isolated thunderstorms over the Mojave Desert. A few storms produced severe weather and flash flooding.
LAS VEGAS HNDRSN SKY	7/20/2018	62	0	0	1400000	Dozens of trees were blown down, at least one of which caused significant damage to a vehicle; at least six power poles and power lines were blown down; there was significant damage to a large shopping center sign; damage to a garage door; and significant damage to the Henderson Pavilion.
LAS VEGAS HNDRSN SKY	8/16/2018	50	0	0	0	Southerly flow pulled moisture into the Mojave Desert, fueling scattered thunderstorms. Some storms produced severe weather and/or flash flooding.
LAS VEGAS HNDRSN SKY	6/14/2019	56	0	0	0	Weak low pressure following on the heels of very hot weather produced spotty thunderstorms across the Mojave Desert and southern Great Basin for several days. A couple of storms produced severe winds.
LAS VEGAS HNDRSN SKY	7/22/2021	55	0	0	200000	Damage occurred from south of Green Valley northward up Boulder Highway, and included numerous trees down, six to eight power poles down, major power lines down, and at least one parking awning damaged.
LAS VEGAS HNDRSN SKY	9/10/2021	64	0	0	0	A small push of monsoon moisture fueled isolated thunderstorms over southern Nevada. Isolated severe winds and lightning injuries occurred.
LAS VEGAS HNDRSN SKY	7/14/2022	35	0	0	1000	Thunderstorm winds uprooted a large tree.
LAS VEGAS MC CARRAN	9/9/2004	58	0	0	0	Not provided.
LAS VEGAS N AIR TERM	8/10/1997	52	0	0	0	An off-duty NWS meteorologist reported a 60 mph wind gust with pea-sized hail one inch deep on the ground.
LAS VEGAS N AIR TERM	8/7/1998	55	0	0	40000	Damaging winds from a nearby thunderstorm overturned two small planes at the North Las Vegas Airport and knocked down a few

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
						power poles at the intersection of Craig Road and Rancho Drive.
LAS VEGAS N AIR TERM	4/8/2013	52	0	0	20000	Thunderstorm winds blew the roof off a hangar at the North Las Vegas Airport.
LAS VEGAS N AIR TERM	7/20/2013	60	0	0	25000	At least three trees were blown down, a patio cover was blown off a home, a hanging sign was torn from a traffic light, and 6300 customers lost power.
LAS VEGAS N AIR TERM	7/28/2013	43	0	0	1000	Thunderstorm winds blew down a 20-foot-tall palm tree.
LAS VEGAS N AIR TERM	8/18/2013	50	0	0	0	Monsoon moisture began to return to the Mojave Desert, fueling thunderstorms. Some storms produced flash flooding and severe weather.
LAS VEGAS N AIR TERM	9/26/2014	55	0	0	0	This gust occurred at the North Las Vegas airport.
LAS VEGAS N AIR TERM	9/26/2014	48	0	0	3000	Thunderstorm winds broke off numerous small tree limbs, blew in the door of a business, and uprooted a large tree.
LAS VEGAS N AIR TERM	9/13/2017	62	0	0	0	Winds gusted to 63 mph one mile SE of Lone Mountain and 71 mph two miles NNW of Centennial Hills.
LAS VEGAS N AIR TERM	2/13/2021	63	0	0	100000	The peak measured gust occurred at North Las Vegas Airport. Around the Valley, screens at a drive-in theater were blown down and into the road, a traffic pole was blown down, a carport was caved in, a metal shed was blown out of a yard into the road and destroyed, and numerous large tents were damaged at a swap meet.
LAS VEGAS N AIR TERM	8/11/2022	56	0	0	0	These gusts occurred at the North Las Vegas Airport and at Allegiant Stadium.

Data Source: NOAA/NCEI Storm Events Databases

Mesquite Thunderstorm Wind

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded six (6) thunderstorm wind events in the City of Mesquite. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the Thunderstorm winds experienced by Mesquite, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 83: Thunderstorm Wind Events, Mesquite, NV, NOAA/NCEI Database

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
MESQUITE	9/9/1998	52	0	0	0	Thunderstorm wind gusts of 60 mph were reported by a weather spotter in Mesquite.
MESQUITE	8/2/2005	55	0	0	0	Not provided.
MESQUITE	7/28/2006	61	0	0	0	Not provided.
MESQUITE	2/3/2008	65	0	0	0	A spotter in Mesquite recorded a peak wind of 75 mph during a thunderstorm.
MESQUITE	4/29/2019	43	0	0	1000	Thunderstorm winds downed a large tree near Horizon Blvd and Falcon Glenn Drive in Mesquite.
MESQUITE	7/13/2021	43	0	0	1000	Thunderstorm winds blew a tree into a road.

Data Source: NOAA/NCEI Storm Events Database

North Las Vegas Thunderstorm Wind

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded four (4) thunderstorm wind events in the the City of North Las Vegas. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the Thunderstorm winds experienced by North Las Vegas, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 84: Thunderstorm Wind Events, North Las Vegas, NV, NOAA/NCEI Database

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
NORTH LAS VEGAS	8/14/1998	NP	0	0	50000	An intense cluster of thunderstorms produced high winds, locally heavy rain and an impressive lightning display as they rolled through the Las Vegas Valley. Several roofs were blown off mobile homes on east Craig Road in North Las Vegas and gusts up to 72 mph were measured at Apex. Firefighters had to rescue at least five motorists stranded by flash flood waters in the area of Cheyenne Avenue and Las Vegas Boulevard. Lightning strikes damaged several transformers, temporarily cutting electricity to about 7,200 people. Lightning also struck a home in the northwest area of Summerlin causing minor damage.
NORTH LAS VEGAS	7/17/2006	50	0	0	0	Not provided.
NORTH LAS VEGAS	7/28/2006	62	0	0	0	Recorded before the equipment was destroyed.
NORTH LAS VEGAS	7/28/2022	62	0	0	2000	Multiple large trees were blown down.

Data Source: NOAA/NCEI Storm Events Database

Tribal Nation – Moapa Band of Paiutes/Moapa Unincorporated Area of Clark County Thunderstorm Wind

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded six (6) thunderstorm wind events in the Tribal Nation – Moapa Band of Paiutes/ Moapa Unincorporated Area of Clark County. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the Thunderstorm winds experienced by Tribal Nation – Moapa Band of Paiutes/ Moapa Unincorporated Area of Clark County, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 85: Thunderstorm Wind Events, Moapa Band of Paiutes/Moapa Unincorporated Area of Clark County, NV, NOAA/NCEI Database

Location	Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
MOAPA	9/8/1998	NP	0	0	140000	Approximately 15 homes and trailers were severely damaged by thunderstorm winds estimated at 80 to 90 mph. Flash flooding also occurred and caused some roadway erosion.
MOAPA	7/27/2007	61	0	0	0	A push of monsoon moisture brought thunderstorms with flash flooding and severe weather to the Mojave Desert and Southern Great Basin from July 24th through the 30th.

Data Source: NOAA/NCEI Storm Events Database

Hail Previous Occurrence Events

Clark County Hail

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded forty-six (46) hail events Clark County (which include Clark County Unincorporated Areas, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation). The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the Hail experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Note: The NOAA/NCEI Storm events database did not have any incidences of storm data records related to hail for the City of North Las Vegas and the Moapa Band of Paiutes from January 1, 1950 – May 31, 2023. Therefore, the City of North Las Vegas and the Moapa Band of Paiutes' Probability of Future Events is included with the Clark County information.

Table 86: Hail Events, Clark County, NV, NOAA/NCEI Database

Location	Date	Extent in Inches	Deaths	Injuries	Property Damage	Extent/Impact Description
ALLIANCE	6/30/1994	1.75	0	0	0	A severe thunderstorm produced a peak wind gust of 60 mph in the Cottonwood Cove area of Lake Mead.
ARDEN	8/18/2016	0.88	0	0	0	Another push of monsoon moisture brought isolated severe weather and flash flooding.
BLUE DIAMOND	5/18/2015	1	0	0	0	Quarter size hail fell for 15 minutes.
BLUE DIAMOND	6/30/2016	0.88	0	0	0	The first monsoon moisture push of the season led to isolated thunderstorms on the 27th through the 29th, followed by widespread severe weather and flash flooding outbreak on the 30th. The episode continued into July 2nd.
BLUE DIAMOND	7/29/2018	0.88	0	0	0	The last push of moisture in July triggered scattered thunderstorms over the Mojave Desert. Some storms produced severe weather and flash flooding.
BRACKEN	7/7/2011	0.88	0	0	0	A citizen posted a report of nickel size hail near the intersection of Sahara and Hualapai to WFO Las Vegas' Facebook page.
BRACKEN	7/15/2012	1.25	0	0	50000000	Hail up to 1.25 inches in diameter fell in a swath from Summerlin to North Las Vegas. According to a local body shop, ten thousand insurance claims were filed for hail damage to vehicles.
BRACKEN	9/26/2014	0.75	0	0	0	Public reported 3/4 hail at Charleston and Fort Apache.
Cal-Nev-Ari	9/4/1994	1	0	0	0	A severe thunderstorm dropped one-inch hail and 0.71 inches of rain.
CAL-NEV-ARI	7/28/2006	0.75	0	0	0	Reported in Laughlin.
CHARLESTON PARK	7/30/2016	0.88	0	0	0	Dime to nickel size hail fell from Mount Charleston to Mary Jane Falls.

Location	Date	Extent in Inches	Deaths	Injuries	Property Damage	Extent/Impact Description
CHARLESTON PARK	7/24/2017	0.75	0	0	0	A big push of monsoon moisture fueled an outbreak of thunderstorms over the Desert Southwest. Many storms in the Mojave Desert produced flash flooding and severe weather.
COTTONWOOD LNDG	10/5/2015	1.25	0	0	0	A strong upper-level low fueled thunderstorms over the Mojave Desert. Many storms produced flash flooding, and isolated severe weather also occurred.
COTTONWOOD LNDG	10/21/2018	0.88	0	0	0	A Pacific low-pressure system pulled up a plume of subtropical moisture, triggering thunderstorms over the Mojave Desert. One storm produced hail.
CRYSTAL	5/7/2016	0.88	0	0	0	Hail up to nickel size covered the ground near the travel plaza at I-15 Exit 75.
ECHO BAY	9/22/2016	0.88	0	0	0	A cold front passing through the Mojave Desert brought a band of thunderstorms well ahead of it, and strong winds with dust storm conditions immediately ahead of it.
GARNET	8/11/2018	1	0	0	0	Hurricane John triggered a Gulf Surge, bringing scattered thunderstorms to the Mojave Desert, some of which produced severe weather and/or flash flooding.
GARNET	8/21/2022	1	0	0	0	Persistent moist monsoonal flow fueled scattered thunderstorms over southern Nevada. A few storms produced severe weather.
GOODSPGS	8/24/2013	1	0	0	0	A strong push of monsoon moisture fueled thunderstorms over the Mojave Desert and southern Great Basin for several days, peaking on the 25th. Many storms produced flash flooding, and isolated severe weather also occurred.
INDIAN SPGS	7/27/2006	0.88	0	0	0	Nickel size hail on U.S. Highway 95.
LAUGHLIN	2/15/2012	0.75	0	0	0	Penny size hail fell for five minutes.
LAUGHLIN	8/18/2016	0.75	0	0	0	Another push of monsoon moisture brought isolated severe weather and flash flooding.
LOGANDALE	8/7/1998	1.75	0	0	0	Severe thunderstorms ripped through the Lake Mead National Recreation Area capsizing at least two boats and producing golf ball sized hail near Logandale. A man in a capsized boat at Las Vegas Bay sustained minor injuries and had to be rescued by the Park Service. Six people from another boat near Callville Bay also had to be pulled from the water when their vessel overturned.
LOGANDALE	7/25/2005	0.75	0	0	0	Dime size hail and estimated 60-70 mph winds 5 miles north of Valley of Fire State Park.
LOGANDALE	10/18/2015	1.25	0	0	0	An upper-level low pressure system brought a round of thunderstorms to the Mojave Desert and southern Great Basin. Significant flash flooding occurred, along with isolated severe weather.
MEAD LAKE	8/28/1997	0.75	0	0	0	A park ranger reported dime-sized hail just north of Las Vegas Bay along North Shore Road.
MOUNT CHARLESTON	7/31/2015	0.25	0	0	1000	A large amount of small hail fell in the upper portion of Lee Canyon, accumulating on the ground like snow. Two hikers were stranded on the

Location	Date	Extent in Inches	Deaths	Injuries	Property Damage	Extent/Impact Description
						Bristlecone Trail.
MOUNTAIN SPGS	7/26/2006	0.75	0	0	0	Dime size hail reported at Lee Canyon.
NELLIS AFB	9/11/1998	1.75	0	0	0	Severe thunderstorms pounded the Las Vegas Valley and Lake Mead for a few hours producing golf ball size hail, a small tornado and widespread flash flooding. Large hail began falling shortly before 11 am PST and numerous hail reports came in for the next couple hours with some episodes causing damage to several automobiles. A small tornado tore the roof off a Henderson warehouse and destroyed a large block wall at a service station a short distance away. Heavy rain fell mainly on the east side of the metro area with amounts up to 1.85 inches in a two-hour period. As a result, flash flooding filled streets and washes and trapped several motorists although no serious injuries occurred. The heavy rain damaged about one acre of the 750-acre Sunrise Landfill and carried significant amounts of debris into the Las Vegas wash. The Clark County School District activated the shelter-in-place" policy for school children at approximately 30 schools around the area. Children were not bussed home until after flooding had subsided."
NELLIS AFB	9/11/1998	1.75	0	0	0	Severe thunderstorms pounded the Las Vegas Valley and Lake Mead for a few hours producing golf ball size hail, a small tornado and widespread flash flooding. Large hail began falling shortly before 11 am PST and numerous hail reports came in for the next couple hours with some episodes causing damage to several automobiles. A small tornado tore the roof off a Henderson warehouse and destroyed a large block wall at a service station a short distance away. Heavy rain fell mainly on the east side of the metro area with amounts up to 1.85 inches in a two-hour period. As a result, flash flooding filled streets and washes and trapped several motorists although no serious injuries occurred. The heavy rain damaged about one acre of the 750 acre Sunrise Landfill and carried significant amounts of debris into the Las Vegas wash. The Clark County School District activated the shelter-in-place" policy for school children at approximately 30 schools around the area. Children were not bussed home until after flooding had subsided."
NELSON	5/9/2011	1	0	0	0	Personnel at the Nevada Solar One power plant reported one inch hail.
Not provided	9/16/1961	1.25	0	0	0	Not provided
Not provided	7/7/1980	1.75	0	0	0	Not provided
Not provided	7/7/1980	1.75	0	0	0	Not provided
Not provided	9/27/1983	0.75	0	0	0	Not provided
Not provided	8/25/1984	0.75	0	0	0	Not provided
Not provided	8/25/1984	0.75	0	0	0	Not provided
Not provided	11/5/1987	1	0	0	0	Not provided

Location	Date	Extent in Inches	Deaths	Injuries	Property Damage	Extent/Impact Description
Not provided	11/5/1987	1	0	0	0	Not provided
Not provided	3/30/1992	0.75	0	0	0	Not provided
RED ROCK CANYON	9/7/2014	0.88	0	0	0	Hail up to nickel size was estimated at Charleston and 215.
RED ROCK CANYON	7/29/2018	1	0	0	0	The last push of moisture in July triggered scattered thunderstorms over the Mojave Desert. Some storms produced severe weather and flash flooding.
RIVERSIDE	8/8/2010	1	0	0	20000	Large hail dented several cars on Interstate 15. The hail size is an estimate and may be underestimated considering the nature of damage reported.
RIVERSIDE	5/9/2011	0.75	0	0	0	A motorcyclist on Interstate 15 reported hail up to penny size.
RIVERSIDE	3/13/2021	1	0	0	0	A driver on Interstate 15 posted a short video of estimated one inch diameter hail occurring on the freeway.
SEARCHLIGHT	9/23/2019	1.75	0	0	0	A driver on Highway 95 reported golf ball size hail.
WANN	9/11/2011	1	0	0	0	Monsoon moisture and an upper-level low fueled thunderstorms over the Mojave Desert. Several storms produced severe weather and flash flooding.
WINCHESTER	8/25/2008	0.75	0	0	0	Penny size hail fell at the intersection of Commerce and Charleston near downtown Las Vegas.

Data Source: NOAA/NCEI Storm Events Database

Boulder City Hail

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded six (6) hail events the City of Boulder City. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the Hail experienced by Boulder City, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 87: Hail Events, Boulder City, NV, NOAA/NCEI Database

Location	Date	Extent in Inches	Deaths	Injuries	Property Damage	Extent/Impact Description
BOULDER CITY	6/28/1994	1.5	0	0	0	A severe thunderstorm produced golf ball-sized hail and strong winds in Boulder City.
BOULDER CITY	8/28/1997	0.75	0	0	0	Dime-sized hail was observed by a storm spotter in Boulder City.
BOULDER CITY	7/3/2009	1	0	0	0	A push of monsoon moisture triggered scattered thunderstorms over the Mojave Desert. A few storms produced severe weather and flash flooding.
BOULDER CITY	9/16/2011	0.75	0	0	0	A slow moving upper level low and monsoon moisture fueled thunderstorms over the Mojave Desert. Many storms produced flash flooding and severe weather.
BOULDER JCT	6/30/2016	2	0	0	50000000	One-to-two-inch hail fell in a swath across the Las Vegas Valley. Numerous vehicles were damaged.
BOULDER CITY ARPT	4/12/2020	1	0	0	0	One inch hail covered Highway 95 about 8 miles south of the Highway 93 interchange.

Data Source: NOAA NCEI Storm Events Database

Henderson Hail

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded thirteen (13) hail events the City of Henderson. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the Hail cexperienced by Henderson, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 88: Hail Events, Henderson, NV, NOAA/NCEI Database

Location	Date	Extent in Inches	Deaths	Injuries	Property Damage	Extent/Impact Description
HENDERSON	8/8/1997	0.75	0	0	0	A brief episode of severe thunderstorms disrupted the afternoon in the Las Vegas Valley. Damaging winds downed power poles and heavy rain caused minor flash flooding. 11,500 homes lost electricity for about four hours and at least one home received minor flood damage. Also, the roof of one home caught fire from a lightning strike but was extinguished before major damage occurred.
HENDERSON	8/8/1997	0.75	0	0	0	A brief episode of severe thunderstorms disrupted the afternoon in the Las Vegas Valley. Damaging winds downed power poles and heavy rain caused minor flash flooding. 11,500 homes lost electricity for about four hours and at least one home received minor flood damage. Also, the roof of one home caught fire from a lightning strike but was extinguished before major damage occurred.
HENDERSON	8/10/1997	0.75	0	0	0	A skywarn spotter reported dime-sized hail in Henderson.
HENDERSON	8/10/1997	0.75	0	0	0	An off-duty NWS meteorologist reported dime-sized hail.
HENDERSON	9/12/1999	0.88	0	0	0	Nickel sized hail was briefly observed by a weather spotter in the Green Valley area of Henderson.
HENDERSON	9/9/2004	0.75	0	0	0	An off duty NWS meteorologist recorded 3 quarter inch hail in Henderson.
HENDERSON	8/2/2005	0.75	0	0	0	Not provided
HENDERSON	8/14/2005	1.75	0	0	0	Not provided
HENDERSON	8/14/2005	0.75	0	0	0	Not provided
HENDERSON	8/27/2010	0.88	0	0	0	Dime to nickel size hail fell for a few minutes.
HENDERSON	7/20/2013	1.75	0	0	0	A large push of monsoon moisture triggered an extended period of thunderstorms across the Mojave Desert and southern Great Basin. Many storms produced flash flooding and severe weather.
HENDERSON	5/18/2015	0.88	0	0	0	An unseasonable low pressure system moving overhead helped trigger scattered thunderstorms over the Mojave Desert. Two of the storms produced large hail.
HENDERSON	8/18/2016	0.75	0	0	0	Another push of monsoon moisture brought isolated severe weather and flash flooding.

Las Vegas Hail

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded twenty-eight (28) hail events the City of Las Vegas. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the Hail experienced by the City of Las Vegas, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 89: Hail Events, Las Vegas, NV, NOAA/NCEI Database

Location	Date	Extent in Inches	Deaths	Injuries	Property Damage	Extent/Impact Description
(LAS)MCCARRAN/LAS VE	7/10/1996	0.75	0	0	0	Dime size hail was reported in Lee Canyon which is in the Spring Mountains west of Las Vegas.
LAS VEGAS	7/14/1996	0.75	0	0	0	Dime size hail was reported in Kyle Canyon.
LAS VEGAS	7/28/1996	0.75	0	0	0	A weather spotter in the Summerlin area of Las Vegas reported 3/4 inch hail.
LAS VEGAS	8/16/1996	1.75	0	0	0	The Nevada Division of Forestry reported golf ball size hail at Kyle Canyon in the Spring Mountains.
LAS VEGAS	8/16/1996	1.75	0	0	0	Golf ball size hail fell at Boulder Beach in the Lake Mead National Recreation Area.
LAS VEGAS	8/9/1997	1.75	0	0	0	Severe thunderstorms rolled across the western part of Las Vegas producing damaging winds and hail. Several power poles were snapped along Charleston Blvd., a trailer was destroyed and signs and roofs in the area received damage from both the wind and hail. 19,000 homes lost power for a few hours. The storms also produced local street flooding with rainfall amounts up to 0.73 inches in 15 minutes.
LAS VEGAS	8/9/1997	1	0	0	25000	Severe thunderstorms rolled across the western part of Las Vegas producing damaging winds and hail. Several power poles were snapped along Charleston Blvd., a trailer was destroyed and signs and roofs in the area received damage from both the wind and hail. 19,000 homes lost power for a few hours. The storms also produced local street flooding with rainfall amounts up to 0.73 inches in 15 minutes.
LAS VEGAS	8/10/1997	0.88	0	0	0	A weather spotter reported nickel-sized hail stones along Charleston Blvd. between Rainbow and Decatur.
LAS VEGAS	9/11/1998	0.75	0	0	0	Severe thunderstorms pounded the Las Vegas Valley and Lake Mead for a few hours producing golf ball size hail, a small tornado and widespread flash flooding. Large hail began falling shortly before 11 am PST and numerous hail reports came in for the next couple hours with some episodes causing damage to several automobiles. A small tornado tore the roof off a Henderson warehouse and destroyed a large block wall at a service station a short distance away. Heavy rain

Location	Date	Extent in Inches	Deaths	Injuries	Property Damage	Extent/Impact Description
						fell mainly on the east side of the metro area with amounts up to 1.85 inches in a two-hour period. As a result, flash flooding filled streets and washes and trapped several motorists although no serious injuries occurred. The heavy rain damaged about one acre of the 750-acre Sunrise Landfill and carried significant amounts of debris into the Las Vegas wash. The Clark County School District activated the shelter-in-place" policy for school children at approximately 30 schools around the area. Children were not bussed home until after flooding had subsided."
LAS VEGAS	9/11/1998	0.75	0	0	0	Severe thunderstorms pounded the Las Vegas Valley and Lake Mead for a few hours producing golf ball size hail, a small tornado and widespread flash flooding. Large hail began falling shortly before 11 am PST and numerous hail reports came in for the next couple hours with some episodes causing damage to several automobiles. A small tornado tore the roof off a Henderson warehouse and destroyed a large block wall at a service station a short distance away. Heavy rain fell mainly on the east side of the metro area with amounts up to 1.85 inches in a two-hour period. As a result, flash flooding filled streets and washes and trapped several motorists although no serious injuries occurred. The heavy rain damaged about one acre of the 750 acre Sunrise Landfill and carried significant amounts of debris into the Las Vegas wash. The Clark County School District activated the shelter-in-place" policy for school children at approximately 30 schools around the area. Children were not bussed home until after flooding had subsided."
LAS VEGAS	9/11/1998	0.75	0	0	0	Severe thunderstorms pounded the Las Vegas Valley and Lake Mead for a few hours producing golf ball size hail, a small tornado and widespread flash flooding. Large hail began falling shortly before 11 am PST and numerous hail reports came in for the next couple hours with some episodes causing damage to several automobiles. A small tornado tore the roof off a Henderson warehouse and destroyed a large block wall at a service station a short distance away. Heavy rain fell mainly on the east side of the metro area with amounts up to 1.85 inches in a two-hour period. As a result, flash flooding filled streets and washes and trapped several motorists although no serious injuries occurred. The heavy rain damaged about one acre of the 750 acre Sunrise Landfill and carried significant amounts of debris into the Las Vegas wash. The Clark County School District activated the shelter-in-place" policy for school children at approximately 30 schools around the area. Children were not bussed home until after flooding had subsided."
LAS VEGAS	9/11/1998	1.75	0	0	0	Severe thunderstorms pounded the Las Vegas Valley and Lake Mead

Location	Date	Extent in Inches	Deaths	Injuries	Property Damage	Extent/Impact Description
						for a few hours producing golf ball size hail, a small tornado and widespread flash flooding. Large hail began falling shortly before 11 am PST and numerous hail reports came in for the next couple hours with some episodes causing damage to several automobiles. A small tornado tore the roof off a Henderson warehouse and destroyed a large block wall at a service station a short distance away. Heavy rain fell mainly on the east side of the metro area with amounts up to 1.85 inches in a two-hour period. As a result, flash flooding filled streets and washes and trapped several motorists although no serious injuries occurred. The heavy rain damaged about one acre of the 750-acre Sunrise Landfill and carried significant amounts of debris into the Las Vegas wash. The Clark County School District activated the shelter-in-place" policy for school children at approximately 30 schools around the area. Children were not bussed home until after flooding had subsided."
LAS VEGAS	9/11/1998	0.75	0	0	75000	Severe thunderstorms pounded the Las Vegas Valley and Lake Mead for a few hours producing golf ball size hail, a small tornado and widespread flash flooding. Large hail began falling shortly before 11 am PST and numerous hail reports came in for the next couple hours with some episodes causing damage to several automobiles. A small tornado tore the roof off a Henderson warehouse and destroyed a large block wall at a service station a short distance away. Heavy rain fell mainly on the east side of the metro area with amounts up to 1.85 inches in a two-hour period. As a result, flash flooding filled streets and washes and trapped several motorists although no serious injuries occurred. The heavy rain damaged about one acre of the 750 acre Sunrise Landfill and carried significant amounts of debris into the Las Vegas wash. The Clark County School District activated the shelter-in-place" policy for school children at approximately 30 schools around the area. Children were not bussed home until after flooding had subsided."
LAS VEGAS	7/25/2003	0.75	0	0	0	A spotter in Green Valley reported dime sized hail for four minutes.
LAS VEGAS	7/28/2005	0.75	0	0	0	Dime size hail.
LAS VEGAS	8/14/2005	0.75	0	0	0	In Red Rock Canyon.
LAS VEGAS	10/25/2005	1	0	0	0	Dime to quarter size hail.
LAS VEGAS	10/25/2005	1	0	0	0	Dime to quarter size hail.
LAS VEGAS	10/14/2006	0.88	0	0	0	Occurred at the intersection of Flamingo Rd. and Boulder Hwy.
LAS VEGAS	10/11/2012	0.88	0	0	0	A strong low-pressure system combined with lingering monsoon moisture to produce flash flooding and severe weather over the Mojave Desert.

Location	Date	Extent in Inches	Deaths	Injuries	Property Damage	Extent/Impact Description
LAS VEGAS HNDRSN SKY	8/25/2008	0.75	0	0	0	Penny size hail fell at the intersection of Interstate 215 and Green Valley Parkway in Henderson.
LAS VEGAS HNDRSN SKY	10/11/2012	1	0	0	1000	Nickel to quarter size hail was reported by several sources as it tracked from Anthem to East Las Vegas. One car windshield was cracked.
LAS VEGAS HNDRSN SKY	7/5/2013	0.88	0	0	0	A report of nickel size hail near Anthem Pkwy. and Bicentennial Pkwy. was relayed through Twitter.
LAS VEGAS HNDRSN SKY	8/11/2018	1	0	0	0	Hurricane John triggered a Gulf Surge, bringing scattered thunderstorms to the Mojave Desert, some of which produced severe weather and/or flash flooding.
LAS VEGAS N AIR TERM	1/21/2012	0.75	0	0	0	Several reports of pea size hail were received from the northwest part of the Las Vegas Valley. The largest stones were penny size near Lake Mead Blvd. and Rampart Dr.
LAS VEGAS N AIR TERM	7/20/2013	1	0	0	0	A large push of monsoon moisture triggered an extended period of thunderstorms across the Mojave Desert and southern Great Basin. Many storms produced flash flooding and severe weather.
LAS VEGAS N AIR TERM	7/6/2015	1	0	0	0	Another push of monsoon moisture fueled more thunderstorms over the Mojave Desert and southern Great Basin. Significant flash flooding and isolated severe weather occurred.
LAS VEGAS N AIR TERM	8/22/2016	1	0	0	0	Three quarter inches to one inch hail fell from Ann and Durango to All American Park.

Data Source: NOAA/NCEI Storm Events Database

Mesquite Hail

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded one (1) hail events the City of Mesquite. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the Hail experienced by Mesquite, including the jurisdictions located within, and is the only source of data accessible.

Table 90: Hail Events, Mesquite, NV, NOAA/NCEI Database

Location	Date	Extent in Inches	Deaths	Injuries	Property Damage	Extent/Impact Description
MESQUITE	8/30/2008	0.75	0	0	0	Monsoon moisture triggered thunderstorms which produced severe weather and flash flooding in the Mojave Desert.

Data Source: NOAA NCEI Storm Events Database

Wind (Strong and High Wind) Previous Occurrences

The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the wind (strong and high wind) hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible.

Note: *The NOAA/NCEI Storm Events Database identifies the location of the wind events within County into the following zones: Northeast Clark County, Western Clark and Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation Area, and Southern Clark County.*

Northeast Clark County High Wind Events

Jurisdictions: Clark County, Mesquite, Moapa River Indian Reservation

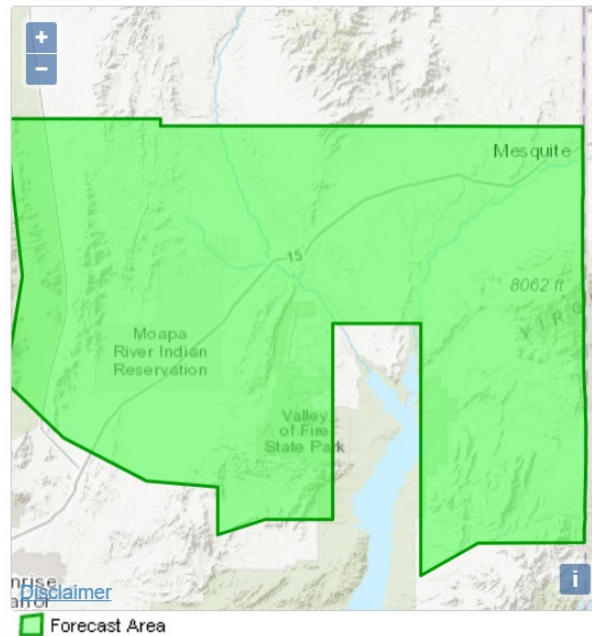


Table 91: High Wind Events, Northeast Clark Zone, NV (Clark County, Mesquite, Moapa River Indian Reservation), NOAA/NCEI Database

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
5/2/2001	47	0	0	0	A strong pressure gradient combined with increasing low level winds caused strong winds across much of southern Nevada.
4/7/2011	52	0	0	5000	Two tents were blown over and damaged at the Clark County Fair and Rodeo in Logandale.
10/11/2021	53	0	0	0	This gust occurred 13 mi SW of Moapa.

Data Source: NOAA NCEI Storm Event Database

Northeast Clark County Strong Wind Events

Jurisdictions: Clark County, Mesquite, Moapa River Indian Reservation

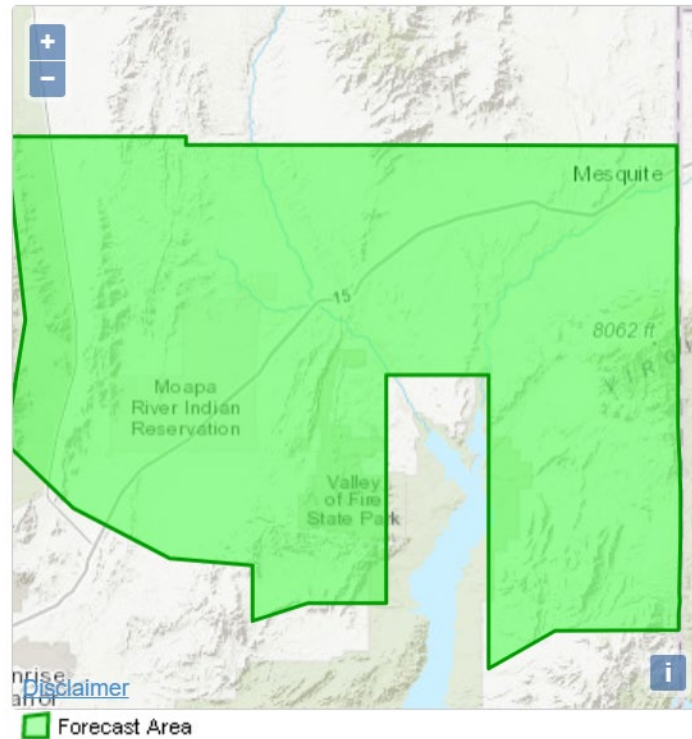


Table 92: Strong Wind Events, Northeast Clark Zone, NV (Clark County, Mesquite, Moapa River Indian Reservation), NOAA/NCEI Database

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
12/25/2008	31	0	0	2000	Strong winds in Mesquite blew over a patio awning and damaged Christmas displays.
4/14/2009	48	0	0	5000	Strong winds 2 miles SSE of Logandale destroyed a 50-yard-long canvas tent with a steel frame.
5/10/2010	35	0	0	5000	Strong winds ripped the roof off a patio in the northeast part of Mesquite.
5/6/2017	39	0	2	1000	Strong winds tossed several canopy tents at a carnival in Mesquite, injuring two people.
4/12/2018	39	0	0	10000	Strong winds destroyed seven vendor tents at the Clark County Fairgrounds in Logandale. The time of occurrence is estimated.
2/2/2020	47	0	0	70000	Seven power poles were blown down in Mesquite, knocking out power to 1275 customers.

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
4/11/2022	39	0	0	15000	Strong winds blew over a big rig on Interstate 15 near Moapa.

Data Source: NOAA NCEI Storm Events Database

Spring Mountain Zone High Wind Events

Jurisdictions: Clark County

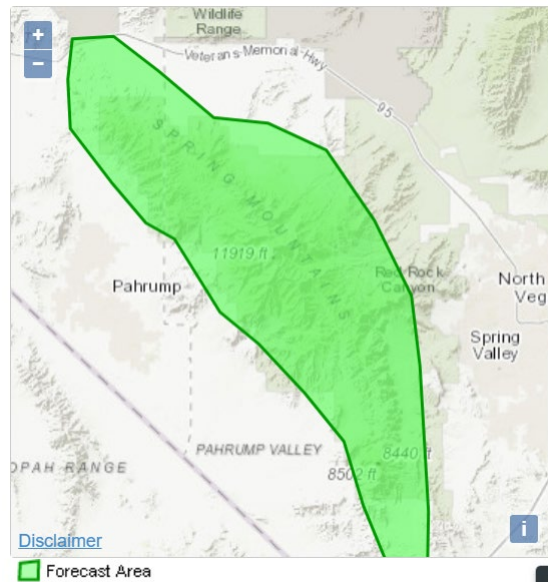


Table 93: High Wind Events, Spring Mountain Zone, NV (Clark County), NOAA/NCEI Database

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
11/11/2006	51	0	0	0	Occurred at Kyle Canyon, NV.
10/5/2007	57	0	0	0	Occurred 2 miles SSE of Mount Charleston, NV.
12/7/2007	64	0	0	0	A gust to 74 mph was measured 2 miles ESE of Red Rock Canyon.
12/25/2007	50	0	0	0	A measured gust to 58 mph occurred at the Red Rock RAWS.
1/28/2008	58	0	0	0	This gust occurred 1 mile SE of the town of Mount Charleston.

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
1/28/2008	66	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
1/28/2008	51	0	0	0	This gust occurred 5 miles SW of Spring Mountain Ranch.
4/15/2008	57	0	0	0	This gust occurred 1 mile SE of the town of Mount Charleston.
6/4/2008	54	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
12/13/2008	63	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
12/13/2008	55	0	0	0	This gust occurred at Mountain Springs.
3/22/2009	50	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
4/8/2009	50	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
4/14/2009	53	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
4/24/2009	54	0	0	0	This gust occurred 2 miles SE of Mount Charleston.
4/25/2009	63	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
9/30/2009	63	0	0	0	These gusts occurred 1 mile ESE of Red Rock Canyon.
10/4/2009	67	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
12/13/2009	52	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
4/27/2010	50	0	0	0	This gust occurred 2 miles SE of Mount Charleston.
12/19/2010	51	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
12/29/2010	54	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon during a downslope wind event.
2/16/2011	52	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
4/7/2011	67	0	0	0	The peak gust for this event occurred 1 mile ESE of Red Rock Canyon at 1034 PST.
5/29/2011	56	0	0	10000	The co-op observer in the community of Goodsprings reported that the wind destroyed a carport and also picked up loose tin and plywood construction supplies, which caused minor damage to a couple of cars. A mesonet sensor 1 mile ESE of Red Rock Canyon recorded a gust of 64 mph.
1/21/2012	66	0	0	0	The peak measured gust occurred 2 miles SE of Mount Charleston.
3/6/2012	61	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
3/17/2012	62	0	0	0	This gust occurred at the Spring Mountain Youth Camp 3 miles NE of Mount Charleston.
3/26/2012	57	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
4/4/2012	56	0	0	0	This gust occurred 1 mile ESE Red Rock Canyon.
5/25/2012	70	0	0	0	The peak gust during this event occurred 3 miles NE of Mt. Charleston at 1700 PST.
10/23/2012	57	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
11/30/2012	63	0	0	0	This gust occurred 2 miles SE of Mt. Charleston.

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
12/2/2012	65	0	0	0	Multiple sites on the east slopes of the Spring Mountains reported high winds. The peak gust occurred 2 miles SE of Mount Charleston at 1150 PST.
4/8/2013	59	0	0	0	This gust occurred at Mountain Springs.
4/15/2013	53	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
9/25/2013	68	0	0	0	The peak gust was measured 5 miles NW of Goodsprings at 1134 PST.
10/27/2013	82	0	0	10000	The top of a large Ponderosa pine blew off and fell onto a fence on Mt. Charleston, two Porta-Potties were blown over at Spring Mountain Ranch State Park, and power was knocked out to 72 customers in Goodsprings. The peak gust was measured at the Las Vegas Ski and Snowboard Resort at 0700 PST.
12/3/2013	63	0	0	0	The peak gust occurred 1 mile ESE of Red Rock Canyon at 1834 PST.
1/30/2014	54	0	0	0	This gust occurred 3 miles NE of Mount Charleston at 8818 feet.
2/27/2014	52	0	0	0	Downslope winds ahead of the oncoming storm system briefly gusted to 60 mph 1 mile ESE of Red Rock Canyon.
2/28/2014	67	0	0	0	These gusts occurred 3 miles NE of Mt. Charleston.
3/26/2014	53	0	0	0	This gust occurred near Red Rock Canyon.
3/29/2014	70	0	0	0	The peak gust was measured 3 miles NE of Mt. Charleston at 2234 PST on the 29th.
4/22/2014	69	0	0	0	The peak gust was measured 3 miles NE of Mount Charleston at 1234 PST.
5/10/2014	58	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
6/16/2014	50	0	0	2000	High winds knocked a large tree down onto another tree in the old town area of Mount Charleston.
11/2/2015	61	0	0	0	This gust occurred 3 miles NE of the town of Mount Charleston.
11/25/2015	52	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
2/17/2016	62	0	0	0	This gust occurred 3 miles NE of Mount Charleston.
2/18/2016	57	0	0	0	These gusts occurred 1 mile ESE of Red Rock Canyon.
3/28/2016	72	0	0	0	The peak gust was measured 3 miles NE of Mount Charleston.
5/19/2016	62	0	0	0	This gust occurred 3 miles NE of Mount Charleston.
10/2/2016	54	0	0	0	This gust was measured 1 mi ESE of Red Rock Canyon.
10/17/2016	52	0	0	5000	Two large trees and a large limb from a third tree were blown down at Spring Mountain Ranch State Park, and a tin roof also suffered minor damage. The peak gust was measured 1 mile ESE of Red Rock Canyon.
12/16/2016	51	0	0	0	This gust occurred 3 miles ENE of Mount Charleston.
3/5/2017	63	0	0	0	The peak gust occurred 3 miles NE of Mount Charleston.
3/30/2017	71	0	0	0	The peak gust occurred at Red Rock Canyon.
11/16/2017	55	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
12/20/2017	59	0	0	0	The peak gust was measured 1 mile ESE of Red Rock Canyon.
2/18/2018	57	0	0	0	The peak gust was measured 1 mile ESE of Red Rock Canyon.
4/7/2018	50	0	0	0	This gust occurred at Mountain Springs.
4/11/2018	51	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
4/16/2018	69	0	0	0	The peak gust occurred 3 miles NE of Mount Charleston.
2/14/2019	54	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
2/15/2019	51	0	0	0	This gust occurred at Mountain Springs.
1/1/2020	54	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
2/2/2020	59	0	0	10000	Strong winds knocked out power to the town of Mount Charleston.
6/28/2020	63	0	0	0	Several stations in the Spring Mountains reported high winds, with the peak gust measured at Mountain Springs. The high winds also fueled the Mahogany Fire, which ignited on this day and was fully contained on July 7.
5/20/2021	56	0	0	0	These gusts occurred at Red Rock Canyon.
10/11/2021	59	0	0	0	These gusts occurred 1 mi ESE of Red Rock Canyon.
10/18/2021	76	0	0	0	The peak gust was measured at Cold Creek.
10/25/2021	65	0	0	0	This gust was measured 6 mi NE of Mount Charleston.
12/14/2021	63	0	0	0	This gust was measured 6 mi NE of Mount Charleston.
12/14/2021	56	0	0	0	This gust was measured 1 mi ESE of Red Rock Canyon.
2/22/2022	65	0	0	0	This gust occurred 3 miles NE of Mount Charleston.
3/20/2022	57	0	0	0	These winds occurred 1 mile ESE of Red Rock Canyon.
4/11/2022	72	0	0	0	The peak gust was measured 3 miles NE of Mount Charleston.
4/11/2022	66	0	0	1000	A tree fell onto Deer Creek Road at mile marker 4.
4/19/2022	64	0	0	1000	The peak gust was measured 3 miles NE of Mount Charleston. A piece of a large Ponderosa pine snapped off and landed on a Forest Service building.
4/21/2022	78	0	0	0	The peak gust was measured 3 miles NE of Mount Charleston.
5/8/2022	65	0	0	0	The peak measured gust occurred 1 mile ESE of Red Rock Canyon.
5/9/2022	62	0	0	0	These gusts occurred 3 miles NE of Mount Charleston.
10/22/2022	71	0	0	0	The peak gust occurred 3 miles NE of Mount Charleston.
11/7/2022	66	0	0	0	These winds occurred 3 miles NE of Mount Charleston.
11/7/2022	66	0	0	0	These winds occurred 3 miles NE of Mount Charleston.
11/8/2022	83	0	0	0	These winds occurred 3 miles NE of Mount Charleston.

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
12/1/2022	72	0	0	0	These gusts occurred 3 miles NE of Mt. Charleston.
12/10/2022	68	0	0	0	These gusts occurred 3 miles NE of Mt. Charleston. High winds were intermittent during this period.
12/31/2022	68	0	0	0	These gusts occurred 3 miles NE of Mt. Charleston.
2/21/2023	71	0	0	0	The peak gust occurred 3 miles NE of Mount Charleston.
2/28/2023	62	0	0	0	These gusts occurred 3 miles NE of Mount Charleston.
3/4/2023	68	0	0	0	These gusts were measured 3 miles NE of Mount Charleston. High winds occurred intermittently through the period.
3/10/2023	72	0	0	0	These gusts occurred 3 miles NE of Mount Charleston. High winds occurred intermittently during the period.
3/29/2023	63	0	0	0	This wind occurred 3 miles NE of Mount Charleston.
4/3/2023	62	0	0	0	Strong low pressure and an associated cold front brought strong to high southwesterly winds ahead of it and northwesterly winds behind it.

Data Source: NOAA NCEI Storm Events Database

Spring Mountain Zone Strong Wind Events

Jurisdictions: Clark County

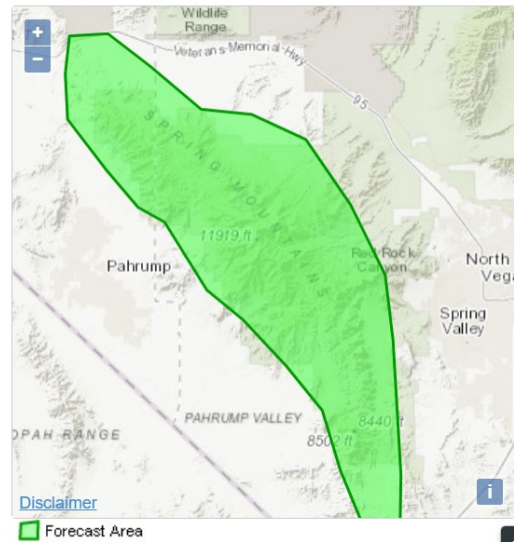


Table 94: Strong Wind Events, Spring Mountain Zone, NV (Clark County), NOAA/NCEI Database

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
11/20/2009	44	0	0	10000	Strong winds knocked out power to much of Mount Charleston. The peak measured gust occurred at Kyle Canyon at 2116 PST.
11/28/2010	43	0	0	5000	A park ranger at the Spring Mountain Ranch State Park reported that wind blew down a large 80-year-old tree, blew several limbs out of other trees, and shook his house.
10/30/2015	32	0	0	1000	A few trees blew down on Highway 157 2 miles ESE of Mt. Charleston. A nearby sensor reported a gust of 37 mph.
1/13/2016	26	0	0	1000	Two dead trees were blown down overnight along Mary Jane Falls Trail west of Mount Charleston. The nearest sensor reported 15 mph wind gusts; based on terrain differences, the winds on the trail were estimated to be 30 mph. The time of occurrence was also estimated.
4/12/2018	43	0	0	5000	Strong winds caused a power outage which affected about 60 people in Goodsprings.
12/24/2021	39	0	0	5000	A combination of heavy rain, heavy wet snow, and strong winds brought down a tree on Mount Charleston, which took out power lines as it fell.

Sheep Mountain Zone High Wind Events

Jurisdictions: Clark County

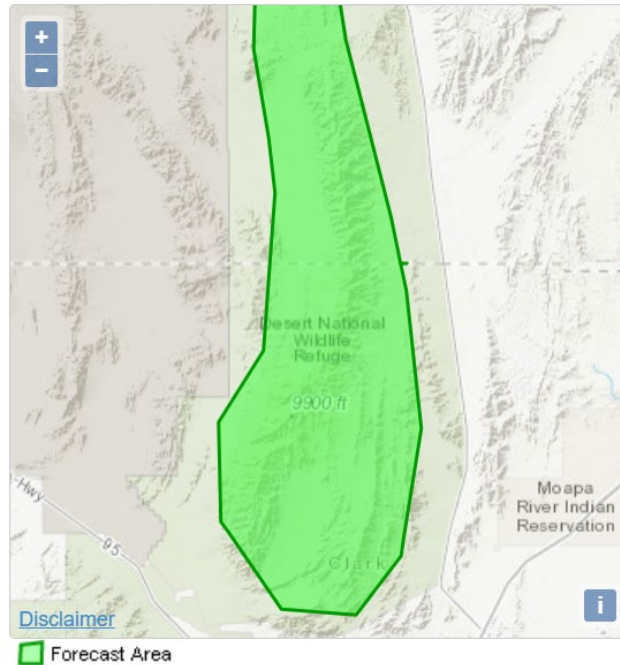


Table 95: High Wind Events, Sheep Mountain Zone, NV (Clark County), NOAA/NCEI Database

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
3/27/2007	64	0	0	0	A gust to 74 mph was measured at the Desert NWR RAWS site (6 miles SSE of Hayford Peak).
5/2/2007	52	0	0	0	A gust to 60 mph was measured by the Desert NWR RAWS (6 miles SSE of Hayford Peak).
6/5/2007	57	0	0	0	A gust to 66 mph was measured by the Desert NWR RAWS (6 miles SSE of Hayford Peak).
10/20/2007	58	0	0	0	A gust to 67 mph was measured by the Desert NWR RAWS (6 miles SSE of Hayford Peak).
12/7/2007	60	0	0	0	A gust to 69 mph was measured 6 miles SSE of Hayford Peak.
12/24/2007	59	0	0	0	Measured gusts to 68 mph and 59 mph occurred 6 miles SSE of Hayford Peak at 8:30 PM and 2:30 AM, respectively.
2/13/2008	68	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.
4/14/2008	60	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
4/30/2008	54	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.
6/4/2008	59	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.
11/15/2008	55	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.
3/4/2009	52	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.
3/22/2009	63	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.
3/26/2009	66	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.
3/29/2009	65	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.
4/14/2009	65	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.
9/30/2009	65	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.
3/31/2010	65	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.
4/4/2010	58	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.
4/5/2010	56	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.
5/9/2010	56	0	0	0	This gust occurred 6 miles SSE of Hayford Peak.
11/27/2017	51	0	0	0	This gust occurred 8 miles SE of Hayford Peak.

Data Source: NOAA NCEI Storm Events Database

Lake Mead/Lake Mohave National Recreational Area Zone High Wind Events

Jurisdictions: Clark County, Boulder City

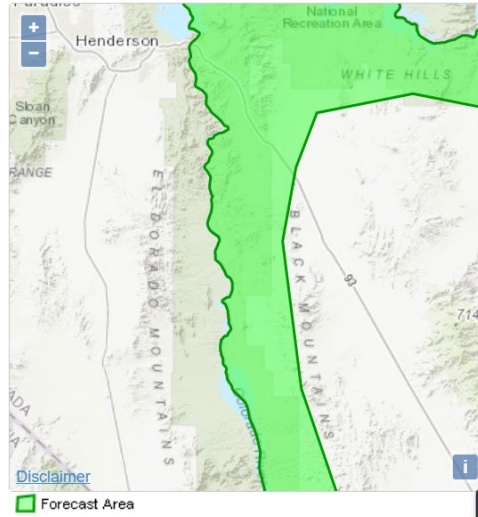


Table 96: High Wind Events, Lake Mead/ Lake Mohave National Recreational Area Zone, NV (Clark County, Boulder City), NOAA/NCEI Database

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
4/4/1997	50	0	0	0	Strong south winds occurred along the Colorado River Valley in advance of a cold front. Repeated gusts exceeding 50 mph were measured by automated sensors with a peak gust of 58 mph reported at Hemenway Launch on Lake Mead.
6/16/1998	61	0	0	15000	Strong northwest winds swept across extreme southern Nevada with a powerful cold front and reached speeds of 70 mph in the Lake Mead Recreation Area. Docks were damaged at Boulder Beach and Temple Bar and several sea and air rescues had to be performed to reach stranded boaters at Lake Mead. Downed trees and power outages were reported in the Las Vegas Valley.
4/15/2002	55	0	1	100000	A strong low pressure system brought high winds to the Lake Mead Recreation Area. Several locations on the Nevada side of the lake reported damage including an overturned houseboat that required rescue operation. One person sustained severe injuries and was taken to a local hospital. Damage included several trees downed, several signs blown over, and shingles blown off homes and park service buildings. Boat docks in the Echo Bay area broke loose and were destroyed.

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
3/6/2012	50	0	0	0	Dust storm conditions reduced visibility to zero along Highway 95 near Eldorado Dry Lake Bed. The Boulder City Airport measured a gust to 58 mph.
5/25/2012	50	0	0	0	This gust occurred at mid-span on the Hoover Dam Bypass.
2/19/2013	50	0	0	0	This gust occurred at mid-span on the Hoover Dam Bypass bridge.
5/10/2014	52	1	0	100000	In the Callville Bay area, damage included 17 house trailer skirts; nine trailer awnings; several trailer roofs; flying debris damage to some vehicles, one houseboat, and a dock; a 25 foot sailboat which was flipped off a trailer; and damage to NV Energy infrastructure. At the Las Vegas Boat Harbor, one dock was pushed 20 feet and the bridge leading to it was damaged. Two other docks and private boats were also damaged. One man was presumed drowned in Lake Mead after high winds blew away his boat and caused waves in the lake.
3/30/2017	56	0	0	0	The peak gust occurred at Cottonwood Cove.
9/8/2020	54	0	0	0	These winds were measured 3 miles SW of Laughlin.
10/25/2020	51	0	0	0	This gust occurred 2 miles SW of Laughlin.

Data Source: NOAA NCEI Storm Events Database

Lake Mead/Lake Mohave National Recreational Area Zone Strong Wind Events

Jurisdictions: Clark County, Boulder City

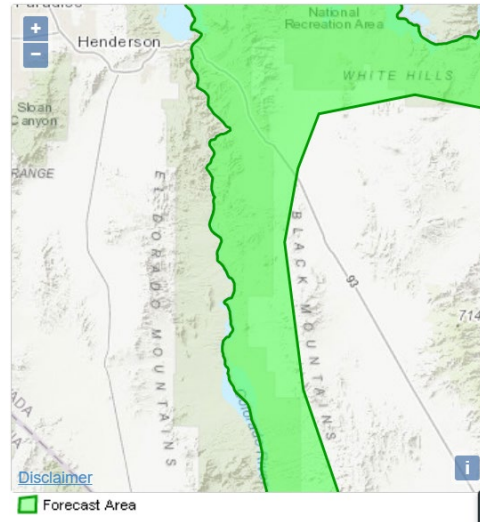


Table 97: Strong Wind Events, Lake Mead/ Lake Mohave National Recreational Area Zone, NV (Clark County, Boulder City), NOAA/NCEI Database

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
5/27/2006	40	1	0	0	One drowning at Lake Mead National Recreation Area. 7YO female, who was not wearing a personal flotation device and did not know how to swim, fell off a raft near Boulder Beach, NV. Strong winds were a contributing factor.
9/19/2007	35	1	0	0	A windsurfer wiped out and drowned in strong winds.
12/25/2008	43	0	0	10000	Strong winds knocked down a large motel sign in Boulder City.
1/9/2009	35	2	0	0	Two men drowned on Lake Mohave when their small boat capsized. Wind gusts between 30 and 40 mph were measured in the area at the time.
4/14/2009	48	0	0	25000	Several boats and boat docks were damaged at the Las Vegas Harbor 5 miles NE of Boulder City.
5/29/2009	43	0	0	35000	Strong winds knocked down four power poles at the intersection of U.S. Hwy. 93 and Ville Drive in Boulder City. 300 people were without power for about four hours.
5/28/2011	40	0	0	90000	Strong winds on Lake Mead capsized and destroyed three boats during the Memorial Day weekend.

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
7/4/2012	43	0	0	100000	Strong outflow winds from rain-cooled air sank or capsized a total of six boats, mainly in the Callville Bay area.
6/24/2018	33	0	3	0	A boat capsized near Lover's Cove in Lake Mead due to a combination of strong winds, high waves, and overloading. All 17 people on board were rescued; three were injured.
10/24/2019	48	0	0	1000	A large tree was blown down at the Laughlin Fire Station.
11/26/2019	43	0	0	1000	Strong winds tore a panel from the Riverside Resort in Laughlin.

Data Source: NOAA NCEI Storm Events Database

Las Vegas Valley Zone High Wind Events

Jurisdictions: Clark County, Boulder City, Las Vegas, North Las Vegas, Henderson, Las Vegas Paiute Tribe

Note: NP = Not Provided

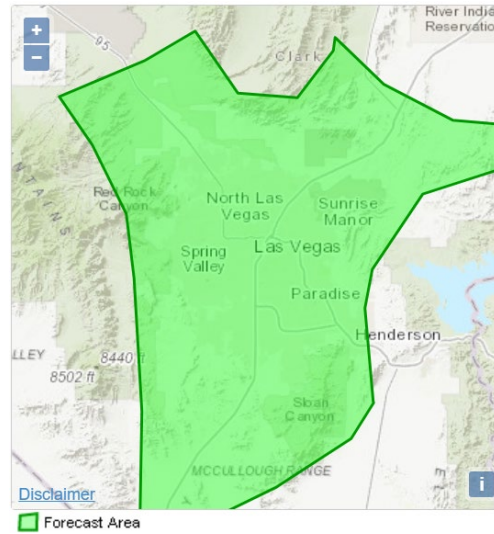


Table 98: High Wind Events, Las Vegas Valley Zone, NV (Clark County, Boulder City, Las Vegas, North Las Vegas, Henderson, Las Vegas Paiute Tribe), NOAA/NCEI Database

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
4/23/1997	NP	0	0	50000	Strong northwest winds behind a vigorous cold front swept across southern Nevada producing gusts exceeding 50 mph. Damage resulted in the Las Vegas Valley with reports of a roof ripped off an apartment complex and a large tent blown down at a golf tournament.
6/16/1998	NP	0	0	5000	Strong northwest winds swept across extreme southern Nevada with a powerful cold front and reached speeds of 70 mph in the Lake Mead Recreation Area. Docks were damaged at Boulder Beach and Temple Bar and several sea and air rescues had to be performed to reach stranded boaters at Lake Mead. Downed trees and power outages were reported in the Las Vegas Valley.
12/20/1998	NP	0	1	15000	A construction trailer was blown over in the northwest part of the Las Vegas Valley trapping two men inside. Winds continued to hamper rescue efforts while the fire department cut the trailer open to free the men. One of the trapped men sustained a minor shoulder injury.
3/20/2000	49	0	0	350000	Not provided
3/20/2000	55	0	0	0	A powerful low-pressure system brought very strong and gusty winds across much of southern Nevada with a storm spotter in Henderson, NV recording a wind gust of 63 mph.
5/10/2000	53	0	0	10000	Not provided

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
12/24/2000	40	0	0	0	A strong cold front pushed through the Great Basin bringing wind gusts of 30 to 40 mph across the Las Vegas valley. A large pine tree was blown down near I-215 and Warm Springs Rd. causing minor traffic delays.
3/11/2001	48	0	1	10000	A strong cold front pushing through southern Nevada helped to develop several thunderstorms north of Las Vegas. Outflow from one storm produced wind gusts up to 55 mph at the Las Vegas airport. One person was injured when a palm tree fell onto her vehicle and several power lines were blown down across town.
5/2/2001	40	0	0	10000	Strong winds across the Las Vegas valley caused a large tree to fall onto two parked cars. A small power outage was also caused by the strong winds.
6/13/2001	47	0	0	0	High winds caused a large tree to fall onto East Desert Inn Road blocking traffic for about an hour.
3/1/2002	59	1	0	100000	A dry cold front pushed through the Las Vegas valley with winds gusting to over 50 mph. A Las Vegas man was killed when strong winds blew his motorcycle into a center concrete median. The motorcycle then struck a light pole throwing the man from his bike killing him instantly. Strong winds over the southern part of the valley blew down power lines which started a fire inside a horse corral, killing three horses. Around town, several trees were snapped, and power lines were downed along with a few homes reporting significant roof damage.
4/15/2002	62	0	4	500000	A strong low-pressure system moved through southern Nevada causing damage throughout the Las Vegas Valley. The first report of high winds came around 11:50 am with gusts over 50 mph at many locations. By 1:00 pm winds were gusting over 70 mph at a few locations with the Las Vegas weather office reporting a wind gust of 69 mph at 1:49 pm. Damage was widespread with many trees uprooted, power lines down, tractor trailers blown over, and several automobile accidents. The high winds also caused the Harrah's kiosk on the Strip to blow over, injuring four tourists. Due to the high winds and blowing dust, McCarran International Airport was shut down to all air operations for approximately two hours with several planes being diverted to other southwestern airports. The high winds also caused extremely unhealthy air qualities and local hospitals were reportedly extremely busy due to people suffering allergies.
4/8/2005	50	0	0	20000	Strong winds were reported throughout the Las Vegas valley with several trees and power lines blown down.
2/27/2007	52	0	0	0	A ham radio antenna and guy wires were snapped, and small tree limbs were broken.
5/2/2007	53	0	0	0	A gust to 61 mph was measured 1 mile E of Red Rock Canyon.
6/5/2007	54	0	0	0	A gust to 62 mph was measured 2 miles ESE of Red Rock Canyon.
6/5/2007	50	0	0	0	Henderson Executive Airport.
10/20/2007	54	0	0	0	Trees were blown down around the Las Vegas Valley. The peak wind at the KLAS ASOS was 62 mph at 8:04 PM PST.
1/5/2008	56	0	0	50000	Localized downslope winds off the Spring Mountains caused damage 10 miles northwest of downtown Las Vegas. Ten homes lost roof tiles; nine of the ten suffered only minor damage. The initial report was winds estimated at 100 mph; however, a NWS meteorologist surveyed

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
					the damage and interviewed several homeowners later the same day, and the consensus was gusts near 65 mph.
2/13/2008	58	0	0	250000	The strongest measured gust occurred at McCarran International Airport (KLAS) at 1900 PST. The airport was closed for a time so that windblown debris could be removed from the runways. A Port-A-Potty blew across the main runway, damaging runway lighting and a parked vehicle. Elsewhere in the valley, a mobile home was blown into a neighboring house, and a large tree crushed a truck. The North Las Vegas Department of Public Works reported 5 street light poles, 8 stop signs, and 3 traffic lights blown down. Many street vendors who were selling Valentine's Day gifts had much of their inventory blown away.
4/15/2008	52	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
6/4/2008	52	0	0	0	This gust occurred at McCarran International Airport in Las Vegas, NV.
6/30/2008	52	0	0	0	This gust occurred at the North Las Vegas airport (KVGT).
12/13/2008	51	0	0	0	This gust occurred at the North Las Vegas airport.
3/22/2009	50	0	0	10000	This gust occurred at the North Las Vegas Airport (KVGT). In addition, gusts estimated at 55 mph knocked down two power poles in North Las Vegas. One pole fell onto and damaged a vehicle.
3/29/2009	58	0	0	0	This gust occurred at Nellis Air Force Base (KLSV).
3/29/2009	51	0	0	0	This gust occurred at McCarran International Airport (KLAS).
4/3/2009	53	0	0	0	This gust occurred at Nellis Air Force Base (KLSV).
4/14/2009	51	0	0	0	This gust occurred at the North Las Vegas Airport (KVGT).
4/14/2009	55	0	0	0	This gust occurred at Nellis Air Force Base (KLSV).
10/4/2009	56	0	0	15000	Several 8–10-foot trees were blown down, and a large sign was destroyed in the extreme southwest corner of the Las Vegas Valley.
12/22/2009	53	0	0	0	This gust occurred at McCarran Airport (KLAS).
3/30/2010	52	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
3/31/2010	53	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
4/5/2010	50	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
4/5/2010	56	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
4/27/2010	53	0	0	0	This gust occurred 1 mile ESE of Red Rock Canyon.
4/28/2010	55	0	0	75000	High winds blew down one light pole and several trees (one of which took out a power pole, knocking out power to at least 300 people), blew several shingles off at least one roof, and destroyed a carport at a condominium complex. The three airports in the valley measured gusts of 50, 54, and 55 knots.
5/10/2010	59	0	0	300000	Three stations reported high winds - 68 mph 1 mile ESE of the Red Rock Canyon Visitors' Center, 61 mph at Nellis AFB, and 61 mph at the Henderson Executive Airport. Broadcast media reported significant damage to the Henderson Pavilion in the Green Valley section of

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
					Henderson. A spotter in Green Valley also reported tree limbs blown down, and a large wooden walking deck blown over.
5/21/2010	58	0	0	2000	Two mesonet stations - one in Mountains Edge and one at Red Rock Canyon - reported gusts of 59 and 67 mph, respectively. An NWS employee reported two trees blown down on Mountains Edge Parkway.
2/16/2011	61	0	0	5000	This gust occurred near the intersection of the 215 freeway and Cheyenne on the northwest side of Las Vegas. Several roof tiles were torn off, and one broke the sun roof of a vehicle.
3/7/2011	50	0	0	5000	A spotter measured a gust to 45 knots, which blew out a transformer, in the north part of the Las Vegas Valley at the onset of the winds. The McCarran Airport ASOS (KLAS) measured a gust to 50 knots two hours later, after which the winds subsided.
4/7/2011	51	0	0	50000	The peak gust for this event occurred at McCarran Airport (KLAS) at 1236 PST. Broadcast media, spotters, and the public reported damage in Las Vegas, North Las Vegas, and Henderson, including several trees down and at least two business signs damaged or destroyed.
9/8/2011	58	0	0	20000	The Nellis AFB ASOS measured a wind gust to 67 mph which collapsed an aircraft shelter, causing minor injuries to eight personnel. A short time later, another microburst uprooted a 30-foot mesquite tree in Henderson.
11/30/2011	50	0	0	10000	Winds disrupted four electricity distribution lines in Las Vegas, knocking out power to about 5000 customers. Large trees were also knocked down near downtown Las Vegas and Summerlin. The Nellis AFB ASOS (KLSV) recorded a peak gust of 58 mph.
1/21/2012	57	0	0	40000	A skylight window blew out in the Galleria Mall; signs, a power line, and several trees were blown down, and a construction trailer was damaged. The peak measured gust occurred at Nellis AFB.
3/6/2012	58	0	0	500000	Numerous trees were uprooted or blown down; at least two fell onto houses. At least two roofs, one awning, and one carport were torn off buildings. Two light poles were blown down; one fell on a vehicle. A couple of large panes of glass were blown out. Three solar panels on the roof of City Hall were damaged. One truck and at least one street sign blew over. Several tents which were set up for the NASCAR races were blown down.
4/5/2012	52	0	0	0	This gust occurred in Henderson.
5/25/2012	52	0	0	10000	A light pole was blown down at the intersection of Eastern and Karen in Las Vegas.
7/4/2012	51	0	0	0	This gust occurred in the southwest corner of Las Vegas, 2 miles N of Sloan.
4/15/2013	50	0	0	0	This gust occurred 3 miles NNW of Centennial Hills.
7/2/2013	52	0	0	50000	High wind from two dissipating showers blew down trees in North Las Vegas, damaging at least two homes. Several cars were damaged, and some homes lost roof tiles. One firework stand also collapsed.
10/28/2013	56	0	0	50000	Several trees were blown down, a large gate was broken, a carport was toppled, and about 1800 customers lost power. The peak gust was measured 16 miles NW of North Las Vegas at 0524 PST.
5/10/2014	50	0	0	100000	Two trampolines became airborne, trees blew down into roads, seriously damaging at least one car, several canopies at Planet Hollywood blew into the street, a carport at an apartment

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
					complex tipped over, and about 18,000 customers lost power.
11/25/2015	53	0	0	0	A gust of 60 mph occurred in Blue Diamond, and a gust of 61 mph occurred 3 miles NNW of Centennial Hills.
2/18/2016	58	0	0	2000	High winds affected much of the Las Vegas Valley. A carport was damaged at an apartment complex in the NW part of the valley.
3/6/2016	53	0	0	25000	The peak gust was measured at North Las Vegas Airport (KVG T). Around the Las Vegas Valley, a tree blew down and landed on a vehicle; a rooftop air conditioner blew into power lines, breaking the power pole; a light post blew down; and a few large tree branches snapped.
3/28/2016	54	0	0	0	The peak gust was measured 4 miles WSW of Spring Valley.
9/22/2016	54	0	0	1000	The peak gust was measured near Henderson. A large tree blew down at the Clark County Building near downtown Las Vegas.
10/2/2016	51	0	0	0	This gust was measured 2 mi NW of Centennial Hills.
11/16/2016	53	0	0	0	The peak gust was measured 2 miles NW of Centennial Hills.
12/16/2016	59	0	1	30000	The peak gust was measured 2 miles NW of Centennial Hills. Around the valley, a traffic light pole fell onto a car, injuring the driver; a mobile billboard truck and parked semi-trailer were blown over; and Interstate 215 was closed for several hours due to construction materials being blown from a flyover ramp under construction into the traffic lanes below.
1/11/2017	54	0	0	20000	The peak gust was measured 1 mile W of Summerlin. Around the valley, at least two trees were blown down, a large concrete sign began to lean but did not fall, and windblown debris got into a power substation and knocked out power to two Las Vegas Strip resorts for just over an hour.
3/5/2017	51	0	0	100000	The peak gust occurred at Nellis AFB. Many trees and power poles were knocked down around the Valley.
3/30/2017	58	0	0	1500000	The peak gust occurred at Nellis AFB. There was widespread damage to trees, power poles and lines, streetlights, and billboards. Some of the trees and poles damaged homes and cars. There were also numerous power outages.
10/8/2017	53	0	0	0	This gust occurred at Nellis Air Force Base (KLSV).
11/16/2017	53	0	0	0	The peak gust was measured 2 miles NW of Centennial Hills.
11/27/2017	50	0	0	5000	The peak measured gust occurred at the North Las Vegas Airport. In North Las Vegas, power lines and a small tree were blown down, a car window was broken, and roof tiles were damaged.
12/3/2017	50	0	0	0	This gust occurred 2 miles NW of Centennial Hills.
12/20/2017	56	0	0	0	The peak gust was measured 1 mile W of Summerlin.
4/12/2018	56	0	0	10000	A few trees blew down, and power outages were scattered around the Valley.
1/21/2019	52	0	0	0	Two sites in the Las Vegas Valley reported wind gusts of 59 and 60 mph as mountain waves enhanced strong prefrontal winds.
10/29/2019	55	0	0	1000	The peak gust occurred at Nellis Air Force Base. A large tree was blown down at Sahara and

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
					Durango.
9/8/2020	53	0	0	50000	Several trees, street signs, streetlights, and power lines were blown down around the Valley.
3/10/2021	50	0	0	0	This gust occurred at the Henderson Executive Airport (KHND).
5/20/2021	47	0	0	15000	Approximately 3600 customers lost power, and at least two events were cancelled due to the winds.
10/11/2021	59	0	0	0	The peak gust was measured at Nellis AFB. Over 11,000 customers lost power.
12/14/2021	53	0	0	0	This gust was measured at Harry Reid International Airport (KLAS).
12/31/2021	51	0	0	0	This gust was measured at Harry Reid International Airport (KLAS).
3/20/2022	54	0	0	0	This gust occurred at Harry Reid International Airport (KLAS).
4/11/2022	54	0	0	0	Two stations in the Las Vegas Valley reported brief high winds. The peak gust was measured in northeast Henderson.
4/11/2022	55	0	0	10000	At least two trees were blown down, one of which landed on power lines and knocked out power to a few customers. A store awning was also damaged.
5/8/2022	58	0	0	5000	The peak measured gust occurred near Red Rock Casino. At least two trees and one large light pole were blown down.
5/9/2022	56	0	0	0	The peak measured gust occurred 10 miles WNW of Gass Peak.
10/22/2022	59	0	0	0	The peak gust occurred 1 mile SSW of The Strip.
12/2/2022	59	0	0	0	This gust occurred 1 mile W of Summerlin.
12/2/2022	50	0	0	0	These gusts occurred at Blue Diamond.
2/14/2023	55	0	0	1000	The peak wind gust occurred at the North Las Vegas (KVGT) ASOS. Power outages occurred in North Las Vegas, and a big rig jackknifed on I-15, but it was not confirmed whether either was wind-related.
2/21/2023	57	0	0	125000	A billboard, a large tree, and nine power poles were blown down.
4/3/2023	50	0	0	0	This gust occurred at Blue Diamond Elementary School.

Las Vegas Valley Zone Strong Wind Events

Jurisdictions: Clark County, Boulder City, Las Vegas, North Las Vegas, Henderson, Las Vegas Paiute Tribe

Note: NP = Not Provided

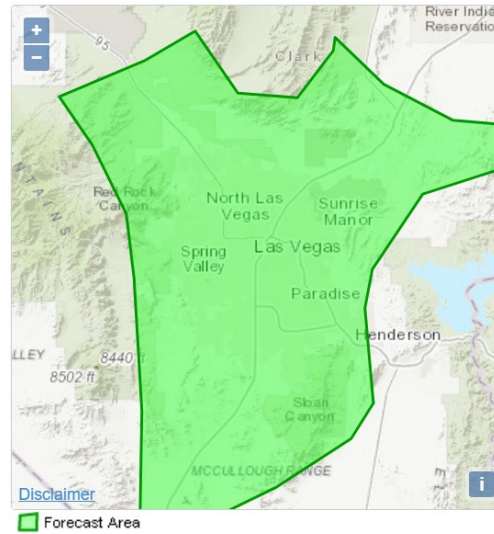


Table 99: Strong Wind Events, Las Vegas Valley Zone, NV (Clark County, Boulder City, Las Vegas, North Las Vegas, Henderson, Las Vegas Paiute Tribe), NOAA/NCEI Database

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
12/14/2003	44	0	0	2000	Several power lines were blown down near Nellis Air Force Base due to strong winds.
4/12/2007	40	1	0	0	A frail woman died in North Las Vegas when she hit her head due to being blown over by a gust of wind. Gusts at the North Las Vegas airport were around 40 knots at the time.
4/12/2007	46	0	2	5000	Strong winds caused a scaffolding unit to fail at a construction site in downtown Las Vegas. Two workers were injured, one critically.
9/1/2008	43	0	2	0	Strong winds blew over a construction wall at Sahara Ave. and Las Vegas Blvd. Two people were injured.
12/13/2008	43	0	0	5000	A billboard and a one-foot diameter tree blew down in the southwest part of the Las Vegas Valley.
12/13/2008	48	0	0	6000	The following damage occurred in the northern part of the Las Vegas Valley: two large signs were snapped at their bases and blown down, a large pine tree was knocked over, and a billboard was blown down.
12/13/2008	43	0	0	3000	Several 7–8-inch diameter trees blew down at the Centennial Hills shopping center 5 miles NNE of Summerlin.
12/25/2008	35	0	0	5000	Near Red Rock Country Club, a chain link fence blew down, hitting cars, knocking down light

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
					posts, and blocking traffic on Charleston Blvd.
3/26/2009	43	0	2	10000	Strong winds snapped a cable on a window-washing platform on a high-rise hotel in Las Vegas, slamming the platform into the side of the hotel at the 15th floor. Several windows were broken, and two workers suffered minor injuries.
4/14/2009	48	0	0	10000	Strong winds uprooted a large tree 5 miles ENE of downtown Las Vegas. The tree fell onto a house, damaging the roof.
4/14/2009	43	0	0	1000	Strong winds ripped some shingles off the roof of a house near the intersection of Sahara and Rainbow in Las Vegas.
3/18/2010	43	0	0	1000000	The Cloud Nine balloon attraction at the south end of the Las Vegas Strip was heavily damaged, and siding was torn off a carport near the intersection of Vegas and Lamb.
3/30/2010	45	0	0	100000	The Carousel at The District at Green Valley Ranch in Henderson was damaged by strong winds. The canopy suffered major damage, some of the metal tube structure holding up the canopy was severely bent or broken, and many of the lights were broken.
4/28/2010	35	0	0	50000	This gust flipped over a small airplane at the North Las Vegas Airport.
4/29/2011	40	0	0	2000	An off-duty NWS employee in North Las Vegas observed two 8-to-9-inch diameter mesquite trees which were split by the wind, and a stop sign which was bent over. In Henderson, broadcast media reported a tree approximately 2 feet in diameter was blown over in a back yard.
3/25/2012	43	0	0	5000	Strong winds knocked out power to 1900 customers east of downtown Las Vegas.
5/7/2012	35	0	0	10000	Strong winds uprooted three trees in Henderson and tore a swamp cooler off the roof of a house in North Las Vegas.
4/8/2013	48	0	0	5000	A light pole was blown over at the intersection of Pecos Rd. and Las Vegas Blvd.
9/25/2013	39	0	0	1000	Strong winds blew down a mesquite tree 3 miles WNW of North Las Vegas.
1/30/2014	43	0	0	25000	Strong winds in the Las Vegas Valley knocked down at least two trees and one set of power lines and threw a covered horse corral over a fence. About 4000 customers lost power. The peak gust was measured at McCarran Airport.
4/26/2014	48	0	0	500	A two-foot diameter tree was snapped about 40 feet above the ground at Floyd Lamb State Park.
11/15/2014	45	0	0	3000	Strong north winds blew through the Las Vegas Valley in the wake of a cold front. A large tree was uprooted and fell on a house near the intersection of Vegas Drive and Michael Way. The North Las Vegas Airport measured a gust to 52 mph around the time that the tree blew down.
12/25/2014	38	0	0	1000	Half a tree blew down across the intersection of Lamb and Washington in Las Vegas.
4/7/2015	48	0	0	1000	Strong winds blew part of the roof off an old barn at the Corn Creek Visitors Center.
4/14/2015	48	0	0	75000	The peak gust occurred at McCarran Airport (KLAS). Visibility was down to one mile in blowing dust. At least five light poles and seven large trees blew down. One tree fell onto power lines, one fell onto a car, and another knocked down a concrete block wall. About 2500 customers lost power.
11/16/2015	45	0	0	2000	Two large trees were blown down in the Las Vegas Valley. Peak wind gusts of 52 mph were

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
					measured at the North Las Vegas Airport and Nellis Air Force Base.
12/10/2015	47	0	0	1000	Strong winds blew down several tree limbs 5 miles SSE of Summerlin. Blowing dust also reduced visibility.
3/11/2016	35	0	0	1000	A tree blew down near Horizon Ridge and Mission in Henderson. Gusts at the Henderson Airport were 40 mph at the time.
4/15/2016	39	0	0	2000	Two trees blew down in different parts of the Las Vegas Valley. Winds were estimated at 40-50 mph.
4/22/2016	43	0	0	2000	Strong winds blew down two large trees in northwest Las Vegas.
11/16/2016	40	0	0	15000	An overhead traffic sign blew down onto Paradise Road just north of the Airport Connector tunnel. Two trees also blew down in Henderson.
5/6/2017	42	0	0	15000	Strong winds downed a power pole and a tree branch.
5/18/2017	48	0	0	10000	Strong winds downed a large tree onto several cars in Las Vegas.
2/18/2018	48	0	0	75000	Five power poles were blown down in the Henderson area, and a total of 2750 customers lost power in multiple areas of the Valley. Winds were estimated at 50-60 mph.
3/2/2018	35	0	0	1000	Strong winds blew down two large tents and six smaller tents at the Las Vegas Motor Speedway. The time and wind speed are estimated from nearby obs.
4/16/2018	39	0	0	5000	Strong winds blew down a tree into power lines on the east side of Las Vegas.
12/12/2018	22	0	0	0	A window washer fell to his death from the Trump Tower after wind gusts slammed him against the building. Some surface stations were reporting gusts of 20 to 30 mph at the time, but gusts on the side of the building could have been higher due to the elevation and funneling of the wind next to the building.
2/14/2019	43	0	0	1000	Strong winds in the northwest quadrant of the Las Vegas Valley damaged a trampoline, blew a screen door off its tracks, and uprooted a large tree.
4/9/2019	39	0	0	1000	Strong winds destroyed a carport 1 mile NW of Henderson.
4/9/2019	35	0	0	10000	Strong winds uprooted a large tree at the Las Vegas Country Club, causing a water main break which flooded streets in the area.
11/25/2019	43	0	0	1000	One tree was uprooted near downtown Las Vegas.
2/2/2020	49	0	0	30000	A tree fell into power lines, causing a power outage and an arcing transformer. Two street signs were blown down, a carport and gazebo were damaged, a large branch fell onto a carport at an apartment complex, and a business display sign was damaged. 2571 customers were without power.
2/3/2020	30	0	0	25000	Wind gusts of 30 to 40 mph blew a restaurant sign onto a vehicle in Henderson, blew down a light pole near Desert Inn and Decatur, and blew down a power pole near Flamingo and Highway 95, causing a power outage.
2/15/2022	35	0	0	10000	Strong winds blew over a big rig on I-15 at Sloan.
3/28/2022	39	0	0	10000	Strong winds blew a strip mall sign onto a vehicle 2 miles WNW of Green Valley.
6/17/2022	43	0	0	2000	Strong winds in Henderson blew down a power line at Equestrian and Pinto.

Southern Clark Zone High Wind Events

Jurisdictions: Clark County

Table 100: High Wind Events, Southern Clark Zone, NV (Clark County), NOAA/NCEI Database

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
3/6/2012	52	0	0	20000	Dust storm conditions reduced visibility to zero along Highway 95 near the Eldorado Dry Lakebed. Approximately 14,000 customers lost power after high winds damaged equipment near Jean.
1/31/2016	59	0	0	0	This gust occurred 6 miles W of Laughlin.
11/8/2022	50	0	0	0	These winds occurred 29 miles N of Searchlight.

Southern Clark Zone Strong Wind Events

Jurisdictions: Clark County

Table 101: High Wind Events, Southern Clark Zone, NV (Clark County), NOAA/NCEI Database

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
12/15/2012	26	1	0	0	A skydiver was killed at the Jean Dry Lakebed when shifting winds caused his parachute to lose lift. At least one media source reported the event as a dust devil, but this is doubtful.

Western Clark/Southern Nye Zone High Wind Events

Jurisdictions: Clark County

Note: NP = Not Provided

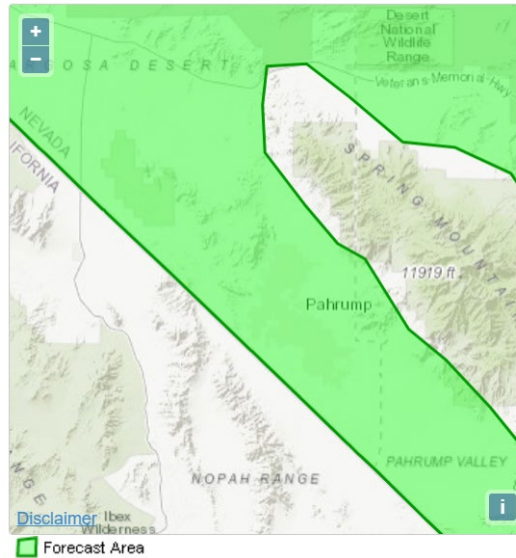


Table 102: High Wind Events, Western Clark/Southern Nye Zone, NV (Clark County), NOAA/NCEI Database

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
12/22/1996	NP	0	0	50000	Localized strong winds below a mountain gap damaged trailers and mobile homes at Cold Creek near Indian Springs.
3/6/1998	50	0	0	0	A 58-mph wind gust from the northwest was recorded near Indian Springs as a vigorous cold front passed.
12/3/1998	50	0	0	0	Not provided
4/3/1999	NP	0	0	50000	Damaging winds whipping through the Pahrump Valley overturned at least one unsecured trailer home and tore roofs and awnings off a few other homes. The windstorm, associated with a strong cold front, reached its peak during the afternoon of April 3.
3/20/2000	45	0	0	10000	A powerful low-pressure system pushing through southern Nevada produced strong winds gusting to 52 mph in Pahrump, NV. Several billboards and a light pole were blown over. Several roofs were also blown off during the strong winds. Visibility at times was near zero in blowing dust along Highway 372.

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
3/31/2000	NP	0	0	20000	A low-pressure system over southeast Arizona and high pressure over the Pacific Northwest caused a tight pressure gradient over the southern Great Basin. The resulting strong winds totally destroyed an abandoned double wide mobile home in Pahrump, NV.
7/2/2001	54	0	0	25000	Strong thunderstorm outflow winds flattened a home that was under construction. Several trees nearby were also knocked down due to the winds.
7/2/2001	61	0	0	5000	Strong thunderstorm outflow winds caused a 50-foot elm tree to topple into a residential backyard. The tree did minor damage to the stucco wall and some backyard furniture. Strong winds also blew a metal shed into power lines causing blackouts that lasted a couple of hours. Another home received minor damage when the chimney was knocked off the roof.
4/15/2002	53	0	0	0	Not provided
1/11/2005	54	0	1	60000	High winds in Pahrump caused a trailer to be blown off its foundation causing one injury.
4/18/2007	60	0	0	0	Occurred at the A27 station on the Nevada Test Site.
6/5/2007	55	0	0	0	A gust to 63 mph was measured at Mercury, NV.
6/5/2007	54	0	0	0	Pahrump, NV. Also reduced visibility in blowing dust.
10/5/2007	53	0	0	10000	Emergency Services communications tower blown down in Pahrump, NV. Measured gust to 61 mph occurred at KDRA ASOS approximately 75 minutes after the tower was blown down.
1/28/2008	50	0	0	0	This gust occurred 1 mile W of Mercury.
1/28/2008	52	0	0	0	This gust blew a roof off a house 8 miles S of Pahrump.
2/13/2008	70	0	0	10000	High winds caused damage in the Ash-Meadows National Wildlife Refuge 15 miles NW of Pahrump. 12 inch diameter fruit trees were blown over, 12 inch diameter limbs were snapped off elm trees, 8-9 inch diameter pine trees were bent over, and 100 square feet of roofing blew off a home.
3/14/2008	50	0	0	0	This gust occurred 13 miles NNW of Lathrop Wells.
3/16/2008	56	0	0	0	This gust occurred 5 miles WNW of Pahrump.
3/16/2008	56	0	0	0	This gust occurred 9 miles NW of Mercury.
4/15/2008	52	0	0	0	This gust occurred 4 miles SSW of Mercury.
4/29/2008	57	0	0	0	This gust occurred 3 miles SSW of Mercury.
6/4/2008	65	0	0	0	This gust occurred 9 miles NW of Mercury, NV.
6/10/2008	59	0	0	0	This gust occurred 15 miles NNE of Amargosa Valley.
6/10/2008	54	0	0	0	This gust occurred 9 miles NW of Mercury.
8/31/2008	56	0	0	0	This gust occurred 1 mile south of Mercury, NV.
3/22/2009	52	0	0	0	This gust occurred 1 mile S of Mercury.
3/26/2009	55	0	0	0	This gust occurred 6 miles WNW of Pahrump.
3/29/2009	56	0	0	0	This gust occurred 1 mile S of Mercury.

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
3/29/2009	50	0	0	0	This gust occurred 3 miles SSW of Mercury.
4/14/2009	54	0	0	0	This gust occurred 4 miles SSW of Mercury, at the Desert Rock Airport (KDRA).
4/14/2009	57	0	0	0	This gust occurred 3 miles SSW of Mercury.
4/14/2009	52	0	0	40000	Seven power poles were knocked down 13 miles N of Amargosa Valley.
4/14/2009	50	0	0	0	This gust occurred 1 mile S of Mercury.
4/24/2009	53	0	0	0	This gust occurred 3 miles SSW of Mercury.
6/5/2009	51	0	0	0	This gust occurred 1 mile S of Mercury.
8/6/2009	59	0	0	0	This gust occurred 1 mile S of Mercury. Another station 3 miles SSW of Mercury recorded a gust of 58 knots at approximately the same time.
8/30/2009	50	0	0	0	This gust occurred 1 mile S of Mercury.
9/29/2009	54	0	0	0	This gust occurred 1 mile S of Mercury.
10/3/2009	51	0	0	0	This gust occurred 1 mile S of Mercury.
10/3/2009	50	0	0	0	This gust occurred 3 miles SSW of Mercury.
10/4/2009	51	0	0	0	This gust occurred 3 miles SSW of Mercury.
10/4/2009	54	0	0	0	This gust occurred 1 mile S of Mercury.
10/27/2009	51	0	0	0	This gust occurred 4 miles NW of Pahrump.
3/30/2010	51	0	0	0	This gust occurred 1 mile S of Mercury.
3/31/2010	50	0	0	0	This gust occurred at Mercury/Desert Rock (KDRA).
3/31/2010	53	0	0	0	This gust occurred 1 mile S of Mercury.
4/5/2010	56	0	0	0	This gust occurred 3 miles SSW of Mercury.
4/5/2010	55	0	0	0	This gust occurred 1 mile S of Mercury.
4/5/2010	52	0	0	0	This gust occurred 9 miles N of Mercury.
4/20/2010	52	0	0	0	This gust occurred 1 mile S of Mercury.
4/27/2010	52	0	0	0	This gust occurred 1 mile S of Mercury.
4/28/2010	59	0	0	0	This gust occurred 5 miles WNW of Pahrump.
5/21/2010	53	0	0	0	This gust occurred 1 mile S of Mercury.
8/28/2010	52	0	0	0	Not provided
2/16/2011	68	0	0	1000	One spotter 3 miles S of Pahrump measured gusts up to 78 mph. Another spotter in Pahrump reported that the roof of her deck was blown off.
2/25/2011	50	0	0	0	This gust occurred at Creech Air Force Base (KINS).
3/20/2011	55	0	4	75000	A gust to 63 mph was measured at the Sandy Valley airport at 1500 PST, and at 1522 PST a

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
					structure collapsed in Sandy Valley, injuring four people and killing one horse.
3/20/2011	54	0	0	0	This gust occurred in Pahrump.
4/7/2011	53	0	0	0	The peak gust for this event occurred 3 miles SSW of Mercury at 1230 PST.
5/8/2011	52	0	0	0	The Mercury/Desert Rock (KDRA) ASOS and a mesonet site approximately 13 miles to the north both measured wind gusts of 58 to 60 mph.
5/15/2011	54	0	0	0	The peak gust during this event was 62 mph at the Mercury/Desert Rock (KDRA) ASOS.
11/30/2011	50	0	0	0	This gust occurred 6 miles west of Pahrump. High winds continued beyond midnight, causing damage in December.
12/1/2011	82	0	1	100000	High winds which began on the evening of November 30th continued into December 1st. In the Pahrump area, a boat, RV, and greenhouse were damaged, numerous shingles were blown off roofs, power lines and a radio tower were blown down, and a carport torn down by the wind fell on a woman, injuring her.
1/21/2012	56	0	0	0	The peak gust was estimated on the south side of Pahrump. Visibility was less than half a mile in blowing dust.
3/6/2012	74	0	0	1000	Zero visibility was reported throughout Pahrump. A tree brushed against a power line, starting a small brush fire.
3/31/2012	56	0	0	0	The peak measured gust during this event was 65 mph 13 miles NW of Mercury.
5/17/2012	71	0	0	0	This gust was measured 2 miles ESE of Pahrump.
5/25/2012	53	0	0	0	The peak gust during this event occurred at the Mercury-Desert Rock Airport (KDRA) at 0925 PST.
11/8/2012	55	0	0	0	These gusts occurred at the Desert Rock Airport (KDRA).
11/8/2012	52	0	0	0	This gust occurred 9 miles N of Mercury.
9/25/2013	50	0	0	0	This gust occurred 3 miles SSW of Mercury.
10/27/2013	56	0	0	10000	Power was knocked out to 600 customers in Indian Springs. The peak gust was measured 1 mile N of Indian Springs at 0104 PST.
5/10/2014	52	0	0	0	This gust was measured 5 miles NW of Pahrump.
12/12/2014	50	0	0	0	Isolated high winds occurred at Indian Springs (KINS) ahead of the main band of rain.
4/14/2015	50	0	0	0	The peak wind occurred at Indian Springs (KINS). Visibility was briefly down to one quarter mile in Amargosa Valley.
11/24/2015	50	0	0	0	This gust occurred at the Mercury/Desert Rock ASOS.
2/17/2016	51	0	0	0	This gust occurred 2 miles N of Amargosa Valley.
3/6/2016	55	0	0	0	The peak gust was measured at Desert Rock (KDRA).
3/28/2016	57	0	0	0	The peak gust was measured at Desert Rock (KDRA).
4/22/2016	54	0	0	0	This gust occurred at Desert Rock (KDRA).
5/20/2016	56	0	0	0	The peak gust occurred at the Desert Rock Airport (KDRA).

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
10/16/2016	56	0	0	0	This gust occurred at the Mercury-Desert Rock (KDRA) airport.
12/16/2016	53	0	0	0	The peak gust was measured at the Mercury-Desert Rock (KDRA) ASOS.
3/5/2017	57	0	0	0	The peak gust occurred 9 miles NNE of Mercury.
3/30/2017	51	0	0	40000	The peak gust occurred at Ash Meadows Wildlife Refuge. Three power poles were blown down in Pahrump.
4/7/2017	50	0	0	0	This gust occurred at Mercury-Desert Rock.
6/11/2017	50	0	0	0	High winds occurred at the Mercury-Desert Rock ASOS and 13 miles NW of Mercury.
11/27/2017	54	0	0	0	High winds occurred at Indian Springs and Pahrump.
3/2/2018	56	0	0	0	The peak gust occurred at the Mercury-Desert Rock (KDRA) ASOS.
4/7/2018	50	0	0	0	This gust occurred at Indian Springs (KINS).
4/11/2018	57	0	0	0	The peak gust occurred at Indian Springs (KINS). Visibility was as low as one mile.
4/16/2018	56	0	0	0	The peak gust occurred at Indian Springs (KINS).
9/28/2019	51	0	0	0	This gust occurred at Mercury-Desert Rock (KDRA).
11/25/2019	50	0	0	0	This gust occurred 2 miles N of Amargosa Valley.
2/2/2020	55	0	0	70000	The peak measured gust occurred 10 miles N of Mercury. Five power poles were blown down in Indian Springs, and two in Pahrump.
11/18/2020	52	0	0	0	This gust occurred at Mercury-Desert Rock.
3/15/2021	56	0	0	0	The peak gust was measured at the Mercury-Desert Rock (KDRA) ASOS.
4/25/2021	53	0	0	0	These winds occurred at the Mercury-Desert Rock (KDRA) ASOS.
5/20/2021	52	0	0	0	These winds occurred at the Mercury-Desert Rock (KDRA) ASOS.
10/11/2021	51	0	0	10000	The peak gust was measured 2 mi N of Amargosa Valley. In Pahrump, arcing power lines led to power outages.
4/21/2022	54	0	0	0	The peak gust was measured 9 miles NNE of Mercury.
11/1/2022	55	0	0	0	A gust of 63 mph was measured at a location on the Nevada National Security Site.
11/7/2022	53	0	0	0	These winds occurred at Mercury-Desert Rock Airport (KDRA).
11/8/2022	51	0	0	0	This gust occurred at the Mercury-Desert Rock Airport (KDRA).
12/1/2022	50	0	0	0	This gust occurred at Mercury-Desert Rock (KDRA).
12/11/2022	53	0	0	0	This gust occurred at Indian Springs (KINS).
2/21/2023	55	0	0	0	These gusts occurred 2 miles N of Amargosa Valley.
2/25/2023	50	0	0	0	This gust occurred 9 miles NNE of Mercury.
3/4/2023	50	0	0	0	This wind occurred at Mercury-Desert Rock (KDRA).

Date	Extent in Knots	Deaths	Injuries	Property Damage	Extent/Impact Description
4/3/2023	50	0	0	0	This gust occurred at Mercury-Desert Rock (KDRA).

Tornado Previous Occurrence

Clark County Tornado

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 13 tornado events Clark County Unincorporated Area, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation). The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the tornado experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Note: The NOAA/NCEI Storm events database did not have any incidences of storm data records related to tornado for the Cities of Boulder City, Mesquite, and North Las Vegas from January 1, 1950 – May 31, 2023. Therefore, the Cities of Boulder City, Mesquite, and North Las Vegas’s Probability of Future Events is included with the Clark County information.

Table 103: Tornado Events, Clark County, NOAA/NCEI Database

Location	Date	Event Type	Extent	Deaths	Injuries	Property Damage	Extent/Impact Description
Not provided	6/7/1964	Tornado	NP	0	0	250000	Not provided
Not provided	8/20/1975	Tornado	F0	0	0	250000	Not provided
Not provided	7/22/1984	Tornado	F0	0	0	0	Not provided
Not provided	5/28/1986	Tornado	F0	0	0	0	Not provided
Not provided	9/17/1989	Tornado	F1	0	0	250000	Not provided
Not provided	10/14/1989	Tornado	F1	0	0	25000	Not provided
Not provided	1/30/1990	Tornado	F0	0	0	0	Not provided
Not provided	3/30/1992	Tornado	F0	0	0	0	Not provided
Not provided	3/30/1992	Tornado	F1	0	0	250000	Not provided
CAL-NEV-ARI	4/21/2001	Tornado	F1	0	0	0	A small tornado was spotted over open terrain near the three-state junction over the Colorado River. This tornado then moved into Mohave County, Arizona.
NELSON	8/4/2014	Tornado	EF0	0	0	0	A small tornado briefly touched down in open desert east of Highway 95 near the Nelsons Landing turn off.

Location	Data	Event Type	Extent	Deaths	Injuries	Property Damage	Extent/Impact Description
CAL-NEV-ARI	3/3/2015	Funnel Cloud	NP	0	0	0	A funnel cloud was photographed near Spirit Mountain.
NELSON	9/9/2017	Funnel Cloud	NP	0	0	0	A funnel cloud was photographed between Searchlight and Nelson Landing.

Data Source: NOAA NCEI Storm Events Database

Henderson Tornado

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded one (1) tornado events Henderson. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the tornado experienced by Henderson, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 104: Tornado Events, Henderson, NV, NOAA/NCEI Database

Location	Data	Event Type	Extent	Deaths	Injuries	Property Damage	Extent/Impact Description
HENDERSON	9/11/1998	Tornado	F0	0	0	30000	A small tornado tore the roof off a Henderson warehouse and destroyed a large block wall at a service station a short distance away.

Data Source: NOAA NCEI Storm Events Database

Las Vegas Tornado

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded one (1) tornado events for the City of Las Vegas. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the tornado experienced by Las Vegas, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 105: Tornado Events, Las Vegas, NV, NOAA/NCEI Database

Location	Data	Event Type	Extent	Deaths	Injuries	Property Damage	Extent/Impact Description
LAS VEGAS N AIR TERM	5/2/2018	Funnel Cloud	NP	0	0	0	A funnel cloud was observed near the end of W Tropical Parkway.

Data Source: NOAA NCEI Storm Events Database

Tribal Nation: Moapa Band of Paiutes/Moapa Unincorporated Area of Clark County, Tornado

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded one (1) tornado events for the Tribal Nation – Moapa Band of Paiutes/Moapa Unincorporated Area of Clark County, NV. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the tornado experienced by Tribal Nation: Moapa Band of Paiutes/Moapa Unincorporated Area of Clark County, including the jurisdictions located within, and is the only source of data accessible.

Note: NP = Not Provided

Table 106: Tornado Events, Tribal Nation – Moapa Band of Paiutes/Moapa Unincorporated Area of Clark County, NV, NOAA/NCEI Database

Location	Data	Event Type	Extent	Deaths	Injuries	Property Damage	Extent/Impact Description
MOAPA	11/20/2019	Funnel Cloud	NP	0	0	0	A funnel cloud was photographed about a mile north of Highway 168 east of Coyote Springs.

Data Source: NOAA NCEI Storm Events Database

Probability of Future Events, Severe Weather (including Thunderstorms, Hail, Wind, and Tornadoes)

Calculating future probability is one of many predictors of future occurrences. Based on the Calculated Priority Risk Index (CPRI) conducted for Clark County and its participating jurisdictions, the following probability rankings for severe weather and high winds/tornadoes for the planning area:

- Severe Storms (Severe Weather): high probability – 3.15 (rank score of 3.0-3.9)
- High Winds and Tornadoes: high probability – 3.2 (rank score of 3.0-3.9)

Please note that the CPRI Rating is a subjective measure based on the opinion of the Clark County MPSC during the planning development portion of the MJHMP update. The following tables provides CPRI Rating on Severe Weather which includes High Wind and Tornadoes for Clark County and its participating jurisdictions.



A Tornado Warning has been issued for parts of southeastern Lincoln and northeastern Clark County until 515PM.

A severe storm northwest of Mesquite is showing rotation and could produce a tornado. Seek shelter if in the warning area! #NVwx

IEMBot VEF @iembot_vef · Aug 21, 2022
 Automated
 VEF issues Tornado Warning (tornado: OBSERVED, hail: 1.00 IN) for Mohave [AZ] and Clark, Lincoln [NV] till 5:15 PM PDT mesonet.agron.iastate.edu/vtec/f/2022-O-...

2022 VEF Tornado Warning (TO.W) #1
 Map Valid: Aug 21 2022 4:48 PM PDT, Event: Aug 21 2022 4:48 PM PDT to Aug 21 2022 5:15 PM PDT
 NEXRAD 4:45 PM
 Generated at 21 Aug 2022 4:48 PM PDT in 4 Mins
 IEM Automated App #308

6:53 PM · Aug 21, 2022

Table 107: Clark County and Participating Jurisdiction CPRI Rating for Severe Weather

37 Retweets 30 Quotes 97 Likes 1 Bookmark

Clark County and Participating Jurisdictions CPRI Rating for Severe Weather							
Hazard: Severe Weather		Category and Weight				CPRI Score	Risk Level
		Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%		
Index Rating (R) Weighted Score (WS)							
Clark County (including Incorporated and Unincorporated Areas)	R	4	2	3	3	3.15	H
	WS	1.8	0.6	0.6	0.3		
Boulder City	R	2	2	1	1	1.75	L
	WS	0.9	0.6	0.15	0.1		
Henderson	R	4	3	3	4	3.10	H
	WS	1.35	0.9	0.45	0.4		
Las Vegas	R	2	3	2	2	2.3	M
	WS	0.9	0.9	0.3	0.2		

Clark County and Participating Jurisdictions CPRI Rating for Severe Weather							
Hazard: Severe Weather		Category and Weight				CPRI Score	Risk Level
		Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%		
Index Rating (R) Weighted Score (WS)							
Mesquite	R	4	2	3	3	3.15	H
	WS	1.8	0.6	0.6	0.3		
North Las Vegas	R	4	2	2	2	2.9	M
	WS	1.8	0.6	0.3	0.2		
Special District: Clark County Water Reclamation District	R	3	3	4	1	2.95	M
	WS	1.35	.9	.6	.1		
Special District: Clark County School District	R	3	3	2	2	2.55	M
	WS	1.35	0.9	0.3	0.2		
Special District: Las Vegas Valley Water District/SWNA	R	2	2	1	3	1.95	L
	WS	0.90	0.60	0.15	0.30		
Tribal Nation: Las Vegas Valley Paiute	R	3	3	3	3	3.0	H
	WS	1.35	0.9	0.45	0.3		
Tribal Nation: Moapa Band of Paiutes	R	3	2	2	2	2.45	M
	WS	1.35	0.6	0.3	0.2		

Note: Though participating in the planning process, at the time of this update, the CPRI data for the City of Mesquite was not received. Therefore, the CPRI rating for the City of Mesquite is the same rating as Clark County due to the city being within the planning area.

Table 108: Clark County and Participating Jurisdiction CPRI Rating for High Winds/Tornadoes

Clark County and Participating Jurisdictions CPRI Rating for High Winds/Tornadoes							
Hazard: Severe Weather		Category and Weight				CPRI Score	Risk Level
		Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%		
Index Rating (R) Weighted Score (WS)							
Clark County (including	R	4	2	4	2	3.2	H

Clark County and Participating Jurisdictions CPRI Rating for High Winds/Tornadoes							
Hazard: Severe Weather		Category and Weight				CPRI Score	Risk Level
		Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%		
Index Rating (R) Weighted Score (WS)							
Incorporated and Unincorporated Areas	WS	1.8	0.6	0.6	0.2		
Boulder City	R	1	1	1	1	1.0	L
	WS	0.45	0.3	0.15	0.1		
Henderson	R	4	3	3	4	3.55	H
	WS	1.8	.9	.45	.4		
Las Vegas	R	2	2	1	1	1.75	L
	WS	0.9	0.6	0.15	0.1		
Mesquite	R	4	2	4	2	3.2	H
	WS	1.8	0.6	0.6	0.2		
North Las Vegas	R	3	2	3	2	2.60	M
	WS	1.35	0.6	0.45	0.2		
Special District: Clark County Water Reclamation District	R	2	2	4	1	2.20	M
	WS	.9	0.6	0.6	0.1		
Special District: Clark County School District	R	3	2	2	2	2.45	M
	WS	1.35	0.60	0.30	0.20		
Special District: Las Vegas Valley Water District/SWNA	R	2	2	1	3	1.95	L
	WS	0.90	0.60	0.15	0.30		
Tribal Nation: Las Vegas Valley Paiute	R	3	2	3	3	2.7	M
	WS	1.35	0.6	0.45	0.30		
Tribal Nation: Moapa Band of Paiutes	R	3	3	3	2	2.9	M
	WS	1.35	0.90	0.45	0.20		

Note: Though participating in the planning process, at the time of this update, the CPRI data for the City of Mesquite was not received. Therefore, the CPRI rating for the City of Mesquite is the same rating as Clark County due to the city being within the planning area.

Thunderstorm Wind Quantitative Future Probability

Clark County – Quantitative Future Probability, Thunderstorm Wind

Based on the information obtained from the NOAA/NCEI, only 173 incidents of thunderstorm wind occurred in Clark County between January 1, 1950, and May 31, 2023. Clark County and its participating jurisdictions which included Clark County Unincorporated Area, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) can expect a thunderstorm wind event with 236.9% probability per year or 2.376 events per year, as indicated in the table directly below.

According to [Table 28: Probability Categories](#), the Clark County has a **highly likely** risk of experiencing a thunderstorm wind event. This number is based on historical events and was derived by dividing the number of recorded events by the year range used. Calculating future probability is not the only predictor of future occurrences. The qualitative chance of a thunderstorm impacting the planning area is highly likely.

Table 109: Probability of Future Events, Thunderstorm Wind – Clark County, NV

Probability of Future Events, Thunderstorm Wind, Clark County, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	2
1960	0
1961	1
1962	0

Probability of Future Events, Thunderstorm Wind, Clark County, NV

Event Year	Event Count
1963	0
1964	2
1965	0
1966	2
1967	0
1968	1
1969	1
1970	2
1971	1
1972	1
1973	3
1974	2
1975	2
1976	3
1977	2
1978	2
1979	0
1980	3
1981	3
1982	2
1983	1

Probability of Future Events, Thunderstorm Wind, Clark County, NV

Event Year	Event Count
1984	9
1985	3
1986	2
1987	4
1988	0
1989	2
1990	3
1991	0
1992	2
1993	2
1994	2
1995	0
1996	6
1997	5
1998	11
1999	0
2000	1
2001	0
2002	1
2003	0
2004	1

Probability of Future Events, Thunderstorm Wind, Clark County, NV

Event Year	Event Count
2005	1
2006	3
2007	1
2008	3
2009	0
2010	2
2011	4
2012	6
2013	3
2014	5
2015	9
2016	8
2017	9
2018	15
2019	3
2020	1
2021	14
2022	8
2023	0
Total Recorded Events =	173
Total Years =	73

Probability of Future Events, Thunderstorm Wind, Clark County, NV	
Event Year	Event Count
Yearly Probability =	236.9%

Data Source: NOAA NCEI Storm Event Database

Boulder City – Quantitative Future Probability, Thunderstorm Wind

The City of Boulder City can each expect a thunderstorm wind event with 28.76% probability per year, or 0.2876 events per year, as indicated in the table directly below. This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Boulder City has a **likely** risk of experiencing a thunderstorm wind event.

Table 110: Probability of Future Events, Thunderstorm Wind – Boulder City, NV

Probability of Future Events, Thunderstorm Wind, Boulder City, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0
1963	0

Probability of Future Events, Thunderstorm Wind, Boulder City, NV

Event Year	Event Count
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0
1982	0
1983	0
1984	0

Probability of Future Events, Thunderstorm Wind, Boulder City, NV

Event Year	Event Count
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	2
1998	1
1999	0
2000	1
2001	0
2002	0
2003	0
2004	0
2005	0

Probability of Future Events, Thunderstorm Wind, Boulder City, NV

Event Year	Event Count
2006	0
2007	0
2008	0
2009	0
2010	1
2011	1
2012	0
2013	2
2014	2
2015	1
2016	1
2017	1
2018	1
2019	1
2020	1
2021	4
2022	1
2023	0
Total Recorded Events =	21
Total Years =	73
Yearly Probability =	28.76%

Henderson – Quantitative Future Probability, Thunderstorm Wind

The City of Henderson can each expect a thunderstorm wind event with 19.17% probability per year, or 0.1917 events per year, as indicated in the table directly below. This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Henderson has a **likely** risk of experiencing a thunderstorm wind event.

Table 111: Probability of Future Events, Thunderstorm Wind – Henderson, NV

Probability of Future Events, Thunderstorm Wind, Henderson, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0

Probability of Future Events, Thunderstorm Wind, Henderson, NV

Event Year	Event Count
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0

Probability of Future Events, Thunderstorm Wind, Henderson, NV

Event Year	Event Count
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	3
1997	4
1998	3
1999	0
2000	0
2001	0
2002	1
2003	0
2004	0
2005	0
2006	1
2007	0
2008	0

Probability of Future Events, Thunderstorm Wind, Henderson, NV	
Event Year	Event Count
2009	0
2010	0
2011	0
2012	0
2013	0
2014	1
2015	1
2016	1
2017	0
2018	0
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	14
Total Years =	73
Yearly Probability =	19.17%

Data Source: NOAA NCEI Storm Event Database

Las Vegas – Quantitative Future Probability, Thunderstorm Wind

The City of Las Vegas can each expect a thunderstorm wind event with 54.79% probability per year, or 0.5479 events per year, as indicated the table directly below This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Las Vegas has a **likely**

risk of experiencing a thunderstorm wind event.

Table 112: Probability of Future Events, Thunderstorm Wind – Las Vegas, NV

Probability of Future Events, Thunderstorm Wind, Las Vegas, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0

Probability of Future Events, Thunderstorm Wind, Las Vegas, NV

Event Year	Event Count
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0

Probability of Future Events, Thunderstorm Wind, Las Vegas, NV

Event Year	Event Count
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	4
1998	8
1999	0
2000	1
2001	0
2002	0
2003	1
2004	1
2005	0
2006	0
2007	0
2008	0
2009	1
2010	1
2011	3

Probability of Future Events, Thunderstorm Wind, Las Vegas, NV	
Event Year	Event Count
2012	0
2013	4
2014	2
2015	1
2016	2
2017	2
2018	3
2019	1
2020	0
2021	4
2022	2
2023	0
Total Recorded Events =	40
Total Years =	73
Yearly Probability =	54.79%

Data Source: NOAA NCEI Storm Event Database

Mesquite – Quantitative Future Probability, Thunderstorm Wind

The City of Mesquite can each expect a thunderstorm wind event with 8.219% probability per year, or 0.082 events per year, as indicated in the table directly below. This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Mesquite has an **occasional** risk of experiencing a thunderstorm wind event.

Table 113: Probability of Future Events, Thunderstorm Wind – Mesquite, NV

Probability of Future Events, Thunderstorm Wind, Mesquite, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0

Probability of Future Events, Thunderstorm Wind, Mesquite, NV

Event Year	Event Count
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0

Probability of Future Events, Thunderstorm Wind, Mesquite, NV

Event Year	Event Count
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	1
1999	0
2000	0
2001	0
2002	0
2003	0
2004	0
2005	1
2006	1
2007	0
2008	1
2009	0

Probability of Future Events, Thunderstorm Wind, Mesquite, NV

Event Year	Event Count
2010	0
2011	0
2012	0
2013	0
2014	0
2015	0
2016	0
2017	0
2018	0
2019	1
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	6
Total Years =	73
Yearly Probability =	8.219%

Data Source: NOAA NCEI Storm Event Database

North Las Vegas – Quantitative Future Probability, Thunderstorm Wind

The City of North Las Vegas can each expect a thunderstorm wind event with 5.479% probability per year, or 0.0547 events per year, as indicated in the table directly below. This number is based on historical events. According to [Table 28: Probability Categories](#), the City of North Las Vegas has an **occasional** risk of experiencing a thunderstorm wind event.

Table 114: Probability of Future Events, Thunderstorm Wind – North Las Vegas, NV

Probability of Future Events, Thunderstorm Wind, North Las Vegas, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0

Probability of Future Events, Thunderstorm Wind, North Las Vegas, NV

Event Year	Event Count
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0

Probability of Future Events, Thunderstorm Wind, North Las Vegas, NV

Event Year	Event Count
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	1
1999	0
2000	0
2001	0
2002	0
2003	0
2004	0
2005	0
2006	2
2007	0
2008	0
2009	0

Probability of Future Events, Thunderstorm Wind, North Las Vegas, NV

Event Year	Event Count
2010	0
2011	0
2012	0
2013	0
2014	0
2015	0
2016	0
2017	0
2018	0
2019	0
2020	0
2021	0
2022	1
2023	0
Total Recorded Events =	4
Total Years =	73
Yearly Probability =	5.479%

Data Source: NOAA NCEI Storm Event Database

Hail Quantitative Probability of Future Events

Clark County – Quantitative Future Probability, Hail

Based on the information obtained from the NOAA/NCEI, only 51 incidents of hail occurred in Clark County between January 1, 1950, and May 31, 2023. Clark County and its participating jurisdictions which included the city of North Las Vegas, Clark County Unincorporated area, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River can expect a hail event with 69.86% probability per year or 0.698 events per year, as indicated in the table directly below.

According to [Table 28: Probability Categories](#), the Clark County has a **highly likely** risk of experiencing a hail event. This number is based on historical events.

Note: The NOAA/NCEI Storm events database did not have any incidences of storm data records related to hail for the City of North Las Vegas, Clark County Unincorporated Areas, Las Vegas Paiute Tribe and the Moapa Band of Paiutes from January 1, 1950 – May 31, 2023. Therefore, the City of North Las Vegas and the Moapa Band of Paiutes' Probability of Future Events is included with the Clark County information.

Table 115: Probability of Future Events, Hail – Clark County, NV

Probability of Future Events, Hail, Clark County, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	1
1962	0

Probability of Future Events, Hail, Clark County, NV

Event Year	Event Count
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	2
1981	1
1982	0
1983	1

Probability of Future Events, Hail, Clark County, NV

Event Year	Event Count
1984	2
1985	0
1986	0
1987	2
1988	0
1989	0
1990	0
1991	0
1992	1
1993	0
1994	2
1995	0
1996	0
1997	1
1998	3
1999	0
2000	0
2001	0
2002	0
2003	0
2004	0

Probability of Future Events, Hail, Clark County, NV	
Event Year	Event Count
2005	1
2006	3
2007	0
2008	1
2009	0
2010	1
2011	4
2012	2
2013	1
2014	2
2015	4
2016	6
2017	1
2018	4
2019	1
2020	0
2021	1
2022	1
2023	0
Total Recorded Events =	51
Total Years =	73

Probability of Future Events, Hail, Clark County, NV	
Event Year	Event Count
Yearly Probability =	69.86%

Data Source: NOAA NCEI Storm Event Database

Boulder City – Quantitative Future Probability, Hail

Based on the information obtained from the NOAA/NCEI, only 51 incidents of hail occurred in Clark County between January 1, 1950, and May 31, 2023. Clark County and its participating jurisdictions which included the City of Boulder City can expect a hail event with 8.219% probability per year or 0.082 events per year, as indicated in the table directly below.

According to [Table 28: Probability Categories](#), Boulder City has an **occasional** risk of experiencing a Boulder City event. This number is based on historical events.

Table 116: Probability of Future Events, Hail – Boulder City, NV

Probability of Future Events, Hail, Boulder City, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0

Probability of Future Events, Hail, Boulder City, NV

Event Year	Event Count
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0
1982	0
1983	0

Probability of Future Events, Hail, Boulder City, NV

Event Year	Event Count
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	1
1995	0
1996	0
1997	1
1998	0
1999	0
2000	0
2001	0
2002	0
2003	0
2004	0

Probability of Future Events, Hail, Boulder City, NV	
Event Year	Event Count
2005	0
2006	0
2007	0
2008	0
2009	1
2010	0
2011	1
2012	0
2013	0
2014	0
2015	0
2016	1
2017	0
2018	0
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	6
Total Years =	73

Probability of Future Events, Hail, Boulder City, NV	
Event Year	Event Count
Yearly Probability =	8.219%

Data Source: NOAA NCEI Storm Event Database

Henderson – Quantitative Future Probability, Hail

The City of Henderson can each expect a hail event with 17.80% probability per year, or a 0.178 event per year, as indicated in the table directly below. This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Henderson has a **likely** risk of experiencing a hail event.

Table 117: Probability of Future Events, Hail – Henderson, NV

Probability of Future Events, Hail, Henderson, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0
1963	0

Probability of Future Events, Hail, Henderson, NV

Event Year	Event Count
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0
1982	0
1983	0
1984	0

Probability of Future Events, Hail, Henderson, NV

Event Year	Event Count
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	1
1995	0
1996	0
1997	4
1998	0
1999	1
2000	0
2001	0
2002	0
2003	0
2004	1
2005	3

Probability of Future Events, Hail, Henderson, NV	
Event Year	Event Count
2006	0
2007	0
2008	0
2009	0
2010	1
2011	0
2012	0
2013	1
2014	0
2015	1
2016	1
2017	0
2018	0
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	13
Total Years =	73
Yearly Probability =	17.80%

Las Vegas – Quantitative Future Probability, Hail

The City of Las Vegas can each expect a hail event with 38.35% probability per year, or a 0.0383 event per year, as indicated in the table directly below. This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Las Vegas has a **likely** risk of experiencing a hail event.

Table 118: Probability of Future Events, Hail – Las Vegas, NV

Probability of Future Events, Hail, Las Vegas, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0

Probability of Future Events, Hail, Las Vegas, NV

Event Year	Event Count
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0

Probability of Future Events, Hail, Las Vegas, NV

Event Year	Event Count
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	5
1997	3
1998	5
1999	0
2000	0
2001	0
2002	0
2003	1
2004	1
2005	4
2006	1
2007	0
2008	1

Probability of Future Events, Hail, Las Vegas, NV	
Event Year	Event Count
2009	0
2010	0
2011	0
2012	3
2013	2
2014	0
2015	1
2016	1
2017	0
2018	1
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	28
Total Years =	73
Yearly Probability =	38.35%

Data Source: NOAA NCEI Storm Event Database

Mesquite – Quantitative Future Probability, Hail

The City of Mesquite can each expect a hail event with 1.369% probability per year, or a 0.0136 event per year, as indicated in the table directly below. This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Mesquite has an **occasional** risk of experiencing a hail event.

Table 119: Probability of Future Events, Hail – Mesquite, NV

Probability of Future Events, Hail, Mesquite, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0

Probability of Future Events, Hail, Mesquite, NV

Event Year	Event Count
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0

Probability of Future Events, Hail, Mesquite, NV

Event Year	Event Count
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	0
1999	0
2000	0
2001	0
2002	0
2003	0
2004	0
2005	0
2006	0
2007	0
2008	1
2009	0
2010	0
2011	0
2012	0

Probability of Future Events, Hail, Mesquite, NV	
Event Year	Event Count
2013	0
2014	0
2015	0
2016	0
2017	0
2018	0
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	1
Total Years =	73
Yearly Probability =	1.369%

Data Source: NOAA NCEI Storm Event Database

Wind (High and Strong) Quantitative Future Probability

Clark County Strong Wind Future Probability

To gain a better understanding of previous occurrences and accurately calculate future probability, the following information was taken into consideration. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the extreme/excessive heat hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible.

Note: The NOAA/NCEI Storm Events Database identifies the location of the extreme/excessive heat events within County into the following zones: Northeast Clark County, Western Clark and

Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation Area, and Southern Clark County.

Based on the information obtained from the NOAA/NCEI, only 69 strong wind incidents occurred in Clark County between January 1, 2017, and May 31, 2023. Clark County and its participating jurisdictions which included Clark County Unincorporated Area, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation can expect a strong wind event with 94.52% probability per year or a 0.945 event per year, as indicated in the table directly below. This number is based on historical events. However, the table below breaks down the probability for each zone with hazard history. The overall probability of a strong wind event is **highly likely** for Clark County and its participating jurisdictions.

Table 120: Probability of Future Events, Strong Wind – Clark County, NV

Probability of Future Events, Strong Wind, Clark County, NV					
Event Year	Northeast Clark Zone Event Count	Spring Mountain Zone Event Count	Lake Mead Lake Mohave Recreational Area Zone Event Count	Las Vegas Valley Zone Event Count	Southern Clark Zone Event Count
1950	0	0	0	0	0
1951	0	0	0	0	0
1952	0	0	0	0	0
1953	0	0	0	0	0
1954	0	0	0	0	0
1955	0	0	0	0	0
1956	0	0	0	0	0
1957	0	0	0	0	0
1958	0	0	0	0	0
1959	0	0	0	0	0
1960	0	0	0	0	0
1961	0	0	0	0	0
1962	0	0	0	0	0
1963	0	0	0	0	0
1964	0	0	0	0	0
1965	0	0	0	0	0
1966	0	0	0	0	0
1967	0	0	0	0	0
1968	0	0	0	0	0
1969	0	0	0	0	0

Probability of Future Events, Strong Wind, Clark County, NV

Event Year	Northeast Clark Zone Event Count	Spring Mountain Zone Event Count	Lake Mead Lake Mohave Recreational Area Zone Event Count	Las Vegas Valley Zone Event Count	Southern Clark Zone Event Count
1970	0	0	0	0	0
1971	0	0	0	0	0
1972	0	0	0	0	0
1973	0	0	0	0	0
1974	0	0	0	0	0
1975	0	0	0	0	0
1976	0	0	0	0	0
1977	0	0	0	0	0
1978	0	0	0	0	0
1979	0	0	0	0	0
1980	0	0	0	0	0
1981	0	0	0	0	0
1982	0	0	0	0	0
1983	0	0	0	0	0
1984	0	0	0	0	0
1985	0	0	0	0	0
1986	0	0	0	0	0
1987	0	0	0	0	0
1988	0	0	0	0	0
1989	0	0	0	0	0
1990	0	0	0	0	0
1991	0	0	0	0	0
1992	0	0	0	0	0
1993	0	0	0	0	0
1994	0	0	0	0	0
1995	0	0	0	0	0
1996	0	0	0	0	0
1997	0	0	0	0	0

Probability of Future Events, Strong Wind, Clark County, NV

Event Year	Northeast Clark Zone Event Count	Spring Mountain Zone Event Count	Lake Mead Lake Mohave Recreational Area Zone Event Count	Las Vegas Valley Zone Event Count	Southern Clark Zone Event Count
1998	0	0	0	0	0
1999	0	0	0	0	0
2000	0	0	0	0	0
2001	0	0	0	0	0
2002	0	0	0	0	0
2003	0	0	0	1	0
2004	0	0	0	0	0
2005	0	0	0	0	0
2006	0	0	1	0	0
2007	0	0	1	2	0
2008	1	0	1	5	0
2009	1	1	2	3	0
2010	1	1	0	3	0
2011	0	0	1	1	0
2012	0	0	1	2	1
2013	0	0	0	2	0
2014	0	0	0	4	0
2015	0	1	0	4	0
2016	0	1	0	4	0
2017	1	0	0	2	0
2018	1	1	1	4	0
2019	0	0	2	4	0
2020	1	0	0	2	0
2021	0	1	0	0	0
2022	1	0	0	2	0
2023	0	0	0	0	0
Total Recorded Events =	7	6	10	45	1

Probability of Future Events, Strong Wind, Clark County, NV					
Event Year	Northeast Clark Zone Event Count	Spring Mountain Zone Event Count	Lake Mead Lake Mohave Recreational Area Zone Event Count	Las Vegas Valley Zone Event Count	Southern Clark Zone Event Count
Total Years =	73	73	73	73	73
Yearly Probability =	9.589%	8.219	1.369%	61.64%	1.369%

Data Source: NOAA/NCEI Storm Events Database

Clark County High Wind Future Probability

Based on the information obtained from the NOAA/NCEI, only 333 high wind incidents occurred in Clark County between January 1, 1950, and May 31, 2023. Clark County and its participating jurisdictions which included Clark County Unincorporated areas, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation can expect a strong wind event with 456.2%% probability per year or 4.56 events per year, as indicated in the table directly below. This number is based on historical events. However, the table below breaks down the proability for each zone with hazard history. The overall probability of a strong wind event is **highly likely** for Clark County and its participating jurisdictions.

Note: Clark County and its participating jurisdictions (included Clark County Unincorporated Areas and the Tribal Lands of the Las Vegas Paiute Tribe and Moapa Band of Paiutes/Moapa River Indian Reservation) can expect a strong wind event with a 456.2% probability each year. This number was derived by dividing the number of recorded events by the year range used. Calculating future probably is not the only predictor of future occurrences. The qualitative chance of a high wind impacting the planning area is highly likely.

Table 121: Probability of Future Events, High Wind – Clark County, NV

Probability of Future Events, High Wind							
Event Year	Northeast Clark Event Count	Spring Mountain Event Count	Las Vegas Valley Event Count	Lake Mead Lake Mohave Event Count	Southern Clark Event Count	Sheep Mountain Event Count	Western Clark Event Count
1950	0	0	0	0	0	0	0
1951	0	0	0	0	0	0	0
1952	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0
1954	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0
1957	0	0	0	0	0	0	0

Probability of Future Events, High Wind

Event Year	Northeast Clark Event Count	Spring Mountain Event Count	Las Vegas Valley Event Count	Lake Mead Lake Mohave Event Count	Southern Clark Event Count	Sheep Mountain Event Count	Western Clark Event Count
1958	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0
1961	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0
1966	0	0	0	0	0	0	0
1967	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0

Probability of Future Events, High Wind

Event Year	Northeast Clark Event Count	Spring Mountain Event Count	Las Vegas Valley Event Count	Lake Mead Lake Mohave Event Count	Southern Clark Event Count	Sheep Mountain Event Count	Western Clark Event Count
1986	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	1
1997	0	0	1	1	0	0	0
1998	0	0	2	1	0	0	0
1999	0	0	0	0	0	0	1
2000	0	0	4	0	0	0	2
2001	1	0	3	0	0	0	2
2002	0	0	2	1	0	0	1
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	1	0	0	0	1
2006	0	1	0	0	0	0	0
2007	0	3	5	0	0	6	4
2008	0	7	6	0	0	5	12
2009	0	8	8	0	0	6	18
2010	0	3	8	0	0	4	11
2011	1	3	5	0	0	0	9
2012	0	9	5	2	1	0	7
2013	0	5	3	1	0	0	2

Probability of Future Events, High Wind							
Event Year	Northeast Clark Event Count	Spring Mountain Event Count	Las Vegas Valley Event Count	Lake Mead Lake Mohave Event Count	Southern Clark Event Count	Sheep Mountain Event Count	Western Clark Event Count
2014	0	8	1	1	0	0	2
2015	0	2	1	0	0	0	2
2016	0	7	7	0	1	0	7
2017	0	4	8	1	0	0	5
2018	0	4	1	0	0	1	4
2019	0	2	2	0	0	0	2
2020	0	3	1	2	0	0	2
2021	1	6	5	0	0	0	4
2022	0	15	8	0	1	0	6
2023	0	6	3	0	0	0	4
Total Recorded Events =	3	96	90	10	3	22	109
Total Years =	73	73	73	73	73	73	73
Yearly Probability =	4.11%	131.5%*	123.2%*	13.69%	4.11%	30.13%	149.31%*

Note: Spring Mountain Zone can expect a high wind event with a 131.5% probability each year or 13.15 events per year. This number was derived by dividing the number of recorded events by the year range used. Calculating future probability is not the only predictor of future occurrences. The qualitative chance of a high wind impacting the planning area is highly likely.

Note: Las Vegas Valley Zone can expect a high wind event with a 123.2% probability each year or 12.32 events per year. This number was derived by dividing the number of recorded events by the year range used. Calculating future probability is not the only predictor of future occurrences. The qualitative chance of a high wind impacting the planning area is highly likely.

Note: Western Clark Zone can expect a high wind event with a 149.31% probability each year or 1.4931 events per year. This number was derived by dividing the number of recorded events by the year range used. Calculating future probability is not the only predictor of future occurrences. The qualitative chance of a high wind impacting the planning area is highly likely.

Data Source: NOAA NCEI Storm Events Database

Tornado Quantitative Future Probability

Clark County Tornado Future Probability

Clark County and its participating jurisdictions Clark County Unincorporated Area, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) can expect a tornado event with 17.80% probability per year, or a 0.178 event per year, as indicated in the table directly below. According to [Table 28: Probability Categories](#), Clark County has a **likely** risk of experiencing a tornado event.

Note: The NOAA/NCEI Storm events database did not have any incidences of storm data records related to tornado for the Cities of Boulder City, Mesquite, and North Las Vegas from January 1, 1950 – May 31, 2023. Therefore, the Cities of Boulder City, Mesquite, and North Las Vegas’s Probability of Future Events is included with the Clark County information.

Table 122: Probability of Future Events, Tornado – Clark County, NV

Probability of Future Events, Tornado, Clark County, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	1
1976	0

Probability of Future Events, Tornado, Clark County, NV

Event Year	Event Count
1977	0
1978	0
1979	0
1980	0
1981	0
1982	0
1983	0
1984	1
1985	0
1986	1
1987	0
1988	0
1989	2
1990	1
1991	0
1992	2
1993	0
1994	0
1995	0
1996	0
1997	0
1998	0
1999	0
2000	0
2001	1
2002	0
2003	0
2004	0
2005	0
2006	0

Probability of Future Events, Tornado, Clark County, NV	
Event Year	Event Count
2007	0
2008	0
2009	0
2010	0
2011	0
2012	0
2013	0
2014	1
2015	1
2016	0
2017	1
2018	0
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	13
Total Years =	73
Yearly Probability =	17.80%

Data Source: NOAA NCEI Storm Events Database

Henderson Tornado Future Probability

The City of Henderson can expect a tornado event with 1.369% probability per year, or a .0136 event per year, as indicated in the table directly below. According to [Table 28: Probability Categories](#), Henderson has an **occasional** risk of experiencing a tornado event.

Table 123: Probability of Future Events, Tornado – Henderson, NV

Probability of Future Events, Tornado, Henderson, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0

Probability of Future Events, Tornado, Henderson, NV

Event Year	Event Count
1979	0
1980	0
1981	0
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	1
1999	0
2000	0
2001	0
2002	0
2003	0
2004	0
2005	0
2006	0
2007	0
2008	0

Probability of Future Events, Tornado, Henderson, NV	
Event Year	Event Count
2009	0
2010	0
2011	0
2012	0
2013	0
2014	0
2015	0
2016	0
2017	0
2018	0
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	1
Total Years =	73
Yearly Probability =	1.369%

Data Source: NOAA NCEI Storm Events Database

Las Vegas Tornado Future Probability

The City of Las Vegas can expect a tornado event with 1.369% probability per year, or a .0136 event per year, as indicated in the table directly below. According to [Table 28: Probability Categories](#), Las Vegas has an **occasional** risk of experiencing a tornado event.

Table 124: Probability of Future Events, Tornado – Las Vegas, NV

Probability of Future Events, Tornado, Las Vegas, NV	
Event Year	Event Count
1950	0
1951	0

Probability of Future Events, Tornado, Las Vegas, NV

Event Year	Event Count
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0

Probability of Future Events, Tornado, Las Vegas, NV

Event Year	Event Count
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	0
1999	0
2000	0
2001	0
2002	0
2003	0
2004	0
2005	0
2006	0
2007	0
2008	0
2009	0
2010	0
2011	0

Probability of Future Events, Tornado, Las Vegas, NV	
Event Year	Event Count
2012	0
2013	0
2014	0
2015	0
2016	0
2017	0
2018	1
2019	0
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	1
Total Years =	73
Yearly Probability =	1.369%

Data Source: NOAA NCEI Storm Events Database

Tribal Nation: Moapa Band of Paiutes/Moapa Unincorporated Area of Clark County Tornado Future Probability

The Tribal Nation of the Moapa Band of Paiutes and Moapa Unincorporated Area of Clark County can expect a tornado event with 1.369% probability per year, or a .0136 event per year, as indicated in the table directly below. According to [Table 28: Probability Categories](#), Moapa Band of Paiutes and Moapa Unincorporated Area of Clark County has an **occasional** risk of experiencing a tornado event.

Table 125: Probability of Future Events, Tornado – Tribal Nation: Moapa Band of Paiutes/Moapa Unincorporated Area of Clark County, NV

Probability of Future Events, Tornado, Tribal Nation: Moapa Band of Paiutes/Moapa Unincorporated Area of Clark County, NV	
Event Year	Event Count
1950	0
1951	0

**Probability of Future Events, Tornado, Tribal Nation: Moapa Band of Paiutes/Moapa
Unincorporated Area of Clark County, NV**

Event Year	Event Count
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0

**Probability of Future Events, Tornado, Tribal Nation: Moapa Band of Paiutes/Moapa
Unincorporated Area of Clark County, NV**

Event Year	Event Count
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	0
1999	0
2000	0
2001	0
2002	0
2003	0
2004	0
2005	0
2006	0
2007	0
2008	0
2009	0
2010	0
2011	0

Probability of Future Events, Tornado, Tribal Nation: Moapa Band of Paiutes/Moapa Unincorporated Area of Clark County, NV

Event Year	Event Count
2012	0
2013	0
2014	0
2015	0
2016	0
2017	0
2018	0
2019	1
2020	0
2021	0
2022	0
2023	0
Total Recorded Events =	1
Total Years =	73
Yearly Probability =	1.369%

Data Source: NOAA NCEI Storm Events Database














Vulnerability and Impact

Thunderstorm (Thunderstorm Winds and Heavy Rain) Impacts

Clark County (including its participating jurisdictions and Clark County Unincorporated Areas and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) have recorded 173 thunderstorm wind events since 1950; and of these events, the range of magnitude was between 45 and 65 MPH with an average of 50 MPH. Based on the Beaufort Scale (as indicated) Clark County and its participating jurisdictions can expect

2.376 thunderstorm wind events per year ranging from Beaufort Scale 8 – “Fresh Gale” to Beaufort Scale 10 – “Whole Gale.”

BEAUFORT WIND SCALE

Beaufort Number	Description	Wind speed	Wave height	Sea conditions	Land conditions	
0	Calm	< 1 knot < 1 mph < 2 km/h	0 ft 0 m	Sea like a mirror	Smoke rises vertically	
1	Light air	1–3 knots 1–3 mph 2–5 km/h	0–1 ft 0–0.3 m	Ripples	Direction shown by smoke drift	
2	Light breeze	4–6 knots 4–7 mph 6–11 km/h	1–2 ft 0.3–0.6 m	Small wavelets	Wind felt on face	
3	Gentle breeze	7–10 knots 8–12 mph 12–19 km/h	2–4 ft 0.6–1.2 m	Large wavelets	Leaves and small twigs in constant motion	
4	Moderate breeze	11–16 knots 13–18 mph 20–28 km/h	3.5–6 ft 1–2 m	Small waves	Raises dust and loose paper	
5	Fresh breeze	17–21 knots 19–24 mph 29–38 km/h	6–10 ft 2–3 m	Moderate waves	Small trees and leaves begin to sway	
6	Strong breeze	22–27 knots 25–31 mph 39–49 km/h	9–13 ft 3–4 m	Large waves	Large branches in motion	
7	High wind, moderate gale, near gale	28–33 knots 32–38 mph 50–61 km/h	13–19 ft 4–5.5 m	Sea heaps up	Whole trees in motion	
8	Gale, fresh gale	34–40 knots 39–46 mph 62–74 km/h	18–25 ft 5.5–7.5 m	Moderately high waves	Twigs break off trees	
9	Strong/severe gale	41–47 knots 47–54 mph 75–88 km/h	23–32 ft 7–10 m	High waves	Slight structural damage	
10	Storm, whole gale	48–55 knots 55–63 mph 89–102 km/h	29–41 ft 9–12.5 m	Very high waves	Trees uprooted, considerable structural damage	
11	Violent storm	56–63 knots 64–72 mph 103–117 km/h	37–52 ft 11.5–16 m	Exceptionally high waves	Widespread damage	
12	Hurricane force	≥ 64 knots ≥ 73 mph ≥ 118 km/h	≥ 46 ft ≥ 14 m	Exceptionally high waves, sea is completely white	Devastation	

Data Source: [Science Sparks](#)

From January 1, 1950, to May 31, 2023, [NOAA/NCEI](#) recorded 173 thunderstorm wind events in Clark County (including its participating jurisdictions and Clark County Unincorporated Area, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation). The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>.

This information represents all the events and extent of the Thunderstorm winds experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. However, thunderstorm (thunderstorm wind and heavy rain) could pose a risk to the vulnerable populations within the planning area. The following information provides updated vulnerability and impact of thunderstorm wind for each jurisdiction in the planning are:

- **Boulder City:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 173 thunderstorm wind events in the City of Boulder City. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the thunderstorms experienced by Boulder City, including the jurisdictions located within, and is the only data source accessible. The City of Boulder City can each expect thunderstorm wind event with a 28.76% probability per year, or 0.2876 events per year, as indicated in Table 110 (above). This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Boulder City has a “**likely**” risk of experiencing a thunderstorm wind event.

In reference to population growth, Boulder City has experienced a 0.919% growth in population. With the recent growth, Boulder City now has many more residents since the last HMP update. At the same time, Boulder City is seeing an increased aging population with 29.0% residents being above the age of 65 and there was a 0.15% increase of housing units between 2010 and 2020. Since 1950, Boulder City has had no injuries or death directly resulting from thunderstorm wind. However, Boulder City has \$588,000 worth of property damage as a result of thunderstorm wind events. It is expected that with increased population and the increasing effects of climate change, Climate change is expected to result in stronger, more powerful storms, particularly thunderstorms which may produce high winds and/or tornados. The most vulnerable populations, including seniors and those experiencing homelessness, are the most at risk for thunderstorm wind.

- **Henderson:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 14 thunderstorm wind events in the City of Henderson. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the thunderstorm wind experienced by Henderson, including the jurisdictions located within, and is the only data source accessible. The City of Henderson can each expect thunderstorm wind event with a 19.71% probability per year, or a 0.1917 event per year, as indicated in Table 111 (above). This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Henderson has a “**likely**” risk of experiencing a thunderstorm wind event.

In reference to population growth, Henderson has experienced a 23.23% growth in population. With the recent growth, Henderson now has many more residents since the last HMP update. At the same time, Henderson is seeing an increased aging population with 26.6% residents being above the age of 65 and there was a 20% increase of housing units between 2010 and 2020. Since 1950, Henderson has had no injuries or death directly resulting from thunderstorm wind. However, Henderson has \$114,000 worth of property damage as a result of thunderstorm wind events. It is expected that with increased population and the increasing effects of climate change, Climate change is expected to result in stronger, more powerful storms, particularly thunderstorms which may produce high winds and/or tornados. The most vulnerable populations, including seniors and those experiencing homelessness, are the most at risk for thunderstorm wind.

- **Las Vegas:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 40 thunderstorm wind events in the City of Las Vegas. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the thunderstorm wind experienced by Las Vegas, including the jurisdictions located within, and is the only data source accessible. The City of Las

Vegas can each expect thunderstorm wind event with a 54.79% probability per year, or 0.5479 events per year, as indicated in Table 112 (above). This number is based on historical events. According to [Table 26: Probability Categories](#), the City of Las Vegas has a “**likely**” risk of experiencing a thunderstorm wind event.

In reference to population growth, Las Vegas has experienced a 9.96% growth in population. With the recent growth, Las Vegas now has many more residents since the last HMP update. At the same time, Las Vegas is seeing an increased aging population with 14.8% residents being above the age of 65 and there was a 5.34% increase of housing units between 2010 and 2020. Since 1950, Las Vegas has had zero deaths, one (1) injury and \$3,221,000 worth of property damage directly resulting from thunderstorm wind. It is expected that with increased population and the increasing effects of climate change, Climate change is expected to result in stronger, more powerful storms, particularly thunderstorms which may produce high winds and/or tornados. The most vulnerable populations, including seniors and those experiencing homelessness, are the most at risk for thunderstorm wind.

- **Mesquite:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](#) recorded six (6) thunderstorm wind events in the City of Mesquite. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the thunderstorm wind experienced by Mesquite, including the jurisdictions located within, and is the only data source accessible. The City of Mesquite can each expect thunderstorm wind event with an 8.219% probability per year, or a 0.082 event per year, as indicated in Table 113 (above). This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Mesquite has a “**occasional**” risk of experiencing a thunderstorm wind event.

In reference to population growth, Mesquite has experienced a 34% growth in population. With the recent growth, Mesquite now has many more residents since the last HMP update. At the same time, Mesquite is seeing an increased aging population with 26.6% residents being above the age of 65 and there was a 20% increase of housing units between 2010 and 2020. Since 1950, Mesquite has had no injuries or deaths and \$2,000 worth of property damage directly resulting from thunderstorm wind. It is expected that with increased population and the increasing effects of climate change, Climate change is expected to result in stronger, more powerful storms, particularly thunderstorms which may produce high winds and/or tornados. The most vulnerable populations, including seniors and those experiencing homelessness, are the most at risk for thunderstorm wind.

- **North Las Vegas:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](#) recorded four (4) thunderstorm wind events in the City of North Las Vegas. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the thunderstorm wind experienced by North Las Vegas including the jurisdictions located within and is the only data source accessible. The City of North Las Vegas can each expect thunderstorm wind events with an 5.479% probability per year, or a 0.0547 event per year, as indicated in Table 114 (above). This number is based on historical events. According to [Table 28: Probability Categories](#), the City of North Las Vegas has a “**occasional**” risk of experiencing a thunderstorm wind event.

In reference to population growth, North Las Vegas has experienced a 34% growth in population. With the recent growth, North Las Vegas now has many more residents since the last HMP update. At the same time, North Las Vegas is seeing an increased

aging population with 10.9% residents being above the age of 65 and there was a 13.5% increase of housing units between 2010 and 2020. Since 1950, North Las Vegas has had no injuries or deaths and \$52,000 worth of property damage directly resulting from thunderstorm wind. It is expected that with increased population and the increasing effects of climate change, Climate change is expected to result in stronger, more powerful storms, particularly thunderstorms which may produce high winds and/or tornados. The most vulnerable populations, including seniors and those experiencing homelessness, are the most at risk for thunderstorm wind.

Lightning Impacts

Since 2018, Clark County has recorded only four (4) lightning-related events/impacts. It is impossible to meet the following planning element due to the planning area being vulnerable to lightning strikes, but without any historical precedent, there is no reasonable way to predict a range or magnitude.

Hail Impacts

Since 2018, Clark County has recorded three (3) hail events, of which the range of magnitude was between 0.75 and 1.00 inches in diameter with an average of 1 inch. Based on the hailstorm average and future probability see in the table above, Clark County and its participating jurisdiction(s) can expect 0.60 potentially damaging' hail events each year, or with 40 percent probability. From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 46 hail events Clark County (including its participating jurisdiction - the and Clark County Unincorporated Area and the Tribal Nation of the Las Vegas Paiute Tribe). The following information was obtained by accessing the NOAA database.

<https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the hail experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. However, hail could pose a risk to the vulnerable populations (aging population and homeless) within the planning area. The following information provides updated vulnerability and impact of hail for each jurisdiction in the planning area:

- **Boulder City:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 51 hail events in the City of Boulder City. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of hail experienced by Boulder City, including the jurisdictions located within, and is the only data source accessible. The City of Boulder City can each expect hail event with 8.219% probability per year, or 0.082 events per year, as indicated in Table 116 (above). This number is based on historical events.

According to [Table 28: Probability Categories](#), the City of Boulder City has a “highly likely” risk of experiencing hail. In reference to population growth, Boulder City has experienced a 0.919% growth in population. With the recent growth, Boulder City now has many more residents since the last HMP update. At the same time, Boulder City is seeing an increased aging population with 29.0% residents being above the age of 65 and there was a 0.15% increase of housing units between 2010 and 2020. Hailstones of this size can destroy roofs, break windows, damage vehicles, kill livestock, and injure people resulting in significant financial and personal losses. Since 1950, Boulder City has had no injuries or death directly resulting from thunderstorm wind. However, Boulder City has \$50,000,000 worth of property damage as a result of hail events. The most vulnerable populations, including seniors and those experiencing homelessness, are the most at risk for hail.

- **Henderson:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 13 hail events in the City of Henderson. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the hail experienced by Henderson, including the jurisdictions located within, and is the only data source accessible. The City of Henderson can each expect a hail event with a 17.80% probability per year, or 0.178 events per year, as indicated in Table 117 (above). This number is based on historical events.

According to [Table 28: Probability Categories](#), the City of Henderson has a “likely” risk of experiencing a hail event. In reference to population growth, Henderson has experienced a 23.23% growth in population. With the recent growth, Henderson now has many more residents since the last HMP update. At the same time, Henderson is seeing an increased aging population with 26.6% residents being above the age of 65 and there was a 20% increase of housing units between 2010 and 2020. Hailstones of this size can destroy roofs, break windows, damage vehicles, kill livestock, and injure people resulting in significant financial and personal losses. Since 1950, Henderson has had no injuries, deaths or property damage directly resulting from hail events. The most vulnerable populations, including seniors and those experiencing homelessness, are the most at risk for hail.

- **Las Vegas:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded 28 hail events in the City of Las Vegas. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the hail experienced by Las Vegas, including the jurisdictions located within, and is the only data source accessible. The City of Las Vegas can each expect hail event with a 38.35% probability per year, or 0.0383 events per year, as indicated in Table 118 (above). This number is based on historical events.

According to [Table 28: Probability Categories](#), the City of Las Vegas has a “likely” risk of experiencing a hail event. In reference to population growth, Las Vegas has experienced a 9.96% growth in population. With the recent growth, Las Vegas now has many more residents since the last HMP update. At the same time, Las Vegas is seeing an increased aging population with 14.8% residents being above the age of 65 and there was a 5.34% increase of housing units between 2010 and 2020. Hailstones of this size can destroy roofs, break windows, damage vehicles, kill livestock, and injure people resulting in significant financial and personal losses. Since 1950, Las Vegas has had no injuries, deaths, but \$101,000 worth of property damage directly resulting from hail events. The most vulnerable populations, including seniors and those experiencing homelessness, are the most at risk for hail.

- **Mesquite:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded one (1) hail event in the City of Mesquite. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the hail experienced by Mesquite, including the jurisdictions located within, and is the only data source accessible. The City of Mesquite can each expect hail event with an 1.369% probability per year, or 0.0136 events per year, as indicated in Table 119 (above). This number is based on historical events.

According to [Table 28: Probability Categories](#), the City of Mesquite has an “occasional” risk of experiencing a hail event. In reference to population growth, Mesquite has experienced a 34% growth in population. With the recent growth, Mesquite now has many more residents since the last HMP update. At the same time, Mesquite is seeing an increased aging population with 26.6% residents being above

the age of 65 and there was a 20% increase of housing units between 2010 and 2020. Hailstones of this size can destroy roofs, break windows, damage vehicles, kill livestock, and injure people resulting in significant financial and personal losses. Since 1950, Mesquite has had no injuries, deaths, or property damage directly resulting from hail events. The most vulnerable populations, including seniors and those experiencing homelessness, are the most at risk for hail.

- **North Las Vegas:** The NOAA/NCEI Storm events <https://www.ncdc.noaa.gov/stormevents/> database did not have any incidences of storm data records related to hail for the City of North Las Vegas from January 1, 1950 – May 31, 2023. Therefore, the City of North Las Vegas Probability of Future Events is included with the Clark County information. Typically, impacts from hail are seen across the entire County and in particular jurisdictions. The City of North Las Vegas resides in Clark County; therefore, this probability is based on County-wide data. Because of this, the City of North Las Vegas hail event data is included under Clark County, and jurisdictional vulnerability and impact data is not available.

Wind (High Wind and Strong Wind) Impacts

Wind (High and Strong Wind) is a regular aspect of normal weather conditions within the County and its participating jurisdictions. However, the hazard being explained is an abnormal gust or length of time of the wind. The wind is also not more susceptible to one part of Clark County than any other, therefore, it can (and does) affect the entire planning area. If the wind is strong enough, it can adversely affect any building, system, or person in any location within the planning area. The following information provides updated vulnerability and impact of wind (high wind and strong wind) for each jurisdiction in the planning area:

- **Boulder City:** The City of Boulder City's wind (high wind and strong wind) events probability is based on the Lake Mead/Lake Mohave National Recreation Area which includes Clark County and Boulder City. This zone, as indicated by the NOAA/NCEI Storm Events Database, identifies the location of the wind (high wind and strong wind) events within County into the following zones: Northeast Clark County, Western Clark and Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation Area, and Southern Clark County.

Note: The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the wind (high wind and strong wind) events hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible.

The City of Boulder City resides in Clark County; therefore, this probability is based on County-wide data. Also, in reference to population growth, the City of Boulder City has experienced a 23.23% growth in population. With the recent growth, Boulder City now has many more residents since the last HMP update. At the same time, Boulder City is seeing an increased aging population with 29.0% of residents being above the age of 65. These groups are most at risk to the impacts of wind (high wind and strong wind) events conditions.

Since 1950, the **Lake Mead/Lake Mohave National Recreational Area Zone** which includes Boulder City had one (1) death, one (1) injury, and \$215,000 directly resulting from high wind events. For Strong wind events, this jurisdiction, had four (4) deaths, three (3) injuries, and \$262,000 worth of property damage directly resulting from strong wind events. It is expected that with increased population and the increasing effects of

climate change, this may lead to an increase in deaths in the future. The most at risk are the area's vulnerable populations, which include seniors and those experiencing homelessness.

Henderson: The City of Henderson's wind (high wind and strong wind) events probability is based on the Las Vegas Valley Zone which includes Clark County, Las Vegas, North Las Vegas, Henderson, and Las Vegas Paiute Tribe. This zone as indicated by the NOAA/NCEI Storm Events Database which identifies the location of the wind (high wind and strong wind) events within County into the following zones: Northeast Clark County, Western Clark and Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation Area, and Southern Clark County.

Note: The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. The Las Vegas Valley Zone which includes the City of Henderson can experience a strong wind event with 61.64% probability per year or 0.630 per year as indicted in Table 120 (above). The overall probability of a strong wind event for the Las Vegas Valley Zone is "**highly likely**".

Related to High Wind, the Las Vegas Valley Zone which includes the City of Henderson, can experience a high wind event with 123.2% probability per year 1.2328 per year as indicted in Table 120 (above). This information represents all the events and extent of the wind (high wind and strong wind) events hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. Also, with population growth, the City of Henderson has experienced a 0.919% growth in population. With the recent growth, Henderson now has many more residents. At the same time, Henderson is seeing an increased aging population with 26.6% residents above the age of 65. These groups are most at risk to the impact of wind (high wind and strong wind) events conditions.

Since 1950, the **Las Vegas Valley Zone** which includes the City of Henderson had one (1) death, six (6) injuries, and \$1,380,000 directly resulting from high wind events. For Strong wind events, for this jurisdiction, had one (1) death, six (6) injuries, and \$1,544,500 worth of property damage directly resulting from strong wind events. It is expected that with increased population and the increasing effects of climate change, may lead to an increase in deaths in the futures. The most vulnerable populations, including seniors and those experiencing homelessness, are most at risk.

- **Las Vegas:** The City of Las Vegas's wind (high wind and strong wind) events probability is based on the Las Vegas Valley Zone which includes Clark County Las Vegas, North Las Vegas, Henderson, and Las Vegas Paiute Tribe. This zone as indicated by the NOAA/NCEI Storm Events Database identifies the location of the extreme/excessive heat events within County into the following zones: Northeast Clark County, Western Clark and Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation Area, and Southern Clark County. Note: The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the wind (high wind and strong wind) events hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. The Las Vegas Valley Zone which includes the City of Las Vegas can experience a strong wind event with 61.64% probability per year or 0.630 per year as indicted in Table 120 (above). The overall probability of a strong wind event for the Las Vegas Valley Zone is highly likely.

Related to High Wind, the Las Vegas Valley Zone which includes the City of Las Vegas, can experience a high wind event with 123.2% probability per year 1.2328 per year as indicted in Table 121 (above). At the same time, the City of Las Vegas is seeing an increased aging population with 14.8% residents above the age of 65 and there was a 5.34% increase of housing units between 2010 and 2020.

Since 1950, the **Las Vegas Valley Zone** which includes the City of Las Vegas had one (1) death, six (6) injuries, and \$1,380,000 directly resulting from high wind events. For Strong wind events, for this jurisdiction, had one (1) death, six (6) injuries, and \$1,544,500 worth of property damage directly resulting from strong wind events. It is expected that with increased population and the increasing effects of climate change, may lead to an increase in deaths in the futures. The most vulnerable populations, including seniors and those experiencing homelessness, are most at risk.

- **Mesquite:** The City of Mesquite's wind (high wind and strong wind) events probability is based on the Northeast Clark Zone which includes Clark County, Mesquite and Moapa River Indian Reservation (Moapa Band of Paiutes). This zone as indicated by the NOAA/NCEI Storm Events Database identifies the location of the extreme/excessive heat events within County into the following zones: Northeast Clark County, Western Clark and Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation Area, and Southern Clark County. Note: The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the wind (high wind and strong wind) events hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. The Northeast Clark Zone which includes the City of Mesquite can experience a strong wind event with 4.11% probability per year or 0.04109 per year as indicted in Table 120 (above). The overall probability of a strong wind event for the Northeast zone is occasional. Related to High Wind, the Northeast Clark County which includes the City of Mesquite, can experience a strong wind event with 9.589% probability per year 0.0958 per year as indicted in Table 121 (above). The overall probability of a high wind event for the Northeast Clark Zone which includes the City of Mesquite, can experience a high wind event is occasional. Mesquite has experienced a 34% growth in population. With the recent growth, Mesquite now has many more residents. At the same time, Mesquite is seeing an increased aging population with 42% residents above the age of 65. These groups are most at risk to the impact of wind (high wind and strong wind) events conditions.

Since 1950, the **Northeast Clark Zone** which includes the City of Mesquite had no deaths or injuries, but \$5,000 worth of property damage directly resulting from high wind events. For Strong wind events, for this jurisdiction, had no deaths, two (2) injuries, and \$108,000 worth of property damage directly resulting from strong wind events. It is expected that with increased population and the increasing effects of climate change, may lead to an increase in deaths in the futures. The most vulnerable populations, including seniors and those experiencing homelessness, are most at risk.

- **North Las Vegas:** The City of Las Vegas's wind (high wind and strong wind) events probability is based on the Las Vegas Valley Zone which includes Clark County Las Vegas, North Las Vegas, Henderson, and Las Vegas Paiute Tribe. This zone as indicated by the NOAA/NCEI Storm Events Database identifies the location of the wind (high wind and strong wind) events within County into the following zones: Northeast Clark County, Western Clark and Southern Nye County, Sheep Range, Spring Mountains-Red Rock Canyon, Las Vegas Valley, Lake Mead National Recreation

Area, and Southern Clark County. Note: The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the wind (high wind and strong wind) events hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. The Las Vegas Valley Zone which includes the City of North Las Vegas can experience a strong wind event with 61.64% probability per year or 0.630 per year as indicted in Table 120 (above). The overall probability of a strong wind event for the Las Vegas Valley Zone is highly likely.

Related to High Wind, the Las Vegas Valley Zone which includes the City of North Las Vegas, can experience a high wind event with 123.2% probability per year 1.2328 per year as indicted in Table 121 (above). Also, with population growth, the City of North Las Vegas has experienced a 21% growth in population. With the recent growth, Las Vegas now has many more residents. At the same time, North Las Vegas is seeing an increased aging population with 10.9% residents above the age of 65.

Since 1950, the **Las Vegas Valley Zone** which includes North Las Vegas, had one (1) death, six (6) injuries, and \$1,380,000 directly resulting from high wind events. For Strong wind events, for this jurisdiction, had one (1) death, six (6) injuries, and \$1,544,500 worth of property damage directly resulting from strong wind events. It is expected that with increased population and the increasing effects of climate change, may lead to an increase in deaths in the futures. The most vulnerable populations, including seniors and those experiencing homelessness, are most at risk.

Tornado Impacts

The NWS recorded two (2) tornadoes in the County since 2000. The range of magnitude was between EF0 and EF1, with an approximate average of an EF1. Based on the Enhanced Fujita Scale and the future probability in the table above, Clark County (including its participating jurisdiction and Clark County Unincorporated Area and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) can expect no tornadoes per year. The NOAA/NCEI events <https://www.ncdc.noaa.gov/stormevents/> database did not have any incidences of storm data records related to tornado for the Cities of Boulder City, Mesquite, North Las Vegas from January 1, 1950 – May 31, 2023. Therefore, the Cities of Boulder City, Mesquite, North Las Vegas Probability of Future Events is included with the Clark County information.

Typically, impacts from tornadoes can be seen across the entire County and in particular jurisdictions. The Cities of Boulder City, Mesquite, North Las Vegas resides in Clark County; therefore, this probability is based on County-wide data. Because of this, the Cities of Boulder City, Mesquite, North Las Vegas tornado event data is included under Clark County, and jurisdictional vulnerability and impact data is unavailable. The following information provides updated vulnerability and impact tornados for each jurisdiction in the planning are:

- **Henderson:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded one (1) tornado events in the City of Henderson. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the tornado experienced by Henderson, including the jurisdictions located within, and is the only data source accessible. The City of Henderson can expect a tornadic event with a 1.369% probability per year, or 0.0136 events per year, as indicated in Table 123 (above). This number is based on historical events. According to [Table 28: Probability Categories](#),

the City of Henderson has an “occasional” risk of experiencing a tornadic event. In reference to population growth, Henderson has experienced a 23.23% growth in population. With the recent growth, Henderson now has many more residents since the last HMP update. At the same time, Henderson is seeing an increased aging population with 26.6% residents being above the age of 65 and there was a 20% increase of housing units between 2010 and 2020. Since 1950, Henderson has had no injuries or death directly resulting from tornado. However, Henderson has \$30,000 worth of property damage as a result of tornadic events. It is expected that with increased population and the increasing effects of climate change, Climate change is expected to result in stronger, more powerful storms, particularly thunderstorms which may produce high winds and/or tornados. The most vulnerable populations, including seniors and those experiencing homelessness, are the most at risk for tornadic events.

- **Las Vegas:** From January 1, 1950, to May 31, 2023, [NOAA/NCEI](https://www.ncdc.noaa.gov/stormevents/) recorded one (1) tornadic events in the City of Las Vegas. The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of the tornado experienced by Las Vegas, including the jurisdictions located within, and is the only data source accessible. The City of Las Vegas can each expect tornado event with a 1.369% probability per year, or 0.0136 events per year, as indicated in Table 124 (above). This number is based on historical events. According to [Table 28: Probability Categories](#), the City of Las Vegas has a “likely” risk of experiencing a tornadic event. In reference to population growth, Las Vegas has experienced a 9.96% growth in population. With the recent growth, Las Vegas now has many more residents since the last HMP update. At the same time, Las Vegas is seeing an increased aging population with 14.8% residents being above the age of 65 and there was a 5.34% increase of housing units between 2010 and 2020. However, Las Vegas has no death, injuries and property damage as a result of tornado events. It is expected that with increased population and the increasing effects of climate change, Climate change is expected to result in stronger, more powerful storms, particularly thunderstorms which may produce high winds and/or tornados. The most vulnerable populations, including seniors and those experiencing homelessness, are the most at risk for tornado events.

Vulnerability of Facilities

Structural vulnerability to severe weather, specifically thunderstorm wind, lightning, hail, and tornadoes, is the same throughout the entire planning area. Wind events create flying debris that can significantly damage infrastructure and buildings. Strong enough wind can cause structural damage to older, less well-constructed buildings, even toppling or leveling them. FEMA Code 361 “Tornado Safe Room” will provide more-than-sufficient protection and resistance to any form of severe storm as they are designed and constructed above the standard metrics of a severe thunderstorm. Lightning can strike anything, and a single bolt has the potential to damage electrical infrastructure or ignite a fire. Hail can be costly by damaging rooftops, outdoor equipment, and windows.

Vulnerability of Population

Clark County’s vulnerability to severe weather is the same throughout the planning area. In the absence of proper shelter, hail, in particular, can cause serious injury to unprotected persons. As long as Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of

Paiutes/Moapa River Indian Reservation) citizens stay indoors and away from windows, they will be protected against hail injury or death. Similarly, they can avoid being struck by lightning by staying indoors. Although lightning may strike a structure sheltering people, it is improbable that the strike itself will directly injure or kill a sheltered person. If a structure can maintain its integrity during high-speed winds, it will protect people from wind injury or death. However, old or poorly constructed facilities are not a good shelter as flying debris can easily break windows or cause structural damage. Either of these instances have the potential for severe injuries or kill anyone taking shelter in an older, less well-constructed building.

The FEMA National Risk Index map provides data on social vulnerability and community resilience related to hazards. Both of these factors impact the vulnerability of a population for a hazard event like severe weather. FEMA National Risk Index defines [Social Vulnerability](#) as the susceptibility of social groups to the adverse impacts of natural hazards, including death, injury, loss, or disruption of livelihood. FEMA defines [Community Resilience](#) as the ability for a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruption. The scoring of these FEMA National Risk Index categories are for all hazards, including drought are as follows:

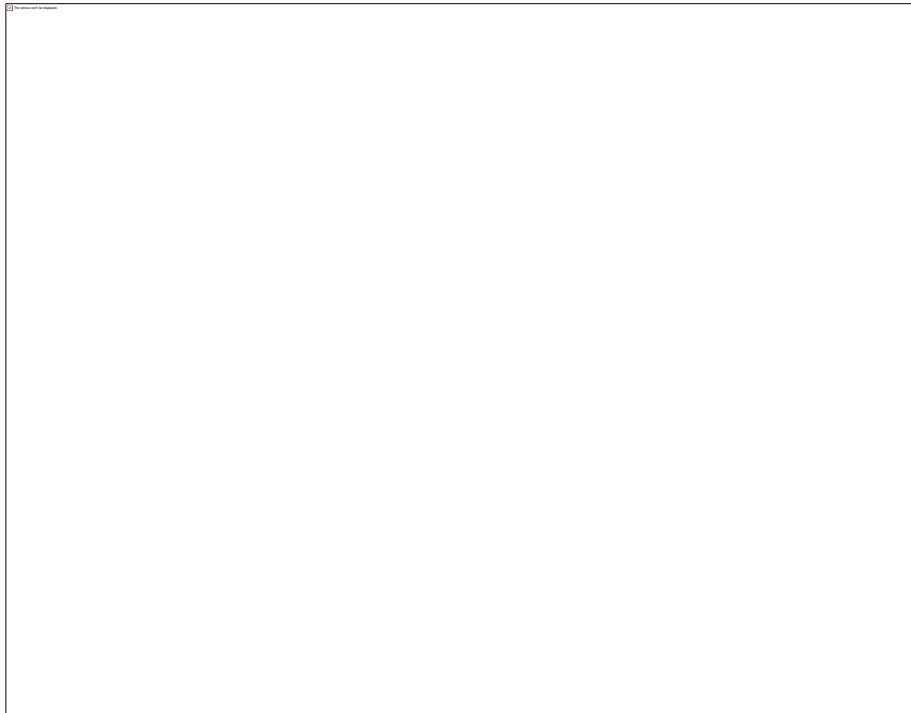
- Community Resilience: the higher community resilience score results in a lower risk index score. The Community Resilience score for Clark County is 49.9, meaning communities within the County have a Very Low ability to prepare for anticipated natural hazards, adapt to conditions, and withstand and recover rapidly from disruptions compared to the rest of the U.S.
- Social Vulnerability: a higher social vulnerability score results in a higher Risk Index score. Social groups in Clark County, NV, have a Relatively High susceptibility to the adverse impacts of natural hazards compared to the rest of the U.S. The Social Vulnerability score for Clark County is 48.59

The following maps provide a snapshot of community resilience and social vulnerability scoring related to all hazards including drought for Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation).

Figure 107: FEMA National Risk Index Maps, Social Vulnerability - Clark County, NV



Figure 108: FEMA National Risk Index Maps, Community Resilience Map – Clark County, NV



Data Source: [The FEMA National Risk Index](#)

Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation). have a total population of 2,265,461 in 840,343 housing units, all of which are highly vulnerable and at risk to severe weather events. Historically, there have been five (5) deaths and no injuries recorded from severe weather (thunderstorms, lightening, hail, wind, and thunderstorm wind) within the planning area.

Impact of Climate Change

Climate change is expected to result in stronger, more powerful storms, particularly thunderstorms which may produce high winds and/or tornados. Climate change-induced warmer weather will likely result in more days with high winds, stronger wind events, and potentially an increased number of tornados on an annual basis. Also, there presently is not enough data or research to quantify the magnitude of change that climate change may have related to tornado frequency and intensity. NASA’s Earth Observatory has studied the interaction between climate change and tornadoes. Based on these studies, meteorologists are unsure why some thunderstorms generate tornadoes and others do not, beyond knowing that they require a specific type of wind shear. Tornadoes spawn from approximately one percent of thunderstorms, usually supercell thunderstorms in a wind-shear environment that promotes rotation. Some studies show a potential decrease in wind shear in mid-latitude areas. Because of uncertainty about the influence of climate change on tornadoes, future updates to the mitigation plan should include the latest research on how the tornado hazard frequency and severity could change. An article published by National Geographic also agrees that there is still much to learn about how climate change might affect tornadoes. As one of nature’s most violent storms, climate change’s effect on tornadoes remains unclear (National Geography 2019). The level of significance of this hazard should be revisited over time.

Critical Facilities & Infrastructure

All critical facilities and infrastructure within Clark County are equally at risk since severe weather indiscriminately affects the entire planning area. Facilities on higher ground may also be more exposed to wind damage or damage from falling trees. The most common problem associated with extreme weather is the loss of utilities. Downed power lines can cause blackouts, leaving large areas isolated and phone, water, and sewer systems inoperable. Roads may become impassable due to flooding and downed trees. High winds can knock down critical infrastructure, such as powerlines, preventing information communication systems from functioning sufficiently. Severe winds can also cause structural and non-structural damage to critical facilities. Heavy rains, especially when accompanied by a windstorm, can cause water damage to critical facilities and compromise functionality.

A complete list of critical facilities and infrastructure can be found in [Appendix E](#).

Land Use & Development

Considering the entire planning area is at risk of severe weather, increased development and population growth can reasonably translate to increased damage due to the hazard. All future development will be affected by severe storms.

The ability to withstand impacts lies in sound land use practices and consistent enforcement of codes and regulations for new construction. Participating jurisdictions have adopted the Nevada Building Code, which corresponds to the International Building Code, to meet Nevada mandates. This code is equipped to deal with the impacts of severe weather events, including high wind, heavy rain, high wind, and tornadoes. Land use policies identified in general plans within the planning area also address many secondary impacts of severe weather, such as flooding. With these tools, the participating jurisdictions are well-equipped to deal with future growth and the associated effects of severe weather.

Unique & Varied Risk

Severe weather, primarily thunderstorm wind, wind (high wind and strong wind), lightning, and hail, can affect a portion or all of the planning area. Unfortunately, there is no accurate method of predicting the location or extent of a severe weather event's impact—namely, if it will affect one participating jurisdiction or any other participating jurisdiction(s).

Additionally, it is not possible to predict varying probability between the participating jurisdiction(s) except for varying risk, as it is proportionate to a participating jurisdiction(s)' demographics. Logically, a participating jurisdiction with a more significant population, like the Las Vegas Metropolitan area, is at higher risk than one with a smaller population in the County's unincorporated areas.

Although this plan addresses vulnerability to severe weather, it is nearly impossible to calculate all risk components at a jurisdictional level. To predict unique and varied risks for Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) one needs a comprehensive catalog of wind resilience ratings, hail impact ratings, and grounding capacity for all infrastructure. Such information is not available at this time.

Note: The following information was obtained by accessing the NOAA database. <https://www.ncdc.noaa.gov/stormevents/>. This information represents all the events and extent of

the severe weather, primarily thunderstorm wind, wind (high wind and strong wind), lightning, and hail hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. Also, the information provided for Clark County also applies to the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas; Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes; and Special Districts representing Clark County School District, Clark County Water Reclamation District, Las Vegas Water District, and Southern Nevada Health District.

Repetitive Loss Structure

Not applicable to the identified hazard.

HAZUS® Models

Not applicable to the identified hazard.

(FL) Fire, Wildland Urban Interface (Wildfire)

Hazard Description

The National Weather Service (NWS) defines a wildfire as “any free-burning, uncontrollable wildland fire not prescribed for the area which consumes the natural fuels and spreads in response to its environment.” The previous Clark County HMP (2012) mentions that wildfires can be human-caused through acts such as arson, campfires, or the improper burning of debris, or can be caused by natural events such as lightning. Wildfires can be categorized into four types:

Wildland fires occur mainly in areas under federal control, such as national forests and parks, and are fueled primarily by natural vegetation. Generally, development in these areas is nonexistent, except for roads, railroads, power lines, and similar features.

Interface or intermix fires occur in areas where both vegetation and structures provide fuel. These are also referred to as Wildland/Urban Interface (WUI) fires.

Firestorms occur during extreme weather (e.g., high temperatures, low humidity, and high winds) with such intensity that fire suppression is virtually impossible. These events typically burn until the conditions change or the fuel is exhausted.

Prescribed fires and prescribed natural fires are intentionally set or natural fires that are allowed to burn for beneficial purposes.

Regardless of how they begin, wildfires can consume large areas, including infrastructure, property, and resources. As indicated in the previous Clark County HMPs (2012 and 2018), the following three factors contribute significantly to wildfire behavior and can be used to identify wildfire hazard areas.

- **Topography:** As slope increases, the rate of wildfire spread increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildfire behavior. However, ridgetops may mark the end of wildfire spread because fire spreads more slowly or may even be unable to spread downhill.
- **Fuel:** Wildfires spread based on the type and quantity of available flammable material, referred to as the fuel load. The basic characteristics of fuel include size and shape, arrangement and moisture content.
- **Weather:** The most variable factor affecting wildfire behavior is weather. Important weather variables are temperature, humidity, wind, and lightning. Weather events ranging in scale from localized thunderstorms to large fronts can have major effects on wildfire occurrence and behavior. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildfire activity. By contrast, cooling and higher humidity often signals reduced wildfire occurrence and easier containment. Wind has probably the largest impact on a wildfire’s behavior and is also the most unpredictable. Winds supply the fire with additional oxygen, further dry potential fuel, and push fire



*Smoke and Ozone Advisory Issued for Clark County, NV
Photo Source: 8NewsNow.com*

across the land at a quicker pace. The threat of wildfire increases in areas prone to intermittent drought, or that are generally arid and dry. Also, since the mid-1980s, earlier snowmelt and associated warming due to global climate change has been associated with longer and more severe wildfire seasons in the western United States.

With more people making their homes in wooded settings near forests and remote mountain sites, the threat of wildfire is steadily rising. This is because the demographic change is expanding the size of the area where structures and other human development meet or intermingle with undeveloped wildland, otherwise known as the wildland-urban interface (WUI). The WUI creates an environment where fire can move readily between structure and vegetation fuels, often resulting in massive fires or conflagrations that may lead to widespread evacuations.

A wildfire risk assessment can determine the level of risk of a particular location. The “boundary” WUI is characterized by areas of development where homes, especially new subdivisions, press against public and private wildlands, such as private or commercial forest land, or public forests or parks. There is a clearly defined boundary between the suburban fringe and the rural countryside. WUI areas deemed as “intermix” are places where improved property and/or structures are scattered and interspersed in wildland areas. These may be isolated rural homes or an area that is just starting to transition from rural to urban land use. “Island” WUI areas, also called occluded interface, are plots of undeveloped wildland, such as remnant forests and parks, within predominately urban or suburban locales.

The [previous Clark County HMP \(2018\)](#) mentions that indirect wildfire effects can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and exacerbate river and stream siltation; thereby increasing flood potential, harming aquatic life, and degrading water quality. Vegetation stripped lands are more susceptible to increased debris flow hazards.

Aside from damaging or destroying property, or worse, claiming lives, wildfires put off dense smoke that can affect air quality and pose a serious health risk. This is especially true for the elderly or those, young and old, who have breathing conditions such as asthma or Chronic Obstructive Pulmonary Disorder (COPD). Experts agree that smoke inhalation is the number one cause of death related to fires. Wildfires are also notorious for spawning secondary hazards long after the original fire is extinguished. Such hazards include flash flooding, debris flow and landslides. All result from fire consuming the vegetation that provides precipitation interception and infiltration as well as slope stability.

Fire services can mitigate wildfires by regularly engaging in preventative burns and proactive land use measures. Homeowners and business owners can also do their part by taking precautionary efforts, such as following local fire-related ordinances; removing leaves, limbs and other debris from property; and creating a defensible space around structures. Among those emphasizing the need for such preemptive actions is Firewise USA™, a national recognition program that provides instructional resources to inform people how to adapt to living with the risk of wildfire.

Location and Extent

The Nevada Enhanced Hazard Mitigation Plan (2018) states that “Nevada is susceptible to weather that may range from prolonged periods of drought to periods that are marked by above average precipitation.” These weather fluctuations result in millions of acres of dead or dying vegetation, which rapidly dry out under normal summer weather conditions. The dry, hot conditions and windy weather patterns characteristic of Nevada’s summers combine with vegetation conditions that fuel fast-moving, high-intensity wildland fires. Nevada also experiences

off-season wildfires in drier fall and winter conditions when adequate herbaceous fuels load exist and are not covered by snow. These can easily be as devastating to communities in the WUI as wildfires occurring in the traditional wildfire season.

As mentioned above, topography and weather are two factors that can contribute to the planning area. Clark County comprises 7,891.7 square miles of land area, which equals over 5.2 million acres ([Clark County Federal Lands](#)) and is the 6th County in Nevada by total area. The [Nevada Community Wildfire Risk/Hazard Assessment Project](#) for Clark County, 2005, provides the following information related to topography, fire ecology, and vegetation within Clark County:

- **Topography:** Topography can have a powerful influence on wildfire behavior. Slope, gulches, and hollows can greatly increase the rate of spread and hamper access. These slopes lend themselves to rapid spreading fires due to their angle. The greater the slope, the faster the flames move and the longer the flames. Wildfires can reach into overhanging canopies, allowing spread not only through the lower areas of the forest, but the ability to jump to other trees. Elevations within the county range from 450 feet above mean sea level at the Colorado River to 11,918 feet at Charleston Peak in the Spring Mountains. The largest mountain ranges in Clark County include the Spring Mountains, the Sheep Range, the McCullough Range, and the Virgin Mountains. The largest valleys are Las Vegas Valley, Sandy Valley, Moapa Valley and the Virgin Valley. The climate is generally characterized by low precipitation and low humidity.
- **Fire Ecology/Vegetation:** Frequent, low intensity wildfires characterize the natural fire regime in ponderosa pine forests. Under a native fire regime, frequent low-intensity surface fires reduce fuel loading from grasses and shrubs, suppress regeneration of shade-tolerant white fir seedlings, and leave the adult pine trees unaffected, protected by thick, fire-resistant bark. With a natural occurrence of wildfire, ponderosa pine forests often have an open, “park-like” appearance with an understory of grass or low shrubs. Under these conditions, heavy fuel loading can occur in discrete areas, but their discontinuous nature reduces the likelihood that a fire will burn with enough intensity to affect the mature trees. over the majority of the county is Mojave Desert scrub, which is typically too sparse to sustain large wildfires. When wildfires do occur in these areas, they tend to occur in dense stands of fuels such as palm forests, or along ephemeral and perennial drainages and irrigation ditches. Large wildfires are typically limited to the Spring Mountain Range in northwest Clark County, in the pinyon-juniper fuel type, where large fires have been known to occur every few years. The long interval for desert shrub and pinyon pine reestablishment following fire is conducive for invasion of aggressive, pioneering plants such as cheatgrass and red brome. Since the 1970's the fire frequency in the Mojave Desert has increased dramatically and includes the occurrence of some large fires. This increase in fire frequency is often attributed to the expansion of red brome and cheatgrass. Both species can create continuous ground fuel conditions that can facilitate ignitions and the spread of fire from shrub to shrub, especially in wet years when annual plants respond with increased vegetation growth.

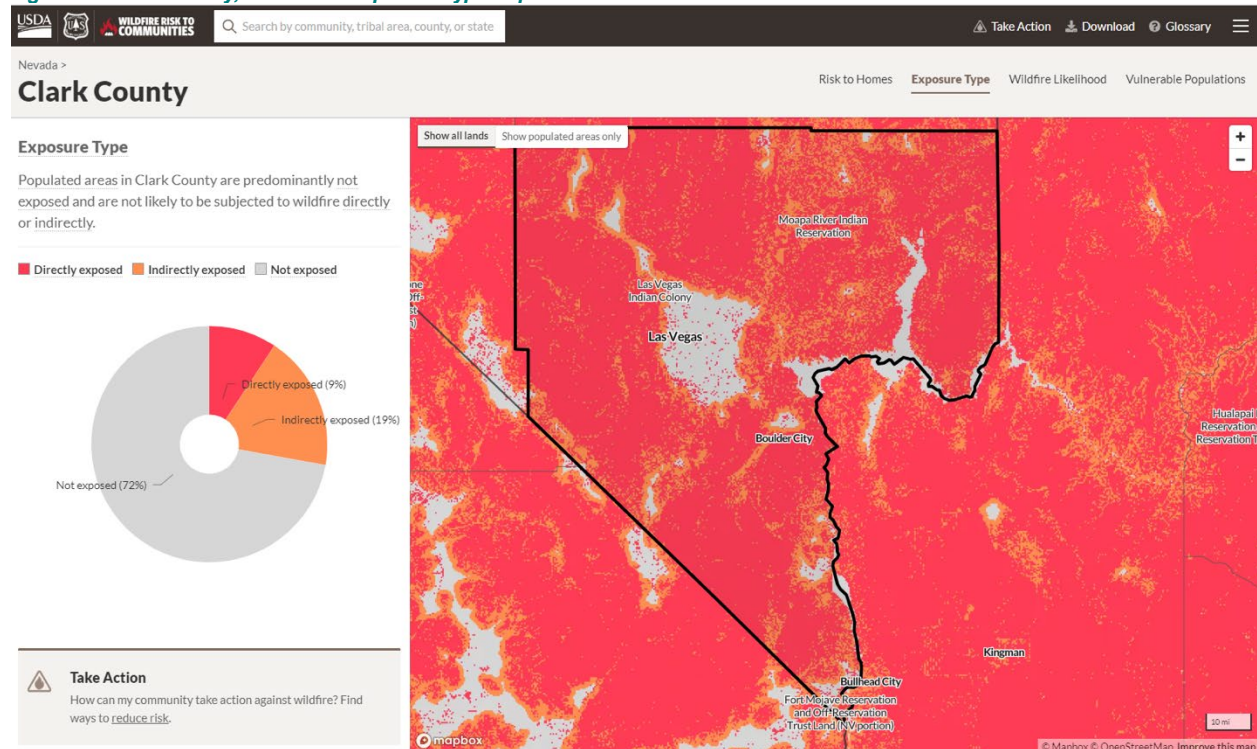
As mentioned in the [previous Clark County HMP \(2018\)](#), mentions that wildfire frequency and severity sometimes result from other hazard impacts, such as lightning, drought, and infestations (such as the damage caused by spruce-bark beetle infestations). If not promptly controlled, wildfires may grow into an emergency or disaster. Even small fires can threaten lives and resources and destroy improved properties. In addition to affecting people, wildfires may severely affect livestock and pets. Such events may require emergency water/food, evacuation, and

shelter.

Wildland fires are also a cascading effect of drought and warmer temperatures. Wildfire risks will likely increase in the future, perhaps dramatically. Extreme variability of precipitation across the southwest, combined with the trend of increasing temperatures, has led to extremely dry conditions within the forest and grasslands of the County, even in the absence of a prolonged drought.

The following map provides the Wildfire exposure for Clark County and its participating jurisdictions (which includes Clark County Unincorporated area, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation):

Figure 109: Clark County, NV Wildfire Exposure Type Map



Data Source: [USDA, USFS Wildfire Risk to Communities](#)

The USFS- WFAS Wildland Fire Assessment System mentions the Fire Danger Rating level takes into account current and antecedent weather, fuel types, and both live and dead fuel moisture (Deeming and others 1977, Bradshaw and others 1984). The Potential fire conditions are described by the warnings issued by the NWS, as shown in Table 126.

Table 126: NWS Wildland Fire Warnings

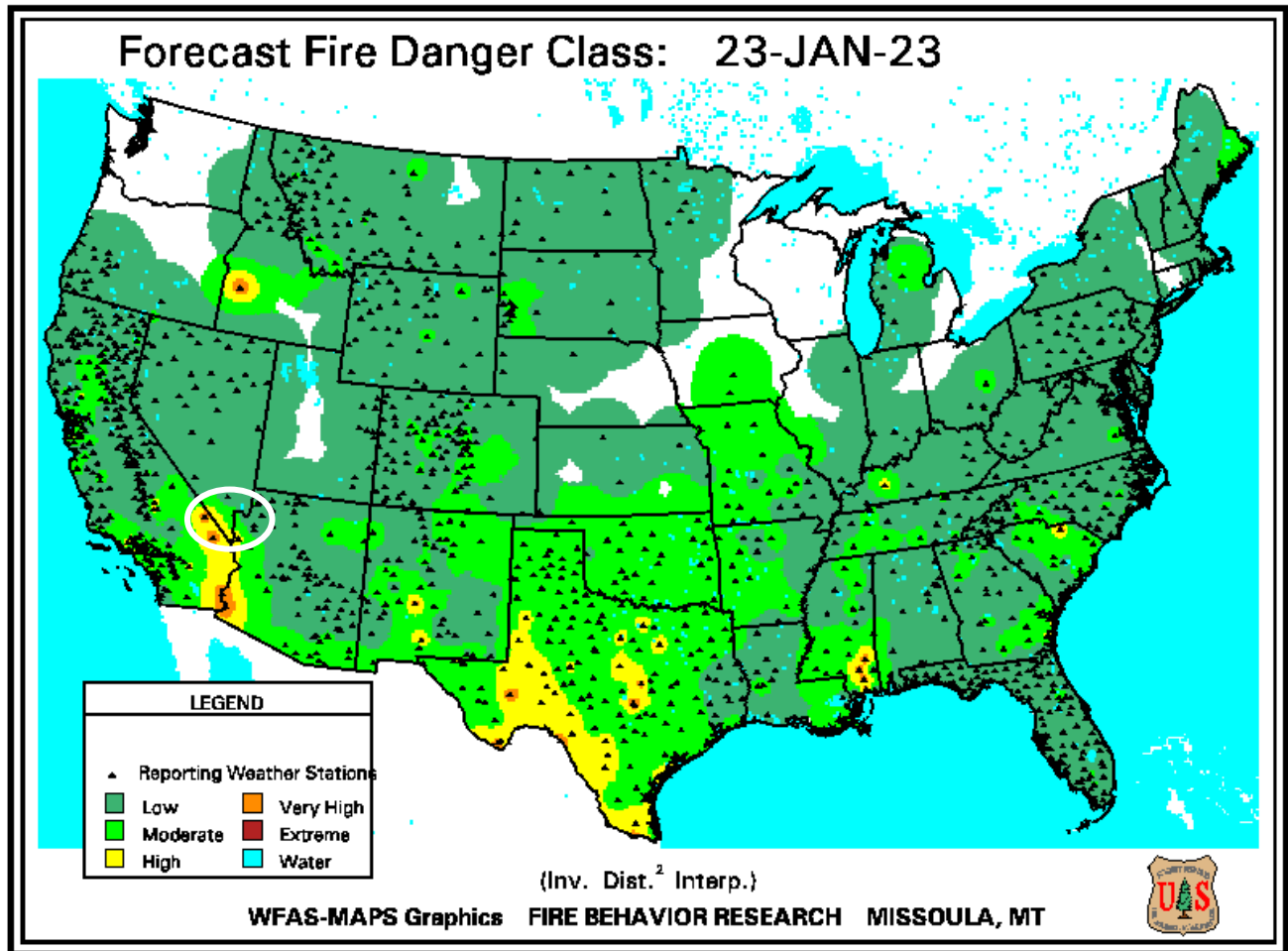
Warning Type	Warning Criteria	Zones Affected
Red Flag Warning	Combination of weather and fuels conditions for any three hours or more in a 12-hour period. Criteria may include: <ul style="list-style-type: none"> • Frequent gusts of 25 mph or greater; • Relative humidity of 15% or less; • Dry thunderstorms with 15% coverage or more, constituting an LAL 6. 	A warning may be issued for all or portions of a fire weather zone or region. Zones impacted by the event will be listed within the Red Flag Warning product.

	<p>Additional criteria include:</p> <ul style="list-style-type: none"> • Haines Index of 5 or 6, indicating a moderate or high potential for large, plume-dominated fire growth; • Wind shifts associated with frontal passages; • First significant lightning event (wet or dry) after an extended hot and dry period; • Poor relative humidity recovery overnight (40% or lower) ; • Any combination of weather and fuel moisture conditions which, to the judgement of the forecaster, would cause extensive wildland fire occurrences. 	
Fire Weather Watch	Alerts land management agencies to the high potential for development of the above Red Flag criteria in the next 12-72 hours.	A watch may be issued for all or portions of a fire weather zone or region. Zones impacted by the event will be listed within the Red Flag Warning

Data Source: [The National Weather Service](#).

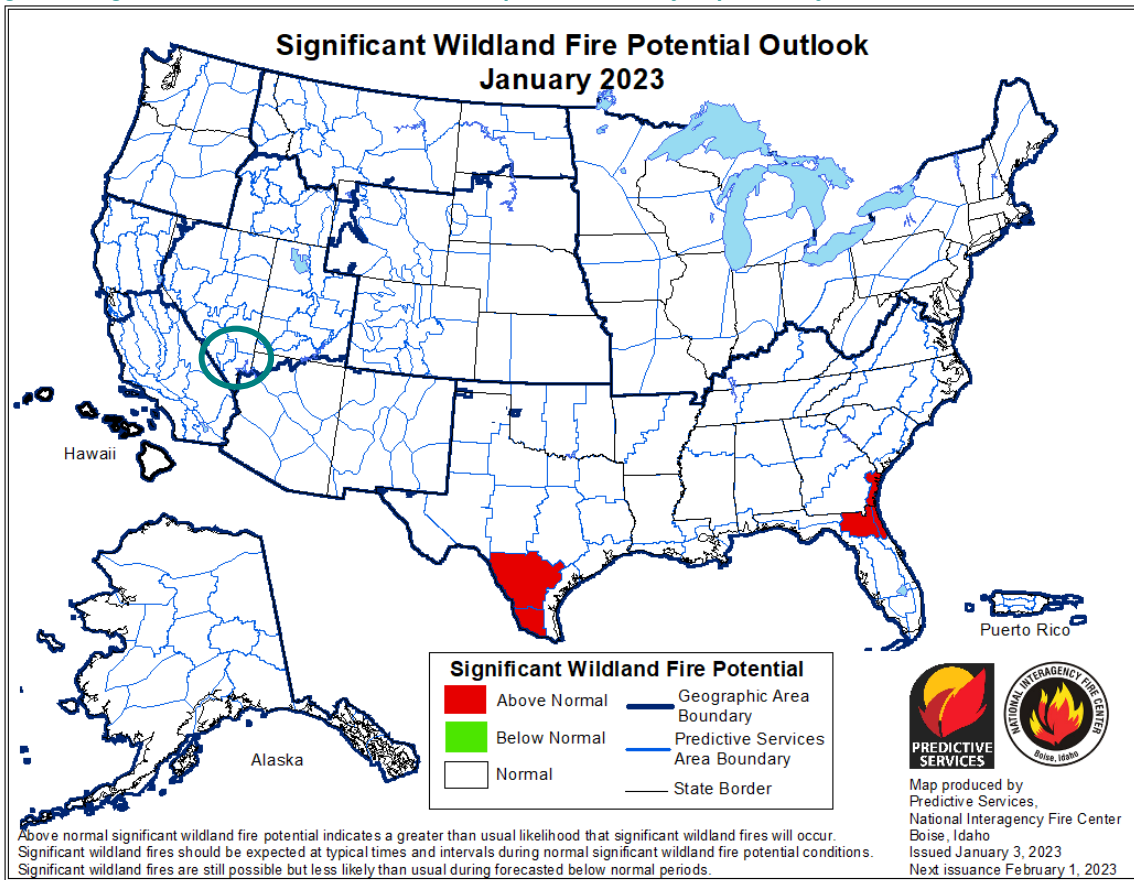
The NWS produces [fire danger maps](#) that depict current fire weather across the U.S. [The U.S. Forest Service Wildland Fire Assessment \(USFA-WFAS\)](#) also provides daily potential wildfire conditions throughout the Country. The corresponding maps will show the current potential wildfire potential for Clark County currently within Low/Normal range:

Figure 110: Fire Danger Index Map of the United States with Clark County Emphasized by a Circle



Data Source: [USFS-WFAS](https://www.usfs.gov/)

Figure 111: Significant Wildland Fire Potential Outlook Map with Clark County Emphasized by a Circle



Data Source: [The National Weather Service](#)

The [National Interagency Coordination Center \(NICC\)](#), the focal point for coordinating the mobilization of resources for wildland fire and other incidents throughout the United States, reported that 123,427 acres burned in Nevada in 2021. [The Nevada Community Wildfire Risk/Hazard Assessment Project for Clark County, 2005](#), has been considered the State of Nevada's Community Wildfire Protection Plan. The previous Clark County HMP (2012) mentions that Community specific information regarding wildfires can be found in the Nevada Community Wildfire Risk/Hazard Assessment Project reports. In 2003 the Healthy Forest Restoration Act was signed into law. The act creates provisions for expanding the activities outlined in the National Fire Plan. During this year the Nevada Fire Safe Council received National Fire Plan funding through the Department of Interior Bureau of Land Management to conduct a Community Risk/Hazard Assessment in at-risk communities across Nevada.

During 2004, field teams comprised of fire behavior specialists, foresters, rangeland fuels specialists, and field technicians visited communities to assess both the risk of ignition and the potential fire behavior hazard. With the use of procedures accepted by Nevada's wildland fire agencies, these specialists focused their analysis on the wildland urban interface areas where homes and wildlands meet. The reports generated by the Nevada Community Wildfire Risk/Hazard Assessment Project for Clark County may be viewed here: <http://www.rcinv.com/reports/clark/>. The assessment teams observed and recorded the factors that significantly influence the risk of wildfire ignition along the wildland-urban interface, and inventoried features that can influence hazardous conditions in the event of a wildfire. Five primary factors that affect potential fire hazard were assessed to arrive at the community hazard assessment score:

- Community design
- Construction materials
- Defensible space
- Availability of fire suppression resources
- Physical conditions such as the vegetative fuel load and topography

At the time of this plan update, Community Wildfire Protection Plans (CWPP) for the [State of Nevada Division of Forestry](#) list all the County & Community Wildfire Risk/Hazard Assessments documents from 2005 and 2008. The previous Clark County MJHP Updates (2012 and 2018) both reference information from the 2005 Community Wildfire/Risk Hazard Assessment Project, which is an indeterminate period. For this plan update, wildfire data will reference the 2005 Wildfire Risk/Hazard Assessment for the County.

The [Nevada Community Wildfire Risk/Hazard Assessment Project for Clark County, 2005](#), indicates the communities within the county and along with their risk – fuel risk and ignition risk to wildfires in the planning area:

Table 1-1. Community Risk and Hazard Assessment Results

Community	Interface Condition	Interface Fuel Hazard Condition	Ignition Risk	Community Hazard Rating
High and Extreme Hazard Communities				
Cold Creek	Intermix	High to Extreme	Moderate	High
Kyle Canyon	Rural	Extreme	High	Extreme
Lee Canyon	Intermix	Extreme	High	Extreme
Mt. Springs	Intermix	High to Extreme	High	Extreme
Nelson	Intermix	Low to Moderate	Moderate	High
Torino Ranch	Classic	Low to Extreme	High	High
Trout Canyon	Intermix	Extreme	High	Extreme
Moderate Hazard Communities				
Cactus Springs	Classic	Low	Low	Moderate
Goodsprings	Classic	Moderate	Moderate	Moderate
Moapa	Classic	Low to High	Low	Moderate
Sandy Valley	Intermix	Low	Low	Moderate
Searchlight	Intermix	Low	Low	Moderate
Low Hazard Communities				
Arden	Occluded	Low	Low	Low
Blue Diamond	Intermix	Low	Low	Low
Boulder City	Classic	Low	Low	Low
Bunkerville	Classic	Low to High	Low	Low
CalNevAri	Classic	Low to Moderate	Low	Low
Cottonwood Cove	Classic	Low	Low	Low
Glendale	Classic	Low to High	Low	Low
Henderson	Classic	Low	Low	Low
Indian Springs	Classic	Low	Low	Low
Las Vegas	Classic	Low	Low	Low
Laughlin	Classic	Low	Low	Low
Logandale	Classic	Low to High	Low	Low
Mesquite	Classic	Low to High	Low	Low
North Las Vegas	Classic	Low	Low	Low
Overton	Classic	Low to High	Low	Low
Palm Gardens Estates	Classic	Low	Low	Low
Primm	Classic	Low	Low	Low
Sloan	Classic	Low	Low	Low

Data Source: [Nevada Community Wildfire Risk/Hazard Assessment Project for Clark County, 2005](#)

The [Nevada Community Wildfire Risk/Hazard Assessment Project](#) and the previous [Clark County HMP \(2018\)](#) indicated the extreme hazard communities in Clark County are all located at higher elevations within or adjacent to the Spring Mountains. The communities with the most hazardous conditions include Kyle Canyon, Lee Canyon, Mt. Springs, and Trout Canyon. High wildfire hazard communities include Cold Creek Nelson, and Torino Ranch. The Clark County Climate Vulnerability Assessment, September 2022, mentions that there are five communities in the planning area at a moderate wildfire risk rating. Those communities are as follows: Cactus Springs, Goodsprings, Moapa, Sandy Valley, and Searchlight. The following map illustrates the stations in some of those extreme hazard communities within the planning area:

Figure 112: State of Nevada Map showing Communities with Extreme Wildfire Risk (2018)

SECTION THREE

Risk Assessment

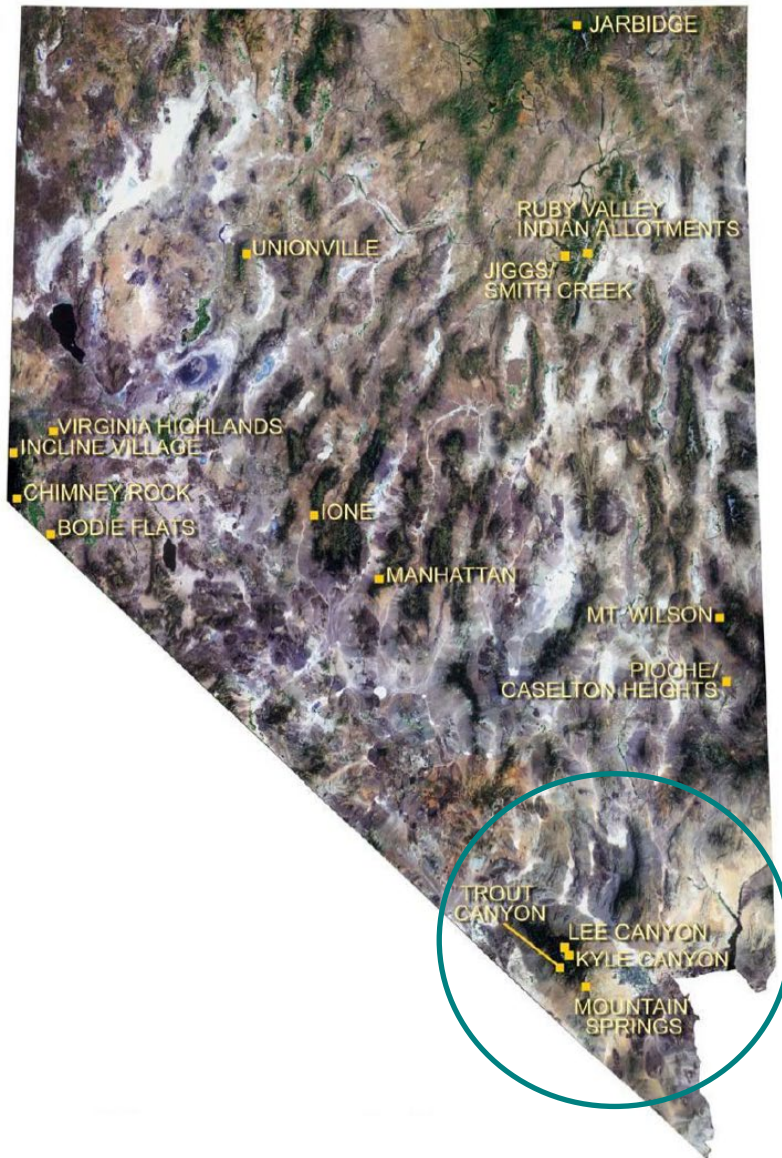
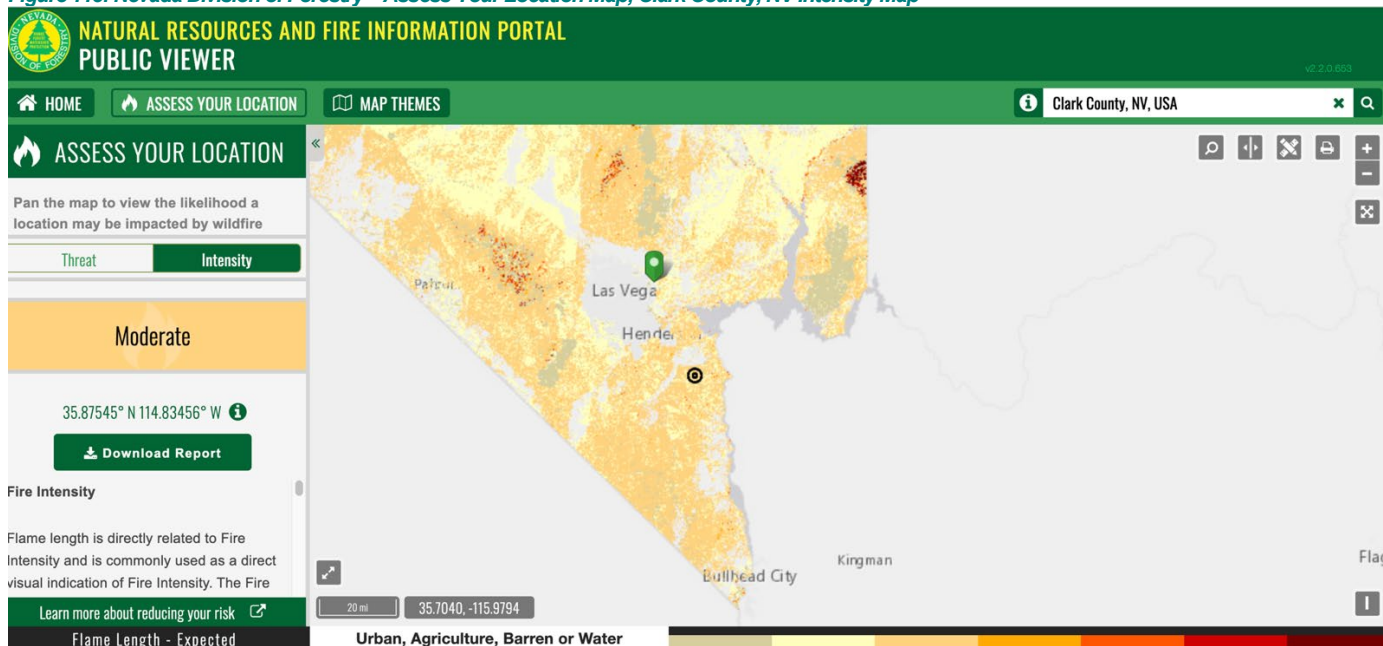


Figure 3-52. Map Showing Communities with Extreme Wildfire Risk

Data Source: [2018 Nevada Enhanced Hazard Mitigation Plan](#)

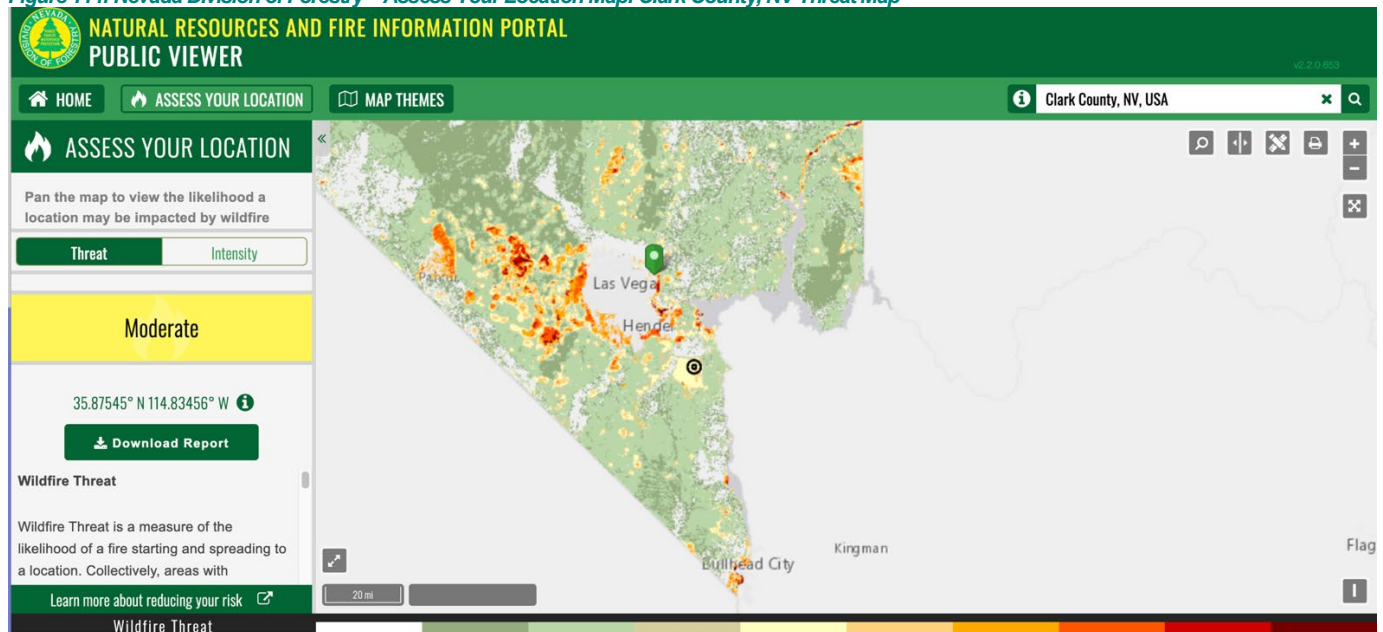
Currently, the [Nevada Division of Forestry, Natural Resources and Fire Information Portal](#) indicates Clark County and its participating jurisdiction(s) have a threat of wildfire within the planning area. The following maps illustrate the likelihood of the threat and intensity of a wildfire event within Clark County and its participating jurisdictions:

Figure 113: Nevada Division of Forestry – Assess Your Location Map; Clark County, NV Intensity Map



Data Source: [Nevada Resources and Fire Information Portal Public Viewer](#)

Figure 114: Nevada Division of Forestry – Assess Your Location Map; Clark County, NV Threat Map



Data Source: [Nevada Resources and Fire Information Portal Public Viewer](#)

Previous Occurrence

Clark County’s previous MJHMP (2018) states that the recent large fires in Clark County include the following:

- **July 2013:** The Carpenter 1 Fire was a large wildfire on Mount Charleston, 25 miles northwest of Las Vegas. The fire began on July 1, 2013, near Pahrump (Nye County) before spreading eastward. The Carpenter 1 Fire was fully contained on August 18, 2013. It consumed nearly 28,000 acres and destroyed six buildings. According to the National Interagency Fire Center, the Carpenter I Fire was considered “the highest ranked priority fire in the nation” at the time of its occurrence.
- **July 2017:** The Mount Potosi Fire was a large wildfire in the Humboldt-Toiyabe National Forest’s Spring Mountains National Recreation Area, about six miles southwest of Mountain Springs and 28 miles southwest of Las Vegas. It began on July 6 due to lightning. It burned roughly 420 acres before it was contained one week later.
-

The following data was provided by [Nevada Wildfire Intelligence](#). Due to the large number of wildfires, only wildfires above 200 acres are listed below. This data is applicable to Clark County, Henderson, Las Vegas, Las Vegas Paiute Tribe, Mesquite, Moapa Band of Paiute, and North Las Vegas. The data is not based on specific jurisdictions, and only at the County level due to limitations with the dataset. No other datasets are available to further outline extent or impacts. The data below is in order of acres burned from highest to lowest.

Table 127: Wildfire Events, Clark County, NV, NOAA/NCEI Database

State	Unit Name	Fire Name	Cause	Acres	Month	Day	Year	Elevation	County
NV	Southern Nevada District	MILE 18	Natural	1260	6	27	1980		Clark
NV	Southern Nevada District	JUMP	Natural	1250	7	30	1980		Clark
NV	Southern Nevada District	HIDDEN	Human	1100	7	13	1980		Clark
NV	Southern Nevada District	POTOSI C	Human	800	6	25	1980		Clark
NV	Southern Nevada District	CARPENT A	Natural	800	6	27	1980		Clark
NV	Southern Nevada District	TABLE TOP	Natural	800	6	29	1980		Clark
NV	Southern Nevada District	MICRO	Natural	800	6	29	1980		Clark
NV	Southern Nevada District	CC SPR A	Human	600	7	18	1980		Clark
NV	Southern Nevada District	CARPENT C	Natural	300	7	25	1980		Clark
NV	Southern Nevada District	SEARCH	Human	300	8	6	1980		Clark

State	Unit Name	Fire Name	Cause	Acres	Month	Day	Year	Elevation	County
NV	Southern Nevada District	SANDY	Natural	250	6	28	1980		Clark
NV	Southern Nevada District	POTOSI D	Natural	250	6	28	1980		Clark
NV	Southern Nevada District	FIGHTER	Natural	250	8	11	1980		Clark
NV	Southern Nevada District	MACKS	Human	6400	6	23	1981		Clark
NV	Southern Nevada District	WHEELER	Human	350	7	30	1981		Clark
NV	Southern Nevada District	POTOSI A	Human	200	2	28	1981		Clark
NV	Southern Nevada District	SKY	Human	4450	7	20	1982		Clark
NV	Southern Nevada District	POTOSI PK	Human	1250	7	11	1983		Clark
NV	Southern Nevada District	LAUGHLIN	Human	300	4	26	1983		Clark
NV	Southern Nevada District	RIVERSIDE	Human	225	5	14	1983		Clark
NV	Southern Nevada District	RIVER	Human	203	4	16	1983		Clark
NV	Southern Nevada District	CORRAL	Human	200	4	8	1984		Clark
NV	Southern Nevada District	ZIPPER	Natural	6011	6	11	1987		Clark
NV	Southern Nevada District	USFW 1	Human	550	7	23	1987		Clark
NV	Southern Nevada District	VIRGIN	Human	210	4	14	1987		Clark
NV	Southern Nevada District	MOUNTAIN	Natural	300	6	15	1988		Clark
NV	Southern Nevada District	CCFD 6	Undetermined	200	4	17	1989		Clark
NV	Southern Nevada District	BUNKER	Natural	3200	8	9	1993	3146	Clark
NV	Southern Nevada District	ARROW 3	Natural	500	8	3	1993	4318	Clark
NV	Lake Mead National Recreation Area	CHRISTMAS	Natural	260	6	20	1993	1814	Clark
NV	Southern Nevada District	SLOAN	Human	253	5	23	1993	2831	Clark
NV	Southern Nevada District	NIPTON	Natural	250	6	20	1993	4134	Clark
NV	Southern Nevada District	AZURE	Natural	250	8	7	1993	2536	Clark
NV	Southern Nevada District	RATTLESNAK	Natural	5700	6	28	1994	3675	Clark
NV	Southern Nevada District	JUMBO	Natural	2070	5	31	1994	3675	Clark
NV	Humboldt-Toiyabe National Forest	LOVELL 2	Natural	320	6	27	1994	5646	Clark

State	Unit Name	Fire Name	Cause	Acres	Month	Day	Year	Elevation	County
NV	Southern Nevada District	OVERTON	Human	249	5	8	1994	2808	Clark
NV	Southern Nevada District	GOLDBUTTE2	Natural	1020	7	8	1995	2835	Clark
NV	Lake Mead National Recreation Area	MIRACLE	Natural	880	8	10	1995	3940	Clark
NV	Southern Nevada District	BUNKER	Natural	650	7	30	1995	2300	Clark
NV	Humboldt-Toiyabe National Forest	MULE SPRINGS	Human	425	8	2	1995	5285	Clark
NV	Southern Nevada District	PRAIRIE	Natural	350	8	23	1995	5056	Clark
NV	Humboldt-Toiyabe National Forest	CAVE	Natural	320	8	12	1995	5837	Clark
NV	Southern Nevada District	GOLDBUTTE	Natural	234	6	23	1995	4964	Clark
NV	Humboldt-Toiyabe National Forest	CANYON	Human	225	10	26	1995	4672	Clark
NV	Humboldt-Toiyabe National Forest	SUN COMPLEX	Natural	1000	8	18	1996	4803	Clark
NV	Southern Nevada District	DEER	Human	774	6	29	1996	5135	Clark
NV	Southern Nevada District	USFW3	Natural	600	7	23	1996	4150	Clark
NV	Humboldt-Toiyabe National Forest	MULE SPRINGS	Human	450	6	16	1996	5276	Clark
NV	Southern Nevada District	LIME	Natural	350	8	16	1996	4108	Clark
NV	Phoenix District Office	COTTONWOOD	Human	300	8	11	1996	2303	Clark
NV	Southern Nevada District	VIRGINPK	Natural	300	8	17	1996	4104	Clark
NV	Humboldt-Toiyabe National Forest	CAN	Natural	250	9	11	1996	5443	Clark
NV	Lake Mead National Recreation Area	CABIN FIRE	Natural	245	7	20	1996	4157	Clark
NV	Humboldt-Toiyabe National Forest	WHEELER	Natural	600	5	13	1997	7238	Clark
NV	Southern Nevada District	RIVER	Human	400	6	18	1998	1759	Clark
NV	Lake Mead National Recreation Area	RIVER	Natural	300	6	18	1998	2208	Clark
NV	Humboldt-Toiyabe National Forest	BUCK SPRINGS	Natural	2000	6	3	2000	7927	Clark
NV	Humboldt-Toiyabe National Forest	TROUT	Natural	878	8	4	2000	7425	Clark
NV	Humboldt-Toiyabe National Forest	LOST CABIN	Natural	4950.001	7	14	2002	6375	Clark
NV	Southern Nevada District	CCFDASST2	Undetermined	300	3	29	2002	1581	Clark

State	Unit Name	Fire Name	Cause	Acres	Month	Day	Year	Elevation	County
NV	Havasu National Wildlife Refuge	RIVER FIRE	Human	492	6	13	2003	489	Clark
NV	Southern Nevada District	NICKEL	Natural	8410.057	6	16	2004	5696	Clark
NV	Desert National Wildlife Refuge	COYOTE SPRINGS	Natural	1057.542	6	28	2004	4226	Clark
NV	Humboldt-Toiyabe National Forest	ROBBERS	Undetermined	296	7	26	2004	7162	Clark
NV	Southern Nevada District	FORK	Natural	81638.87	6	28	2005	5331	Clark
NV	Southern Nevada District	GOODSPRING	Natural	33580.39	6	22	2005	4131	Clark
NV	Southern Nevada District	TRAMP	Natural	26285.11	6	28	2005	3255	Clark
NV	Desert National Wildlife Refuge	GASS	Natural	22000	6	22	2005	1919	Clark
NV	Desert National Wildlife Refuge	WAMP	Natural	4813.019	6	24	2005	3783	Clark
NV	Desert National Wildlife Refuge	VEGAS	Natural	4225.699	7	30	2005	5197	Clark
NV	Southern Nevada District	BUNKERVILL	Natural	3070.128	6	22	2005	2992	Clark
NV	Desert National Wildlife Refuge	COYOTE	Natural	2468	6	22	2005	3576	Clark
NV	Southern Nevada District	DRY LAKE	Natural	2220.607	6	22	2005	3169	Clark
NV	Southern Nevada District	FWS 5	Natural	1571.141	8	3	2005	2674	Clark
NV	Desert National Wildlife Refuge	SHEEP	Natural	1154.908	7	30	2005	4498	Clark
NV	Southern Nevada District	GARNET	Human	1061.937	7	3	2005	3074	Clark
NV	Southern Nevada District	DRYMIDDLE	Natural	931.3325	6	22	2005	3084	Clark
NV	Southern Nevada District	FWS 6	Natural	931	8	11	2005	2782	Clark
NV	Southern Nevada District	LOOP	Natural	859.046	7	22	2005	3980	Clark
NV	Southern Nevada District	DRY ROCK	Natural	859	6	22	2005	3018	Clark
NV	Southern Nevada District	DEVILSPEAK	Natural	567.9111	6	23	2005	4639	Clark
NV	Desert National Wildlife Refuge	QUAIL SPRINGS	Natural	320	8	2	2005	2851	Clark
NV	Southern Nevada District	MCCULLOUGH	Natural	224.5	7	19	2005	3579	Clark
NV	Desert National Wildlife Refuge	GASS SPRINGS	Natural	210	8	12	2005	4567	Clark

State	Unit Name	Fire Name	Cause	Acres	Month	Day	Year	Elevation	County
NV	Southern Nevada District	HWY160MM14	Human	205	10	9	2005	3701	Clark
NV	Southern Nevada District	FWS 9	Natural	18792.07	7	1	2006	4938	Clark
NV	Southern Nevada District	VIRGIN GOLD COMPLEX	Natural	2696.436	7	24	2006	3294	Clark
NV	Southern Nevada District	SCENIC	Natural	1611.58	9	6	2006	4068	Clark
NV	Southern Nevada District	PASS	Human	597	9	19	2006	4656	Clark
NV	Southern Nevada District	PICNIC	Natural	567.9756	7	24	2006	5689	Clark
NV	Southern Nevada District	DOUBLE NICKEL	Natural	522.3874	7	3	2006	4285	Clark
NV	Humboldt-Toiyabe National Forest	DOUBLE UP	Human	494.1845	5	21	2006	5640	Clark
NV	Southern Nevada District	FWS 2	Natural	467	6	8	2006	4800	Clark
NV	Humboldt-Toiyabe National Forest	APPALOOSA	Natural	292.0729	7	25	2006	4741	Clark
NV	Southern Nevada District	WHITNEY PASS	Natural	230.1077	7	24	2006	4885	Clark
NV	Southern Nevada District	BONNIE SPRINGS	Human	389.553	7	2	2007	4101	Clark
NV	Southern Nevada District	CCFD 2	Undetermined	209.4031	3	13	2007	1591	Clark
NV	Southern Nevada District	MOAPA	Undetermined	599.2074	7	1	2010	1775	Clark
NV	Desert National Wildlife Refuge	MORMON	Natural	763.1283	8	28	2011	6998	Clark
NV	Southern Nevada District	MULE	Human	225	7	10	2011	4416	Clark
NV	Southern Nevada District	WHITE ROCK	Natural	1083.951	4	26	2012	2890	Clark
NV	Southern Nevada District	EASTERN MINE	Natural	379.0672	8	11	2012	5194	Clark
NV	Humboldt-Toiyabe National Forest	Carpenter 1	Natural	27876.88	7	1	2013	7700	Clark
NV	Southern Nevada District	DOD 4	Natural	1216.904	7	7	2013	3104	Clark
NV	Humboldt-Toiyabe National Forest	LOVELL	Undetermined	440.1205	6	26	2016	5141	Clark
NV	Humboldt-Toiyabe National Forest	POTOSI	Natural	430.8371	7	6	2017	5079	Clark
NV	Southern Nevada District	BONELLI PEAK	Natural	4456.171	7	24	2019	3737	Clark
NV	Nevada Division of Forestry - Southern Region	BIG BEND	Human	238.4739	8	18	2019	492	Clark
NV	Humboldt-Toiyabe National Forest	COTTONWOOD	Natural	2817	7	20	2020	5138	Clark

State	Unit Name	Fire Name	Cause	Acres	Month	Day	Year	Elevation	County
NV	Humboldt-Toiyabe National Forest	MAHOGANY	Human	2758	6	28	2020	8717	Clark
NV	Southern Nevada District	VIRGIN MOUNTAIN	Natural	1624	9	22	2020	6257	Clark
NV	Southern Nevada District	SANDY VALLEY	Human	1380	6	10	2021	4262	Clark
NV	Southern Nevada District	COTTONWOOD VALLEY	Human	373	6	14	2021	4341	Clark

Data Source: Nevada Wildfire Info Dashboard – Desktop (<https://www.arcgis.com/apps/dashboards/c205f43ea5df4f98b6d0f0f709d15e2f>)

Probability of Future Events, Fire, Wildland Urban Interface (Wildfire)

Calculating future probability is one of many predictors of future occurrences. Based on the Calculated Priority Risk Index (CPRI conducted for Clark County and its participating jurisdictions, there is a **moderate probability (rank score of 3.0-3.9) of a fire, wildland urban interface (wildfire)** event in the planning area. Please note that the CPRI Rating is a subjective measure based on the opinion of the Clark County MPSC members during the planning development portion of the MJHMP update.

The following table provides CPRI Rating for wildfire related to Clark County and its participating jurisdictions (which includes the Clark County Unincorporated areas, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation).

Table 128: Clark County and Participating Jurisdiction CPRI Rating for Fire, Wildland Urban Interface (Wildfire)

Clark County and Participating Jurisdictions CPRI Rating for Fire, Wildland Urban Interface (Wildfire)							
Hazard: Fire, Wildland Urban Interface (Wildfire)	Category and Weight				CPRI Score	Risk Level	
	Probability 45%	Magnitude/Severity 30%	Warning Time 15%	Duration 10%			
Index Rating (R) Weighted Score (WS)							
Clark County (including Incorporated and Unincorporated Areas)	R	2	2	4	2	2.3	M
	WS	0.9	0.6	0.6	0.4		
Boulder City	R	1	1	2	1	1.15	L
	WS	0.45	0.3	0.3	0.1		
Henderson	R	1	2	4	2	1.85	L
	WS	0.45	0.6	0.6	0.2		
Las Vegas	R	2	2	4	2	1.75	L
	WS	0.45	0.6	0.3	0.4		
Mesquite	R	2	2	4	2	2.3	M
	WS	0.9	0.6	0.6	0.4		
North Las Vegas	R	1	1	1	1	1	L
	WS	0.45	0.3	0.15	0.1		
Special District: Clark County Water Reclamation District	R	1	2	2	1	1.45	L
	WS	0.45	0.6	0.3	0.1		
Special District: Clark County School District	R	3	2	4	3	2.85	M
	WS	1.35	0.6	0.6	0.3		
Special District: Las Vegas Valley Water District/SWNA	R	2	2	4	2	3.25	H
	WS	0.9	.6	.6	.2		
Tribal Nation: Las Vegas Valley Paiute	R	2	2	2	2	2	M
	WS	0.9	0.3	0.3	0.2		

Clark County and Participating Jurisdictions
CPRI Rating for Fire, Wildland Urban Interface (Wildfire)

Hazard: Fire, Wildland Urban Interface (Wildfire)	Category and Weight				CPRI Score	Risk Level	
	Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%			
Index Rating (R) Weighted Score (WS)							
Tribal Nation: Moapa Band of Paiutes	R	2	3	3	3	2.55	M
	WS	0.9	0.9	0.45	0.3		

Note: Though participating in the planning process, CPRI data for the fire, wildland-urban interface (wildfire) for the City of Mesquite and Las Vegas Valley Water District/SWNA was not received at the time of this update. Therefore, the CPRI rating for the City of Mesquite and Las Vegas Valley Water District is the same as Clark County because the city and the special district are within the planning area.

Wildfire Quantitative Probability of Future Events

In order to gain a better understanding of previous occurrences, and accurately calculate future probability, the following information was taken into consideration. From January 1, 1950, to May 31, 2023, Nevada Wildfire Info Dashboard - Desktop recorded 114 wildfire events in Clark County. This data is applicable to Clark County, Henderson, Las Vegas, Las Vegas Paiute Tribe, Mesquite, Moapa Band of Paiute, and North Las Vegas. Clark County and its participating jurisdictions can expect a wildfire event with 156.16% probability per year or 1.56 events per year, as indicated in Table 129 (below). According to [Table 26: Probability Categories](#), Clark County and its participating jurisdictions has a **highly likely** risk of experiencing a wildfire event.

Note: Clark County and its participating jurisdictions (included Clark County Unincorporated Areas and the Tribal Lands of the Las Vegas Paiute Tribe and Moapa Band of Paiutes/Moapa River Indian Reservation) can expect a wildfire event with a 156.16% probability each year or 1.56 events per year. This number was derived by dividing the number of recorded events by the year range used. Calculating future probably is not the only predictor of future occurrences. The qualitative chance of a wildfire impacting the planning area is highly likely.

Table 129: Probability of Future Events, Fire, Wildland Urban Interface (Wildfire) – Clark County, NV

Probability of Future Events, Wildfire, Clark County, NV	
Event Year	Event Count
1950	0
1951	0
1952	0
1953	0
1954	0
1955	0
1956	0
1957	0
1958	0
1959	0
1960	0
1961	0
1962	0

Probability of Future Events, Wildfire, Clark County, NV

Event Year	Event Count
1963	0
1964	0
1965	0
1966	0
1967	0
1968	0
1969	0
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	0
1980	13
1981	3
1982	1
1983	4
1984	1
1985	0
1986	0
1987	3
1988	1
1989	1
1990	0
1991	0
1992	0
1993	6
1994	4
1995	8
1996	9
1997	1

Probability of Future Events, Wildfire, Clark County, NV

Event Year	Event Count
1998	2
1999	0
2000	2
2001	0
2002	2
2003	1
2004	3
2005	21
2006	10
2007	2
2008	0
2009	0
2010	1
2011	2
2012	2
2013	2
2014	0
2015	0
2016	1
2017	1
2018	0
2019	2
2020	3
2021	2
2022	0
2023	0
Total Recorded Events =	114
Total Years =	73
Yearly Probability =	156.16%

Data Source: Nevada Wildfire Info Dashboard (<https://www.arcgis.com/apps/dashboards/c205f43ea5df4f98b6d0f0f709d15e2f>)

Vulnerability and Impact

Given the data deficiency described in Location & Extent section of this hazard profile, the current impacts of wildfires throughout the planning area are unknown but have the potential, depending upon the circumstances, to be severe. Clark County Office of Emergency Management & Homeland Security will seek out the data to support this finding and will update this portion of the MJHMP as soon as possible.

Vulnerability of Facilities

A wildfire burning near a jurisdiction may cover it in soot, cause secondary fires from traveling coals, or directly engulf facilities, potentially burning them to the ground. Facilities within the planning area can be protected and safe by creating defensible spaces or buffer zones, maintaining a fuel-free environment, and modifying structures to prevent wildfire growth.

Clark County and its participating jurisdictions' critical structures are valued at \$395,355,458.

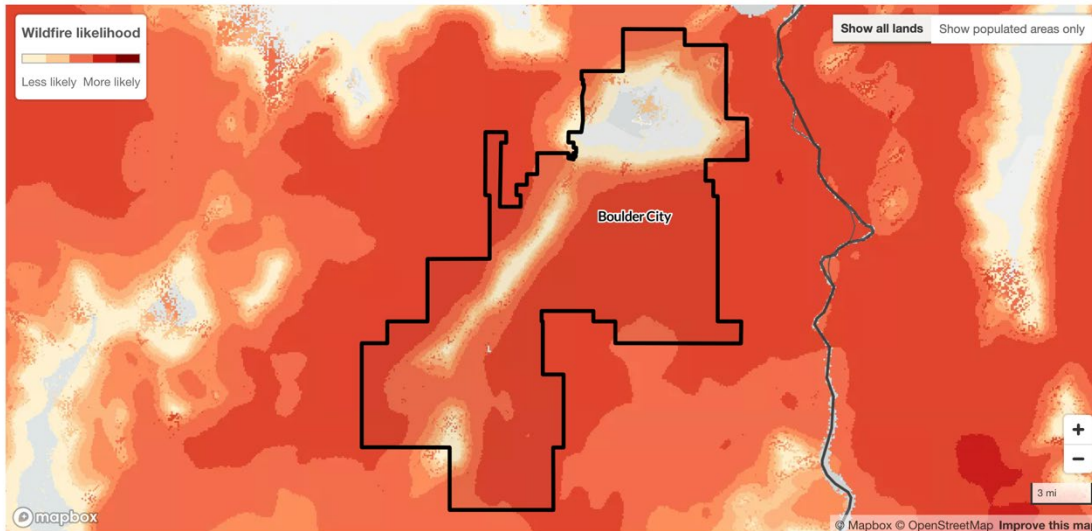
Vulnerability of Population

A wildfire could pose a risk to the vulnerable population within the County. Clark County and its participating jurisdiction(s) have a total population of 2,265,461 in 840,343 housing units at risk of wildfires. This information should be considered when understanding how many citizens will potentially be displaced from their homes due to the hazard. Since 2010, there have been four (4) injuries, but no deaths have occurred in Clark County or its participating jurisdictions due to wildfire.

The greatest vulnerability of a jurisdiction(s)' population is the inability to properly evacuate in an emergency situation. In particular, the population can be caught off guard due to slow or improper warning systems, erratic weather conditions, etc., and become trapped in a rapidly growing wildfire. The following information provides updated vulnerability and impact of wildfire for each jurisdiction in the planning area:

Boulder City: The City of Boulder City's wildfire probability is based on the overall probability score for Clark County of **"highly likely"**. This is based on the wildfire data included in the Previous Occurrence and Probability of Future Events sections in this hazard profile as provided by the Nevada Wildfire Info Dashboard - Desktop. Data can only be pulled for a specific County. City/Town/Tribal data cannot be individually calculated. Typically, the current impacts of wildfires throughout the planning area are unknown but have the potential, depending upon the circumstances. The City of Boulder City resides in Clark County; therefore, this probability is based on County-wide data. The Wildfire Risk to Communities mentions the populated areas in Boulder City, on average has a greater likelihood than 38% of communities in the US to wildfire. The following map provides the likelihood of wildfire in the City of Boulder City.

Populated areas in Boulder City have, on average, greater wildfire likelihood than 38% of communities in Clark County.

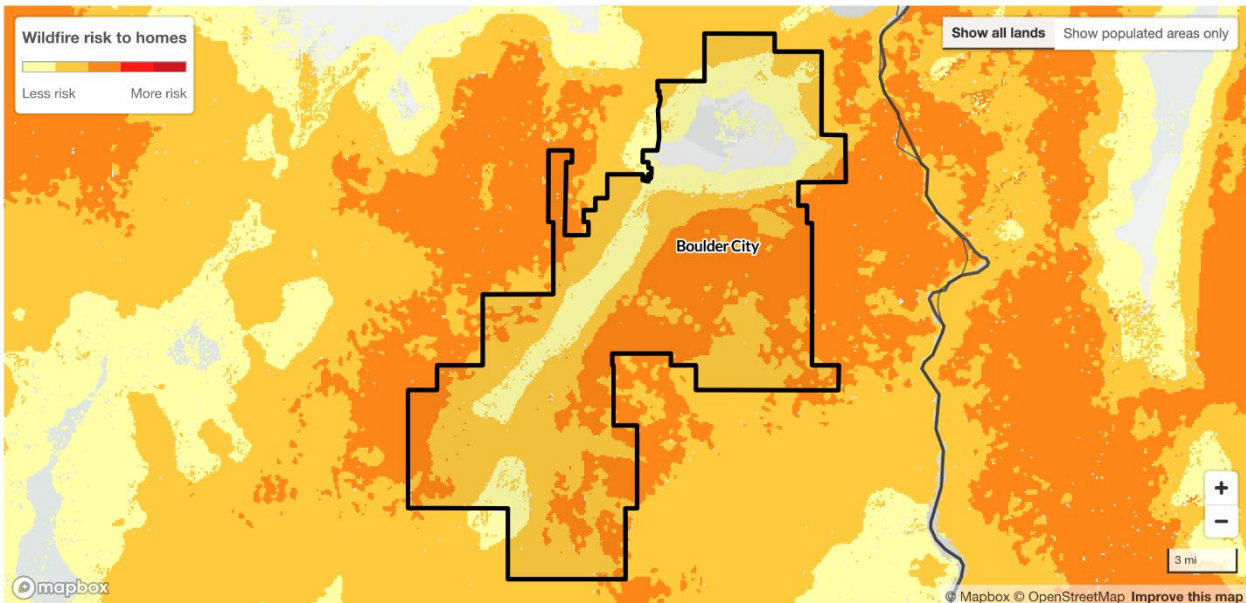


Data Source: [USDA USFS Wildfire Risk to Communities](#)

In reference to population growth: “The City of Boulder City has experienced a 0.919% growth in population. With the recent growth, Boulder City now has many more residents since the last HMP update. At the same time, Boulder City is seeing an increased aging population with 29.0% of residents being above the age of 65 and there was a 0.15% increase of housing units between 2010 and 2020. These groups are most at risk to the impacts of wildfire conditions. Related to the impacts of wildfire, as mentioned above, the Nevada Wildfire Info Dashboard data only provided wildfire status, and not the impacts related to deaths and loss of property or crop damage.

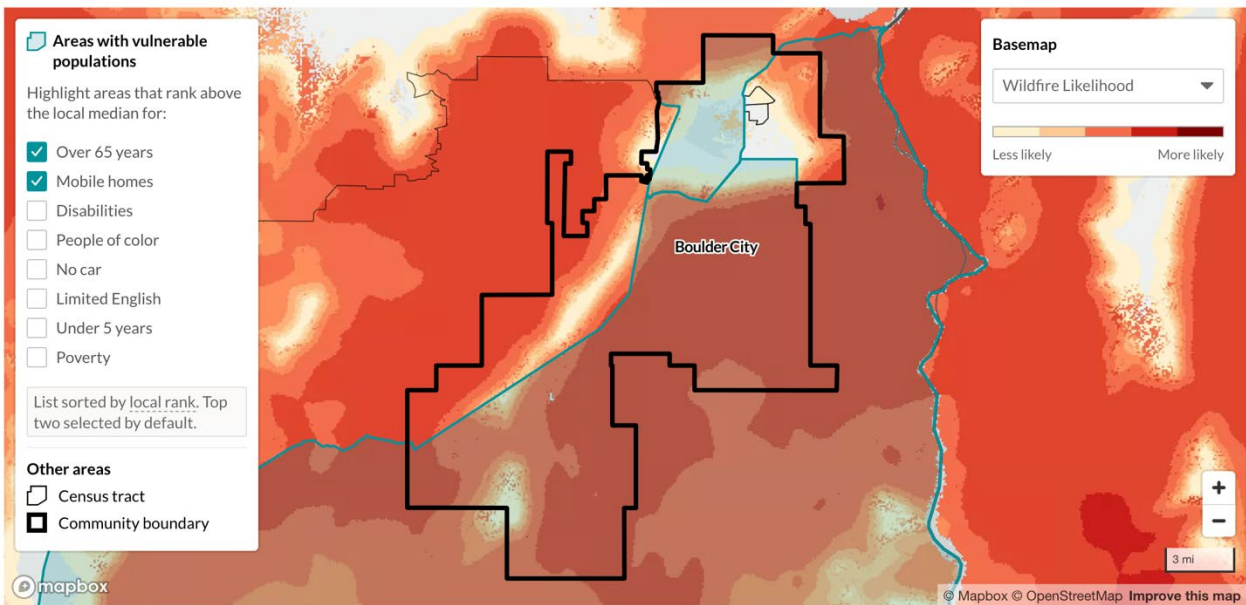
The previous Clark County MJHMP (2018) mentions wildland fires throughout the western United States have become, larger, hotter, and more deadly over the past years. This is due to record drought which has resulted in 100’s of millions of dead trees, hotter temperatures and forest management programs that left very high fuel loads in place. The potential for wildland fire has increased throughout the entire planning area, since completion of the previous MJHMP plan update (2018). As that plan stated, approximately 17.3 percent of land (1,396.1 square miles) in Clark County is located in high to very high wildfire hazard areas. The previous Clark County MJHMPs (2012 and 2018) both mentioned, the largest areas susceptible to wildfire are the areas just west and north of the Las Vegas Valley region. Therefore, as indicated on the following images indicates the risk to homes and the vulnerable population in Boulder City to wildfire events:

Risk to Homes – Boulder City, NV



Data Source: [USDA USFS Wildfire Risk to Communities](#)

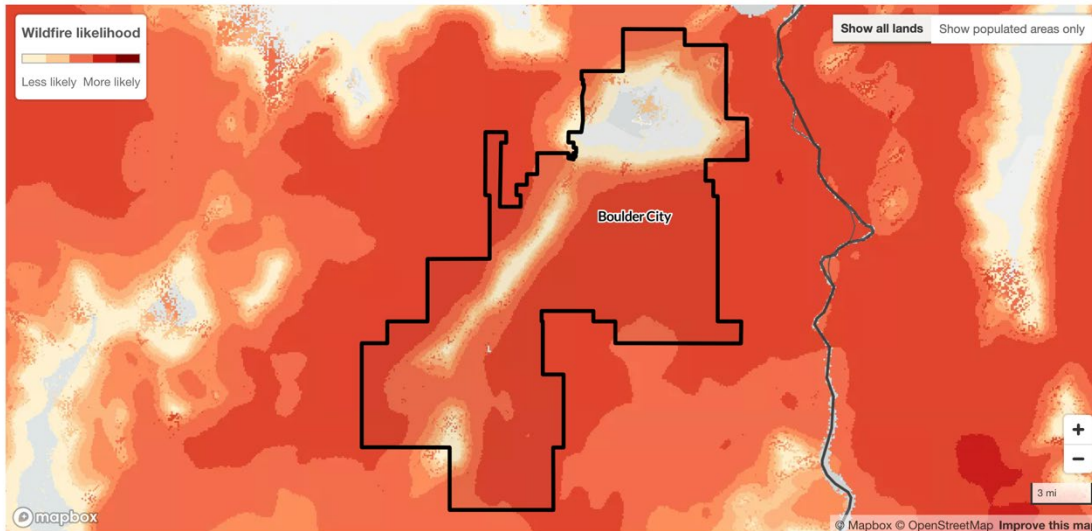
Vulnerable Population Risk – Boulder City, NV



Data Source: [USDA USFS Wildfire Risk to Communities](#)

Henderson: The City of Henderson’s wildfire probability is based on the overall probability score for Clark County of “**highly likely**”. This is based on the wildfire data included in the Previous Occurrence and Probability of Future Events sections in this hazard profile as provided by the Nevada Wildfire Info Dashboard - Desktop. Data can only be pulled for a specific County. City/Town/Tribal data cannot be individually calculated. Typically, the current impacts of wildfires throughout the planning area are unknown but have the potential, depending upon the circumstances. The City of Henderson resides in Clark County; therefore, this probability is based on County-wide data. The Wildfire Risk to Communities mentions the populated areas in Henderson, on average has a greater likelihood than 54% of communities in the US to wildfire. The following map provides the likelihood of wildfire in the City of Henderson.

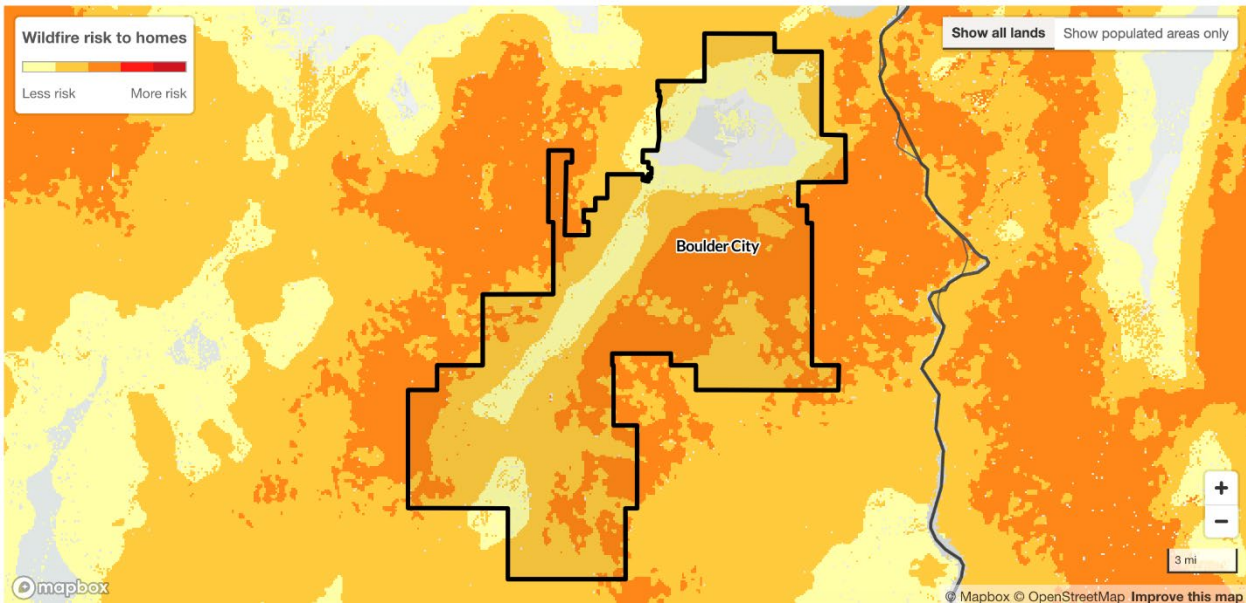
Populated areas in Boulder City have, on average, greater wildfire likelihood than 38% of communities in Clark County.



Data Source: [USDA USFS Wildfire Risk to Communities](#)

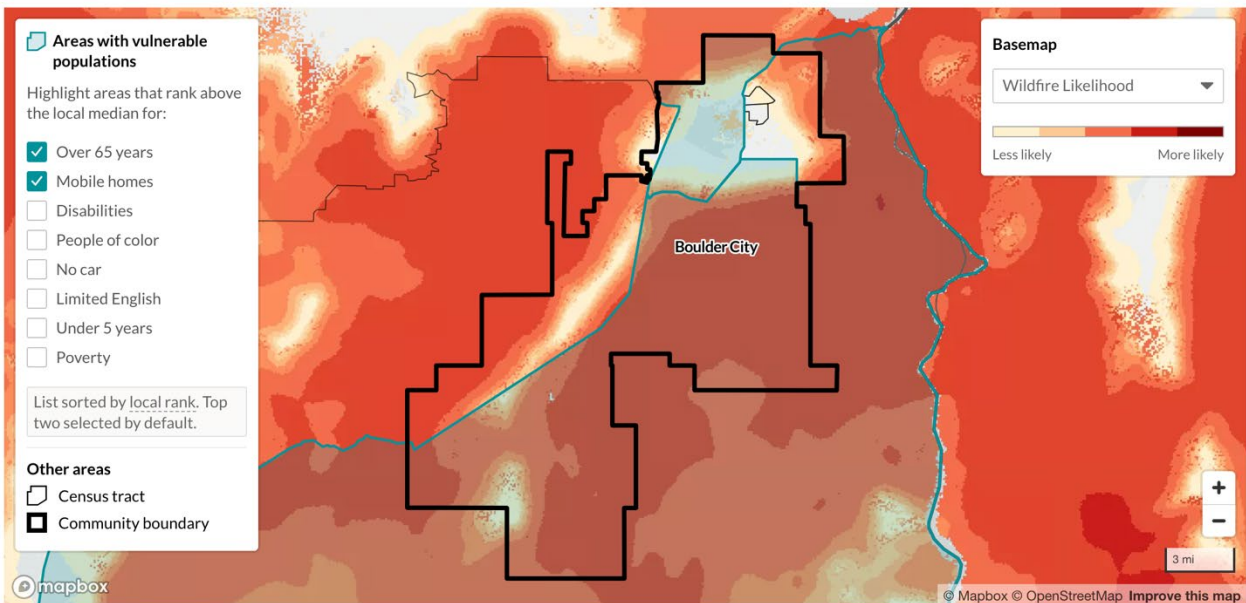
Typically, the current impacts of wildfires throughout the planning area are unknown but have the potential, depending upon the circumstances. The City of Henderson resides in Clark County; therefore, this probability is based on County-wide data. In reference to population growth: “The City of Henderson has experienced a 23.23% growth in population. With the recent growth, Henderson now has many more residents since the last HMP update. At the same time, Henderson is seeing an increased aging population with 29.0% of residents being above the age of 65 and there was a 20% increase of housing units between 2010 and 2020. These groups are most at risk to the impacts of wildfire conditions. Related to the impacts of wildfire, as mentioned above, the Nevada Wildfire Info Dashboard data only provided wildfire status, and not the impacts related to deaths and loss of property or crop damage. The previous Clark County MJHMP (2018) mentions wildland fires throughout the western United States have become, larger, hotter, and more deadly over the past years. This is due to record drought which has resulted in 100’s of millions of dead trees, hotter temperatures and forest management programs that left very high fuel loads in place. The potential for wildland fire has increased throughout the entire planning area since completion of the previous MJHMP plan update (2018). As that plan stated, approximately 17.3 percent of land (1,396.1 square miles) in Clark County is located in high to very high wildfire hazard areas. The previous Clark County MJHMPs (2012 and 2018) both mentioned, the largest areas susceptible to wildfire are the areas just west and north of the Las Vegas Valley region, which includes the City of Henderson. Therefore, as indicated on the following images indicates the risk to homes and the vulnerable population in Henderson to wildfire events:

[Risk to Homes – Henderson, NV](#)



Data Source: [USDA USFS Wildfire Risk to Communities](#)

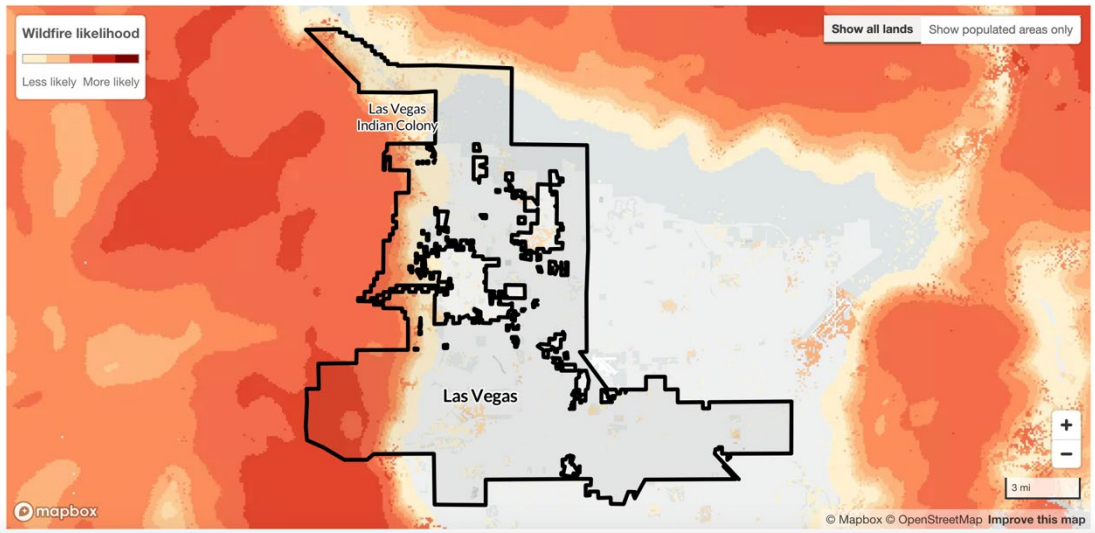
Vulnerable Population Risk – Henderson, NV



Data Source: [USDA USFS Wildfire Risk to Communities](#)

Las Vegas: The City of Las Vegas’s wildfire probability is based on the overall probability score for Clark County of “**highly likely**”. This is based on the wildfire data included in the Previous Occurrence and Probability of Future Events sections in this hazard profile, as provided by the Nevada Wildfire Info Dashboard - Desktop. Data can only be pulled for a specific County. City/Town/Tribal data cannot be individually calculated. Typically, the current impacts of wildfires throughout the planning area are unknown but have the potential, depending upon the circumstances. The City of Las Vegas resides in Clark County; therefore, this probability is based on County-wide data. The Wildfire Risk to Communities mentions the populated areas in Las Vegas, on average has a greater likelihood than 76% of communities in the US to wildfire. The following map provides the likelihood of wildfire in the City of Las Vegas.

Populated areas in Las Vegas have, on average, greater wildfire likelihood than 46% of communities in Clark County.

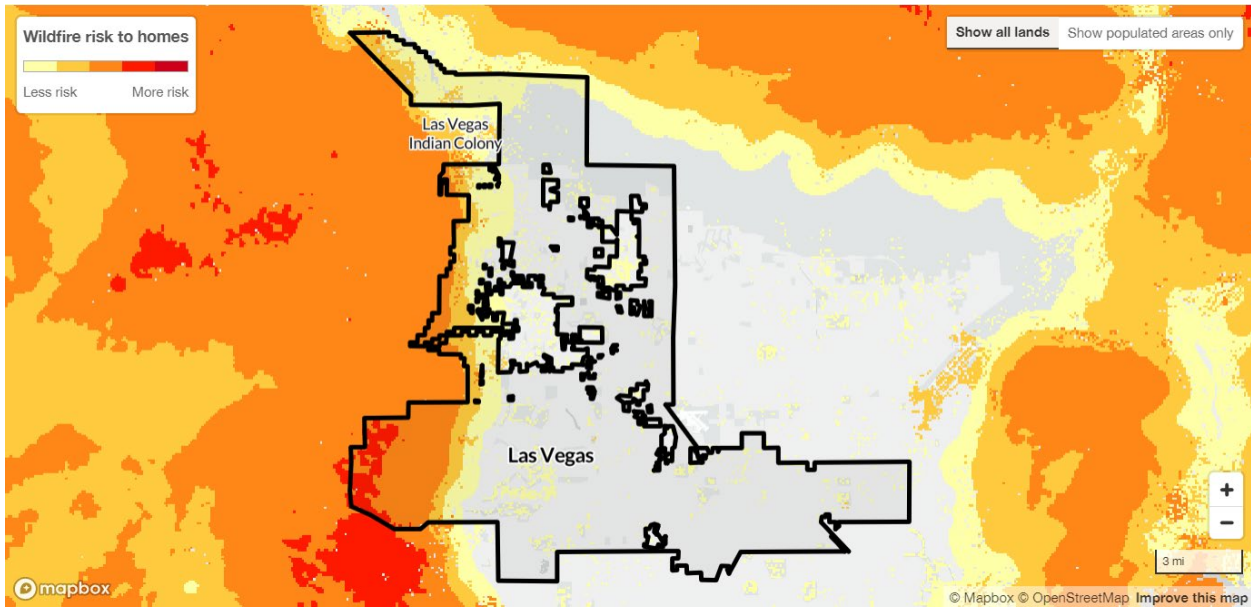


Data Source: [USDA USFS Wildfire Risk to Communities](#)

In reference to population growth: The City of Las Vegas has experienced a 9.96% growth in population. With the recent growth, Las Vegas now has many more residents since the last HMP update. At the same time, Las Vegas is seeing an increased aging population with 14.8% of residents being above the age of 65 and there was a 5.34% increase of housing units between 2010 and 2020. These groups are most at risk to the impacts of wildfire conditions.

Related to the impacts of wildfire, as mentioned above, the Nevada Wildfire Info Dashboard data only provided wildfire status, and not the impacts related to deaths and loss of property or crop damage. The previous Clark County MJHMP (2018) mentions wildland fires throughout the western United States have become, larger, hotter, and more deadly over the past years. This is due to record drought which has resulted in 100's of millions of dead trees, hotter temperatures and forest management programs that left very high fuel loads in place. The potential for wildland fire has increased throughout the entire planning area, since completion of the previous MJHMP plan update (2018). As that plan stated, approximately 17.3 percent of land (1,396.1 square miles) in Clark County is located in high to very high wildfire hazard areas. The previous Clark County MJHMPs (2012 and 2018) both mentioned, the largest areas susceptible to wildfire are the areas just west and north of the Las Vegas Valley region, which includes the City of Las Vegas. Therefore, the following images indicate the risk to homes and the vulnerable population in Las Vegas to wildfire events:

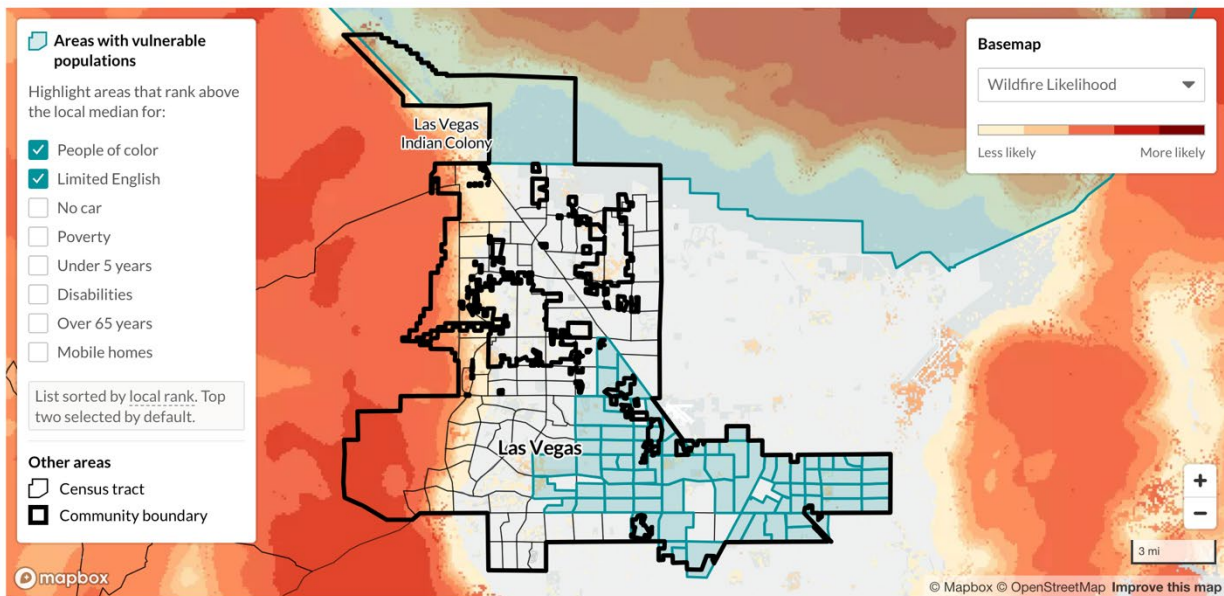
Risk to Homes – Las Vegas, NV



Data Source: [USDA USFS Wildfire Risk to Communities](#)

Vulnerable Population Risk – Las Vegas, NV

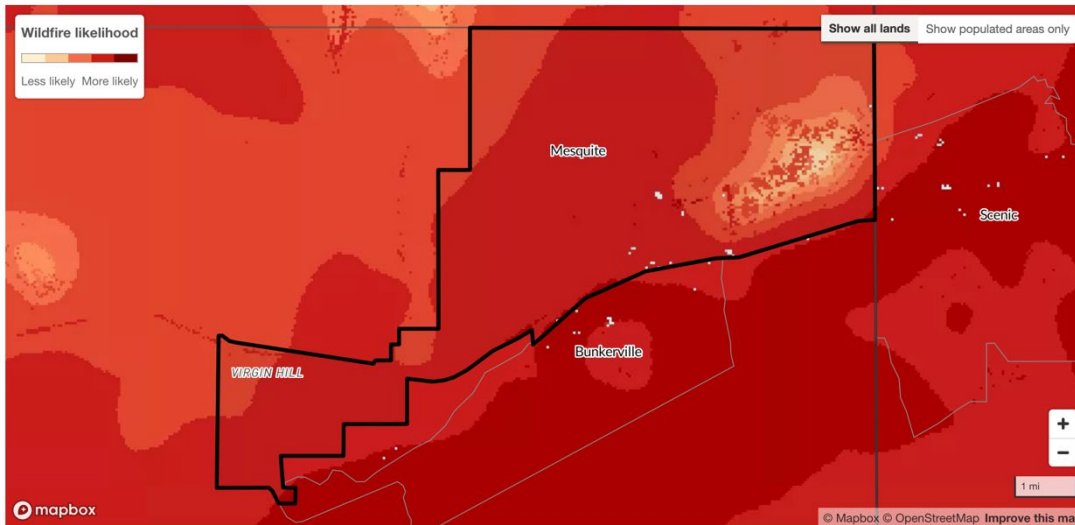
Potentially vulnerable populations may experience difficulty preparing for and responding to wildfire.



Data Source: [USDA USFS Wildfire Risk to Communities](#)

Mesquite: The City of Mesquite’s wildfire probability is based on the overall probability score of “highly likely” for Clark County. This is based on the wildfire data included in the Previous Occurrence and Probability of Future Events sections in this hazard profile as provided by the Nevada Wildfire Info Dashboard - Desktop. Data can only be pulled for a specific County. City/Town/Tribal data cannot be individually calculated. Typically, the current impacts of wildfires throughout the planning area are unknown but have the potential, depending upon the circumstances. The City of Mesquite resides in Clark County; therefore, this probability is based on County-wide data. The Wildfire Risk to Communities mentions the populated areas in Mesquite, on average has a greater likelihood than 96% of communities in the US to wildfire. The following map provides the likelihood of wildfire in the City of Mesquite.

Populated areas in Mesquite have, on average, greater wildfire likelihood than 96% of communities in Clark County.

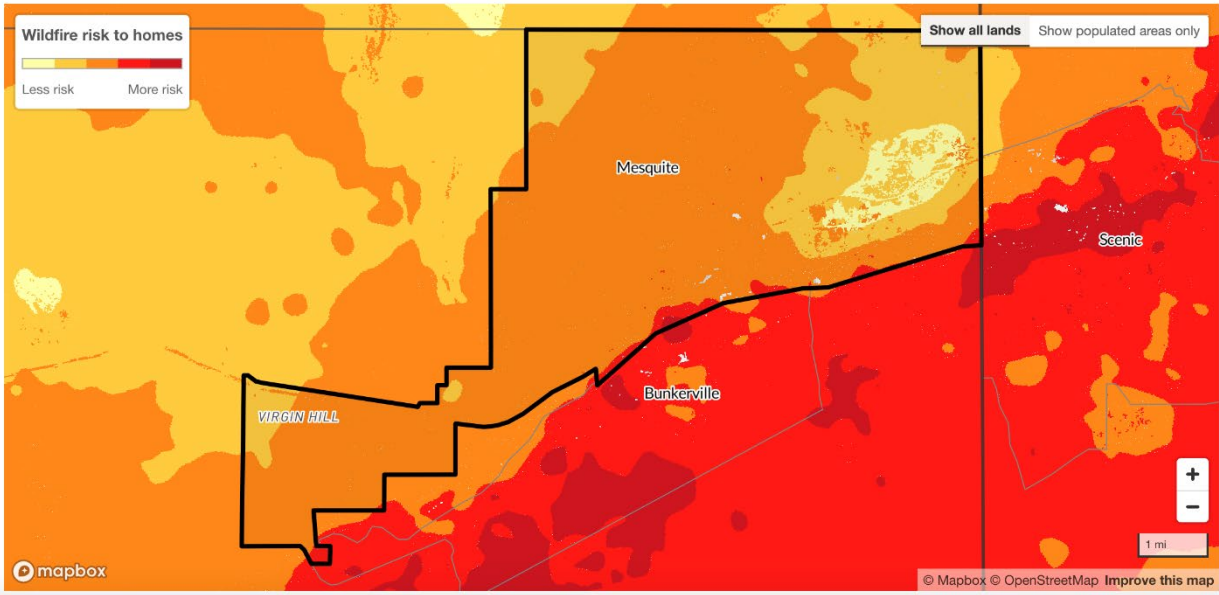


Data Source: [USDA USFS Wildfire Risk to Communities](#)

In reference to population growth: The City of Mesquite has experienced a 34% growth in population. With the recent growth, Mesquite now has many more residents since the last HMP update. At the same time, Mesquite is seeing an increased aging population with 26.6% of residents being above the age of 65 and there was a 20% increase of housing units between 2010 and 2020. These groups are most at risk to the impacts of wildfire conditions. Related to the impacts of wildfire, as mentioned above, the Nevada Wildfire Info Dashboard data only provided wildfire status, and not the impacts related to deaths and loss of property or crop damage.

The previous Clark County MJHMP (2018) mentions wildland fires throughout the western United States have become, larger, hotter, and more deadly over the past years. This is due to record drought which has resulted in 100's of millions of dead trees, hotter temperatures and forest management programs that left very high fuel loads in place. The potential for wildland fire has increased throughout the entire planning area since completion of the previous MJHMP plan update (2018). As that plan stated, approximately 17.3 percent of land (1,396.1 square miles) in Clark County is located in high to very high wildfire hazard areas. The previous Clark County MJHMPs (2012 and 2018) both mentioned, the largest areas susceptible to wildfire are the areas just west and north of the Las Vegas Valley region, which includes the City of Mesquite. Therefore, the following images indicate the risk to homes and the vulnerable population in Mesquite to wildfire events:

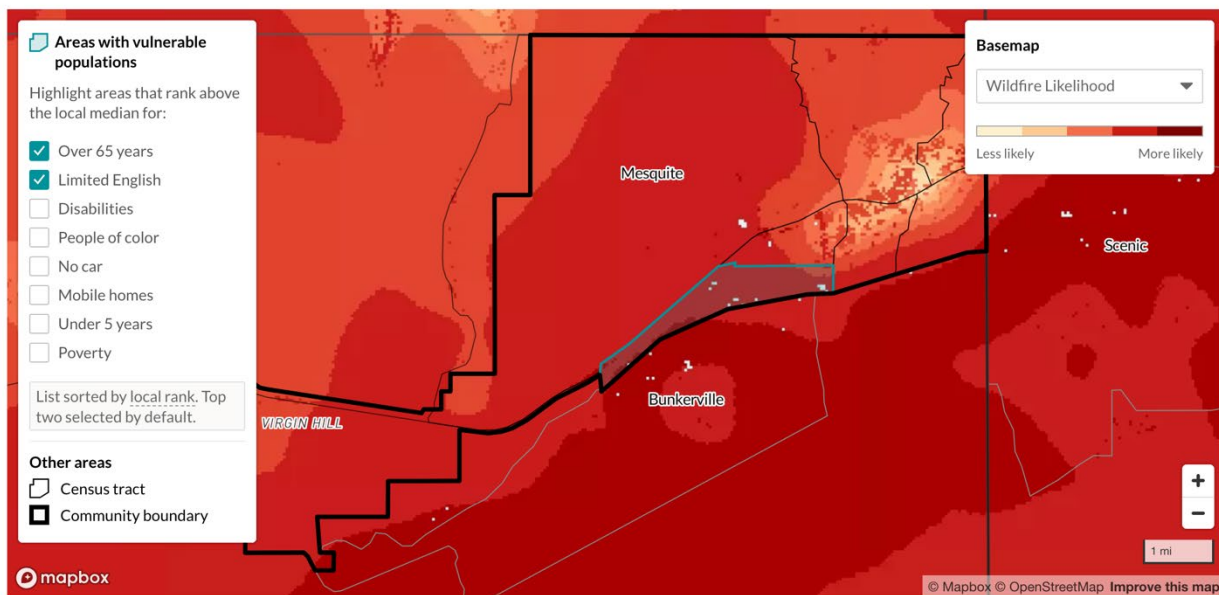
Risk to Homes – Mesquite, NV



Data Source: [USDA USFS Wildfire Risk to Communities](#)

Vulnerable Population Risk – Mesquite, NV

Potentially vulnerable populations may experience difficulty preparing for and responding to wildfire.

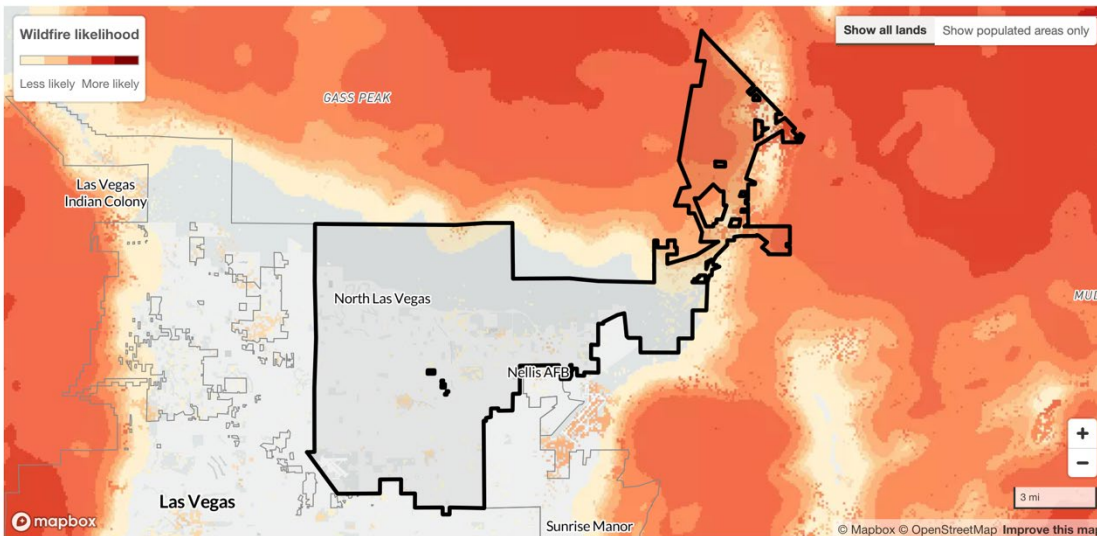


Data Source: [USDA USFS Wildfire Risk to Communities](#)

North Las Vegas: The City of North Las Vegas’s wildfire probability is based on the overall probability score of “**highly likely**” for Clark County. This is based on the wildfire data included in the Previous Occurrence and Probability of Future Events sections in this hazard profile as provided by the Nevada Wildfire Info Dashboard - Desktop. Data can only be pulled for a specific County. City/Town/Tribal data cannot be individually calculated.

Typically, the current impacts of wildfires throughout the planning area are unknown but have the potential, depending upon the circumstances. The City of North Las Vegas resides in Clark County; therefore, this probability is based on County-wide data. The Wildfire Risk to Communities mentions the populated areas in Las Vegas, on average has a greater likelihood than 8% of communities in the US to wildfire. The following map provides the likelihood of wildfire in the City of North Las Vegas.

Populated areas in North Las Vegas have, on average, greater wildfire likelihood than 8% of communities in Clark County.

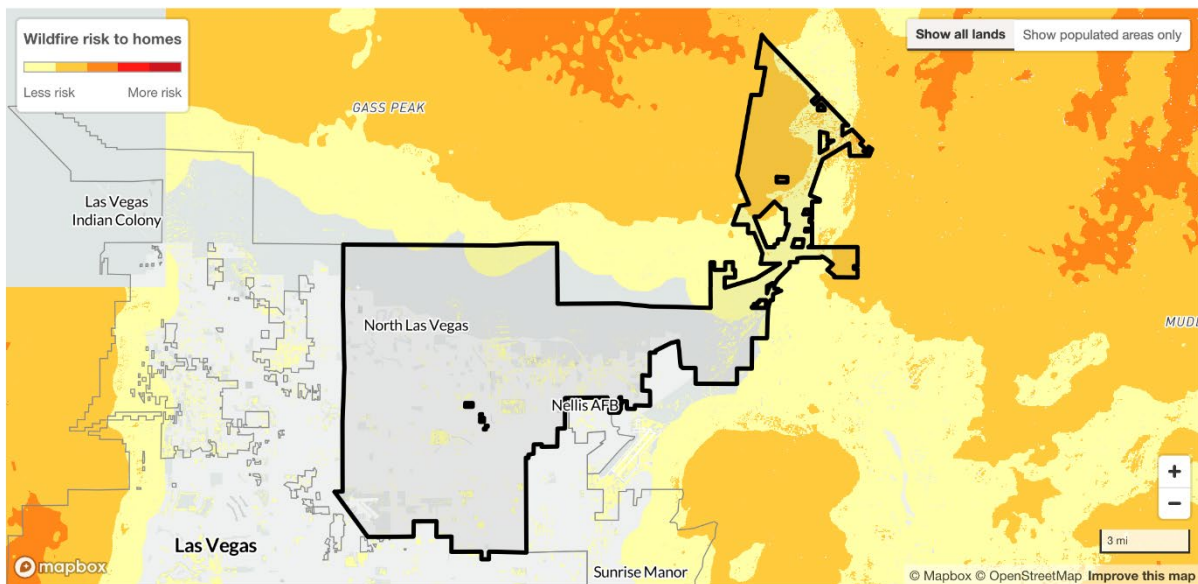


Data Source: [USDA USFS Wildfire Risk to Communities](#)

In reference to population growth: The City of North Las Vegas has experienced a 21% growth in population. With the recent growth, North Las Vegas now has many more residents since the last HMP update. At the same time, Mesquite is seeing an increased aging population with 10.9% of residents being above the age of 65 and there was a 13.5% increase of housing units between 2010 and 2020. These groups are most at risk to the impacts of wildfire conditions. Related to the impacts of wildfire, as mentioned above, the Nevada Wildfire Info Dashboard data only provided wildfire status, and not the impacts related to deaths and loss of property or crop damage. The previous Clark County MJHMP (2018) mentions wildland fires throughout the western United States have become, larger, hotter, and more deadly over the past years. This is due to record drought which has resulted in 100's of millions of dead trees, hotter temperatures and forest management programs that left very high fuel loads in place. The potential for wildland fire has increased throughout the entire planning area, since completion of the previous MJHMP plan update (2018). As that plan stated, approximately 17.3 percent of land (1,396.1 square miles) in Clark County is located in high to very high wildfire hazard areas.

The previous Clark County MJHMPs (2012 and 2018) both mentioned, the largest areas susceptible to wildfire are the areas just west and north of the Las Vegas Valley region, which includes the City of North Las Vegas at risk for wildfire events. Therefore, as indicated on the following images indicates the risk to homes and the vulnerable population in North Las Vegas to wildfire events:

Risk to Homes – North Las Vegas, NV



Data Source: [USDA USFS Wildfire Risk to Communities](#)

Vulnerable Population Risk – North Las Vegas, NV

Data Source: [USDA USFS Wildfire Risk to Communities](#)

The Clark County Climate Vulnerability Study mentions how wildfire will affect the people and communities within Clark County related to housing, schools, correctional and detention centers, and critical health facilities:

- **Housing:** “Seven Clark County communities have “high” or “extreme” wildfire hazard ratings, including: Cold Creek, Kyle Canyon, Lee Canyon, Mountain Springs, Nelson, Torino Ranch, and Trout Canyon. Residents and homes in these communities are at greater risk of direct wildfire impacts. Local and regional wildfires can cause smoke inhalation and poor air quality, which negatively impact residents living in homes without adequate air filtration systems. Increasing development in wildland, urban interface areas (WUIs) across the state puts additional demand on public resources. Housing has low-moderate sensitivity (S1) and moderate adaptive capacity (AC2).”

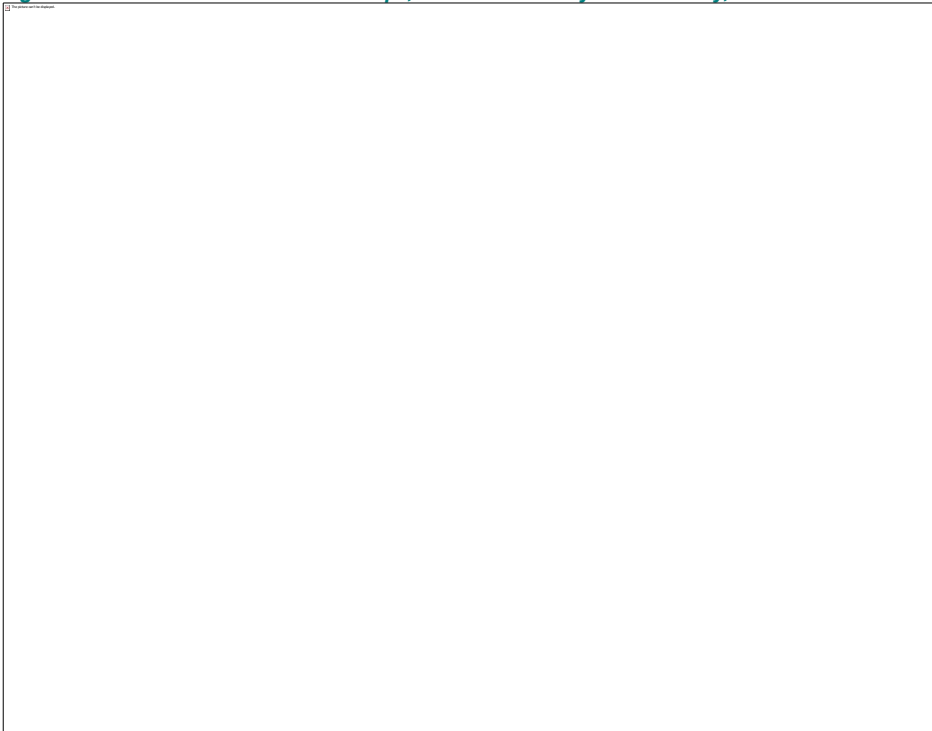
- **Schools:** “The largest cities within the county served by CCSD include Las Vegas, Henderson, and North Las Vegas. But the district also services cities and rural areas as far north as Indian Springs and Mesquite and as far south as Laughlin and Searchlight. If Clark County’s rural schools were grouped into their own district, it would be the fourth-largest rural district in the state. While not all schools are at equal risk of wildfire impacts, the school district is impacted by poor air quality due to wildfire smoke. These smoke events impact health and limited outdoor access for CCSD student, teachers, administrators, and staff, lead to moderate sensitivity and adaptive capacity.”
- **Correctional Facilities & Detention Centers:** “In 2021, the Mt. Charleston facilities (Spring Mountain Youth Camp and Residential Center) had to evacuate due to impending wildfire—a process that was time and resource intensive. When not facing direct wildfire impacts, both corrections and detention inmates and staff are negatively impacted by poor air quality. This impacts lung health, exacerbates preexisting conditions, and limits incarcerated and detained individuals’ access to outdoor spaces, leading to moderate-high sensitivity (S3) and moderate adaptive capacity (AC3).”
- **Critical Health Facilities:** “Critical health facilities observe increases in respiratory and cardiovascular cases when air quality is degraded, from particulate matter in wildfire smoke.⁹⁹ These impacts to public health and air quality can occur from distant or regional wildfires, such as in 2021 from the Caldor Fire. Individuals with preexisting health conditions are more sensitive to the impacts from wildfire smoke, and Clark County observed a higher mortality rate (50.1 per 100,000) from Chronic Lower Respiratory Diseases (CLRD) in 2016-2018 compared to the national rate (40.4 per 100,000).¹⁰⁰ Wildfires can directly affect the ability of emergency services to provide access to impacted areas, and indirectly impact facilities due to power disruptions. While healthcare facilities are generally equipped to handle additional cases of respiratory and cardiovascular illness, these facilities and workers are often at capacity. Critical health facilities have moderate-high sensitivity (S3) and moderate adaptive capacity (AC2).”

Finally, the FEMA National Risk Index map provides data on social vulnerability and community resilience wildfire. FEMA National Risk Index defines [Social Vulnerability](#) as the susceptibility of social groups to the adverse impacts of natural hazards, including death, injury, loss, or disruption of livelihood. FEMA defines [Community Resilience](#) as the ability for a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruption. The scoring of these FEMA National Risk Index categories are for all hazards, including wildfire are as follows:

- **Community Resilience:** the higher community resilience score results in a lower risk index score. **The Community Resilience score for Clark County is 49.9**, meaning communities within the County have a Very Low ability to prepare for anticipated natural hazards, adapt to conditions, and withstand and recover rapidly from disruptions compared to the rest of the U.S.
- **Social Vulnerability:** a higher social vulnerability score results in a higher Risk Index score. Social groups in Clark County, NV, have a Relatively High susceptibility to the adverse impacts of natural hazards compared to the rest of the U.S. **The Social Vulnerability score for Clark County is 48.59.**

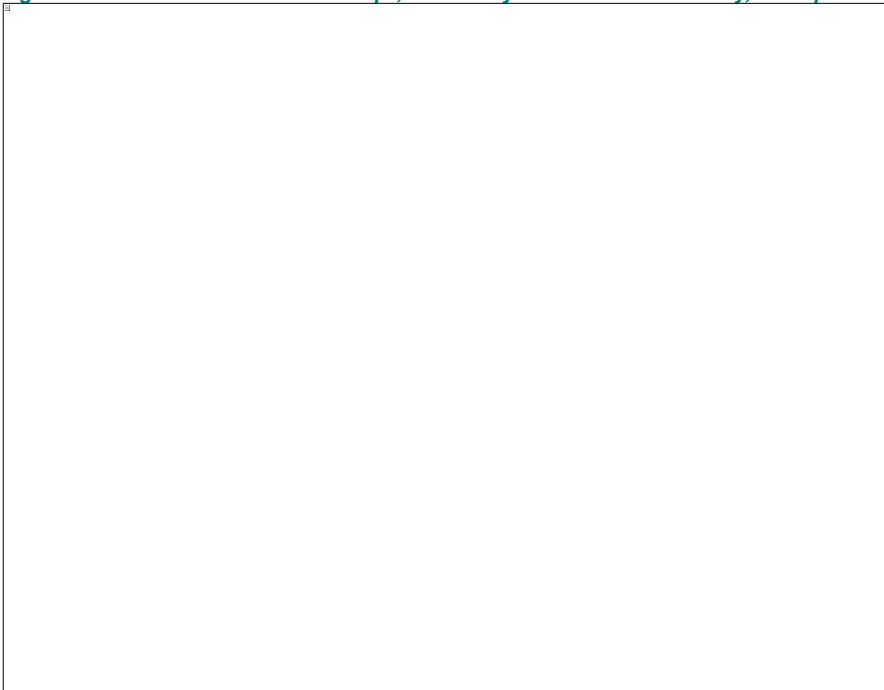
The following maps provide a snapshot of community resilience and social vulnerability scoring related to all hazards including wildfire for Clark County and its participating jurisdictions (which included Clark County Unincorporated area, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation).

Figure 1155: FEMA National Risk Index Maps, Social Vulnerability - Clark County, NV



Data Source: [The FEMA National Risk Index](#)

Figure 116: FEMA National Risk Index Maps, Community Resilience - Clark County, NV Map



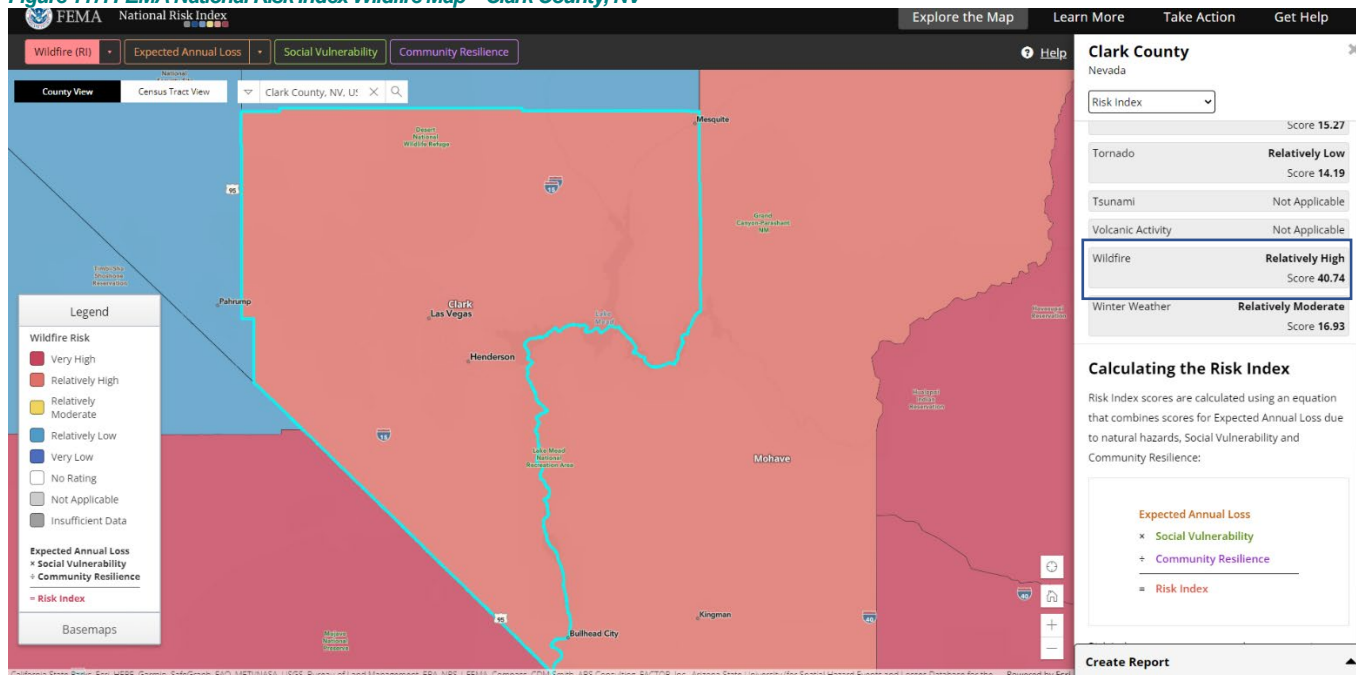
Data Source: [The FEMA National Risk Index](#)

Vulnerability of Systems

The FEMA National Risk Index for Natural Hazards is an online mapping system that identifies communities most at risk to 18 natural hazards. Related to wildfire, the National Risk Index, a [Wildfire Risk Index](#) score and rating represent a community's relative risk for wildfires compared to the rest of the United States. Clark County has a wildfire risk score of 40.74 (relatively high) compared to the

rest of the Country. The map below illustrates that score visually.

Figure 117: FEMA National Risk Index Wildfire Map – Clark County, NV



Data Source: [The FEMA National Risk Index](#)

In the event a wildfire begins to burn and grow, evacuation routes may become blocked by the fire or by other people attempting to evacuate. The impingement of the local transportation system makes appropriate warning and information sharing paramount in mitigating wildfire risks for Clark County and its participating jurisdictions.

Impact of Climate Change

Climate change is predicted to cause longer, dryer, hotter summers. The results will cause tree deaths at higher elevations. The combination of large numbers of dead trees and longer fire seasons are likely to be a greater number of fires with a larger burn area.

Critical Facilities and Infrastructure

Wildfires have the potential to affect Clark County and its participating jurisdictions (which included Clark County Unincorporated areas, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation). Therefore, all facilities listed in [Appendix E \(Critical Facilities & Infrastructure\)](#) could be operationally and sustainability affected based on the fact that basic essentials like water and electricity are needed to keep facilities and infrastructure going like in healthcare or schools. The following critical facilities and infrastructure for each participating jurisdiction (Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas) are illustrated on Maps 23-24 within this MJHMP update.

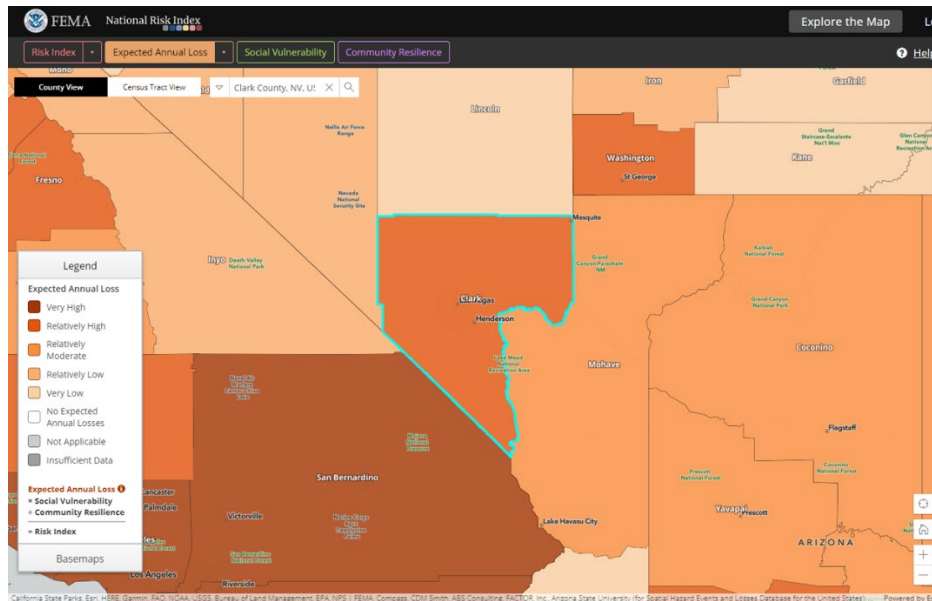
A complete list of critical facilities and infrastructure can be found [in Appendix E – Critical Facilities & Infrastructure](#).

Also, the National Risk Index scores provided by FEMA analyze potential exposure and estimated losses within the planning area related to wildfire. For this hazard, the National Risk Index uses the [Wildfire Exposure value](#) to represent community building values (in dollars), population (in both people and population equivalence), and agriculture value (in dollars) exposed to Wildfires. [Exposure](#) is a natural consequence factor for Annual Expected Loss, the natural hazard component of the National Risk Index. A jurisdiction with a higher exposure value will result in higher Expected Annual Loss and Risk Index scores. Clark County's Expected Annual Loss rating related to wildfire is 36.29, which is

relatively high compared to the rest of the country. The other exposure data related to expected loss wildfire is as follows:

- Expected Annual Loss: \$4.9M
- Exposure: \$0.25T
- Frequency: 0.283% events per year
- Historic Loss Ratio: Very Low

The following map illustrates the expected annual loss for fire, wildland urban interface (wildfire) in the planning area:



Data Source: [The FEMA National Risk Index](#)

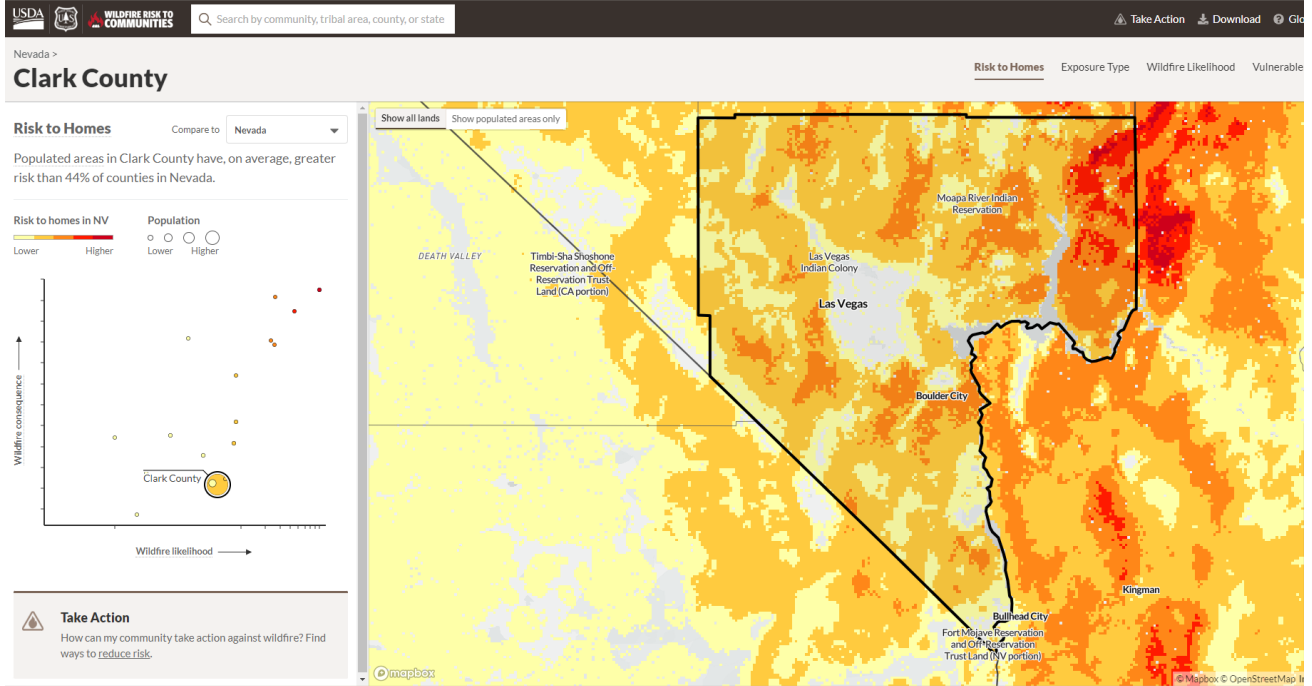
Land Use and Development

Wildland fires throughout the western United States have become, larger, hotter, and more deadly over the past years. This is due to record drought which has resulted in 100's of millions of dead trees, hotter temperatures and forest management programs that left very high fuel loads in place. The potential for wildland fire has increased throughout the entire planning area, since completion of the previous MJHMP plan update (2018). As that plan stated, approximately 17.3 percent of land (1,396.1 square miles) in Clark County is located in high to very high wildfire hazard areas.

The previous Clark County MJHMPs (2012 and 2018) both mentioned, the largest areas susceptible to wildfire are the areas just west and north of the Las Vegas Valley region. Additionally, communities with high and extreme fire hazard ratings are Cold Creek, Kyle Canyon, Lee Canyon, Mountain Springs, Nelson, Torino Ranch and Trout Canyon. Fortunately, the susceptible areas are not home to many residents and less than one percent of the County's population and residential buildings are in a wildfire hazard zone.

The following map from [the USDA US Forestry Service Wildfire Risk to Communities](#) shows "Risk to Homes" within populated areas in Clark County, on average, has a greater risk than 44% of counties in Nevada to wildfire. The following map illustrates that risk within the planning area:

Figure 118: Risk to Homes, Wildfire Map – Clark County, NV



Data Source: [USDA USFS Wildfire Risk to Communities](#)

Unique and Varied Risk

Wildfires can affect all, or a portion, of the entire planning area. [Drought](#) conditions, also identified as a hazard in the plan, can add to this risk. The table below reflects the risk characteristics within Clark County and its participating jurisdictions (which included the Clark County Unincorporated area and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) mentioned in the [2005 Nevada Community Wildfire Risk/Hazard Assessment Project for Clark County](#).

Table 130: Unique & Varied Risk, Fire, Wildland Urban Interface Fire (Wildfire)

Unique & Varied Risk, Fire, Wildland Urban Interface Fire (Wildfire)	
Jurisdictions	Risk Characteristics (Interface Conditions and Community Hazard Rating)
Cold Creek	Intermix Condition and High Rating
Kyle Canyon	Rural Condition and Extreme Rating
Lee Canyon	Intermix Condition and Extreme Rating
Mt. Springs	Intermix Condition and Extreme Rating
Nelson	Intermix Condition and High Rating
Torino Ranch	Classic Condition and High Rating

Unique & Varied Risk, Fire, Wildland Urban Interface Fire (Wildfire)

<i>Jurisdictions</i>	<i>Risk Characteristics (Interface Conditions and Community Hazard Rating)</i>
Trout Canyon	Intermix Condition and Extreme Rating
Cactus Springs	Classic Condition and Moderate Rating
Goodsprings	Classic Condition and Moderate Rating
Moapa	Classic Condition and Moderate Rating
Sandy Valley	Intermix Condition and Moderate Rating
Searchlight	Intermix Condition and Moderate Rating
Arden	Occluded Condition and Low Rating
Blue Diamond	Intermix Condition and Low Rating
Boulder City	Classic Condition and Low Rating
Bunkerville	Classic Condition and Low Rating
CalNevAri	Classic Condition and Low Rating
Cottonwood Cove	Classic Condition and Low Rating
Glendale	Classic Condition and Low Rating
Henderson	Classic Condition and Low Rating
Indian Springs	Classic Condition and Low Rating
Las Vegas	Classic Condition and Low Rating
Laughlin	Classic Condition and Low Rating
Logandale	Classic Condition and Low Rating
Mesquite	Classic Condition and Low Rating
North Las Vegas	Classic Condition and Low Rating
Overton	Classic Condition and Low Rating

Unique & Varied Risk, Fire, Wildland Urban Interface Fire (Wildfire)	
<i>Jurisdictions</i>	<i>Risk Characteristics (Interface Conditions and Community Hazard Rating)</i>
Palm Gardens Estates	Classic Condition and Low Rating
Primm	Classic Condition and Low Rating
Sloan	Classic Condition and Low Rating

Data Source: [2005 Nevada Community Wildfire Risk/Hazard Assessment Project](#)

Note: The following information was obtained by accessing the [Nevada Wildfire Info Dashboard](#) and the [2005 Nevada Community Wildfire Risk/Hazard Assessment Project for Clark County](#).

<https://www.arcgis.com/apps/dashboards/c205f43ea5df4f98b6d0f0f709d15e2f>. This information represents all the events and extent of the Flood hazard experienced by Clark County, including the jurisdictions located within, and is the only source of data accessible. Also, the information provided for Clark County also applies to the Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas; Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes; and Special Districts representing Clark County School District, Clark County Water Reclamation District, Las Vegas Water District, and Southern Nevada Health District.

Repetitive Loss Structure

Not applicable.

HAZUS® Models

Not applicable.

(INF) Infectious Disease - Epidemic

Hazard Description

The Mayo Clinic defines [infectious diseases](#) as disorders caused by organisms — such as bacteria, viruses, fungi, or parasites. Many organisms live in and on our bodies. They're normally harmless or even helpful. But under certain conditions, some organisms may cause disease. Some infectious diseases can be passed from person to person, and insects or other animals transmit some. Infectious disease outbreaks can cause public health emergencies like epidemics, pandemic, and endemics. The Columbia Mailman School of Public Health February 2021 article "Epidemic, Endemic, Pandemic: What are the Differences?"

(<https://www.publichealth.columbia.edu/public-health-now/news/epidemic-endemic-pandemic-what-are-differences>) defines these outbreak types as the following:

- **Epidemic:** As defined by the Centers for Disease Control and Prevention (CDC), an epidemic is "a sudden increase in the number of cases of an infectious disease within a community or geographic area during a specific time period."
- **Pandemic:** The World Health Organization (WHO) declares a pandemic when a disease's growth is exponential. This means the growth rate skyrockets, and each day cases grow more than the day prior. In being declared a pandemic, the virus has nothing to do with virology, population immunity, or disease severity. It means a virus covers a wide area, affecting several countries and populations.
- **Endemic disease:** An outbreak is endemic when it is consistently present but limited to a particular region. This makes the disease spread and rates predictable. Malaria, for example, is considered endemic in certain countries and regions.

The WHO defines pandemics, epidemics, and endemic diseases based on a disease's rate of spread. Thus, the difference between an epidemic and a pandemic isn't in the severity of the disease but in the degree to which it has spread. According to the Global Health Council, over 9.5 million people die each year from infectious diseases. Although progress has been made to control or eradicate many infectious diseases, humans remain vulnerable to many new emerging organisms, such as severe acute respiratory syndrome (SARS) and the West Nile virus. In addition, previously recognized pathogens can evolve to become resistant to available antibiotics and other treatments. For example, malaria, tuberculosis, and bacterial pneumonias are appearing in new forms that are resistant to drug treatments. The spread of infectious diseases also increases with population growth and the ease of travel. Some examples of modern-day infectious disease epidemics/pandemics are as follows:

- **Corona Viruses / SARS –Coronaviruses** cause a large percentage of colds and upper respiratory infections. Severe Acute Respiratory Syndrome (SARS) is a viral respiratory disease caused by a SARS-associated coronavirus. It was first identified on November 16, 2002, during an outbreak that emerged in China and spread to four other countries. It was quickly given the formal name of SARS due to its primary symptoms, and the CDC issued their first health alert on March 15, 2003. The current (2020) COVID-19 pandemic is spread by a coronavirus.
- **Influenza – Flu** epidemics and pandemics occur routinely, typically in the fall and winter. Because flu seasons fluctuate in length and severity, a single estimate cannot be used to summarize influenza-associated deaths. The U.S. Centers for Disease Control and Prevention (CDC) estimates that from the 1976-1977 flu season to the 2006-2007 season, flu-associated deaths ranged from a low of about 3,000 to a high of about 49,000.
- **Insect / Tick-Borne Disease** – Insects such as mosquitos and ticks can transmit various diseases. Diseases that mosquitoes carry include Eastern equine encephalitis; Malaria; West Nile virus; Zika virus. Diseases that can be contracted through a tick bite include Colorado tick fever; Ehrlichiosis; Lyme disease; Rocky Mountain spotted fever; Tularemia.

- **Plague** – Caused by the bacteria *Yersinia pestis*, a zoonotic bacterium usually found in small mammals and their flea, the plague is transmitted between animals and humans by the bite of infected fleas, direct contact with infected tissues, and inhalation of infected respiratory droplets. There are two primary clinical forms of plague infection: bubonic and pneumonic. Bubonic plague is the most common form and is characterized by painful swollen lymph nodes or 'buboes.' Plague can be a very severe disease in people, with a case-fatality ratio of thirty to sixty percent (30%-60%) for the bubonic type and is always fatal for the pneumonic kind when left untreated.
- **Anthrax** – Anthrax is a serious infectious disease caused by gram-positive, rod-shaped bacteria known as *Bacillus anthracis*. Although it is rare, people can get sick with anthrax if they come in contact with infected animals or contaminated animal products. Anthrax has the potential for and has been used as a biological weapon.
- **Hemorrhagic Fevers** – Viral hemorrhagic fevers are a group of illnesses caused by several distinct families of viruses. The term "viral hemorrhagic fever" is generally used to describe a severe multisystem syndrome. Characteristically, the overall vascular system is damaged, and the body's ability to regulate itself is impaired. These symptoms are often accompanied by hemorrhage. However, the bleeding is itself rarely life-threatening. While some types of hemorrhagic fever viruses can cause relatively mild illnesses, many of these viruses cause severe, life-threatening diseases. Hemorrhagic fevers include Ebola and Yellow Fever.

Pandemics have occurred throughout history. Some of the largest scale public health and pandemic incidents include:

- **COVID-19 (2019-Present)** – Beginning in December 2019, in the region of Wuhan, China, a new ("novel") coronavirus appeared and rapidly spread. COVID-19, a shortened form of "coronavirus disease of 2019," has affected every nation on the planet. It is the largest pandemic since the 1918-1919 Spanish Influenza.
- **HIV/AIDS (1976-Present, peak at 2005-2012)** – HIV/AIDS was first identified in the Democratic Republic of the Congo in 1976. HIV/AIDS is a global pandemic, having killed more than 36 million people since 1981. Currently, there are between 31 and 35 million people living with HIV infections.
- **H3N2 Flu (1968)** – A category 2 Flu pandemic, the 1968 flu pandemic was caused by the H3N2 strain of the Influenza A virus. Within three months, it had spread to the Philippines, India, Australia, Europe, and the U.S. While the 1968 pandemic had a comparatively low mortality rate (.5%), it still resulted in the deaths of more than a million people, including 500,000 residents of Hong Kong; approximately 15% of its population at the time.
- **H2N2 Flu (1956-1958)** – The Asian Flu was a pandemic outbreak of Influenza A of the H2N2 subtype that originated in China in 1956 and lasted until 1958. In its two year infectious duration, it resulted in approximately two million deaths worldwide and 69,800 in the U.S.
- **H1N1 Flu (1918-1920)** – A strain of H1N1 influenza resulted in a deadly outbreak that tore across the globe, infecting over a third of the world's population and ending the lives of 20 to 50 million people. Of the 500 million people infected in the 1918 infection wave, mortality rates were estimated at 10% to 20%, with up to 25 million deaths in the first 25 weeks alone
- **Plague (1346 to 1353)** – The Black Death was an outbreak of Bubonic Plague that ravaged Europe, Africa, and Asia, with an estimated death toll between 75 and 200 million people. Thought to have originated in Asia, the pandemic most likely jumped continents via the fleas living on the rats found aboard merchant ships.

Public health emergencies, namely pandemics, can cause sudden, widespread morbidity and mortality and social, political, and economic disruption. These outbreaks require more public health and medical resources than a day-to-day operations. They may include responses such as infection control, contact tracing, quarantine, isolation, prophylaxis, and social distancing (<https://ready.nola.gov/hazard-mitigation/hazards/infectious-disease-outbreak/>). In fact, the financial

damage by itself can be devastating as workers stay home and/or businesses close their doors indefinitely. Even with the seasonal flu, the U.S. Department of Health & Human Services estimates that 111 million workdays are lost annually, equating to \$7 billion in sick days and lost productivity. A global pandemic lasting a year could trigger a "major global recession," warned a 2008 report from the World Bank.

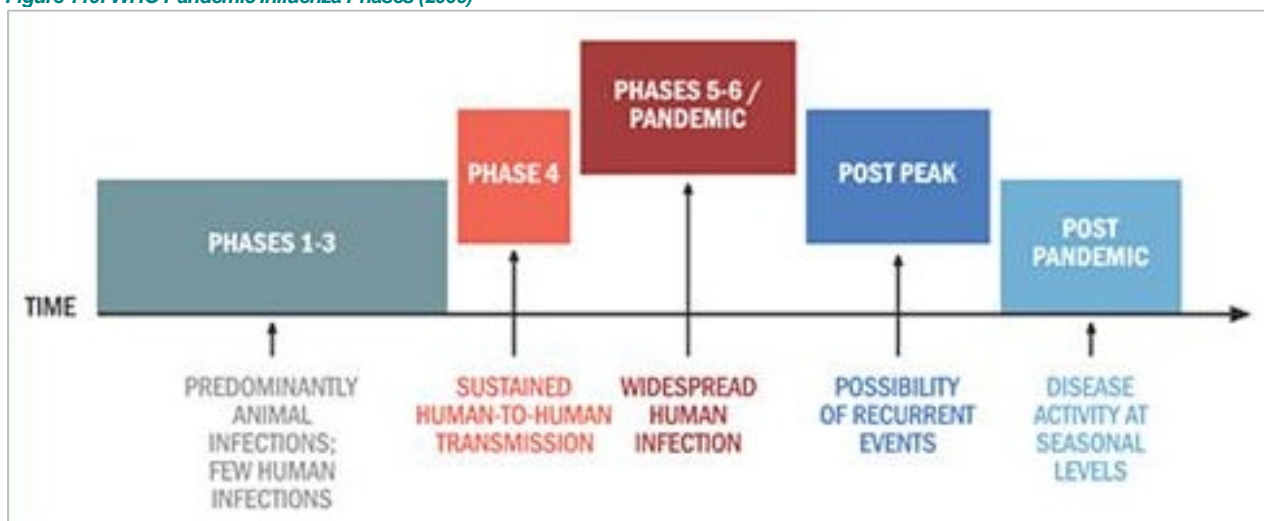
Location and Extent

As published on Medlineplus.gov website (<https://medlineplus.gov/infectiousdiseases.html>), "Germs, or microbes can be found everywhere. – in the air, soil and water. There are also germs on your skin and in your body. Many of them are harmless, and some can be helpful. But some of them can make you sick. Infectious diseases are diseases that are caused by germs. Infectious diseases can cause many different symptoms. Some are so mild that you may not even notice any symptoms, while others can be life-threatening."

The extent of an epidemic or pandemic can vary greatly depending on a long list of factors. These include but are certainly not limited to identifying the disease and how it spreads; educating the public of the risk as well as how to protect themselves and others; preparing hospitals for possible med surge events; having ample personal protective equipment, or PPE, readily available; allowing people to work from home; and of course, practicing good handwashing and social distancing.

No location in the world, including the U.S., Nevada, and Clark County, is immune to communicable diseases like COVID-19. The previous MJHMP 2018 mentions that the State of Nevada has established a list of over 60 communicable (infectious) diseases, which, by law, must be reported by health providers to report to state or local public health officials. These diseases are those of public interest by reason of their communicability, severity, or frequency. For Clark County, the [Southern Nevada Health District](#) provides current data on the ongoing pandemic. The World Health Organization currently uses the Pandemic Influenza Phases to characterize pandemics as shown in Figure 120.

Figure 119: WHO Pandemic Influenza Phases (2009)

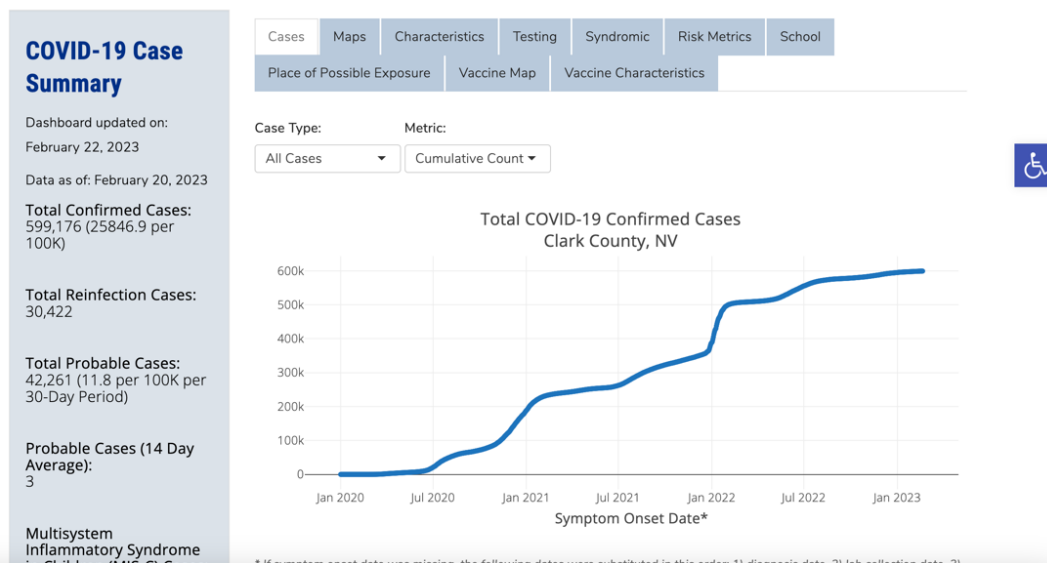


Data Source: World Health Organization (WHO)

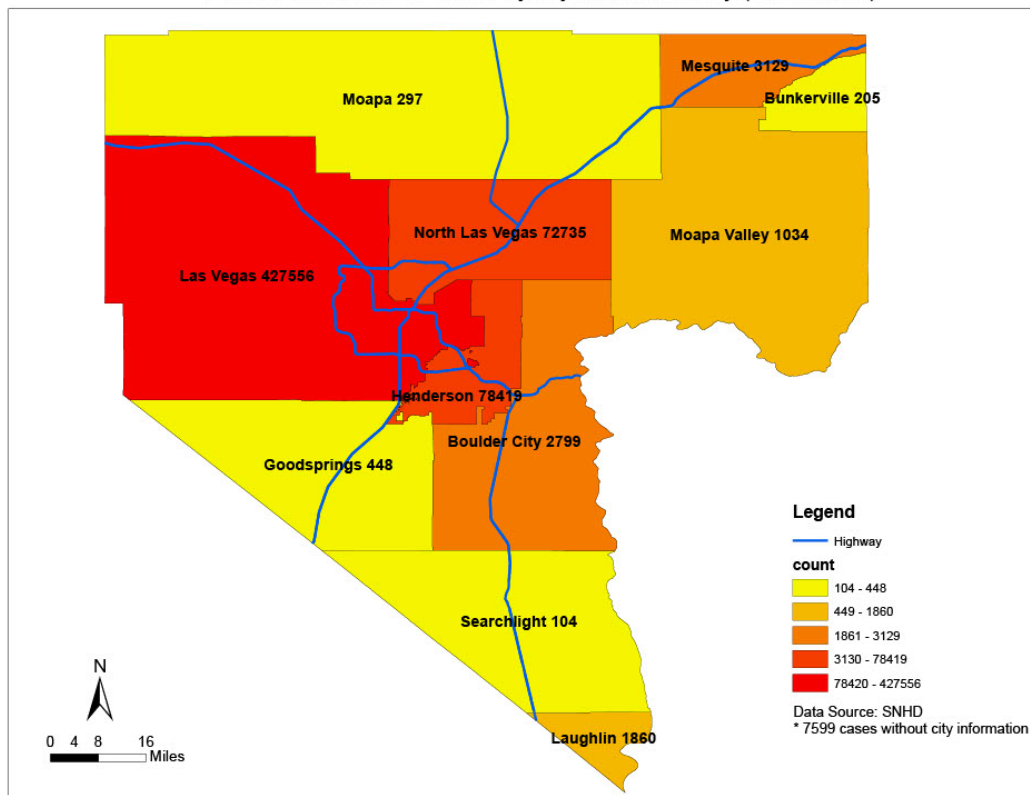
Still, as evidenced by the COVID-19 pandemic, the extent can be far greater than once thought possible. Millions of people may become infected globally, and tens of thousands of people may die. Entire cities may shut down. Unemployment may skyrocket. Hospitals may fill to capacity. Schools may close. Government services may be limited or completely unavailable. Food, water, and other essentials may be scarce. Making matters worse, it could take weeks, if not months, for the situation to stabilize. This is especially true in large cities like New York where a phased reopening is presently underway. Even in Clark County, where there have been 599,176 total confirmed and probable cases of COVID-19 to date (February 28, 2023). The County provides residents a COVID-19 Summary for Clark County dashboard that provides metrics of confirmed/probable cases, deaths, recovery, and

hospitalizations (ICU and Non-ICU patients):

Figure 120: COVID-19 Map and Dashboard-Summary for Clark County Data Dashboard, February 28, 2023



Number of COVID-19 cases by city in Clark county (02.20.2023)

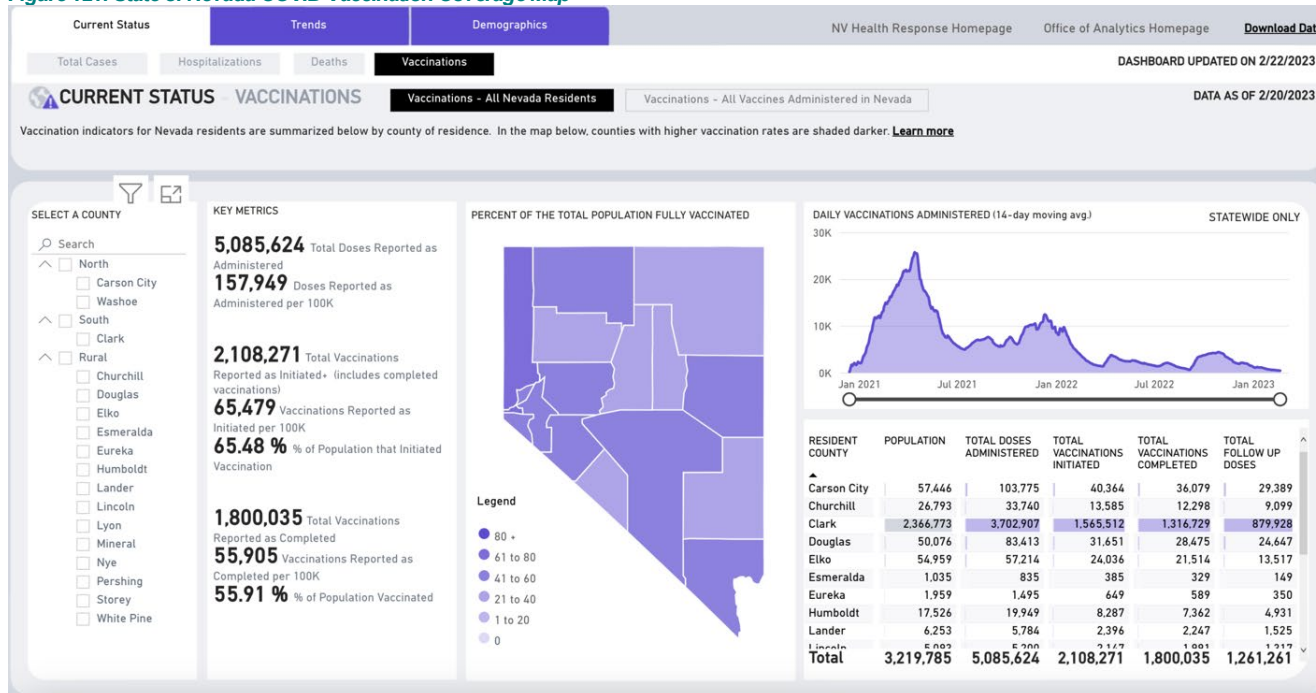


Map and Data Source: Southern Nevada Health District, COVID-19 Cases and Vaccine Data (<https://covid.southernnevadahealthdistrict.org/data/reports/>)

Further, a Presidential Disaster declaration ([DR-4523-NV](#)) remains in place for the State of Nevada. Due to the COVID-19 pandemic, Businesses and government offices are slow to return to normal. In fact, the County has created the “Clark County Re-opening guidelines website” which takes the health and safety of the community and its’ employees seriously. This website provides resources, guidelines, and tools for Clark County to return to work safely and re-open safely in the community. (https://www.clarkcountynv.gov/top_services/covid19/reopening_guidelines.php). Also, in December 2020, the Federal Drug Administration (FDA), approved COVID-19 vaccinations for Emergency Use Authorization (<https://www.fda.gov/emergency-preparedness-and-response/mcm-legal-regulatory->

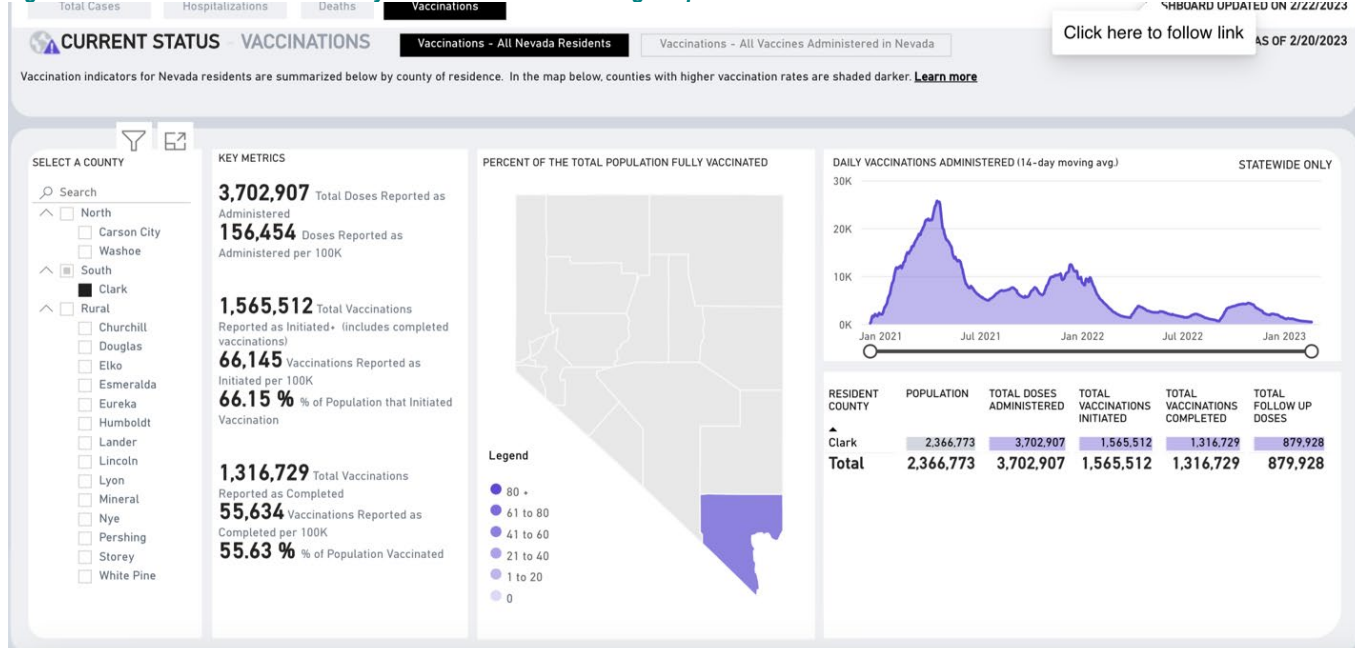
[and-policy-framework/emergency-use-authorization](#)). An Emergency Use Authorization (EUA) is a mechanism to facilitate the availability and use of medical countermeasures, including vaccines, during public health emergencies, such as the current COVID-19 pandemic. The first two approved were the Pfizer and Moderna Vaccines (date of first EUA issuance, December 2020), and a third vaccine, Janssen COVID-19 vaccine (date of first EUA issuance, February 2021). As of April 2021, the President of the United States made COVID-19 vaccines eligible for Adults within the United States effective April 19, 2021. At the time of this plan update, the state of Nevada reported 5,085,624 total doses reported as administered to Nevada residents and 65.48% of the population that have initiated COVID-19 vaccinations. As of February 28, 2023, Clark County currently has 1,316,729 of its 2,366,773 residents have coverage (completed two (2) doses of the Pfizer or Moderna or one (1) does of the Janssen (Johnson & Johnson or J&J) vaccines). The following maps show this completed vaccination coverage for Nevada and Clark County from the State’s COVID-19 Vaccination dashboards (<https://nvhealthresponse.nv.gov/>):

Figure 121: State of Nevada COVID Vaccination Coverage Map



Data Source: Nevada Health Response (<https://nvhealthresponse.nv.gov/>)

Figure 122: State of Nevada: Clark County COVID Vaccination Coverage Map



Data Source: Nevada Health Response (<https://nvhealthresponse.nv.gov/>)

Previous Occurrence

Clark County, like other locations across the country and around the globe, has experienced outbreaks of communicable disease—the latest of which is the COVID-19 pandemic. As of this writing (February 23, 2023), the Southern Nevada Health District, the County’s Public Health Department is reporting 599,176 confirmed cases and probably cases and 9,308 deaths (<https://www.southernnevadahealthdistrict.org/download/COVID-19/updates/2023/February/20230220-Weekly-Aggregate-COVID19.pdf>).

According to the CDC, community transmission of COVID-19 was first detected in the U.S. in February 2020. By mid-March 2020, all 50 states, the District of Columbia, New York City, and four U.S. territories had cases of the virus. As of February 21, 2023, [the World Health Organization \(WHO\)](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports) reported 757,264,511 confirmed cases and 6,850,594 deaths globally. Of those numbers and the CDC states the U.S. has 103,268,408 cases and has lost well over 1,115,637 lives due to the virus or complications from the virus. However, since the release of the vaccine and vaccine boosters, the total number of updated booster doses in the U.S. is 53,350,658. Approximately 876,294 of the U.S. confirmed, and probable cases are in the State of Nevada, which now has a COVID-19 death toll of 21,188 people.

Prior to the current coronavirus pandemic, the previous HMP (2018) mentions the entire County is susceptible to infectious diseases. Segments of the population at highest risk for contracting an illness from a pathogen are the very young, the elderly, or individuals who currently experience respiratory or immune deficiencies. These segments of the population are present throughout the region. Additionally, because of the communicable nature of these diseases, tourism centers or areas of high population density are considered more at risk. As a result, the population in and around the Las Vegas Strip may have an increased potential for exposure and spread of infectious diseases.

Probability of Future Events, Infectious Disease

Public health emergencies can occur at any time and in virtually any location, including the State of Nevada and Clark County. The previous plan update (2018) mentions the probability and magnitude of an infectious disease occurrence is difficult to evaluate due to the wide variation in disease characteristics, such as rate of spread, morbidity and mortality, detection and response time, and the

availability of vaccines and other forms of prevention. A review of the historical record indicates that disease related disasters do occur in humans with some regularity and varying degrees of severity. There is growing concern, however, about emerging infectious diseases. Infectious diseases constitute a significant risk to the population of Clark County. Minor outbreaks occur an estimated 30 times per year. The probability of a major infectious disease outbreak, with the potential of reaching the scale of an epidemic, however, is not nearly as common. Based upon past history, a major infectious disease outbreak occurs about once every 10 years.

Based on the Calculated Priority Risk Index (CPRI conducted for Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation), there is a **high risk probability (rank score of 3.0-3.9)** of Infectious Disease - Pandemic event in the planning area. The following table provides CPRI Rating for Infectious Disease - Pandemic related to the planning area.

Table 131: Clark County and Participating Jurisdiction CPRI Rating for Infectious Disease – Pandemic

Clark County and Participating Jurisdiction CPRI Rating for Infectious Disease – Pandemic							
Hazard: Infectious Disease	Category and Weight				CPRI Score	Risk Level	
	Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%			
Index Rating (R) Weighted Score (WS)							
Clark County (including Incorporated and Unincorporated Areas)	R	3	4	1	4	3.1	H
	WS	1.35	1.2	0.15	0.4		
Boulder City	R	4	3	1	4	3.25	H
	WS	1.8	0.9	0.15	0.4		
Henderson	R	4	3	1	4	3.25	H
	WS	1.8	0.9	0.15	0.4		
Las Vegas	R	4	4	2	4	3.7	H
	WS	1.8	1.2	0.3	0.4		
Mesquite	R	3	4	1	4	3.1	H
	WS	1.35	1.2	0.15	0.4		
North Las Vegas	R	3	4	2	4	3.25	H
	WS	1.35	1.2	0.3	0.4		
Special District: Clark County Water Reclamation District	R	4	4	1	4	3.55	H
	WS	1.8	1.2	0.15	.40		
Special District: Clark County School District	R	3	3	1	4	2.8	M
	WS	1.35	0.9	0.15	0.4		
Special District: Las Vegas Valley Water District/SWNA	R	3	3	1	4	2.8	M
	WS	1.35	0.9	0.15	0.40		
Tribal Nation: Las Vegas Valley Paiute	R	2	3	3	4	3.55	H
	WS	1.8	0.9	0.45	0.4		

**Clark County and Participating Jurisdiction
CPRI Rating for Infectious Disease – Pandemic**

Hazard: Infectious Disease	Category and Weight				CPRI Score	Risk Level	
	Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%			
Index Rating (R) Weighted Score (WS)							
Tribal Nation: Moapa Band of Paiutes	R	4	4	3	3	3.75	H
	WS	1.8	1.2	0.45	0.3		

Note: Though participating in the planning process, at the time of this update CPRI data for the City of Mesquite was not received. Therefore, the CPRI rating for the City of Mesquite is the same rating as Clark County due to the city being within the planning area.

Also, given that the County has no significant occurrences of public health emergencies like an epidemic pandemic in the last plan update (2018), Clark County is currently within the COVID-19 pandemic that is affecting the County and state. Also, with new strains of highly infectious diseases, including influenza, steadily on the rise worldwide, it seems logical that the probability of future events is occasional. As a reminder, calculating probability is not the only predictor of future occurrences. Qualitative assessments will be given if necessary.

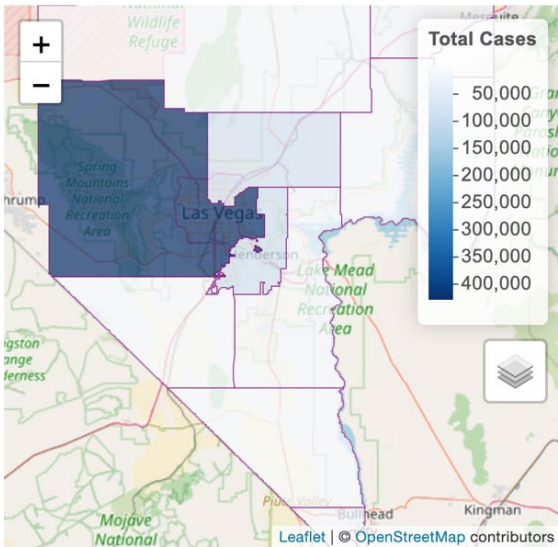
Vulnerability and Impact

Like other counties across the State of Nevada, other states across the U.S., and other countries around the world, all of Clark County is susceptible to communicable and potentially lethal disease(s). Depending on the severity, i.e., number of cases, number of recoveries, and number of deaths, along with the availability of vaccines, the impact of these diseases may be minimal, marginal, severe, or even catastrophic. Every situation is different, making it difficult to determine with certainty what the full impact, physically or financially, may be within the planning area.

Vulnerability of Population

Every resident of Clark County is vulnerable to communicable disease, whether it is the common cold, pandemic influenza, or novel coronavirus. Of course, depending on the disease, certain groups may be considered more susceptible. In the case of the COVID-19 pandemic, this includes the elderly and those with weakened immune systems or underlying medical conditions. It also includes those working on the front lines, i.e., nurses, doctors, EMS technicians and others, who must tend to the sick and dying. The following dashboard is the Total COVID-19 Cases by Township by Clark County, NV:

Total COVID-19 Cases by Township
Clark County, NV



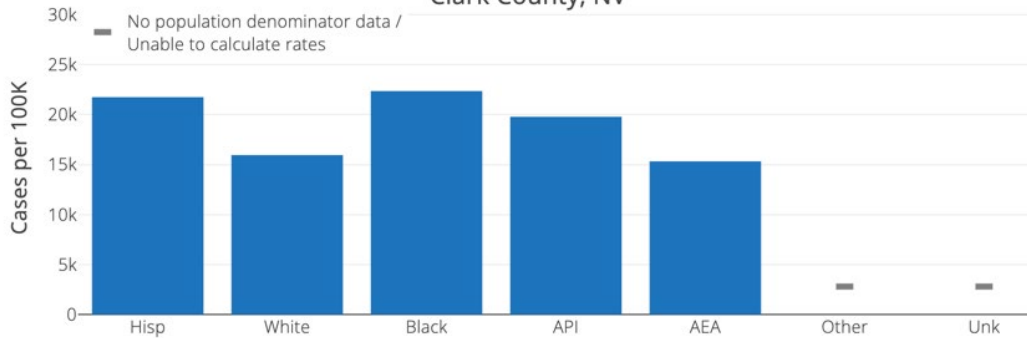
Search:

Township	Cases
Las Vegas	427,560
Henderson	78,421
North Las Vegas	72,736
Mesquite	3,129
Boulder City	2,799
Laughlin	1,860
Moapa Valley	1,034
Goodsprings	448

Showing 1 to 8 of 11 entries

Previous Next

COVID-19 Cases by Race and Ethnicity
Clark County, NV



Choose y-axis:

Rate (per 100K) Percent (%) of Total

Abbreviations: Hisp, Hispanic Origin of Any Race; White, White Race Not of Hispanic Origin; Black, Black Race Not of Hispanic Origin; API, Asian or Pacific Islander Not of Hispanic Origin; AEA, American Indian, Eskimo, or Aleut Not of Hispanic Origin; Other, Other Race or Multiple Races Not of Hispanic Origin; Unk, Unknown.

Note: Rates for categories with fewer than 12 cases are suppressed due to high relative standard error.

Population data source for calculating rate estimates: 2019 ASRHO Estimates and Projections Summary for 2020, Office of the State Demographer for Nevada.

Data Source: Southern Nevada Health District: <http://covid.southernnevadahealthdistrict.org/data/>

Most public health and pandemics affect disadvantaged communities to a greater degree. This is due to more frequent, underlying health conditions among this population, less access to health care / health insurance and living in more densely occupied housing.

Without the availability (and use) of personal protective equipment (PPE), the vulnerability to disease for the population of Clark County increases. It is further exacerbated by the lack of, or access to, certain medical equipment, such as ventilators, which can prove to be lifesavers.

Vulnerability of System

A public health crisis, namely a pandemic, has the potential to impact a number of critical systems. These include but are certainly not limited to healthcare, finance, education, and communications. For example, essential services, such as internet and phone, may be limited due to high use from at-home workers and students; and computer networks may be far more vulnerable to costly cyberattacks. Agriculture and manufacturing may also be impacted, disrupting the supply chain, and leaving essentials scarce on store shelves. Just as concerning, farmers like those in Clark County may find themselves having to discard or donate food (meat, fruits, vegetables, and milk) as the restaurants, schools, and other businesses that normally buy these items could close. This could lead to food shortages and higher prices in the future.

Impact of Climate Change

Climate change has no bearing on the profiled hazard of Infectious Disease - Epidemic.

Critical Facilities and Infrastructure

Though not physically harmful, an epidemic or pandemic, poses a number of issues for Clark County's infrastructure and critical facilities. Employees may be too sick to work, forcing businesses to alter their hours or close their doors. Government services, including law enforcement, public health, and even road maintenance, may be limited. Schools and daycares may close indefinitely. Hospitals may be short staffed, or just as concerning, short on beds in the case of medical surge event. A complete list of Clark County's critical facilities and infrastructure is available [in Appendix E](#).

Land Use and Development

Land use and development has no bearing on the profiled hazard of Infectious Disease.

Unique and Varied Risk

All of Clark County is susceptible to the hazard Infectious Disease - Epidemic, so there is no unique and varied risk. However, it is known that elderly people, i.e., those residing in nursing homes, long-term care centers, and rehabilitation facilities are often more susceptible to communicable diseases like the flu and coronavirus. Additionally, those working on the front lines, e.g., nurses, doctors, law enforcement, and emergency medical service (EMS) providers are more likely to be exposed to contagions. It is uncertain, but highly likely that the same level of risk would be present during a flu pandemic, which is far more common than viruses like COVID-19.

However, the previous HMP plan (2018) mentions that Clark County is fortunate because it has an excellent public health system that constantly monitors the threats that could lead to a widespread and significant public health emergency. People who have weak immune systems are particularly vulnerable to infectious diseases. Infectious diseases can seriously affect those individuals who are infected with HIV or are receiving immunosuppressive therapy for cancer or organ transplants. Others who may be disproportionately affected by infectious diseases include the elderly; persons being cared for in institutional settings (such as hospitals and nursing homes); and persons with inadequate access to healthcare, such as the homeless, and others of low socioeconomic status. In addition, pregnant women and people who care for small children are generally at higher risk for acquiring infectious diseases.

The impact on safety, health, and economics will vary widely depending on the type and magnitude of a public health emergency. The Southern Nevada Health District has plans for emergency response actions and other information that is not included in this plan.

Link: (<https://covid.southernnevadahealthdistrict.org/>)

It is very difficult to predict future occurrences of many of the diseases affecting Clark County. The Clark County COVID-19 Resources that provides a communication toolkit and community resources and information to inform community members of the types of infectious disease present, baseline rates of communicable disease, and a brief history of the prevalence of select diseases. These resources can be found online here: <https://covid.southernnevadahealthdistrict.org/resources/>.

Repetitive Loss Structure

There are no repetitive loss properties associated with this particular hazard in the planning area.

HAZUS® Models

Not applicable to the identified hazard.

(INF) Infestation

Hazard Description

As defined by [Federal Executive Order 13112](#) an invasive species is a non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive species can be plants, animals, and other organisms (e.g., microbes). Human actions are the primary means of invasive species introductions.

Infestations impact Nevada's economy through the destruction of crops and natural resources which also impacts tourism. Some of the plant infestations are highly flammable and assist in the spread of wildfires. The infestations of greatest concern in Clark County include noxious weeds as defined by the U.S. Department of Agriculture, noxious weeds are “species of plants that cause disease or are injurious to crops, livestock or land, and thus are detrimental to agriculture, commerce or public health.” Noxious weeds are considered invasive due to their ability to rapidly reproduce and spread, ultimately out-competing all other vegetation in an area.” In reference to agriculture, invasive weeds affect crop production. In reference to natural or wildland areas, invasive weeds cause a drastic change in the composition, structure, and function of ecosystems.

The [Nevada Department of Agriculture](#) has developed a list of 47 Noxious Weeds, divided into three categories (A, B and C):

- **Category A:** Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations.
- **Category B:** Weeds established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur.
- **Category C:** Weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer.

Other invasive plants that are too widely distributed in Nevada to be included in the noxious weed list, but present problems in Nevada, include Cheatgrass and Red brome. Cheatgrass (*bromus tectorum* L.) is an annual grass that forms tuft up to two feet tall with leaves and sheathes that are covered in short soft hairs. The flowers occur as drooping, open, terminal clusters that can have a greenish, red, or purple hue. These annual plants will germinate in the fall or spring and senescence usually occurs in summer. Cheatgrass's invasive nature is due to its potential to completely alter the ecosystem in which it invades, completely replacing native vegetation and changing fire regimes.

Red brome (*bromus rubens* L.) is a tufted, cool-season annual bunchgrass commonly found growing on shallow dry soil or poor textured, clayey soil. It becomes extremely competitive with other grasses and displaces native species. The accumulation of litter and necromass has the potential to increase fire frequency in the desert.

Location and Extent

According to the 2012 Census of Agriculture, 252 farms, covering 15,620 acres of land. Crop sales accounted for \$3,291,000 and livestock sales accounted for \$3,535,000 in 2012. As of the [2017 Census of Agriculture](#), Clark County contains 179 farms. This version of the Census of Agriculture did not include data for total acres data was withheld. The footnote indicated that this information was not included to avoid disclosing data for individual operations. Most of these important farmlands are located within the County's unincorporated areas and zoned for agriculture use. Different pests can impact different crops in different ways; while there is no scale to define the extent of an infestation,

a pest could have a major economic impact on the value of infested crops. Infestations have occurred throughout Clark County in the following locations:

- **Noxious Weeds:** The majority of noxious weed infestations are north of Clark County. Sarah Mustard (*brassica tournefortii*) is the exception, which extends throughout the eastern half and southern portion of the County.
- **Cheatgrass and Red Brome:** Cheatgrass and Red brome prosper in similar habitats and are found particularly in areas of dry rangeland and shrub steppe habitats of the County.
- **Africanized Honeybees:** Africanized honeybees were first found in the U.S. in southern Texas in 1990. In 1998 their presence had been detected in Clark County and has since continued to spread north, into Lincoln and Nye Counties Nevada.
- **Banded Elm Bark Beetle (BEBB):** The BEBB is found in populations of elm trees throughout the County.
- **Mosquitos:** Mosquitos are quite active in throughout Southern Nevada. In May 2017, the *Aedes aegypti* mosquito has been identified in North Las Vegas.

There are no recognized scales to measure infestation. Most commonly, infestation is quantified by acres and percentage of area affected. Noxious weed which are defined as "any species of plant which is, or likely to be, detrimental or destructive and difficult to control or eradicate." are regulated by the Nevada Department of Agriculture. The extent of infestations in Clark County is based on many factors. Pests enter Clark County on commercial shipments of plants, food, and other materials. They may also be transported on vehicles, fruits, plants, seeds, or animals when travelers enter the County.

- **Noxious Weeds:** Of the 47 noxious weeds listed by the State of Nevada, only 13 are found in Clark County. Most of them do not have an overwhelming presence.
- **Cheatgrass and Red Brome:** Cheatgrass and Red brome have thrived in Nevada and cover about 9 million acres of land in Nevada, about 13 percent of the state's total acreage. Without human intervention, their populations will continue to grow.
- **Africanized Honeybees:** The Clark County Public Works Department notes that "the Africanized honeybee is well established in Las Vegas" and has recommended that residents "Stay Away From Honey Bee Colonies." In a report from February 2000 a state agriculturist said that the actual number of hives or swarms found in Las Vegas in 1999 was about 1,000, before 1998 there had been no reports of hives or swarms. Additionally, the Agriculture Department estimated that 75 percent of all bees in the valley are Africanized.
- **Banded Elm Bark Beetle:** The BEBB has invaded much of Nevada and the Western United States, and the extent of its infestation continues to grow. Prior to the introduction of the BEBB a similar beetle, the European elm bark beetle (EEBB) was found in populations of elm trees. In a study to determine the relative abundance of the BEBB and the EEBB, presented at the annual USDA Interagency Research Forum on Invasive Species, beetle traps were set up in five states. In 2007, 43 percent of the beetles caught in the Nevada traps were BEBB. The following year a similar study was set up and BEBB increased in abundance in Nevada to 68 percent. It seems that the BEBB attacks standing trees more aggressively, may have displaced the EEBB and/or is better able to colonize regions beyond EEBB's range.
- **Quagga Mussels:** As an aquatic species their presence in Clark County has remained limited to the bodies of water along the Colorado River. However, since their introduction to Clark County, their presence has expanded to northern Nevada; in 2011 Quagga mussels were found in Lahontan Reservoir and Rye Patch Reservoir.
- **Asian Clam:** The presence of Asian Clams in the County has not extended beyond Lake Mead.
- **New Zealand Mudsail:** The extent of the New Zealand Mudsail appears to be confined to Lake Mead.
- **Aedes Aegypti:** The *Aedes aegypti* mosquito is the main type of mosquito that spreads Zika, dengue, chikungunya, and other viruses.

Previous Occurrence

In the previous MJHMP (2018) the following infestations have been documented to have occurred within Clark County:

- **Noxious Weeds:** Many non-native plants are introduced to new areas every year. Many are considered benign, but some species are classified as noxious because of their invasive nature; more than 500 weeds in North America are classified as noxious. The first widespread weed in Nevada considered to be invasive was a Russian thistle or tumbleweed that was introduced in the late 1800s. The Halogeton glomeratus was the second invasive species to reach Nevada and was discovered in 1934.
- **Cheatgrass:** Cheatgrass is native to Europe and parts of Africa and Asia. It was first introduced into the United States accidentally in the mid-1800s and by the early 1900s was found throughout the Great Basin (includes Nevada, and parts of California, Idaho and Utah).
- **Red Brome:** The red brome is native to Europe and parts of Africa and Asia. It was brought to North American before 1800. In contrast to accidental introductions, red brome was seeded near the University of Arizona at Tucson from 1906 to 1908 for evaluation as a forage plant; this grass soon escaped and became established along the Santa Cruz River. It continued to spread and by the 1960s was found throughout Nevada.
- **Africanized Honey Bees:** Africanized honey bees were first found in the U.S. in southern Texas in 1990. In 1998 their presence had been detected in Clark County and has since continued to spread into northern Nevada.
- **Banded Elm Bark Beetle:** The BEBB is native to northern China, Central Asia and Russia. The beetle was first detected in the United States in 2003 in Colorado and Utah. Since then the beetle has been collected in 21 states, including Nevada. However, the simultaneous detection across the country suggested that it was not a recent introduction, and a survey of museum specimens established their presence in Denver Colorado in 1994.
- **Quagga Mussels:** Quagga mussels are native to Ukraine and were first sighted in the United States in 1989 in the Great Lakes. By 1995 quagga mussels were discovered outside of the Great Lakes basin and in January 2007 populations were discovered in Lake Mead near Boulder City.
- **Asian Clam:** The Asian clam is native to Asian and parts of Africa and was introduced into the United States in 1938. In 1959 the clam was discovered in Nevada in Lake Mead.
- **New Zealand Mudsnaill:** The New Zealand Mudsnaill is native to New Zealand and was first detected in the United States in 1987 in Idaho. No other populations were discovered until 1993 when they were found in Oregon. Since then, their invasion has expanded and the New Zealand Mudsnaill is currently found in all western states, except New Mexico.
- **Mosquitos:** Two people died from the West Nile virus in 2017. Fourteen zip codes in the County returned positive tests for the virus in that year.

Probability of Future Events, Infestation

In the last 20 years, four new invasive species have been introduced to Clark County. The probability of future events for infestation in the planning area is likely due the more transient nature of the population, but also an increased ability track/study infestation/invasive species. As a reminder, calculating probability is not the only predictor of future occurrences. Qualitative assessments will be given if necessary.

Also, based on the Calculated Priority Risk Index (CPRI conducted for Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation), there is a **moderate risk probability (rank score of 2.0-2.9) of Infestation** event in the planning area.

Please note that the CPRI Rating is a subjective measure based on the opinion of the Clark County MPSC members during the planning development portion of the MJHMP update. The following table provides CPRI Rating for Infestation related to the planning area.

Table 132: Clark County and Participating Jurisdiction CPRI Rating for Infestation

Clark County and Participating Jurisdictions CPRI Rating for Infestation							
Hazard: Infestation		Category and Weight				CPRI Score	Risk Level
		Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%		
Index Rating (R) Weighted Score (WS)							
Clark County (including Incorporated and Unincorporated Areas)	R	2	2	1	4	2.15	M
	WS	0.9	0.6	0.15	0.4		
Boulder City	R	2	2	2	2	2.00	M
	WS	0.9	0.6	0.3	0.2		
Henderson	R	1	1	1	1	1.00	L
	WS	0.45	0.3	0.15	0.1		
Las Vegas	R	1	1	2	3	1.35	L
	WS	0.45	0.3	0.3	0.3		
Mesquite	R	2	2	1	4	2.15	M
	WS	0.9	0.6	0.15	0.4		
North Las Vegas	R	2	1	2	1	1.60	L
	WS	0.9	0.3	0.3	0.1		
Special District: Clark County Water Reclamation District	R	1	2	1	4	1.60	L
	WS	0.45	0.6	0.15	0.4		
Special District: Clark County School District	R	1	1	1	1	1.00	L
	WS	0.45	0.3	0.15	0.4		
Special District: Las Vegas Valley Water District/SWNA	R	2	2	1	4	2.15	M
	WS	0.9	0.6	0.15	0.1		
Tribal Nation: Las Vegas Valley Paiute	R	2	2	1	4	2.05	M
	WS	0.9	0.6	0.15	0.4		
Tribal Nation: Moapa Band of Paiutes	R	2	3	1	4	2.35	M
	WS	0.90	0.9	0.15	0.4		

Note: Though participating in the planning process, CPRI data for the infestation for the City of Mesquite was not received at the time of this update. Therefore, the CPRI rating for the City of Mesquite is the same as Clark County because the city and the special district are within the planning area.

Vulnerability and Impact

Infestation and invasive species are a significant concern to Clark County.

Vulnerability of Population

A widespread infestation/invasive species affecting agriculture and livestock could result in severe consequences to the economic base of the County and its communities employed by the agriculture industry. Agricultural pests and diseases or significant crop losses can also impact communities if they result in limited food supplies and rises in food prices. Widespread crop losses due to contamination issues (foreign agents, biological disease) could also decrease the public's confidence in food safety. Rural communities closest to these agricultural operations may also be most vulnerable to these diseases, as livestock pathogens can infect host species, which may include wildlife and human.

Vulnerability of System

There are no widely accepted estimates of the impacts and loss estimates due to infestation/invasive species. The loss in biodiversity, increase in wildfire potential and other impacts is in the millions of dollars annually. The State of Nevada Enhanced Hazard Mitigation Plan (2018) mentions, Quagga mussels form massive clusters and can almost entirely halt water flow through plumbing or intake pipes. They cause millions of dollars of damage annually to boats and water systems, and disrupt native ecosystems, threatening sport fisheries. Not only that, but their excrement also poisons the lake's water and animals. Removing invasive species costs upwards of \$150 an acre. To keep the invasives out, requires rapidly reintroducing native species which can cost several hundred dollars more per acre.

Impact of Climate Change

The success of invasive plants in native plant communities is highly influenced by factors related to environment (such as temperature, precipitation, and carbon dioxide), disturbance or resource availability, and biotic resistance (The kind of temperature changes observed, described and projected by several studies over the past decade may have notable effects on native vegetation and invasive plants. Although temperature shifts can alter invasive dynamics, the greatest effect of climate change in biotic communities arises from shifts in maximum and minimum temperatures rather than annual means. These changes can give invasive species an early season start, resulting in increased growth and recruitment relative to native species. An example is that higher low temperatures, during winter months, resulting in increased bark beetle larva survival rates with resultant large-scale damage/death to trees and more intense wildfires.

Critical Facilities and Infrastructure

Agriculture pests or diseases would not directly impact critical facilities assessed in this plan; however, the food and agriculture industry, which is considered a critical facility within the County would be affected. Impacts to farms and agriculture operations within the County would have debilitating effects on food security, public health, and the economy within the planning area. Also, Clark County farms and associated processing plants would be directly impacted economically by long-term disruptions in the food supply associated with crop losses due to infestation related to agriculture pests. A complete list of critical facilities and infrastructure can be found in [Appendix E](#).

Land Use and Development

Most likely, good development practices and the ongoing implementation of the buffer policies within the Count would not have an impact on Clark County's vulnerability to noxious weeds, agricultural pests, plant diseases, or tree mortality.

Unique and Varied Risk

The invasive species/infestation in Clark County will likely exist for years. However, more recent statistics show that new infestations are occurring more frequently. Clark County has taken steps to reduce the extent of infestations through laws, regulations, and planning (such as the 2000 Nevada State Weed Plan and the Establishment of an Interior quarantine due to Africanized honeybees [May 2001]), but it is not likely that these infestations will ever be eradicated. Furthermore, controls are even more challenging to regulate due to the transient nature of the County's invasive species. Historically new invasive species appeared, on average, every ten (10) years.

Related to noxious weeds are those weeds designated as a pest by state or federal law or regulation. The [Nevada Weed Management Association \(NWMA\)](#) mentions that Early Detection and Rapid Response (EDRR) and mapping are tools for managing noxious weeds related to infestation. The NWMA website notes Nevada is a partner state using the Early Detection & Distribution Mapping System (EDDMapS) app for reporting and learning more about invasive plants found throughout the state. This invaluable tool is available to both invasive species professionals and the general public and can be accessed [here](#).

Repetitive Loss Structure

There are no repetitive loss properties associated with this particular hazard in the planning area.

HAZUS® Models

Not applicable to the identified hazard.

(HM) Hazardous Materials

Hazard Description

A hazardous material (HazMat) is defined as any material that, due to its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released. Hazardous materials include but are not limited to hazardous substances, hazardous wastes, and any material that a business or local implementing agency has a reasonable basis to believe would be dangerous to the health and safety of persons or would be harmful to the environment if released.

The U.S. Occupational Safety and Health Administration (OSHA) defines a hazardous material as any substance or chemical posing a health hazard, or physical hazard, including chemicals that are carcinogens, toxic agents, irritants, corrosives, sensitizers; agents that act on the hematopoietic system; agents that damage the lungs, skin, eyes, or mucous membranes; chemicals that are combustible, explosive, flammable, oxidizers, pyrophoric, unstable-reactive or water-reactive; and chemicals that, in the course of normal handling, use, or storage may produce or release dust, gases, fumes, vapors, mists or smoke that may have any of the previously mentioned characteristics. Effects of exposure may be felt over seconds, minutes, or hours (i.e., short-term effects) or not emerge until days, weeks, or even years after (i.e., long-term effects). Some substances are harmful after a single exposure of short duration, but others require long episodes of exposure or repeated exposure over time to cause harm.

Hazardous material releases can occur from industrial facilities at fixed sites or along transportation corridors such as rail and roadways. Past hazardous material releases are contained in the history section. Hazards from releases causes include fire, explosion, toxicity, corrosiveness, and asphyxiation. These releases may cause long-term impacts to both individuals affected by the initial release and the surrounding environment or personal property and can result in short-term or long-term evacuations, depending on the size and scale of the incident. The [U.S. Department of Transportation \(DOT\)](#) divides hazardous materials into nine major hazard classes. A hazard class is a group of materials that share a common major hazardous property, i.e., radioactivity, flammability, etc. These hazard classes include:

- Class 1—Explosives
- Class 2—Compressed Gases
- Class 3—Flammable Liquids
- Class 4—Flammable Solids; Spontaneously Combustible Materials; Dangers When Wet Materials/Water-Reactive Substances
- Class 5—Oxidizing Substances and Organic Peroxides
- Class 6—Toxic Substances and Infectious Substances
- Class 7—Radioactive Materials
- Class 8—Corrosives
- Class 9—Miscellaneous Hazardous Materials/Products, Substances, or Organisms

Mobile incidents include those that occur on a roadway or a railroad. These incident-related releases are dangerous because they can happen anywhere, including near human populations, critical facilities, or environmentally sensitive areas. Mobile incident-related releases can also be more difficult to mitigate because of the great area over which any given incident might occur and the potential distance of the incident site from response resources.

The release of hazardous substances from stationary sources such as storage facilities or manufacturing plants can be caused by human error, equipment failure, intentional dumping, acts of terrorism, or natural phenomena. Earthquakes pose a particular risk because they can damage or destroy facilities containing hazardous substances. The threat posed by a hazardous-material event can be amplified by restricted access, reduced fire suppression and spill containment capability, and cutoff of response resources.

Specific incidents involving hazardous materials, whether in transit, stored, used, or produced, are reported to the federally established National Response Center (NRC). Staffed 24 hours a day by the U.S. Coast Guard officers and marine science technicians, the NRC is the designated federal point of contact for reporting all oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the U.S. and its territories. Reports to the NRC activate the National Contingency Plan and the federal government's response capabilities. The NRC maintains reports of all releases and spills in a national database. In 2018, it logged 25,600 incidents nationwide.

Eight of the most common hazardous materials that first responders, HAZMAT teams, and perhaps the NRC's On-Scene Coordinator are likely to encounter in the event of an industrial accident or transportation-related incident are: carbon dioxide, chlorine, fireworks, gasoline, argon, sulfuric acid, propylene, and liquified petroleum gas (LPG). The "List of Lists: Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-To-Know Act (EPCRA), Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Section 112(r) of the Clean Air Act" is available from the U.S. Environmental Protection Agency (EPA).

While it is nearly impossible to eliminate HazMat incidents altogether, there are many precautions industries can take to stay safe in the event of industrial or accidental (i.e., transportation-related) spillage. The same holds true for the communities located near these industries and the highways, railroads, pipelines, and air/water transportation systems they routinely use to move hazardous materials. Risks can ultimately be minimized and remediation simplified by a better understanding of the hazardous materials common to a particular area, along with specifics on how best to react if and when an incident occurs.

Location and Extent

While it is nearly impossible to eliminate HazMat incidents altogether, there are many precautions industries can take to stay safe in the event of industrial or accidental (i.e., transportation-related) spillage. The same holds true for the communities located in close proximity to these industries, as well as the highways, railroads, pipelines, and air/water transportation systems they routinely use to move hazardous materials. Through a better understanding of the hazardous materials common to a particular area, along with specifics on how best to react if and when an incident occurs, risks can ultimately be minimized, and remediation simplified.

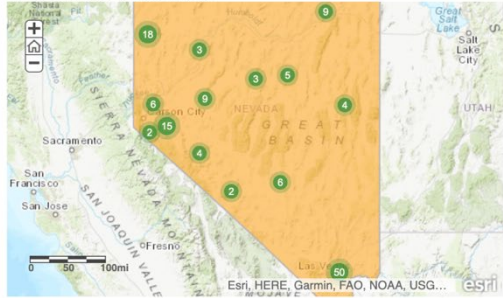
According to 2021 Preliminary Toxics Release Inventory (TRI) data, of the nation's 21,087 toxics-releasing facilities, 146 are located in the state of Nevada. In fact, the State ranks number 1 out of 56 states/territories based on total releases per square mile. The following are the quick facts for the State of Nevada:

2021 TRI Factsheet: State – Nevada

Data Source: 2021 National Analysis Dataset (released October 2022)

The [Toxics Release Inventory \(TRI\)](#) tracks the management of certain toxic chemicals that may pose a threat to human health and the environment. Certain industrial facilities in the U.S. must report annually how much of each chemical is recycled, combusted for energy recovery, treated for destruction, and disposed of or otherwise released on- and off-site. This information is collectively referred to as production-related waste managed.

Map of TRI Facilities in Nevada



Nevada ranks **1 out of 56** states/territories nationwide based on total releases per square mile (Rank 1 = highest releases)

Quick Facts for 2021

	Nevada	United States
Number of TRI Facilities:	146	21,087
Total Production-Related Waste Managed:	559.7 million lbs	29.2 billion lbs
Total On-site and Off-site Disposal or Other Releases:	449.2 million lbs	3.3 billion lbs
Total On-site:	443.4 million lbs	2.8 billion lbs
• Air:	665.0 thousand lbs	571.1 million lbs
• Water:	601 lbs	196.3 million lbs
• Land:	442.7 million lbs	2.1 billion lbs
Total Off-Site:	5.8 million lbs	429.8 million lbs

Data Source: [United States Environmental Protection Agency TRI Explorer](#)

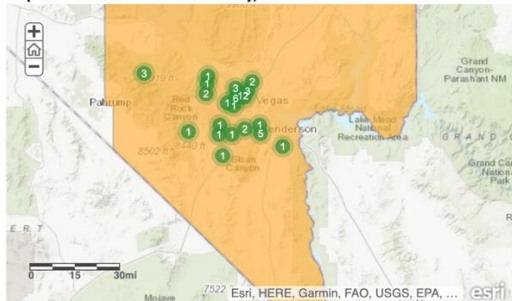
Of those 146 facilities reporting toxic release information in Nevada, fifty (50) are located in Clark County. The presence of these sites within and near Cobb County, along with the routine transportation of hazardous materials, contribute to the HazMat risk. The following quick facts for Clark County (2021) are provided by TRI.

2021 TRI Factsheet: County – Clark, NV

Data Source: 2021 National Analysis Dataset (released October 2022)

The [Toxics Release Inventory \(TRI\)](#) tracks the management of certain toxic chemicals that may pose a threat to human health and the environment. Certain industrial facilities in the U.S. must report annually how much of each chemical is recycled, combusted for energy recovery, treated for destruction, and disposed of or otherwise released on- and off-site. This information is collectively referred to as production-related waste managed.

Map of TRI Facilities in Clark County, NV



Nevada ranks **1 out of 56** states/territories nationwide based on total releases per square mile (Rank 1 = highest releases)

Quick Facts for 2021

	Clark County, NV	United States
Number of TRI Facilities:	50	21,087
Total Production-Related Waste Managed:	5.4 million lbs	29.2 billion lbs
Total On-site and Off-site Disposal or Other Releases:	5.0 million lbs	3.3 billion lbs
Total On-site:	3.2 million lbs	2.8 billion lbs
• Air:	54.4 thousand lbs	571.1 million lbs
• Water:	0 lbs	196.3 million lbs
• Land:	3.1 million lbs	2.1 billion lbs
Total Off-Site:	1.8 million lbs	429.8 million lbs

[Go To New Report](#)
[Print View](#)
[Español](#)

Data Source: [United States Environmental Protection Agency TRI Explorer](#)

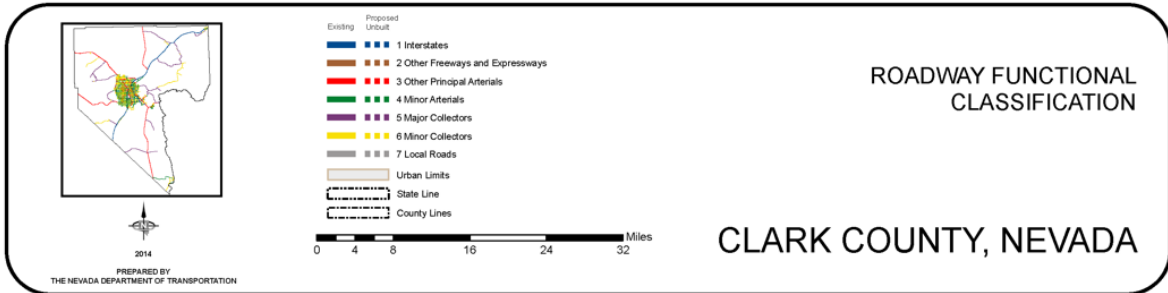
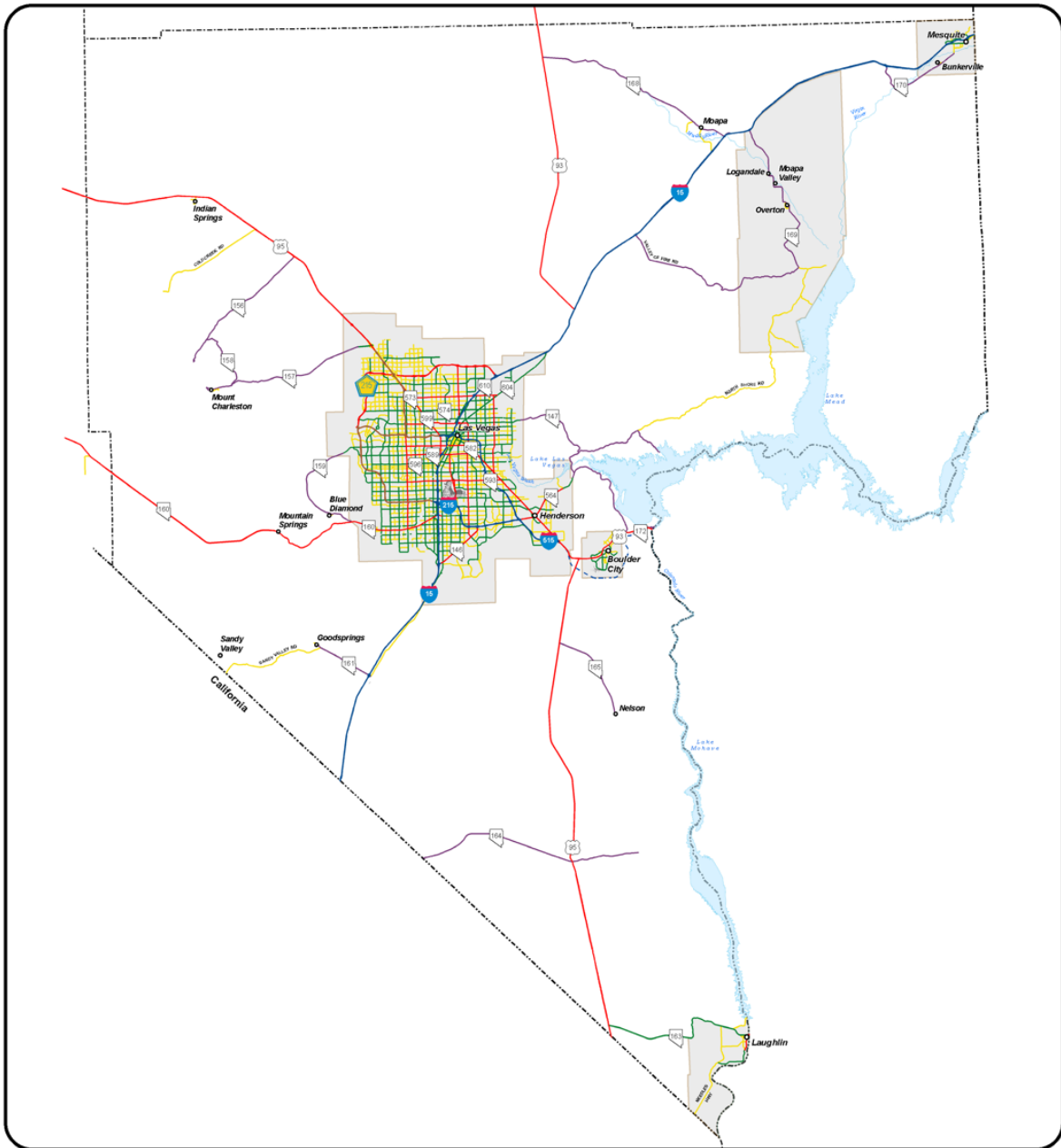
Clark County is situated on the southern tip of Nevada and served by a network of primary and secondary highways. The [2022 Clark County HazMat Emergency Response Plan](#) indicates the following routes within the County: four major highways in Clark County: Interstate Highway I-15, U.S. Highway 95, U.S. Highway 93, and I-215 known as the Beltway. The Interstate I-15 connects the Las Vegas Valley with St. George & Salt Lake City, Utah toward the northeast and Barstow & San Bernardino, California toward the southwest. U.S. Highway 95 connects the Las Vegas Valley with Indian Springs and the Nevada National Security Site (NNSS) to the Northwest and Laughlin Nevada toward the South. U.S. Highway 93 connects the Las Vegas Valley with Ely & Caliente Nevada toward the north and Hoover Dam (U.S. 515) & the City of Boulder City. Interstate I-11 is now open which

includes 15 miles of new freeway around the southern perimeter of Boulder City from I-515 (U.S. 95) to U.S. Highway 93. At the eastern end, the I-11 connects to the Mike O'Callaghan-Pat Tillman Memorial Bridge and to Kingman, Arizona. The I-215 Beltway consists of three connected segments (northern, western, and southern) that together form a freeway ring or loop around a major portion of the Las Vegas Valley. The interchange between Interstate Highway I-15 and U.S. Highway 95 is commonly known as the Spaghetti Bowl.

Nestled within the County are the following incorporated cities of Las Vegas, North Las Vegas, Henderson, Boulder City, and Mesquite which are the counties' populated areas. Also, the County is home to the Country's 7th largest airport and world-renowned Casinos, which makes it a famous tourism market coupled with major interstate highway and rail transportation routes within the County as a target for terrorism/WMD and Hazmat incidents. The previous MJHMP (2018) indicates that other modes of transportation of hazardous materials include:

- Rail (two Union Pacific Railroad main lines) -the first runs across northern Nevada, linking central California with Salt Lake City. The other runs through the southern part of the state, including the Las Vegas Valley. The southern line connects Los Angeles - Long Beach with Salt Lake City and UP's transcontinental line to eastern destinations.
- Airports (Harry Reid International Airport (previously known as McCarran International Airport), five general aviation airports, and Nellis Air Force Base).
- Four major petroleum product pipelines.

Other hazardous material areas include Black Mountain Industrial, (2,717) EHS fixed facilities, wellheads, and the Nevada National Security Site. The following is a base map showing the major transportation routes in Clark County.



Data Source: [Nevada Department of Transportation \(NDOT\)](#)

HazMat incidents pose significant risk to humans, animals, or the environment in Clark County. Depending on the type of hazardous material(s) and the size of the area impacted, the losses could be minor, major, or significant.

Possible Losses to Critical Facilities	Possible Losses to Structures	Possible Ecological Losses	Possible Social Losses
<ul style="list-style-type: none"> • Critical functional losses • Structural and content losses, if an explosion is present • Contamination 	<ul style="list-style-type: none"> • Inaccessibility • Contamination • Structural and content losses, if an explosion is present • Business closures and associated business disruption losses 	<ul style="list-style-type: none"> • Loss of wildlife • Loss of habitat • Degraded air and water quality 	<ul style="list-style-type: none"> • Cancelled activities • Emotional impacts of significant population losses and illness

As noted in the previous MJHMP (2018), Clark County has experienced “serious” hazardous material transportation incidents. These incidents are defined as including a fatality or injury requiring in-patient hospitalization. On the fixed facility side, as of December 2017, there are 437 EHS facilities within the County that have chemicals above the Threshold Planning Qualities.

Previous Occurrence

Given the presence of fifty (50) TRI facilities in Clark County, and the continuous storage, production, use and transportation of hazardous materials across its main thoroughfares, the entire planning area is at risk of a HazMat incident.

Based on information obtained from the Nevada State Fire Marshal and State Emergency Response Commission Search (<https://nevada.hazconnect.com>), there were 170 significant transportation-related HazMat (spill) incidences that occurred in Clark County and its participating jurisdictions (which included Clark County Unincorporated area, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation). between January 1, 2018 and February 28, 2023.

The following citations were taken verbatim from the Nevada State Fire Marshal and State Emergency Response Commission Search. Details of the events are provided below:

Las Vegas, February 2023

A leak in the Kinder Morgan pipeline resulted in a shut down and fuel shortage. The Governor of Nevada to declare a state of emergency and Clark County to declare a fuel emergency³

³ KLAS – Las Vegas 8 (Feb.10,2023). Pipeline shuts down supplies 90% of Las Vegas valley’s fuel needs. 8 News Now Las Vegas. <https://www.8newsnow.com/investigators/pipeline-shutdown-by-leak-provides-90-of-gasoline-to-las-vegas-valley/?ipid=promo-link-block1>

Probability of Future Events, Hazardous Materials

Although there is no single, comprehensive source of open-source information about hazardous materials in the state, there are several specific sources that can be queried. The events that can produce a hazardous material release vary significantly, and therefore future releases are statistically independent of past events. The fact that all releases have a human component that makes prediction difficult. Based on the Calculated Priority Risk Index (CPRI) conducted for Clark County and its participating jurisdictions (which includes the Clark County Unincorporated areas, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation), there is a **moderate probability (rank score of 2.0-2.9)** of a terrorism event in the planning area.

Please note that the CPRI Rating is a subjective measure based on the opinion of the Clark County MPSC members during the planning development portion of the MJHMP update.

The following table provides CPRI Rating for hazardous materials related to Clark County and its participating jurisdictions.

Table 133: Clark County and Participating Jurisdictions - CPRI Ratings for Hazardous Materials

Clark County and Participating Jurisdictions CPRI Rating for Hazardous Materials							
Hazard: Hazardous Materials	Category and Weight					CPRI Score	Risk Level
	Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%			
Index Rating (R) Weighted Score (WS)							
Clark County (including Incorporated and Unincorporated Areas)	R	3	2	4	3	2.85	M
	WS	1.35	0.6	0.6	0.3		
Boulder City	R	3	3	4	3	3.15	H
	WS	1.35	0.9	0.6	0.3		
Henderson	R	4	4	1	4	3.55	H
	WS	1.8	1.2	.15	.4		
Las Vegas	R	3	4	3	2	3.2	H
	WS	1.35	1.2	0.45	0.2		
Mesquite	R	3	2	4	3	2.85	M
	WS	1.35	0.6	0.6	0.3		
North Las Vegas	R	3	1	4	2	2.75	M
	WS	1.35	0.3	0.6	0.2		
Special District: Clark County Water Reclamation District	R	4	4	3	1	3.55	H
	WS	1.8	1.2	.45	.10		
Special District: Clark County School District	R	2	2	3	3	2.25	M
	WS	0.9	0.6	0.45	0.3		
Special District: Las Vegas Valley Water District/SWNA	R	2	3	4	3	2.7	M
	WS	0.9	0.9	0.6	0.30		

Clark County and Participating Jurisdictions
CPRI Rating for Hazardous Materials

Hazard: Hazardous Materials	Category and Weight				CPRI Score	Risk Level
	Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%		
Index Rating (R) Weighted Score (WS)						
Tribal Nation: Las Vegas Valley Paiute	R	4	3	3	3.6	H
	WS	1.8	0.9	0.15		
Tribal Nation: Moapa Band of Paiutes	R	3	3	4	3.05	H
	WS	1.35	0.9	0.6		

Note: Though participating in the planning process, at the time of this update CPRI data for the City of Mesquite was not received. Therefore, the CPRI rating for the City of Mesquite is the same rating as Clark County due to the city being within the planning area.

However, calculating future probability is not the only predictor of future occurrences. Unfortunately, the short period of recorded and observed historical data that contribute to the risk make it challenging to develop return periods for hazardous material release areas in Clark County. As stated previously, given the presence of fifty (50) TRI facilities in Clark County and the continuous storage, production, use, and transportation of hazardous materials across its main thoroughfares, the entire planning area is at risk of a HazMat incident.

Clark County and its participating jurisdictions can expect a HazMat event with 3400% probability per year, or 34 events per year, as indicated in the following table. This number was derived from the number of recorded events by the year range used. The qualitative chance of a hazardous materials event in the planning area is considered highly likely.

Table 134: Probability of Future Events, Hazardous Materials, Clark County, NV

Probability of Future Events, Hazardous Materials, Clark County, NV	
Event Year	Event Count
2018	47
2019	35
2020	24
2021	32
2022	32
Total Recorded Events =	170
Total Years =	5
Yearly Probability =	*3400%

Vulnerability and Impact

Hazard materials that are processed correctly and transported safely are not impactful to the community in a negative way. However, hazardous materials could have a significant impact if there was a chemical release or explosion involving chemicals within the planning area. The probability of a hazardous materials events in the planning area as depicted in the [previous section](#), is 3400% events per year.

Vulnerability of Population

Depending upon the chemical, if a hazardous material incident were to occur, this could significantly impact the population of Clark County. Not only are the workers at the hazardous waste sites vulnerable, but so too are the communities around the facilities themselves. Train tracks and even major highways are also vulnerable. Anything from minor irritation to death can occur if certain materials are inhaled or exposed to humans.

Vulnerability of System

A hazardous materials event will affect transportation routes in and out of the Clark County. A train wreck involving a hazardous material event will force the tracks to be shut down. Similarly, a truck wreck on the interstate or other roadways in Clark County will stop traffic and may require the evacuation of area homes, schools, businesses, etc.

Impact of Climate Change

Climate change does not have a close correlation with hazardous material (HazMat) release incidents. While an increase in the number of storm events may result in a rise in transportation accidents annually, it is difficult to determine if this will result in additional or more severe releases.

Critical Facilities and Infrastructure

All critical facilities and infrastructure within the planning area are equally at risk of a HazMat incident. This is especially true for homes, schools, businesses, and critical facilities that are in close proximity to rail transportation and highways, including the following within the planning area: The Interstate I-15 connects the Las Vegas Valley with St. George & Salt Lake City, Utah toward the northeast and Barstow & San Bernardino, California toward the southwest. U.S. Highway 95 connects the Las Vegas Valley with Indian Springs and the Nevada National Security Site (NNSS) to the North West and Laughlin Nevada toward the South. U.S. Highway 93 connects the Las Vegas Valley with Ely & Caliente Nevada toward the north and Hoover Dam (U.S. 515) & the City of Boulder City. Interstate I-11 is now open which includes 15 miles of new freeway around the southern perimeter of Boulder City from I-515 (U.S. 95) to U.S. Highway 93. At the eastern end, the I-11 connects to the Mike O'Callaghan-Pat Tillman Memorial Bridge and to Kingman, Arizona. The I-215 Beltway consists of three connected segments (northern, western, and southern) that together form a freeway ring or loop around a major portion of the Las Vegas Valley. The interchange between Interstate Highway I-15 and U.S. Highway 95 is commonly known as the Spaghetti Bowl. A complete list of critical facilities and infrastructure can be found in [Appendix E](#).

Land Use and Development

Clark County's previous MJHMP (2018) indicated that they planning area has no land use or development trends related to hazardous materials incidents. However, such events can have a prominent, direct environmental impact and cause long-term, insidious ecological damage. Water pollution is an immediate concern for direct human consumption, recreation, crop irrigation, and fish and wildlife consumption. Depending on the material, pollutants can bio accumulate to differing degrees, affecting animals high on the food chain long after a spill. A hazardous material incident could affect geology and significantly impact soils and farmlands, requiring expensive remediation. In terms of location and extent, when a hazardous material incident occurs in Clark County, there is a chance it will not only involve dirt or surface material but will also include flowing mater in ditches, ricers, or small streams. Other potential concerns for spills/leaks are for situations involving sabotage and terrorism.

Unique and Varied Risk

Clark County, as a whole, is vulnerable to this particular hazard due the large number of facilities storing hazardous materials, and the frequent transportation of hazardous materials by rail and road transportation. All of Clark County, to include its seven participating jurisdictions, is vulnerable to both fixed-location and transportation-related hazardous materials spills. Hazardous material releases or events are most likely to occur on one of the County's four major highway systems (I-15, U.S. 95, U.S. 93, and I-215); two Union Pacific Railroad main lines; six airports, including Harry Reid International Airport (McCarran) and Nellis Air Force Bases; four major petroleum product pipelines Black Mountain Industrial Park in the City of Henderson; EHS fixed facilities, wellheads, and the Nevada National Security Site in southeastern Nye County which is 65 miles northwest of the city of Las Vegas. Hazardous material events impacts include fires, impediments of transportation, evacuation and short- or longer-term displacement, and social disruption.

Repetitive Loss Structure

Not applicable to the identified hazard.

HAZUS® Models

Not applicable to the identified hazard.

(T) Terrorism

Hazard Description

The definition of terrorism by the U.S. Federal Bureau of Investigation (FBI) is “the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.” The FBI defines cyberterrorism as the use of computer network tools to shut down critical national infrastructures (e.g., energy, transportation, government operations) or to coerce or intimidate a government or civilian population.

Terrorists may use one or more of the following types of weapons: chemical, biological, incendiary, radiological, or explosives. In addition to large-scale attacks, a full range of assault styles must be considered, including simple bombings, active shooter, assassinations with small arms, major bombings, and others. The use of explosive devices remains the weapon of choice for terrorist activity. Related activities include bomb threats that disrupt the normal operations of transit systems, government, or corporate facilities. Primary locations likely to be targeted include airports, mass transit targets, government facilities, and high population density locations, although so-called “soft targets” such as schools, local entertainment facilities, etc., are at risk. The potential for nuclear, biological, or chemical terrorism is also a concern. These types of emergencies would necessitate detailed contingency planning and preparation of emergency responders to protect their communities.

Weapons of mass destruction (WMD) typically used by terrorists are categorized by an acronym that lists the types of materials/weapons: CBRNE stands for chemical, biological, radiological, nuclear, and explosives; BNICE stands for biological, nuclear, incendiary, chemical, and explosives. The nature of each category of weapon is described briefly below:

- **Chemical** – These include blood and choking agents, nerve agents, blister agents, and toxic industrial chemicals. The advantages of using chemical weapons include being easy to make, readily available, inexpensive, having an immediate effect, and that they are easily spread. The disadvantages are that they require significant quantities for a mass effect, and that the production and deployment are potentially hazardous to the terrorist. Some chemical agents are odorless and tasteless and are difficult to detect, while others have distinct odors. They can have an immediate effect (i.e., a few seconds to a few minutes) or a delayed effect (i.e., several hours to several days). Routes of exposure for chemical weapons are inhalation, ingestion, absorption, and injection. Unlike many biological weapons, first responders can take self-protective measures by wearing personal protective equipment. First-aid measures and effective medical interventions are available, and chemical agent exposures can be decontaminated, and agents neutralized.
- **Biological** – These are defined as bacteria, viruses, or toxins used to produce illness or death in people, animals, or plants. The advantages of biological weapons include being easy to make, readily available, and relatively inexpensive. The disadvantages include delayed effects and potential deployment hazards to the terrorist. Routes of exposure for biological weapons are inhalation, ingestion, absorption, and injection. Biological agents can be dispersed as airborne particles or aerosols on food items or in water, or through an injection. Terrorists may use biological weapons because the agents are odorless, tasteless, and extremely difficult to detect.
- **Radiological / Nuclear** – These are typically in the form of a traditional fission device such as an atom bomb, a radiological dispersal device (i.e., often called a dirty bomb), or a conventional explosion at a nuclear facility. The advantages of radiological or nuclear weapons include availability of materials, devastating effects, and a great psychological impact on the population. The disadvantages include delayed effects, deployment is hazardous to the terrorists, and it is extremely expensive — in the millions of dollars for a nuclear weapon. Radiation cannot be detected by human senses. Consequences may include death, severe health risks to the public, damage to the environment, and extraordinary loss of, or damage to, property. The health effects of radiological or nuclear

materials include radiation burns, fragmentation wounds, acute radiological poisoning, and long-term effects, such as cancers and birth defects.

- **Explosives** – These are most terrorists’ weapon of choice. 86% of domestic terrorist incidents involve the use of explosives. Explosives are readily available and have dramatic results, are low risk, require few skills to build and use, are easy to execute, allow for remote attacks, and do not require many people to execute. There are low explosives and high explosives. The effects include blast pressure, both positive and negative, fragmentation, and thermal. There are pipe bombs or bombs that can be easily concealed into a backpack, box, vehicles, or virtually any type of container, with numerous trigger mechanisms to set off the bomb. Bombings account for up to fifty percent of worldwide terrorist attack patterns.
- **Cyberterrorism** – According to the FBI, cyberterrorism is any "premeditated, politically motivated attack against information, computer systems, computer programs, and data which results in violence against non-combatant targets by sub-national groups or clandestine agents." As nations and critical infrastructure become more dependent on computer networks for their operations, new vulnerabilities are created. A cyberterrorist attack is designed to cause physical violence or extreme financial harm. Possible cyberterrorist targets include the banking industry, military installations, power plants, air traffic control centers, and water systems but could be against any facility that relies on computers, computer systems, and programs for their operations.
- **Active Shooter** – The U.S. Department of Homeland Security defines the active shooter as "an individual actively engaged in killing or attempting to kill people in a confined and populated area; in most cases, active shooters use firearms, and there is no pattern or method to their selection of victims." Active shooters may also use explosive devices during assaults to increase the likelihood of casualties or to commit suicide. Most incidents occur at locations in which the killers find little impediment in pressing their attack. Locations are generally described as soft targets that have limited security measures to protect members of the public. In most instances, shooters commit suicide, are shot by police, or surrender when confrontation with responding law enforcement is unavoidable.
- **Contamination** – Contamination of food and water supplies is an infrequent method of terrorism. In 1984, members of the Rajneeshee religious cult contaminated a city water supply tank in Dalles, Oregon, using Salmonella and infected 750 people. In 1992 The Kurdistan Workers' Party (PKK) put lethal concentrations of potassium cyanide in the water tanks of a Turkish Air Force compound in Istanbul. Contamination has the potential to injure large numbers of people and disrupt critical commodity supplies. Under the Environmental Protection Agency America’s Water Infrastructures Act, water system operators are required to conduct a risk and resiliency assessment and develop an emergency response plan.

Per the National Advisory Committee on Criminal Justice Standards and Goals, every type of terrorist utilizes distinct methods of violence to get their message across. They can be anything from assault weapons or explosive devices to toxic chemicals that are released into the air. These attacks may occur at any time or place, which makes them an extremely effective method of instilling terror and uncertainty into the general public.

The U.S. Department of Homeland Security (DHS), created by the Homeland Security Act of 2002, is responsible for ensuring the safety and security of America from terrorist attacks and other disasters.

Location and Extent

The form and locations of many natural hazards are identifiable and, even in some cases, predictable. However, there is no defined geographic boundary for terrorism. In addition to direct physical damage, terrorist attacks breed fear. Even an unsuccessful attempt to attack the region would seriously impact the comfort of residents and affect local businesses. Terrorist incidents in this country before the September 11, 2001, attacks have included bombings of the World Trade Center (1993) in New York City, the United States Capitol Building in Washington, D.C., and Mobil Oil corporate headquarters in

New York City. There was also the 1995 bombing of the Murrah Federal Building in Oklahoma City. The notable incident that occurred within Clark County, primarily the City of Las Vegas, was the Las Vegas Shooting in October 2017. In this incident, at least 59 people died, and more than 500 people were injured due to a gunman opening fire from the 32nd floor of a Las Vegas hotel during a country music event. (<https://www.nbcnews.com/storyline/las-vegas-shooting/las-vegas-police-investigating-shooting-mandalay-bay-n806461>).

The previous Clark County MJHMP (2018) mentioned that the Department of Homeland Security's National Planning Scenario identifies possible terrorist strike locations it views as most plausible. The at-risk sites include cities that have economic and symbolic value, places with hazardous facilities, and areas where large groups of people congregate, such as an office building or sports arena. As such, the Las Vegas Strip is potentially a high-profile target. As one of 64 designated urban metropolitan areas, Las Vegas has been identified by the federal government as "high-threat, high-density," with regard to acts of terrorism. In addition to the Las Vegas Strip, the following locations are viewed as potential targets in Clark County: Fremont Street (Las Vegas, Nevada), individual casinos, Las Vegas Convention Center, Harry Reid International Airport (previously known as McCarran International Airport) (Las Vegas, Nevada), military bases, and dams. The damage caused by a terror attack depends on the attack method. Large bomb attacks could destroy major infrastructure, kill many people, and disrupt regional functioning for a significant time. Cyberterrorism would cause different types of damage, possibly severely hampering local government operations and businesses with no direct injuries or loss of life. The County experienced a cyberterrorism event in August 2020 when the Clark County School District experienced a ransomware attack that affected its students and employees (<https://www.ktnv.com/news/clark-county-school-district-releases-update-about-recent-cyber-attack>).

Since 9/11, like most states in the U.S., the State of Nevada and Clark County have implemented numerous homeland security measures to ensure its population's continued safety and security. The Nevada Legislature created the [Nevada Commission on Homeland Security](#) in 2003. Clark County is among the many local governments the Nevada Commission of Homeland Security supports on a continual basis. The Commission is tasked with several responsibilities directed towards making recommendations to the Governor, the Legislature, local governments, private businesses, and citizens about actions and measures that may be taken to protect the citizens and visitors to this State from potential acts of terrorism and related emergencies. For the County, the [Las Vegas Metropolitan Police Department Homeland Security Division website](#) mentions that it comprises the Emergency Operations Bureau, Southern Nevada Counter-Terrorism Center, Criminal Intelligence Section, and SWAT Bureau. The Southern Nevada Counter-Terrorism Center (Fusion Center) serves as the State of Nevada's designated Fusion Center.

Like every location across the U.S., Clark County is susceptible to the hazard of terrorism. This is why it is essential that the vital part that the whole community is a part of our homeland security efforts. If you observe suspicious activity requiring immediate response, contact Clark County 911 (<https://www.dhs.gov/see-something-say-something/reporting/nevada>). If you have information about suspicious activity, specifically in Clark County, call [1-702-828-SSSS](tel:1-702-828-SSSS) (702-828-7777) or submit a tip on www.snctc.org.

Previous Occurrence

Due to the sensitive nature and vulnerability of terrorism in the planning area, much of the data relating to terrorist activities is confidential and, therefore, unavailable for this plan update. However, the following incidents have been reported in the previous MJHMPs (2012 and 2018) and the news:

January 7, 1967 – Clark County, Terrorism – Criminal Incident

Richard James Paris, a 28-year-old Army deserter, committed suicide by firing a handgun into a pile of dynamite at the Orbt Inn hotel.

March 8, 1972 – Clark County – Las Vegas, Terrorism – Terrorist Attack

During an apparent \$2 million extortion plot against Trans World Airlines, a bomb exploded in an

empty Boeing 707 plane at Harry Reid International Airport (previously known as McCarran International Airport) in Las Vegas, seven hours after arriving from Kennedy International Airport in New York.

January 8, 2014 – Clark County – Terrorism – Right Wing

Two assailants shot and killed two police officers as they were eating lunch. The attackers then took the officers' weapons and ammunition before shooting and killing one other person inside a Walmart store across the street. One attacker shot the other before killing herself, Clark County investigators believe the attackers had a suicide pact.

April 5, 2017 – Clark County, Las Vegas – Terrorism

Nicolai Howard Mork, an MIT business school graduate faces terrorism charges in Las Vegas and unlawful acts related to weapons of mass destruction.

October 1, 2017 – Clark County, Las Vegas – Criminal Intent

Clark County experienced the largest mass shooting incident in the United States' history. The ongoing investigation reports that an active shooter killed 58 people and injured 515 more during an outdoor music festival on the Las Vegas Strip; and Clark County is experiencing significant economic impact and resource shortage in responding to these matters and anticipated continued economic obligation resulting in financial hardship for short term response and long-term recovery for the affected individuals and areas.

June 1, 2020 – Clark County, Las Vegas – Criminal Intent

A man shot and paralyzed a Las Vegas officer during a racial justice protest on the Las Vegas Strip.

August 27, 2020 – Clark County – Cyberterrorism

Clark County School District (CCSD) was the victim of a criminal ransomware attack. Upon learning of this attack, CCSD immediately notified law enforcement and began an investigation to determine the full nature and scope of this incident, including whether any CCSD data was impacted. As part of our response, CCSD's Technology staff isolated the infected systems and began taking certain systems offline to further limit the impact on CCSD.

March 5, 2022 – Clark County, Henderson – Terrorism, Terroristic Attack

A 21-year-old woman stabbed her date inside a Sunset Station Hotel and Casino hotel room in Henderson NV. Authorities said the stabbing was in retaliation for the death of an Iranian military leader who was killed by US drone strike in 2020.

Probability of Future Events, Terrorism

While authorities may receive tips, acts of terrorism are, for the most part, unpredictable. Based on the Calculated Priority Risk Index (CPRI conducted for Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation), there is a **moderate probability** (rank score of **2.0-2.9**) of a terrorism event in the planning area.

Please note that the CPRI Rating is a subjective measure based on the opinion of the Clark County MPSC members during the planning development portion of the MJHMP update.

The following table provides CPRI Rating for wildfire related to Clark County and its participating jurisdictions (which includes the Clark County Unincorporated area, and Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation).

Table 135: Clark County and Participating Jurisdictions CPRI Rating for Terrorism

Clark County and Participating Jurisdictions CPRI Rating for Terrorism							
Hazard: Terrorism	Category and Weight					CPRI Score	Risk Level
	Probability 45%	Magnitude/ Severity 30%	Warning Time 15%	Duration 10%			
Index Rating (R) Weighted Score (WS)							
Clark County (including Incorporated and Unincorporated Areas)	R	2	3	4	4	2.8	M
	WS	0.9	0.9	0.6	0.4		
Boulder City	R	2	2	4	4	2.5	M
	WS	0.9	0.6	0.6	0.4		
Henderson	R	4	4	4	4	4	S
	WS	1.35	1.2	0.6	0.4		
Las Vegas	R	4	4	3	4	3.85	H
	WS	1.8	1.2	0.45	0.4		
Mesquite	R	2	3	4	4	2.8	M
	WS	0.9	0.9	0.6	0.4		
North Las Vegas	R	2	2	4	1	2.2	M
	WS	0.9	0.6	0.6	0.1		
Special District: Clark County Water Reclamation District	R	1	2	4	1	1.75	L
	WS	.45	.60	.60	.10		
Special District: Clark County School District	R	2	3	4	1	2.5	M
	WS	0.9	0.9	0.6	0.1		
Special District: Las Vegas Valley Water District/SWNA	R	2	3	4	3	2.7	M
	WS	0.90	0.90	0.60	0.30		
Tribal Nation: Las Vegas Valley Paiute	R	4	4	3	4	3.85	H
	WS	1.8	1.2	0.45	0.4		
Tribal Nation: Moapa Band of Paiutes	R	2	1	1	2	1.55	L
	WS	0.9	0.3	0.15	0.2		

Note: Though participating in the planning process, at the time of this update CPRI data for the City of Mesquite was not received. Therefore, the CPRI rating for the City of Mesquite is the same rating as Clark County due to the city being within the planning area.

However, calculating future probability is not the only predictor of future occurrences. This is especially true of terrorism, which is human-caused and, as previously mentioned, highly unpredictable. Due to the sensitive nature and vulnerability of this hazards, much of the data relating to terrorist activities in Clark County is confidential. However, there were events/ incidents of terrorism that were reported in the previous MJHMPs (2012 and 2018) and the news over the last five years. Clark County and its participating jurisdictions can expect terrorism event with 83.3% probability per year or 0.833 events per year, as indicated in the following table. The qualitative chance of a terrorism event within the planning are remains **highly likely**.

Table 136: Probability of Future Event, Terrorism, Clark County, NV

Probability of Future Events, Terrorism, Clark County, NV	
Event Year	Event Count
2017	2
2018	0
2019	0
2020	2
2021	0
2022	1
Total Recorded Events =	5
Total Years =	6
Yearly Probability =	83.3%

Data Source: Clark County 2012 Multi-Jurisdictional Hazard Mitigation Plan; Clark County 2018 Multi-Jurisdictional Hazard Mitigation Plan; KNTV13 ABC Affiliate Las Vegas; NBC News

Vulnerability and Impact

Terrorist attacks will continue into the future. They are likely to become more sophisticated, and potentially, more deadly. As terrorists increasingly target information technology systems through cyberattacks, critical infrastructure, finance, health, and transportation systems are at risk.

Vulnerability of Population

The entire population of Clark County, primarily the Las Vegas-Henderson Metropolitan Area, is vulnerable to the hazard of terrorism.

Vulnerability of System

Given the unpredictable nature of terrorism, it is difficult to determine which systems within Clark County, primarily the Las Vegas – Henderson Metropolitan area, may be impacted during an event. This is especially true for high-risk areas near main thoroughfares, interstates, railroads, airports, and chemical companies throughout the County. It is best to assume all are at risk of damage, disruption, or destruction.

Impact of Climate Change

Climate change does not have a close correlation with terrorist incidents.

Critical Facilities and Infrastructure

Critical Facilities & Infrastructure are high value targets for terrorists, and all should be presumed to be highly susceptible to terrorist attack. Based on previous events, it is presumed that critical facilities and services and large gatherings of people are at higher risk. Public transportation facilities have been a repeated target of terrorists. This is due to the open nature of the facilities, the large numbers of people that use them, and the paralyzing effects that terrorist attacks have on communities' ability to provide transportation for daily life. Terrorist attacks on transportation systems thus have an impact that is much greater than to loss of human life and injuries and the damage done to infrastructure. By shutting down vital services and requiring increased security, they have a disproportionate economic cost.

A complete list of critical facilities and infrastructure can be found in [Appendix D – Critical Facilities & Infrastructure](#).

Land Use and Development

Land use and development has no bearing on this particular hazard.

Unique and Varied Risk

There is no unique and varied risk to the hazard of terrorism. However, everyone living and working in Clark County could be impacted by such an event in one way or another. Terrorism has the potential to negatively affect all of Clark County, especially the populated metropolitan area of Las Vegas – Henderson – North Las Vegas. There are no defined methods for estimating the losses from terrorism. Individual terrorist incidents, such as the 9/11 World Trade Center attack, have caused the loss of thousands of lives and resulted in billions of dollars in damage. Within the County, losses from terrorist attacks could be devastating. There are numerous laws and regulations that relate to terrorism both at the state and federal levels. Key laws that are particularly applicable to the County are:

- [18 United States Code Title 113B Section 2323](#) which describes prohibitions for bombings of places of public use, government facilities, public transportation, and infrastructure facilities.
- [The Critical Infrastructure Information Act of 2002 \(CII Act\)](#) facilitates greater sharing of critical infrastructure information among the owners and operators of the critical infrastructures and government entities with infrastructure protection responsibilities, thereby reducing the nation's vulnerability to terrorism.
- [NRS Chapter 239C & BRS Section 293C.010](#) which is Chapter 239C is Nevada's Homeland Security legislation, which provided plans to respond to terrorism and related emergencies. Also, it promotes statewide preparation for acts of cyber-terrorism, environmental catastrophes, and other related incidents.

As a result, any future mitigation steps taken related to terrorist activities should be initiated on a countywide basis and include all participating jurisdictions.

Repetitive Loss Structure

Not applicable to the identified hazard.

HAZUS® Models

Not applicable to the identified hazard.

Excluded Hazards

Avalanche

Avalanche was excluded from Clark County's previous MJHMP (2018) and was not mentioned as a hazard of concern with this plan update.

Coastal Storm

Coastal Storm was excluded from Clark County's previous MJHMP (2018) and was not mentioned as a hazard of concern with this plan update.

Landslide

The State of Nevada Enhanced Hazard Mitigation Plan (2018) states that Landslide poses a hazard in the State of Nevada because in Nevada, rockslides are more common than normal landslides seen in other areas. They tend to be localized; however, this hazard can occur with earthquakes, major storms, floods, melting ice, and snow. However, with earthquake and flooding being hazards of concern for this MJHMP update, landslide was excluded from Clark County's 2018 MJHMP (2018) and was not mentioned as a hazard of concern with this plan update.

Tsunami/Seiche

The State of Nevada Enhanced Hazard Mitigation Plan (2018) states that Tsunami/Seiche poses a hazard in the State of Nevada because lakes in Nevada could have 10-meter-high waves generated by an earthquake under or adjacent to the lake. However, with Lake Meade located in the planning area and earthquake being a hazard of concern for this MJHMP update, tsunami/seiche was excluded from Clark County's 2018 MJHMP (2018) and was not mentioned as a hazard of concern with this plan update.

Volcano

The State of Nevada Enhanced Hazard Mitigation Plan (2018) does not identify Clark County as being at risk from Volcano. The hazard was excluded from Clark County's previous MJHMP (2018) and was not mentioned as a hazard of concern with this plan update.

Note: Some human-caused hazards, though identified in the State of Nevada Enhanced Mitigation Plan (2018), are not included in Clark County's previous HMP (2018) nor this plan update. This includes Utility Failure.

Hazard Risk Summary

Probability Categories/Range per Year

Probability Categories	Unlikely	Occasional	Likely	Highly Likely
Range (Per Year)	0%	1-10%	11-50%	51-100%

The table below outlines each participating jurisdictions’ general risk to this plan’s profiled hazards. The rankings are based on a composite evaluation of this plan’s risk assessment, namely, a hazard’s probability of occurring in the future, the vulnerability of a jurisdiction to a specific hazard, the intensity of past hazard impacts, and a joint evaluation of local experts and stakeholders. For reference, the probability categories/ percentages previously indicated in Table 26 shown above.

Notes: * Clark County acknowledges the risk posed by these man-made and technological hazards to the jurisdiction. However, in alignment with DMA 2000, it has selected to address these hazards through other planning mechanisms and initiatives.

** Clark County acknowledges the risk posed by climate change. For the purposes of this plan, it has elected to address this risk through mitigation of the natural hazards known to be exacerbated by climate change, as outlined in the hazard descriptions that follow.

** Clark County and its participating jurisdictions can expect a drought event with 9060.8% probability each year. This number was derived from the number of recorded events by the year range used. Calculating future probability is not the only predictor of future occurrences. The qualitative chance of a drought impacting the planning area is highly likely.

** The hazard of dam failure is considered occasional but without a definite calculation of probability. This is due to there being no record/data of dam failure in the planning period since the last plan update (2018).

** The hazard of earthquake is considered likely but without a definite calculation of probability. This is due to there being no record/data of earthquake in the planning period since the last plan update (2018)

***Clark County and its participating jurisdictions can expect a hazardous material event with 3400% probability each year. This number was derived from the number of recorded events by the year range used. Calculating future probability is not the only predictor of future occurrences. The qualitative chance of a flood impacting the planning area is highly likely.

****Severe Weather: The likelihood of severe weather occurring in Clark County is likely for a heavy rain, unlikely for a occasional, and highly likely, respectively for hail, wind, lightning, and thunderstorm wind events. However, for a combined likelihood of a severe weather event, it is highly likely for the entire planning area.

*****Clark County and its participating jurisdictions can expect an extreme/excessive heat event with 941.18% probability each year. This number was derived from the number of recorded events by the year range used. Calculating future probability is not the only predictor of future occurrences. The qualitative chance of an extreme/excessive heat event impacting the planning area is highly likely.

**Clark County and its participating jurisdictions (included Clark County Unincorporated Areas and the Tribal Land of the Las Vegas Paiute Tribe) can expect a flood (flood/flash flood) event with a 335.61% probability each year. This number was derived by dividing the number of recorded events by the year range used. Calculating future probability is not the only predictor of future occurrences. The qualitative chance of a flood impacting the planning area is highly likely.

Hazard Risk Summary – Probability of Future Event (Quantitative), Natural Hazards

Jurisdictions	Climate Change	Infrastructure, Dam Failure	Drought	Extreme/ Excessive Heat	Fissures & Subsidence	Flood, Landslides & Debris Flow, Flooding	Geohazards- Earthquake and Seismic Hazards	Severe Weather	Fire, Wildland Urban Interface Fire (Wildfire)
Clark County including Clark County Unincorporated Areas and Las Vegas Paiute Tribe	Highly Likely	Occasional**	Highly Likely**	Highly Likely *****	Occasional	Highly Likely **	Highly Likely	Highly Likely****	Highly Likely
City of Boulder City	Highly Likely	Occasional**	Highly Likely**	Highly Likely *****	Occasional	Likely	Highly Likely	Highly Likely****	Highly Likely
City of Henderson	Highly Likely	Occasional**	Highly Likely**	Highly Likely *****	Likely	Likely	Highly Likely	Highly Likely****	Highly Likely
City of Las Vegas	Highly Likely	Occasional**	Highly Likely**	Highly Likely *****	Likely	Highly Likely	Likely**	Highly Likely****	Highly Likely
City of Mesquite	Highly Likely	Occasional**	Highly Likely**	Highly Likely *****	Occasional	Occasional	Likely**	Highly Likely****	Highly Likely
City of North Las Vegas	Highly Likely	Occasional**	Highly Likely**	Highly Likely *****	Likely	Occasional	Likely**	Highly Likely****	Highly Likely
Tribal Nation: Moapa Band of Paiutes/Moapa Unincorporated Area of Clark County	Highly Likely	Occasional**	Highly Likely**	Highly Likely *****	Occasional	Likely	Highly Likely	Highly Likely****	Highly Likely

Hazard Risk Summary - Man-Made Hazards

Jurisdictions	Infrastructure, Dam Failure	Hazardous Materials	Infectious Disease	Infestation	Terrorism
Clark County including Clark County Unincorporated Areas, Las Vegas Paiute Tribe, and Moapa Band of Paiutes	Occasional**	Highly Likely	Occasional**	Likely	Highly Likely
City of Boulder City	Occasional**	Highly Likely	Occasional**	Likely	Highly Likely
City of Henderson	Occasional**	Highly Likely	Occasional**	Likely	Highly Likely
City of Las Vegas	Occasional**	Highly Likely	Occasional**	Likely	Highly Likely
City of Mesquite	Occasional**	Highly Likely	Occasional**	Likely	Highly Likely
City of North Las Vegas	Occasional**	Highly Likely	Occasional**	Likely	Highly Likely
Special District: Clark County School District	Occasional**	Highly Likely	Occasional**	Likely	Highly Likely
Special District: Las Vegas Valley Water District/SWNA	Occasional**	Highly Likely	Occasional**	Likely	Highly Likely

Section 5: Mitigation Strategy

Hazard Mitigation Statement

The 2024 MJHMP represents the County’s and participating jurisdiction’s commitment to create safer, more resilient communities by taking actions to reduce risk and by committing resources to lessen the effects of hazards on the people and property.

Hazard Mitigation Goals and Objectives

Mitigation goals are guidelines that represent what the community wants to accomplish through the mitigation plan. Goals are broad statements that represent a long-term, community-wide vision. The Mitigation Planning Steering Committee reviewed the goals and objectives from the previous MJHMP (2018) and determined which best met their jurisdiction’s mitigation capabilities and requirements. The result was a new streamlined set of unified hazard mitigation goals listed in the following table. The goals support addressing the hazards in the General Plans and reflect input provided by stakeholders and the public. The jurisdictions worked with their Planning Departments to align these goals, and their mitigation strategies, with their General Plan Safety Elements.

Table 137: Hazard Mitigation Goals

Hazard Mitigation Goals	
Goal	Description
1	Reduce the risk from natural hazard events utilizing community cooperation and an all-hazards approach.
2	Pursue additional, complete, and accurate data in support of mitigation planning, disaster preparedness, disaster response, and disaster recovery operations.
3	Improve public understanding of, and support for, hazard mitigation measure.
4	Integrate the multi-jurisdictional hazard mitigation plan’s findings into the planning, and decision-making processes for all current and future emergency management and preparedness related activities.
5	Minimize the risk to property from climate change.
6	Minimize the risk to property from dam failure.
7	Minimize the risk to property from drought.
8	Minimize the risk to property from geohazards – earthquake and seismic hazard.
9	Minimize the risk to property from infrastructure – flood, landslides & debris flow, flooding.
10	Minimize the risk to property from fissures & subsidence.
11	Minimize the risk to property from fire, wildland urban interface (wildfire).
12	Minimize the risk to property from infrastructure - dam failure.
13	Minimize the risk to property from infestation.
14	Minimize the risk to property from infectious disease.
15	Minimize the risk to property from hazardous materials.
16	Minimize the risk to property from terrorism.

Capabilities

Federal regulations require local hazard mitigation plans identify goals for reducing long-term vulnerabilities to the identified hazards in the planning area (Section 201.6(c)(3)(i)). Elements of this requirement include a description of capabilities that support mitigation activities.

Table 138: FEMA Regulation Checklist: Capability Assessment

FEMA Regulation Checklist: Capability Assessment	
44 CFR § 201.6(c)(3)	The plan must include mitigation strategies based on the jurisdiction's "existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools."
Elements	
C1.	Does the plan document the jurisdiction's existing authorities, policies, programs and resources, and its ability to expand on and improve these existing policies and programs? 44 CFR § 201.6(c)(3).
C2.	Does the Plan address the jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? 44 CFR § 201.6(c)(3)(ii).

Data Source: FEMA, Local Mitigation Planning Handbook Review Tool, March 2013.

A capability assessment was conducted of the MJHMP participating jurisdictions' authorities, policies, programs, and resources. From the assessment, goals, and mitigation actions were developed.

Clark County and its participating jurisdiction(s)' (which includes Clark County Unincorporated Area and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) capabilities (planning and regulatory, administrative and technical, financial, and education and outreach) were reviewed and updated to provide any changes that reflect their current capabilities as described in the 2018 MJHMP plan update. Each jurisdiction was provided a Jurisdiction Capabilities Assessment Worksheet by CONSTANT to review their capabilities to be included in this plan update. Capabilities for the County and all participating jurisdictions are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory Capabilities

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Planning and Regulatory Capability Assessment for Clark County

PLANS	Yes/No	<ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Community Wildfire Protection Plan	Yes	2005, The Nevada Community Wildfire Risk/Hazard Assessment Project for Clark County, 2005, has been considered the State of Nevada's Community Wildfire Protection Plan. The previous Clark County HMP (2012) mentions that Community specific information regarding wildfires can be found in the Nevada Community Wildfire Risk/Hazard Assessment Project report.
Comprehensive/Master Plan	Yes	Yes, it provides policies on both natural and manmade hazards
Continuity of Operations (COOP) Plan	Yes	Yes, at the time of this plan update, the Clark County COOP is being revised and updated
Capital Improvement Plan (CIP)	Yes	2023, Yes, The CIP is a 5-year plan for financing infrastructure improvements, government facility construction improvements and equipment acquisition.
Economic Development Plan	Yes	2015-2035, Yes, the Clark County Economic Development Plan is meant to accommodate and guide population and employment growth for the next 20 years. The most recent 20-year planning horizon 2015-2035.
Emergency Operations Plan (EOP)	Yes	Yes, last update to the EOP was 2019 and has been reviewed and will be for review and feedback in 2023. Yes, the Clark County EOP describes what the local jurisdiction's actions will be during a response to an emergency. Includes annexes that describe in more detail the actions required of the local jurisdiction's departments/agencies. Further, this plan describes the role of the Emergency Operation Center (EOC) and the coordination that occurs between the EOC and the local jurisdiction's departments and other response agencies. Finally, this plan describes how the EOC serves as the focal point among local, state, and federal governments in times of disaster.
Stormwater Management Plan	Yes	2009. Clark County addresses stormwater management through the 208 Area-Wide Water Quality Management Plan, which addresses aspects of environmental hazards. Defer to the SNWA representative as to how this may tie into mitigation strategy for drinking water usage.
Transportation Plan	No	
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	<ul style="list-style-type: none"> What type of codes? Are codes adequately enforced?

PLANS	Yes/No	<ul style="list-style-type: none"> • Does the plan address hazards? • Does the plan ID project to include in the mitigation strategy? • Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Building Codes		Effective February 4, 2019, the Clark County Department of Building and Fire Prevention has adopted the 2018 International Building Codes. All permit applications (except standard plans) filed from this date forward must adhere to the 2018 Building Codes. Below are local amendments to the adopted codes. For more information about the Clark County Building Code can be found online here .
Site plan review requirements	Yes	County Building Inspector for Earthquake and Flood and Clark County Fire Prevention conducts site visits related to fire hazards (wildfire)
How can capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.
LAND USE PLANNING & ORDINANCES	Yes/No	<ul style="list-style-type: none"> • Is the ordinance effective for reducing hazard impacts? • Is the ordinance adequately administered and enforced?
Floodplain ordinance	Yes	Yes, Clark County Regional Flood Control District provides floodplain management for the Unincorporated County. Participant in the Clark County Flood Control District (CCFCD). Chapter 3.16 – Flood Control District can be found online here .
Subdivision ordinance	Yes	Yes, update to take affect June – July 2023, Title 30 Unified Development Codes can be found online here .
Zoning ordinance	Yes	Yes, update to take affect June – July 2023, Title 30 Unified Development Codes can be found online here .
How can capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.

Planning and Regulatory Capability Assessment for Clark County Water Reclamation District (CCWD)

PLANS	Yes/No	Answer these questions in the space below:
Community Wildfire Protection Plan	No	<ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Comprehensive/Master Plan	Yes	The District has multiple master plans based on service areas and a comprehensive service area plan. These items are then incorporated into the Capital Improvement Plan.
Continuity of Operations Plan	Yes	2022. Plan addresses hazards from the framework of managing personnel and essential functions but does not directly address hazards. Does not tie to a project in the mitigation strategy and cannot be used to implement mitigation actions.
Capital Improvement Plan	Yes	2019; yes, the CIP IDs green energy projects for the District. The plan identifies estimated costs to engineer (design and construct) mitigation projects.
Economic Development Plan	No	
Emergency Operations Plan	Yes	2022. Plan addresses hazards directly but focuses on short-term response. Does not tie to a project in the mitigation strategy and cannot be used to implement mitigation actions.
Stormwater Management Plan	Yes	2009. Clark County addresses stormwater management through the 208 Area-Wide Water Quality Management Plan; addresses some aspects of environmental hazards. Defer to SNWA representative as to how this may tie into mitigation strategy for drinking water usage.
Transportation Plan	No	
Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	Answer these questions in the space below:
Building Codes	Yes	<ul style="list-style-type: none"> What type of codes? Are codes adequately enforced?
Fire Code	Yes	Follows current codes as required by Clark County.
Hazardous Material Permitting	Yes	Follows current codes as required by Clark County.
Internal inspections/control	Yes	Follows Design and Construction Standards for Wastewater Collection Systems, Southern Nevada – 2019 4th Edition and CCWRD Service Rules.
NDEP Source Point and Discharge Permitting	Yes	Follows current codes as required by NRS or federal statutes.
Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		
LAND USE PLANNING & ORDINANCES	Yes/No	Answer these questions in the space below:
		<ul style="list-style-type: none"> Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?

PLANS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Does the plan address hazards? • Does the plan ID project to include in the mitigation strategy? • Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Floodplain ordinance	No	
Subdivision ordinance	No	
Zoning ordinance	No	
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		

Planning and Regulatory Capability Assessment for Boulder City

PLANS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Community Wildfire Protection Plan	No	The city does not have a substantial wildfire risk.
Comprehensive/Master Plan	No	Does not address hazard mitigation directly.
Continuity of Operations Plan	Yes	Yes. All departments have a COOP that was revised in 2023.
Capital Improvement Plan	Yes	Some foreseen hazards, but not unknown. FY 23, FY 24 will be approved in May 2024.
Economic Development Plan	Yes	The plan does not address hazards.
Emergency Operations Plan	Yes	2019. Yes, the current EOP addresses hazards & mitigation strategies. It is undergoing a revision in 2023.
Stormwater Management Plan	Yes	2023. Regional Flood Control Masterplan addresses hazards & mitigation strategies.
Transportation Plan	No	Pavement Management System due to growth ordinance that addresses hazards & mitigation strategies.
Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> What type of codes? Are codes adequately enforced?
Building Codes	Yes	The 2018 ICC codes, 2018 U-codes, NFPA 72 are all adequately enforced. More information regarding the City of Boulder City building codes can be found online here .
Site plan review requirements	Yes	2018 IRC, IBC are enforced in the site plan reviews.
Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		
LAND USE PLANNING & ORDINANCES	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Floodplain ordinance	Yes	Yes, Flood Hazard Reduction Ordinance – Title 11, Chapter 40 , as current as 01/23/2023. This ordinance does address hazard impacts and is adequately administered and enforced.
Subdivision ordinance	Yes	Yes, Subdivision Regulation – Chapter 39 as current as 01/23/2023, does address hazard impacts and is adequately administered and enforced.
Zoning ordinance	Yes	Same Title as Subdivisions and Floodplain which addresses hazard mitigation. The current codes (as current as 01/23/2023) can be found online here .
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		

Planning and Regulatory Capability Assessment for Henderson

PLANS	Yes/No Year	<ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Capital Improvements Plan	Yes	2022. Yes, includes project identification and addresses community hazards, can be used to implement mitigation actions as needed.
Community Wildfire Protection Plan		
Comprehensive/Master Plan	Yes	2017. Describes hazard areas and regulates current and future development based on known hazard areas.
Continuity of Operations Plan	Yes	Annually updated, includes a Continuity of Government (COG) and all city departments, includes relocation strategies and devolution, succession and alternative sites.
Economic Development Plan	Yes	2017. Component of the Comprehensive Plan.
Emergency Operations Plan	Yes	All Hazards EOP updated biannually, includes all Emergency Support Functions (ESFs), basic plan, pandemic plan and recovery plan.
Stormwater Management Plan	Yes	2011. Yes, to all.
Transportation Plan	Yes	2022. Component of the Comprehensive Plan.
How can these capabilities be expanded and improved to reduce risk?		Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	<ul style="list-style-type: none"> What type of codes? Are codes adequately enforced?
Building Codes	Yes	2018-2021 IBC Code Suite. Codes are enforced. Plan reviews, inspections, regulated construction and structures in Henderson. More information for the City of Henderson Building Codes can be found on the City of Henderson's website and also here .
Site plan review requirements	Yes	2022 Title 19 Development Code . Code is enforced.
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.
LAND USE PLANNING & ORDINANCES		<ul style="list-style-type: none"> Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Floodplain ordinance	Yes	Yes, City Code Chapter 15.50- Flood Control and Control of Draining can be found online here .
Subdivision ordinance	Yes	Multiple Subdivision ordinances can be found online here .
Zoning ordinance	Yes	Yes, to all. Known as Codes of Ordinances (Development Code – Zoning) can be found online here . The purpose of this code is to establish the minimum requirements to safeguard public health, safety, and general welfare through structural strength, means of egress facilities, and stability; access for persons with disabilities, sanitation, adequate lighting, ventilation and energy conservation; and safety for life and property from fire and other hazards attributed to the built environment.
How can these capabilities be expanded and improved to reduce risk?		Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.

Planning and Regulatory Capability Assessment for Las Vegas

PLANS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Does the plan address hazards? • Does the plan ID project to include in the mitigation strategy? • Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Community Wildfire Protection Plan	N/A	City of Las Vegas is an urban environment with no wildfire protection zone to manage
Comprehensive/Master Plan	Yes	CLV 2050 Master Plan identifies hazards, mitigation strategies. Approved by Council July 2022
Continuity of Operations Plan	Yes	CLV continuously updates COOP by department. Approved by City Manager's Office 2023 (on-going)
Capital Improvement Plan	Yes	Managed by Public Works, this plan is updated annually.
Economic Development Plan	Yes	Economic & Urban Development partners with Redevelopment Agency (RDA) and Las Vegas Global and Economic Alliance
Emergency Operations Plan	Yes	CLV certifies or updates EOP annually (2022)
Stormwater Management Plan	Yes	The Stormwater Quality Management Committee (SQMC) is a community partnership of the Clark County Regional Flood Control District and is committed to the development and implementation of stormwater pollution monitoring, control and outreach efforts within the Las Vegas Valley.
Transportation Plan	N/A	CLV participates on Clark County Regional Transportation Commission's ITS
Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • What type of codes? • Are codes adequately enforced?
Building Codes	Yes	The 2021 International Building Code (IBC) and International Fire Code (IFC) were adopted in September 2022. The effective date of these codes is March 23, 2023. More information for the City of Las Vegas Building Codes can be found here .
Site plan review requirements	Yes	Routine, Land Use and Fire Reviews for Buildings conducted by Community Development Dept
Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		
LAND USE PLANNING & ORDINANCES	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Is the ordinance effective for reducing hazard impacts? • Is the ordinance adequately administered and enforced?
Floodplain ordinance	Yes	Las Vegas Municipal Code 20.08.040 - Methods of reducing flood losses (1987). This code can be found online here .
Subdivision ordinance	Yes	Las Vegas Municipal Code 20.08.370 - Subdivision proposals (1987). This code can be found online here .
Zoning ordinance	Yes	Las Vegas Municipal Code Title 19 (2011). This code can be found online here .
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more		

PLANS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Does the plan address hazards? • Does the plan ID project to include in the mitigation strategy? • Can the plan be used to implement mitigation actions? Include date of the most recent plan.
effective at preventing losses.		

Planning and Regulatory Capability Assessment for Las Vegas Valley Water District/SWNA

PLANS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Water Resource Plan	Yes	Water Resource Plan that provides a comprehensive overview of projected water demands in Southern Nevada, as well as the water resources available, or expected to be available, to meet those demands over time. Current Plan is 2023, updated annually.
Comprehensive/Master Plan	N/A	
Continuity of Operations Plan	Yes	Yes, identifies how to proceed with loss of facilities, relocation, reconstitution, delegation of authority, Succession planning, critical software/hardware, ETC
Capital Improvement Plan	Yes	2017 with a 10-year planning horizon. New one being worked through currently.
Economic Development Plan	N/A	
Emergency Operations Plan	Yes	Reviewed/updated 2022, In accordance with America's Water Infrastructure Act of 2018 (AWIA 2018), Covers a multitude of scenarios that cover all hazard threats, including terrorism, weather, natural disaster, human caused accidental and intentional.
Stormwater Management Plan	N/A	
Transportation Plan	N/A	
Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> What type of codes? Are codes adequately enforced?
Building Codes	Yes	Yes, LVWD follows Clark County's Building Codes
Site plan review requirements	Yes	Yes, LVWD follows the Clark County Site plan review requirements.
Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		
LAND USE PLANNING & ORDINANCES	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Turf Removal, and other water use ordinances	Yes	Turf Removal Rebate Programs have been in place for 20 years. Recently, a requirement to remove nonfunctional turf as been adopted as well as pool size limits. Both to support water conservation goals set for the community.
Floodplain ordinance	Yes	
Subdivision ordinance	Yes	
Zoning ordinance	Yes	

PLANS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Does the plan address hazards? • Does the plan ID project to include in the mitigation strategy? • Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		

Planning and Regulatory Capability Assessment for Mesquite

PLANS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Community Wildfire Protection Plan	No	The city follows under the County and State mitigation work related to the river that are related to wildland fire risk
Comprehensive/Master Plan	N/A	Per the last MJHMP (2018), the City of Mesquite indicated that the State of Nevada requires jurisdictions to address seismic activity. Mesquite is working to confirm if have an updated copy of this plan for MJHMP record
Continuity of Operations Plan	Yes	Yes, updated in 2022
Capital Improvement Plan	Yes	Yes, updated October 2022
Economic Development Plan	Yes	Yes, updated October 2022
Emergency Operations Plan	Yes	Yes, and EOP was reviewed and updated January 2023 to meet state of NV compliance
Stormwater Management Plan	Yes	Yes, updated October 2022
Transportation Plan	Yes	Yes, updated October 2022
Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> What type of codes? Are codes adequately enforced?
Building Codes	Yes	The IBC 2018 Code, however the City will be working to adopt 2004 IBC Code Suite. These codes are adequately enforced. More information for the City of Mesquite Building Codes can be found here .
Site plan review requirements	Yes	Yes, the City Building Inspector completed site plan review related to flooding and earthquake and the City Fire Inspector completes review for fire hazards.
Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		
LAND USE PLANNING & ORDINANCES	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Floodplain ordinance	Yes	Yes, updated October 2022. Title – Flood Control District Ordinance can be found online here .
Subdivision ordinance	Yes	Yes, updated October 2022, Chapter 6 Subdivision Regulations can be found online here .
Zoning ordinance	Yes	Yes, updated October 2022, Chapter 7 – Zoning Districts Ordinance can be found online here .
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		

Planning and Regulatory Capability Assessment for North Las Vegas

PLANS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Community Wildfire Protection Plan	No	No plan. No use for mitigation strategy or actions
Comprehensive/Master Plan	Yes	No, the plan address land development. No use for mitigation strategy or actions.
Continuity of Operations Plan	Yes	Annual updates. Yes, it addresses all hazards, identifies projects and includes mitigation strategies, and can be used to implement mitigation actions.
Capital Improvement Plan	Yes	Annual with forward projection. Yes, it addresses all hazards, identifies projects and includes mitigation strategies, and can be used to implement mitigation actions.
Economic Development Plan	Yes	Annual with forward projection. Yes, it addresses all hazards, identifies projects and includes mitigation strategies, and can be used to implement mitigation actions.
Emergency Operations Plan	Yes	Updated 2021. Yes, it addresses all hazards, identifies projects and includes mitigation strategies, and can be used to implement mitigation actions.
Stormwater Management Plan	Yes	The plan address city and developer storm water protection. No use for mitigation strategy or actions.
Transportation Plan	Yes	The plan address roadways. No use for mitigation strategy or actions.
Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> What type of codes? Are codes adequately enforced?
Building Codes	Yes	The 2018 IBC Code Suite. Yes, codes are adequately enforced. ICC, yes enforced. For more information about the City of North Las Vegas Building Codes can be found here .
Site plan review requirements	Yes	Regional criteria. Yes, enforced by inspectors and engineers
Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		
LAND USE PLANNING & ORDINANCES	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Floodplain ordinance	Yes	Yes, as of March 14, 2023, City Ordinance Chapter 8.50 – Stormwater Regulations can be found online here .
Subdivision ordinance	Yes	Yes, as of March 14, 2023, City Ordinance Title 16 – Development Code, Title 16.01.190 – Subdivision can be found online here .
Zoning ordinance	Yes	Yes, as of March 14, 2023, City Ordinance Title 17 – Zoning Ordinances can be found online here .
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		

Planning and Regulatory Capability Assessment for Las Vegas Paiute Tribe

PLANS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Does the plan address hazards? • Does the plan ID project to include in the mitigation strategy? • Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Community Wildfire Protection Plan	No	
Comprehensive/Master Plan	No	
Continuity of Operations Plan	No	Though the Tribe doesn't have a COOP they understand the need and has included the creation and development of this plan as a priority/mitigation project for the next plan cycle
Capital Improvement Plan	N/A	
Economic Development Plan	N/A	
Emergency Operations Plan	Yes	Yes, there is one however, it is in draft but due to COVID, the Tribe is working to update the document to reflect the current capabilities of the Tribe
Stormwater Management Plan	N/A	
Transportation Plan	N/A	
Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • What type of codes? • Are codes adequately enforced?
Building Codes	N/A	
Site plan review requirements	N/A	
Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		
LAND USE PLANNING & ORDINANCES	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Is the ordinance effective for reducing hazard impacts? • Is the ordinance adequately administered and enforced?
Floodplain ordinance	N/A	
Subdivision ordinance	N/A	
Zoning ordinance	N/A	
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		

Planning and Regulatory Capability Assessment for Moapa Band of Paiutes

PLANS	Yes/No Year	Does the plan address hazards? Does the plan ID projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Capital Improvements Plan	Yes, 2015	As per the 2015 Moapa Band of Paiutes Hazard Mitigation Plan, the tribe has a 5-year Master Plan.
Community Wildfire Protection Plan	N/A	
Comprehensive/Master Plan	Yes	
Continuity of Operations Plan	N/A	
Economic Development Plan	Yes	As per the 2015 Moapa Band of Paiutes Hazard Mitigation Plan, the tribe has an Economic Development Plan (Economic Development Department).
Emergency Operations Plan	Yes	Yes, the 2015 Moapa Band of Paiutes Hazard Mitigation Plan does mention having a stormwater management program within its regulatory capabilities.
Stormwater Management Plan	Yes	Yes, the 2015 Moapa Band of Paiutes Hazard Mitigation Plan does mention having a stormwater management program within its regulatory capabilities. However, the Stormwater Management Program needed to be reconstructed.
Transportation Plan	N/A	
How can these capabilities be expanded and improved to reduce risk?		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	What type of codes? Are codes adequately enforced?
Building Codes	Yes	Yes, as mentioned in the 2015 Moapa Band of Paiutes Hazard Mitigation Plans regulatory capabilities, the tribe follows unified building code.
Site plan review requirements	No	No, the 2015 Moapa Band of Paiutes Hazard Mitigation Plan does not mention any site plan review requirement within its regulatory capabilities.
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.
LAND USE PLANNING & ORDINANCES		Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Floodplain ordinance	No	No, the 2015 Moapa Band of Paiutes Hazard Mitigation Plan does not mention any ordinances like floodplain for the tribal reservation.
Subdivision ordinance	N/A	N/A, the 2015 Moapa Band of Paiutes Hazard Mitigation Plan does not mention any ordinances like subdivision for the tribal reservation.
Zoning ordinance	N/A	N/A, the 2015 Moapa Band of Paiutes Hazard Mitigation Plan does not mention any ordinances like zoning for the tribal reservation.
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		

Note: As mentioned in the [2015 Moapa Band of Paiutes Hazard Mitigation Plan \(April 2015\)](#), will adhere to the regulations, policies, program, regulatory capabilities related to hazard prone areas as described in the Clark County Plan, including pre-disaster hazard mitigation management and post-disaster mitigation management.

Administrative and Technical Capabilities

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, and floodplain managers. Small communities may rely on other government entities such as counties or special districts for resources. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administrative and Technical Capability Assessment for Clark County

ADMINISTRATION	Yes/No	<ul style="list-style-type: none"> Describe capability. Is coordination effective?
Mutual aid agreements	Yes	Yes, the County participates in the NVMAC (NV Mutual Aid Compact).
Planning Commission	Yes	They are effective in communication with the County Commissioners.
TECHNICAL STAFF	Yes/No and include if Full Time (FT) or Part Time (PT) position	<ul style="list-style-type: none"> Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes	Yes, to all.
Community Planner	Yes	Yes, to all.
Emergency Manager	Yes	Yes, to all.
Engineer	Yes	Yes, to all.
Fire Chief	Yes	Yes, to all.
Floodplain Manager/Administrator	Yes	Yes, to all.
GIS/HAZUS Coordinator	Yes	Yes, to all.
Sheriff	Yes	Yes, to all.
Procurement Services Manager	Yes	Yes, to all.
By continuing to utilize and seek improved methods for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts. An important component is the use of trained grant writers with the knowledge and skill sets to research and apply for federal funding opportunities.		

Administrative and Technical Capability Assessment for Clark County Water Reclamation District (CCWRD)

ADMINISTRATION	Yes/No	Describe capability. Is coordination effective?
Mutual aid agreements	Yes	Yes, CCWRD participates in the statewide water/wastewater assistance network called NV WARN.
TECHNICAL STAFF	Yes/No and include if Full Time (FT) or Part Time (PT) position	Answer these questions in the space below: <ul style="list-style-type: none"> Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
GIS/HAZUS Coordinator	Yes	GIS staff available but may not be aware of all mitigation activities/hazards for the county.
Engineering Staff	Yes; FT	Team of engineers as FTE and available consulting firms on a wide-variety of mitigation-related infrastructure items.
Emergency Management Program-Coordinator and Analyst	Yes; FT	Staff communicate organization hazards both internally and externally to inform mitigation efforts.

Administrative and Technical Capability Assessment for Boulder City

ADMINISTRATION	Yes/No	Describe capability. Is coordination effective?
Mutual aid agreements	Yes	Yes, the city is multiple, current mutual aid agreements.
Planning Commission	Yes	They are effective in communication with the city council.
TECHNICAL STAFF	Yes/No and include if Full Time (FT) or Part Time (PT) position	Answer these questions in the space below: <ul style="list-style-type: none"> Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes	Yes, to all.
Community Planner	Yes	For the Community Development Director who oversees the Planner, yes to all.
Emergency Manager	Yes	Yes, to all.
Engineer	Yes	Yes, to all.
Fire Chief	Yes	Yes, to all.
Floodplain Manager/Administrator	Yes	Yes, to all.
GIS/HAZUS Coordinator	Yes	Yes, to all.
Police Chief	Yes	Yes, to all.
Procurement Services Manager	Yes	Yes, to all.
<p>By continuing to utilize and seek improved methods for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts. An important component is the use of trained grant writers with the knowledge and skill sets to research and apply for federal funding opportunities.</p>		

Administrative and Technical Capability Assessment for Henderson

ADMINISTRATION	Yes/No	Describe capability. Is coordination effective?
Mutual aid agreements		
Planning Commission		
TECHNICAL STAFF	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes FT	All trained on hazards and mitigation, and we adhere to the NIMS training program
Community Planner	Yes FT	Yes, develops and maintains the Comprehensive Plan, including the safety element. Develops area plans based on the Comprehensive Plan, to provide more specific guidance for the development of more specific areas. Reviews private development projects and proposed capital improvements projects and other physical projects involving property for consistency and conformity with the Comprehensive Plan. Anticipates and acts on the need for new plans, policies, and code changes. Applies the approved plans, policies, code provisions, and other regulations to proposed land uses.
Emergency Manager	Yes FT	Yes, all hazards trained, National Incident Management System (NIMS) certified, Incident Command System (ICS) training, CBCP, coordinates with all departments and staff, uses skills to be mitigated and assess risk, experience managing a variety of incidents.
Engineer	Yes FT	Yes. Oversees the effective, efficient, fair, and safe enforcement of the Nevada Building Code. Provides direct or contract civil, structural, and mechanical engineering services, including contract, project, and construction management. Maintains and operates a wide range of local equipment and facilities as well as providing assistance to members of the public. These include providing sufficient clean fresh water and reliable sewer services. Maintains and operates of a wide range of local equipment and facilities as well as providing assistance to members of
Fire Chief		Yes, all hazards trained, NIMS certified, ICS training, coordinates with all departments and staff, uses skills to mitigate and assess risk, experience managing a variety of incidents.
Floodplain Manager/Administrator	Yes FT	Yes, enforces the jurisdiction's floodplain management ordinance, which requires that new development proposals do not increase flood risk, and that new developments are not located below the 100 year flood level. In addition, the Floodplain Administrator is responsible for planning and managing flood risk reduction projects throughout the jurisdiction.
GIS/HAZUS Coordinator	Yes FT	Yes, all staff go through ICS training and are equipped to identify and assess hazards
Sheriff	Yes FT	Police Chief
Procurement Services Manager	Yes FT	Yes, all hazards trained, NIMS certified, ICS training, coordinates with all departments and staff, uses skills to mitigate and assess risk, experience managing a variety of incidents.
How can capabilities be expanded and improved to reduce risk?		Additional training of staff in hazard mitigation and financial resources to pursue mitigation projects.

Administrative and Technical Capability Assessment for Las Vegas

ADMINISTRATION	Yes/No	Describe capability. Is coordination effective?
Mutual aid agreements	Yes	Nevada Emergency Management Assistance Compact
Planning Commission	Yes	Members appointed by City Council, monthly meetings open to public
TECHNICAL STAFF	Yes/No and include if Full Time (FT) or Part Time (PT) position	Answer these questions in the space below: <ul style="list-style-type: none"> • Is staff trained on hazards and mitigation? • Is coordination between agencies and staff effective? • Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes	Full Time position; yes to all.
Community Planner	Yes	Full Time position; yes to all.
Emergency Manager	Yes	Full Time position; yes to all.
Engineer	Yes	Full Time position; yes to all.
Fire Chief	Yes	Full Time position; yes to all.
Floodplain Manager/Administrator	Yes	Full Time position; yes to all.
GIS/HAZUS Coordinator	Yes	Full Time position; yes to all.
Sheriff	Yes	Full Time position; yes to all.
Procurement Services Manager	Yes	Full Time position; yes to all.
Additional technical expertise in climate adaptation and sustainability as well as economic recovery is key to success in identified mitigation activities.		

Administrative and Technical Capability Assessment for Las Vegas Valley Water District/SWNA

ADMINISTRATION	Yes/No	Describe capability. Is coordination effective?
Mutual aid agreements	Yes	Yes, NVWARN, and an agreement with two agencies in California.
Planning Commission	N/A	
TECHNICAL STAFF	Yes/No and include if Full Time (FT) or Part Time (PT) position	Answer these questions in the space below: <ul style="list-style-type: none"> Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	N/A	
Community Planner	N/A	
Emergency Management Coordinator	Yes	Yes, to all.
Engineer-Infrastructure Management	Yes	Yes, to all
Risk Manager	Yes	Yes, to all
Floodplain Manager/Administrator	N/A	
GIS/HAZUS Coordinator	N/A	
Security Manager	Yes	Yes, and a staff of security officers to support.
Procurement Services Manager	Yes	Yes, to all
By continuing to utilize and seek improved methods for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts. An important component is the use of trained grant writers with the knowledge and skill sets to research and apply for federal funding opportunities.		

Administrative and Technical Capability Assessment for Mesquite

ADMINISTRATION	Yes/No	Describe capability. Is coordination effective?
Mutual aid agreements	Yes	Yes, the City with Littlefield Beaver Dam Fire Dept (AZ), Clark County Station 71 in Bunkerville, and Lincoln County, NV for fire/rescue efforts. The City is written into the HAZMAT response plan for the County and will come into further MAA beginning in 2024.
Planning Commission	Yes	They are effective in communicating with the City Council.
TECHNICAL STAFF	Yes/No and include if Full Time (FT) or Part Time (PT) position	Answer these questions in the space below: <ul style="list-style-type: none"> Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes	Yes, to all.
Community Planner	Yes	Yes, to all.
Emergency Manager	Yes	Yes, the all. The Fire Chief also serves as the Emergency Manager for the City.
Engineer	Yes	Yes, to all.
Fire Chief	Yes,	Yes, the all. The Fire Chief also serves as the Emergency Manager for the City.
Floodplain Manager/Administrator	Yes	Ask Travis
GIS/HAZUS Coordinator	Yes	Yes, to all.
Sheriff	Yes	Yes, to all.
Procurement Services Manager	Yes	Yes, to all.
By continuing to utilize and seek improved methods for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts. An important component is the use of trained grant writers with the knowledge and skill sets to research and apply for federal funding opportunities.		

Administrative and Technical Capability Assessment for North Las Vegas

ADMINISTRATION	Yes/No	Describe capability. Is coordination effective?
Mutual aid agreements	Yes	Yes
Planning Commission	Yes	They are effective in communication with the City Council.
TECHNICAL STAFF	Yes/No and include if Full Time (FT) or Part Time (PT) position	Answer these questions in the space below: <ul style="list-style-type: none"> Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes	Yes, to all.
Community Planner	Yes	Yes, to all.
Emergency Manager	Yes	Yes, to all.
Engineer	Yes	Yes, to all.
Fire Chief	Yes	Yes, to all.
Floodplain Manager/Administrator	Yes	Yes, to all.
GIS/HAZUS Coordinator	Yes	Yes, to all.
Sheriff	No.	City Police Chief
Procurement Services Manager	Yes	Procurement Manager and Accounting Manager
<p>By continuing to utilize and seek improved methods for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts. An important component is the use of trained grant writers with the knowledge and skill sets to research and apply for federal funding opportunities.</p>		

Administrative and Technical Capability Assessment for Las Vegas Paiute Tribe

ADMINISTRATION	Yes/No	Describe capability. Is coordination effective?
Mutual aid agreements	Yes	
Planning Commission	No	
TECHNICAL STAFF	Yes/No and include if Full Time (FT) or Part Time (PT) position	Answer these questions in the space below: Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	N/A	
Community Planner	N/A	
Emergency Manager	FT	Yes, to all
Engineer	FT	Yes, to all
Fire Chief	N/A	
Floodplain Manager/Administrator	N/A	
GIS/HAZUS Coordinator	N/A	
Chief of Police	FT	Yes, to all
Procurement Services Manager	N/A	
<p>By continuing to utilize and seek improved methods for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts. An important component is the use of trained grant writers with the knowledge and skill sets to research and apply for federal funding opportunities.</p>		

Administrative and Technical Capability Assessment for Moapa Band of Paiutes

ADMINISTRATION	Yes/No	Describe capability. Is coordination effective?
Mutual aid agreements		
Planning Commission		
TECHNICAL STAFF	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes	Yes, Public Works Director
Community Planner	No	
Emergency Manager	Yes	Yes, Emergency Services Manager
Engineer	Yes	Yes, Tribal Planner
Floodplain Manager/Administrator	Yes	
GIS/HAZUS Coordinator	No	No, Indian Health Service
Grant writer	Yes	
How can capabilities be expanded and improved to reduce risk?		Additional training of staff in hazard mitigation and financial resources to pursue mitigation projects.

Note: As mentioned in the [2015 Moapa Band of Paiutes Hazard Mitigation Plan \(April 2015\)](#), the Moapa Band of Paiutes Emergency Management Program operates under the direction of the Moapa Band of Paiutes Tribal Council. Day-to-day operations and direction for the program is conducted under the management of the Tribal Chairman who has delegated coordination actions to the Moapa Band of Paiutes Emergency Coordinator. The final responsibility for all emergency management belongs to the Tribal Chairman. The Tribal Chairman and Council are responsible for all policy-level decisions. They are also required to be the approving body for public information releases to the public. During response operations, the elected officials will be available to their constituents to handle non-routine problems. The Tribal Emergency Management has responsibility for coordinating the entire emergency management program, within the boundaries of the Reservation, and can make routine decisions within the limits of disaster authority. During emergency operations, the Emergency Manager ensures that all parties are working in a concerted, supportive effort to overcome the disaster.

Financial Capabilities

The following table contains a list of administrative and financial capabilities available to Clark County. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Financial Capability Assessment for Clark County

FINANCIAL	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Has the funding resource been used in past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Building Resilient Infrastructure and Communities (BRIC)	Yes	
Hazard Mitigation Grant Program (HMPG)	Yes	
Pre-Disaster Mitigation grant program (PDM)	Yes	
Earthquake Mitigation Funds (Nevada Earthquake Safety Council)	No	
Flood Mitigation Assistance grant program (FMA)	Yes	
Water Preservation Funds (SWNA)	No	No, not for the county but the jurisdiction participation in this plan update
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)	Yes	Project specific – the City receives RFPs for the NV Division of Forestry to apply to secure funds for related projects
Capital improvements project funding	Yes	
Community Development Block Grant	Yes	Yes, Acquisition of real property, relocation and demolition, rehabilitation of residential and non-residential structures, construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes. Grants award based on specific projects as they are identified.
Authority to levy taxes for specific purposes	N/A	
Impact fees for new development	N/A	
Incur debt through special tax bond	Yes	Variable amount. As stated in the previous MJHMP (2018), revenue bonds are used to finance capital projects that 1) have an identified budgetary stream for repayment (e.g. specified fees, tax receipts; 2) generate project revenue but rely on broader pledge of general fund revenues to reduce borrowing costs; 3) finance the acquisition and installation of equipment for the local jurisdiction's general governmental purposes.
Incur debt through general obligation bonds	Yes	Variable amount. As stated in the previous MJHMP (2018), general obligation bonds are appropriately used for the construction and/or acquisition of improvements to real property broadly available to residents and visitors. Such facilities include, but are not limited to, libraries, hospitals, parks, public safety facilities, and cultural and educational facilities.
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.

Financial Capability Assessment for Clark County Water Reclamation District (CCWRD)

FINANCIAL	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Has the funding resource been used in the past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Building Resilient Infrastructure and Communities Grant (BRIC)	No	
Hazard Mitigation Grant Program (HMPG)	No	
Pre-Disaster Mitigation grant program (PDM)	No	
Earthquake Mitigation Funds (Nevada Earthquake Safety Council)	No	
Flood Mitigation Assistance Grant Program (FMA)	No	
Water Preservation Funds (SWNA)	No	
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)	No	
Capital improvements project funding	Yes	Relies upon ratepayer fees and charges to fund the operations, maintenance, and capital programs.
Community Development Block Grant	No	
Authority to levy taxes for specific purposes	Yes	While given the statutory authorization to assess ad valorem taxes, the District has not done so, relying upon fees and charges to fund the operations, maintenance and capital programs. The District has the authority to levy taxes, sell bonds, create assessment districts, and the right of eminent domain.
Impact fees for new development	Yes	The District assigns fees for new development/connection charges.
Incur debt through special tax bond	N/A	
Incur debt through general obligation bonds	Yes	Yes, this has been utilized in the past and the District is considering general obligation bonds in the future for capital improvements.
Recovery Funds	Yes	CCWRD is utilizing ARPA funds to pilot a septic conversion program in unincorporated Clark County to capture any additional return flow credits from septic tank residential areas.

Financial Capability Assessment for Boulder City

FINANCIAL	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Has the funding resource been used in the past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Building Resilient Infrastructure and Communities Grant (BRIC)	No	FEMA's BRIC grant program give states, local communities, tribes and territories funding to address future risks to natural disasters, including ones involving wildfires, drought, hurricanes, earthquakes, extreme heat, and flooding. Addressing these risks helps make communities more resilient. Boulder City could apply for assistance for such a project.
Hazard Mitigation Grant Program (HMPG)	No	
Pre-Disaster Mitigation grant program (PDM)	No	
Earthquake Mitigation Funds (Nevada Earthquake Safety Council)	No	
Flood Mitigation Assistance grant program (FMA)	No	Flood Mitigation Assistance funds may be used for projects such as Project Scoping; Technical Assistance; Community Flood Mitigation Projects; Individual Structure/Property-Level Flood Mitigation Projects; and Management Costs. Boulder City could apply for a apply for assistance for such a project.
Water Preservation Funds (SWNA)	Yes	Currently participating in rebate program for Water Smart Landscaping
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)	Yes	The fire department has a current, two-year agreement with the Division of Forestry to provide response and training services.
Capital improvements project funding	Yes	Receive funding from both RTC and CCRFC
Community Development Block Grant	Yes	Annually receives approximately \$35K that is provided to Lend a Hand and Emergency Aid. Currently using grant for improvements to a building that will house Lend a Hand.
Authority to levy taxes for specific purposes	No/Yes	Have not used this in the past.
Impact fees for new development	No	
Incur debt through special tax bond	No	Debt over \$1M must be approved by voters
Incur debt through general obligation bonds	Yes	Debt over \$1M must be approved by voters. Before ballot question was approved debt was used for water line infrastructure.
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.

Financial Capability Assessment for Henderson

FINANCIAL	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Has the funding resource been used in the past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Building Resilient Infrastructure and Communities Grant (BRIC)	Yes	
Hazard Mitigation Grant Program (HMPG)	Yes	Supports pre- and post-disaster mitigation plans and projects. Available to Nevada communities after a Presidentially declared disaster has occurred in Nevada.
Pre-Disaster Mitigation grant program (PDM)	Yes	Supports pre-disaster mitigation plans and projects. Available on an annual basis as a nationally competitive grant.
Earthquake Mitigation Funds (Nevada Safety Council)	Yes	Allocates FEMA money for earthquake mitigation efforts/.
Flood Mitigation Assistance grant program (FMA)	Yes	Mitigates repetitively flooded structures and infrastructure. Available on an annual basis, distributed to Nevada communities by the Nevada DEM
Water Preservation Funds (SWNA)	Yes	Provides incentives to conserve and preserve water resources.
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)	Yes	Administers funding from FEMA, BLM, and U.S. Forest Service for certain types of wildfire emergency and mitigation funding
Capital improvements project funding	Yes	Can be used to address community hazards and implement mitigation actions as needed.
Community Development Block Grant	Yes	Acquisition of real property, relocation and demolition, rehabilitation of residential and non-residential structures, construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes
Authority to levy taxes for specific purposes	Yes	
Impact fees for new development	Yes	Established an assessment contribution on certain land uses to establish the equitable funding of infrastructure within a geographic boundary.
Incur debt through special tax bond	Yes	
Incur debt through general obligation bonds	Yes	General obligation bonds are appropriately used for the construction and/or acquisition of improvements to real property broadly available to residents and visitors. Such facilities include, but are not limited to, libraries, hospitals, parks, public safety facilities, and cultural and educational facilities
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.

Financial Capability Assessment for Las Vegas

FINANCIAL	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Has the funding resource been used in the past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Building Resilient Infrastructure and Communities Grant (BRIC)	No	Some mitigation activities planned in the next 5 years are eligible under this grant program.
Hazard Mitigation Grant Program (HMPG)	Yes	HMPG-Post Fire FFY2020, planning grant in progress.
Pre-Disaster Mitigation grant program (PDM)	No	Have not used this funding source in at least 15 years.
Earthquake Mitigation Funds (Nevada Earthquake Safety Council)	No	Potential source for seismic mitigation activities.
Flood Mitigation Assistance grant program (FMA)	No	Not a direct recipient, CLV supports applications made by Regional Flood Control District
Water Preservation Funds (SNWA)	No	Southern Nevada will soon surpass the region's 2035 goal to reduce consumption through conservation to 199 GPCD, CLV participates in the SNWA conservation planning.
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)	No	City of Las Vegas is an urban environment and is generally not involved in wildfire mitigation.
Capital improvements project funding	Yes	The Public Works Department manages all CIP funding on an annual basis. CIP may be used as a match source for PDM, HMPG or BRIC.
Community Development Block Grant	Yes	Most CDBG grants are used in support of low-income housing initiatives, may be used to support context-sensitive planning efforts.
Authority to levy taxes for specific purposes	No	The city is a political subdivision of the state and is not authorized to levy taxes.
Impact fees for new development	Yes	The city imposes fees for various development activities to support cost of government support services.
Incur debt through special tax bond	No	The city is a political subdivision of the state and is not authorized to levy taxes.
Incur debt through general obligation bonds	Yes	The city has utilized bonds for projects such as city hall, municipal court and the civic plaza.
How can capabilities be expanded and improved to reduce risk?		Utilize subject matter experts to identify and apply for FEMA program grants.

Financial Capability Assessment for Las Vegas Valley Water District/SWNA

FINANCIAL	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Has the funding resource been used in the past and for what type of activities? • Could the resource be used to fund future mitigation actions?
LVVWD and SNWA General Funds and Reserve Policy	Yes	Among various other purposes, to mitigate one-time, unforeseen infrastructure or major capital equipment failures and other significant non-recurring impacts to operating revenues and expenses.
Building Resilient Infrastructure and Communities Grant (BRIC)	N/A	
Hazard Mitigation Grant Program (HMPG)		
Pre-Disaster Mitigation grant program (PDM)		
Earthquake Mitigation Funds (Nevada Earthquake Safety Council)	N/A	
Flood Mitigation Assistance grant program (FMA)	N/A	
Water Preservation Funds (SWNA)	N/A	
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)	N/A	
Capital improvements project funding	N/A	
Community Development Block Grant	N/A	
Authority to levy taxes for specific purposes	N/A	
Impact fees for new development	N/A	
Incur debt through special tax bond	N/A	
Incur debt through general obligation bonds	N/A	
How can capabilities be expanded and improved to reduce risk?	Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.	

Financial Capability Assessment for Mesquite

FINANCIAL	Yes/No/ NA	Answer these questions in the space below: <ul style="list-style-type: none"> • Has the funding resource been used in the past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Building Resilient Infrastructure and Communities Grant (BRIC)	NA	The City has not utilized this funding in the past. It is unknown if it could be a resource the city could utilize to fund mitigation actions.
Hazard Mitigation Grant Program (HMPG)	Yes	
Pre-Disaster Mitigation grant program (PDM)	Yes	
Earthquake Mitigation Funds (Nevada Earthquake Safety Council)	Yes	Project Specific
Flood Mitigation Assistance grant program (FMA)	Yes	Yes, it has been used in the past. Unknown if the resource could be used to fund future mitigation actions since the Flood Control District controls the resource funding
Water Preservation Funds (SWNA)	Yes	Project Specific
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)	Yes	Project specific – the City receives RFPs for the NV Division of Forestry to apply to secure funds for related projects
Capital improvements project funding	No	
Community Development Block Grant	Yes	Yes, as mentioned in the previous HMP (2018), acquisition of real property, relocation and demolition, rehabilitation of residential and non-residential structures, construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes. Grant award based on specific projects as they are identified.
Authority to levy taxes for specific purposes	Yes	Yes, it is allowable to use. Ability to use as a resource but has not been used yet.
Impact fees for new development	Yes	Yes, this has been used in the past, unknown at this time type of activities. Could be used in the future to fund mitigation activities
Incur debt through special tax bond	Yes	Yes, this has been used in the past, unknown at this time type of activities. Could be used in the future to fund mitigation activities
Incur debt through general obligation bonds	Yes	Yes, this has been used in the past, unknown at this time type of activities. Could be used in the future to fund mitigation activities
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.

Financial Capability Assessment for North Las Vegas

FINANCIAL	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Has the funding resource been used in the past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Building Resilient Infrastructure and Communities Grant (BRIC)	No	
Hazard Mitigation Grant Program (HMPG)	No	No prior awards. However, the City would like to pursue funding through this program for mitigation or flood activities.
Pre-Disaster Mitigation grant program (PDM)	No	No, the City does not currently have activities planned to fit into that funding.
Earthquake Mitigation Funds (Nevada Earthquake Safety Council)	No	No, the City does not currently have activities planned to fit into that funding.
Flood Mitigation Assistance grant program (FMA)	No	
Water Preservation Funds (SWNA)	Yes	Yes, the City currently has an active project funded through SNPLMA to support Water Preservation. The City is in the process of a Citywide Turf Reductions Program in Parks. The City also participates in Regional Water Preservation Programs with Southern Nevada Water Authority (SWNA). Additionally, the City plan to apply for BOR funding to increase water preservation abilities.
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)	No	No, the City does not currently have activities planned to fit into that funding.
Capital improvements project funding	Yes	Yes, The CIP is approved annually by City Council and managed by the Public Works Department. Many of the CIP projects are funded through a blend of local and federal grant dollars. Current CIP items included flood mitigation and control activities, water preservation, protection systems for water and sewer systems, City turf reduction, and park irrigation improvements.
Community Development Block Grant	Yes	Yes, CDBG formula grant is received annually by the City. These funds can be used for mitigation projects, but 51% or more beneficiaries must be low to moderate income persons. Additionally, the highest need for these funds at this time is community services. The City has requested HUD Community Project Funding for preparedness activities.
Authority to levy taxes for specific purposes	No	No, Per NRS, the City is not authorized to levy taxes.
Impact fees for new development	Yes	The City has a schedule for development fees. These fees are used to support the infrastructure growth and operational costs to services developing areas.
Incur debt through special tax bond	No	The City may, under the City Charter, levy a special assessment tax. However, the City does not have plans to do so.
Incur debt through general obligation bonds	Yes	Yes, the City may, under the City Charter, levy a special assessment or tax. However, the City does not have plans to do so. It has done so in the past for infrastructure, projects including water facilities.
How can capabilities be expanded and improved to		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as

reduce risk?	new legislation proposals to open the doors for improved funding opportunities.
How can capabilities be expanded and improved to reduce risk?	Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.

Financial Capability Assessment for Las Vegas Paiute Tribe

FINANCIAL	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Has the funding resource been used in the past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Building Resilient Infrastructure and Communities Grant (BRIC)	N/A	
Hazard Mitigation Grant Program (HMPG)	Yes	
Pre-Disaster Mitigation grant program (PDM)	Yes	
Earthquake Mitigation Funds (Nevada Earthquake Safety Council)	No	
Flood Mitigation Assistance grant program (FMA)	Yes	
Water Preservation Funds (SWNA)	Yes	
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)	No	
Capital improvements project funding	No	
Community Development Block Grant	No	
Authority to levy taxes for specific purposes	No	
Impact fees for new development	No	
Incur debt through special tax bond	No	
Incur debt through general obligation bonds	No	
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.

Financial Capability Assessment for Moapa Band of Paiutes

FINANCIAL	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Has the funding resource been used in the past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMPG)	N/A	
Pre-Disaster Mitigation grant program (PDM)	Yes	
Flood Mitigation Assistance grant program (FMA)	Yes	
Capital improvements project funding	Yes	
Community Development Block Grant	Yes	
Authority to levy taxes for specific purposes	Yes	
Impact fees for new development	Yes	
Incur debt through special tax bond	Yes	
Incur debt through general obligation bonds	No	
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.

Note: As mentioned in the [2015 Moapa Band of Paiutes Hazard Mitigation Plan \(April 2015\)](#), identifies financial tools or resources that Moapa Band of Paiutes could potentially used to help fund activities in addition to Economic Development Activities.

Education and Outreach Capabilities

The following tables list education and public outreach capabilities. These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Education and Outreach Capability Assessment for Clark County

PROGRAM / ORGANIZATION	Access / Eligibility (Yes/No)	Answer these questions in the space below: <ul style="list-style-type: none"> • Describe program/organization and how it relates to disaster resilience and mitigation. • Could the program/organization help implement future mitigation activities?
Jurisdiction (County/City/Tribe) Website and Social Media (PIO/PAO Programming)	Yes	The County maintains a website and accounts with Facebook , Instagram , Nextdoor , Twitter , and YouTube . County libraries, law enforcement, and fire/rescue agencies also maintain social media accounts. These resources are regularly used to convey hazard mitigation and disaster-related information to the public, as well as develop awareness of in-person and online events. They can be used to support future mitigation activities.
Firewise Communities certification	Yes	The Community Wildfire Protection Plans also serve to establish future mitigation projects and actions to support disaster resilience.
Storm Ready certification	Yes	The County Storm Ready Certification issued through the National Weather Service is current and due for renewal in 2023 (i.e., applies to all of the County).
Citizen groups focused on emergency preparedness, environmental protection, etc.	Yes	CERT (Community Emergency Response Team), MRC (Medical Reserve Corps), ARES (Amateur Radio Emergency Services), Faith Based organizations such as the First Baptist support group, Salvation Army, and United Way of Southern Nevada. These organizations provide responder Support and Emergency Management and EOC support to local communities and local government during times of disaster and preparedness training for local needs.
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)	Yes	The County frequently addresses public information needs through a variety of mechanisms. The local government organizations utilize a well-developed and coordinated PIO group with partners from all levels of government including city, county departments, and federal and state offices. This is especially effective during times of disaster. Clark County Emergency Management utilizes public presentations and media outlets (e.g., radio, print) to provide public outreach on emergency preparedness. The County website is a primary tool for dissemination of public information.
Public-private partnership initiatives addressing disaster-related issues	Yes	Examples of organizations for this effort include VOAD (Volunteer Organizations Active in Disaster), LEPC (Local Emergency Planning Committee) for addressing all hazard issues.
How can capabilities be expanded and improved to reduce risk?		This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

Education and Outreach Capability Assessment for Clark County Water Reclamation District (CCRWD)

PROGRAM / ORGANIZATION	Access / Eligibility (Yes/No)	Answer these questions in the space below: <ul style="list-style-type: none"> Describe program/organization and how it relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Pain in the Drain	Yes	Pain in drain educates on appropriate use of wastewater collection systems. No does not implement mitigation activities.
How can capabilities be expanded and improved to reduce risk?		This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

Education and Outreach Capability Assessment for Boulder City

PROGRAM / ORGANIZATION	Changes since 2018 Plan Update Yes or No	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. <ul style="list-style-type: none"> Could the program/organization help implement future mitigation activities?
Jurisdiction (County/City/Tribe) Website and Social Media (PIO/PAO Programming)	No	Yes	The city maintains a website and accounts with Facebook , Instagram , Twitter , and YouTube . County libraries, law enforcement, and fire/rescue agencies also maintain social media accounts. These resources are regularly used to convey hazard mitigation and disaster-related information to the public, as well as develop awareness of in-person and online events. They can be used to support future mitigation activities.
Firewise Communities certification	No	No	
Storm Ready certification	No		
Citizen groups focused on emergency preparedness, environmental protection, etc.	No	No	This does not currently exist in Boulder City
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)	No	Yes	The Boulder City Fire Dept frequently addresses public information needs through a variety of mechanisms. The fire department social media sites and city website is a primary tool for dissemination of public information.
Public-private partnership initiatives addressing disaster-related issues	No	Yes	Examples of organizations for this effort include VOAD (Volunteer Organizations Active in Disaster), LEPC (Local Emergency Planning Committee) for addressing hazardous materials issues,
How can capabilities be expanded and improved to reduce risk?			This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

Education and Outreach Capability Assessment for Henderson

PROGRAM / ORGANIZATION	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. <ul style="list-style-type: none"> • Could the program/organization help implement future mitigation activities?
City Website and Social Media (PIO/PAO Programming)	Yes	The City maintains a website and accounts with Facebook, Instagram, Twitter, and YouTube. City libraries, law enforcement, and fire/rescue agencies also maintain social media accounts. These resources are regularly used to convey hazard mitigation and disaster-related information to the public, as well as develop awareness of in-person and online events. They can be used to support future mitigation activities.
Firewise Communities certification	Yes	ISO classification Class 1
Storm Ready certification	Yes	
Citizen groups focused on emergency preparedness, environmental protection, etc.	Yes	
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)	Yes	CERT (Community Emergency Response Team), MRC (Medical Reserve Corps), ARES (Amateur Radio Emergency Services), Faith Based organizations such as the First Baptist support group, Salvation Army, and United Way of Northern Arizona. These organizations provide First Responder Support and Emergency Management and EOC support to local communities and local government during times of disaster and preparedness training for local needs. The City also has a robust volunteer program that includes police and fire volunteers
Public-private partnership initiatives addressing disaster-related issues	Yes No (for water use)	The City frequently addresses public information needs through a variety of mechanisms. The local government organizations utilize a well-developed and coordinated PIO group with partners from all levels of government including city, county departments, and federal and state offices. This is especially effective during times of disaster. Emergency Management utilizes public presentations and media outlets (e.g. radio, print) to provide public outreach on emergency preparedness. The City website is a primary tool for dissemination of public information
How can capabilities be expanded and improved to reduce risk?		This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

Education and Outreach Capability Assessment for Las Vegas

PROGRAM / ORGANIZATION	Changes since 2018 Plan Update Yes or No	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. <ul style="list-style-type: none"> • Could the program/organization help implement future mitigation activities?
Jurisdiction (County/City/Tribe) Website and Social Media (PIO/PAO Programming)	Yes	Yes	The city maintains a website and accounts with Facebook , Instagram , Twitter , and YouTube . The Office of Emergency Management maintains a Twitter handle, @clvalerts and manages a mass notification / IPAWS system countywide, as well as maintains the Southern Nevada Emergency Preparedness app. City libraries, law enforcement, and fire/rescue agencies also maintain social media accounts. These resources are regularly used to convey hazard mitigation and disaster-related information to the public, as well as develop awareness of in-person and online events. They can be used to support future mitigation activities.
Firewise Communities certification	N/A	N/A	The city is an urban environment and supports urban fire prevention programs. Firewise is designed for wildfire prevention and resistance.
Storm Ready certification	Yes	Yes	Storm Ready Certification issued through the National Weather Service is due for renewal.
Citizen groups focused on emergency preparedness, environmental protection, etc.	Yes	Yes	CERT (Community Emergency Response Team), MRC (Medical Reserve Corps), ARES (Amateur Radio Emergency Services), American Red Cross, Faith Based organizations such as Latter-Day Saints support group, Salvation Army, Red Rock Search and Rescue, Fire Explorers and United Way of Southern Nevada. These organizations, along with state VOAD, provide First Responder Support and Emergency Management and EOC support to local communities and local government during times of disaster and preparedness training for local needs.
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)	Yes	Yes	The City of Las Vegas frequently addresses public information needs through a variety of mechanisms. The local government organizations utilize a well-developed and coordinated PIO group with partners from all levels of government including city, county departments, and federal and state offices. This is especially effective during times of disaster. City of Las Vegas Emergency Management utilizes public presentations and media outlets (e.g. radio, print) to provide public outreach on emergency preparedness. The City of Las Vegas government website is a primary tool for dissemination of public information.
Public-private partnership initiatives addressing disaster-related issues	Yes	Yes	Examples of organizations for this effort include VOAD (Volunteer Organizations Active in Disaster), LEPC (Local Emergency Planning Committee) for addressing hazardous materials issues. The city Office of Emergency Management established a Downtown Resort Emergency Management Working Group to address issues specific to the Fremont Street Experience corridor.
How can capabilities be expanded and improved to reduce risk?			Additional interaction with faith-based organizations outside of the VOAD structure to build community wide credibility for government announcements of emergency conditions.

Education and Outreach Capability Assessment for Las Vegas Valley Water District/SWNA

PROGRAM / ORGANIZATION	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. <ul style="list-style-type: none"> Could the program/organization help implement future mitigation activities?
Website and Social Media (PIO/PAO Programming)	Yes	LVVWD and SNWA maintains a website and accounts with Facebook , Instagram , Twitter , LinkedIn , and YouTube . These resources are regularly used to convey drought mitigation to the public, as well as develop awareness of in-person and online events. They can be used to support future mitigation activities.
Firewise Communities certification		
Storm Ready certification	Yes	LVVWD has had Storm Ready Certification issued through the National Weather Service, unsure if it is still current.
Citizen groups focused on emergency preparedness, environmental protection, etc.		
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)	Yes	LVVWD and SNWA frequently addresses public information needs through a variety of mechanisms. They utilize a well-developed and coordinated PIO group that utilizes public presentations and media outlets (e.g. radio, print) to provide public outreach on responsible water use.
Public-private partnership initiatives addressing disaster-related issues	Yes	LVVWD and SNWA participate in LEPC and sub committees. Also, annual familiarity tours are offered to local first responders so that they would be more prepared to respond to emergencies on or properties.
How can capabilities be expanded and improved to reduce risk?		This can be accomplished by including the organizations in our public outreach, planning, training, and overall preparedness efforts and real time events.

Education and Outreach Capability Assessment for Mesquite

PROGRAM / ORGANIZATION	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. <ul style="list-style-type: none"> • Could the program/organization help implement future mitigation activities?
Jurisdiction (County/City/Tribe) Website and Social Media (PIO/PAO Programming)	Yes	The County maintains a website and accounts with Facebook and Twitter . County libraries, law enforcement, and fire/rescue agencies also maintain social media accounts. These resources are regularly used to convey hazard mitigation and disaster-related information to the public, as well as develop awareness of in-person and online events. They can be used to support future mitigation activities.
Firewise Communities certification		
Storm Ready certification	Yes	The County Storm Ready Certification issued through the National Weather Service is current and due for renewal in July 2021 (i.e. applies to all of the County). The City fall under the County Certification
Citizen groups focused on emergency preparedness, environmental protection, etc.	Yes	CERT (Community Emergency Response Team), ARIS, and Volunteer police. These organizations provide First Responder Support and Emergency Management and EOC support to local communities and local government during times of disaster and preparedness training for local needs.
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)	Yes No (for water use)	The City frequently addresses public information needs through a variety of mechanisms. The local government organizations utilize a well-developed and coordinated PIO group with partners from all levels of government including city, county departments. and federal and state offices. This is especially effective during times of disaster. City of Mesquite Emergency Management utilizes public presentations and media outlets (e.g. radio, print) to provide public outreach on emergency preparedness. The City teaches the NFPA messaging to school and participates in Safety Rodeo events as community outreach
Public-private partnership initiatives addressing disaster-related issues	Yes	Examples of organizations for this effort include Mesquite Emergency Planning Committee meets twice a year and the faith based meets once a year for addressing all hazard events in the City as well as the City has a seat on the County LEPC.
How can capabilities be expanded and improved to reduce risk?		This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

Education and Outreach Capability Assessment for North Las Vegas

PROGRAM / ORGANIZATION	Changes since 2018 Plan Update Yes or No	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. <ul style="list-style-type: none"> • Could the program/organization help implement future mitigation activities?
Jurisdiction (County/City/Tribe) Website and Social Media (PIO/PAO Programming)		Yes	The County maintains a website and accounts with Facebook , Instagram , Twitter , LinkedIn , Nextdoor , and YouTube . City libraries, law enforcement, and fire/rescue agencies also maintain social media accounts. These resources are regularly used to convey hazard mitigation and disaster-related information to the public, as well as develop awareness of in-person and online events. They can be used to support future mitigation activities.
Firewise Communities certification		Yes	
Storm Ready certification		Yes	The County Storm Ready Certification issued through the National Weather Service is current and due for renewal in July 2021 (i.e., applies to all of the County).
Citizen groups focused on emergency preparedness, environmental protection, etc.		Yes	
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)		Yes No (for water use)	
Public-private partnership initiatives addressing disaster-related issues		Yes	
How can capabilities be expanded and improved to reduce risk?			This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

Education and Outreach Capability Assessment for Las Vegas Paiute Tribe

PROGRAM / ORGANIZATION	Changes since 2018 Plan Update Yes or No	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Jurisdiction (County/City/Tribe) Website and Social Media (PIO/PAO Programming)		Yes	The Tribe maintains a website and a Facebook account. Currently, in the event of a disaster, Law Enforcement officer go door to door to notify residents of a hazard related events within the tribe. Law enforcement is currently working on methods to convey hazard mitigation and disaster related information to the public. The Golf Course makes notifications via a PA system to visitors about hazard related information. They can be used to support future mitigation activities
Firewise Communities certification		No	
Storm Ready certification		No	
Citizen groups focused on emergency preparedness, environmental protection, etc.		No	
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)		Yes	In the future, the Tribe has a PIO which is also the Tribal Chairperson. The Police Department uses a group text to notify residents related to public outreach to Tribal residents. The Tribe is looking to implement a vendor to help with the creation of a notification system for the Tribe in the event hazard in the area.
Public-private partnership initiatives addressing disaster-related issues		No	
How can capabilities be expanded and improved to reduce risk?			This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

Education and Outreach Capability Assessment for Moapa Band of Paiute Tribe

PROGRAM / ORGANIZATION	Changes since 2018 Plan Update Yes or No	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. <ul style="list-style-type: none"> • Could the program/organization help implement future mitigation activities?
Jurisdiction (County/City/Tribe) Website and Social Media (PIO/PAO Programming)			
Firewise Communities certification			
Storm Ready certification			
Citizen groups focused on emergency preparedness, environmental protection, etc.			
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)			
Public-private partnership initiatives addressing disaster-related issues			
How can capabilities be expanded and improved to reduce risk?			This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

Note: The [2015 Moapa Band of Paiutes Hazard Mitigation Plan \(April 2015\)](#), did not identify any education and outreach capabilities for the Tribe.

National Flood Insurance Program Participation

Floodplain management is the operation of a community program of measures for reducing flood damage. These measures take a variety of forms; and generally, include zoning, subdivision, or building requirements, and special-purpose floodplain ordinances. Clark County’s previous HMP (2018) indicates the National Flood Insurance Program’s aim is to reduce the impact of flooding to residential and nonresidential buildings. It does so by providing insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Overall, the program reduces the socio-economic impact of disasters by promoting the purchase and retention of Risk Insurance in general, and National Flood Insurance in particular.

Joining the NFIP requires the adoption of a floodplain management ordinance by jurisdictions and following established minimum standards set forth by FEMA and the State of Nevada when developing in the floodplain. These standards require that all new buildings and substantial improvements to existing buildings will be protected from damage by the 100-year flood, and that new floodplain development will not aggravate existing flood problems or increase damage to other properties. As a participant in the NFIP, communities also benefit from having Flood Insurance Rate Maps (FIRM) that map identified flood hazard areas and can be used to assess flood hazard risk, regulate construction practices and set flood insurance rates.

If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the Federal Government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods.

The County and four (4) of the six (6) incorporated jurisdictions currently participate in the NFIP. The following table summarizes their NFIP status and statistics.

Note: *The Tribal Nations of Las Vegas Paiute Tribe and Moapa Band of Paiutes currently do not participation in the NFIP Program.*

NFIP Status for Clark County

Jurisdiction	Comm ID	NFIP Entry Date	Map Date (DFIRM)	CRS Entry Data	# of Policies	Total Coverage	Total Written Premium + FPF	Floodplain Management Role
Clark County*	320003#	09/29/1989	11/16/2011	10/01/1992	740	\$248,822,700	\$603,802	Provides floodplain management for the Unincorporated County. Participant in the Clark County Flood Control District (CCFCD). Floodplain Management Contact: Layne Weber – wleber@clarkcountyNV.gov .

Jurisdiction	Comm ID	NFIP Entry Date	Map Date (DFIRM)	CRS Entry Data	# of Policies	Total Coverage	Total Written Premium + FPF	Floodplain Management Role
Boulder City	320004#	09/16/1981	11/16/2011	N/A	12	\$3,544,000	\$5,954	Provides in-house floodplain management. Participant of the CCFCD. Floodplain Management Contact: Jim Kean – Jkean@BCNV.org .
Henderson*	32005#	06/15/1982	11/16/2011	10/01/1991	199	\$66,119,100	\$107,188	Provides in-house floodplain management. Participant of the CCFCD. Floodplain Management Contact: Albert “Al” Jankowiak – Albert.Jankowiak@cityofhenderson.com .
Las Vegas*	325276#	09/30/1980	11/16/2011	10/01/1991	330	\$103,217,600	\$186,150	Provides in-house floodplain management. Participant of the CCFCD. Floodplain Management Contact: Peter Jackson – pjackson@LasVegasNevada.com .
Mesquite*	320035#	09/28/90	12/04/2007	10/01/2002	34	\$30,101,000	\$19,811	Provides in-house floodplain management. Participant of the CCFCD. Floodplain Management Contact: Travis Anderson – tanderson@mesquitenv.gov .
North Las Vegas*	320007#	01/16/1981	11/16/2011	10/01/1991	96	\$30,101,000	\$57,771	Provides in-house floodplain management. Participant of the CCFCD. Floodplain Management Contact: Mark Escobedo – escobedom@cityofnorthlasvegas.com .
<p>Notes: *Indicates CRS participating jurisdiction.</p> <p>Data Dictionary as mentioned in the NFIP Policy Information by State and Community document:</p> <ul style="list-style-type: none"> • Community ID: The 6-character community ID in which the policy resides. • # of Policies: The number of policies in force for a given state and combination of attributes. • Total Coverage: The total building and contents coverage for the policies in force. • Total Written Premium + FPF: This represents the sum of the premium and the FPF (federal policy fee) for the policies in force. <p>Data Sources: Participation – FEMA’s Community Status Book Report, Nevada, 03/01/2023. Policy statistics (current as of 03/01/2023) https://www.fema.gov/cis/NV.html NFIP Policy Information by State (Policy statistics current as of 1/31/2023) https://nfipservices.floodsmart.gov/sites/default/files/nfip_policy-information-by-state_20230131.xlsx</p>								

Building codes and inspections provide local government with the means to maintain county structures that are resilient to natural hazards like flooding. Clark County and its participating jurisdictions have adopted the following building constructions codes within the County. These codes were adopted and amended by the State of Nevada Department of Administration State Public Works Division (https://publicworks.nv.gov/Services/Permitting_Code_Enforcement/Permitting_Code_Enforcement/).

Continued compliance with NFIP requirements within the planning area is listed for each jurisdiction below:

Clark County (including Clark County Unincorporated area)

County Ordinance [Chapter 3.16 Flood Control District](#) and [Title 24 – Water, Sewage and other Utilities, Chapter 24.40.10](#). The County follows Clark County Regional Flood Control District's [Uniform Regulations for Control Drainage](#) effective September 30, 2022. Also, the Clark County Regional Flood Control District ensures compliance with [Hydrologic Criteria and Drainage Design Manual \(HCDDM\)](#) to produce flood resistant land development projects and effective flood control infrastructure. The focus areas of the HCDDM can be found here on the [Regional Flood Control District website](#). For more information related to floodplain management contact Layne Weber at wleber@clarkcountynv.gov.

Boulder City

City Code [Flood Hazard Reduction ordinance – Title 11, Chapter 40](#). Also, Boulder City has adopted the Clark County Regional Flood Control District Rules, Regulations and Constructions Standards effective September 30, 2022. A copy of the Uniform Regulations Reference Document for CCRFD can be found [here](#). For more information related to floodplain management in Boulder City, NV, contact Jim Kean at jkean@bcnv.org.

Henderson

City Code Flood Control and Control of Drainage – [Title 15 Building and Construction, Chapter 15.50](#). Also, the City of Henderson follows these regulations by Clark County Regional Flood District related to drainage and drainage design:

Title 15.50.010 – [Uniform Regulations for Control Drainage](#), effective September 30, 2022

Title 19.14.6 – [Hydrologic Criteria and Drainage Design Manual](#), as of September 1999

For more information related to floodplain management in Henderson, NV, contact Al Jankowiak at Albert.Jankowiak@cityofhenderson.com.

Las Vegas

City Code [Title 20- Flood Control](#). Also, the City of Las Vegas follows the Clark County Regional Flood Control District Title 15.50.010 – [Uniform Regulations for Control Drainage](#), effective September 30, 2022. For more information related to floodplain management in Las Vegas, NV, contact pjackson@LasVegasNevada.com.

Mesquite

City Code [Title 8 - Flood Control Ordinance](#). The City of Mesquite also follow the Clark County

Flood Control Districts [Uniform Regulation for Control Drainage](#) effective September 30, 2022. Also, the following ordinances have passed regarding Flood Control and Draining within the City of Mesquite:

City Ordinance 160: an ordinance of the city of Mesquite, Nevada, amending the Mesquite Municipal Code, Title 8, Chapter 10, Section 10-080 (A) to conform to action of City Council and Section 10-040(A) deleting typographical errors in the original ordinance not consistent with the adopted draining regulations and all matters relating thereto.

City Ordinance #40: An ordinance amending ordinance #39, dated July, Mesquite Municipal Code Chapter 3, Title 1, Enacting Uniform Regulations for the control of drainage, wording in Section 10 regarding flood hazard reduction, defining and identifying floodways, and certain other word changes throughout, and any other matters properly related thereto.

City Ordinance #62: An ordinance of the City of Mesquite, repealing Ordinance #39 Uniform Regulations for control of drainage and all amendments thereto, repealing Mesquite Municipal Code Title 3 in its entirety, and adopting the following set of Uniform Regulations for the Control of Drainage as mandated by NRS 543.595(1), governing the subdivision of land, parcel maps, division of land and any new development and/or substantial improvement of land in order to be eligible to participate in the regional fund for control of floods, and any other matters relating thereto.

City Ordinance #292: An ordinance amending Mesquite Municipal code, Title 8, Chapter 1, Section 9 thereof entitled “definitions” and specifically amending the revision of the definitions entitled “Base Flood Elevation”; amending section 10.020 thereof entitled “areas of Special Flood Hazard” and specifically amending the subsections thereof entitled “Floodway Fringe: and “Areas of Shallow Flooding”; amending section 10.100 thereof entitled “Hazard Mitigation” and specifically amending the subsections thereof entitled “General Standards” (Elevation and Floodproofing) and “Specific Standards” (Residential Construction, Non-Residential Construction and Manufactured Homes); and other matters properly related thereto.

City Ordinance #273: An ordinance amending Mesquite Municipal Code, Title 8, Chapter 1, Part 1, Sub Part B, Section 10.020, entitled “Areas of Special Flood Hazard” and amending Mesquite Municipal Code, Title 9, Chapter 7, Article K, Section 9, Subsection K93) entitled “Duties of Operator” and Subsection M entitled “Prohibited Activities;” incorporating conditions related to recreational vehicles required to be adopted by the Federal Emergency Management Agency (FEMA).

City Ordinance #472: An ordinance of the City Council of the City of Mesquite, Nevada, amending Title 8 of the Mesquite Municipal Code, entitled “Drainage Control Regulation: by amending Section 8: “Definitions;” Section 10.020: Areas of Special Flood Hazard;” Section 20: Effective Date”; Section 32: “Definitions”; Section 34: Permit Requirements”; and other matters properly related thereto.

City Ordinance #510: An ordinance amending City of Mesquite Code, Title 8 Flood Control Ordinance, replacing section 8-1-Part II: Excavation and Grading with a New Section 8-2 Excavation and Grading Standards, and to provide for other matters properly related thereto.

For more information related to floodplain management for Mesquite, NV, contact Travis Anderson at tanderson@mesquitenv.gov.

North Las Vegas

City Code [Chapter 8.50 – Stormwater Regulations](#). Also, the City of North Las Vegas follows Clark County Regional Flood Control District’s [Uniform Regulations for Control Drainage](#) effective September 30, 2022. For more information related to floodplain management in the North Las Vegas, NV, contact Mark Escobedo at escobedom@cityofnorthlasvegas.com. *Note: Information related to Repetitive Loss properties in the planning area can be found in Flooding Hazard profile of this MJHMP update under – [Repetitive](#)*

[Loss Structure.](#)

Implementation and Enforcement of Local Floodplain Management Regulations to Regulate and Permit Development in SFHAs

The Clark County Regional Flood Control District (CCRFCD) provided the following guidance related to the implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs in the planing area. The CCRFCD stated the following:

All development in Clark County needs to comply with the [Uniform Regulations for the Control of Drainage \(UREgs\)](#) and the [Hydrologic Criteria and Drainage Design Manual \(HCDDM\)](#). Both the UREgs and the HCDDM are managed by CCRFCD and adopted by the member agencies (Clark County and cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas). The member agencies are responsible for permitting, but all development must comply each of these documents. In all cases the criteria in these documents are either the same or more stringent than FEMA's National Flood Insurance Regulations.

Developments in the SFHA are reviewed by the local entity and CCRFCD for compliance with the UREgs and the HCDDM prior to the issuance of grading or construction permits.

How Compliance of Substantial Improvement/Substantial Damage Provision are Achieved?

The Clark County Regional Flood Control District (CCRFCD) reviews all plans related to land development to ensure compliance with NFIP and local floodplain regulations can be found on the CCRFCD website under "[Land Development](#)." This compliance includes construction adjacent to and within the floodplain with the County. This process meets the minimum federal regulations set forth by the NFIP. CCRFCD website mentions that the submission of land development can be submitted electronically. Also, related to the implementation of the substantial improvement/ substantial damage provisions of their floodplain management regulations after an event. The Clark County Regional Flood Control District is also responsible for the planning and funding of major flood control infrastructure in Clark County. The funding includes maintenance and repair of drainage facilities on our flood control master plan update (MPU), but does not extend to other damages in the community. Essentially each jurisdiction (Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas) is responsible for post-event damages in the community, which is generally a partnership between their Public Works and Emergency Management departments. The [Clark County Regional Flood Control District](#) seeks to effective regulations, criterial and programs that protect the environment and are sound storm water management tools and enhance public awareness of flood safety and other District programs by focusing on the following strategies:

1. Assist customers to increase their understanding of flood control rules, regulations, and the National Flood Insurance Program (NFIP).
2. Ensure compliance with the Uniform Regulations for Control of Drainage for all projects that have regional significance.
3. Provide a sound basis for expenditure of private, public, and regional monies.
4. Utilize the best available information in the planning and design of private and public infrastructure.
5. Promote programs that qualify communities to receive credits under the NFIP's Community Rating System (CRS).

6. Cooperate with entities to provide the Federal Emergency Management Agency (FEMA) with information to facilitate publication of accurate flood insurance rate maps.
7. Ensure compliance with the District's Environmental Impact Statement (EIS).
8. Ensure compliance with the Las Vegas Valley National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit issued by the Nevada Department of Environmental Protection.
9. Ensure compliance with the minimum requirements of the District's Hydrologic Criteria and Draining Design Manual (HCDDM) to produce flood resistant and land development and effective flood control infrastructure.
10. Participate in multi-agency environmental protection efforts.
11. Collaborate with the entities to develop Emergency Action Plans that provide communities with a safety plan during flood control emergencies.

For more information about the land development review process and substantial improvements and substantial damage provisions, can be found here: <https://www.regionalflood.org/programs-services/projects-engineering/land-development-review-status>

Mitigation Actions/Projects and Implementation Strategy

The following section contains the status of mitigation actions from the previous MJHMP. It also provides for ongoing mitigation actions from the 2018 plan and the new mitigation action for this MJHMP.

Previous Mitigation Actions / Projects Assessment

Table 139: FEMA Regulation Checklist: Plan Review and Revision

FEMA Regulation Checklist: Plan Review and Revision	
Progress in Local Mitigation Efforts	
44 CFR § 201.6(c)(d)(3)	"A local jurisdiction must review and revise its plan to reflect . . . progress in local mitigation efforts . . ."
Elements	
D2.	Was the Plan revised to reflect progress in local mitigation efforts? 44 CFR § 201.6(d)(3).

Data Source: FEMA, Local Mitigation Plan Review Tool, March 2013.

The 2018 MJHMP contained mitigation actions for the County and each participating jurisdiction. Many of the mitigation actions were completed or carried out to some degree or are considered ongoing. Some of the mitigation actions were duplicative, some were better categorized as emergency preparedness or recovery activities, and others were either not addressed during the time period or were not feasible to accomplish. The tables below describe the current status of mitigation action from the previous plan.

Previous Mitigation Plans Accomplishments – Completed Projects

Previous Plan's Mitigation Accomplishments, Clark County, NV

Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Structural Emphasis (in 2018 MHJMP)	Cost Estimate	Estimated Timeline	Potential Funding Source	Status
Flood Projects through the CCRFCD	Las Vegas Wash - Sloan Channel to Stewart Avenue and Flamingo Wash below Nellis Boulevard - North Reach in LV Wash from Nellis to Stewart consisting of 7200 LF of concrete channel.	Flood	CCPW/ CCRFCD	Existing	\$20,440,260	1-5 years	CCRFCD	Substantial Completion 12/2017
Flood Projects through the CCRFCD	Duck Creek at Dean Martin - Triple barrel 14' X 6' RCBC	Flood	CCPW/ CCRFCD	Existing	\$3,087,867	1-5 years	CCRFCD	Substantial Completion 02/2018
Flood Projects through the CCRFCD	Muddy River Logandale Levee - Approximately 3000 LF of earthen levee, with concrete slope protection	Flood	CCPW/ CCRFCD	Existing	\$6,731,520	1-5 years	CCRFCD	Substantial Completion 02/2018
Flood Projects through the CCRFCD	Duck Creek Las Vegas Boulevard - Approximately 6700 LF of RCBC ranging from 7' X 6' to 20' X 8'	Flood	CCPW/ CCRFCD	Existing	\$5,921,331	1-5 years	CCRFCD	Substantial Completion 06/2018
Flood Projects through the CCRFCD	Flamingo Wash, Eastern Avenue - Add addition RCBC cell at Eastern and minor channel improvements to approach	Flood	CCPW/ CCRFCD	Existing	\$1,313,020	1-5 years	CCRFCD	Substantial Completion 10/2018
Flood Projects through the CCRFCD	Searchlight - South, Encinitas Street Storm Drain - 2,040 LF of 36" to 72" RCP	Flood	CCPW/ CCRFCD	Existing	\$2,001,892	1-5 years	CCRFCD	Substantial Completion 10/2019
Flood Projects through the CCRFCD	SR 163 at Casino Drive, Laughlin - 84" RCP and 8'x5' RCB from the CO River to existing RCB under Casino Drive, transition and junction structures	Flood	CCPW/ CCRFCD	Existing	\$1,790,675	1-5 years	CCRFCD	Substantial Completion 01/2020
Flood Projects through the CCRFCD	Duck Creek Haven Street - App. 2,800 LF RCB within Haven St from Cactus to Pyle	Flood	CCPW/ CCRFCD	Existing	\$3,037,061	1-5 years	CCRFCD	Substantial Completion 04/2021
Flood Projects through the	Craig Rd SD - El Capitan to Ft Apache - Approximately 3,000 LF 54" RCP to 6'x4' RCB from Ft	Flood	CCPW/ CCRFCD	Existing	\$2,539,801	1-5 years	CCRFCD	Substantial Completion 12/2021

Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Structural Emphasis (in 2018 MHJMP)	Cost Estimate	Estimated Timeline	Potential Funding Source	Status
CCRFCD	Apache to GONO 0181							
Flood Projects through the CCRFCD	Duck Creek Jones Blvd - Phase 2 - App 4,700 LF RCB within Jones Blvd from Irvin to Pyle	Flood	CCPW/ CCRFCD	Existing	\$10,256,050	1-5 years	CCRFCD	Substantial Completion 06/2022
Flood Projects through the CCRFCD	Silverado Ranch Detention Basin and Outfall - 170 ac-ft detention basin, 1170 LF of 14' X 8' RCBC, 670 LF of 72" outlet pipe	Flood	CCPW/ CCRFCD	Existing	\$19,384,238	1-5 years	CCRFCD	Substantial Completion 12/2022
Flood Projects through the CCRFCD	Las Vegas Wash - Sloan Channel to Stewart Avenue and Flamingo Wash below Nellis Boulevard - North Reach in LV Wash from Nellis to Stewart consisting of 7200 LF of concrete channel.	Flood	CCPW/ CCRFCD	Existing	\$20,440,260	1-5 years	CCRFCD	Substantial Completion 12/2017
Emergency Power	Provide additional emergency power, such as a generator equipment, for new and existing critical facilities to operate continuously but cannot do so for long durations of power outage. Provide additional emergency power (generator) to Clark County Multi-Agency Coordination Center/EOC.	Earthquake, Flood, Climate Change, Wildfire	CCFD (Office of Emergency Management & Homeland Security)	Existing	N/A	2018-2019	PDM, other applicable federal programs	Completed in 202-2021

Previous Plan’s Mitigation Accomplishments, Boulder City, NV

Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Structural Emphasis (in 2018 MHJMP)	Cost Estimate	Estimated Timeline	Potential Funding Source	Status
Flood Control	Alleviate the damage associated with flooding through new and reinforced flood control projects, including storm drains, culverts, drop inlets, channels, and detention basins. Hemenway Watershed Improvements Phase IIB – Hemenway channel improvements to meet flood control freeboard requirements, improve access for maintenance, and reduce erosion around existing facilities.	Flood, Dam Failure	Boulder City Public Works Department	New	\$5.5M	1-5 years	FEMA Grants; Potential CIP Funding	Completed. <u>Project Update:</u> Since the last plan update (2018), the Hemenway Watershed Improvements Phase IIB – Hemenway channel improvements to meet flood control freeboard requirements, improve access for maintenance, and reduce erosion around existing facilities maintenance and freeboard extensions was completed in 2022.
Flood Control	Alleviate the damage associated with flooding through new and reinforced flood control projects, including storm drains, culverts, drop inlets, channels, and detention basins. North Railroad Conveyance Phase 2 – Improvements to install a channel around the Veterans Home to convey flows from the drainage basin to the North Railroad Detention Basin. The project will also increase the capacity of the North Railroad Detention Basin to accommodate additional flows.	Flood, Dam Failure	Boulder City Public Works Department	New	\$2.5M	1-5 years	FEMA Grants; Potential CIP Funding	Complete. <u>Project Update:</u> Since the last plan update (2018), North Railroad Conveyance Phase 2 – Improvements to install a channel around the Veterans Home to convey flows from the drainage basin to the North Railroad Detention Basin. The project will also increase the capacity of the

Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Structural Emphasis (in 2018 MHJMP)	Cost Estimate	Estimated Timeline	Potential Funding Source	Status
								North Railroad Detention Basin to accommodate additional flow was completed in 2019.

Previous Plan’s Mitigation Accomplishments, Mesquite, NV

Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Structural Emphasis (in 2018 MHJMP)	Cost Estimate	Estimated Timeline	Potential Funding Source	Status
Emergency Power	Provide additional emergency power, such as a generator equipment, for new and existing critical facilities to operate continuously but cannot do so for long durations of power outage. Generator power needed a primary shelter (City of Mesquite Fire & Rescue)	Earthquake, Flood, Climate Change, Wildfire	City of Mesquite Fire and Rescue	New/Proposed	\$280,000	1-5 years	FEMA Grant (PDM)	Completed
Mesquite Town Wash, Abbott Wash	Assessment of wash, inspection, cleaning and reshaping, vegetation control, species survey and removal, erosion control	Flood	City of Mesquite Public Works	Existing	\$300,000	Ongoing	City Budget, FDA, NDA	Completed

Previous Plan’s Mitigation Accomplishments, Moapa Band of Paiute

Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Structural Emphasis (in 2018 MHJMP)	Cost Estimate	Estimated Timeline	Potential Funding Source	Status
Flood Control	Alleviate the damage associated with flooding through new and reinforced flood control projects including storm drains, culverts, drop inlets, channels, and detention basins	Flood	Moapa Band of Paiutes Business Department	New/Proposed	\$2 Million	1-5 years	FEMA Grant	Completed. This mitigation project was a priority of Tribe during the last plan update period and was completed in 2020. Link to completed project: https://www.fema.gov/disaster-federal-register-notice/reservation-road-lincoln-road-flood-control-project-moapa-band

Previous Mitigation Plan Projects – Deferred Projects

Deferred Mitigation Projects from Clark County MJHMP 2018 – Clark County and Unincorporated Areas

Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Structural Emphasis (in 2018 MHJMP)	Cost Estimate	Estimated Timeline	Potential Funding Source	Status
Flood Projects through the CCRFCD	Reduce the threat of flood and flash flooding through development of flooding facilities and public awareness.	Flooding	CCRFCD	Existing	N/A	1-5 years	N/A	Deferred Project from the 2018 plan. This project was one of the ongoing projects listed in the previous MJHMP. For the 2024 plan update, this project will be deferred and not carried over, due to the actual project being divided among the jurisdictions during the last plan cycle.
HMP Integration	Continue to integrate the Clark County HMP, in particular the hazard analysis and mitigation strategy sections, into local planning documents, including general plans, emergency operations plan, and capital improvement plans. 2017 Clark County Comprehensive Master Plan – Safety Element and the 2017 State of Nevada and Las Vegas Urban Area THIRA and SPR Report acknowledge the 2012 HMP.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County Departments	Existing	N/A	N/A	N/A	Deferred Project from the 2018 Plan due to lack of staff, time, and resources. For the 2024 plan update, this project will be included as a new project named "Annual Review and Update of Hazard Mitigation Plan".
Drought Response Measures	Reduce the threat of flood and flash flooding through development of flooding facilities and public	Drought	SNWA	Existing	N/A	N/A	N/A	Deferred Project from the 2018. The project was included in the

Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Structural Emphasis (in 2018 MHJMP)	Cost Estimate	Estimated Timeline	Potential Funding Source	Status
	awareness.							2018 MJHMP Updated but during this planning process due to the responsible party for this project not able to provide additional information to include the project into this plan update.
Turf Limits Program	Turf limits restrict or prohibit the amount of grass to be planted at new properties. The restrictions prohibiting types of grass that can be planted apply to all property owners.	Drought	SWNA	Existing	N/A	N/A	N/A	Deferred Project from the 22018. The project was included in the 2018 MJHMP update. Still, during this planning process, the responsible party was transferred from SWNA to the City of North Las Vegas for the upcoming planning cycle. For more details about this project, refer to the North Las Vegas Mitigation Projects/Actions – NLV8.

Deferred Mitigation Projects from Clark County MJHMP 2018 – Clark County Water Reclamation District

Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Structural Emphasis (in 2018 MHJMP)	Cost Estimate	Estimated Timeline	Potential Funding Source	Status
Laughlin Water Resource Facility	Rehabilitate systems, including emergency storage pond.	Flooding	Clark County Water Reclamation District	Existing	N/A	N/A	N/A	Deferred Project from the 2018 MJHMP and was deferred for the plan update due to lack of staff, time, and resources.

Deferred Mitigation Projects from Clark County MJHMP 2018 – Henderson

Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Structural Emphasis (in 2018 MHJMP)	Cost Estimate	Estimated Timeline	Potential Funding Source	Status
Regional Flood Control Maintenance Work Program	Annual program to inspect and maintain Regional Flood Control District facilities to ensure the system conveys flows safely and efficiently. Funded by the Clark County Regional Flood Control District.	Flood, Dam Failure	City of Henderson	Existing	N/A	N/A	Funded by the Clark County Regional Flood Control District.	Deferred Project from the 2018 MJHMP and was deferred for the plan update due to lack of staff, time, and resources.
Drop Inlet Inspection and Maintenance Program	Annual program to inspect and maintain drop inlets to ensure the system conveys flows safely and efficiently.	Flood	City of Henderson	Existing	N/A	N/A	N/A	Deferred Project from the 2018 MJHMP and was deferred for the plan update due to lack of staff, time, and resources.
Turf Limits Program	Turf limits restrict or prohibit the amount of grass to be planted at new properties. The restrictions prohibiting types of grass that can be planted apply to all property owners.	Drought	City of Henderson	Existing	N/A	N/A	N/A	Deferred Project from the 2018 MJHMP and was deferred for the plan update due to lack of staff, time, and resources.
Emergency Power	Provide additional emergency power, such as generator equipment, for new and existing critical facilities to operate continuously but cannot do so for long durations of power outage. Acquire and install permanent emergency generators and appropriate connections for the permanent generators at Downtown and Multi-Generational Recreation Centers. Acquire one (1) portable emergency generator and acquire and install appropriate connections for the portable emergency generator at Heritage Park, Whitney Ranch and Heritage Aquatics Recreation Centers. These centers will potentially be used as shelter locations.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	City of Henderson Public Works Parks and Recreation	New	N/A	N/A	FEMA grant funding	Deferred Project from the 2018 MJHMP and was deferred for the plan update due to lack of staff, time, and resources.

Mitigation Projects

The Clark County 2018 MJHMP update contained a risk assessment of identified hazards for the County and participating municipalities, and a mitigation strategy to address these hazards' risk and vulnerability. Accordingly, an open discussion took place with the MPSC during the planning phase to determine the current mitigation action/priorities to include in this plan update. Among them, and considered a key part of the planning process, Clark CCOEM solicited participation from the County's participating jurisdictions and stakeholders to help identify mitigation activities/goals/projects for plan inclusion. Typically, mitigation activities/goals/projects focus on strengthening infrastructure and facilities. Clark County's cities and stakeholder's participation in the activities related to the mitigation strategy allowed for CCOEM to learn more about each jurisdictions' needs, facilities, and infrastructure. A Clark County mitigation planning steering committee meeting in November 2022, focused on the Mitigation Strategy Update. Facilitated by CCOEM and CONSTANT Associates, Clark County's steering committee members were provided with information on how to offer valuable insight related to the hazards within Clark County. The Clark County MPSC members learned how CONSTANT Associates would assist them in providing input to update the mitigation projects from the previous plan as well as how and when to offer any new/proposed projects to include in the current HMP update.

Following this meeting, representatives from CONSTANT Associates worked with CCOEM and the County's participating jurisdictions to provide updates relevant to previous mitigation projects (2018), including the current status (completed, deferred, or carryover). The MPSC was also tasked with identifying any new mitigation projects for this plan update and completing a new mitigation action worksheet created specifically for Clark County. During the planning process, Clark County was able to update these worksheets with its mitigation projects from the 2018 plan update along with the new/proposed projects for the next five-year plan cycle.

The list of mitigation projects and actions selected for this plan update is based upon the potential to reduce risk to life and property with an emphasis on new and existing infrastructure, ease of implementation, community and agency support, consistency with local jurisdictions' plans and capabilities, available funding, vulnerability, and total risk. As identified in the previous MJHMP (2018), the County and its participating municipalities continue to take a multi-jurisdictional approach for this plan update as indicated in Clark County's previous HMP plan updates in 2012. The goals and objectives for the County and its participating jurisdictions will continue to no longer differentiate from that of the County to facilitate a more thorough and standardized approach to mitigation planning.

This plan update includes 30 "carryover" projects from Clark County's previous MJHMP (2018), as they are still relevant, in progress, or ongoing. Also, the hazards, mitigation goals, objectives, and measures that were developed jointly between Clark County and the Cities of Boulder City, NV; Henderson, NV; Las Vegas, NV, Mesquite, NV, and North Las Vegas, NV along with The Tribal Governments of the Las Vegas Paiute Tribe and Moapa Band of Paiutes, (in the previous plan - 2018) have been carried over to this plan update due to being deferred because of a lack of funding and/or resources to complete the mitigation projects/actions during the last five-year cycle.

Clark County and participating jurisdictions have completed 17 mitigation projects and deferred seven (7) since the last plan was approved in August 2018. The following tables describe those completed and deferred mitigation projects by jurisdiction.

The final mitigation action plans identify desired mitigation actions for each participating jurisdiction pending future funding – they are not obligations or funding commitments. For further information on evaluation criteria for the proposed and carried mitigation projects/actions, please see [Mitigation Project Evaluation & Prioritization](#). The full list of mitigation projects, their descriptions, and prioritization per jurisdiction and stakeholder can be found in [Appendix H – Mitigation Project Prioritization](#).

Note: Any and all mitigation projects and actions will be reviewed and enhanced as a part of the MJHMP plan maintenance cycle to ensure vulnerable populations are included in the MJHMP update.

Note: Some projects and actions mitigation risk and vulnerability to multiple hazards. Some of these projects and actions list participating jurisdictions that are only at risk from one or a few of the mitigated hazards. For instance, the HMP Integration project which is for the County and all participating jurisdictions to review the hazard mitigation plan at least annually to review the hazards addressed in the plan and ensure the implementation of the projects addressed in the 2024 plan update. This project addresses all hazards including climate change, dam failure, drought, earthquake, excessive/extreme heat, flooding, fissures & subsidence, severe weather, wildfire, hazardous materials, infectious disease, infestation, and terrorism.

Mitigation Projects/Activity Summary – Clark County

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Flood Projects through the CCRFCD: Las Vegas Wash - Sloan Channel to Stewart Avenue and Flamingo Wash below Nellis Boulevard - North Reach in LV Wash from Nellis to Stewart consisting of 7200 LF of concrete channel.	Flood	CCPW/ CCRFCD	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Flood Projects through the CCRFCD: Duck Creek at Dean Martin - Triple barrel 14' X 6' RCBC	Flood	CCPW/ CCRFCD	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Flood Projects through the CCRFCD: Muddy River Logandale Levee - Approximately 3000 LF of earthen levee, with concrete slope protection	Flood	CCPW/ CCRFCD	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Flood Projects through the CCRFCD: Duck Creek Las Vegas Boulevard - Approximately 6700 LF of RCBC ranging from 7' X 6' to 20' X 8'	Flood	CCPW/ CCRFCD	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Flood Projects through the CCRFCD: Flamingo Wash, Eastern Avenue - Add addition RCBC cell at Eastern and minor channel improvements to approach	Flood	CCPW/ CCRFCD	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Flood Projects through the CCRFCD: Searchlight - South, Encinitas Street Storm Drain - 2,040 LF of 36" to 72" RCP	Flood	CCPW/ CCRFCD	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Flood Projects through the CCRFCD: SR 163 at Casino Drive, Laughlin - 84" RCP and 8'x5' RCB from the CO River to existing RCB under Casino Drive, transition and junction structures	Flood	CCPW/ CCRFCD	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Duck Creek Haven Street - App. 2,800 LF RCB within Haven St from Cactus to Pyle	Flood	CCPW/ CCRFCD	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Flood Projects through the CCRFCD: Craig Rd SD - El Capitan to Ft Apache - Approximately 3,000 LF 54" RCP to 6'x4' RCB from Ft Apache to GONO 0181	Flood	CCPW/ CCRFCD	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Flood Projects through the CCRFCD: Duck Creek Jones Blvd - Phase 2 - App 4,700 LF RCB within Jones Blvd from Irvin to Pyle	Flood	CCPW/ CCRFCD	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Flood Projects through the CCRFCD: Silverado Ranch Detention Basin and Outfall - 170 ac-ft detention basin, 1170 LF of 14' X 8' RCBC, 670 LF of 72" outlet pipe	Flood	CCPW/ CCRFCD	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Flood Projects through the CCRFCDL Las Vegas Wash - Sloan Channel to Stewart Avenue and Flamingo Wash below Nellis Boulevard - North Reach in LV Wash from Nellis to Stewart consisting of 7200 LF of concrete channel.	Flood	CCPW/ CCRFCD	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Emergency Power: Provide additional emergency power (generator) to Clark County Multi-Agency Coordination Center/EOC	Earthquake, Flood, Climate Change, Wildfire	CCFD (Office of Emergency Management & Homeland Security)	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Flood Projects through the CCRFCD: Reduce the threat of flood and flash flooding through development of flooding facilities and public awareness	Flood	CCRFCD	Removed. This project was deferred, due to the actual project being divided among the jurisdictions during the last plan cycle.

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
HMP Integration	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County Departments	Removed. This project was deferred from the 2018 plan update. However, the County kept this project and will be moved to the 2024 plan update as "Annual Review and Update of Hazard Mitigation Plan".
Drought Response Measures	Drought	SNWA	Removed. The project was included in the 2018 MJHMP Updated but during this planning process due to the responsible party for this project not able to provide additional information to include the project into this plan update.
Turf Limits Program	Drought	SWNA	Removed from the Clark County project list there its deferred for this plan update. However, this project will move to the 2024 plan update cycle, because the responsible party was transferred from SWNA to the City of North Las Vegas for the upcoming planning cycle. For more details about this project, refer to the North Las Vegas Mitigation Projects/Actions – NLV8.
Implementing Benchmarking Ordinance with Energy/Water Assistance for Building	Drought	Clark County Environment and Sustainability	New project for 2024 plan update
Efficiency Program Stacking Model	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County Environment and Sustainability	New project for 2024 plan update
Develop and implement a regional education program on topics like resilience and sustainability	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease,	Clark County Environment and Sustainability	New project for 2024 plan update

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
	Hazardous Materials, and Terrorism)		
State Renewable Portfolio Standard Advocacy Initiatives	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County Environment and Sustainability	New project for 2024 plan update
Expansion of Community Solar Program	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County Environment and Sustainability	New project for 2024 plan update
Community Resilience Hubs	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County Environment and Sustainability	New project for 2024 plan update
Community Wildfire Protection Plans	Wildfire	Clark County-Rural Fire	New project for 2024 plan update
Homeowner Education and Outreach	Wildfire	Fire, Public works, GIS, Parks Department	New Project for 2024 plan update
Fire Breaks Near Public Lands	Wildfire	Fire, Public works, GIS, Parks Department	New project for 2024 plan update
Generator Installation, Searchlight FS 75	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County RPM	New project for 2024 plan update
Generator Installation, Indian Springs	All Hazards (Climate Change,	Clark County RPM	New project for 2024 plan update

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
FS 83	Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)		
Bunkerville Generator Replacement	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County RPM	New project for 2024 plan update
Phase II-Unreinforced Masonry Structure Survey	Earthquake	Clark County Building Department	Keep, moved to 2024 plan update
Research into earthquake hazard	Earthquake	UNR and Nevada Earthquake Council	Keep, moved to 2024 plan update
Wildfire Awareness	Wildfire	Clark County Fire	Keep, moved to 2024 plan update
Flood Projects through the CCRFCD - Blue Diamond Channel 02, Decatur-Le Baron to Richma	Flood	Clark County Public Works/Clark County Regional Flood Control District (CCRFCD)	Keep, moved to 2024 plan update
Flood Projects through the CCRFCD -Wagon Trail Channel, Sunset Road to Teco Ave	Flood	Clark County Public Works/Clark County Regional Flood Control District (CCRFCD)	Keep, moved to 2024 plan update
Flood Projects through the CCRFCD - Blue Diamond Wash, Arville Street	Flood	Clark County Public Works/Clark County Regional Flood Control District (CCRFCD)	Keep, moved to 2024 plan update
Flood Projects through the CCRFCD- Harry Reid Airport Peaking Basin - East Outfall	Flood	Clark County Public Works/Clark County Regional Flood Control District (CCRFCD)	Keep, moved to 2024 plan update
Flood Projects through the CCRFCD - Fairgrounds Detention Basin and outfall, Moapa Valley	Flood	Clark County Public Works/Clark County Regional Flood Control District	Keep, moved to 2024 plan update

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
		(CCRFCD)	
National Cohesive Wildland Fire Management (also, known as Mosquito Abatement Program from 2018 CCMJHMP Update)	Wildfire	CCFD - Rural Fire Division	Keep, moved to 2024 plan update
Vector Control's 2023 Aquatic Insect Suppression Program (also, known as Mosquito Abatement Program from 2018 CCMJHMP Update)	Infectious Disease, Infestation	Clark County Public Works (Vector Control)/ Southern Nevada Health District	Keep, moved to 2024 plan update
Flamingo Wash, Maryland Parkway to Palos Verdes Street	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	New project for 2024 plan update
Jim McGaughey Detention Basin, Collection & Outfall	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	New project for 2024 plan update
Las Vegas Wash -Branch 02 - Monson Channel - Jimmy Durante to Boulder Hwy	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	New project for 2024 plan update
Orchard Detention Basin Collector - Charleston to Linden	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	New project for 2024 plan update
Goodsprings Phase I	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	New project for 2024 plan update
Blue Diamond Railroad Channel	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	New project for 2024 plan update

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Windmill Wash Detention Basin Expansion and Jess Waite Levee Facilities	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	New project for 2024 plan update
SR163 at Casino Drive - Phase 2 Sediment Basin	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	New project for 2024 plan update
Airport Channel - Naples	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	New project for 2024 plan update
Duck Creek/Blue Diamond, Bermuda Road to Las Vegas Blvd	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	New project for 2024 plan update
Blue Diamond Channel Amigo to Haven	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	New project for 2024 plan update
Flamingo, Cimarron Branch - Russell Road to Patrick Lane	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	New project for 2024 plan update
Hiko Springs Wash Detention Basin Expansion	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	New project for 2024 plan update
Flamingo Wash, UPRR to Hotel Rio Drive	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	New project for 2024 plan update

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Sunset Park - Duck Creek Wash to Eastern Avenue	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFC	New project for 2024 plan update
Annual Review and Update of Hazard Mitigation Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	New project for 2024 plan update
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	New project for 2024 plan update
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	New project for 2024 plan update
Annual Review and Update of Local Emergency Operations Plan (LEOP)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; Clark County Local Emergency Planning Commission (LEPC); All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water	New project for 2024 plan update

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
		Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	
Animal Evacuation Measures Public Awareness Campaign	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County PIO/Communication Office; Clark County Animal Protection Service	New project for 2024 plan update
Procure Emergency Evacuation Trailer	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County Administrative Services	New project for 2024 plan update
Temporary Sheltering Needs for Animal Services	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County Administrative Services	New project for 2024 plan update

Mitigation Projects/Activity Summary – Clark County Water Reclamation District

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Laughlin Water Resource Facility	Flood	Clark County Water Reclamation District	Removed. This project was deferred from the 2018 MJHMP and will be deferred for this 2024 MJHMP plan update due to lack of staff time and resources.
Emergency Power	Earthquake, Flood, Climate Change, Wildfire	Clark County Water Reclamation District	Keep, moved to 2024 plan update
Mosquito Abatement Program	Infectious Disease and Infestation	Clark County Water Reclamation District	Keep, moved to 2024 plan update
Green Energy Projects	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County Water Reclamation District	New project for 2024 plan update
Surge Pond Overflow Protection	Flood	Clark County Water Reclamation District	New project for 2024 plan update
Annual Review and Update of Hazard Mitigation Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District , and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District , and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat,	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson,	New project for 2024 plan update

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
	Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District , and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	
Annual Review and Update of Local Emergency Operations Plan (LEOP)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District , and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update

Mitigation Projects/Activity Summary – Boulder City

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Flood Control – Improvements Phase IIB – Hemenway Channel Improvements	Flood, Dam Failure	Boulder City	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Flood Control – North Railroad Conveyance Phase 2 Improvements	Flood, Dam Failure	Boulder City	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Implement floodplain and stream restoration projects	Flood	Boulder City	Keep, moved to 2024 plan update
Maximize Maintenance Funding for Existing Flood Control Facilities	Flood	Boulder City	Keep, moved to 2024 plan update
Continue Water Conservation Measures	Drought	Boulder City	Keep, moved to 2024 plan update
Flood Control Improvements	Flooding	Boulder City	New project for 2024 plan update
Emergency Power	Earthquake, Flood, Climate Change, Wildfire	Boulder City	Keep, moved to 2024 plan update
Implement floodplain and stream restoration projects	Flood	Boulder City	Keep, moved to 2024 plan update
Maximize Maintenance Funding for Existing Flood Control Facilities	Flood	Boulder City	Keep, moved to 2024 plan update
Annual Review and Update of Hazard Mitigation Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood,	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City , Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County	New project for 2024 plan update

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
	Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City , Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City , Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update
Annual Review and Update of Local Emergency Operations Plan (LEOP)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City , Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update

Mitigation Projects/Activity Summary – Henderson

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Regional Flood Control Maintenance Work Program	Flood, Dam Failure	Henderson	Removed. Due to a lack of staffing and funding sources, this project was deferred in the 2018 plan and will not be carried over to the 2024 plan update.
Drop Inlet Inspection and Maintenance Program	Flood	Henderson	Removed. Due to a lack of staffing and funding sources, this project was deferred in the 2018 plan and will not be carried over to the 2024 plan update.
Turf Limits Program	Drought	Henderson	Removed. Due to a lack of staffing and funding sources, this project was deferred in the 2018 plan and will not be carried over to the 2024 plan update.
Emergency Power	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Henderson	Removed. Due to a lack of staffing and funding sources, this project was deferred in the 2018 plan and will not be carried over to the 2024 plan update.
Unreinforced Masonry Database	Earthquake, Flood, Climate Change	Henderson	New project for 2024 plan update
Critical Infrastructure Flood Risk Reduction	Flood, Dam Failure	Henderson	New project for 2024 plan update
Critical Facilities & Infrastructure Seismic Retrofit or Replacement	Earthquake, Dam Failure, Climate Change	Henderson	Keep, moved to 2024 plan update
Flood Control	Flood, Dam Failure	Henderson	Keep, moved to 2024 plan update
Annual Review and Update of Hazard Mitigation Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease,	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson , Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
	Hazardous Materials, and Terrorism)		
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson , Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson , Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update
Annual Review and Update of Local Emergency Operations Plan (LEOP)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson , Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update

Mitigation Projects/Activity Summary – Las Vegas

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Hazard Prevention Framework	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Las Vegas	New project for 2024 plan update
Cooling Infrastructure Investment	Drought	Las Vegas	New project for 2024 plan update
Hazard Economic Recovery Framework	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Las Vegas	New project for 2024 plan update
Update of RFCD Master Plan Improvements within the City	Flooding	Las Vegas	New project for 2024 plan update
Seasonal Monsoon Season Study	Flooding	Las Vegas	New project for 2024 plan update
Low Impact Development of Natural Drainage Techniques	Flooding; Subsidence & Fissures	Las Vegas	New project for 2024 plan update
Early Warning Notification Education Program	Flooding	Las Vegas	New project for 2024 plan update
Turf Limits Program	Drought, Climate Change	Las Vegas	Keep, moved to 2024 plan update
Critical Infrastructure Flood Risk Reduction (Bonneville Stormwater)	Flood	Las Vegas	Keep, moved to 2024 plan update
Emergency Power (Shelter Generators)	Earthquake, Dam Failure, Flood, Climate Change	Las Vegas	Keep, moved to 2024 plan update
Aquifer Storage and Recovery (Water Use and Conservation)	Drought, Subsidence & Fissures	Las Vegas	Keep, moved to 2024 plan update
NIPP's Security and Resilience Challenge (Smart City)	Hazardous Materials, Terrorism	Las Vegas	Keep, moved to 2024 plan update
NIPP's Security and Resilience Challenge (Connected Corridors)	Hazardous Materials, Terrorism	Las Vegas	Keep, moved to 2024 plan update
Annual Review and Update of Hazard	All Hazards (Climate	Clark County OEM; All	New project for 2024 plan

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Mitigation Plan	Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas , Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	update
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas , Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas , Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update
Annual Review and Update of Local Emergency Operations Plan (LEOP)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas , Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update

Mitigation Projects/Activity Summary – Las Vegas Valley Water District/SWNA

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Installation of Perimeter Fence	Terrorism	Las Vegas Valley Water District (LVVWD)/SWNA	New project for 2024 plan update
Septic to Sewer Conversions	Drought, Climate Change	Las Vegas Valley Water District (LVVWD)/SWNA	New project for 2024 plan update
Treatment Facility Network Improvements	Terrorism	Las Vegas Valley Water District (LVVWD)/SWNA	New project for 2024 plan update
Equip Riverbank Well	Drought, Climate Change	Las Vegas Valley Water District (LVVWD)/SWNA	New project for 2024 plan update
Replace Aging/Failed Surveillance and Networking Equipment	Terrorism	Las Vegas Valley Water District (LVVWD)/SWNA	New project for 2024 plan update
Risk Solutions Software for Continuity of Operations Plan Management	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Las Vegas Valley Water District (LVVWD)/SWNA	New project for 2024 plan update
Design and Installation of Horizon Lateral	Earthquake, Flood, Climate Change, Wildfire	Las Vegas Valley Water District (LVVWD)/SWNA	New project for 2024 plan update
Purchase generators and develop plan to use well water to provide critical service water supply if treatment plants operations are disrupted	Earthquake, Flood, Climate Change, Wildfire	Las Vegas Valley Water District (LVVWD)/SWNA	New project for 2024 plan update
Turf Limits	Drought, Climate Change	Las Vegas Valley Water District (LVVWD)/SWNA	Keep, moved to 2024 plan update. This project in the previous plan draft responsible party changed from Clark County to Las Vegas Water District/SWNA
Water Conservation Program	Drought, Climate Change	Las Vegas Valley Water District (LVVWD)/SWNA	New project for 2024 plan update

Mitigation Projects/Activity Summary – Mesquite

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Emergency Power	Earthquake, Flood, Climate Change, Wildfire	Mesquite	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Mesquite Town Wash, Abott Wash	Flood	Mesquite	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Damage Assessment Forms for Flooding and Earthquake	Earthquake, Flood, Climate Change	Mesquite	New project for 2024 plan update
Town Wash Detention Basin, Abbott Wash Detention Basin, Pulspher Wash Detention Basin	Flood	Mesquite	Keep, moved to 2024 plan update.
Flooding-Levy Build Up	Flood	Mesquite	New project for 2024 plan update
Senior Center Backup Power Supply	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Mesquite	New project for 2024 plan update
Recreation Center Backup Power Supply	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Mesquite	New project for 2024 plan update
Drought-Water Conservation Planning	Drought, Climate Control	Mesquite	New project for 2024 plan update
Annual Review and Update of Hazard Mitigation Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite , North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite , North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite , North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update
Annual Review and Update of Local Emergency Operations Plan (LEOP)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite , North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update

Mitigation Projects/Activity Summary – North Las Vegas

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Lower Las Vegas Wash Detention Basin Inflow Channel	Flood	North Las Vegas	New project for 2024 plan update
Range Wash - Las Vegas Diversion Channel	Flood	North Las Vegas	New project for 2024 plan update
Las Vegas Boulevard Storm Drain	Flood	North Las Vegas	New project for 2024 plan update
Range Wash Beltway Conveyance	Flood	North Las Vegas	New project for 2024 plan update
Beltway Collection System - Pecos	Flood	North Las Vegas	New project for 2024 plan update
Speedway North Detention Basin and Outfall	Flood	North Las Vegas	New project for 2024 plan update
Speedway #3 Detention Basin Expansion and Inflow/Outflow Facilities	Flood	North Las Vegas	New project for 2024 plan update
North Apex - System 1 Detention Basin and Outfall	Flooding	North Las Vegas	New project for 2024 plan update
Turf Conversion Subsidy	Drought	North Las Vegas	Keep, moved to 2024 plan update.
Flood Control	Flood, Dam Failure	North Las Vegas	Keep, moved to 2024 plan update.
Emergency Power	Earthquake, Flood, Climate Change, Wildfire	North Las Vegas	Keep, moved to 2024 plan update.
Annual Review and Update of Hazard Mitigation Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas , Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas , Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
	Materials, and Terrorism)		
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas , Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update
Annual Review and Update of Local Emergency Operations Plan (LEOP)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas , Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update

Mitigation Projects/Activity Summary – Las Vegas Paiute Tribe

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Purchase of Law Enforcement Facility Generator	Drought, Earthquake, Flooding	Las Vegas Paiute Tribe	New project for 2024 plan update
Flood Control Project Maintenance Project - US 95 Highway Culvert	Flood	Las Vegas Paiute Tribe	New project for 2024 plan update
Flood Control Project - Paiute Golf Course - Wolf Course Channel Extension	Flood	Las Vegas Paiute Tribe	New project for 2024 plan update
Protect Snow Mountain Water Well	Drought, Excessive Heat, Wildfire, Earthquake	Las Vegas Paiute Tribe	New project for 2024 plan update
Acquire Water Well Backup Generator for Snow Mountain	Drought, Earthquake, Flooding, Wildfire, Hazardous Materials, and Terrorism	Las Vegas Paiute Tribe	New project for 2024 plan update
Create a Tribal Continuity of Operations Plan (COOP)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Las Vegas Paiute Tribe	New project for 2024 plan update
Annual Review and Update of Hazard Mitigation Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	New project for 2024 plan update
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	New project for 2024 plan update
Development of a County Sheltering	All Hazards (Climate	Clark County OEM; All	New project for 2024 plan

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Plan	Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	update
Annual Review and Update of Local Emergency Operations Plan (LEOP)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update

Mitigation Projects/Activity Summary – Moapa Band of Paiutes

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
Flood Control	Flood	Moapa Band of Paiutes	Removed, this project was completed during the during the 2018 MJHMP Plan Cycle.
Emergency Power for Admin and Law Enforcement	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Moapa Band of Paiutes	New project for 2024 plan update
Tribal Emergency Preparation (Training, Purchasing, Planning, and Events Planning)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Moapa Band of Paiutes	New project for 2024 plan update
Annual Review and Update of Hazard Mitigation Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake,	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of	New project for 2024 plan update

Mitigation Project or Activity	Related Hazards	Jurisdictions	Notes
	Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	
Annual Review and Update of Local Emergency Operations Plan (LEOP)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	New project for 2024 plan update

Mitigation Project Evaluation and Prioritization

STAPLE+E

Clark County and its participating jurisdiction(s)' (which includes Clark County Unincorporated Area and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) primary hazard risks, and thus priorities are climate change, drought, earthquake, flooding, fissures & subsidence, wildfire, dam failure, infectious disease, hazardous materials, and terrorism. A composite evaluation matrix was used to prioritize Clark County and its participating jurisdiction(s)' mitigation projects and activities. The evaluation was conducted for each mitigation project and activity for each participating jurisdiction. All priorities were re-assessed using STAPLE+E for this plan update to ensure that the projects reflect current priorities. The composite evaluation matrix is comprised of the three factors detailed below.

The first factor is the STAPLE+E evaluation which is best for measuring feasibility and ease of implementation. The tables in this section provide the STAPLE+E evaluation criteria and the evaluation itself.

The second factor is the effectiveness of the mitigation project. How well does it mitigate the impact of a particular hazard? This is determined by its ability to protect citizens, property, and systems. For instance, wires installed to pin down trees and other objects will reduce their ability to become uprooted or take flight during hazards of high wind but are not as effective at reducing impacts from tornadoes or strong winds as are properly constructed and reinforced buildings. This factor is rated as: **Low = 0.5, Medium = 1, and High = 1.5.**

The third factor is a hazard risk-based evaluation. It draws on the hazard risk summary found in Section 4.3 of this plan. Each risk rating is assigned a value based on the assessment (None = 0, Low = 5, Medium = 10, and High = 15). A summary of these results is displayed in this section, while the full, per jurisdiction per hazard tables are located in [Appendix H](#).

$$(HRT) = (HR1 + HR2 + HRn)$$

The total evaluation score is based on the hazard risk total multiplied by the effectiveness factor, added to the STAPLE+E score.

Hazard Risk Total (HRT): The sum of values (low through high) of each hazard the project is designed to mitigate.

Mitigation Project Effectiveness (MPE): A multiplier based on the project's effectiveness to mitigate against a chosen hazard.

STAPLE+E Evaluation: A raw score comprised of positive and negative feasibility.

$$(Priority) = (STAPLE+E) + (MPE * HRT)$$

Upon completing the evaluations, a composite score is calculated and prioritized based on their total score (**Low = 0 – 25, Medium = 26 – 50, High = > 50**).

Table 140: STAPLE+E Criteria

STAPLE+E Criteria	
Evaluation Category	Source of Information
Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the communities' social and cultural values.
Technical	Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost-benefit review, and possible to fund.
Environmental	Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, and that are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Benefit-Cost Analysis

FEMA provides detailed guidance for analyzing the economic feasibility of mitigation activities. Benefit-Cost Analysis (BCA) is the method by which the future benefits of a hazard mitigation project are determined and compared to its costs. The end result is a Benefit-Cost Ratio (BCR), which is calculated by a project's total benefits divided by its total costs. The BCR is a numerical expression of the "cost-effectiveness" of a project. A project is considered to be cost effective when the BCR is 1.0 or greater, indicating the benefits of a prospective hazard mitigation project are sufficient to justify the costs.

FEMA requires a BCA to validate cost effectiveness of proposed hazard mitigation projects prior to funding. There are two drivers behind this requirement: 1) the Office of Management and Budget's (OMB) [Circular A-94 Revised](#), "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs" and 2) the [Stafford Act](#).

Conducting BCA for a mitigation activity can assist the County in determining whether a project is worth undertaking now, in order to avoid disaster related damages later. Cost-effectiveness analysis evaluates how to best spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating hazards can provide decision makers with an understanding of the potential benefits and costs of an activity, as well as a basis for comparing alternative projects. Additional information on BCA is available on the [FEMA BCA website](#).

STAPLE+E Project Tables for Clark County and its participating Jurisdictions

STAPLE+E Ranking, Clark County, NV

STAPLE+E Rankings – Clark County, NV																								
X = Not Applicable	+ = Favorable/Positive Impact											- = Not Favorable/Negative Impact												
STAPLE+E Criteria	Social		Technical			Administrative			Political			Legal			Economic			Environmental					Total Impact	
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals		Consistent with Federal Law
Implementing Benchmarking Ordinance with Energy/Water Assistance for Building	+	X	+	+	X	+	+	+	+	+	+	X	+	+	+	+	+	+	+	X	X	+	+	18
Efficiency Program Stacking Model	+	X	+	+	X	+	+	+	+	+	+	X	+	+	+	+	+	+	+	X	X	+	+	18
Develop and implement a regional education program on topics like resilience and sustainability	+	X	+	+	X	+	+	+	+	+	+	X	+	+	+	+	-	+	X	X	X	+	X	15

STAPLE+E Rankings – Clark County, NV

STAPLE+E Criteria	+ = Favorable/Positive Impact										- = Not Favorable/Negative Impact										Total Impact			
	Social		Technical			Administrative			Political		Legal			Economic				Environmental						
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/ Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals	Consistent with Federal Law	
State Renewable Portfolio Standard Advocacy Initiatives	+	X	+	+	X	+	+	+	+	+	+	+	+	+	+	+	+	+	X	X	X	+	X	17
Expansion of Community Solar Program	+	X	+	+	X	+	+	+	+	+	+	X	+	+	+	+	+	+	+	X	X	+	+	18
Implementing Benchmarking Ordinance with Energy/Water Assistance for Building	+	X	+	+	X	+	+	+	+	+	+	X	+	+	+	+	+	+	+	X	X	+	+	18
Efficiency Program Stacking Model	+	X	+	+	X	+	+	+	+	+	+	X	+	+	+	+	+	+	+	X	X	+	+	18

STAPLE+E Rankings – Clark County, NV

X = Not Applicable	+ = Favorable/Positive Impact											- = Not Favorable/Negative Impact												
STAPLE+E Criteria	Social		Technical			Administrative			Political			Legal			Economic				Environmental				Total Impact	
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals		Consistent with Federal Law
Develop and implement a regional education program on topics like resilience and sustainability	+	X	+	+	X	+	+	+	+	+	+	X	+	+	+	+	-	+	X	X	X	+	X	15
Community Wildfire Protection Plans	-	+	-	+	-	X	+	X	+	+	X	+	+	+	+	+		X	+	X	X	+	+	13
Homeowner Education and Outreach	-	+	+	+	-	X	+	X	+	+	X	+	+	-	+	+	X	+	+	X	X	+	+	14
Fire Breaks Near Public Lands	+	+	+	+	-	X	+	+	+	+	X	+	+	X	+	+	X	+	+	X	X	+	+	16

STAPLE+E Rankings – Clark County, NV

STAPLE+E Criteria	+ = Favorable/Positive Impact											- = Not Favorable/Negative Impact											Total Impact	
	Social		Technical			Administrative			Political			Legal			Economic				Environmental					
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals	Consistent with Federal Law	
Generator Installation, Searchlight FS 75	+	+	+	+	-	X	+	+	+	+	X	+	+	X	+	+	X	+	+	X	X	+	+	16
Generator Installation, Indian Springs FS 83	+	+	+	+	-	X	+	+	+	+	X	+	+	X	+	+	X	+	+	X	X	+	+	16
Bunkerville Generator Replacement	+	+	+	+	-	X	+	+	+	+	X	+	+	X	+	+	X	+	+	X	X	+	+	16
Phase II- Unreinforced Masonry Structure Survey	X	X	+	X	-	X	X	X	X	X	X	+	+	X	+	+	-	-	+	X	X	+	+	8
Research into earthquake hazard	+	X	+	X	-	X	X	X	+	X	X	+	+	+	X	+	+	-	+	X	X	+	+	11
Wildfire Awareness	X	+	+	-	-	X	X	X	+	X	X	+	+	+	+	+	-	-	+	X	X	+	+	11

STAPLE+E Rankings – Clark County, NV

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Flood Projects through the CCRFCD - Blue Diamond Channel 02, Decatur-Le Baron to Richma	x	+	+	+	x	+	+	+	+	x	x	+	+	+	+	+	x	-	+	x	x	+	+	15
Flood Projects through the CCRFCD - Wagon Trail Channel, Sunset Road to Teco Ave	x	+	+	+	x	+	+	+	+	x	x	+	+	+	+	+	x	-	+	x	x	+	+	15
Flood Projects through the CCRFCD - Blue Diamond Wash, Arville Street	x	+	+	+	x	+	+	+	+	x	x	+	+	+	+	+	x	-	+	x	x	+	+	15

STAPLE+E Rankings – Clark County, NV

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Flood Projects through the CCRFCD- Harry Reid Airport Peaking Basin - East Outfall	x	+	+	+	x	+	+	+	+	x	x	+	+	+	+	+	x	-	+	x	x	+	+	15
Flood Projects through the CCRFCD - Fairgrounds Detention Basin and outfall, Moapa Valley	x	+	+	+	x	+	+	+	+	x	x	+	+	+	+	+	x	-	+	x	x	+	+	15

STAPLE+E Rankings – Clark County, NV

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National Cohesive Wildland Fire Management (also, known as Mosquito Abatement Program from 2018 CCMJHMP Update)	-	+	X	+	X	X	-	-	+	X	+	+	+	+	+	+	X	+	+	X	+	+	+	14
Vector Control's 2023 Aquatic Insect Suppression Program (also, known as Mosquito Abatement Program from 2018 CCMJHMP Update)	+	-	+	X	X	X	X	+	X	X	X	+	+	X	+	+	X	+	+	X	X	+	+	11

STAPLE+E Rankings – Clark County, NV

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Flamingo Wash, Maryland Parkway to Palos Verdes Street	+	+	X	X	-	X	+	+	X	X	X	+	+	X	+	+	X	-	+	X	X	+	+	11
Jim McGaughey Detention Basin, Collection & Outfall	+	+	X	X	-	X	+	+	X	X	X	+	+	X	+	+	X	-	+	X	X	+	+	11
Las Vegas Wash -Branch 02 - Monson Channel - Jimmy Durante to Boulder Hwy	+	+	X	X	-	X	+	+	X	X	X	+	+	X	+	+	X	-	+	X	X	+	+	11
Orchard Detention Basin Collector - Charleston to Linden	+	+	X	X	-	X	+	+	X	X	X	+	+	X	+	+	X	-	+	X	X	+	+	11

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Goodsprings Phase I	+	+	x	x	-	x	+	+	x	x	x	+	+	x	+	+	x	-	+	x	x	+	+	11
Blue Diamond Railroad Channel	+	+	x	x	-	x	+	+	x	x	x	+	+	x	+	+	x	-	+	x	x	+	+	11
Windmill Wash Detention Basin Expansion and Jess Waite Levee Facilities	+	+	x	x	-	x	+	+	x	x	x	+	+	x	+	+	x	-	+	x	x	+	+	11
SR163 at Casino Drive - Phase 2 Sediment Basin	+	+	x	x	-	x	+	+	x	x	x	+	+	x	+	+	x	-	+	x	x	+	+	11
Airport Channel - Naples	+	+	x	x	-	x	+	+	x	x	x	+	+	x	+	+	x	-	+	x	x	+	+	11

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Duck Creek/Blue Diamond, Bermuda Road to Las Vegas Blvd	+	+	x	x	-	x	+	+	x	x	x	+	+	x	+	+	x	-	+	x	x	+	+	11
Blue Diamond Channel Amigo to Haven	+	+	x	x	-	x	+	+	x	x	x	+	+	x	+	+	x	-	+	x	x	+	+	11
Flamingo, Cimarron Branch - Russell Road to Patrick Lane	+	+	x	x	-	x	+	+	x	x	x	+	+	x	+	+	x	-	+	x	x	+	+	11
Hiko Springs Wash Detention Basin Expansion	+	+	x	x	-	x	+	+	x	x	x	+	+	x	+	+	x	-	+	x	x	+	+	11

STAPLE+E Rankings – Clark County, NV

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Flamingo Wash, UPRR to Hotel Rio Drive	+	+	x	x	-	x	+	+	x	x	x	+	+	x	+	+	x	-	+	x	x	+	+	11
Sunset Park - Duck Creek Wash to Eastern Avenue	+	+	x	x	-	x	+	+	x	x	x	+	+	x	+	+	x	-	+	x	x	+	+	11
Annual Review and Update of Hazard Mitigation Plan	+	-	+	+	-	+	-	x	+	+	x	+	+	-	+	+	x	+	x	x	x	+	+	13
Annual Review and Update of Continuity of Operations (COOP) Plan	+	-	+	+	-	+	-	x	+	+	x	+	+	-	+	+	x	+	x	x	x	+	+	13
Development of a County Sheltering Plan	+	-	+	+	-	+	-	x	+	+	x	+	+	-	+	+	x	+	x	x	x	+	+	13

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Annual Review and Update of Local Emergency Operations Plan (LEOP)	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Animal Evacuation Measures Public Awareness Campaign	X	+	+	+	X	+	-	X	+	X	X	+	+	X	+	+	X	+	X	X	X	+	+	12
Procure Emergency Evacuation Trailer	X	+	+	+	X	+	-	X	+	X	X	+	+	X	+	+	X	+	X	X	X	+	+	12
Temporary Sheltering Needs for Animal Services	X	+	+	+	X	+	-	X	+	X	X	+	+	X	+	+	X	+	X	X	X	+	+	12

STAPLE+E Ranking, Clark County, NV Water Reclamation District

STAPLE+E Rankings, Clark County, NV Water Reclamation District																								
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Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals		Consistent with Federal Law
Emergency Power	+	-	+	+	-	+	+	+	+	X	+	X	+	-	+	+	+	+	-	-	+	+	+	16
Mosquito Abatement Program	-	-	+	+	-	+	+	+	+	X	+	+	+	-	+	+	+	X	X	-	X	+	+	14
Green Energy Projects	+	X	+	+	-	X	X	+	X	X	X	X	+	-	+	+	+	X	-	X	X	+	+	10
Surge Pond Overflow Protection	X	X	+	+	-	X	+	+	X	X	X	+	+	-	+	+	+	+	+	-	X	X	+	12
Annual Review and Update of Hazard Mitigation Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Annual Review and Update of Continuity of Operations (COOP) Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13

STAPLE+E Rankings, Clark County, NV Water Reclamation District

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Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites		Consistent with Community Goals	Consistent with Federal Law
Development of a County Sheltering Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Annual Review and Update of Local Emergency Operations Plan (LEOP)	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13

STAPLE+E Ranking, Boulder City, NV

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STAPLE+E Criteria		Social		Technical			Administrative			Political			Legal			Economic			Environmental					Total Impact	
Considerations		Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals		Consistent with Federal Law
Implement floodplain and stream restoration projects		+	X	+	+	-	+	-	+	+	X	+	X	+	+	+	X	+	-	+	+	X	+	+	15
Maximize Maintenance Funding for Existing Flood Control Facilities		+	-	+	+	-	+	+	+	+	X	+	X	+	+	+	+	+	+	-	-	-	+	+	16
Continue Water Conservation Measures		+	-	X	+	-	+	+	+	+	+	+	X	+	+	+	X	-	+	+	-	-	+	+	15
Flood Control Improvements		+	-	+	+	-	+	+	+	+	+	+	X	+	-	+	+	+	+	X	X	X	+	X	15
Emergency Power		+	-	+	+	-	+	-	+	+	+	+	X	+	-	+	X	+	-	X	-	-	X	X	11

STAPLE+E Rankings, Boulder City, NV

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Development of a County Sheltering Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Annual Review and Update of Local Emergency Operations Plan (LEOP)	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Annual Review and Update of Hazard Mitigation Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Annual Review and Update of Continuity of Operations (COOP) Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13

STAPLE+E Ranking, Henderson, NV

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Unreinforced Masonry Database		+	-	+	+	-	X	-	X	+	+	X	+	+	X	+	X	+	+	X	X	X	+	+	12
Critical Infrastructure Flood Risk Reduction		X	X	+	+	-	X	-	+	+	X	X	+	+	X	+	X	+	+	+	X	X	+	+	12
Critical Facilities & Infrastructure Seismic Retrofit or Replacement		X	-	+	X	-	X	-	+	+	X	X	+	+	X	+	X	+	+	+	X	X	+	+	11
Flood Control		+	-	+	X	-	X	-	+	+	X	X	+	+	X	+	X	+	+	+	X	X	+	+	12
Development of a County Sheltering Plan		+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13

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Annual Review and Update of Local Emergency Operations Plan (LEOP)	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Annual Review and Update of Hazard Mitigation Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Annual Review and Update of Continuity of Operations (COOP) Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13

STAPLE+E Ranking, Las Vegas, NV

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Hazard Prevention Framework	+	x	+	x	-	+	+	x	+	x	x	+	+	x	+	+	+	+	x	x	x	+	x	12
Cooling Infrastructure Investment	+	x	+	x	-	+	+	+	+	x	x	+	+	x	+	+	+	+	+	x	x	+	+	15
Hazard Economic Recovery Framework	+	+	+	+	x	+	+	+	x	x	x	+	+	x	+	x	+	+	-	-	-	+	+	14
Update of RFCDC Master Plan Improvements within the City	+	x	+	+	x	x	x	+	+	x	+	+	+	-	+	+	+	+	+	x	x	x	x	13
Seasonal Monsoon Season Study	-	-	+	+	-	+	+	+	x	x	x	+	+	-	+	+	+	+	-	-	-	+	x	12

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Low Impact Development of Natural Drainage Techniques	+	X	+	+	X	+	+	+	X	X	X	+	+	+	+	+	+	+	+	X	X	+	+	16
Early Warning Notification Education Program	-	-	+	+	-	+	+	+	+	X	+	+	+	+	+	+	+	+	-	-	-	+	+	16
Turf Limits Program	-	-	+	+	-	+	+	+	+	X	X	+	+	+	+	X	+	+	+	+	X	X	+	15
Critical Infrastructure Flood Risk Reduction (Bonneville Stormwater)	-	-	+	+	-	+	+	+	+	X	+	+	+	-	+	X	+	+	+	X	+	+	+	16
Emergency Power (Shelter Generators)	-	-	+	-	-	+	+	+	+	X	+	+	+	-	+	X	+	+	X	X	X	+	+	13

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Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals		Consistent with Federal Law
Aquifer Storage and Recovery (Water Use and Conservation)	-	-	+	+	-	+	+	+	+	X	+	+	+	+	+	X	+	+	+	+	X	+	+	17
NIPP's Security and Resilience Challenge (Smart City)	-	-	+	+	-	+	+	+	+	X	+	+	+	+	+	X	+	+	-	-	-	+	+	15
NIPP's Security and Resilience Challenge (Connected Corridors)	-	-	+	+	-	+	+	+	+	X	+	+	+	+	+	X	+	+	-	-	-	+	+	15
Annual Review and Update of Hazard Mitigation Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Annual Review and Update of Continuity of Operations (COOP) Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13

STAPLE+E Rankings – City of Las Vegas, NV

X = Not Applicable	+ = Favorable/Positive Impact											- = Not Favorable/Negative Impact												
STAPLE+E Criteria	Social		Technical			Administrative			Political			Legal			Economic				Environmental			Total Impact		
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites		Consistent with Community Goals	Consistent with Federal Law
Development of a County Sheltering Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Annual Review and Update of Local Emergency Operations Plan (LEOP)	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13

STAPLE+E Ranking, Las Vegas Valley Water District/SWNA

STAPLE+E Rankings – Las Vegas Valley Water District/SWNA																								
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STAPLE+E Criteria	Social		Technical			Administrative			Political			Legal			Economic				Environmental					Total Impact
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals	Consistent with Federal Law	
Installation of Perimeter Fence	+	x	+	+	x	+	+	+	+	+	+	+	+	+	+	+	x	+	-	x	x	x	x	15
Septic to Sewer Conversions	+	x	+	+	x	+	+	+	+	+	+	x	+	+	+	+	+	+	+	x	x	+	+	18
Treatment Facility Network Improvements	+	x	+	+	x	+	+	+	+	+	+	x	+	+	+	+	+	+	x	x	x	x	x	15
Equip Riverbank Well	+	x	+	+	x	+	+	+	+	+	+	x	+	+	+	+	+	+	x	x	x	+	x	16
Replace Aging/Failed Surveillance and Networking Equipment	+	x	+	+	x	+	+	+	+	+	+	x	+	+	+	+	-	+	x	x	x	x	x	14

STAPLE+E Rankings – Las Vegas Valley Water District/SWNA

STAPLE+E Criteria	+ = Favorable/Positive Impact											- = Not Favorable/Negative Impact										Total Impact		
	Social		Technical			Administrative			Political			Legal			Economic				Environmental					
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals	Consistent with Federal Law	
Risk Solutions Software for Continuity of Operations Plan Management	+	X	+	+	X	+	+	+	+	+	+	+	+	+	+	+	+	+	X	X	X	X	X	16
Design and Installation of Horizon Lateral	+	X	+	+	X	+	+	+	+	+	+	+	+	+	+	+	+	+	X	X	X	X	X	16
Purchase generators and develop plan to use well water to provide critical service water supply if treatment plants operations are disrupted	+	X	+	+	X	+	X	+	+	+	+	+	+	+	+	+	+	X	X	X	X	+	X	15
Turf Limits	+	X	+	+	X	+	X	+	+	+	+	+	+	+	X	+	-	X	+	X	X	+	+	15

STAPLE+E Ranking, Mesquite, NV

STAPLE+E Rankings – City of Mesquite, NV																								
STAPLE+E Criteria	+ = Favorable/Positive Impact											- = Not Favorable/Negative Impact												
	Social		Technical			Administrative			Political			Legal			Economic			Environmental						Total Impact
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals	Consistent with Federal Law	
Damage Assessment Forms for Flooding and Earthquake	X	-	+	X	-	X	-	X	+	+	X	+	+	X	+	+	X	+	+	X	X	+	+	11
Flooding-Levy Build Up	X	+	+	+	X	X	+	+	+	+	X	+	+	X	+	+	-	+	-	X	X	+	+	14
Senior Center Backup Power Supply	+	+	+	X	-	+	-	+	+	+	X	+	+	X	+	+	-	+	-	X	X	+	+	14
Recreation Center Backup Power Supply	+	+	+	X	-	+	-	+	+	+	X	+	+	X	+	+	-	+	-	X	X	+	+	14
Drought-Water Conservation Planning	X	-	+	X	-	+	+	X	+	+	X	+	+	X	+	+	+	+	+	X	X	+	+	14
Channel, Pulsipher Wash Channel"	+	+	+	+	-	X	+	+	+	+	X	+	+	X	+	+	+	-	+	X	X	+	+	16

STAPLE+E Rankings – City of Mesquite, NV

STAPLE+E Criteria	+ = Favorable/Positive Impact											- = Not Favorable/Negative Impact										Total Impact		
	Social		Technical			Administrative			Political			Legal			Economic				Environmental					
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals	Consistent with Federal Law	
Town Wash Detention Basin, Abbott Wash Detention Basin, Pulsipher Wash Detention Basin	+	+	+	+	-	x	+	+	+	+	x	+	+	x	+	+	+	-	+	x	x	+	+	16
Annual Review and Update of Hazard Mitigation Plan	+	-	+	+	-	+	-	x	+	+	x	+	+	-	+	+	x	+	x	x	x	+	+	13
Annual Review and Update of Continuity of Operations (COOP) Plan	+	-	+	+	-	+	-	x	+	+	x	+	+	-	+	+	x	+	x	x	x	+	+	13

STAPLE+E Rankings – City of Mesquite, NV

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STAPLE+E Criteria	Social		Technical			Administrative			Political			Legal			Economic				Environmental			Total Impact		
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites		Consistent with Community Goals	Consistent with Federal Law
Development of a County Sheltering Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Annual Review and Update of Local Emergency Operations Plan (LEOP)	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13

STAPLE+E Ranking, North Las Vegas, NV

STAPLE+E Rankings – City of North Las Vegas, NV																								
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	Social		Technical			Administrative			Political			Legal			Economic				Environmental					
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals	Consistent with Federal Law	
Lower Las Vegas Wash Detention Basin Inflow Channel	X	+	+	+	+	X	X	-	+	+	X	+	+	X	+	X	+	+	X	X	X	+	+	13
Range Wash - Las Vegas Diversion Channel	X	+	+	+	+	X	X	-	+	+	X	+	+	X	+	X	+	+	X	X	X	+	+	13
Las Vegas Boulevard Storm Drain	X	+	+	+	+	X	X	-	+	+	X	+	+	X	+	X	+	+	X	X	X	+	+	13
Range Wash Beltway Conveyance	X	+	+	+	+	X	X	-	+	+	X	+	+	X	+	X	+	+	X	X	X	+	+	13
Beltway Collection System - Pecos	X	+	+	+	+	X	X	-	+	+	X	+	+	X	+	X	+	+	X	X	X	+	+	13
Speedway North Detention Basin and Outfall	X	+	+	+	+	X	X	-	+	+	X	+	+	X	+	X	+	+	X	X	X	+	+	13

STAPLE+E Rankings – City of North Las Vegas, NV

STAPLE+E Criteria	+ = Favorable/Positive Impact											- = Not Favorable/Negative Impact											Total Impact	
	Social		Technical			Administrative			Political			Legal			Economic				Environmental					
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals	Consistent with Federal Law	
Speedway #3 Detention Basin Expansion and Inflow/Outflow Facilities	x	+	+	+	+	x	x	-	+	+	x	+	+	x	+	x	+	+	x	x	x	+	+	13
North Apex - System 1 Detention Basin and Outfall	x	+	+	+	+	x	x	-	+	+	x	+	+	x	+	x	+	+	x	x	x	+	+	13
Turf Conversion Subsidy	x	+	+	+	+	-	+	x	+	+	x	+	x	x	+	-	+	+	+	+	x	x	+	14
Flood Control	x	-	+	+	+	-	x	x	+	+	x	+	x	+	+	-	+	+	+	x	x	x	+	12
Emergency Power	x	-	+	+	+	-	x	x	+	+	x	+	x	+	+	-	+	+	+	+	x	x	+	13
Annual Review and Update of Hazard Mitigation Plan	+	-	+	+	-	+	-	x	+	+	x	+	+	-	+	+	x	+	x	x	x	+	+	13

STAPLE+E Rankings – City of North Las Vegas, NV

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Annual Review and Update of Continuity of Operations (COOP) Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Development of a County Sheltering Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Annual Review and Update of Local Emergency Operations Plan (LEOP)	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13

STAPLE+E Ranking, Las Vegas Paiute Tribe

STAPLE+E Rankings – Las Vegas Paiute Tribe																									
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STAPLE+E Criteria		Social		Technical			Administrative			Political			Legal			Economic			Environmental					Total Impact	
Considerations		Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals		Consistent with Federal Law
Purchase of Law Enforcement Facility Generator		+	-	+	x	x	-	-	+	+	+	+	x	+	x	+	+	-	+	x	-	-	+	+	12
Flood Control Project Maintenance Project - US 95 Highway Culvert		+	+	+	+	-	-	-	+	+	+	+	x	+	x	+	+	+	+	x	-	-	+	+	15
Flood Control Project - Paiute Golf Course - Wolf Course Channel Extension		+	+	+	+	-	-	-	+	+	+	+	x	+	x	+	+	+	+	x	-	-	+	+	15
Protect Snow Mountain water well		+	+	+	+	-	+	-	+	+	+	x	x	+	x	+	+	-	+	x	-	-	+	+	14

STAPLE+E Rankings – Las Vegas Paiute Tribe

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STAPLE+E Criteria	Social		Technical			Administrative			Political			Legal			Economic				Environmental				Total Impact	
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals		Consistent with Federal Law
Acquire Water Well Backup Generator for Snow Mountain	+	+	+	+	-	+	-	+	+	+	X	X	+	X	+	+	-	+	X	-	-	+	+	14
Create a Tribal Continuity of Operations Plan (COOP)	+	-	+	+	-	+	-	+	+	+	X	X	+	X	+	+	-	+	X	-	-	+	+	13
Annual Review and Update of Local Emergency Operations Plan (LEOP)	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Development of a County Sheltering Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13

STAPLE+E Rankings – Las Vegas Paiute Tribe

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Annual Review and Update of Hazard Mitigation Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Annual Review and Update of Continuity of Operations (COOP) Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13

STAPLE+E Ranking, Moapa Band of Paiute Tribe

STAPLE+E Rankings – Moapa Band of Paiute Tribe																									
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STAPLE+E Criteria		Social		Technical			Administrative			Political			Legal			Economic			Environmental					Total Impact	
Considerations		Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Community Goals		Consistent with Federal Law
Emergency Power for Admin and Law Enforcement		+	-	+	X	-	X	-	+	+	+	+	X	+	+	+	+	-	+	X	X	X	+	+	13
Tribal Emergency Preparation (Training, Purchasing, Planning, and events planning)		+	-	+	X	-	X	-	+	+	+	+	X	+	+	+	+	-	+	X	X	X	+	+	13
Annual Review and Update of Local Emergency Operations Plan (LEOP)		+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13

STAPLE+E Rankings – Moapa Band of Paiute Tribe

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STAPLE+E Criteria	Social		Technical			Administrative			Political			Legal			Economic				Environmental			Total Impact		
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites		Consistent with Community Goals	Consistent with Federal Law
Annual Review and Update of Hazard Mitigation Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Annual Review and Update of Continuity of Operations (COOP) Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13
Development of a County Sheltering Plan	+	-	+	+	-	+	-	X	+	+	X	+	+	-	+	+	X	+	X	X	X	+	+	13

Mitigation Action Project Prioritization Tables (Proposed and Carry-Over Projects) for Clark County, NV and its Participating Jurisdictions

Mitigation Action Project Prioritization (Proposed and Carry-Over Projects), Clark County, NV Departments (Clark County Unincorporated)

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Clark County 1	Flood Projects through the CCRFCD - Blue Diamond Channel 02, Decatur-Le Baron to Richma	Blue Diamond Channel 02, Decatur-Le Baron to Richmar - Approximately 980 feet of 10'x6' RCB along Decatur Boulevard connecting to the Silverado Ranch DB - Combined with RTC Roadway Project	Flood	Clark County Public Works/Clark County Regional Flood Control District (CCRFCD)	Medium (37.5)	Existing	\$1,778,560	1-5 years	CCRFCD	Carry-over project from 2018 plan. This project was a carry-over project from the 2018 MJHMP update however, the project is near completion and will be completed by the end of the upcoming plan cycle.
Clark County 2	Flood Projects through the CCRFCD - Wagon Trail Channel, Sunset Road to Teco Ave	Wagon Trail Channel, Sunset Road to Teco Ave - 10' x 6' reinforced concrete box culvert in Procyon Street from Sunset Road to Teco Avenue	Flood	Clark County Public Works/Clark County Regional Flood Control District (CCRFCD)	Medium (37.5)	Existing	\$2,371,530	1-5 years	CCRFCD	Carry-over project from 2018 plan. This project was a carry-over project from the 2018 MJHMP update however, the project is near completion and will be completed by the end of the upcoming plan cycle.

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Clark County 3	Flood Projects through the CCRFCD - Blue Diamond Wash, Arville Street	Blue Diamond Wash, Arville Street to I-15 - 66" diameter reinforced concrete pipe storm drain in Robindale Road from Arville Street to I-15	Flood	Clark County Public Works/Clark County Regional Flood Control District (CCRFCD)	Medium (37.5)	Existing	\$7,155,769	1-5 years	CCRFCD	Carry-over project from 2018 plan. This project was a carry-over project from the 2018 MJHMP update however, the project has an estimated completion date of 8/2023.
Clark County 4	Flood Projects through the CCRFCD- Harry Reid Airport Peaking Basin - East Outfall	Harry Reid Airport Peaking Basin - East Outfall - App .85 mile 54" RCP, 6x6 RCB, and 8x4 RCB from Airport Peaking Basin to Fla Wash	Flood	Clark County Public Works/Clark County Regional Flood Control District (CCRFCD)	Medium (37.5)	Existing	\$7,026,705	1-5 years	CCRFCD	Carry-over project from 2018 plan. This project was a carry-over project from the 2018 MJHMP update however, the project has an estimated completion date of 8/2023.
Clark County 5	Flood Projects through the CCRFCD - Fairgrounds Detention Basin and outfall, Moapa Valley	Fairgrounds Detention Basin and outfall, Moapa Valley - 130 ac-ft detention basin and approx. 4,100 LF 7' x 5' RCB	Flooding	Clark County Public Works/Clark County Regional Flood Control District (CCRFCD)	Medium (37.5)	Existing	\$20,683,226	1-5 years	CCRFCD	Carry-over project from 2018 plan. This project was a carry-over project from the 2018 MJHMP update however, the project has an estimated completion

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
										date of 1/2024.
Clark County 6	Generator Installation, Indian Springs FS 83	Install generators at stations in order to provide community sheltering and maintain emergency response during power outages. One generator to be installed per year at two different stations. Year 2, Indian Springs FS 83 generator install. This rural community would not otherwise be able to take on capital projects like these. These projects would contribute to community security by providing resiliency to volunteer firefighters that serve the area as well as emergency sheltering in a community that have very little public space capable of providing community needs during a disaster.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County RPM	Medium (40)	New	\$120,000	1 Year	HMGP	Proposed project for the 2024 plan update.
Clark County 7	Bunkerville Generator Replacement	The first generator is located at Station 71 in Bunkerville. This station has a generator just outside the station. The generator currently does not service the station, it was installed for the Emergency Communication Center (ECC) located onsite and communications tower located outside. The station his station also provides emergency radio information via a low power FM radio station housed onsite and transmitted locally on FM95.1. This radio station has been used in the past few years to broadcast emergency information both from Clark County and the City of	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County RPM	Medium (40)	New	\$530,000	1-2 years	HMGP	Proposed project for the 2024 plan update.

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		Mesquite. The unique nature of Station 71 and its equipment places it as a community lifeline providing safety/security and communications, both components of FEMA's National Preparedness Goal. We are seeking to replace this small generator with one that services the station as well as the communication equipment. The station power needs would require replacing the 45kw generator attached to the tower and replacing it with a 90kw generator serving both the station and tower. This generator is already in an enclosure but would enable remote monitoring and expanded capacity.								
Clark County 8	Generator Installation, Searchlight FS 75	Install generators at stations in order to provide community sheltering and maintain emergency response during power outages. One generator to be installed per year at two different stations. Year 1, Searchlight FS 75 generator install	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	RPM	Medium (33.31)	New	\$120,000	1 Year	HMGP	Proposed project for the 2024 plan update.
Clark County 9	Community Wildfire Protection Plans	Work with the BLM, USFS, and NDF to create specific Community Wildfire Protection Plans for the communities at extreme or very high wildfire risk; Trout Canyon, Mt. Springs, Mt. Charleston, Torino Ranch, Nelson, Cold Creek Evaluate Blue Diamond, Cal Nev Ari, Searchlight,	Wildfire	Clark County – Rural Fire	Medium (32)	New	\$50,000	1 year	BLM Community Fire Assistance	Proposed project for the 2024 plan update.

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		Indian Springs, Goodsprings, Sandy Valley, Corn Creek for inclusion to the list of high hazard areas. The development of CWPPs and community specific outreach and public education is 1 year. Assisting with the development of these projects are the Nevada Division of Forestry Fire Adapted Community Coordinator and the Shared Stewardship Working Group with all federal and local land management agencies.								
Clark County 10	Fire Breaks Near Public Lands	Create and maintain fire breaks near public lands to mitigate threats to communities originating from outside the jurisdictional boundary of the municipality. install generators at stations in order to provide community sheltering and maintain response during power outages. Three generators installed during the next four (4) years at different stations - Year 1 Searchlight FS 75 generator install. This would be the install of a new 60kw generator, pad, sound attenuation, permits, and remote monitoring. This would enable resilient power supply to this critical building in a small rural community. Fire Station 75 years has lost power several times in the past year, which requires a manual release of the apparatus bay doors from the motorized trolley to open them. The installation	Wildfire	Clark County Fire, Clark County Public Works, Clark County GIS Department, and Clark County Parks Department	Medium (32)	New	\$150,000	2 years	BLM Community Fire Assistance	Proposed project for the 2024 plan update.

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		of a generator at the station would provide resiliency against power interruption, enable continuity of service by the local volunteer firefighters, and provide a safe refuge area for the community should be extended sheltering be required for long term needs following a natural disaster.								
Clark County 11	Efficiency Program Stacking Model	Efficiency program stacking model to bring together multiple incentives to support building retrofits for all sizes to save energy, water, and weatherize homes.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infectious Disease, Hazardous Materials, and Terrorism)	Clark County Environment and Sustainability	Medium (28.91)	New	\$844,000	1-3 years	Energy Efficiency Community Block Grant Program	Proposed Project for the 2024 Plan update
Clark County 12	Expansion of Community Solar Program	Expand community solar programs to deliver shade and other resilience benefits equitably across communities in Clark County. This action aims to expand the geographic coverage of community solar projects across Clark County. Community solar refers to local solar facilities shared by multiple community subscribers who receive credit on their electricity bills for their share of the power produced.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infectious Disease, Hazardous Materials, and Terrorism)	Clark County Environment and Sustainability	Medium (28.91)	New	\$1M	1-3 years	Federal Grant; Department/General Funds	Proposed Project for the 2024 Plan update
Clark County 13	National Cohesive Wildland Fire Management Strategy (also known as Fuel	Reduce the understory fuel around lines, areas or zones where structures and other human development meet or intermingle with wildland or	Wildfire	CCFD – Rural Division	Medium (28)	Existing	\$200,000-\$400,000	3-5 years	USFS, BLM, or NDF along with public/private partnerships with NV	Carry-over from the 2018 plan. Project Update: As

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
	Management from the CCMJHP 2018 update)	vegetative fuels (including invasive species). Focus should be placed on larger areas (such as those surrounding neighborhoods that have varying degrees of fire resistance and defensible space) that have a history of large destructive fires and a high-density concentration of understory fuel. Conduct annual fuel reduction activities in highest risk areas for wildland/urban interface, including the Spring Mountains (Trout Canyon, Mountain Springs), and Northeast Clark County (Moapa/Moapa Valley) areas within Clark County							Energy and Valley Electric or the Clark County General Fund.	part of a multiyear effort in 2024-2028 this strategy will be operationalized by educating threatened communities on defensible space awareness, helping residents make meaningful steps to increase resilience to wildfires, and assisting in the maintenance of public spaces within Clark County. Community Wildfire Protection Plans (CWPP) will be created in 2024 to better communicate hazard messaging with the public as

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
										<p>well as guide protective actions within the project timeline. Specific actions to be taken include the carry-over of action items from 2018's are as follows: there are a number of extreme fire danger areas within Clark County that have already been identified including Cold Creek, Mountain Springs, Trout Canyon, and Lovell Canyon to Torino Ranch. These areas will see fuel reduction in the community tie into projects implemented by federal</p>

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
										land managers in the last decade. In 2022 alone the USFS completed fuel reduction in over 2000 acres of the SMNRA and hazardous fuel reduction in these areas is ongoing. The expected timeline for defensible space awareness, public education, and fuel reduction projects on intermingled private/public lands along with Clark County infrastructure sites within Clark County jurisdiction is 3-5 years.
Clark County 14	Implementing Benchmarking Ordinance with Energy/Water Assistance for Building	Implement benchmarking ordinance with energy/water assistance for buildings. Reducing energy use will allow for less demand on the grid, especially during extreme weather events, such as heat waves. Water efficiency will put less of a	Drought	Clark County Environment and Sustainability	Medium (28)	New	\$600,00	1-3 years	National Building Performance Standards Coalition, Building Codes Implementation for Efficiency and	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		strain on our community and water resources as we are experiencing a prolonged drought.							Resilience Program, Departmental funds	
Clark County 15	State Renewable Portfolio Standard Advocacy Initiative	Advocate to increase the State Renewable Portfolio Standard to attain 100% renewable energy by 2050 and advocate for utility regulation that aligns incentives with the accurate value of grid services provided by distributed solar and storage. This will increase grid reliability and reduce demand.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County Environment and Sustainability	Medium (27.91)	New	\$200,000	One year-plans to begin in 2025	Department/ General Funds	Proposed Project for the 2024 Plan update
Clark County 16	Flamingo Wash, Maryland Parkway to Palos Verdes Street	Open channel improvements from Maryland to Cambridge and from Swenson to Palos Verde. The project is expected to encumber construction funding April-23 and advertise for bids August 2023.	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	Medium (27.5)	New	\$14,344,543	1-5 years	Clark County Regional Flood Control District CCRFCD	Proposed Project for the 2024 Plan update
Clark County 17	Jim McGaughey Detention Basin, Collection & Outfall	88 AC-FT Detention Basin, 6' x 6' RCB and Open Channel inflow facilities, and RCP outfall. This project is expected to encumber construction funding May-23 and advertise for bids Sept-23	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	Medium (27.5)	New	\$14,344,543	1-5 years	Clark County Regional Flood Control District CCRFCD	Proposed Project for the 2024 Plan update
Clark County 18	Las Vegas Wash -Branch 02 - Monson Channel - Jimmy Durante to Boulder Hwy	Culvert crossings, new RCB, and open channel improvements adjacent to Flamingo Rd. This project is expected to encumber construction funding July-23 and advertise for bids October 2023.	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	Medium (27.5)	New	\$14,742,513	1-5 years	Clark County Regional Flood Control District CCRFCD	Proposed Project for the 2024 Plan update
Clark County 19	Orchard Detention Basin Collector	4765 LF of soil cement lined levee extending north of Charleston. This project is expected to encumber construction funding Dec-	Flood	Clark County Public Works (CCPW)/Clark County	Medium (27.5)	New	\$6,485,481	1-5 years	Clark County Regional Flood Control	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
	- Charleston to Linden	23 and advertise for bids March 2024.		Regional Flood Control District CCRFCD					District CCRFCD	
Clark County 20	Goodsprings Phase I	approximately 3000 LF of earthen and rip rap channel with 80 LF of 6' X 5' RCBC. This project is expected to encumber construction funding Dec-23 and advertise for bids March 2024.	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	Medium (27.5)	New	\$1,000,000	1-5 years	Clark County Regional Flood Control District CCRFCD	Proposed Project for the 2024 Plan update
Clark County 21	Blue Diamond Railroad Channel	App 1-mile open Channel Improvements adjacent to UPRR from Blue Diamond Rd to Rainbow Blvd. This project is expected to encumber construction funding Dec-23 and advertise for bids March 2024.	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	Medium (27.5)	New	\$22,725,070	1-5 years	Clark County Regional Flood Control District CCRFCD	Proposed Project for the 2024 Plan update
Clark County 22	SR163 at Casino Drive - Phase 2 Sediment Basin	This project will add sediment basin u/s of LUBC0010 in Laughlin. The expected to encumber construction funding Dec-23 and advertise for bids March 2024.	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	Medium (27.5)	New	\$5,174,070	1-5 years	Clark County Regional Flood Control District CCRFCD	Proposed Project for the 2024 Plan update
Clark County 23	Airport Channel - Naples	This project will construct 2500 LF of 20' X 6' concrete channel, 120-AC-FT peaking basin. The expected to encumber construction funding Dec-23 and advertise for bids March 2024.	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	Medium (27.5)	New	\$20,503,634	1-5 years	Clark County Regional Flood Control District CCRFCD	Proposed Project for the 2024 Plan update
Clark County 24	Duck Creek/Blue Diamond, Bermuda Road to Las Vegas Blvd	RCB and open channel improvements to DC/BD Wash from LV Blvd to Bermuda. This project expected to encumber construction funding Dec-23 and advertise for bids March 2024.	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	Medium (27.5)	New	\$2,500,00	1-5 years	Clark County Regional Flood Control District CCRFCD	Proposed Project for the 2024 Plan update
Clark County 25	Blue Diamond Channel Amigo to Haven	Open channel and underground SD improvements from Amigo to Haven St. The expected to encumber construction	Flood	Clark County Public Works (CCPW)/Clark County	Medium (27.5)	New	\$7,514,396	1-5 years	Clark County Regional Flood Control	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		funding Dec-23 and advertise for bids March 2024.		Regional Flood Control District CCRFCD					District CCRFCD	
Clark County 26	Flamingo, Cimarron Branch - Russell Road to Patrick Lane	RCP west of Cimarron Rd alignment from Russell Rd to Patric Ln. This project expected to encumber construction funding Jan-24 and advertise for bids May 2024.	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	Medium (27.5)	New	\$3,000,000	1-5 years	Clark County Regional Flood Control District CCRFCD	Proposed Project for the 2024 Plan update
Clark County 27	Hiko Springs Wash Detention Basin Expansion	308-acre-foot expansion to Hiko Springs Detention Basin. This project expected to encumber construction funding Mar-24 and advertise for bids July 2024.	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	Medium (27.5)	New	\$30,000,000	1-5 years	Clark County Regional Flood Control District CCRFCD	Proposed Project for the 2024 Plan update
Clark County 28	Flamingo Wash, UPRR to Hotel Rio Drive	approximately 700 LF of gabion channel with 20-foot bottom width. This project expected to encumber construction funding Mar-24 and advertise for bids July-24	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	Medium (27.5)	New	\$5,696,000	1-5 years	Clark County Regional Flood Control District CCRFCD	Proposed Project for the 2024 Plan update
Clark County 29	Sunset Park - Duck Creek Wash to Eastern Avenue	RCB in Sunset Rd from DC Wash to Tomiyasu Ln then extending southwest through Sunset Park. This project expected to encumber construction funding Dec-24 and advertise for bids March-25	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	Medium (27.5)	New	\$19,4169,042	1-5 years	Clark County Regional Flood Control District CCRFCD	Proposed Project for the 2024 Plan update
Clark County 30	Community Resilience Hubs	Establish a network of community resilience hubs, prioritizing communities with higher heat vulnerability.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County Environment and Sustainability	Medium (26.91)	New	\$300,000	3-5 years	Department/ General Funds	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Clark County 31	Develop and implement a regional education program on topics like resilience and sustainability	Develop and implement a regional education program, focusing on resilience and sustainability topics. Community members will be more prepared for climate hazards and can learn how to practice more sustainable behaviors.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infectious Disease, Hazardous Materials, and Terrorism)	Clark County Environment and Sustainability	Medium (25.91)	New	\$1M	1-5 years	Youth Engagement, Education and Employment Grant, Environmental Health Sciences Core Centers, departmental funds, potentially cost share with other municipalities	Proposed Project for the 2024 Plan update
Clark County 32	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2024 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infectious Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Clark County 33	Annual Review and Update of Continuity of Operations (COOP) Plan	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infectious Disease, Hazardous	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Materials, and Terrorism)	District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes						
Clark County 34	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Clark County 35	Annual Review and Update of Local Emergency Operations Plan (LEOP)	Annual review and updated the County's LEOP to ensure compliance with NV DEM requirements	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; Clark County Local Emergency Planning Commission (LEPC); All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
				Moapa Band of Paiutes						
Clark County 36	Procure Emergency Evacuation Trailer	Procure an emergency evacuation animal trailer and vehicle to tow it to hold household pets during evacuation periods for all hazards where temporary shelter/transportation of animals is needed	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County Administrative Services	Low (23.54)	New	Need Cost Estimate	1-5 years	General Funds	Proposed Project for the 2024 Plan update
Clark County 37	Mosquito Abatement Program (Vector Control's 2023 Aquatic Insect Suppression Program)	Continue the countywide Vector Surveillance Program for early warning disease introduction and the countywide long-term abatement program to target treatment areas, particularly those prone to flooding. Continue Annual Clark County Mosquito Abatement Program to prevent and respond to mosquito infestations, including outreach to the general public and affected area residents.	Infectious Disease, Infestation	Clark County Public Works (Vector Control)/ Southern Nevada Health District	Low (22)	Existing	\$25,000-\$50,000	2018-2022	PDM and Post-Event Mitigation funds, if applicable	Carry-over from the 2018 plan. Project Update: Vector Control's 2023 Aquatic Insect Suppression Program is a year-round program. This program includes mosquitoes, midges, black flies, and caddisflies. This program covers all of Unincorporated Clark County & Bullhead City (though an inter-local agreement with

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
										<p>Bullhead City). All other municipalities in need of Vector Control services would be on direction from the Office of Emergency Management & Homeland Security for intervention procedures. Those municipalities would cover any additional funding for their needs or request for mitigation actions. All vector related mitigation inventory and equipment is on hand at our facility. Communication protocols are already in place with the SNHD's mosquito surveillance team. Both the SNHD and Vector Control are connected with the Nevada</p>

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
										Department of Agriculture.
Clark County 38	Windmill Wash Detention Basin Expansion and Jess Waite Levee Facilities	Construct upstream levee facilities and expand detention basin volume. This project is expected to encumber construction funding Dec-23 and advertise for bids March 2024.	Flood	Clark County Public Works (CCPW)/Clark County Regional Flood Control District CCRFCD	Low (22)	New	\$2,500,000	1-5 years	Clark County Regional Flood Control District CCRFCD	Proposed Project for the 2024 Plan update
Clark County 39	Homeowner Education and Outreach	Conduct homeowner education and clean up in communities to improve access to properties by fire apparatus, provide defensible space, add spark arrestors to fireplaces, remove ladder fuels and implement strategies contained in Chapter 6 of the municipality. Create and maintain fire breaks near public lands to mitigate threats to communities originating from outside the jurisdictional boundary of the municipality.	Wildfire	Clark County Fire, Clark County Public Works, Clark County GIS, Clark County Parks Department	Low (21)	New	\$25,000	2 Years	BLM Fire Assistance	Proposed Project for the 2024 Plan update
Clark County 40	Animal Evacuation Measures Public Awareness Campaign	Conduct awareness campaign to increase public knowledge for small and large animal evacuation measures including the need to take kennels, crates, leashes, harnesses, leads, bowls, food, medicine, etc. with them as they evacuate.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County PIO/Communication Office; Clark County Animal Protection Service	Low (18)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle.	General Funds	Proposed Project for the 2024 Plan update
Clark County 41	Temporary Sheltering Needs for Animal Services	Procure large tents, generators, kennels, and crates for temporary sheltering of household pets for all hazards	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat,	Clark County Administrative Service	Low (17.77)	New	Need Cost Estimate	1-5 years	General Funds	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		requiring emergency sheltering operations.	Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)							
Clark County 42	Research into earthquake hazard (also known as Unreinforced Masonry Database in the 2018 MJHMP)	UNR and the Nevada Earthquake Safety Council (NESC) continue to study earthquake hazard and risk in the Las Vegas Valley	Earthquake	UNR and Nevada Earthquake Council	Low (16.5)	Existing	\$50,000	2-5 years	Need Funding Source	Carry-over from the 2018 plan. This project was one of the ongoing projects listed in the previous MJHMP. Project Update: This project was included in the last MJHMP update but due to the lack of staff and funding, this project is being carried over to the 2024 MJHMP update.
Clark County 43	Wildfire Awareness (also known as "Fuel Management in the 2018 MJHMP)	Public Awareness of threat of wildfire and actions to reduce the threat.	Wildfire	Clark County Fire and Clark County Public Information Officer	Low (16.5)	Existing	Staff Time and Resources	Ongoing, continuous throughout the five-year cycle	FEMA EPMG Grant Funding	Carry-over from the 2018 plan. Project Update: This project was included in the last MJHMP update but due to the lack of staff

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
										and funding, this project is being carried over to the 2024 MJHMP update.
Clark County 44	Phase II- Unreinforced Masonry Structure Survey (also known as Unreinforced Masonry Database)	Continue to update and validate the Clark County Unreinforced Masonry (URM) Inventory Database by undertaking the following activities: attempt to complete screening for structures that were not able to be screened during the first phase of the project; expand the scope of project to include screening of URM's within the incorporated cities in Clark County; prepare a GIS enabled map layer showing the validated database of URM structures; work collectively with state and local officials to determine the next appropriate step in mitigating the potential hazards associated with URM structures.	Earthquake	Clark County Building Department	16	Existing	2 years	\$52,000	Federal Grants; Department/ General Funds	Carry-over from the 2018 plan. Project Update: This project was included in the last MJHMP update but due to the lack of staff and funding, this project is being carried over to the 2024 MJHMP update.

Mitigation Action Project Prioritization (Proposed and Carry-Over Projects), Clark County, NV Water Reclamation District

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
CCWRD 1	Surge Pond Overflow Protection	Surge Pond Overflow Protection-This project will provide the design and construction of new flood walls to protect equipment and allow for additional contingency options for diverting flows.	Flooding	CCRWD Engineering Operations	Medium (34.5)	New	\$2M	5-10 years	Capital Funds; BRIC	Proposed project for the 2024 plan update.
CCWRD 2	Emergency Power	Provide additional emergency power with long-term goal of temporary/emergency power that uses alternative sources that are environmentally friendly	Earthquake, Flooding, Climate Change, Wildfire	CCWRD Operations and Engineering	Low (22.25)	Existing	Total \$135 million, combined with other infrastructure upgrades	10+ years	BRIC Funds	Carry-over project from 2018 plan. Project Update: Continuing to work on switchgears and other power upgrades to provide system redundancy. Completion date is estimated in 2025, though equipment delays have impacted dates.
CCWRD 3	Mosquito Abatement Program	Continue the countywide Vector Surveillance Program for early warning disease introduction and the countywide long term abatement program to target treatment areas, particularly those prone to flooding. Continue Mosquito Abatement Program to prevent and respond to mosquito infestations, including outreach to the general public and affected area	Infestation, Infectious Disease	CCWRD Collection Systems & Maintenance and Clark Co Vector Control	Low (21.5)	Existing	\$50,000/year	Ongoing, continuous through the five-year cycle.	PDM and Post-Event Mitigation Funds (if applicable)	Carry-over project from 2018 plan. Project Update: Since the last plan update, the mosquito abatement program continues throughout Clark County.

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		residents.								
CCWRD 4	Green Energy Projects	Green Energy Projects- Included will be modifications at LWRC, DBWRC, and MVWRC to utilize solar energy generation and modifications at FWRC to employ hydroelectric and/or anaerobic digestion for energy generation. LWRC and DBWRC will be the first areas of focus. Up to 1MW of power will be generated with solar energy.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	CCWD Engineering, Operations, and Collection Systems	Low (20)	New	\$4M Minimum	10+years	Capital Funds; BRIC Funds	Proposed project for the 2024 plan update.

Mitigation Action Project Prioritization (Proposed and Carry-Over Projects), Boulder City

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Boulder City 1	Implement floodplain and stream restoration projects	Alleviate the damage associated with flooding through new and reinforced flood control projects, including storm drains, culverts, drop inlets, channels, and detention basins. Implement floodplain and stream restoration projects to reduce flood risk and erosion by providing stable reaches and also mitigate drought impacts by providing baseflow recharge, water supply augmentation, floodwater storage, terrestrial and aquatic wildlife habitat, and recreation opportunities by restoring the site's soil, hydrology and vegetation conditions that mimic pre-development channel flow and floodplain connectivity.	Flooding	Boulder City Public Works	Medium (37.5)	New	\$33M	1-5 years	CCRFCD	Carry-over project from the 2018 plan. Project Update: Maximize the use of maintenance funding provided by the Clark County Regional Flood Control District for the maintenance of existing flood control facilities.
Boulder City 2	Flood Control Improvements	Facilitate design and construction of flood control improvements identified in the 2023 Boulder City Flood Control Master Plan Update.	Flooding	Boulder City Public Works	Medium (37.5)	New	\$32.6M	1-5 years	CCRFCD	Proposed project for the 2024 plan update.
Boulder City 3	Emergency Power	Provide additional emergency power, such as a generator equipment, for new and existing critical facilities to operate continuously but cannot do so for long durations of power outage.	Earthquake, Flooding, Climate Change, Wildfire	Boulder City Fire Department	Medium (31.625)	Existing	\$300K	1-5 years	CIP	Carry-over project from the 2018 plan. Project Update: In the last five years, the emergency generators for critical facilities projects is partially complete and will be carried over to the 2024

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
										plan update. The facilities were a emergency generator was added or maintenance were the following: PD, FD, WWTP, Red Mountain communicati on site, City Hall/Parks & Rec. are complete. The maintenance yard with fueling site 1 should be complete within a year. (Generator is on site and electrical work needs to be completed.)
Boulder City 4	Maximize Maintenance Funding for Existing Flood Control Facilities (also known as Flood Control in 2018 MJHMP)	Maximize the use of maintenance funding provided by the Clark County Regional Flood Control District for the maintenance of existing flood control facilities.	Flooding	Boulder City Public Works	Medium (31)	Existing	\$2.0M	Ongoing, Continuous through the five-year plan cycle.	CCRFCD	Carry-over project from the 2018 plan. This project was included in the last MJHMP update but due to the lack of staff and funding, this project is being carried over to the 2024

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
										MJHMP update.
Boulder City 5	Continue Water Conservation Measures	Continue water conservation measures in coordination with the Southern Nevada Water Authority (SNWA) and other purveyor members. Measures include prohibiting new golf course development, reducing golf course water budgets, converting cool season turf, implementing large water user policy, implementing AB356 (non-functional turf removal), implementing pool development standards, enhancing leak resolutions, implementing park efficiency improvements, implementing cooling efficiency standards, enhancing landscape watering compliance, making asset management investments, limiting new turf installations, implementing pricing changes, and optimizing return-flow credits.	Drought	Boulder City Public Works, Community Development, & Utilities	Medium (25)	Existing	\$6.5M	Ongoing, Continuous through the five-year plan cycle.	ARPA Funds	Carry-over project from the 2018 plan. This project was included in the last MJHMP update but due to the lack of staff and funding, this project is being carried over to the 2024 MJHMP update.
Boulder City 6	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2024 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infectious Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Boulder City 7	Annual Review and Update of Continuity of	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought,	Clark County OEM; All Jurisdictions (Clark County	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year	Federal and State Grants;	Proposed Project for

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
	Operations (COOP) Plan		Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes				plan cycle. Will be conducted annually beginning January 2024.	City/County General Fund	the 2024 Plan update
Boulder City 8	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Boulder City 9	Annual Review and Update of Local Emergency Operations Plan (LEOP)	Annual review and updated the County's LEOP to ensure compliance with NV DEM requirements	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous	Clark County OEM; Clark County Local Emergency Planning Commission (LEPC); All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas,	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Materials, and Terrorism)	Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes						

Mitigation Action Project Prioritization (Proposed and Carry-Over Projects), Henderson

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Henderson 1	Unreinforced Masonry Database	Continue to update and validate the Clark County Unreinforced Masonry (URM) Inventory Database by undertaking the following activities: complete screening for structures that were not able to be screened during this phase of the project; expand the scope of project to include screening of URM within the incorporated cities in Clark County; prepare a GIS enabled map layer showing the validated database of URM structures; work collectively with state and local officials to determine the next appropriate step in mitigating the potential hazards associated with URM structures.	Earthquake, Flood, Climate Change	City of Henderson Community Development	Medium (25.75)	New	1-5 years	\$1M	Federal and State Funding	Proposed project for 2024 plan.
Henderson 2	Critical Infrastructure Flood Risk Reduction	Reinforce roads/bridges that are prone to repetitive flooding and/or flash flooding through protection activities, including elevating the roads/bridges and installing/widening culverts beneath the roads/bridges or upgrading storm drains.	Flood, Dam Failure	City of Henderson Public Works	Low (22)	New	5 years	\$45M	Federal and State Funding, CIP, Maintenance	Proposed project for 2024 plan.
Henderson 3	Flood Control	Alleviate the damage associated with flooding through new and reinforced flood control projects, including storm drains, culverts, drop inlets, channels, and detention basins. Implement the Clark County Regional Flood Control District (CCRFCD) Capital Improvement Plan to	Flood, Dam Failure	City of Henderson Public Works	Low (22)	Existing	1-5 years	\$20M	FEMA grant Funding, CIP, Maintenance	Carry-over project from the 2018 plan. This project was included in the last MJHMP update but due to the lack of staff and funding,

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		design and construct master plan flood control facilities.								this project is being carried over to the 2024 MJHMP update.
Henderson 4	Critical Facilities & Infrastructure Seismic Retrofit or Replacement	Seismically retrofit or replace critical facilities and infrastructure that are categorized as structurally deficient and are located in strong to very strong ground shaking areas and/or are necessary to use during and/or immediately after a disaster or emergency. Retrofit existing potable water reservoirs with seismic couplings at inlet and outlet connections	Earthquake, Dam Failure, Climate Change	City of Henderson Public Work; City of Henderson Parks and Recreation; City of Henderson Utilities	Low (21)	Existing	5 Years	\$5M	Federal and State Funding	Carry-over project from the 2018 plan. This project was included in the last MJHMP update but due to the lack of staff and funding, this project is being carried over to the 2024 MJHMP update.
Henderson 5	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2024 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Henderson 6	Annual Review and Update of Continuity of Operations (COOP) Plan	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought, Earthquake, Excessive	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes				annually beginning January 2024.		
Henderson 7	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Henderson 8	Annual Review and Update of Local Emergency Operations Plan (LEOP)	Annual review and updated the County's LEOP to ensure compliance with NV DEM requirements	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous	Clark County OEM; Clark County Local Emergency Planning Commission (LEPC); All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Materials, and Terrorism)	Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes						

Mitigation Action Project Prioritization (Proposed and Carry-Over Projects), Las Vegas

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Las Vegas 1	Update of RFCD Master Plan Improvements within the City	Construct the recommended improvements contained within the RFCD's Master Plan to eliminate as much of the FEMA designated flood zone within the City as possible, thereby protecting residents and property	Flooding	Las Vegas Public Works, RFCD	Medium (35.5)	New	\$200M+	5+ years	CIP, General Fund, BRIC	Proposed project for the 2024 plan update.
Las Vegas 2	Critical Infrastructure Flood Risk Reduction (Bonneville Stormwater)	Reinforce roads/bridges that are prone to repetitive flooding and/or flash flooding through protection activities, including elevating the roads/bridges and installing/widening culverts beneath the roads/bridges or upgrading storm drains. Bonneville Underpass is constructed below the groundwater table, so constant groundwater dewatering is required to keep the underpass dry. Groundwater is contaminated and requires treatment before discharge into storm drain. The project is ongoing since 1992. The maintenance of pumping station costs approximately \$40,000 per year.	Flooding	Las Vegas Public Works	Medium (31)	Existing	\$7Million to replace pump and \$40,000 annual maint. cost	Ongoing, Continuous through the five-year plan cycle.	CIP, Clark County Regional Flood Control District Grant Programs	Carry-over project from the 2018 plan. Project Update: New pump and generator installation will start this year and will be completed in approximately 2-year. The cost of this replaces is approximately \$7million. The maintenance of pumping station will continue with approximate annual cost of \$40,000 per year.
Las Vegas	Cooling Infrastructure Investment	Prepare for long-term, seasonal hazards such as extreme heat by investing in cooling infrastructure and	Drought	Las Vegas Community Development; Las	Medium (30)	New	\$50M+	5+ years	CIP, BRIC	Proposed project for the 2024

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
3		developing urban design standards that mitigate the urban heat island effect		Vegas Public Works; Las Vegas Parks & Recreation						plan update.
Las Vegas 4	NIPP's Security and Resilience Challenge (Smart City)	Strengthen the security and resilience of critical infrastructure through state-of-the-art, cost-effective technology, tools, processes, and methods as part of the 2017 National Infrastructure Protection Plan's (NIPP) Security and Resilience Challenge. The city is underway with a robust connected vehicle corridor deployment. To date, 14 traffic signals within the region have been instrumented with Dedicated Short-Range Communications (DSRC) radios. Our experience includes the installation, inspection, and integration of the data into our regional traffic system. The city is developing a network of connected corridors within our Innovation District for deployment of Connected Autonomous Vehicles (CAVS). The roadways include Main and Fourth streets, Stewart, Bonneville and Clark avenues and Casino Center Boulevard. The connected corridor project is underway and will install 24 additional DSRC radios in the downtown Innovation District again using our significant fiber optic investment. This project will provide a solid backbone for the safe assessment of CAVs, that use this area as a proving ground, and offers the capability of monitoring the performance of various technology deployments.	Hazardous Materials, Terrorism	Public Works, Operations and Maintenance, Information Technologies, Planning / City of Las Vegas	Medium (30)	Existing	\$10M+	1-2 year (2025)	CIP	Carry-over project from the 2018 plan. Project Update: This project was carried over from 2018 MJHMP update due to lack of staffing and funding.
Las Vegas 5	NIPP's Security and Resilience Challenge (Connected Corridors)	Strengthen the security and resilience of critical infrastructure through state-of-the-art, cost-effective technology, tools, processes, and methods as part of the 2017 National Infrastructure Protection Plan's (NIPP) Security and Resilience Challenge. The city is underway with a robust connected	Hazardous Materials, Terrorism	Public Works, Innovation and Technology Planning / City of Las Vegas	Medium (30)	Existing	\$10M+	2-5 years	CIP	Carry-over project from the 2018 plan. Project Update: This project was carried

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		vehicle corridor deployment. To date, 14 traffic signals within the region have been instrumented with Dedicated Short-Range Communications (DSRC) radios. Our experience includes the installation, inspection, and integration of the data into our regional traffic system. The city is developing a network of connected corridors within our Innovation District for deployment of Connected Autonomous Vehicles (CAVS). The roadways include Main and Fourth streets, Stewart, Bonneville and Clark avenues and Casino Center Boulevard. The connected corridor project is underway and will install 24 additional DSRC radios in the downtown Innovation District again using our significant fiber optic investment. This project will provide a solid backbone for the safe assessment of CAVs, that use this area as a proving ground, and offers the capability of monitoring the performance of various technology deployments.								over from the 2018 MJHMP update due to lack of staffing and funding.
Las Vegas 6	Low Impact Development of Natural Drainage Techniques	Increase the number of multi-use facilities and utilize low-impact development and other natural drainage techniques	Flooding; Subsidence & Fissures	Las Vegas Parks & Recreation; Las Vegas Public Works	Medium (28.5)	New	\$1M	5+years	CIP, General Fund, BRIC	Proposed project for the 2024 plan update.
Las Vegas 7	Aquifer Storage and Recovery (Water Use and Conservation)	Maximize the use of recycled water in areas where return flow to the Colorado River system is not practical, by creating aquifer storage and recovery (ASR). Source waters for injection into ASR wells range from potable water, reclaimed water, partially treated surface water, and raw groundwater. Explore use of Aquifer Recharge and Recovery (ARAR), where water is recharged to an aquifer either under gravity or injected for the purpose of recharging	Drought, Subsidence & Fissures	Parks and Rec, Planning / City of Las Vegas	Medium (27)	Existing	\$1M	1-5 years	CIP	Carry-over project from the 2018 plan. Project Update: This project was carried over from the 2018 MJHMP update due to lack of

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		<p>the aquifer. The primary source of water for the Las Vegas region is the Colorado River. The city plays a crucial role in the conservation and management of the water supply for its residents and businesses by supporting regional management efforts by the Southern Nevada Water Authority. Since 2008, the city has reduced its water consumption from 1.47 billion gallons to 1.18 billion gallons in 2016. These savings were achieved through the replacement of more than 40-acres of grass with synthetic turf at city sports fields and parks. City landscaping utilizes drought tolerant plants and public art. More than 75 million gallons of water per day have been recycled at the city's wastewater treatment plants and used at golf courses around the valley or returned to Lake Mead. In the community, water use has declined from approximately 350 gallons per person per day (GPCD) in 1990 to less than 220 GPCD today. Southern Nevada will soon surpass the region's 2035 goal to reduce consumption through conservation to 199 GPCD. Overall Colorado River water consumption has decreased 40 billion gallons despite an increase of 500,000 residents over the last decade.</p>								staffing and funding.
Las Vegas 8	Emergency Power (Shelter Generators)	<p>Provide additional emergency power, such as a generator equipment, for new and existing critical facilities to operate continuously but cannot do so for long durations of power outage. Two shelter locations have been identified with a need for back-up power improvements. At least two new trailer mounted diesel generator sets with quick connection cables and temporary fencing will be required.</p>	Earthquake, Dam Failure, Flood, Climate Change	<p>Building and Safety, Community Services, Facilities, Emergency Management / City of Las Vegas</p>	Low (24.25)	Existing	\$50,000	1-3 years	EMPG; CIP	<p>Carry-over project from the 2018 plan. Project Update: This project was carried over from the 2018 MJHMP update due</p>

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
										to lack of staffing and funding.
Las Vegas 9	Early Warning Notification Education Program	Continue coordinating with the RFCD and National Weather Service on early warning notifications and education on the risks of flooding	Flooding	Las Vegas Emergency Management; RFCD; NWS; Las Vegas Communications	Low (23.5)	New	\$50,000	5+years	General Fund, EMPG	Proposed project for the 2024 plan update.
Las Vegas 10	Turf Limits	Turf limits restrict or prohibit the amount of grass to be planted at new properties. The restrictions prohibiting types of grass that can be planted apply to all property owners.	Drought; Climate Change	Las Vegas Parks & Rec, Las Vegas Planning Department	Low (21.5)	Existing	\$50,000	5+ years	General Fund, EMPG	Carry-over project from the 2018 plan. Project Update: This project was carried over from the 2018 MJHMP update due to lack of staffing and funding. This is an ongoing project into 2024.
Las Vegas 11	Hazard Economic Recovery Framework	To lessen economic severity of all types of hazards, develop a comprehensive economic recovery framework that's context sensitive and adaptable to a variety of hazard scenarios	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease,	Las Vegas Emergency Management, Las Vegas Economic & Urban Development, Las Vegas Community Development and Las Vegas Public Works	Low (19.77)	New	\$200,000	5 years	EPMG, PDM, General Fund	Proposed project for the 2024 plan update.

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Hazardous Materials, and Terrorism)							
Las Vegas 12	Seasonal Monsoon Season Study	Determine the effect an increasingly active monsoonal season may have on storm water infrastructure	Flooding	Las Vegas Public Works, National Weather Service	Low (19.5)	New	\$100,000	2-4 years	General Fund	Proposed project for the 2024 plan update.
Las Vegas 13	Hazard Prevention Framework	Develop hazard prevention, mitigation, vulnerability, and recovery frameworks that apply to hazards	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Las Vegas Emergency Management, Las Vegas Economic & Urban Development, Las Vegas Community Development and Las Vegas	Low (17.77)	New	\$200,000	5 years	EPMG, PDM, General Fund	Proposed project for the 2024 plan update.
Las Vegas 14	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2024 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Las Vegas 15	Annual Review and Update of Continuity of Operations (COOP) Plan	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infectious Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Las Vegas 16	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infectious Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Las Vegas 17	Annual Review and Update of Local Emergency Operations Plan (LEOP)	Annual review and updated the County's LEOP to ensure compliance with NV DEM requirements	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infectious Disease, Hazardous Materials, and Terrorism)	Clark County OEM; Clark County Local Emergency Planning Commission (LEPC); All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson,	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes						

Mitigation Action Project Prioritization (Proposed and Carry-Over Projects), Las Vegas Valley Water District (LVWD)/SWNA

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
LVWD 1	Septic to Sewer Conversions	Connect properties currently on septic systems to the sewer system so that indoor use water can be captured and recycled.	Drought, Climate Change	Las Vegas Valley Water District	Medium (30.5)	New	\$2.6M	1-2 years	Proposed ARPF/Federal and State Funds	Proposed Project for 2024 plan.
LVWD 2	Installation of Perimeter Fence	Installation of approximately 4,000 linear feet of perimeter fence around the existing Reservoir site to improve security required due to increased foot and vehicle traffic near the Raiders stadium.	Terrorism	Las Vegas Valley Water District	Medium (30)	New	\$12.1M	1-3 years	Federal and State Funds	Proposed Project for 2024 plan.
LVWD 3	Treatment Facility Network Improvements	Network Improvements to harden Industrial Control Systems from Cyber vulnerabilities.	Terrorism	Las Vegas Valley Water District	Medium (30)	New	\$10.0M	1-2 years	LVVWD General Fund	Proposed Project for 2024 plan.
LVWD 4	Purchase generators and develop plan to use well water to provide critical service water supply if treatment plants operations are disrupted	This plan and equipment will provide a limited emergency potable water supply to critical services in the community if there were a large-scale interruption of the SNWA treatment facilities.	Earthquake, Flood, Climate Change, Wildfire	BBWD (Big Bend Water District, Laughlin)	Medium (28.75)	New	\$0.8M	1-2 years	Proposed SRF Funding	Proposed Project for 2024 plan.
LVWD 5	Water Conservation Program	A Southern Nevada Water Authority program that focuses on reductions in consumptive Colorado River water use, specifically changing the outdoor water use habits of residents, since outdoor use accounts for the greatest consumption of water.	Drought, Climate Change	BBWD (Big Bend Water District, Laughlin)	Medium (28.5)	New	\$0.75M	1-2 years	Proposed SRF Funding	Carry-over project from the 2018 plan. Project Update: This project was one of the ongoing projects listed in the previous MJHMP. Per SWNA, this ongoing

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
										project for the last 20 years in the community therefore this has been a continuous project will be considered a carry-over project for the 2024 plan update.
LVWD 6	Risk Solutions Software for Continuity of Operations Plan Management	Continuity of Operations Planning (COOP) is important to our organization to enable rapid response and recovery when faced with emergencies brought on by all hazards. This software will make the COOP current and easily accessible to all staff while maintaining document control.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	SWNA	Medium (27.54)	New	\$9M	3-5 years	SWNA General Fund	Proposed Project for 2024 plan.
LVWD 7	Design and Installation of Horizon Lateral	Install line to provide redundancy in a large part of the service area.	Earthquake, Flood, Climate Change, Wildfire	SWNA	Low (22.875)	New	\$1.0M	1-2 years	SWNA General Fund	Proposed Project for 2024 plan.
LVWD 8	Equip Riverbank Well	Obtain and install equipment for the Riverbank Well in Laughlin Nevada to provide an alternate source of water for the Big Bend system.	Drought, Climate Change	Las Vegas Valley Water District	Low (22.25)	New	\$1.3M	1 year	LVVWD General Fund	Proposed Project for 2024 plan.

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
LVWD 9	Replace Aging/Failed Surveillance and Networking Equipment	CCTV is a main component of the district's physical security program. Updating the system ensures reliability and keeps the system up to date. The CCTV program offers our security force real time information on any intrusions and enables a quick response and accurate reporting to law enforcement.	Terrorism	Las Vegas Valley Water District	Low (21.5)	New	\$1.9M	1 year	LVVWD General Fund	Proposed Project for 2024 plan.
LVWD 10	Turf Limits	Advertising, turf removal, water smart landscaping program. Turf limits restrict or prohibit the amount of grass to be planted at new properties. The restrictions prohibiting types of grass that can be planted apply to all property owners.	Drought, Climate Change	BBWD (Big Bend Water District, Laughlin)	Low (21.25)	New	\$2.4M	2-4 years	Proposed SRF Funding	Carry-over project from the 2018 plan. Project Update: This project was one of the ongoing projects listed in the previous MJHMP. This project was carried over from the 2018 MJHMP update due to lack of staffing and funding.

Mitigation Action Project Prioritization (Proposed and Carry-Over Projects), Mesquite

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Mesquite 1	Town Wash Detention Basin, Abbott Wash Detention Basin, Pulsipher Wash Detention Basin	Assessment of basin, inspection, cleaning and reshaping, vegetation control, species survey and removal, erosion control	Flood	City of Mesquite Public Works	Medium (38.5)	Existing	\$500,000	Ongoing, Continuous through the five-year plan cycle.	City Budget, FDA, NDR	Carry-over project from the 2018 plan. Project Update: This project is being carried over to this plan update because it is still in process and is 80% complete.
Mesquite 2	Flooding-Levy Build Up	Build up the Levy of the Virgin River to ensure homes, building and resources are protected during floods.	Flood	City of Mesquite Public Works	Medium (30.3636365)	New	\$20 million	5 years	Regional Flood Control District	Proposed Project for the 2024 plan update.
Mesquite 3	Damage Assessment Forms for Flooding and Earthquake	Provide training for building inspector to properly perform building assessment after earthquakes or floods	Earthquake, Flood, Climate Change	City of Mesquite Developmental Services and Emergency Management	Medium (26)	New	\$10,000	1-2 years	Mesquite General Fund Federal Funds	Proposed Project for the 2024 plan update.
Mesquite 4	Recreation Center Backup Power Supply	Provide backup power supply to the Recreation Center as the identified shelter facility to operate independently.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	City of Mesquite Public Works	Medium (25.54)	New	\$200,000	1-2 Years	ARPA	Proposed Project for the 2024 plan update.

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Mesquite 5	Senior Center Backup Power Supply	Provide backup power supply to the Senior Center as the identified shelter facility to operate independently.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	City of Mesquite Public Works	Medium (25.54)	New	\$100,000	1 Year	ARPA	Proposed Project for the 2024 plan update.
Mesquite 6	Drought-Water Conservation Planning	Develop and implement a city education program, focusing on resilience and drought conservation topics. Community members will be more prepared for climate hazards and can learn how to practice drought conservation sustainable planning	Drought, Climate Change	Virgin Valley Water District	Low (21.5)	New	\$250,000	Ongoing, Continuous through the five-year plan cycle.	Virgin Valley Water District (VVWD)	Proposed Project for the 2024 plan update.
Mesquite 7	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2024 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Mesquite 8	Annual Review and Update of Continuity of Operations (COOP) Plan	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Mesquite 9	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Mesquite 10	Annual Review and Update of Local Emergency Operations Plan (LEOP)	Annual review and updated the County's LEOP to ensure compliance with NV DEM requirements	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding,	Clark County OEM; Clark County Local Emergency Planning Commission (LEPC); All Jurisdictions	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections, Disease, Hazardous Materials, and Terrorism)	(Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes				beginning January 2024.		

Mitigation Action Project Prioritization (Proposed and Carry-Over Projects), North Las Vegas

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
NLV 1	Lower Las Vegas Wash Detention Basin Inflow Channel	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (35.5)	New	\$4M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV2	Range Wash - Las Vegas Diversion Channel	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (35.5)	New	\$11M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV 3	Las Vegas Boulevard Storm Drain	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (35.5)	New	\$10M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV 4	Range Wash Beltway Conveyance	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (35.5)	New	\$15M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV 5	Beltway Collection System - Pecos	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (35.5)	New	\$5M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV 6	Speedway North Detention Basin and Outfall	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (35.5)	New	\$16.5M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV 7	Speedway #3 Detention Basin Expansion and Inflow/Outflow Facilities	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (35.5)	New	\$5M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV 8	Turf Conversion Subsidy	Turf Conversion Study - Provide an additional turf conversion to supplement the already existing Southern Nevada Water Authority Program	Drought	North Las Vegas Public Works	Medium (29)	Existing	\$500,000	2-5 years	Federal and State Funds	Carry-over project from the 2018 plan. This project was carried over from the 2018 MJHMP update due to lack of staffing and funding.
NLV 9	North Apex - System 1 Detention Basin and Outfall	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (28)	New	\$31M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
NLV 10	Flood Control	Alleviate the damage associated with flooding through new and reinforced flood control projects, including storm drains, culverts, drop inlets, channels, and detention basins. Oak Island Storm Drain Mitigation Project: The City will eliminate the last residential Flood Zone "A" lots in the City's jurisdiction; 100% capture of water flow; flow redirect conservation. Protect existing county/city assets and new developments from effects of floods within the 100-year floodplain.	Flood, Dam Failure	North Las Vegas Public Works	Medium (27)	Existing	Upon receipt of grant funding, within grant funding period.	2-5 years	FEMA Grants with Match from Clark County Regional Flood Control District	Carry-over project from the 2018 plan. This project was carried over from the 2018 MJHMP update due to lack of staffing and funding.
NLV 11	Emergency Power	Provide additional emergency power, such as a generator equipment, for new and existing critical facilities to operate continuously but cannot do so for long durations of power outage. Emergency Generators for Critical Infrastructure and Sheltering Facilities	Earthquake Flood Climate Change Wildfire	North Las Vegas Public Works	Low (20.5)	Existing	Grant Application Opportunities	2-5 years	FEMA Grants; Potential CIP Funding	Carry-over project from the 2018 plan. This project was carried over from the 2018 MJHMP update due to lack of staffing and funding.
NLV 12	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2024 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections, Disease, Hazardous	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Materials, and Terrorism)	Moapa Band of Paiutes						
NLV 13	Annual Review and Update of Continuity of Operations (COOP) Plan	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
NLV 14	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
NLV 15	Annual Review and Update of Local Emergency	Annual review and updated the County's LEOP to ensure compliance with NV DEM requirements	All Hazards (Climate Change, Drought, Earthquake,	Clark County OEM; Clark County Local Emergency Planning	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
	Operations Plan (LEOP)		Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections, Disease, Hazardous Materials, and Terrorism)	Commission (LEPC); All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes				conducted annually beginning January 2024.		

Note: Mitigation Project Labeled "NLV 8 – Turf Conversion Subsidy" was a project that was listed under Clark County Unincorporated as an ongoing project from the 2012 MJHMP. In the last plan update (2018), the responsible party for this project was the Southern Nevada Water Authority Program (SWNA). During the planning process, North Las Vegas Public Works included this project in their mitigation project/action this planning cycle due to their collaborative work between the North Las Vegas Public Works Department and the Southern Nevada Water Authority Program (SWNA).

Mitigation Action Project Prioritization (Proposed and Carry-Over Projects), Las Vegas Paiute Tribe

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Las Vegas Paiute 1	Flood Control Project Maintenance Project - US 95 Highway Culvert	Reinforce roads/bridges that are prone to repetitive flooding and/or flash flooding through protection activities, including elevating the roads/bridges and installing/widening culverts beneath the roads/bridges or upgrading storm drains. The Las Vegas Paiute Tribe is seeking funding for continued channel maintenance near U.S. 95 due to flooding. Following the 2013 flooding event, the highway was reconstructed to widen the culverts under the freeway to drain water past the resorts. The Tribe wants to continue channel maintenance efforts along U.S. 95 before another significant flooding event.	Flooding	Las Vegas Paiute Tribe (LVPT) Police Department	Medium (30)	New	\$30,000-\$50,000	1-5 years	Federal Grants and State Grants	Proposed Project for the 2024 Plan Update
Las Vegas Paiute 2	Flood Control Project - Paiute Golf Course - Wolf Course Channel Extension	The Tribe is seeking funds to extend a flood channel located on the Paiute Golf Resort - Wolf Course. The existing channel must be extended past the east fence on the golf course grounds. The extension of this channel will alleviate the damage associated with flooding through existing ends near Wolf Course, where river rocks have filled up over the past five years.	Flooding	Las Vegas Paiute Emergency Management Team; Las Vegas Paiute Public Works Department; NV Department of Transportation; Las Vegas Valley Water District	Medium (30)	New	\$350,000-\$500,000	1-5 years	Federal Grants and State Grants	Proposed Project for the 2024 Plan Update
Las Vegas Paiute 3	Acquire Water Well Backup	The Tribe does not have portable water access during a hazard event on	Drought, Earthquake, Flooding,	Las Vegas Paiute Golf Resort and	Medium (27.33333)	New	\$200,000-\$400,000	1-5 years	Federal Grants	Proposed Project for the 2024

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
	Generator for Snow Mountain	the reservation and is looking to provide additional potable water (new water tank) to operate continuously for long durations during drought, severe storms, floods, or other disaster situations where water availability may be limited. Bringing 220v power to the existing water tank and adding an emergency power generator will allow the water pump at Snow Mountain to work during an extended power outage that could leave the residents of Snow Mountain without access to water in the event of an emergency.	Wildfire, Hazardous Material, and Terrorism	LVPT Maintenance Dept;						Plan Update
Las Vegas Paiute 4	Protect Snow Mountain Water Well	The Snow Mountain Water Well is a vital critical facility to the Tribe and provides water to the residents of this part of the Tribe. The Tribe seeks funds to protect with measures like updating the tank, ensuring the well has the proper fencing, and protection against hazards like drought, earthquake, excessive heat, and wildfires.	Drought, Excessive Heat, Wildfire, and Earthquake	LVPT Maintenance Department	Medium (26.5)	New	\$50,000-\$100,000	1-5 years	Federal Grants and State Grants	Proposed Project for the 2024 Plan Update
Las Vegas Paiute 5	Purchase of Law Enforcement Facility Generator	Law Enforcement Department is looking to purchase a generator due to power supply issues causing loss in communication with tribal citizens and their officers in the field in the event of an emergency.	Drought, Earthquake, Flooding, Wildfire, Hazardous Materials, and Terrorism	LVPT Maintenance Department	Medium (25.333)	New	\$90,000-\$100,000	1-5 years	Federal Grants and State Grants	Proposed Project for the 2024 Plan Update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Las Vegas Paiute 6	Create a Tribal Continuity of Operations Plan (COOP)	The Las Vegas Valley Paiute Tribe is seeking funding for professional contracted services to develop a Continuity of Operations Plan (COOP) to ensure the capability exists to continue essential Tribal functions in the event of an all-hazards event. The COOP will provide for the continuation of vital Tribal services across a wide range of potential emergencies. The professional contractor will work with Tribal Governments Officials and Tribal Government Departments to develop a continuity plan.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Las Vegas Paiute Emergency Management Team; Las Vegas Paiute Tribal Government	Low (18.769231)	New	\$5,000-\$10,000	1-5 years	Federal Grants and State Grants	Proposed Project for the 2024 Plan Update
Las Vegas Paiute 7	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2024 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Las Vegas Paiute 8	Annual Review and Update of Continuity of Operations (COOP) Plan	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding,	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson,	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes				beginning January 2024.		
Las Vegas Paiute 9	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Las Vegas Paiute 10	Annual Review and Update of Local Emergency Operations Plan (LEOP)	Annual review and updated the County's LEOP to ensure compliance with NV DEM requirements	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; Clark County Local Emergency Planning Commission (LEPC); All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
				Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes						

Mitigation Action Project Prioritization (Proposed and Carry-Over Projects), Moapa Band of Paiutes Tribe

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Moapa 1	Emergency Power for Admin and Law Enforcement	The tribe is seeking to purchase and install backup generators for the Admin and Law enforcement buildings. The purpose would be to keep the Government working during Power Outages and have cooling stations during emergency events within the Tribal land.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Moapa Band of Paiutes Business Department; Moapa Band of Paiutes Government, and Moapa Band of Paiutes Law Enforcement	Medium (34.4285)	New	\$1 Million	1-5 years	Federal and State Grants; Moapa Band of Paiutes	Proposed Project for the 2024 Plan Update
Moapa 2	Tribal Emergency Preparation (Training, purchasing, planning and events planning)	The Tribal Emergency Manager will work on preparing the community (Elders) and help prepare for events (Emergency or Non-Emergency) disasters by assessing Tribe's Emergency Preparedness and Event Planning efforts.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Moapa Band of Paiutes Business Department; Moapa Band of Paiutes Government, and Moapa Band of Paiutes Law Enforcement	Medium (34.4285)	New	\$500,000	1-5 years	Federal and State Grants; Moapa Band of Paiutes	Proposed Project for the 2024 Plan Update
Moapa 3	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2024 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather,	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes						
Moapa 4	Annual Review and Update of Continuity of Operations (COOP) Plan	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Moapa 5	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Moapa 6	Annual Review and Update of Local Emergency Operations Plan (LEOP)	Annual review and updated the County's LEOP to ensure compliance with NV DEM requirements	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; Clark County Local Emergency Planning Commission (LEPC); All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Planning Integration

Mitigation does not end at plan approval. Plan approval is only the beginning. The successful implementation of any number of mitigation activities and projects requires the coordination and collaboration of a number of local agencies, departments, and organizations. Each group has varying decision-making processes and authorities governing their actions. This plan, once approved, must be integrated into their decision-making processes as a tool for improving their respective resiliencies.

Coordination with other community planning efforts was paramount to the success of this plan. Mitigation planning involves identifying existing policies, tools, and actions that will reduce a community’s risk and vulnerability to hazards. Clark County and its participating jurisdictions uses a variety of planning mechanisms such as land development regulations and ordinances to guide growth and development. Integrating existing planning efforts and mitigation policies and action strategies into this plan establishes a credible and comprehensive plan that ties into and supports other community programs.

The following tables identify the existing planning mechanisms for each jurisdiction in the planing area that were reviewed and how they were incorporated into the 2024 Hazard Mitigation Plan Update.

Clark County, NV (including Unincorporated Areas)

Existing Planning Mechanisms – Clark County, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates.
Local Emergency Operations Plan	Yes	Identifies major capabilities.
Master Plan	Yes	Identifies policies on both manmade and natural hazards.
Capital Improvement Plan (Yes)	Yes	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions; mitigation strategies.

Existing Planning Mechanisms – Clark County, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
Building and Zone Codes and Ordinances	Yes	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy. The County has adopted and adheres to the 2018 Building Codes.
Stormwater Management Plan	Yes	Capability assessment, mitigation strategies.
Clark County, NV Climate Vulnerability Assessment	Yes	Identifies the current and future impacts of climate change in Clark County and Boulder City.
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County, including unincorporated areas.
Community Wildfire Protection Plan	Yes	Identifies the County's priorities for wildfire fuel reduction projects. At the time of this update the CWPP was outdated (2005). The County hopes to integrate the updated CWPP during the next plan update cycle.
Transportation Plan	No	Identifies transportation plans, programs, and projects within the County. At the time of this update the County does not have an updated transportation plan. Developing a transportation plan is a key opportunity of plan integration for the County and its participating jurisdictions.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction.
FEMA's National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction.
U.S Census Bureau		Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

Boulder City, NV

Existing Planning Mechanisms – Boulder City, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates.
Local Emergency Operations Plan	Yes	Identifies major capabilities. The Boulder City EOP is being revised in 2023, this is a key opportunity for integration.
Local Continuity of Operations Plan (COOP)	Yes	Identifies major capabilities. The Boulder City COOP is being revised in 2023, this is a key opportunity for integration.
Master Plan	No	Identifies policies on both manmade and natural hazards. At the time of this plan update, the City of Boulder City's Master Plan does not address hazard mitigation directly. The next update of the integration of the MJHMP into the revised Boulder City Master Plan would be a key opportunity for integration.
Capital Improvement Plan	Yes	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions, mitigation strategies. The Boulder City Capital Improvement Plan is being revised in 2023-2024, this is a key opportunity for integration.
Building and Zone Codes and Ordinances	Yes	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy. Boulder City has adopted and adheres to the 2018 Building Codes.
Stormwater Management Plan	Yes	Capability assessment, mitigation strategies.
Clark County, NV Climate Vulnerability Assessment	Yes	Identifies the current and future impacts of climate change in Clark County including the City of Boulder City.
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County, including Boulder City.

Existing Planning Mechanisms – Boulder City, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
Community Wildfire Protection Plan	No	Identifies the County’s priorities for wildfire fuel reduction projects. At the time of this update the CWPP was outdated (2005). The City does not have a CWPP due to not having a substantial wildfire risk.
Transportation Plan	No	Identifies transportation plans, programs, and projects within the City. At the time of this update the City has a Pavement Management System due to growth ordinance that addresses hazard and mitigation strategies.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction.
FEMA’s National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction.
U.S Census Bureau	Yes	Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

Henderson, NV

Existing Planning Mechanisms – Henderson, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates.
Local Emergency Operations Plan	Yes	Identifies major capabilities. The City of Henderson’s EOP is revised in biannually, this is a key opportunity for integration.
Local Continuity of Operations Plan (COOP)	Yes	Identifies major capabilities. The Henderson City COOP is revised annually, this is a key opportunity for integration.
Master Plan	Yes	Identifies policies on both manmade and natural hazards. The City of Henderson’s Master Plan was last revised in 2017. During the next revision plan process is a key opportunity for integration.
Capital Improvement Plan	Yes	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions, mitigation strategies. The Henderson Capital Improvement Plan was revised in 2022 and includes project identification and addresses community hazards that can be used to implement mitigation actions, as needed.
Building and Zone Codes and Ordinances	Yes	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy. Henderson has adopted and adheres to the 2018-2021 Building Code Suite.
Stormwater Management Plan	Yes	Capability assessment, mitigation strategies.
Clark County, NV Climate Vulnerability Assessment	Yes	Identifies the current and future impacts of climate change in Clark County including the City of Henderson.
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County, including Henderson.

Existing Planning Mechanisms – Henderson, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
Community Wildfire Protection Plan	No	Identifies the County’s priorities for wildfire fuel reduction projects. At the time of this update the CWPP was outdated (2005). The City of Henderson does not have a CWPP.
Transportation Plan	Yes	Identifies transportation plans, programs, and projects within the County. The City of Henderson’s Transportation Plan is a component of the Cities Comprehensive/Master Plan that was revised in 2022.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction.
FEMA’s National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction .
U.S Census Bureau		Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

Las Vegas, NV

Existing Planning Mechanisms – Las Vegas, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates.
Local Emergency Operations Plan	Yes	Identifies major capabilities. The City of Las Vegas EOP is revised (2022) in annually, this is a key opportunity for integration.
Local Continuity of Operations Plan (COOP)	Yes	Identifies major capabilities. Las Vegas COOP is revised (2022) continuously by departments, this is a key opportunity for integration.
Master Plan	Yes	The City of Las Vegas's 2050 Master Plan was revised in 2022 and identifies hazards and mitigation strategies.
Capital Improvement Plan	Yes	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions, mitigation strategies. The City of Las Vegas Capital Improvement plan is revised annually, this is a key opportunity for integration.
Building and Zone Codes and Ordinances	Yes	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy. Las Vegas City has adopted and adheres to the 2021 Building Code Suite.
Stormwater Management Plan	Yes	Capability assessment, mitigation strategies.
Clark County, NV Climate Vulnerability Assessment	Yes	Identifies the current and future impacts of climate change in Clark County including the City of Las Vegas.
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County, including Las Vegas.

Existing Planning Mechanisms – Las Vegas, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
Community Wildfire Protection Plan	No	Identifies the County’s priorities for wildfire fuel reduction projects. At the time of this update the CWPP was outdated (2005). The City does not have a CWPP because the city is an urban environment with no wildfire protection zone to manage.
Transportation Plan	No	Identifies transportation plans, programs, and projects within the County. The City of Las Vegas participates on the Clark County Regional Transportation Commission therefore does not have a developed transportation plan.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction.
FEMA’s National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction.
U.S Census Bureau	Yes	Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

Mesquite, NV

Existing Planning Mechanisms – Mesquite, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates.
Local Emergency Operations Plan	Yes	Identifies major capabilities. The City of Mesquite's EOP was reviewed and updated in 2023 to meet the State compliance. This is a key opportunity for integration.
Local Continuity of Operations Plan (COOP)	Yes	Identifies major capabilities. The Mesquite COOP revised in 2022, this is a key opportunity for integration.
Master Plan	No	Identifies policies on both manmade and natural hazards. At the time of this plan update the City of Mesquite does not indicate having a Master Plan.
Capital Improvement Plan	Yes	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions, mitigation strategies. The City of Mesquite Capital Improvement plan is revised annually, this is a key opportunity for integration.
Building and Zone Codes and Ordinances	Yes	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy. Mesquite has adopted and adheres to the 2018 Building Code Suite however; the City will be working to adopt the 2004 IBC Suite. This is a key opportunity for integration.
Stormwater Management Plan	Yes	Capability assessment, mitigation strategies. The City of Mesquite's Stormwater Management Plan was revised in October 2022, this is a key opportunity for integration.
Clark County, NV Climate Vulnerability Assessment	Yes	Identifies the current and future impacts of climate change in Clark County including the City of Mesquite.
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County, including Mesquite.

Existing Planning Mechanisms – Mesquite, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
Community Wildfire Protection Plan	No	Identifies the County’s priorities for wildfire fuel reduction projects. At the time of this update the CWPP was outdated (2005). The City does not have a CWPP because it falls under the County and State mitigation work related to the river which is a related wildfire risk.
Transportation Plan	Yes	Identifies transportation plans, programs, and projects within the County and the City. The City of Mesquite’s Transportation Plan was revised (2022), this is a key opportunity for integration.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction.
FEMA’s National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction.
U.S Census Bureau	Yes	Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

North Las Vegas, NV

Existing Planning Mechanisms – North Las Vegas, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates.
Local Emergency Operations Plan	Yes	Identifies major capabilities. The City of North Las Vegas EOP is revised in annually, this is a key opportunity for integration.
Local Continuity of Operations Plan (COOP)	Yes	Identifies major capabilities. The City of North Las Vegas COOP is revised in annually, this is a key opportunity for integration.
Master Plan	No	Identifies policies on both manmade and natural hazards. At the time of this plan update the City of North Las Vegas has a Master Plan but it addresses land development and not mitigation strategy or actions. This is a key opportunity for integration in the future.
Capital Improvement Plan	Yes	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions, mitigation strategies. The City of North Las Vegas Capital Improvement plan is revised annually, this is a key opportunity for integration.
Building and Zone Codes and Ordinances	Yes	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy. North Las Vegas has adopted and adheres to the 2018 Building Code Suite. However, the City will be working to adopt the 2004 IBC Suite. This is a key opportunity for integration.
Stormwater Management Plan	Yes	Capability assessment, mitigation strategies. The City of North Las Vegas Stormwater Management Plan addresses city and developer stormwater protection but not mitigation strategy or actions. This is a key opportunity for integration in the future.
Clark County, NV Climate Vulnerability Assessment	Yes	Identifies the current and future impacts of climate change in Clark County including the City of North Las Vegas.

Existing Planning Mechanisms – North Las Vegas, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County, including North Las Vegas.
Community Wildfire Protection Plan	No	Identifies the County’s priorities for wildfire fuel reduction projects. At the time of this update the CWPP was outdated (2005). The City does not have a CWPP and there is no use for mitigation strategies or actions related to wildfire fuel reduction projects.
Transportation Plan	Yes	Identifies transportation plans, programs, and projects within the County and the City. The City of North Las Vegas Transportation Plan addresses roadways, but not mitigation strategy or actions, this is a key opportunity for integration.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction.
FEMA’s National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction.
U.S Census Bureau	Yes	Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

Las Vegas Paiute Tribe

Existing Planning Mechanisms – Las Vegas Paiute Tribe		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates. The Tribe was included in the previous Clark County MJHMP.
Tribal Emergency Operations Plan	Yes	Identifies major capabilities. Las Vegas Paiute Tribe is working to update their EOP to reflect the current capabilities of the Tribe, this is a key opportunity for integration.
Tribal Continuity of Operations Plan (COOP)	No	Identifies major capabilities. At the time of this plan update, the Las Vegas Paiute Tribe does not have a COOP. The Tribe understands the need for. This plan has included the development of this plan as a priority/mitigation project, which is a key opportunity for integration.
Master Plan	No	Identifies policies on both manmade and natural hazards.
Capital Improvement Plan	N/A	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions, mitigation strategies.
Building and Zone Codes and Ordinances	N/A	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy.
Stormwater Management Plan	N/A	Capability assessment, mitigation strategies.
Clark County, NV Climate Vulnerability Assessment	Yes	Identifies the current and future impacts of climate change in Clark County, including the Las Vegas Paiute Tribe.
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County.

Existing Planning Mechanisms – Las Vegas Paiute Tribe		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
Community Wildfire Protection Plan	No	Identifies the County's priorities for wildfire fuel reduction projects.
Transportation Plan	N/A	Identifies transportation plans, programs, and projects within the County, including the Las Vegas Paiute Tribe.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction.
FEMA's National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction.
U.S Census Bureau	Yes	Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

Moapa Band of Paiutes

Existing Planning Mechanisms – Moapa Band of Paiutes		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
County Hazard Mitigation Plan	Yes	Analyze previous plan for updates. The Tribe was included in the previous Clark County MJHMP. As mentioned in the 2015 Moapa Band of Paiutes Hazard Mitigation Plan (April 2015), will adhere to the regulations, policies, program, regulatory capabilities related to hazard prone areas as described in the Clark County Plan, including pre-disaster mitigation management and post-disaster mitigation management.
Tribal Emergency Operations Plan	Yes	Identifies major capabilities. As of the 2015 Moapa Tribal HMP, the Tribe has a Tribal EOP. The revision of this plan is a key opportunity for integration.
Tribal Continuity of Operations Plan (COOP)	N/A	Identifies major capabilities.
Master Plan	Yes	Identifies policies on both manmade and natural hazards. As of the 2015 Moapa Tribal HMP, the Tribe has a 5-year Master Plan. The revision of this plan is a key opportunity for integration.
Capital Improvement Plan	N/A	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions, mitigation strategies. As of the 2015 Moapa Tribal HMP, the Tribe has a 5-year Master Plan. The revision of this plan is a key opportunity for integration.
Building and Zone Codes and Ordinances	N/A	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy. As of the 2015 Moapa Tribal HMP, the Tribe follows unified building code.
Stormwater Management Plan	Yes	Capability assessment, mitigation strategies. As of the 2015 Moapa Tribal HMP, the Tribe has a stormwater management program, but the program needed to be reconstructed. The revision of this plan and reconstruction of the program is a key opportunity for integration.
Clark County, NV Climate Vulnerability	Yes	Identifies the current and future impacts of climate change in Clark County.

Existing Planning Mechanisms – Moapa Band of Paiutes		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
Assessment		
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County.
Community Wildfire Protection Plan	N/A	Identifies the County's priorities for wildfire fuel reduction projects.
Transportation Plan	N/A	Identifies transportation plans, programs, and projects within the County, including Moapa Tribe.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction
FEMA's National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction.
U.S Census Bureau	Yes	Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

These and other documents were reviewed and considered, as appropriate, during the collection of hazard identification, vulnerability assessment, and capability assessment. Data from these plans and ordinances were incorporated into the risk assessment and hazard vulnerability sections of the plan as appropriate. The data was also used in determining the capability of the community in being able to implement certain mitigation strategies.

Democratic Governments and Boards

These organizations rely on agenda proposals, deliberation, discussion, and voting to solidify their decision-making. This type of decision-making makes up the majority of Clark County's participating jurisdictions and stakeholders.

This plan should be integrated into the agenda proposal's design and cross-referenced during deliberation and discussion of the proposed activity. By using this plan's risk assessment, development and capital improvement projects can be appropriately implemented taking into consideration a community's resiliency.

The Clark County MJHMP update (2024) will be incorporated into existing planning mechanisms in varying processes. These processes will be tailored to the unique characteristics of the planning mechanism and the governing structure of Clark County and its participating jurisdictions.

Mitigation Plan Funding

Upon adoption of an HMP plan or other emergency management-related plans, CCOEM will notify all participating jurisdictions when the next mitigation planning steering committee (MPSC) meeting topic will be reviewing mitigation project and action selections. Each jurisdiction then approves a list of mitigation actions and projects they want to pursue according to the mechanism listed in the table on the following page. During the MPSC meeting, CCOEM will assist the jurisdictions in determining which grant program and path will be appropriate for the project. If additional funding is necessary, the jurisdictions will have to return to their community and pass a resolution to secure the funding. The resolution is subject to the process listed in table on the following page.

Emergency Management Planning

All participating jurisdictions (which includes Clark County Unincorporated Area, cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, NV, and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) in the Clark County MJHMP update, each of the jurisdictions have the authority to declare an emergency at the jurisdictional level.

State of Nevada Enhanced Mitigation Plan (2018) – The State’s HMP is required by FEMA regulations to include assessments and integration of local and tribal mitigation plans. The process of integrating the Clark County’s MJHMP update into the State’s plan is already an established process and is managed by the Nevada Division of Emergency Management.

Link:

<http://data.nbmjg.unr.edu/Public/NEHMP/StateOfNevadaEnhancedHazardMitigationPlan2018.pdf>

Nevada Threats & Hazards (September 2020) – The Nevada Threats and Hazards document is a document created by the State of Nevada Division of Emergency Management (DHS)/Office of Homeland Security (DHS). Within the document’s statement of purpose, the reason for this document was that upon further research, FEMA, state agencies, and local jurisdictions were using various terms to define specific threats and hazards. In order to support this effort, DEM has developed a standardized list of threats and hazards to be used in the planning process. The standardized list of terms combines FEMA definitions with a list of hazards specific to geography and industry in Nevada. This document is also a tool that may be used for jurisdictions to facilitate THIRA/SPR planning, plan development and updates (such as the MJHMP update), and grant applications through DEM and DHS.

Infrastructure, Development, and Construction Projects Related to Hazard Mitigation

All participating jurisdictions (which includes Clark County Unincorporated Area, cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, NV, and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) in Clark

County approach infrastructure, development, and construction projects related to hazard mitigation in the same way. The demographics of Clark County allows for planning to exist through collaboration with their Local Emergency Planning Committee (LEPC) and planning area stakeholders.

Clark County Local Emergency Planning Committee (LEPC) & Multi-Jurisdictional Hazard Mitigation Plan Steering Committee (MPSC)

The Clark County LEPC and MPSC is a conduit for all mitigation actions and projects. It is headed by CCOME and meets every quarter (February, May, August, and November) and meetings are open to the public. Note, meetings may only be held via teleconference, please check the agenda of the respective meeting you are attending.

Link:

https://www.clarkcountynv.gov/government/departments/fire_department/emergency_management/lepc_agendas_minutes.php

Their meetings are held in the Clark County Fire Administration Office, 575 E. Flamingo Road. Members of the LEPC and MPSC come from all jurisdictions and from a wide variety of local agencies and departments as well as industry and the general public.

Mitigation Projects and Actions Implementation

As stated in the previous MJHMP (2012), mitigation actions will be monitored and updated through the use of the Mitigation Project Progress Report. During each annual review, each department or agency currently administering a mitigation project will submit a progress report to the Clark County OEM&HS to review and evaluate. For projects that are being funded by a FEMA mitigation grant, FEMA quarterly reports may be used as the preferred reporting tool. As shown in Appendix F of the 2012 MJHMP update document, the progress report will discuss the current status of the mitigation project, including any changes made to the project, identify implementation problems, and describe appropriate strategies to overcome them. After considering the findings of the submitted progress reports, the Clark County OEM may request that the implementing department or agency meet to discuss project conditions.

Upon adoption of an MJHMP plan or other emergency management-related plans, CCOEM will notify all participating jurisdictions (which includes Clark County Unincorporated Area, cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, NV, and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) when the next mitigation planning committee (MPSC) meeting topic will be reviewing mitigation project and action selections. Each jurisdiction then approves a list of mitigation actions and projects they want to pursue according to the mechanism listed in the table on the following page. If additional funding is necessary, the jurisdictions will have to return to their community and pass a resolution to secure the funding. The resolution is subject to the process listed in table on the following page.

Capital Improvement & Economic Development Planning Related to Hazard Mitigation

All of the participating jurisdictions (which included Clark County and the cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, NV, and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) currently have capital improvement or economic development plans.

Upon adoption of this plan, CCOEM will notify each participating jurisdictions' governing authority. The notification will also contain a special notice to incorporate the following procedure to any capital improvement or economic development plans related to hazard mitigation that may be developed in the future.

Upon project conception, the county commissioners, mayors, council members, and tribal government officials, may contact CCOEM for funding guidance and grant assistance. In Clark County and its participating jurisdictions' improvement and development projects rely on grant funding. CCOEM may advise the project proposing jurisdiction on which grant program is appropriate.

Following a funding source decision, the proposals will then be returned to the project proposing jurisdiction and undergo a vote by the appropriate governing body for approval. Upon approval by the governing body, CCOEM may assist in applying for grant funding for the new improvement or development project.

All economic development plans initiated or supported by a jurisdiction will undergo a hazard application process in which all hazard risk assessments from the MJHMP plan will be weighed into the benefit cost analysis. This can be done at the local level prior to working with the Clark County LEPC or CCOEM or exist as a known future consideration and requirement. However, if done at the local level, it must be reviewed and approved by the Clark County LEPC/MPSC.

Section 6: Plan Approval and Adoption

Overall Intent

Adoption by local governing body demonstrates the jurisdiction’s commitment to fulfilling the hazard mitigation commitment to the hazard mitigation goals and actions outlined in the plan. Adoption legitimizes the plan and authorizes responsible agencies to perform their responsibilities. Updated plans are adopted anew to demonstrate the community’s recognition of the current planning process, acknowledge changes from the previous five years, and validate the priorities for hazard mitigation actions. Without adoption, the jurisdiction has not completed the mitigation planning process and will not be eligible for certain FEMA assistance, such as HMA or HHPD grant program funding for mitigation actions.

Table 141: FEMA Regulation Checklist: Plan Adoption

FEMA Regulation Checklist: Plan Adoption	
44 CFR § 201.6(c)(5)	Documentation of Plan Adoption: This plan shall include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.
Elements	
F1.	For single-jurisdiction plans, does the governing body of the jurisdiction formally adopt the plan to be eligible for certain FEMA assistance? 44 CFR 201.6(c)(5)
F2.	For multi-jurisdictional plans, has the governing body of each jurisdiction officially adopted the plan to be eligible for certain FEMA assistance? 44 CFR 201.6(c)(5)

Data Source: FEMA, Local Mitigation Planning Policy Guide, Released April 19, 2022, Effective April 19, 2023

Plan Adoption Resolutions

Resolution, Clark County

Resolution Pending

Resolution, City of Boulder City

Resolution Pending

Resolution, City of Henderson

Resolution Pending

Resolution, City of Las Vegas

Resolution Pending

Resolution, City of Mesquite

Resolution Pending

Resolution, City of North Las Vegas

Resolution Pending

Resolution, Las Vegas Paiute Tribe – Tribal Government

Resolution Pending

Resolution, Moapa Band of Paiutes – Tribal Government

Resolution Pending

Special District: Clark County School District Resolution Letter

Pending adoption

Special Districts: Clark County Water Reclamation District Resolution Letter

Pending adoption

Special Districts: Las Vegas Valley Water District Resolution Letter

Pending adoption

Special Districts: Southern Nevada Health District Resolution Letter

Pending adoption

State of Nevada Approval Letter

Pending adoption

FEMA Approval Letter

U.S. Department of Homeland Security
FEMA Region 9
1111 Broadway, Suite 1200
Oakland, CA 94607-4052



FEMA

December 7, 2023

Misty Richardson
Clark County Fire Department
Office of Emergency Management & Homeland Security
575 East Flamingo Road, Station 18
Las Vegas, NV 89119

Dear Misty Richardson:

The Federal Emergency Management Agency (FEMA) has completed its review of the *Clark County, Nevada, Multi-jurisdictional Hazard Mitigation Plan* and has determined that this plan is eligible for final approval pending its adoption by Clark County and participating jurisdictions. Please see the enclosed list of approvable pending adoption jurisdictions.

Formal adoption documentation must be submitted to FEMA Region 9 by at least one participating jurisdiction within one calendar year of the date of this letter, or the entire plan must be updated and resubmitted for review. FEMA will approve the plan upon receipt of the documentation of formal adoption.

Once the plan is approved, each participating jurisdiction must adopt the plan within five calendar years of the date of the approval. The adoption of the plan by each jurisdiction ensures that jurisdiction's continued eligibility for funding under FEMA's Hazard Mitigation Assistance (HMA) programs. All requests for funding, however, will be evaluated individually according to the specific eligibility, and other requirements of the particular program under which applications are submitted.

If you have any questions regarding the planning or review processes, please contact the FEMA Region 9 Hazard Mitigation Planning Team at fema-r9-mitigation-planning@fema.dhs.gov.

Sincerely,

XING LIU Digitally signed by XING LIU
Date: 2023.12.07 11:49:22
-08'00'

for Alison Kearns
Planning and Implementation Branch Chief
Mitigation Division
FEMA Region 9

www.fema.gov

Clark County Hazard Mitigation Plan Approvable Pending Adoption Notice
December 7, 2023
Page 2 of 3

Enclosures (2)

Clark County MJHMP Plan Review Tool, dated December 7, 2023
Status of Participating Jurisdictions, dated December 7, 2023

cc: Janell Woodward, Grants and Projects Analyst II, Nevada Division of Emergency
Management

www.fema.gov

Status of Participating Jurisdictions as of December 7, 2023

Jurisdictions – Adopted and Approved

#	Jurisdiction	Date of Adoption
1		
2		
3		
4		
5		
6		

Jurisdictions – Approvable Pending Adoption

#	Jurisdiction
1	Clark County
2	City of Boulder City
3	City of Henderson
4	City of Las Vegas
5	City of Mesquite
6	City of North Las Vegas

www.fema.gov

Appendix A – Local and Tribal Mitigation Plan Review Tools

Local Mitigation Plan Review Tool (PRT)

The Local Mitigation Plan Review Tool (PRT) demonstrates how the local mitigation plan meets the regulation in 44 CFR § 201.6 and offers states and FEMA Mitigation Planners an opportunity to provide feedback to the local governments, including special districts.

1. The Multi-Jurisdictional Summary Sheet is a worksheet that is used to document how each jurisdiction met the requirements of the plan elements (Planning Process; Risk Assessment; Mitigation Strategy; Plan Maintenance; Plan Update; and Plan Adoption).
2. The Plan Review Checklist summarizes FEMA's evaluation of whether the plan has addressed all requirements.

For greater clarification of the elements in the Plan Review Checklist, please see Section 4 of this guide. Definitions of the terms and phrases used in the PRT can be found in Appendix E of this guide.

Plan Information	
Jurisdiction(s)	Click or tap here to enter text.
Title of Plan	Click or tap here to enter text.
New Plan or Update	Click or tap here to enter text.
Single- or Multi-Jurisdiction	Choose an item.
Date of Plan	Click or tap to enter a date.
Local Point of Contact	
Title	Click or tap here to enter text.
Agency	Click or tap here to enter text.
Address	Click or tap here to enter text.
Phone Number	Click or tap here to enter text.
Email	Click or tap here to enter text.

Additional Point of Contact	
Title	Click or tap here to enter text.
Agency	Click or tap here to enter text.
Address	Click or tap here to enter text.
Phone Number	Click or tap here to enter text.
Email	Click or tap here to enter text.

Review Information	
State Review	
State Reviewer(s) and Title	Click or tap here to enter text.
State Review Date	Click or tap to enter a date.
FEMA Review	
FEMA Reviewer(s) and Title	Click or tap here to enter text.
Date Received in FEMA Region	Click or tap to enter a date.
Plan Not Approved	Click or tap to enter a date.
Plan Approvable Pending Adoption	Click or tap to enter a date.
Plan Approved	Click or tap to enter a date.

Multi-Jurisdictional Summary Sheet

In the boxes for each element, mark if the element is met (Y) or not met (N).

#	Jurisdiction Name	A. Planning Process	B. Risk Assessment	C. Mitigation Strategy	D. Plan Maintenance	E. Plan Update	F. Plan Adoption	G. State Requirements
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Plan Review Checklist

The Plan Review Checklist is completed by FEMA. States and local governments are encouraged, but not required, to use the PRT as a checklist to ensure all requirements have been met prior to submitting the plan for review and approval. The purpose of the checklist is to identify the location of relevant or applicable content in the plan by element/sub-element and to determine if each requirement has been “met” or “not met.” FEMA completes the “required revisions” summary at the bottom of each element to clearly explain the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is “not met.” Sub-elements in each summary should be referenced using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each element and sub-element are described in detail in Section 4: Local Plan Requirements of this guide.

Plan updates must include information from the current planning process.

If some elements of the plan do not require an update, due to minimal or no changes between updates, the plan must document the reasons for that.

Multi-jurisdictional elements must cover information unique to all participating jurisdictions.

Element A: Planning Process

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
A1. Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement 44 CFR § 201.6(c)(1))		
A1-a. Does the plan document how the plan was prepared, including the schedule or time frame and activities that made up the plan’s development, as well as who was involved?	Click or tap here to enter text.	Choose an item.
A1-b. Does the plan list the jurisdiction(s) participating in the plan that seek approval, and describe how they participated in the planning process?	Click or tap here to enter text.	Choose an item.
A2. Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as businesses, academia, and other private and non-profit interests to be involved in the planning process? (Requirement 44 CFR § 201.6(b)(2))		
A2-a. Does the plan identify all stakeholders involved or given an opportunity to be involved in the planning process, and how each stakeholder was presented with this opportunity?	Click or tap here to enter text.	Choose an item.
A3. Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval? (Requirement 44 CFR § 201.6(b)(1))		
A3-a. Does the plan document how the public was given the opportunity to be involved in the planning process and how their feedback was included in the plan?	Click or tap here to enter text.	Choose an item.

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
A4. Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement 44 CFR § 201.6(b)(3))		
A4-a. Does the plan document what existing plans, studies, reports and technical information were reviewed for the development of the plan, as well as how they were incorporated into the document?	Click or tap here to enter text.	Choose an item.
ELEMENT A REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element B: Risk Assessment

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
B1. Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events? (Requirement 44 CFR § 201.6(c)(2)(i))		
B1-a. Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area?	Click or tap here to enter text.	Choose an item.
B1-b. Does the plan include information on the location of each identified hazard?	Click or tap here to enter text.	Choose an item.
B1-c. Does the plan describe the extent for each identified hazard?	Click or tap here to enter text.	Choose an item.
B1-d. Does the plan include the history of previous hazard events for each identified hazard?	Click or tap here to enter text.	Choose an item.
B1-e. Does the plan include the probability of future events for each identified hazard? Does the plan describe the effects of future conditions, including climate change (e.g., long-term weather patterns, average temperature and sea levels), on the type, location and range of anticipated intensities of identified hazards?	Click or tap here to enter text.	Choose an item.

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
B1-f. For participating jurisdictions in a multi-jurisdictional plan, does the plan describe any hazards that are unique to and/or vary from those affecting the overall planning area?	Click or tap here to enter text.	Choose an item.
B2. Does the plan include a summary of the jurisdiction’s vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP-insured structures that have been repetitively damaged by floods? (Requirement 44 CFR § 201.6(c)(2)(ii))		
B2-a. Does the plan provide an overall summary of each jurisdiction’s vulnerability to the identified hazards?	Click or tap here to enter text.	Choose an item.
B2-b. For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction?	Click or tap here to enter text.	Choose an item.
B2-c. Does the plan address NFIP-insured structures within each jurisdiction that have been repetitively damaged by floods?	Click or tap here to enter text.	Choose an item.
ELEMENT B REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element C: Mitigation Strategy

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
C1. Does the plan document each participant’s existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement 44 CFR § 201.6(c)(3))		
C1-a. Does the plan describe how the existing capabilities of each participant are available to support the mitigation strategy? Does this include a discussion of the existing building codes and land use and development ordinances or regulations?	Click or tap here to enter text.	Choose an item.
C1-b. Does the plan describe each participant’s ability to expand and improve the identified capabilities to achieve mitigation?	Click or tap here to enter text.	Choose an item.

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
C2. Does the plan address each jurisdiction’s participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement 44 CFR § 201.6(c)(3)(ii))		
C2-a. Does the plan contain a narrative description or a table/list of their participation activities?	Click or tap here to enter text.	Choose an item.
C3. Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement 44 CFR § 201.6(c)(3)(i))		
C3-a. Does the plan include goals to reduce the risk from the hazards identified in the plan?	Click or tap here to enter text.	Choose an item.
C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement 44 CFR § 201.6(c)(3)(ii))		
C4-a. Does the plan include an analysis of a comprehensive range of actions/projects that each jurisdiction considered to reduce the impacts of hazards identified in the risk assessment?	Click or tap here to enter text.	Choose an item.
C4-b. Does the plan include one or more action(s) per jurisdiction for each of the hazards as identified within the plan’s risk assessment?	Click or tap here to enter text.	Choose an item.
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction? (Requirement 44 CFR § 201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))		
C5-a. Does the plan describe the criteria used for prioritizing actions?	Click or tap here to enter text.	Choose an item.
C5-b. Does the plan provide the position, office, department or agency responsible for implementing/administrating the identified mitigation actions, as well as potential funding sources and expected time frame?	Click or tap here to enter text.	Choose an item.
ELEMENT C REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element D: Plan Maintenance

Element D Requirements	Location in Plan (section and/or page number)	Met / Not Met
D1. Is there discussion of how each community will continue public participation in the plan maintenance process? (Requirement 44 CFR § 201.6(c)(4)(iii))		
D1-a. Does the plan describe how communities will continue to seek future public participation after the plan has been approved?	Click or tap here to enter text.	Choose an item.
D2. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a five-year cycle)? (Requirement 44 CFR § 201.6(c)(4)(i))		
D2-a. Does the plan describe the process that will be followed to track the progress/status of the mitigation actions identified within the Mitigation Strategy, along with when this process will occur and who will be responsible for the process?	Click or tap here to enter text.	Choose an item.
D2-b. Does the plan describe the process that will be followed to evaluate the plan for effectiveness? This process must identify the criteria that will be used to evaluate the information in the plan, along with when this process will occur and who will be responsible.	Click or tap here to enter text.	Choose an item.
D2-c. Does the plan describe the process that will be followed to update the plan, along with when this process will occur and who will be responsible for the process?	Click or tap here to enter text.	Choose an item.
D3. Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement 44 CFR § 201.6(c)(4)(ii))		
D3-a. Does the plan describe the process the community will follow to integrate the ideas, information and strategy of the mitigation plan into other planning mechanisms?	Click or tap here to enter text.	Choose an item.
D3-b. Does the plan identify the planning mechanisms for each plan participant into which the ideas, information and strategy from the mitigation plan may be integrated?	Click or tap here to enter text.	Choose an item.
D3-c. For multi-jurisdictional plans, does the plan describe each participant's individual process for integrating information from the mitigation strategy into their identified planning mechanisms?	Click or tap here to enter text.	Choose an item.
ELEMENT D REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element E: Plan Update

Element E Requirements	Location in Plan (section and/or page number)	Met / Not Met
E1. Was the plan revised to reflect changes in development? (Requirement 44 CFR § 201.6(d)(3))		
E1-a. Does the plan describe the changes in development that have occurred in hazard-prone areas that have increased or decreased each community's vulnerability since the previous plan was approved?	Click or tap here to enter text.	Choose an item.
E2. Was the plan revised to reflect changes in priorities and progress in local mitigation efforts? (Requirement 44 CFR § 201.6(d)(3))		
E2-a. Does the plan describe how it was revised due to changes in community priorities?	Click or tap here to enter text.	Choose an item.
E2-b. Does the plan include a status update for all mitigation actions identified in the previous mitigation plan?	Click or tap here to enter text.	Choose an item.
E2-c. Does the plan describe how jurisdictions integrated the mitigation plan, when appropriate, into other planning mechanisms?	Click or tap here to enter text.	Choose an item.
ELEMENT E REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element F: Plan Adoption

Element F Requirements	Location in Plan (section and/or page number)	Met / Not Met
F1. For single-jurisdictional plans, has the governing body of the jurisdiction formally adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))		
F1-a. Does the participant include documentation of adoption?	Click or tap here to enter text.	Choose an item.
F2. For multi-jurisdictional plans, has the governing body of each jurisdiction officially adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))		
F2-a. Did each participant adopt the plan and provide documentation of that adoption?	Click or tap here to enter text.	Choose an item.

ELEMENT F REQUIRED REVISIONS		
Required Revision: Click or tap here to enter text.		

Element G: High Hazard Potential Dams (Optional)

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD1. Did the plan describe the incorporation of existing plans, studies, reports and technical information for HHPDs?		
HHPD1-a. Does the plan describe how the local government worked with local dam owners and/or the state dam safety agency?	Click or tap here to enter text.	Choose an item.
HHPD1-b. Does the plan incorporate information shared by the state and/or local dam owners?	Click or tap here to enter text.	Choose an item.
HHPD2. Did the plan address HHPDs in the risk assessment?		
HHPD2-a. Does the plan describe the risks and vulnerabilities to and from HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD2-b. Does the plan document the limitations and describe how to address deficiencies?	Click or tap here to enter text.	Choose an item.
HHPD3. Did the plan include mitigation goals to reduce long-term vulnerabilities from HHPDs?		
HHPD3-a. Does the plan address how to reduce vulnerabilities to and from HHPDs as part of its own goals or with other long-term strategies?	Click or tap here to enter text.	Choose an item.
HHPD3-b. Does the plan link proposed actions to reducing long-term vulnerabilities that are consistent with its goals?	Click or tap here to enter text.	Choose an item.
HHPD4-a. Did the plan include actions that address HHPDs and prioritize mitigation actions to reduce vulnerabilities from HHPDs?		
HHPD4-a. Does the plan describe specific actions to address HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD4-b. Does the plan describe the criteria used to prioritize actions related to HHPDs?	Click or tap here to enter text.	Choose an item.

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD4-c. Does the plan identify the position, office, department or agency responsible for implementing and administering the action to mitigate hazards to or from HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD Required Revisions		
Required Revision: Click or tap here to enter text.		

Element H: Additional State Requirements (Optional)

Element H Requirements	Location in Plan (section and/or page number)	Met / Not Met
This space is for the State to include additional requirements.		
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.

Plan Assessment

These comments can be used to help guide your annual/regularly scheduled updates and the next plan update.

Element A. Planning Process

Strengths

[insert comments]

Opportunities for Improvement

[insert comments]

Element B. Risk Assessment

Strengths

[insert comments]

Opportunities for Improvement

[insert comments]

Element C. Mitigation Strategy

Strengths

[insert comments]

Opportunities for Improvement

[insert comments]

Element D. Plan Maintenance

Strengths

[insert comments]

Opportunities for Improvement

[insert comments]

Element E. Plan Update

Strengths

[insert comments]

Opportunities for Improvement

[insert comments]

Element G. HHPD Requirements (Optional)

Strengths

[insert comments]

Opportunities for Improvement

[insert comments]

Element H. Additional State Requirements (Optional)

Strengths

[insert comments]

Opportunities for Improvement

[insert comments]

Region IX Tribal Hazard Mitigation Plan Review Tool

REGION IX TRIBAL HAZARD MITIGATION PLAN REVIEW TOOL

The *Tribal Mitigation Plan Review Tool* records how the tribal hazard mitigation plan meets the regulations in 44 CFR §§ 201.7 and 201.5 (if applicable) and offers FEMA plan reviewers an opportunity to provide feedback to the tribal government.

- **Section 1:** The Regulation Checklist documents FEMA’s evaluation of whether the plan has addressed all requirements. If plan requirements are not met, FEMA uses each Required Revisions section to indicate necessary changes.
- **Section 2:** The Strengths and Opportunities for Improvement summary identifies plan’s strengths as well as areas for improvement as part of the next plan update.
- **Section 3:** The Hazard Identification and Risk Assessment Matrix is an optional tool for plan reviewers to identify if all components of Element B are met.

Tribal Jurisdiction:	Title of Plan:	Date of Plan:
Tribal Point of Contact:		Address:
Title:		
Agency:		
Phone Number:		
		E-Mail:

State Reviewer (if applicable):	Title:	Date:
Date Received at State Agency		
Date Sent to FEMA		

FEMA Reviewer:	Title:	Date:
Date Plan Received in FEMA Region IX		
Date Plan Not Approved		
Date Plan Approvable Pending Adoption		
Date Plan Approved		

**SECTION 1:
REGULATION CHECKLIST**

Standard Regulation Checklist		Location in Plan	Met	Not Met
Regulation (44 CFR 201.7 Tribal Mitigation Plans)		(section and/or page number)		
ELEMENT A. PLANNING PROCESS				
A1. Does the plan document the planning process, including how it was prepared and who was involved in the process? [44 CFR § 201.7(c)(1)]	a. Does the plan document how the plan was prepared, including the schedule or timeframe and the activities that made up the plan's development?			
	b. Does the plan document who was involved on the planning team, including each person's position or title and department/agency?			
A2. Does the plan document an opportunity for public comment during the drafting stage and prior to plan approval, including a description of how the tribal government defined "public"? [44 CFR § 201.7(c)(1)(i)]	a. Does the plan describe how the tribal government defined "public"?			
	b. Does the plan describe how the public was given the opportunity to be involved in the planning process?			
	c. Does the plan describe how public feedback was incorporated into the plan?			
A3. Does the plan document, as appropriate, an opportunity for neighboring communities, tribal and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? [44 CFR § 201.7(c)(1)(ii)]	a. Does the plan identify all tribal members/citizens, and partners who were given an opportunity to be involved in the planning process?			
	b. Does the plan identify how tribal members/citizens and partners were invited to participate in the process?			
A4. Does the plan describe the review and incorporation of existing plans, studies, and reports? [44 CFR § 201.7(c)(1)(iii)]	a. Does the plan describe what existing plans, studies, and reports were reviewed?			
	b. Does the plan document how relevant information was incorporated into the mitigation plan?			
A5. Does the plan include a discussion on how the planning process was integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA programs and initiatives? [44 CFR § 201.7(c)(1)(iv)]	a. Does the plan describe how the tribal government integrated the current planning process and/or findings with other ongoing tribal planning efforts?			
	b. Does the plan describe how the tribal government integrated the current planning process with other FEMA programs and initiatives?			

Standard Regulation Checklist

Regulation (44 CFR 201.7 Tribal Mitigation Plans)

Location in Plan
(section and/or
page number)

Met

Not
Met

A6. Does the plan include a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within the plan update cycle)? [44 CFR § 201.7(c)(4)(i)]

a. Does the plan identify how, when, and by whom the plan will be *monitored* (how will implementation be tracked) over time?

b. Does the plan identify how, when, and by whom the plan will be *evaluated* (assessing the effectiveness of the plan at achieving stated purpose and goals) over time?

c. Does the plan identify how, when, and by whom the plan will be *updated* during the 5-year cycle?

A7. Does the plan include a discussion of how the tribal government will continue public participation in the plan maintenance process? [44 CFR § 201.7(c)(4)(iv)]

ELEMENT A: REQUIRED REVISIONS

ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT

B1. Does the plan include a description of the type, location, and extent of all natural hazards that can affect the tribal planning area? [44 CFR § 201.7(c)(2)(i)]

a. Does the plan include a description of the tribal planning area?

b. Does the plan include a description of the natural hazards that can affect the tribal planning area?

c. Does the plan provide the rationale for the omission of any natural hazards that are commonly recognized to affect the tribal planning area?

d. Does the plan include a description of the *type* of all natural hazards that can affect each tribal planning area?

e. Does the plan include a description of the *location* for all natural hazards that can affect each tribal planning area?

f. Does the plan include a description of the *extent* for all natural hazards that can affect each tribal planning area?

B2. Does the plan include information on previous occurrences of hazard events and on the probability of future

a. Does the plan include information on *previous occurrences* of hazard events for each tribal planning area?

Standard Regulation Checklist

Regulation (44 CFR 201.7 Tribal Mitigation Plans)

Location in Plan
(section and/or
page number)

Met

Not
Met

hazard events for the tribal planning area? [44 CFR § 201.7(c)(2)(i)]

b. Does the plan include information on the *probability* of future hazard events for each tribal planning area? Probability must include considerations of future conditions, including the effects of long-term changes in weather patterns on identified hazards.

B3. Does the plan include a description of each identified hazard's impact as well as an overall summary of the vulnerability of the tribal planning area? [44 CFR § 201.7(c)(2)(ii)]

a. Is there a description of each hazard's *impacts* on each tribal planning area (what happens to structures, infrastructure, people, environment, cultural sites, etc.)?

b. Is there a description of each identified hazard's overall *vulnerability* (structures, systems, populations, or other community assets defined by the tribal government that are identified as being susceptible to damage and loss from hazard events) for each tribal planning area?

ELEMENT B: REQUIRED REVISIONS

ELEMENT C. MITIGATION STRATEGY

C1. Does the plan include a discussion of the tribal government's pre-and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including an evaluation of tribal laws and regulations related to hazard mitigation as well as to development in hazard-prone areas? [44 CFR §§ 201.7(c)(3) and 201.7(c)(3)(iv)]

a. Does the plan describe the tribal government's *existing* capabilities to mitigate hazards in the tribal planning area, including pre-disaster and post-disaster hazard management policies and programs?

b. Does the plan include an evaluation of the tribal laws, regulations, policies, programs, and resources related to hazard mitigation and development in hazard-prone areas?

C2. Does the plan include a discussion of tribal funding sources for hazard mitigation projects and identify current and potential sources of Federal, tribal, or private funding to implement mitigation activities? [44 CFR §§ 201.7(c)(3)(iv) and 201.7(c)(3)(v)]

a. Does the plan describe the tribal government's *existing* funding sources for hazard mitigation actions and/or projects?

b. Is there a general discussion of how the tribal government has used non-FEMA (tribal, private or other federal) funds for hazard mitigation projects?

Standard Regulation Checklist

Regulation (44 CFR 201.7 Tribal Mitigation Plans)

Location in Plan
(section and/or
page number)

Met

Not
Met

	c. Is there a general discussion of how the tribal government has used FEMA mitigation funding, including HMGP, PDM, FMA, PA (C-G), and FMAG?			
	d. Does the plan identify <i>potential</i> sources of funding to implement mitigation actions and/or projects?			
C3. Does the Mitigation Strategy include goals to reduce or avoid long-term vulnerabilities to the identified hazards? [44 CFR § 201.7(c)(3)(i)]				
C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with emphasis on new and existing buildings and infrastructure? [44 CFR § 201.7(c)(3)(ii)]	a. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects to reduce the impacts from each identified hazard?			
	b. Do the identified mitigation actions and projects have an emphasis on new and existing buildings and infrastructure?			
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized, implemented, and administered by the tribal government? [44 CFR § 201.7(c)(3)(iii)]	a. Does the plan explain how the mitigation actions will be prioritized?			
	b. Does the plan identify the position, office, department, or agency responsible for implementing and administering each action?			
C6. Does the plan describe a process by which the tribal government will incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate? [44 CFR § 201.7(c)(4)(iii)]	a. Does the plan identify other planning mechanisms where hazard mitigation information and/or actions may be incorporated?			
	b. Does the plan describe the process to integrate the data, information, and hazard mitigation goals and actions into other planning mechanisms?			
C7. Does the plan describe a system for reviewing progress on achieving goals as well as activities and projects identified in the mitigation strategy, including monitoring implementation of mitigation measures and project closeouts? [44 CFR §§ 201.7(c)(4)(ii) and 201.7(c)(4)(v)]	a. Does the system for tracking the implementation of mitigation activities and projects identified in the mitigation strategy include a schedule?			
	b. Does the system noted above identify the tribal department or tribal office responsible for coordination (or non-tribal entity or agency, if the tribe allows)?			
	c. Does the system noted above describe the role of the agencies/offices identified in the mitigation strategy?			
	d. Does the system noted above include project closeout procedures?			

Standard Regulation Checklist
 Regulation (44 CFR 201.7 Tribal Mitigation Plans)

Location in Plan
 (section and/or
 page number) Met Not
 Met

ELEMENT C: REQUIRED REVISIONS

ELEMENT D. PLAN UPDATES

D1. Was the plan revised to reflect changes in development? [44 CFR § 201.7(d)(3)]	a. Does the plan describe changes in development that have occurred in hazard prone areas since the last plan was approved?			
D2. Was the plan revised to reflect progress in tribal mitigation efforts? [44 CFR §§ 201.7(d)(3) and 201.7(c)(4)(iii)]	a. Does the plan describe the status of each mitigation action and/or project identified in the previous plan?			
	b. For those actions not completed, does the plan provide a narrative describing the status (for example, a description of why the action is no longer relevant)?			
	c. Does the updated plan describe how the tribal government incorporated the previous mitigation plan into other planning mechanisms, as applicable?			
D3. Was the plan revised to reflect changes in priorities? [44 CFR §201.7(d)(3)]				

ELEMENT D: REQUIRED REVISIONS

ELEMENT E. ASSURANCES AND PLAN ADOPTION

E1. Does the plan include assurances that the tribal government will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, including 2 CFR Parts 200 and 3002, and will amend its plan whenever necessary to reflect changes in tribal or Federal laws and statutes? [44 CFR § 201.7(c)(6)]			
E2. Does the plan include documentation that it has been formally adopted by the governing body of the tribal government requesting approval? [44 CFR § 201.7(c)(5)]			

ELEMENT E: REQUIRED REVISIONS

PAUSE...

If the tribal jurisdiction is seeking an enhanced planning status, continue providing information for the requirements in Elements F-I. If an enhanced status is *not* being sought, skip ahead to the Strengths and Opportunities for Improvement section and do not fill out location in plan or met/not met columns.

Is the tribal jurisdiction seeking an enhanced planning status?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

Enhanced Regulation Checklist		Location in Plan	Met	Not Met
Regulation (44 CFR § 201.5 Enhanced Tribal Mitigation Plans)		(section and/or page number)		
ENHANCED ELEMENT F. STANDARD PLAN REQUIREMENTS				
F1. Does the enhanced plan include all elements of the standard tribal mitigation plan? [44 CFR §§ 201.3(e)(3), 201.5(b), and 201.7]				
ENHANCED ELEMENT F: REQUIRED REVISIONS				
ENHANCED ELEMENT G. INTEGRATED PLANNING				
G1. Does the enhanced plan demonstrate integration to the extent practicable with other tribal and/or regional planning initiatives and FEMA mitigation programs and initiatives? [44 CFR §§ 201.3(e)(3) and 201.5(b)(1)]	a. Does the enhanced plan demonstrate integration with other tribal and/or regional planning initiatives (and tribal organizations)? At a minimum, the following sectors must be included: <ul style="list-style-type: none"> • Emergency Management • Economic Development • Land Use Development • Housing • Health and Social Services • Infrastructure • Natural and Cultural Resources 			
	b. Does the enhanced plan illustrate integration of FEMA mitigation programs and initiatives (including, if applicable, but not limited to: HMGP, PDM, FMA, NFIP, and Risk MAP, as well as other FEMA programs that advance mitigation, for example, THIRA and PA C-G)?			
ENHANCED ELEMENT G: REQUIRED REVISIONS				
ENHANCED ELEMENT H. TRIBAL MITIGATION CAPABILITIES				

Enhanced Regulation Checklist		Location in Plan	Met	Not Met
Regulation (44 CFR § 201.5 Enhanced Tribal Mitigation Plans)		(section and/or page number)		

<p>H1. Does the tribal government demonstrate commitment to a comprehensive mitigation program? [44 CFR §§ 201.3(e)(3) and 201.5(b)(4)]</p>	<p>a. Does the enhanced plan illustrate targeted risk reduction for each of the identified hazards in the tribal planning area?</p>			
	<p>b. Does the enhanced plan illustrate a mitigation program that is inclusive of various agencies and sectors with mitigation capabilities and resources?</p>			
	<p>c. Does the enhanced plan demonstrate a mitigation program that is coordinated to increase resilience from the adverse impacts of future hazard events in the tribal planning area?</p>			

<p>H2. Does the enhanced plan document capability to implement mitigation actions? [44 CFR §§ 201.3(e)(3), 201.5(b)(2)(i), 201.5(b)(2)(ii), and 201.5(b)(2)(iv)]</p>	<p>a. Does the enhanced plan describe the system to rank the mitigation measures according to established eligibility criteria, including a process to prioritize between funding programs and proposals that address different or multiple hazards?</p>			
	<p>b. Does the enhanced plan describe how the tribal government will assess the effectiveness of mitigation actions, including the role of departments involved, the timeline, and the use of the results to inform the mitigation strategy?</p>			

<p>H3. Is the tribal government using existing mitigation programs to achieve mitigation goals? [44 CFR §§ 201.3(e)(3), 201.5(a) and 201.5(b)(3)]</p>	<p>a. Does the enhanced plan document how the tribal government has made full use of the funding available through the FEMA assistance programs (for example, PA C-G, HMGP, PDM, and FMA)?</p>			
	<p>b. Does the enhanced plan document how the tribal government uses existing programs to achieve its mitigation goals?</p>			

ENHANCED ELEMENT H: REQUIRED REVISIONS

ENHANCED ELEMENT I. HMA GRANTS MANAGEMENT

<p>I1. With regard to HMA, is the tribal government maintaining the capability to meet application timeframes and submitting complete project</p>	<p>a. Are all applications and amendments submitted by the end of each program's respective application period?</p>			
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Enhanced Regulation Checklist		Location in Plan	Met	Not Met
Regulation (44 CFR § 201.5 Enhanced Tribal Mitigation Plans)		(section and/or page number)		
applications? [44 CFR §§ 201.3(e)(3), 201.5(b)(2)(iii)(A)]	b. Are all applications entered into FEMA's electronic data systems (such as NEMIS and/or eGrants)?			
	c. Is an Eligibility and Completeness Checklist prepared for all applications?			
	d. Are all applications determined to be complete by FEMA within 90 days of submittal or selection for further review? (Required environmental and historic preservation reviews and consultations are not included in the 90-day review timeframe calculation.)			
12. With regard to HMA, is the tribal government maintaining the capability to prepare and submit accurate environmental reviews and benefit-cost analyses? [44 CFR §§ 201.3(e)(3) and 201.5(b)(2)(iii)(B)]				
13. With regard to HMA, is the tribal government maintaining the capability to submit complete and accurate quarterly progress and financial reports on time? [44 CFR §§ 201.3(e)(3) and 201.5(b)(2)(iii)(C)]	a. Have all progress reports been completed and submitted on time?			
	b. Have all federal financial reports (FFR), Standard Form (SF) SF-425 been submitted on time?			
	c. Has the tribal government consistently complied with the Standards for Financial and Program Management requirements described in 2 CFR §§ 200.300 to 200.309?			
14. With regard to HMA, is the tribal government maintaining the capability to complete HMA projects within established performance periods, including financial reconciliation? [44 CFR §§ 201.3(e)(3) and 201.5(b)(2)(iii)(D)]	a. Is all work as part of HMA sub awards completed by the end of Period of Performance?			
	b. There are no major findings on the last single audit obtained by the tribal government related to HMA programs. For tribal governments without HMA grants, FEMA will review other federal grants.			
	c. Are all grant close-out activities, including financial reconciliation, completed within 90 days from the end of the performance period?			
	d. Have actual expenditures been documented and are they consistent with SF-424A or SF-424C (Application for Federal Assistance and Budget Information)?			

Enhanced Regulation Checklist		Location in Plan	Met	Not Met
Regulation (44 CFR § 201.5 Enhanced Tribal Mitigation Plans)		(section and/or page number)		
ENHANCED ELEMENT I: REQUIRED REVISIONS				

**SECTION 2:
STRENGTHS AND OPPORTUNITIES FOR IMPROVEMENT**

INSTRUCTIONS: The purpose of the Strengths and Opportunities for Improvement section is for FEMA to provide more comprehensive feedback on the tribal mitigation plan to help the tribal government advance mitigation planning. The intended audience is the tribal staff responsible for the mitigation plan update. FEMA will address the following topics:

1. Plan strengths, including specific sections in the plan that are above and beyond the minimum requirements; and
2. Suggestions for future improvements.

Results from the Strengths and Opportunities for Improvement section are *not* required for Plan Approval.

Element A: Planning Process

<p>Strengths:</p> <ol style="list-style-type: none">1)2)3) <p>Opportunities for Improvement:</p> <ol style="list-style-type: none">1)2)3)

Element B: Hazard Identification and Risk Assessment

<p>Strengths:</p> <ol style="list-style-type: none">1)2)3) <p>Opportunities for Improvement:</p> <ol style="list-style-type: none">1)2)3)

Element C: Mitigation Strategy

<p>Strengths:</p> <ol style="list-style-type: none">1)2)3)

Opportunities for Improvement:

- 1)
- 2)
- 3)

Element D: Plan Update, Evaluation, and Implementation (Plan Updates Only)

Strengths:

- 1)
- 2)
- 3)

Opportunities for Improvement:

- 1)
- 2)
- 3)

**SECTION 3:
HAZARD IDENTIFICATION AND RISK ASSESSMENT MATRIX (OPTIONAL TOOL)**

INSTRUCTIONS: This matrix can be used by the plan reviewer to help identify if all of the components of Element B have been met. List natural hazards (meteorological, geological, environmental) that are identified in the plan in the column labeled "Hazard" and put a "Y" or "N" for each component of Element B.

HAZARD IDENTIFICATION AND RISK ASSESSMENT MATRIX								
Hazard	Requirement Met? (Y/N)							
	Type	Location	Extent	Previous Occurrences	Probability	Impacts	Vulnerability	Mitigation Action

Appendix B – Mitigation Planning Steering Committee Documentation

Appendix B contains reference documents and data sources used to draft the Clark County MJHMP (2024) update. This appendix also includes documentation of the planning process for the MJHMP Planning Team, including meetings, presentations, emails, etc. Each jurisdiction conducted additional, informal, planning efforts to support the MJHMP Planning Team. This was primarily due to the operational requirements of the ongoing COVID-19 response. Only one of these supplementary efforts was conducted formally. It is documented herein.

Reference Documents:

- **Local Mitigation Planning Policy Guide (FP 206-21-0002)**, FEMA, released April 19, 2022, Effective April 19, 2023
- Hazard Mitigation Assistance Program Assistance Program and Policy Guide (FP-206-0001), FEMA, March 2023
- Local Mitigation Plan Review Guide, FEMA, 2011
- Local Mitigation Planning Handbook, FEMA, 2013
- Tribal Mitigation Planning Handbook, FEMA, May 2019
- Mitigation Ideas A Resource for Reducing Risk to Natural Hazards, FEMA, 2013
- Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000, FEMA, 2008
- National Mitigation Framework, Second Edition, Department of Homeland Security, 2016
- Guidelines and Specifications for Flood Hazard Mapping Partners, FEMA, 2002
- HAZUS Inventory Technical Manual for HAZUS 6.0, FEMA, November 2022
- Understanding Your Risks: Identifying Hazards and Estimating Losses (FEMA 386-2), FEMA, 2001

Data Sources:

Quantitative Data Sources

8NewsNow.com
U.S Census Quick Facts
U.S Census (data.census.gov)
Clark County School District (CCSD)
Clark County, NV Master Plan
Clark County, NV Comprehensive Planning Department
Clark County, NV Fire Plan
Clark County, NV Information Technology, GIS Management Office (GISMO)
Clark County, NV Economic Development
Clark County, NV Regional Flood Control District
Clark County Sustainability and Climate Plan
Clark County Vulnerability Assessment
City of Boulder City
City of Henderson
City of Las Vegas
City of Mesquite
City of North Las Vegas
Las Vegas Paiute Tribe
Moapa Band of Paiute
Clark County Water Reclamation District
Southern Nevada Health District
Columbia School of Public Health
FEMA National Risk Index
FEMA Disaster Information – Federal Disaster Declarations
Federal Drug Administration (FDA)
Las Vegas Review-Journal
Centers for Disease Control and Prevention (CDC)
State of Nevada Enhanced Hazard Mitigation Plan
State of Nevada Division of Water Resources
Southern Nevada Counter-Terrorism Center (Fusion Center)
Nevada Weed Management Association (NWMA)
Ready.nola.gov
Las Vegas Metropolitan Police Department Homeland Security Division
Medlineplus.gov
Nevada Threats & Hazards, September 2020
The Nevada Independent

NCEI/NOAA Storm Events Database
National Park Service
The Nature Conservancy
National Drought Mitigation Center (www.drought.unl.edu)
National Flood Insurance Program (NFIP)
National Interagency Coordination Center (NICC)
Nevada Department of Agriculture
Nevada Division of Emergency Management (NVDEM)
Nevada Seismological Laboratory (Seismo Lab)
National Geographic
National Response Center (NRC)
NBC News
KTNV.com
U.S. Environmental Protection Agency (EPA)
U.S. Army Corps of Engineers (USACE)
United States (U.S.) Bureau of Reclamation
U.S. Department of Homeland Security (DHS)
U.S. Federal Bureau of Investigation (FBI)
USDA, National Agricultural Statistics Service
USFA – WDAS Wildland Fire Assessment System
U.S. Geological Survey (USGS)
U.S. Geological Survey (USGS) National Center for Earth Resources Observation and Science (EROS)
U.S. Geological Survey (USGS) National Water Information
U.S. Occupational Safety and Health Administration (OSHA)
U.S. Department of Transportation (USDOT)
VegDRI – National Drought Mitigation Center (NDMC)
Washington State Department of Natural Resources
World Health Organization (WHO)

Geographic Data Sources

Clark County, NV Information Technology, GIS Management Office (GISMO)
Clark County Sustainability and Climate Plan
Clark County Water Reclamation District
U.S. Drought Monitor/Drought.gov
USGS Geological Survey Bulletin (1991)
USGS Geological Survey
FEMA HAZUS® Database
FEMA National Risk Index
FEMA Flood Map Service Center
FEMA Dam Awareness Fact Sheet, May 2018
NOAA Climate Report (2010)
NCEI/NOAA
National Inventory of Dams (NID)
National Park Maps
National Weather Service
Nevada Resources and Fire Information Portal Public Viewer
My Hazards Nevada – Nevada Bureau of Mines and Geology
Nevada Health Response
Nevada Department of Transportation (NDOT)
RCI Report – Clark County, NV Fire Plan
USDA, USFS Wildfire Risk to Communities
USFA – WDAS Wildland Fire Assessment System
U.S. Environmental Protection Agency (EPA)
VegDRI – National Drought Mitigation Center (NDMC)
Virginia Department of Conservation and Recreation – Dam Safety Education – Dam Failures
Southern Nevada Water Authority
Southern Nevada Health District
State of Nevada Enhanced Hazard Mitigation Plan (2018)

Mitigation Planning Steering Committee Meetings:

Meeting Date	Meeting Title	Meeting Handouts, Presentation Included in MJHMP
Apr. 18, 2022	Clark County MJHMP Steering Committee Kickoff Meeting	<ul style="list-style-type: none"> • Presentation (cover only) • Meeting Minutes with attendance sheet
May 24, 2022	Clark County MJHMP Steering Committee Meeting	<ul style="list-style-type: none"> • Presentation (cover only) • Meeting Minutes with attendance sheet
Aug. 16, 2022	Clark County MJHMP Steering Committee Meeting	<ul style="list-style-type: none"> • Agenda • Presentation (cover only) • Meeting Minutes with attendance sheet
Nov. 29, 2022	Clark County MJHMP Steering Committee Meeting	<ul style="list-style-type: none"> • Invitation • Presentation (cover only) • Meeting Minutes with attendance sheet
Dec. 2022 – Jan. 2023	Clark County MJHMP Steering Committee Technical Assistance 1:1 Meetings (Mitigation Action Worksheet Completion)	<ul style="list-style-type: none"> • Invitation • Meeting Schedule
Feb. 15, 2023	Clark County MJHMP Steering Committee Meeting	<ul style="list-style-type: none"> • Invitation • Presentation (cover only) • Meeting Minutes with attendance sheet
Apr. 26, 2023	Clark County MJHMP Steering Committee Meeting	<ul style="list-style-type: none"> • Invitation • Presentation (cover only) • Meeting Minutes with attendance sheet

1. Project Kickoff Meeting

Date/Time: April 18, 2022 @ 1:00PM-2:00PM PST

Location: Microsoft Teams (virtual meeting)

Presentation:



The map displays Clark County, Nevada, with major cities and highways labeled. Cities include Primm, Logansport, Overton, North Las Vegas, Henderson, Boulder City, Nelson, Searchlight, Laughlin, Jean, Mountain Springs, Wood Springs, Diamond, and Mt. Charleston. Highways shown include 93, 15, 95, 156, 160, 164, and 163.



Steering Committee Kickoff Meeting

CLARK COUNTY
MULTI JURISDICTION HAZARD MITIGATION PLAN

Monday, April 18, 2022

Resilience is CONSTANT™

Meeting Minutes (with attendance sheet):

Clark County, Nevada
Multi-Jurisdiction Hazard Mitigation Plan (MJHMP)
Steering Committee Kickoff Meeting Minutes



Steering Committee Kickoff Meeting Minutes

Date: April 18, 2022

Time: 1:00-2:00pm PST

Notetaker: Amanda Ozaki-Laughon

Table 1: Action Items

#	Action Item	Assignee	Date
1.	Distribute meeting minutes to Clark Co. Project Manager and then the Steering Committee Members	CONSTANT	04/22/2022
2.	Schedule quarterly Steering Committee meetings based on response to Doodle polls	CONSTANT	04/25/2022
3.	Develop and share drafted Public Involvement Plan	CONSTANT	04/30/2022
4.	Respond to Doodle polls for quarterly Steering Committee meeting availability	Steering Committee	04/22/2022
5.	Identify local events where public engagements can occur	Steering Committee	04/30/2022
6.	Seek clarification regarding the Paiute Tribe's 2019 annex update and the expectation to align with 2023 Clark Co MJHMP	Clark Co PM	Ongoing

I. Welcome and Administrations

1. Introductions and Opening Remarks
2. Ms. Mann started the meeting with opening remarks and a welcome, and housekeeping items regarding participation via Zoom.
3. Mr. Hynds welcomed the group as the workgroup lead and explained the purpose of the group and the MJHMP project.
4. Ms. Mann then led the group through a round of brief introductions.

1



5. Following introductions, she explained the difference in members, alternates, and subject-matter experts (SME). The SMEs may be called upon to provide input during certain phases of the project including hazard identification, hazard or community profiles, impacts, etc.

II. Meeting Purpose

1. Ms. Mann noted that the meeting would provide an overview on hazard mitigation, clarify the project's scope, and focus on time-sensitive deliverables, including the timeline of Steering Committee and SME involvement.
2. Ms. Mann asked if there were any questions or comments. Hearing none, she passed the meeting to Mr. Rosenberg.

III. Hazard Mitigation Overview

1. Mr. Rosenberg led the group through an explanation of hazard mitigation planning. He defined key terms, discussed the Federal Disaster Mitigation Act of 2000, and the expiration date of the Clark County MJHMP, last updated in 2018.
2. Mr. Rosenberg emphasized the utility of the plan with regard to applying and receiving grant funding from the federal government.
3. Mr. Rosenberg asked if there were any questions. Hearing none, he passed the meeting to Ms. Mann to discuss the project scope.

IV. Project Scope

1. Ms. Mann led the group through the objectives as expressed in the project contract, emphasizing the update of mitigation strategies based on current hazards in Clark County. She asked Mr. Hynds if he had any additions.
2. Mr. Hynds stated that the State of Nevada is paralleling this effort to list and uniformly describe the hazards for the state.
3. Mr. Rosenberg stated that this uniformity is very important and admirable of the State to take on.
4. Ms. Mann asked if there were any further questions.
5. Ms. Parker stated that the Paiute Tribe updated its annex after the 2018 MJHMP, at the request of the government due to some changes through FEMA regarding tribal mitigation plans. The annex was approved in 2019, and she inquired as to whether the tribe will follow the Clark County timeline.
6. Mr. Hynds expressed his understanding that the plan, as a whole, is expiring, and all of the annexes would be included in this new update. Additional clarification will be sought to determine if the tribe is on the same schedule as this plan update.

V. Deliverables

1. Ms. Mann walked the group through the four tasks of the project including the planning process, risk assessment, mitigation strategy, and plan maintenance and adoption.
2. She asked if the group had any questions. Hearing none, she moved to discuss the project timeline.



3. Ms. Mann led the group through a discussion of the project timeline, including key project milestones, contingencies for holidays, and adoption by September 2023.

VI. Steering Committee Management

1. Ms. Mann asked to Ms. Ozaki-Laughon to discuss the quarterly meeting schedule.
2. Ms. Ozaki-Laughon explained the process of using Doodle poll to fill out availability and responded to questions regarding Friday scheduling and error messages with Doodle poll. She asked if there were further questions. Hearing none, she passed the meeting back to Ms. Mann.

VII. Next Steps and Action Items

1. Ms. Mann led the group through next steps, including scheduling quarterly Steering Committee meetings, distribution of meeting minutes, distribution of a shared site for documentation sharing, and development of a drafted Public Involvement Plan.
2. Ms. Mann highlighted action items for the Project Management team for Clark County, including preparation for one of the project's community engagements during the July 9 Local Emergency Planning Committee (LEPC) meeting, and search for local events to maximize participation and involvement.
3. The Doodle polls for each Steering Committee Meeting are listed below:

May 2022 Quarterly Meeting:

<https://doodle.com/meeting/participate/id/bkR586Ja>

September 2022 Quarterly Meeting:

<https://doodle.com/meeting/participate/id/eVO5JlBa>

January 2023 Quarterly Meeting:

<https://doodle.com/meeting/participate/id/b4xkW3Vb>

June 2023 Quarterly Meeting:

<https://doodle.com/meeting/participate/id/dR6M8yKd>

4. Ms. Mann asked if there were any other questions or any further feedback. Hearing none, she concluded the meeting.

Table 2: Meeting Attendees

#	Name	Position	Organization/Department
1.	Holly Mann	Project Manager	CONSTANT
2.	Amanda Ozaki-Laughon	Deputy Project Manager	CONSTANT
3.	Jeremy Hynds	Emergency Manager	City of Henderson
4.	Lee Rosenberg	Subcontracted support	Navigating Preparedness Associates
5.	Jim Sims	Project Sponsor	CONSTANT



6.	A.J. Cieplenski	Subject Matter Expert	Harry Reid International
7.	Angeline Szymanski	Steering Committee Member	Clark County Water Reclamation District
8.	Billy Samuels# Clark County - OEM	Steering Committee Member	Clark County Fire Department
9.	Bradley Iverson	Steering Committee Alternate	City of Las Vegas
10.	Brian O'Neal	Subject Matter Expert	CCFD Rural Division
11.	Carlito Rayos	Steering Committee Member	Clark County
12.	Carolyn Levering	Steering Committee Member	City of Las Vegas
13.	Clint J Spencer	Steering Committee Member	Clark County Public Works
14.	Dan Berc	Subject Matter Expert	NOAA
15.	Geir Gabrielson	Subject Matter Expert	Nevada National Guard
16.	Greg Chesser	Steering Committee Member	Boulder City
17.	Harriett Parker	Steering Committee Member	Las Vegas Paiute Tribe
18.	Janelle Woodward	Steering Committee Member	State of Nevada
19.	Jason Manzo	Subject Matter Expert	Southern Nevada Area Communications Council
20.	Jeff Harper	Steering Committee Member	Moapa Paiute Tribe
21.	Jeremy Hynds	Steering Committee Lead	City of Henderson
22.	Jim Andersen	Subject Matter Expert	Clark County
23.	Jim Owens	Steering Committee Alternate	Las Vegas Paiute Tribe
24.	Josie Ross	Steering Committee Alternate	City of Henderson
25.	Leigh Ann Anders	Subject Matter Expert	Clark County
26.	Misty Robinson	Subject Matter Expert	Southern Nevada Health District
27.	Phil Klevorick	Subject Matter Expert	Clark County
28.	Robert Vega	Subject Matter Expert	Clark County
29.	Ryan Gerchman	Steering Committee Member	State of Nevada
30.	Sam Baker-	Steering Committee Member	Environment and Sustainability



31.	Sam Palmer	Subject Matter Expert	Clark County
32.	Sarah Wright	Subject Matter Expert	Clark County
33.	Solome Barton	Steering Committee Alternate	City of North Las Vegas
34.	Stephen Neel	Subject Matter Expert	Moapa Valley Fire District
35.	Werner K. Hellmer	Subject Matter Expert	Clark County

2. Clark County MJHMP Steering Committee Quarterly Meeting

Date/Time: May 24, 2022 @ 2:00PM – 3:00PM PDT

Location: Zoom (virtual meeting)

Presentation (cover only):



The map shows Clark County, Nevada, with major cities and highways labeled. Cities include Primm, Logansport, Overton, North Las Vegas, Henderson, Boulder City, Nelson, Searchlight, Laughlin, Jean, Sandy Valley, Goodsprings, Mountain Springs, Diamond, Mt Charleston, and LAS VEGAS. Highways shown include 93, 15, 95, 156, 160, 164, and 163.



Steering Committee
Quarterly Meeting

CLARK COUNTY
MULTI JURISDICTION HAZARD MITIGATION PLAN

May 24, 2022

Resilience is CONSTANT™

Meeting Minutes with attendance sheet:

Clark County, Nevada
 Multi-Jurisdiction Hazard Mitigation Plan (MJHMP)
 Steering Committee Quarterly Meeting Minutes



Steering Committee Quarterly Meeting Minutes

Date: May 24, 2022
 Time: 2:00-3:00pm PDT
 Notetaker: Tracy To

Table 1: Action Items

#	Action Item	Assignee	Date
1.	Confirm access to SharePoint: https://constantassociates.sharepoint.com/sites/ClarkCountyMJHMP	Steering Committee MEMBERS and ALTERNATES	As soon as possible
2.	Confirm jurisdiction/agency's intent to be included in the Public Involvement Plan (PIP) for this Project. <ul style="list-style-type: none"> Where the final PIP will be posted If a community survey link will be available If the MJHMP project will be shared during an upcoming community meeting/engagement 	Each jurisdiction/agency that will contribute to & adopt the Clark Co MJHMP	As soon as possible. Steering Committee Members please email your responses to: Holly Mann Amanda Ozaki-Laughon
3.	Complete the Hazard Mitigation Planning Questionnaire.	Each jurisdiction/agency that will contribute to & adopt the Clark Co MJHMP	By July 1, 2022 Please upload to your corresponding folder on SharePoint (CLICK HERE)
4.	Provide requested documentation: <ul style="list-style-type: none"> General Plan Safety Element Zoning Ordinance General Plan Land Use Element Fire Code National Flood Insurance Program Emergency Operations Plan Climate Action/Adoption Plans Development Code 	Each jurisdiction/agency that will contribute to & adopt the Clark Co MJHMP	By July 1, 2022 Please upload to your corresponding folder on SharePoint (CLICK HERE)



	<ul style="list-style-type: none"> • Community Design Guidelines • Capital Improvement Plans • Storm Water Management Plans 		
5.	Issue calendar invitations for the following quarterly Steering Committee Meeting dates: <ul style="list-style-type: none"> • Tuesday, SEPT 13, 2022 - 11:00AM PT • Tuesday, JAN 17, 2023 - 11:00AM PT • Tuesday, JUNE 06, 2023 - 11:00AM PT 	CONSTANT	As soon as possible
6.	Complete the May 24 Steering Comm Meeting Minutes/Notes	CONSTANT	June 1, 2022

I. Welcome and Administrations

- a. Introductions and Opening Remarks
- b. Ms. Mann started the meeting with opening remarks and a welcome, and housekeeping items regarding participation via Zoom.
- c. Ms. Mann then took attendance for the group.

II. Quarterly Meeting Purpose

- a. Ms. Mann noted that the purpose of meeting would cover the quarterly meeting schedule and project timeline, SharePoint site access and use, public engagement, and the hazard mitigation planning questionnaire.
- b. The tentative dates for the quarterly meetings will take place at 11AM on the following dates:
 - i. September 13, 2022
 - ii. January 17, 2023
 - iii. June 6, 2023
- c. Ms. Mann asked if there were any questions or comments. Hearing none, she moved on to Public Engagement.

III. Public Engagement

- a. Ms. Mann noted that the public involvement plan should be tailored to each jurisdiction responsible for updating the multi-jurisdictional hazard mitigation plan (MJHMP).
- b. Ms. Mann led the group through the plan document that was shared prior to the meeting. She discussed the entities that were part of the adoption process for 2018 and emphasized that there is a need to include and engage jurisdictions and entities that should be involved for the 2023 update and identify what has changed since 2018.
- c. Ms. Mann stated that Constant will provide a scripted summary of the project to allow each jurisdiction to utilize during public engagement meetings to announce the project is underway. A survey will be used to engage the public. Ms. Ross asked if the script was already developed. Ms. Mann stated that the script is to be developed to allow members to review the script prior to finalizing.
- d. Ms. Mann asked if there were any questions. Hearing none, she passed the meeting to Mr. Rosenberg to discuss the questionnaire.

IV. Hazard Mitigation Planning Questionnaire



- a. Mr. Rosenberg led the group through information required for the hazard mitigation planning, which include National Flood Insurance Program structures, critical infrastructure community assets, prior mitigation efforts and resources, cultural and historical resources, and community engagement.
- b. Mr. Rosenberg further requested that each jurisdiction/organization provide a list of capabilities with a one-month deadline.
- c. Mr. Rosenberg gave a brief update on the FEMA hazard mitigation tool kit, which requires climate change to be addressed in all hazard mitigation plans either as its own hazard or in individual hazards, such as flooding and extreme heat. FEMA also requires addressing equity as well.
- d. Mr. Rosenberg emphasized that having concrete actionable items in the hazard mitigation plan will help make jurisdictions eligible for grant funding when applying.
- e. Ms. Mann mentioned that the questionnaire will be made into a fillable form to make it easier for distribution to stakeholders.
- f. Ms. Mann asked if there were any further questions. Hearing none, she moved on to next steps and action items.

V. Next Steps and Action Items

- a. Ms. Mann led the group through next steps, including finalizing the Public Involvement Plan (PIP), distribution of meeting minutes, redistribution of a shared site for documentation sharing, and assist hosting jurisdictions with public engagements.
- b. Ms. Mann highlighted action items for the Project Management team for Clark County, including preparation for one of the project's community engagements during the July 9 Local Emergency Planning Committee (LEPC) meeting.
- c. Ms. Mann requested that the Steering Committee members add supporting documentation to the SharePoint site, complete the questionnaire, and coordinate with CONSTANT for support on public engagements.
- d. Ms. Mann asked if there were any other questions or any further feedback. Hearing none, she concluded the meeting.

Table 2: Meeting Attendees

#	Name	Position	Organization/Department
1.	Holly Mann	Project Manager	CONSTANT
2.	Tracy To	Project Support	CONSTANT
3.	Lee Rosenberg	Subcontracted Support	Navigating Preparedness Associates
4.	Angeline Szymanski	Steering Committee Member	Clark County Water Reclamation District
5.	Arthur Perillo	Steering Committee Member	City of Las Vegas, Fire
6.	Bradley Iverson	Steering Committee Alternate	City of Las Vegas
7.	Brian Richmond	Steering Committee Member	State of Nevada
8.	Brian Scroggins	Steering Committee Member	City of Las Vegas



9.	Carlito Rayos	Steering Committee Member	Clark County
10.	Clint J Spencer	Steering Committee Member	Clark County Public Works
11.	Corey Ross	Steering Committee Member	City of Las Vegas Valley Water District
12.	Craig McDougall	Steering Committee Member	Clark County, Regional Flood
13.	Dustin Schelin	Steering Committee Member	Las Vegas Fire & Rescue
14.	Harriett Parker	Steering Committee Member	Las Vegas Paiute Tribe
15.	Jeff Harper	Steering Committee Member	Moapa Paiute Tribe
16.	Jeremy Hynds	Steering Committee Lead	City of Henderson
17.	Josie Ross	Steering Committee Alternate	City of Henderson
18.	Michael Wilson	Steering Committee Member	Clark County School Districts
19.	Misty Richardson	Steering Committee Member	Clark County Office of Emergency Management and Homeland Security
20.	Misty Robinson	Subject Matter Expert	Southern Nevada Health District
21.	Sam Baker	Steering Committee Member	Environment and Sustainability
22.	Travis Anderson	Steering Committee Member	City of North Las Vegas

3. Project Planning Team Mitigation Action Planning Meeting

Date/Time: August 16, 2022 @ 11:00AM – 12:00PM PST

Location: Zoom Meeting (virtual meeting)

Agenda:

Clark County, Nevada
Multi-Jurisdictional Hazard Mitigation Plan
Steering Committee Quarterly Meeting



August Quarterly Meeting Agenda

Location: Virtual

Date: August 16, 2022

Time: 11:00-12:30pm PDT

YouTube Livestream Link: <https://youtu.be/NhUKhJnZB0>

- I. Welcome & Administration
 - i. Steering Committee Membership Attendance
 - ii. May 2022 Quarterly Meeting Minutes
 - iii. Quarterly Meeting Purpose
- II. Steering Committee Management
 - i. Project Progress and Steering Committee Roles
 - ii. Hazard Questionnaire Progress and Data Gaps*
 - iii. Community Survey Distribution and Outreach Progress*
- III. Mitigation Goals and Actions
 - i. Past Mitigation Goals
 - ii. Updating Mitigation Goals
- IV. Next Steps & Action Items
 - i. CONSTANT Support Team
 - ii. County PM / City of Henderson
 - iii. Steering Committee*
- V. Next Scheduled Meeting
 - i. Steering Committee Quarterly Meeting – January 17, 2023

*Indicates action required of the Steering Committee members.



Presentation (cover only):



Steering Committee Quarterly Meeting

CLARK COUNTY
MULTI JURISDICTION HAZARD MITIGATION PLAN

August 16, 2022

Resilience is CONSTANT™

Meeting Minutes with attendance sheet:

Clark County, Nevada
Multi-Jurisdiction Hazard Mitigation Plan (MJHMP)
Steering Committee Quarterly Meeting Minutes



Steering Committee Quarterly Meeting Minutes

Date: Tuesday August 16, 2022
Time: 11:00-12:00pm PST
Facilitator: Amanda Ozaki-Laughon
Notetaker: Lenah Mansour

Table 1: Action Items

#	Action Item	Assignee	Date
1	Send meeting minutes, agenda and slide deck	CONSTANT	COMPLETE
2	Provide support regarding public engagement and documentation of community survey posts	Clark County	Ongoing
3	Send CPRI worksheet to the Steering Committee	CONSTANT	08/26/2022
4	Approve meeting minutes from August Steering Committee Meeting	Clark County PM and the City of Henderson	08/23/2022
5	Conclude the hazard planning questionnaire and wrap up public engagement documentation on the community survey	Steering Committee	08/31/2022
6	Complete prior mitigation action worksheet and CPRI worksheet	Steering Committee	09/09/2022
7	Provide mapping GIS products that can be included in the plan as it is being drafted	Steering Committee	10/01/2022

- I. Welcome and administration
 - a. Introductions and Opening Remarks
 - i. Ms. Ozaki-Laughon started the meeting with opening remarks and a welcome, and housekeeping items regarding participation via Zoom.
 - ii. Ms. Ozaki-Laughon then took attendance for the group.



II. Meeting Purpose

- a. Ms. Ozaki-Laughon noted that the purpose of meeting is to provide a quarterly project progress update, review outstanding data requirements, answer any outstanding data questions regarding the project task and move into the mitigation strategy phase.
- b. A secondary purpose for the meeting is to provide an update on the project schedule and discussing and answering any outstanding questions the committee may have.
- c. Ms. Ozaki-Laughon informed the committee that meeting minutes will be taken and will be sent out following this conversation. She asked if there were any questions. Hearing none, she proceeded with a roll call.
- d. Ms. Ozaki-Laughon informed the attendees that the next scheduled meeting will take place on January 17, 2023.

III. Project Progress Update

- a. Ms. Ozaki-Laughon presented the actions taken and tasks completed in this project since March 2022. Ms. Ozaki-Laughon:
 - b. Disseminated meeting minutes from the May Quarterly Meeting
 - c. Developed and shared the Hazard Questionnaire with Steering Committee members
 - d. Developed and shared the Community Survey for the public via Survey Monkey, which has collected over 500 responses
 - i. Began analyzing potential losses and community descriptions/community capabilities
 - e. Ms. Ozaki-Laughon proceeded to present the challenges and support needs:
 - f. There is need to post the community survey to jurisdiction websites and social media, and forward documentation to CONSTANT
 - g. There are outstanding data requirements for community capabilities and potential losses from the hazard questionnaire
 - h. Ms. Ozaki-Laughon presented the next steps foreseen for this project:
 - i. Collect information necessary for risk assessment and complete analysis
 - j. Develop and finalize mitigation strategy, action plan, and mitigation action specifications
 - k. Outstanding Data Requests:
 - l. Ms. Ozaki-Laughon went over the outstanding data requirements in each jurisdiction, asking for clarification on the status. The status of each jurisdiction is included in the below table:



Table 2: Status Update on Data Collection Efforts

Jurisdiction	Community Survey Substantiation	Hazard Assessment Questionnaire
Boulder City	Boulder City will post the survey on a webpage and will send the URL of that webpage to MS. Ozaki-Laughon.	Boulder City will resend the PDF with the north-wind historic preservation district survey pdf as it was a damaged file. They informed Ms. Ozaki-Laughon that the tables have already been completed and sent to CONSTANT.
City of Henderson	Completed	Ms. Ozaki-Laughon will work with Ms. Josie offline on the Hazard Assessment Questionnaire
City of Las Vegas	Las Vegas will post the questionnaires on their webpage	Questionnaire is still in progress
City of Mesquite	Will post the news article on the webpage	Jayson Andreus will provide follow up to Ms. Ozaki-Laughon before the end of this meeting regarding the status update of the questionnaire
City of North Las Vegas	Completed	Completed
Clark County	Completed	Completed
Clark County School District	CONSTANT will follow up offline as there were no representatives from the meeting	
Clark County Water Reclamation District	Completed	Ms. Ozaki-Laughon verified that tables left blank indicate that the information was not applicable for the water reclamation district.
Las Vegas Paiute Tribe	CONSTANT will follow up offline as there were no representatives from the meeting	
Las Vegas Valley Water District	Completed	Ms. Ozaki-Laughon will schedule a meeting with Cory Raos to assist with the hazard assessment questionnaire.
Moapa Band of Paiutes	Ms. Ozaki-Laughon will follow up with Jeff regarding posting the community survey.	Ms. Ozaki will follow up with Jeff offline regarding updates concerning the blank table in the hazard assessment questionnaire.



- m. Ms. Ozaki-Laughon followed up with the presentation to demonstrate the important of the Community Survey substantiation and the Hazard Assessment questionnaire.
- n. Mr. Rosenberg informed the Steering Committee that they need to provide input into developing hazard mitigation activities or action items to meet the FEMA requirement.
- o. Mr. Rosenberg also requested the jurisdictions provide past emergency declarations/proclamations for their communities. This would include COVID-19 public health declarations.
- p. Mr. Rosenberg plans to use content from the questionnaire to update the four major capabilities for each jurisdiction, and he stands available to follow-up with any questions.
- q. Jayson Andrus requested a follow-up meeting with Mr. Rosenberg.
- r. Project Timeline
 - i. Ms. Ozaki-Laughon reviewed the project timeline and informed the participants that CONSTANT completed the majority of community engagement and is entering into the final phase of risk analysis and mitigation goal drafting

IV. Mitigation Goals and Actions

- a. Hazard Selection Process
- b. Mr. Rosenberg moved on to go through the hazard selection process and asked for feedback from the committee.
- c. Mr. Rosenberg informed the participants that FEMA requires to perform a thorough job. In describing the hazards and documenting the history, location, extent, impact from climate change, the probability and severity of the hazard.
- d. Mr. Rosenberg informed the committee that he won't need to list all the hazard in the plan and that the major focus is to select those that are most applicable to Clark County and participating organizations.
- e. Hazard identification process:
 - i. Avalanche: Upon going through the Avalanche hazard, Mr. Rosenberg asked Ms. Richardson to send him the avalanche study.
 - ii. Health Hazard: Mr. Rosenberg suggested to combine the epidemic and pandemic under one category being health hazard.
 - iii. Flood: Ms. Richardson does not consider flood to be problematic from the area
 - iv. Ms. Richardson suggested to look at the national weather partners to help with the language encompassing each of the severe weather, hail, thunderstorm, and windstorm.
 - v. Infestation: Mr. Rosenberg asked if infestation should be included in the plan along with the associated mitigation activities. Ms. Richardson informed Mr. Rosenberg that this opinion should given by the agriculture group who were not available for that meeting
 - vi. Mr. Rosenberg suggested to group snowfall and severe storm under winter storm. Misty asked Mr. Rosenberg if he could provide a subset to that information.
 - vii. Mr. Rosenberg suggested including Tornados under severe storm, hail, thunderstorm and high wind.



- viii. Volcano: Ms. Richardson informed the committee that there is nothing active in the region
 - f. Mr. Rosenberg informed the participants that he will be incorporating the elements discussed in the conversation to the plan and then followed by requesting jurisdictions send CONSTANT mapping GIS products that can be included in the plan (e.g. for hazards that include pipeline locations, railroads, fire danger zones and dam inundation).
 - i. Mr. Rosenberg and the Steering Committee agreed to dam inundation under floods.
 - ii. The Steering Committee agreed to include civil unrest in the first draft. Mr. Rosenberg will take a look at the long-term loss of power as he develops the draft.
 - iii. Mr. Rosenberg informed the participating organization that each of them is going to have a tailored list of hazards with their CPRI (consolidated prioritized risk index) available to them.
 - iv. In the comment section, Ms. Szymanski suggested adding power reliance.
 - g. Cumulative Prioritized Risk Index (CPRI)
 - i. Ms. Ozaki-Laughon moved to the next slide to go over the Hazard Identification & Prioritization tool with Mr. Rosenberg.
 - ii. Mr. Rosenberg informed the participants that this is a tool that FEMA is pleased for CONSTANT to use. This tool shows that an analysis has been conducted prior to selecting the hazards and turns of risk and priorities.
 - iii. Mr. Rosenberg informed the committee that four items have been selected and are weighed against probability, magnitude, warning time and duration.
 - iv. Mr. Rosenberg stated this tool will be sent to the attendees to be used when determining the scores for each of their applicable hazards.
 - v. Mr. Rosenberg showed a CPRI sample of hazards to provide an example of how the analysis will be made. He then informed the participants that he will be developing a CPRI overall for each participating organization based on their input and will include it in the plan.
 - vi. Mr. Rosenberg carried out a live CPRI workshop with the committee, went through a couple of hazards and explained the process behind the CPRI analysis.
 - vii. Since FEMA requires climate change to be included as a hazard, Mr. Rosenberg suggested providing a climate change index to each hazard resulting from climate change.
 - viii. Wildfire and pandemic CPRI analysis were configured as an example by Mr. Rosenberg. Probability, magnitude and severity, duration and warning time were given respective scores by the committee.
- V. Mitigation Action Planning
 - a. Ms. Ozaki-Laughon moved on to the mitigation action planning section to inform the participants that once the level of severity for each of the identified hazards have been rated the next step forward will be addressing mitigation actions to address these hazards.



- b. Ms. Ozaki-Laughon informed the Steering Committee that Mitigation Goals are a limited number of overall goals that will be matched to mitigation actions. Each jurisdiction will have a mitigation action plan as an appendix in the MJHMP.
- c. She highlighted the four mitigation goals in the 2018 MJHMP and asked for feedback from the Steering Committee. Mr. Rosenberg added that a sample list of goals can be sent to the Committee.
- d. Ms. Ozaki-Laughon stated that once the goals are finalized, CONSTANT will request an update on the mitigation actions found in the 2018 MJHMP. These status updates should be limited to:
 - i. Not Started/Not Funded
 - ii. In Progress/Ongoing
 - iii. Completed
- e. Mr. Rosenberg suggested expanding the Mitigation Goals to include education and outreach/engagement of the public.
- f. Ms. Ozaki-Laughon asked if there were any further comments. Hearing none, she proceeded to the next section.

VI. Next Steps and Action Items

a. Action Items:

CONSTANT:

- a. Send follow-up on public outreach documentation. Survey extended to September 1, 2022.
- b. Send completed meeting minutes and slide deck to Steering Committee.
- c. Send CPRI worksheet to Steering Committee members, due September 9
- d. Send Mitigation Actions Worksheet, due September 9

Clark County PM/Steering Committee Oversight Group

- e. Approve meeting minutes from Steering Committee Meeting
- f. Provide support with Steering Committee members completion of hazard questionnaire and public engagement documentation

Steering Committee

- g. Complete hazard questionnaire by August 31
- h. Send public engagement documentation by August 31
- i. Complete CPRI worksheet and Mitigation Action worksheet by September 9

Table 3: Meeting Attendees

#	Name	Project Role
1	Lee Rosenberg	Project Manager, CONSTANT
2	Misty Richardson	Project Manager, Clark County
3	Carlito Rayos	Steering Committee Member

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4	Samantha Baker	Steering Committee Member
5	Clint Spencer	Steering Committee Member
6	Ryan Turner	Steering Committee Member
7	Greg Chesser	Steering Committee Member
8	Bradley Iverson	Steering Committee Member
9	Travis Anderson	Steering Committee Member
10	Angeline Szymanski	Steering Committee Member
11	Jeff Harper	Steering Committee Member
12	Billy Samuels	Steering Committee Member
13	Todd Myers	Steering Committee Member
14	Craig McDougall	Steering Committee Member
15	Corey Ross	Steering Committee Member
16	Sanders Smiles	Steering Committee Member
17	Jeff Ohs	Steering Committee Member
18	Skye Dunfield	Steering Committee Member

4. Clark County MJHMP Steering Committee Meeting

Date/Time: November 29, 2022 @ 11:00AM – 12:00PM PST

Location: Microsoft Teams (virtual meeting)

Invitation:

The screenshot shows a Microsoft Teams meeting invitation window. The title bar reads 'MJHMP Mitigation Action Worksheet Meeting - Meeting - Calendar - Dan.Smith@constantassociates.com'. The invitation details include:

- From:** Casey Moes, Sent on Thursday, 11/17/2022 at 12:31 PM
- Time:** Tue 11/29/2022 2:00 PM - 2:30 PM
- Location:** Microsoft Teams Meeting (with a 'Join Teams meeting' button)
- Status:** You accepted this meeting on 11/17/2022
- Reminder:** 15 minutes before
- Attachments:** 2 attachments (516 KB): 'Example New Mitigation Acti...' and 'Survey Analysis Summary_Cl...'. Options to 'Save all to OneDrive - Constant and Associates' and 'Download all' are visible.
- Organizer:** Casey Moes
- Attendees:** A list of 23 attendees, all marked as 'Required'. Visible attendees include: jandrus@mesquitenv.g..., carlito.rayos@clarkcou..., clint.spencer@clarkcou..., gtb@ClarkCountyNV.g..., sarah.wright@clarkcou..., Misty Richardson, rdunfield@cleanwatert..., r14590s@lvmpd.com, corey.ross@lvvwd.com, geir.j.gabrielson.mil@a..., stephanie.daus@nvene..., Lopezj@rtcsnv.com, and robinson@snhd.org.

The main body of the invitation contains the following text:

Clark County Hazard Mitigation Planning Team,

Good morning!

Last week I sent out a new Hazard Mitigation Action Worksheet and I wanted to schedule a short meeting to go over that with all of you. This also gives me a chance to introduce myself and new additions to the planning team virtually and prepared for any 1:1 scheduling we may need to do to get these products accomplished.

I've attached the example worksheet that was sent out last week and the results of the Clark County community survey where we had a whopping 803 respondents taking about their understanding of local hazards and level of preparedness. My apologies if you have already received this, but it also pertains to our discussion on Tuesday so please take a look if you have the time.

If you cannot make this meeting and want to meet separately on this issue, please reach out to me at casey@constantassociates.com

I look forward to seeing you all virtually very soon.

Respectfully,

Casey

Presentation (cover only):



Steering Committee Quarterly Meeting

CLARK COUNTY
MULTI JURISDICTION HAZARD MITIGATION PLAN

November 29th, 2022

Resilience is CONSTANT™

Meeting Minutes with attendance sheet:

Clark County MJHMP
Steering Committee Special Update Meeting
Meeting Minutes



Meeting Minutes

Date: November 29, 2022

Time: 11:00 AM (PST)

Location: Conference Call

Table 1: Action Items

#	Action Item	Responsible	Due Date
1	Clean Up Outstanding CPRI Worksheets	CONSTANT	Ongoing
2	1:1 Sessions for filling out New Action Mitigation Worksheets	CONSTANT	Ongoing
3	Continue to assist with outreach	Clark County	Ongoing
4	Direct questions and concerns to CONSTANT team	Clark County	Ongoing
5	Clean up and Complete prior Mitigation Action Worksheets	Steering Committee	December 15
6	Complete any outstanding CPRI Worksheet	Steering Committee	December 15
7	Schedule 1:1 Session with CONSTANT	Steering Committee	December 8
8	Complete New Hazard Mitigation Action Worksheet	Steering Committee	January 30

I. Welcome/Introductions

- a. Casey Moes, CONSTANT, introduced herself as the project manager, as well as the rest of the CONSTANT Team. The new CONSTANT members attending this meeting were Casey, Mona Bontty, Emily Long and Dan Smith.
- b. Meeting Participants can be found on Table 2: Participants
- c. Casey provided the purpose of the meeting to the group. She stated that this meeting was to update everyone on the change in the team, new timeline and do a brief overview of the newest requirement – the New Mitigation Action Worksheet.

II. Project Overview

- a. Casey provided basic information around hazard mitigation.
Casey mentioned financial assistance and grant sources associated to the Hazard Mitigation Plan (HMP) that are necessary for implementing many of their required mitigation.
- b. Casey covered importance of Hazard Mitigation plan updates
 - i. Completed Mitigation Projects





- ii. Carry Over Projects
- iii. Proposed Projects

III. New Action Mitigation Worksheet

- a. Casey described each component of the mitigation worksheet. She used a few minutes to talk about the action description, estimated timeline (i.e. 2-5 years), potential funding source, estimated costs, and responsible party.
- b. Casey also showed a few examples of a completed New Action Mitigation Worksheet and went step by step on how she got the information.

IV. Project Timeline

- a. Casey provided updated timeline for the project. She and the Clark County MJHMP Project Managers decided to move key deliverables back in order to allow a more thorough review of current resources and delivery of New Action Mitigation Plans.
- b. The new timeline for portions of the Hazard Mitigation Plan

Section of the Hazard Mitigation Plan	New Due Date
Section 3: Planning Area	January 5 th
Section 4: Hazard Risk Assessment	January 5 th
Overall Risk Portion of Plan to Steering Committee	January 31 st
Add Mitigation Capabilities information (Floodplain Management, Planning Integration)	February 8 th
Add Mitigation Projects New and Old	February 15 th
Section 5: Draft Mitigation Strategy to Steering Committee	March 15 th
Final Draft Available for Review	April 17 th

V. 1:1 Mitigation Worksheet Sessions

- a. Casey stressed open time slots for each jurisdiction to go over their prior and new action mitigation worksheets. Jurisdictions could register for 1:1 session to cover either completing the form or going over completed forms
- b. Each jurisdiction can sign up on Calendly or by writing Dan Smith. Here is the link <https://calendly.com/dan-smith-7/30min>.

VI. Next Steps

- a. See Action Items (Table 1)
- b. Outstanding CPRI Worksheets and previous mitigation actions area due no later than December 15th, 2022.

VII. Questions/Comments.





- a. Ryan Gerchman from Nevada OEM introduced himself as the state Hazard Mitigation Plan point of contact and offered to assist in any way possible.
- b. Jeremy Hynds, North Las Vegas, also introduced himself and asked a few follow up questions of Emily Long.

VIII. Adjourn

Table 2: Participants

	Name	Role	Organization
1	Casey Moes	Project Manager	CONSTANT
2	Dan Smith	DPM	CONSTANT
3	Emily Long	Project Support	CONSTANT
4	Mona Botty	Project Sponsor	CONSTANT
5	Lee Rosenberg	Lead Writer	CONSTANT
6	Sarah Wright	EM Support	Clark County GIS
7	Misty Richardson	Clark County MJHMP Project Manager	CCOEM
8	Misty Robinson	Public Health Supervisor	Southern Nevada Health District
9	Jim Anderson	Director Code Enforcement	Clark County
10	Josie Ross	EM Specialist/ DPM Clark County MJHMP	CCOEM
11	Dean Mosher	Public Works	Clark County
12	Clint Spenser	Manager Public Works	Clark County Public Works
13	Carlito Rayos	Hazmat Coordinator	Clark County Fire Department
14	Brian O'Neal	Assistant Chief	Clark County Fire Rurals
15	AJ Cieplenski	Airport Emergency Administrator	Harry Reid International Airport (LAS)
16	Jim Andersen	Code Enforcement/Animal Protection Services	Clark County
17	Corey Ross	Emergency Manager	LVVWD/SNWA
18	Jason Manzo	SNACC	Clark County
19	Mike Atherall	Emergency Management	LVMPD
20	Gil Doucet	Safety Officer	CAEP- Olin Chemical Factory
21	Ryan Gerchman	Hazard Mitigation Planner	Nevada Division of Emergency Management



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 Steering Committee Special Update Meeting
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22	Kendall Herzer	Lower Colorado Basin	US Bureau of Reclamation
23	Sam Baker	Department of Environment and Sustainability	Clark County
24	Jeremy Hynds	Emergency Management	City of North Las Vegas
25	Stephanie Daus	Emergency Management Specialist	NV Energy
26	Greg Chesser	Manager	Boulder City
27	LTC Gier Gabrielson	Subject Matter Expert	Nevada National Guard (NVNG)
28	Jeff Ohs	Assistant EM	University of Las Vegas



5. Clark County MJHMP Steering Committee Technical Assistance 1:1 Meeting (Mitigation Action Worksheet Completion)

Date: December 2022 – January 2023

Location: Teams Meeting (virtual meeting)

Technical Assistance Sign-up Link: <https://calendly.com/dan-smith-7/30min>

Invitation:

From: Casey Moes <casey@constantassociates.com>

Sent: Wednesday, November 30, 2022 11:12 AM

To: Gregory Chesser <gchesser@bcnv.org>; kherzer@usbr.gov; boneal@clarkcountynv.gov; jrbrianscroggins@gmail.com; Bradley Iverson <biverson@lasvegasnevada.gov>; Carolyn Levering <clevering@lasvegasnevada.gov>; jandrus@mesquitenv.gov; bartons@cityofnorthlasvegas.com; Travis Anderson <anderson@cityofnorthlasvegas.com>; Carlito Rayos <carlito.rayos@clarkcountynv.gov>; clint.spencer@clarkcountynv.gov; james.andersen@clarkcountynv.gov; dean.mosher@clarkcountynv.gov; leigh.ann.anders@clarkcountynv.gov; rgv@clarkcountynv.gov; Sam.Palmer@ClarkCountyNV.gov; wkh@ClarkCountyNV.gov; papazian@clarkcountynv.gov; gtb@ClarkCountyNV.gov; klevorick@clarkcountynv.gov; Jeremy Hynds <hynds@cityofnorthlasvegas.com>; sarah.wright@clarkcountynv.gov; billy.samuels@clarkcountynv.gov; Misty Richardson <richardsonm@ClarkCountyNV.gov>; Samantha Baker <Samantha.Baker@ClarkCountyNV.gov>; chris.wardlaw@clarkcountynv.gov; coleenl@clarkcountynv.gov; wilsomf@nv.ccsd.net; kiernnd@nv.ccsd.net; Angeline Szymanski <aszymanski@cleanwaterteam.com>; rdunfield@cleanwaterteam.com; adolphc@mccarran.com; r14590s@lvmpd.com; Harriett Parker <hparker@lvpaiute.com>; jowens@lvpaiute.com; Corey Ross <corey.ross@lvvwd.com>; jharper@moapatribalpd.com; stephen.neel@clarkcountynv.gov; jorge.gonzalez@clarkcountynv.gov; geir.j.gabrielson.mil@army.mil; daniel.berc@noaa.gov; stephanie.daus@nenergy.com; GJDoucet@olin.com; Lopezj@rtcsnv.com; jmanzo@clarkcountynv.gov; robinson@snhd.org; janell.woodward@dem.nv.gov; rgerchman@dem.nv.gov; rebecca.feiden@spsca.nv.gov; gregg.maye@unlv.edu; jeffrey.ohs@unlv.edu; cmcdougall@regionalflood.org; tmeyers@regionalflood.org; Dan Smith <Dan.Smith@constantassociates.com>; Emily Long

<emily.long@constantassociates.com>; josie.ross@cityofhenderson.com
Cc: Mona Bontty <mona.bontty@constantassociates.com>; Robert Palumbo <PalumboR@rtcshv.com>; Sam Baker <Sam.Baker@ClarkCountyNV.gov>; lee rosenberg <lee.rosenberg@navigatingpreparedness.com>; Adolph Cieplenski <adolphe@lasairport.com>; Jodi Carl <J10171C@LVMPD.COM>; hynds@cityofnorthlasvegas.com
Subject: Slides, Thank you and link for Sign up

Clark County HMP Team,

Thank you for jumping on this hastily scheduled meeting yesterday. I've enclosed the slidedeck as promised yesterday and included the link to Dan's Calendly here <https://calendly.com/dan-smith-7/30min>

I hope to speak with many of you soon and thank you to those that have already knocked out all the required tasks to get this plan written.

Respectfully,

Casey

Casey Moes (She/Her)
Associate
(845) 505-0675
8(a) and WOSB Certified Business
[Website](#) | [Newsletter](#) | [LinkedIn](#) | [Facebook](#)



---Original Appointment---

From: Casey Moes
Sent: Thursday, November 17, 2022 12:31 PM
To: Casey Moes; gchesser@bcnv.org; kherzer@usbr.gov; boneal@clarkcountynv.gov; jbrianscroggins@gmail.com; biverson@lasvegasnevada.gov; clevering@lasvegasnevada.gov; jandrus@mesquitenv.gov; bartons@cityofnorthlasvegas.com; anderson@cityofnorthlasvegas.com; carlito.rayos@clarkcountynv.gov; dint.spencer@clarkcountynv.gov; james.andersen@clarkcountynv.gov; Dean.Mosher@ClarkCountyNV.gov; leigh.ann.anders@clarkcountynv.gov; rgv@clarkcountynv.gov; Sam.Palmer@ClarkCountyNV.gov; wkh@ClarkCountyNV.gov; papazian@clarkcountynv.gov;

gtb@ClarkCountyNV.gov; klevorick@clarkcountynv.gov; sarah.wright@clarkcountynv.gov;
billy.samuels@clarkcountynv.gov; Misty Richardson (richardsonm@ClarkCountyNV.gov);
samantha.baker@clarkcountynv.gov; chris.wardlaw@clarkcountynv.gov; coleenl@clarkcountynv.gov;
wilsofm@nv.ccsd.net; kiernnd@nv.ccsd.net; aszymanski@cleanwaterteam.com;
rdunfield@cleanwaterteam.com; adolphc@mccarran.com; r14590s@lvmpd.com; hparker@lvpaiute.com;
jowens@lvpaiute.com; corev.ross@lvvwd.com; jharper@moapatribalpd.com;
stephen.neel@clarkcountynv.gov; jorge.gonzalez@clarkcountynv.gov; geir.j.gabrielson.mil@army.mil;
daniel.berc@noaa.gov; stephanie.daus@nvenergy.com; GJDoucet@olin.com; Lopezj@rtcsonv.com;
jmanzo@clarkcountynv.gov; robinson@snhd.org; Janell.Woodward@dem.nv.gov; rgerchman@dem.nv.gov;
rebecca.feiden@spcsa.nv.gov; gregg.maye@unlv.edu; jeffrey.ohs@unlv.edu; CMcDougall@regionalflood.org;
tmeyers@regionalflood.org; Dan Smith; Emily Long; Josie Ross

Cc: Mona Boritty; Robert Palumbo; Sam Baker; lee rosenberg; Adolph Cieplenski; Jodi Carl;

hynds@cityofnorthlasvegas.com

Subject: MJHMP Mitigation Action Worksheet Meeting

When: Tuesday, November 29, 2022 2:00 PM - 2:30 PM (UTC-05:00) Eastern Time (US & Canada).

Where: Microsoft Teams Meeting

Clark County Hazard Mitigation Planning Team,

Good morning!

Last week I sent out a new Hazard Mitigation Action Worksheet and I wanted to schedule a short meeting to go over that with all of you. This also gives me a chance to introduce myself and new additions to the planning team virtually and prepared for any 1:1 scheduling we may need to do to get these products accomplished.

I've attached the example worksheet that was sent out last week and the results of the Clark County community survey where we had a whopping 803 respondents taking about their understanding of local hazards and level of preparedness. My apologies if you have already received this, but it also pertains to our discussion on Tuesday so please take a look if you have the time.

If you cannot make this meeting and want to meet separately on this issue, please reach out to me at casey@constantassociates.com

I look forward to seeing you all virtually very soon.

Respectfully,

Casey

Casey Moes (She/Her)

Associate

(845) 505-0675

8(a) and WOSB Certified Business

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Jurisdictions	Clark County NV, Mitigation Planning Steering Committee - Mitigation Strategy Technical Assistance Appointments: Mitigation Action Worksheet Completion											
	12/1/22	12/6/22	12/8/22	12/12/22	12/14/22	12/15/22	1/4/22	1/6/22	1/9/22	1/11/22	1/13/22	Comments/Notes
Clark County Animal Protective Service				10:00-10:30 (Pacific) Clark County Animal Protective Service Contact: Jim Andersen								
Clark County Department of Sustainability			2:00-2:30 (Pacific) Clark County Contact: Sam Baker, Ariel Choinard									
Clark County Departments (Public Work, OEM, etc)												
City of Boulder City												
City of Henderson							12:00- 12:30PM Pacific City of Henderson Contact: Josie Ross, Douglas Bergstorm					
City of Las Vegas												

Jurisdictions	Clark County NV, Mitigation Planning Steering Committee - Mitigation Strategy Technical Assistance Appointments: Mitigation Action Worksheet Completion											
	12/1/22	12/6/22	12/8/22	12/12/22	12/14/22	12/15/22	1/4/22	1/6/22	1/9/22	1/11/22	1/13/22	Comments/ Notes
City of Mesquite		11:30-12:00 (Pacific) City of Mesquite Contact: Jayson Andrus and Spencer Lewis				11:30-12:00 (Pacific) City of Mesquite Contact: Jayson Andrus and Spencer Lewis						Another meeting to follow after project list is provided
City of North Las Vegas										9:30-10:00 (Pacific) City of North Las Vegas Contact: Jeremy Hynds		
Las Vegas Paiute Tribe												
Moapa Band of Paiutes												
Clark County Water Reclamation												
Clark County School District												
Las Vegas Water District					2:00-2:30 (Pacific) Las Vegas Valley Contact: Corey Ross							

Jurisdictions	Clark County NV, Mitigation Planning Steering Committee - Mitigation Strategy Technical Assistance Appointments: Mitigation Action Worksheet Completion											
	12/1/22	12/6/22	12/8/22	12/12/22	12/14/22	12/15/22	1/4/22	1/6/22	1/9/22	1/11/22	1/13/22	Comments/Notes
Las Vegas Metro Police Department			1:30-2:00 (Pacific) Las Vegas MPD Contact: Michael Atherall, Rachel Skidmore									
Constant Associates Facilitation Team Appointment		11:30 - Mona/Dan	1:30 - Mona	10:00 - Casey/Dan	2:00 - Mona/Dan	Mona/Dan	12:00 - Casey/Emily			9:30 - Mona/Emily		
			2:00 - Mona/Casey									
Color Coding Meaning												
Technical Assistance Appointment Not Scheduled												
Technical Assistance Appointment Scheduled												

6. Clark County MJHMP Steering Committee Meeting

Date/Time: February 19, 2023 @ 1:30PM – 3:00PM PST

Location: Zoom (virtual meeting)

Invitation:

The screenshot shows a calendar invitation for a Zoom meeting. The invitation is titled "February 2023: Rescheduled Clark County MJHMP Steering Committee Quarterly Meeting" and is from Mona Bontty, sent on Tuesday, 1/10/2023 at 7:49 PM. The meeting is scheduled for Wednesday, February 15, 2023, from 4:30 PM to 6:00 PM. A "Join meeting" button is visible, along with a Zoom link. The invitation text states that the January meeting has been rescheduled for February 15, 2023, from 1:30pm-3:00pm. It also mentions that the meeting will be held via Zoom and provides contact information for technical difficulties. The invitation is addressed to "Steering Committee Members" and includes a list of attendees on the right side of the screen.

February 2023: Rescheduled Clark County MJHMP Steering Committee Quarterly Meeting

From: Mona Bontty Sent on Tuesday, 1/10/2023 at 7:49 PM

Wed 2/15/2023 4:30 PM - 6:00 PM

[Join meeting](#) Zoom

You accepted this meeting on 1/10/2023

Don't remind me

Steering Committee Members,

The January MJHMP Steering Committee Quarterly Meeting has been rescheduled for **February 15, 2023 from 1:30pm-3:00pm**. This calendar appointment supersedes the previous appointment of January 17, 2023. Please delete the January appointment from your calendars.

The 1.5 hour meeting will be held via Zoom. Please use the Zoom information below to join. If you experience any technical difficulties, please contact a member of our team and we will be happy to assist you.

We look forward to your participation February 15th!

Admin Constant Associates is inviting you to a scheduled Zoom meeting.

Topic: February 2023: Clark County MJHMP Steering Committee Quarterly Meeting
Time: Feb 15, 2023 01:30 PM Pacific Time (US and Canada)

Join Zoom Meeting
<https://us06gweb.zoom.us/j/86295708032>

Tracking

Organizer
Mona Bontty

Attendees

Yes: 17

- clint.spencer@clarkcou... Required
- Harriett Parker Required
- jandrus@mesquitenv.g... Required
- rgerchman@dem.nv.gov Required
- bartons@cityofnorthla... Required
- jharper@moapatribalp... Required
- lee rosenberg Required
- Sam Baker Required
- Misty Richardson Required
- jeffrey.ohs@unlv.edu Required
- Daven Solis Required
- Dan Smith Required
- Emily Long Required

Presentation (Cover only):



Steering Committee Quarterly Meeting

CLARK COUNTY
MULTI- JURISDICTIONAL HAZARD MITIGATION PLAN

February 15, 2023

Resilience is CONSTANT™

Meeting Minutes with attendance sheet:

Clark County MJHMP
Steering Committee Meeting #3
Meeting Minutes



Meeting Minutes

Date: February 15, 2023

Time: 1:30 PM (PST)

Location: Zoom Conference Call

Table 1: Action Items

#	Action Item	Responsible	Due Date
1	Follow up on additional information needed from submitted Mitigation Action Worksheets	CONSTANT	Ongoing
2	Send out Capabilities Assessment Worksheets	CONSTANT	Ongoing
	Submit Section 5: Draft Mitigation Strategy	CONSTANT	Mar. 15
3	Continue to assist with outreach	Clark County/CONSTANT	Ongoing
4	Submit Mitigation Action Worksheets	Steering Committee	Feb. 17
5	Submit Jurisdiction Capabilities Assessment Worksheet	Steering Committee	Feb. 28
6	Open Public Comment Period		May 1

I. Welcome/Introductions

- Mona Bontty, CONSTANT, introduced herself as the Project Manager, as well as the rest of the CONSTANT Team. The additional CONSTANT members attending this meeting were Emily Long, Dan Smith and subcontractor Lee Rosenberg.
- Mona completed Steering Committee roll call. Meeting Participants can be found on Table 2: Participants.

II. Quarterly Project Activities

- Mona provided updates on the following:
 - Work that has been completed since the last Steering Committee Meeting
 - Bi-Weekly Project Status Meetings held with Misty and Josie
 - Submissions of the draft of Section 3 and Section 4 to (Misty/Josie) for review.
 - Meetings with individual jurisdictions on Hazard Mitigation Worksheets were held
 - Coordination and information gathering efforts completed to obtain Critical Facilities Data
 - Meetings held with the State of Nevada, Janelle and Ryan. Their support to the MJHMP update has been appreciated



- Misty has been involved in the engagement of the area tribal communities/government
- Presentation by CONSTANT at the LEPC meeting on the project and the current status need for mitigation projects
- Multiple meetings held regarding in-kind tracking for this project

III. Mitigation Action Worksheet Status

- CONSTANT conducted multiple 1:1 interviews with jurisdictions to support the completion of their Mitigation Action Worksheets
- Mona provided the list of jurisdictions who have submitted their Mitigation Action Worksheets:
 - Boulder City
 - Clark County (Office of Environmental & Sustainability)
 - Clark County Water Reclamation District
 - Las Vegas Valley Water District
 - City of North Las Vegas
- Additional information might be needed, especially on detailed project descriptions
- What is needed, outstanding jurisdictional Mitigation Action information:
 - City of Henderson
 - City of Las Vegas
 - City of Mesquite
 - Clark County Public Works Department
 - Clark County Building and Fire Safety
 - Las Vegas Paiute Tribe
 - Moapa Band of Paiutes
- Spencer Lewis, City of Mesquite, gave an update on their status of their Mitigation Action Worksheet, estimate of submission by beginning of next week
- Mona reviewed the information needed in the Hazard Mitigation Action Worksheet
- Mona mentioned that CONSTANT will be following up with jurisdictions that have submitted worksheets and have any missing or additional; information that is required
 - Deadline for Submission of Mitigation Action Worksheets is Friday, February 17, 2023
 - Projects to include Completed Mitigation Projects, Carry-Over Projects, and Proposed Projects
- Emily, CONSTANT, complimented the team on what has been submitted so far and mentioned that during her analysis the edits that are required are minor, information has also been taken from prior worksheets that were submitted from prior requests

IV. Capabilities Assessment

Emily presented the following regarding the Capabilities Assessment Worksheet:



- Capabilities Assessment for each jurisdiction is the next piece of information needed for the MJHMP update The FEMA Tribal Mitigation Planning Handbook explanation of a Capabilities Assessment
 - The Capabilities Assessment is the primary part of mitigation planning and reviewing mitigation strategies for the mitigation plan
 - The primary types of capabilities:
 - Planning and Regulatory – Capabilities that are based on the implementation of ordinances, policies, local laws and State statutes, and plans and programs that relate to guiding and managing growth and development
 - Administrative and Technical – Refers to the community’s staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions
 - Financial – Resources that a jurisdiction has access to or is eligible to use to fund mitigation actions. The costs associated with implementing mitigation activities vary. Some mitigation actions such as building assessment or outreach efforts require little to no costs other than staff and time and existing operating budgets
 - Education and Outreach – Refers to education and outreach programs and method already in place that could be used to implement mitigation activities and communicate hazard-related information
- Potential project examples that would fall under these categories
- Worksheets will be emailed to jurisdictions and are due back to CONSTANT on **February 28, 2023**

V. Open Comment Period and MJHMP Submission

- Emily covered the next steps following submission of Mitigation Action Process
- Looking to conduct Steering Committee Close Out – April 26, 2023
- Open Comment Period: May 1 – 22, 2023, supporting documentation for Open Comment advertisement will be provided
- Emily mentioned the options for when process of adoption and approval can begin
- Jeremy, City of North Las Vegas, had a question regarding whether or not the County had to approve the MJHMP prior to Jurisdictions approving
- Misty, Clark County OEM, commented via chat, “We have only ever had the county approve first, I’m not certain if cities must wait.”
- Lee, CONSTANT, mentioned that Tribal government or Special Districts do not have to wait for County approval
- Emily mentioned that the approval process should occur around the time of BRIC Grant application submission, for that grant the requirements include approved HMP and project must be included in HMP
- Ryan, State of Nevada, mentioned an Approval Pending Adoption option
- Misty, commented via chat, “Due to this being multi-jurisdictional we have typically taken the lead through adoption 1st by the Board of County Commissioners followed by municipalities”



No further questions or comments asked by Steering Committee Members

VI. Project Timeline Highlights

Updates to the Hazard Mitigation Plan Project Timeline

Hazard Mitigation Plan Task	Status and Due Date
Section 3: Planning Area	Draft Completed
Section 4: Hazard Risk Assessment	Draft Completed
Receive Outstanding Mitigation Action Worksheets to input data into MJHMP Plan Draft	Friday, February 17, 2023
Submit Jurisdiction Capabilities Assessment Worksheet	Tuesday, February 28, 2023
Section 5: Draft Mitigation Strategy Submission	Wednesday, March 15, 2023
Open Public Comment Period	Monday, May 1, 2023 – Monday, May 22, 2023
Final Draft to Nevada Department Division of Emergency Management/Homeland Security & FEMA	Thursday, June 1, 2023

VII. Next Steps

- See Action Items (Table 1)

VIII. Questions/Comments.

IX. Adjourn

Table 2: Participants

	Name	Role	Organization
1	Mona Bontty	Project Manager/Sponsor	CONSTANT
2	Dan Smith	DPM	CONSTANT
3	Emily Long	Subject Matter Expert/Project Support	CONSTANT
4	Lee Rosenberg	SME	CONSTANT
5	Misty Richardson	Clark County MJHMP Project Manager	CCOEM
6	Josie Ross	EM Specialist/ DPM Clark County MJHMP	City of Henderson
7	Ryan Gerchman	Hazard Mitigation Planner	State of Nevada
8	Greg Chesser	Deputy Fire Chief	Boulder City

Clark County MJHMP
 Steering Committee Meeting #3
 Meeting Minutes



9	Guy DeMarco	City of Las Vegas OEM	City of Las Vegas
10	Spencer Lewis	Emergency Management	City of Mesquite
11	Jeremy Hynds	Emergency Management	City of North Las Vegas
12	Angeline Szymanski	Emergency Management Coordinator	CC Water Reclamation District
13	Skye Dunfield	EM Intern	CC Water Reclamation District
14	Jae Beasley	Director of School Safety	CC School District
15	Harriet Parker	Safety Officer/EM Coordinator	Las Vegas Paiute Tribe
16	Corey Ross	Emergency Management Coordinator	Las Vegas Valley Water District
17	Clint Spencer	Manager	CC Public Works

7. Clark County MJHMP Steering Committee Meeting

Date/Time: April 26, 2023 @ 1:30PM – 3:00PM PST

Location: Zoom (virtual meeting)

Invitation:

Busy Mark as Private Reply Forward Options ...

This meeting has been adjusted to reflect your current time zone. It was initially created in the following time zone: (UTC-08:00) Pacific Time (US & Canada).

99 **Clark County MJHMP April Steering Committee Meeting via zoom** Clark County MJHMP

🕒 Wednesday, April 26, 2023 from 3:30 PM to 5:00 PM
1 hour, 30 minutes

📅 You accepted [Edit RSVP](#)

🔗 <https://us06web.zoom.us/j/89567899134> Meeting ID: 895 6789 9134
[Join](#)

🔔 15 minutes before

[Meeting Details](#) Meeting Insights (1)

MJHMP Steering Committee Members,

The final Clark County MJHMP Steering Committee Quarterly Meeting is scheduled for **April 26, 2023 from 1:30pm-3:00pm**. Please save this date on your calendars which supersedes the previous appointment of June 6, 2023. During this meeting we will be discussing the start of the open Public Comment Period beginning May 1st and outreach support needed from each jurisdiction.

The 1.5 hour meeting will be held via Zoom. Please use the Zoom information below to join. If you experience any technical difficulties, please contact a member of our team and we will be happy to assist you.

We look forward to your participation on April 26th!

[Delete Meeting](#)

Invitees

Organizer

- Mona Bontty**
Required

14 Accepted

- jandrus@mesquitenv.gov**
Required
- bartons@cityofnorthlasv...**
Required
- jharper@moapatribalpd.c...**
Required
- Sam Baker**
Required
- Misty Richardson**
Required
- jeffrey.ohs@unlv.edu**
Required
- Michael Atherall**
Required
- Andria Webster**
Required
- Emily Long**
Required
- Dan Smith**
Required
- Aleks Baran**
Required
- Emma Lerch**
Required
- Mike Browning**
Optional
- Joe Ginty**
Optional

2 Tentative

Presentation (Cover only):



Preparation for Open Comment Review Period

CLARK COUNTY, NV

MJHMP STEERING COMMITTEE/COMMUNITY MEETING

April 26, 2023

Resilience is CONSTANT™

Meeting Minutes with attendance sheet:

Clark County MJHMP
Steering Committee Meeting #8
Meeting Minutes



Meeting Minutes

Date: April 26, 2023,

Time: 1:30 PM (PST)

Location: Zoom Conference Call

Table 1: Action Items

#	Action Item	Responsible	Due Date
1	Send meeting recording for steering committee members that are not present	CONSTANT	May 1
2	Provide link to the open comment plan draft and the survey for the public	CONSTANT	April 26
3	Complete the CPRI assessment for Las Vegas Paiute Tribe during open comment period	Harriett Parker (Las Vegas Paiute Tribe)	May 22
4	Review Section 5 under mitigation project prioritization to correct any highlighted sections	Steering Committee	May 22
5	Send Mona documentation of social media and website posts made during the open comment period.	Steering Committee	May 22

I. Welcome/Introductions

- Mona Bonty (CONSTANT) welcomed everyone to the Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) April Steering Committee Meeting and thanked everyone for their help developing the hazard mitigation plan (HMP). Mona then provided an overview of the agenda for the meeting and asked everyone to place their name and organization into the Zoom chat or identify themselves if they are a community member.
- Mona asked Misty Richardson (Clark County Office of Emergency Management) to introduce herself and then Mona introduced herself and Emily Long (CONSTANT).
- Mona mentioned that the plan has been posted in the chat in case any meeting members would like to reference it during the meeting.

II. Plan Overview

- Following introductions, Emily welcomed everyone and professed her excitement that the project has come to the point of open comment. She thanked everyone for being present and stated that if there are any questions to please leave them in the chat. Emily stated



that the majority of the meeting will be a refresher from previous steering meetings and that the recording of the meeting is due to the fact that open comment is not only for the hazard mitigation team, but also for the public.

- Emily started in on the slideshow stating that the plan is 850 pages that contains information that will be available to integrate into other plans for the next five years. Emily covered the background of why jurisdictions mitigate and the benefits of mitigation rather than exclusively response while also providing an overview of the three Federal Emergency Management Agency (FEMA) mitigation grants that Clark County will be able to apply to with the plan created by CONSTANT.
- Emily covered the Hazard Mitigation Grant Program, Building Resilient Infrastructure and Communities, and the Flood Mitigation Plan Grant. Emily also mentioned that the plan was built to specifically target hazards put forth by the county and jurisdictions that were pertinent since the last plan update in 2018. Emily emphasizes that a large focus of the plan was to show FEMA that the steering committee was engaged but also that the community was involved.
- Emily stated that all correspondence and interactions were documented to show FEMA that all decisions were not exclusively CONSTANT driven, and that the steering committee was engaged throughout the process.
 - This information will be under Section Two under steering committee.
- Emily provided a timeline of the project for the meeting members and briefly touched on the key events that had transpired, like the kickoff meeting and the one-on-one technical assistance meetings held in December 2022 to January 2023.

III. Plan Sections

- Emily provided the six sections of the plan: Hazard Program Requirements, Introduction, Planning Process and Planning Procedures, Planning Description and Hazard Risk Analysis, Hazard Mitigation Strategy, and Plan Approval and Adoption. Emily went into each section to provide a more detailed description of the contents. She also stated that the plan was built to directly accomplish the requirements put forth by FEMA, to include a new requirement since 2018 so there will hopefully be very minor edits necessary following the FEMA review.
- Emily covered the data collection with specific emphasis on the utilization of the Clark County hazard mitigation survey and the Clark County open comment survey which were utilized and included in the plan to show FEMA that there was a high level of input by community stakeholders.
- From the data collection section Emily went over the documents used to draft the plan with a thank you going out to Sam Baker (Clark County Department of Environment and Sustainability) for her contributions.
- Emily also mentioned that the document was written with many links and graphics to facilitate the readability and long-term usability of the plan.
 - Emily discussed the continued public involvement throughout the plans open comment period, but also into the actionable mitigation process following the plans



approval. Emily stated that the plan should be made available to the public through the County's website and directly to the jurisdictions.

- Emily stated that the plan will continue to be monitored with a process developed between CONSTANT and Clark County so that the processes developed during the Plan's development are fulfilled and improved in the coming years.
- Following the plan maintenance process Emily covered Section Three and Four which included the planning area and hazard analysis and risk assessment (HARA).
 - Emily discussed the hazard risk models which were determined based on data collected from the National Oceanic and Atmospheric Administration (NOAA) database and discussed that the models can be used by the County to determine future vulnerabilities.
 - Emily also reminded the meeting participants that CONSTANT provided information not only on the current risks, but also future risks.
 - The CPRI tables were covered next. Emily went over the support from the County on creating those deliverables and mentioned that if there were any errors that the County or Jurisdictions notice, to please let CONSTANT know so that CONSTANT can modify those prior to the end of the open comment period.
- Section Five, Mitigation Strategy, was covered next, with particular focus on the STAPLE+E process.
 - CONSTANT performed a analysis on 92 possible mitigation projects put forth by Clark County. Emily discussed the process for determining the priority ranking for the projects and let the meeting attendants know that if during the open comment period certain priorities look like they need to be shifted CONSTANT will work with the associated jurisdiction to modify the ranking.

IV. Open Comment Review

- Emily stated that the plan will be available for open comment for 21 days starting May 1st, 2023. Emily emphasized that all the jurisdictions and the County need to review the plan and submit any necessary change to CONSTANT during this period.
- Following all the edits from the jurisdictions, CONSTANT will work with Misty Richardson (Clark County Office of Emergency Management) to finalize any changes prior to submission to the State.
- Emily asked the County and jurisdictions to send all social media and website posts to Mona so that those documents can be incorporated into the Plan prior to submission to the State.

V. Review and Approval Process

- Emily covered the movement of the Plan through the State and on to FEMA for approval.
- Emily discussed the associated timeline with each section of the approval process and covered the incorporation of resolution letters into the final plan. She also discussed that



the goal following approval is for the County to continue to revisit the plan annually and make necessary modifications to keep it current.

VI. Question and Answer Period

- Emily opened the question period with a clarification to Harriett Parker (Las Vegas Paiute Tribe) that if she would like to still submit a CPRI to CONSTANT, she will make sure it is incorporated into the plan prior to submission to the State.
 - Harriett thanked Emily and said that she will submit one to CONSTANT.
- Emily also discussed that following FEMA pending approval status, if the County or Jurisdictions would like CONSTANT's support during city council meetings, CONSTANT would be happy to support in a virtual setting.
 - Following those statements, Emily asked if Misty had any input, which she declined.
- Jeremy Hynds (City of North Las Vegas) asked Emily if cyber was included in the plans, to which Emily stated that it was not due to the specifications put forth by FEMA for the specific grants that the County is applying for, but that cyber is alluded to in the history of hazards section. Jeremy okayed this statement and Emily closed the session by thanking Jeremy thanked CONSTANT for the heavy lift with this project.

VII. Final Comments

- Mona and Emily thanked all of those participating in the meeting for their hard work and diligence during the plan creation process and stated their desire for this plan to increase the resilience and preparedness of the communities it applies to.
- Emily stated that the meeting recording, surveys, and Plan will be available to the County and Jurisdiction following the meeting



Table 2: Participants

	Name	Role	Organization
1	Mona Bontty	Project Manager/Sponsor	CONSTANT
2	Emily Long	Subject Matter Expert/Project Support	CONSTANT
3	Emma Lerch	Intern	CONSTANT
4	Oliver Martin	Intern	CONSTANT
5	Misty Richardson	Assistant Emergency Manager/ Clark County MJHMP Project Manager	CCOEM
6	Joe Ginty	Administrative Assistant	Southern Nevada Health District
7	Jeffrey Ohs	Assistant Emergency Manager	University of Las Vegas
8	Mike Atherall	Analyst	Las Vegas Metropolitan Police Department/Southern Nevada Counter Terrorism Center
9	Dean Mosher	Assistant Manager, Maintenance Management	Clark County, NV Public Works
10	Dave Pritchard	Supervisor, Construction Management Inspection	Clark County, NV Public Works
11	Sam Baker	Sustainability Program Administrator	Clark County, NV Department of Environment and Sustainability

Open Comment Period Vulnerable Populations Outreach

Email to Departments/Agencies that work with the Vulnerable Population

Emily Long

Friday, May 26, 2023 at 16:51:09 Central Daylight Time

Subject: Clark County MJHMP Plan Update Open Comment Review Period Extension – June 2, 2023
Date: Tuesday, May 23, 2023 at 7:35:34 PM Central Daylight Time
From: Misty Richardson
To: SS Admin, Randy Reinoso, Michele Fuller-Hallauer, Mary Cannizzaro
CC: Emily Long, Mona Bontty, Dan Smith, Haley Fessenden
Priority: High
Attachments: image001.jpg, image002.jpg, image003.png, image004.png, image005.png, image006.png, image007.png, image008.png, image009.png

Good afternoon,

The Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) Update planning process is coming to a close and we need your help! As a key part of the planning process, Clark County is seeking feedback from stakeholders that represent the County's vulnerable population to incorporate into the plan update. We have received new information regarding the FEMA review process of the MJHMP Update and areas of focus regarding vulnerable populations. FEMA is expecting extensive outreach to vulnerable populations that needs to be documented in the plan draft and specifically noted in the updated FEMA Plan Review tool.

As a County and participating jurisdiction department/agency that works with vulnerable populations, **we want to make you aware of this period and allow you to participate in our Extended Open Comment Review Period. Please review our draft plan (<https://tinyurl.com/CCMJHMPPlanDraft>) and provide your feedback and comments using our Open Comment Review Survey: <https://www.surveymonkey.com/r/2XZ2BL8>. Our MJHMP Open Comment Review Extension Period ends on Friday, June 2, 2023.**

If you have any questions about our MJHMP Open Comment Review Period or the MJHMP Planning process, please reply to this email or call me at 702-686-6187.

Thank you again for your support and participation!



Misty Richardson

**Assistant Emergency
Manager**

Clark County Fire Department
Office of Emergency Management &
Homeland Security

Phone: 702-455-5713

Mobile: 702-686-6187

Email: richardsonm@clarkcountynv.gov

575 East Flamingo Road, Station 18
Las Vegas, NV 89119

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Emily Long

Friday, May 26, 2023 at 16:52:59 Central Daylight Time

Subject: Clark County MJHMP Plan Update Open Comment Review Period Extension – June 2, 2023
Date: Tuesday, May 23, 2023 at 7:41:27 PM Central Daylight Time
From: Misty Richardson
To: Catrina Grigsby-Thedford, amanda.lakin@rwhousingcoalition.org, christine.hess, kgibson@LasVegasNevada.gov, christisonj@cityofnorthlasvegas.com, Stacy DiNicola, Michele Fuller-Hallauer, mcloutier@lasvegasnevada.gov, Catherine Huang, Shelly Johnson, achavez@catholiccharities.com
CC: Mona Bontty, Emily Long, Dan Smith, Haley Fessenden
Priority: High
Attachments: image001.jpg, image002.jpg, image003.png, image004.png, image005.png, image006.png, image007.png, image008.png, image009.png

Good afternoon,

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Las Vegas, NV 89119

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Subject: FW: Clark County MJHMP Plan Update Open Comment Review Period Extension – June 2, 2023

Date: Wednesday, May 24, 2023 at 9:40:57 AM Central Daylight Time

From: Misty Richardson <richardsonm@ClarkCountyNV.gov>

To: Mona Bontty <mona.bontty@constantassociates.com>, Emily Long <emily.long@constantassociates.com>, Dan Smith <Dan.Smith@constantassociates.com>, Haley Fessenden <haley.fessenden@constantassociates.com>

Priority: High

Attachments: image001.jpg, image002.jpg, image003.png, image004.png, image005.png, image006.png, image007.png, image008.png, image009.png

Good morning team, please note the extensive and impressive list of folks that Catherine forwarded the survey to. I hope this demonstrates the outreach effort.

From: Catherine Huang <C3H@ClarkCountyNV.gov>

Sent: Tuesday, May 23, 2023 6:08 PM

To: Adrienne Babbitt <Adrienne.M.Babbitt@hud.gov>; Alisha Barrett <AKC@ClarkCountyNV.gov>; Brenda Barnes <MartinBV@ClarkCountyNV.gov>; Brooke Page <Brooke.Page@csh.org>; cherry <cherry@lssnv.org>; Dagny Stapleton <Dagny.Stapleton@ClarkCountyNV.gov>; Danielle Davis <ddavis@LasVegasNevada.GOV>; De La Paz, Enrique M <Enrique.M.DeLaPaz@hud.gov>; Erik Pappa <epappa@ClarkCountyNV.gov>; Jason Lilly <lillyj@cityofnorthlasvegas.com>; Juawana Grant <juawana.grant@nvhousingcoalition.org>; Karen McDonnell <Karen.McDonnell@ClarkCountyNV.gov>; Kirsten Coulombe <kirsten.coulombe@dhecfp.nv.gov>; Lauren Hornaday <Lauren.Hornaday@ClarkCountyNV.gov>; Lived X Consultants <SNVLivedX@gmail.com>; Rachele Tyler-Martin <Rachele.Tyler-Martin@clarkcountynv.gov>; Randy Reinoso <RKR@ClarkCountyNV.gov>; Review Journal Assistants <assistants@reviewjournal.com>; Sundaylee Cabrera <SundayL@mccarran.com>; Teresa Etcheberry <Teresa.Etcheberry@ClarkCountyNV.gov>; The Unified Project, Inc <contactus@theunifiedproject.org>; Aaron Sheets <aaron@link2hope.org>; Albert Chavez <achavezt@catholiccharities.com>; Alexandria Brown <alexandria@snvchips.org>; Alyson Martinez <amartinez@vegasrescue.org>; Angela Quinn <aquinn@fmhwc.org>; Anthony Barnes <Anthony.Barnes@usw.salvationarmy.org>; Anthony Malone <A5M@ClarkCountyNV.gov>; Arash Ghafoori <arash@nphy.org>; Armena Mkhitarian <armena@lssnv.org>; ahamernik <ahamernik@nevadahand.org>; Brooke Neubauer <brooke@thejustoneproject.org>; Catrina Grigsby-Thedford <catrina@nevadahomelessalliance.org>; Christina Vela <Cvela@stjudesranch.org>; csha <csha@safestest.org>; Ellen Richardson-Adams <Eadams@health.nv.gov>; Elsie.Lewis <Elsie.Lewis@usw.salvationarmy.org>; Frank Gallardo <frank.gallardo@cplc.org>; Frank Reagan <frank.reagan@westcare.com>; friley <friley@HELPSONV.ORG>; Gerson Pedrozo <gpedrozo@helpusa.org>; Greta Jackson <a.jackson@silverstatehealth.org>; Heather Engle <heather@vegasrescue.org>; Jasmine Lee <jlee@theshadetree.org>; Jeff Iverson <Jeff@FreedomHouseLV.com>; JoAnn Tobiassen <emergencyaidbc@gmail.com>; Jocelyn Bluit-Fisher <jfisher@LasVegasNevada.GOV>; Jon Ponder <jonp@hopeforprisoners.org>; Juan Salinas <juan.salinas@usw.salvationarmy.org>; Julie Proctor <juliep@safehousenv.org>; Kathleen Miller <kmlivinggracehome@gmail.com>; Kelly Robson <kellyr@bitfocus.com>; KMoskowitz <KMoskowitz@jfsalv.org>; Kevin Morss <k.morss@thewellcaregroup.com>; Lewis Jordan <lJordan@snvrha.org>; lperez <lperez@theshadetree.org>; Lisa Barnes <Lisa.Barnes@usw.salvationarmy.org>; Lizette Guillen <lguillen@nevadapartners.org>; Marisa Cervantes <marisa@thejustoneproject.org>; Maurice Cloutier <mcloutier@lasvegasnevada.gov>; Merideth Spriggs <merideth@caridadcharity.com>; Nick Lenderman <Nick.lenderman@usw.salvationarmy.org>; Nicole Anderson <nanderson@catholiccharities.com>; Raymond White <RWhite@nationsfinest.org>; Ronelle Shoda <rsho@safestest.org>; Shalimar Cabrera <scabrera@usvetsinc.org>; Steve Schmitt <sschmitt@catholiccharities.com>; Director-fplv <director@fplv.org>; Thomas "Chicago" Randleel

<721thom@gmail.com>; Thomas Roberts <troberts@catholiccharities.com>; tristan <tristan@lssnv.org>; Ashley Brown <Ashley.Brown@ClarkCountyNV.gov>; barb <barb@fplv.org>; Bitfocus System Administration <nevada-admin@bitfocus.com>; Denise Charles <dcharles@stjudesranch.org>; Elizabeth Jarman <Elizabeth.Jarman@va.gov>; Kelly Robson <krobson@HELPSONV.ORG>; kmoore <kmoore@helpsonv.org>; Louis Lacey <llacey@HELPSONV.ORG>; melissa <melissa@nphy.org>; Michele Fuller-Hallauer <MHF@ClarkCountyNV.gov>; Aaron Krolkowski <aaronk@uwsn.org>; Annie Wilson <A9278W@lvmpd.com>; Emily Paulsen <emily.paulsen@anthem.com>; Hassan Chaudhry <hchaudhry@fscompanies.com>; Hayley Jarolimek <Hayley.Jarolimek@cityofhenderson.com>; Jennifer L. Huse <jhuse@health.nv.gov>; Julie Calloway <jcalloway@bcnv.org>; Katherine Marçal <katherine.marcal@unlv.edu>; Kena Adams <indianvoicesnevada@gmail.com>; Kyle O'Connell-Mock <Kyle.Mock@aristocrat.com>; Meg Pike <berglme@nv.ccsd.net>; Phil Washington <pastorpdwash@yahoo.com>; Rebecca Edgeworth <Rebecca.edgeworth@tun.touro.edu>; Rick Damian <damiann@cityofnorthlasvegas.com>; rnlolan <rnlolan@lasvegasnevada.gov>; Troy Oglesbee <troyoglesbee@yahoo.com>; Vera Moore <vera@trubeginnings.org>; Young Adults in Charge <youngadultsincharge@gmail.com>; carlton.craig <carlton.craig@unlv.edu>; Dawn K. Christensen <Dawn@nevadaresorts.org>; Gigi Simmons <Gigi.Simmons@va.gov>; christisonj@cityofnorthlasvegas.com; Jenny Gratzke <gratzke@snhd.org>; Jocelyn Acevedo <jacevedo@nevadahand.org>; Kelly-Jo Shebeck <kellyjo@nv.ccsd.net>; Kevin Whalen <kevin@nevadahomelessalliance.org>; Mamdoe Dyamwalle <mdyamwalle@health.nv.gov>; Matthew Kovacich <M13238K@LVMPD.COM>; Mayra Gonzalez <mgonzale34@touro.edu>; Michelle Johnston <mjohnston@usvetsinc.org>; Stacy DiNicola <Stacy.DiNicola@cityofhenderson.com>; Stephany Coaley <scoaley@lasvegasnevada.gov>; Tameika Ortiz <TameikaO@uwsn.org>; Abby Quinn <aquinn@helpsonv.org>; Amanda Lakin <amanda.lakin@nvhousingcoalition.org>; Jace Radke <jradke@lasvegasnevada.gov>; Mary Duff <maryd3033@gmail.com>; Maurice Page <page@pagestrategicsolutions.com>; YAZMIN Beltran <YAZMIN.BELTRAN@clarkcountynv.gov>; Alicia Hendrix <ahendrix@nvhealthcenters.org>; Angela Phillips <angelap@LASVEGASHABITAT.ORG>; HomeBase Southern Nevada Homeless CoC <snhcocnofa@homebasecc.org>; bclaridy <bclaridy@helpsonv.org>; Tameca Ulmer <Tameca.Ulmer@ClarkCountyNV.gov>; Arcelia Barajas <abarajas@lasvegasnevada.gov>; Karen Schneider <Karen.Schneider@ClarkCountyNV.gov>; Tara Ulmer <Tara.Ulmer@ClarkCountyNV.gov>; Kathi Thomas-Gibson <kgibson@LasVegasNevada.GOV>

Cc: Misty Richardson <richardsonm@ClarkCountyNV.gov>

Subject: FW: Clark County MJHMP Plan Update Open Comment Review Period Extension – June 2, 2023

Importance: High

Please see below for an important comment period

Catherine Huang Hara, MSW

Clark County Social Service

T: 702.283.7006 | F: 702.598.4228

E: c3h@clarkcountynv.gov

Monday-Thursday 7:00am-5:30pm

From: Misty Richardson <richardsonm@ClarkCountyNV.gov>

Sent: Tuesday, May 23, 2023 5:41 PM

Subject: Clark County MJHMP Plan Update Open Comment Review Period Extension – June 2, 2023

Importance: High

Good afternoon,

The Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) Update planning process is coming to a close and we need your help! As a key part of the planning process, Clark County is seeking feedback from stakeholders that represent the County's vulnerable

Page 2 of 3

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If you have any questions about our MJHMP Open Comment Review Period or the MJHMP Planning process, please reply to this email or call me at 702-686-6187.

Thank you again for your support and participation!



Misty Richardson
Assistant Emergency
Manager

Clark County Fire Department
Office of Emergency Management &
Homeland Security

Phone: 702-455-5713
Mobile: 702-686-6187
Email: richardsonm@clarkcountynv.gov

575 East Flamingo Road, Station 18
Las Vegas, NV 89119

Follow Clark County:



The mission of the Office of Emergency Management (OEM) is to facilitate and support the resources that will enable Clark County to mitigate, prepare for, respond to and recover from emergencies. OEM provides a single point of coordination for Clark County public safety projects. This includes emergency management planning, preparation activities such as training and exercises, response support coordination during emergencies and coordination of recovery programs following emergencies. In this capacity, OEM works closely with Clark County public safety organizations to facilitate a coordinated approach to multi-agency activities.

Appendix C: Public Engagement Documentation

Appendix C contains documentation of stakeholder engagement and outreach. It includes survey format and results, webpage and social media account postings, and public notification material.

Dates	Event Activity	Documentation
July 2022	Media Campaign	<ul style="list-style-type: none"> • Posts on County, Website • Flyer for Community Distribution
Jul 11, 2022 – Sept 1, 2022	Public Engagement Survey and Results	<ul style="list-style-type: none"> • Survey questions, data analysis, and results report • Posts on County and city/town websites (with select social media posts supporting outreach).
April 26, 2023 – May 1-21, 2023, Extended to June 2, 2023 <i>NOTE: Ending date varies due to variable initial posting date of participating jurisdictions</i>	Public and Neighboring Jurisdiction Review Public draft MJHMP posted on County and cities' websites and sent to the following neighboring jurisdictions for review and comment.	<ul style="list-style-type: none"> • Public Comment Review Survey (including survey report) • Posts on County and city/town websites (with select social media posts supporting outreach). • Email to neighboring jurisdictions and utilities <i>NOTE: No substantive feedback was received from the public, neighboring jurisdictions, or utility organizations engaged in the review process.</i>

Open Comment Survey Link

<https://www.surveymonkey.com/r/ClarkCountyMJHMP23>

Community Public Kickoff Meeting Survey

<https://www.surveymonkey.com/r/ClarkCountyMJHMP2023>

Project Overview Flyer

Consultant: Distribution Flyer



Clark County, with support from Constant Associates, is updating its Multi-Jurisdictional Hazard Mitigation Plan (MJHMP).

The County MJHMP is vital to reducing the impact of disasters on life and property, and increasing the resiliency of the Clark County community.

This project offers an opportunity to county jurisdictions, agencies, and the public to provide feedback regarding hazards impacting their communities and identification of important mitigative actions. Check your community's website as more information becomes available!



As part of this project, Constant Associates will be conducting:

- Regular Steering Committee Meetings
- Public Engagement Meetings
- Deploying an Online Survey
- Providing a Drafted Plan Update for Public Review

Learn more about hazard mitigation:

- [Clark County Office of Emergency Management](#)
- [Nevada Division of Emergency Management](#)
- [FEMA Hazard Mitigation Planning](#)

Community – Public Outreach Survey, July 2022

Consultant: Email

10/14/22, 4:33 PM

Mail - Amanda Ozaki-Laughon - Outlook

Community Survey is LIVE: Clark County MJHMP Update

Amanda Ozaki-Laughon <Amanda@constantassociates.com>

Mon 7/11/2022 12:00 PM

To: Amanda Ozaki-Laughon <Amanda@constantassociates.com>

Cc: Misty Richardson <richardsonm@ClarkCountyNV.gov>;josie.ross@cityofhenderson.com <josie.ross@cityofhenderson.com>;lee rosenberg <lee.rosenberg@navigatingpreparedness.com>;Holly Mann <Holly.Mann@constantassociates.com>;Jayson Kratoville <Jayson@constantassociates.com>
Bcc: adolphc@mccarran.com <adolphc@mccarran.com>;Gregory Chesser <gchesser@bcnv.org>;Bradley Iverson <biverson@lasvegasnevada.gov>;billy.samuels@clarkcountynv.gov <billy.samuels@clarkcountynv.gov>;Carlito Rayos <carlito.rayos@clarkcountynv.gov>;boneal@clarkcountynv.gov <boneal@clarkcountynv.gov>;clint.spencer@clarkcountynv.gov <clint.spencer@clarkcountynv.gov>;Carolyn Levering <clevering@lasvegasnevada.gov>;geir.j.gabrielson.mil@army.mil <geir.j.gabrielson.mil@army.mil>;janell.woodward@dem.nv.gov <janell.woodward@dem.nv.gov>;papazian@clarkcountynv.gov <papazian@clarkcountynv.gov>;chris.wardlaw@clarkcountynv.gov <chris.wardlaw@clarkcountynv.gov>;klevorick@clarkcountynv.gov <klevorick@clarkcountynv.gov>;Samantha Baker <Samantha.Baker@ClarkCountyNV.gov>;jmanzo@clarkcountynv.gov <jmanzo@clarkcountynv.gov>;robinson@snhd.org <robinson@snhd.org>;james.andersen@clarkcountynv.gov <james.andersen@clarkcountynv.gov>;rgv@clarkcountynv.gov <rgv@clarkcountynv.gov>;leigh.ann.anders@clarkcountynv.gov <leigh.ann.anders@clarkcountynv.gov>;rgerchman@dem.nv.gov <rgerchman@dem.nv.gov>

Good afternoon,

Thank you for being a vital part of the Clark County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) Update! Over the past month, we have received thorough and thoughtful feedback from the Steering Committee regarding the Clark County MJHMP Community Survey. Your feedback, to the extent possible, has been incorporated into the survey and is ready for distribution to residents in your jurisdiction.

I am happy to announce that the community survey is now live (as of July 11) and will close on **September 1, 2022 at 5:00pm PST**.

<https://www.surveymonkey.com/r/ClarkCountyMJHMP2023>

Engagement with the public is required, and heavily evaluated, by FEMA for plan approval. At a minimum, each jurisdiction should post a brief announcement and link to the survey to its public access websites and social media accounts. Periodic reposting/sharing of the link should be prioritized throughout July and August. Below are some avenues other jurisdictions are using to share the survey:

- Homeowners Associations
- Farmer's Markets
- Back to School Fairs
- "Open Houses" hosted by law enforcement agencies

Our team will be monitoring social media and websites for each jurisdiction; when the survey is posted, we will take screenshots to add to the substantiation appendix of the plan.

The attached Public Involvement Plan (PIP) includes sample language for website postings and social media content. I have also attached full-size PDF/JPG images of a flyer and social media content that can be used as either a sample or ready-to-post content.

If your jurisdiction is using other "out of the box" approaches to engaging your residents, please let us know! We would love to hear from you and brainstorm further engagement. If you have any questions, feel free to reach out to me via email or using the phone number in my signature.

<https://outlook.office.com/mail/id/AAQkADU2ZjczZDUwLTJkMTgtNGFIZi1hNDILTMtyZDdjMDAzNGIwZGQAQHDtBRAPEbROmaa1qua0efM%3D>

1/2

Community – Public Outreach Survey, July 2022

Survey Link

<https://www.surveymonkey.com/r/ClarkCountyMJHMP2023>



Community Survey – Clark County Multi-Jurisdictional Hazard Mitigation Plan

Survey Description

Clark County is updating its Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) and needs **your input** on which hazards have the greatest impact to your community.

Every five years, the County must update its plan. The current update cycle is set for the summer of 2023 but cannot be completed without your help. By answering this short survey you are assisting the County to better prepare for and respond to disasters which threaten the way you live, work, play, and access services.

All survey answers are anonymous and will be used to help develop the County's hazard mitigation plan. Additional comment/answer space is available at the end of the survey.

* 1. Please select the option that best describes where you live.

2. Clark County residents and businesses may encounter a variety of hazards and/or disasters. How concerned are you about the following hazards impacting you, your business and Clark County? (Please rate for each hazard)

	Not at all concerned	Somewhat concerned	Very concerned	Extremely concerned	Unsure
Climate Change	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dam Failure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drought	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Earthquake and Seismic Hazards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hazardous Materials	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infectious Disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infestation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Subsidence and Fissures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Terrorism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wildfire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (e.g., civil disturbance, supply chain delays, housing crisis, extended power outages, extended transportation disruptions, etc.)

Please specify in the text box below.

3. Which of the following steps has your household taken to prepare for hazardous events? (Check all that apply)

- Purchased earthquake insurance
- Taken a Community Emergency Response Team (CERT) classes and/or joined a local CERT team
- Practiced a home evacuation drill at least once a year
- Purchased flood insurance
- Created a family reunification communication plan
- Prepared a disaster supply kit
- Developed a home emergency evacuation plan
- Stored water (one gallon a day/person for 5 days)
- Identified utility shutoffs at your home and have shut-off tools available
- Stored medical supplies (first aid kit, prescription medicines, extra glasses) at home, work, and automobile
- Received First Aid/CPR training
- Have working portable fire extinguishers in appropriate areas of the home
- Stored a battery powered radio, flashlights, and extra batteries
- Stored non-perishable food for 5 days
- Installed smoke and carbon monoxide detectors on each floor of your house
- None
- Other (please specify in the text box)

4. How prepared is your household to cope with a hazard event?

Somewhat Prepared	Adequately Prepared	Very Well Prepared	Not Prepared At All	Unsure
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

existing buildings to protect them from a hazard or removal from the hazard area, such as acquisition, relocation, elevation, and structural retrofits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Structural projects intended to lessen hazard impact by modifying the natural progression of the hazard, such as detention/retention basins, retaining walls, storm sewers, and restoration efforts to increase the natural environment's capacity to absorb hazard impacts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency services actions that protect people and property during and immediately after a hazard event, such as warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public education and awareness activities to inform community members about hazards and the techniques they can use to protect and prepare their property and	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

themselves,
including outreach
projects, CERT,
school programs,
library materials,
and safety fair
events

Other (please specify)

7. Do you or anyone in your household have disabilities and/or access and functional needs and would you be interested in early warning notifications or specialized response to evacuate during disasters?

Yes

No

8. If you answered yes to Question 7, do you have a certified service animal that you would be interested in evacuating with you or a household member to a shelter during a disaster?

Yes

No

9. If you answered yes to Question 7, would you be interested in more information about Disaster Assistance for people with disabilities and/or access and functional needs?

Yes

No

10. Are you currently registered to receive early warning notifications, from your town/city, Clark County, the State of Nevada, and/or the Early Alert System (EAS)?

Yes

No

Unsure

11. Do you have any other comments, questions, or concerns?

Media Campaign

County: Website

https://www.clarkcountynv.gov/news_detail_T28_R742.php



County: Flyer (July 2022)

SUPPORT A RESILIENT CLARK COUNTY

RESPONSE **RECOVERY** **MITIGATION** **PREPAREDNESS**

ABOUT THE PROJECT

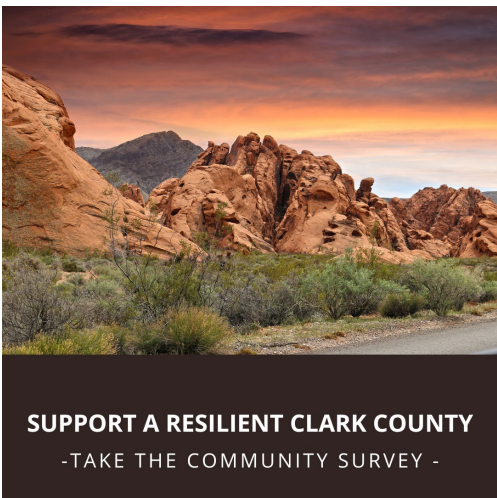
Clark County is developing a Multi-Jurisdictional Hazard Mitigation Plan or MJHMP. This plan will allow Clark County, and the communities within it, to receive both state and federal hazard mitigation grants and disaster relief funds.

TAKE THE SURVEY

As part of this important update, Clark County needs your input on which hazards have the greatest impact to your community. Scan the QR code to take the survey, or follow the link below to support a resilient Clark County!

 OEM@CLARKCOUNTY.GOV

County: Instagram (July 2022)



Clark County Water Reclamation District

Clark County Water Reclamation District: Website

<https://www.cleanwaterteam.com/Home/Components/News/News/100/> (July 11, 2022)

The screenshot shows a news article on the Clark County Water Reclamation District website. The article is titled "County Seeks Community Input" and is dated 07/11/2022 4:43 PM. The text discusses the Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) and the need for community input. It mentions that the county has released a Hazard Mitigation Planning Survey and provides a link to it. The article also explains the importance of public participation in hazard mitigation planning and the benefits of investing in quality hazard mitigation plans. At the bottom, it states that the county has hired Constant Associates, a California-based emergency management consulting firm, and that the project is expected to be complete by September 2023. A "Return to full list >>" link is provided at the end of the article.


Boulder City

Boulder City: Website


<https://www.bcnv.org/CivicAlerts.aspx?AID=324&ARC=530> (August 16, 2022)

The screenshot shows a news flash on the Boulder City website. The title is "[ARCHIVED] Clark County Needs Your Input". The text explains that Clark County is developing a Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) and needs community input. It provides a link to the survey: <https://www.surveymonkey.com/c/ClarkCountyMJHMP2022>. Below the text is a QR code and a section titled "SUPPORT A RESILIENT CLARK COUNTY" with icons for Response, Recovery, Mitigation, and Preparedness. The "ABOUT THE PROJECT" section explains the MJHMP and the "TAKE THE SURVEY" section provides more details about the survey. The email address OEM@CLARKCOUNTY.GOV is also listed.

Boulder City: Facebook (August 5, 2022)

 **City of Boulder City, NV**
August 5, 2022 · 🌐

Clark County is updating its Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) and needs your input on which hazards have the greatest impact to your community. Every five years, the County must update its plan. The current update cycle is set for the summer of 2023 but cannot be completed without your help. Click the link to support a resilient Clark County: tinyurl.com/26dx8bkn



SUPPORT A RESILIENT CLARK COUNTY
- TAKE THE COMMUNITY SURVEY -

👍 3 1 💬 1 ➦

Boulder City: Twitter (August 5, 2022)

 **CityofBoulderCityNV** @BoulderCityNev · Aug 5, 2022 ...

Clark County is updating its Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) and needs your input on which hazards have the greatest impact to your community. Click the link to support a resilient Clark County: tinyurl.com/26dx8bkn



SUPPORT A RESILIENT CLARK COUNTY
- TAKE THE COMMUNITY SURVEY -
tinyurl.com/26dx8bkn

💬 ↻ 1 ❤️ 1 📊 ➦

The screenshot shows the City of Henderson website. The top navigation bar includes links for Pay, News, Jobs, Contact Us, and Service Finder. Below this is a secondary navigation bar with links for Residents, Our City, Government (highlighted), and Business, along with a search icon. A left sidebar menu lists various emergency management services, with 'Hazard Mitigation' selected. The main content area features the title 'Hazard Mitigation' and a breadcrumb trail: 'Government > Departments > Emergency Management >'. The primary article is titled 'City of Henderson Completes Annual Update to Mitigation Action Plan'. The text describes the city's completion of its annual evaluation and update to the Clark County 2018 Multi-Jurisdictional Hazard Mitigation Plan in October 2022. It details how the plan assesses risks from natural disasters like earthquakes, floods, and droughts, and outlines strategies for policy changes and community protection. A secondary section titled 'Hazard Mitigation—What Does It Mean?' defines the term according to Title 44 of the Code of Federal Regulations and explains the process of identifying hazards and developing mitigation actions. The footer contains contact information for the City of Henderson, quick links to various services, and social media icons.

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Office of Health and Safety
Office of Environmental Services
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Hazard Mitigation
Emergency Preparedness Planning
Community Emergency Response Team
+ Get Ready! Stay Ready! Information & Videos
Events
Captain Kit & the Ready Crew
Apps & Additional Resources

Government > Departments > Emergency Management >
Hazard Mitigation
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City of Henderson Completes Annual Update to Mitigation Action Plan
The City of Henderson completed its most recent annual evaluation and update to its Mitigation Action Plan as part of the Clark County 2018 Multi-Jurisdictional Hazard Mitigation Plan in October 2022.
The Mitigation Action Plan assesses the risks of natural disasters such as earthquake, flood and drought and establishes a strategy for policy changes, programs, projects and other activities that will reduce the potential community impact. Mitigation action planning helps protect residents and businesses from loss associated with those hazards and can increase community ratings that are used by the National Flood Insurance Program, which can result in lower flood insurance premiums for property owners. Hazard mitigation is one of the most effective forms of emergency preparedness. The City of Henderson Office of Emergency Management encourages individuals, families and businesses to conduct their own forms of emergency preparedness and hazard mitigation, by assessing their needs and building personal emergency preparedness kits.
During the last year, the City of Henderson completed several projects identified in the Mitigation Action Plan, including repairs to the Black Mountain Detention Basin, Lake Mead Channel Confluence and SNWA Channel, which improve the community's drainage system and help lessen the impact of flood events.
The Clark County 2018 Multi-Jurisdictional Hazard Mitigation Plan and the City of Henderson's annual evaluation and update of its Mitigation Action Plan are made available to the public in accordance with the Community Rating System recertification process.

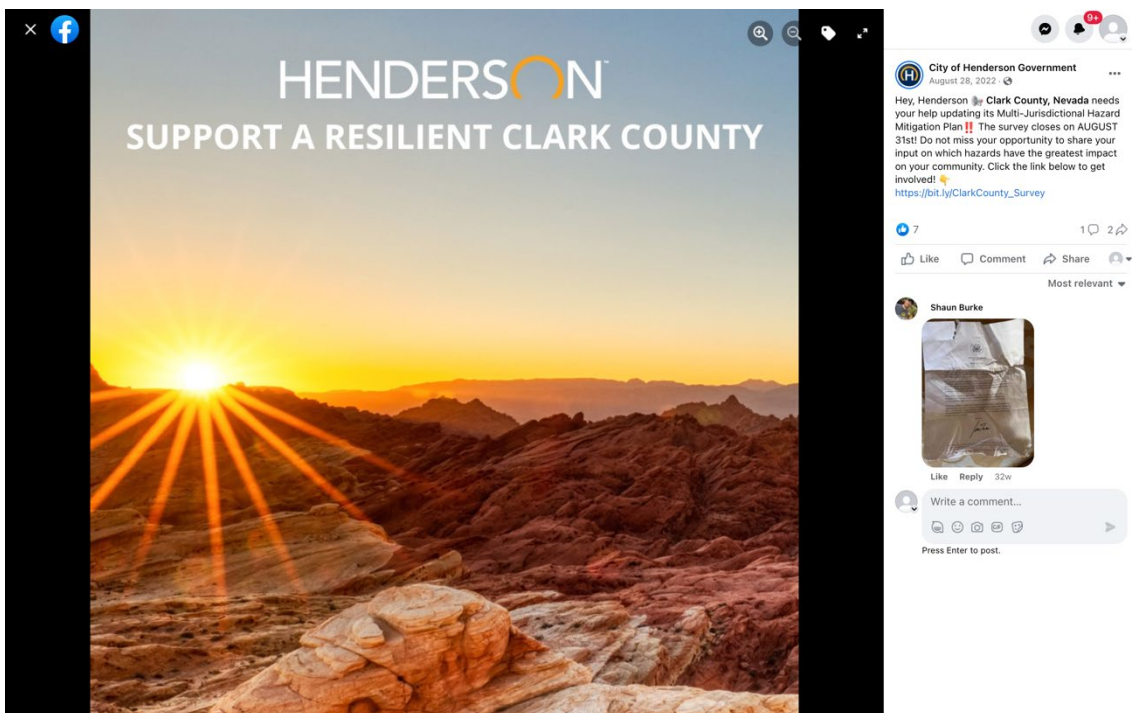
Hazard Mitigation—What Does It Mean?
As defined in Title 44 of the Code of Federal Regulations, hazard mitigation is "any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards." As such, hazard mitigation is any work to minimize the impacts of any type of hazard event before it occurs.
Hazard mitigation aims to reduce losses from future disasters. It is a process in which hazards are identified and profiled, the people and facilities at risk are analyzed, and mitigation actions to reduce or eliminate hazard risk are developed. The implementation of the mitigation actions, which include short and long-term strategies that may involve planning, policy changes, programs, projects, and other activities, is the end result of this process.

City of Henderson
Henderson City Hall
240 S. Water St.
Henderson, NV 89015
702-267-2323

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Henderson: Facebook (August 28, 2022)



Henderson: Email – Notification of In-person Events help Community Survey Responses (July 6, 2022)

RE: REMINDER, July 7 | Clark Co. MJHMP Draft Public Survey (FOR RESPONSE)

Josie Ross <Josie.Ross@cityofhenderson.com>

Wed 7/6/2022 2:57 PM

To: Holly Mann <Holly.Mann@constantassociates.com>; Misty Richardson <richardsonm@ClarkCountyNV.gov>

Cc: Amanda Ozaki-Laughon <Amanda@constantassociates.com>

Good Afternoon,

The survey looks great, and will be a useful tool in communicating with our residents.

Henderson EM is going to attend the following public events, where we will have Ipads for residents to take the survey, as well as a large cardboard cutout QR code so that residents can use their phones to access the survey.

- Farmers' Markets at Cornerstone Park and on Water Street Plaza
- Tuesday, July 12th
- Tuesday, August 2nd
- Saturday, August 6th
- Tuesday, August 9th
- Tuesday, August 23rd
- Tuesday, August 30th

- Annual Back to School Safety Fair at the Galleria Mall on July 28
- Fire Station Open House on August 13

We also reached out to a number of HOAs that we work closely with, and they will be emailing their residents the survey link on our behalf. We provided content and background information for them to share with their residents. I expect that we should be able to reach about 6,000 people with the help of the HOAs.

Because we didn't have a huge number of upcoming events, and because we were unable to get on the City Council Meeting agenda, we had to "think outside the box".

Any outdoor forum, like Downtown Summerlin, Tivoli Village, Town Square, a large park, back to school safety fairs, farmer's markets, etc, are great places to set up tables with preparedness information and do some public outreach. In the past, we've worked with our libraries as well, where we set up emergency preparedness outreach booths and connect with the public that way.

Hopefully this will be impactful and helpful.

Las Vegas

Las Vegas: Nextdoor (July 28, 2022)



Emergency Managers Seek Public Input on Local Hazards

City of Las Vegas from City of Las Vegas · 28 Jul

Clark County and area emergency managers are asking community members to participate in a survey through Aug. 31 to gather public input on the top hazards Southern Nevada faces and to support community resiliency. The 11-question survey is part of a joint effort to update the County's Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). It's available here: <https://www.surveymonkey.com/r/ClarkCoun...>



The County's Hazard Mitigation Plan is updated every five years in cooperation with the cities of Boulder City, Henderson, Las Vegas, North Las Vegas, Mesquite, the Las Vegas Band of Paiutes, the Moapa Band of Paiutes, the Clark County School District (CCSD), the Clark County Water Reclamation District (CCWRD), Las Vegas Metropolitan Police Department and the Las Vegas Valley Water District. It's an opportunity to re-assess risks posed by natural, technological, and human-caused disasters and identify ways to mitigate those risks. The planning process will result in an update to the County's plan in 2023.

The top hazards identified during past updates have been communicable disease, wildfire, flooding, earthquake and extreme heat. Power outages also can be sporadic concerns. Participation in the survey is anonymous. Through the survey, Southern Nevadans can share which hazards they believe have the greatest impact on the community. Survey responses will provide planners insight into public preferences and valuable knowledge about the needs of vulnerable populations. The goal is to ensure that those who may be disproportionately affected by disasters are accounted for in the update of the plan.



28 Jul · Subscribers of City of Las Vegas in General

THANK | 1

REPLY

Las Vegas Valley Water District

Las Vegas Valley Water: Social Media Posts – Twitter, Instagram, and Facebook (August 9, 2022)

10/14/22, 4:14 PM

Mail - Amanda Ozaki-Laughon - Outlook

FW: (External) FW: news release link

Misty Richardson <richardsonm@ClarkCountyNV.gov>

Tue 8/9/2022 10:13 AM

To: Amanda Ozaki-Laughon <Amanda@constantassociates.com>

From: Corey Ross <corey.ross@lvvwd.com>

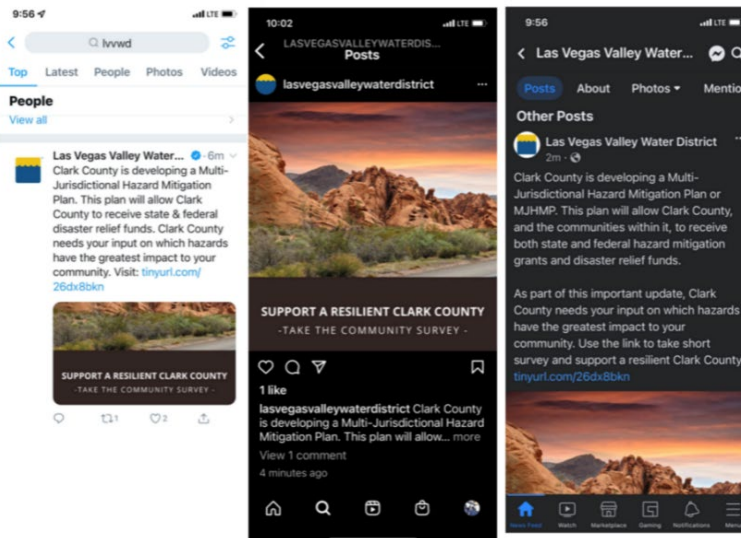
Sent: Tuesday, August 9, 2022 10:09 AM

To: Misty Richardson <richardsonm@ClarkCountyNV.gov>

Cc: Billy Samuels <bsamuels@ClarkCountyNV.gov>; Josie Ross <josie.ross@cityofhenderson.com>

Subject: RE: (External) FW: news release link

These went out today, our social team sad they will post more throughout the rest of the month. Still working to get the information for the questionnaire.



(July 21, 2022)

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EMERGENCY MANAGERS SEEK PUBLIC INPUT ON LOCAL HAZARDS

Posted by mlnbbm | Jul 21, 2022 | Clark County, News, Top Stories | 1

Clark County and area emergency managers are asking community members to participate in a survey **through Aug. 31** to gather public input on the top hazards Southern Nevada faces and to support community resiliency. The 11-question survey is part of a joint effort to update the County's Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). It's available

here: <https://www.surveymonkey.com/r/ClarkCountyMJHMP2023/>.

The County's Hazard Mitigation Plan is updated every five years in cooperation with the cities of Boulder City, Henderson, Las Vegas, North Las Vegas, Mesquite, the Las Vegas Band of Paiutes, the Moapa Band of Paiutes, the Clark County School District (CCSD), the Clark County Water Reclamation District (CCWRD), Las Vegas Metropolitan Police Department and the Las Vegas Valley Water District. It's an opportunity to re-assess risks posed by natural, technological, and human-caused disasters and identify ways to mitigate those risks. The planning process will result in an update to the County's plan in 2023.

"We encourage countywide participation in the survey among our residents and businesses in rural and urban areas of our community," said Clark County Deputy Fire Chief Billy Samuels, who oversees the Fire Department's Office of Emergency Management. "The survey also will tell us about the state of preparedness among our residents so we can work to address needs as part of our future hazard mitigation planning."


The top hazards identified during past updates have been communicable disease, wildfire, flooding, earthquake and extreme heat. Power outages also can be sporadic concerns. Participation in the survey is anonymous. Through the survey, Southern Nevadans can share which hazards they believe have the greatest impact on the community. Survey responses will provide planners insight into public preferences and valuable knowledge about the needs of vulnerable populations. The goal is to ensure that those who may be disproportionately affected by disasters are accounted for in the update of the plan.

The Federal Disaster Mitigation Act of 2000 requires Hazard Mitigation Plan updates for communities to remain eligible to continue to receive certain forms of non-emergency disaster assistance. Requirements for the updates also are set by the State of Nevada and the Federal Emergency Management Agency (FEMA).

The County's existing 2018 MJHMP can be found on the Fire Department's Office of Emergency Management website pages at <https://tinyurl.com/5n69k2f5>. A draft of the 2023 MJHMP is expected to be posted for public review in late spring 2023.

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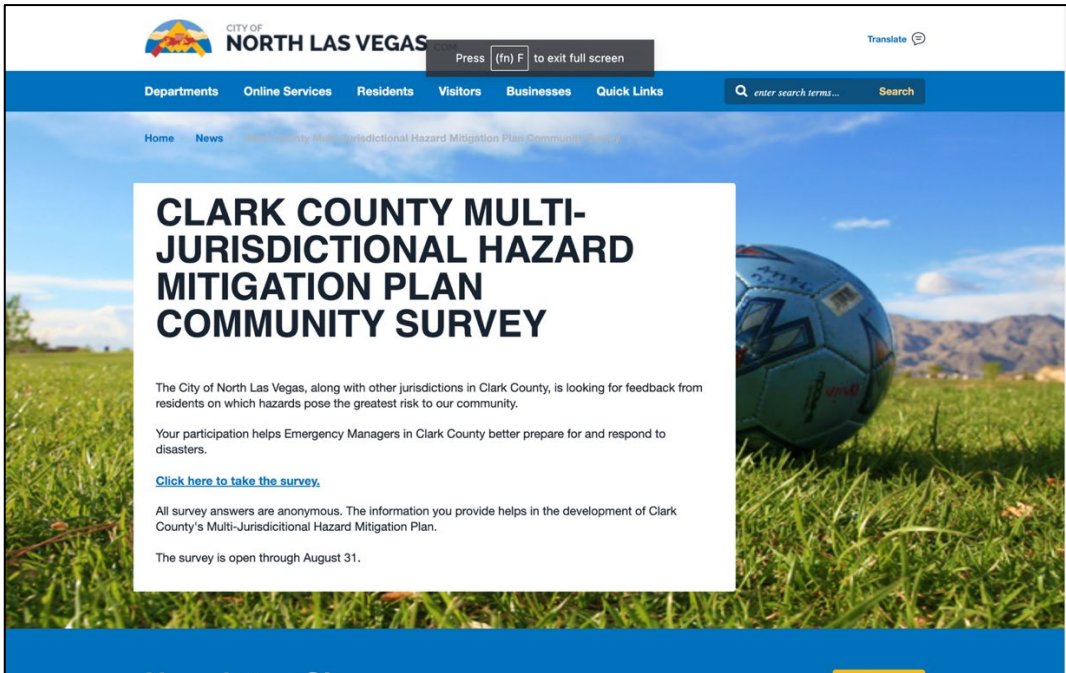
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North Las Vegas

North Las Vegas: Website

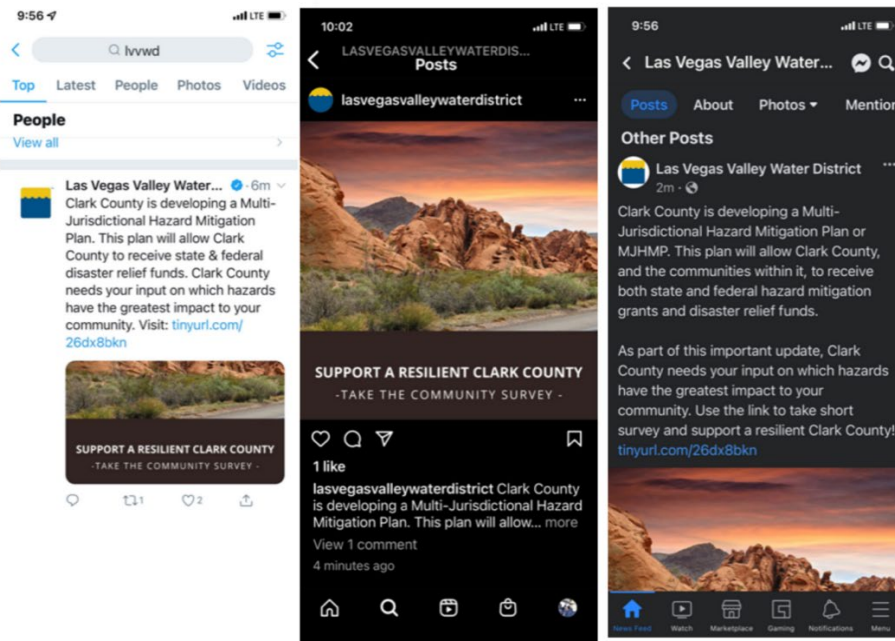
http://old.cityofnorthlasvegas.com/newsdetail_T6_R664.php



City of North Las Vegas: Facebook (August 9, 2022)

To: Misty Richardson <richardsonm@ClarkCountyNV.gov>
Cc: Billy Samuels <bsamuels@ClarkCountyNV.gov>; Josie Ross <josie.ross@cityofhenderson.com>
Subject: RE: [External] FW: news release link

These went out today, our social team sad they will post more throughout the rest of the month. Still working to get the information for the questionnaire.



Tribal Nation: Moapa Band of Paiutes

Moapa Band of Paiute: Email (August 24, 2022)

10/14/22, 4:25 PM

Mail - Amanda Ozaki-Laughon - Outlook

RE: [Clark County MJHMP Update] Steering Committee Meeting Documents and Next Steps

Jeff Harper <jharper@moapatribalpd.com>

Wed 8/24/2022 2:40 PM

To: Amanda Ozaki-Laughon <Amanda@constantassociates.com>

So here are the two flyers I sent out and we will be talking about it at coffee with the cops. It will be hand delivered to all houses on the reservation.

Jeff Harper
Acting Chief of Police
Moapa Tribal Police Dept.
Office (702) 865-2828
Cell (702) 281-1197
FAX (702) 865-2865



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Additional Community Outreach

Silver State Times: Newspaper (Online)

<https://silverstatetimes.com/stories/630245247-clark-county-multi-jurisdictional-hazard-mitigation-plan-community-survey>



Silver State Times

Clark County Multi-Jurisdictional Hazard Mitigation Plan Community Survey

LOCAL GOVERNMENT

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City of North Las Vegas

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By Press release submission

Aug 10, 2022

The City of North Las Vegas, along with other jurisdictions in Clark County, is looking for feedback from residents on which hazards pose the greatest risk to our community.

Your participation helps Emergency Managers in Clark County better prepare for and respond to disasters.

[Click here to take the survey.](#)

All survey answers are anonymous. The information you provide helps in the development of Clark County's Multi-Jurisdictional Hazard Mitigation Plan.

The survey is open through August 31.

Original source can be found [here](#).

TRENDING



Clark County Commissioner- Electronic Newsletter

<https://content.govdelivery.com/accounts/NVCLARK/bulletins/3263884>

(August 8, 2022)



Weigh In On Hazards Facing Clark County

Clark County and area emergency managers are asking community members to participate in a survey to gather public input on the top hazards Southern Nevada faces and to support community resiliency. The survey is part of a joint effort to update the County's Multi-Jurisdictional Hazard Mitigation Plan. The Plan is updated every 5 years and provides an opportunity to re-assess risks posed by natural, technological, and human-caused disasters and identify ways to mitigate those risks.

It's available here: <https://www.surveymonkey.com/r/ClarkCountyMJHMP2023>.

SUPPORT A RESILIENT COMMUNITY
Clark County & Agency Partners Want to Know Your Thoughts on the Top Hazards Facing Southern Nevada

TAKE OUR SURVEY BY AUG. 31

(July 22, 2022)

1 weather alerts

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LOCAL NEWS



Clark County asks for public input on local hazards affecting Southern Nevada



Photo by: KTNV

By: KTNV Staff

Posted at 1:49 PM, Jul 22, 2022 and last updated 2:50 PM, Jul 22, 2022

LAS VEGAS (KTNV) — Clark County is looking for public input on the top hazards Southern Nevada faces and on improving community resilience.

Clark County officials say this is an opportunity to re-assess risks posed by natural, technological, and human-caused disasters and identify ways to mitigate those risks.

Recent Stories from ktnv.com



The 11-question survey will be part of a joint effort to update the County's Multi-Jurisdictional Hazard Mitigation Plan, which is updated every five years. This process will result in an update to the County's plan in 2023. The survey will close on Aug. 31.

"We encourage countywide participation in the survey among our residents and businesses in rural and urban areas of our community," said Clark County Deputy Fire Chief Billy Samuels, who oversees the Fire Department's Office of Emergency Management. "The survey also will tell us about the state of preparedness among our residents so we can work to address needs as part of our future hazard mitigation planning."

Top hazards identified during past updates have been communicable disease, wildfire, flooding, earthquakes and extreme heat. Power outages can also be sporadic concerns.

Through the survey, Southern Nevadans can share which hazards they believe have the greatest impact on the community. In turn, responses will provide planners insight into public preferences and valuable knowledge about the needs of vulnerable populations. The goal is to ensure that those who may be disproportionately affected by disasters are accounted for in the update of the plan.

A draft of the 2023 MJHMP update is expected to be posted for public review in late spring 2023.

To take the survey and learn more, click on this [link](#).

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News 3 Las Vegas: Online Article

<https://news3lv.com/news/local/southern-nevada-residents-asked-to-provide-input-on-local-hazards-las-vegas-henderson-clark-county-ccsd-lvmpd-moapa-band-paiutes-government>


(July 21, 2022)

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Southern Nevada residents asked to provide input on local hazards

by News 3 Staff | Thu, July 21st 2022, 9:31 PM CDT



FILE: Parts of Durango Drive in the northwest valley were underwater during flooding on Tuesday, July 25, 2017. (Myndell Nunley | KSNV)


LAS VEGAS (KSNV) — Residents across Southern Nevada have been asked to sound off on hazards in their communities.

Clark County and area emergency managers have opened a survey to gather public input on the top hazards in the region.

MORE ON NEWS 3 | Las Vegas vs. Louisville: Finals voting now open for 2022 MLB Triple-A Best Ballpark

Results will help update the county's Multi-Jurisdictional Hazard Mitigation Plan. It's refreshed every five years in cooperation with local cities, tribal governments, police, the school district and water management agencies.

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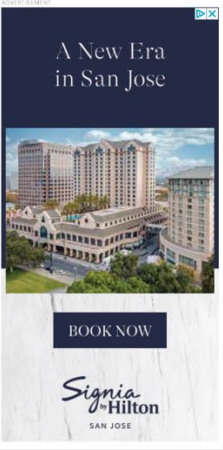
Wolf & Shepherd

"We encourage countywide participation in the survey among our residents and businesses in rural and urban areas of our community," Clark County Deputy Fire Chief Billy Samuels said in a press release. "The survey also will tell us about the state of preparedness among our residents so we can work to address needs as part of our future hazard mitigation planning."

Past surveys have identified communicable disease, wildfire, flooding, earthquake and extreme heat as top hazards.

There are 11 questions in the survey, which will be open through Aug. 31. Participation is anonymous.


Visit [this link](#) to complete the survey.



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Clark County Multi-Jurisdictional Hazard Mitigation Plan Survey

To inform the update of the Clark County Multi-Jurisdictional Hazard Mitigation Plan (MJHP), the county conducted an online survey measuring resident level of concern for various hazards, and the community’s general level of preparedness. The online survey was conducted from July 11, 2022, through September 1, 2022. 803 Clark County residents replied to the survey, with a completion rate of 100%. This means that every person who accessed the survey submitted a completed form. On average, individuals filling out the survey spent approximately five minutes crafting answers.

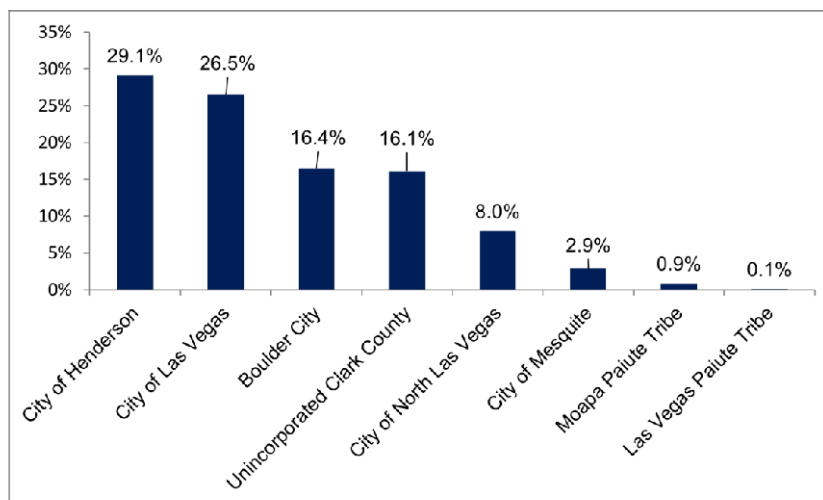
The Clark County MJHP Community Survey asked 11 questions, both quantitative and qualitative. Each question asked respondents to detail their perspectives on the hazards that present themselves to their community. The hazards listed were based off of the hazard list from the 2018 Clark County MJHP. Additional hazards added to the updated 2023 plan were not included in the survey.

Below are quantitative breakdowns for each question.

Question 1: Select the option that best describes where you live.

Of the 803 survey respondents, 29% (234 participants) were from the City of Henderson. 27% (213 participants) were residents of Las Vegas, and 16% (132 participants) were residents of Boulder City.

Figure 1

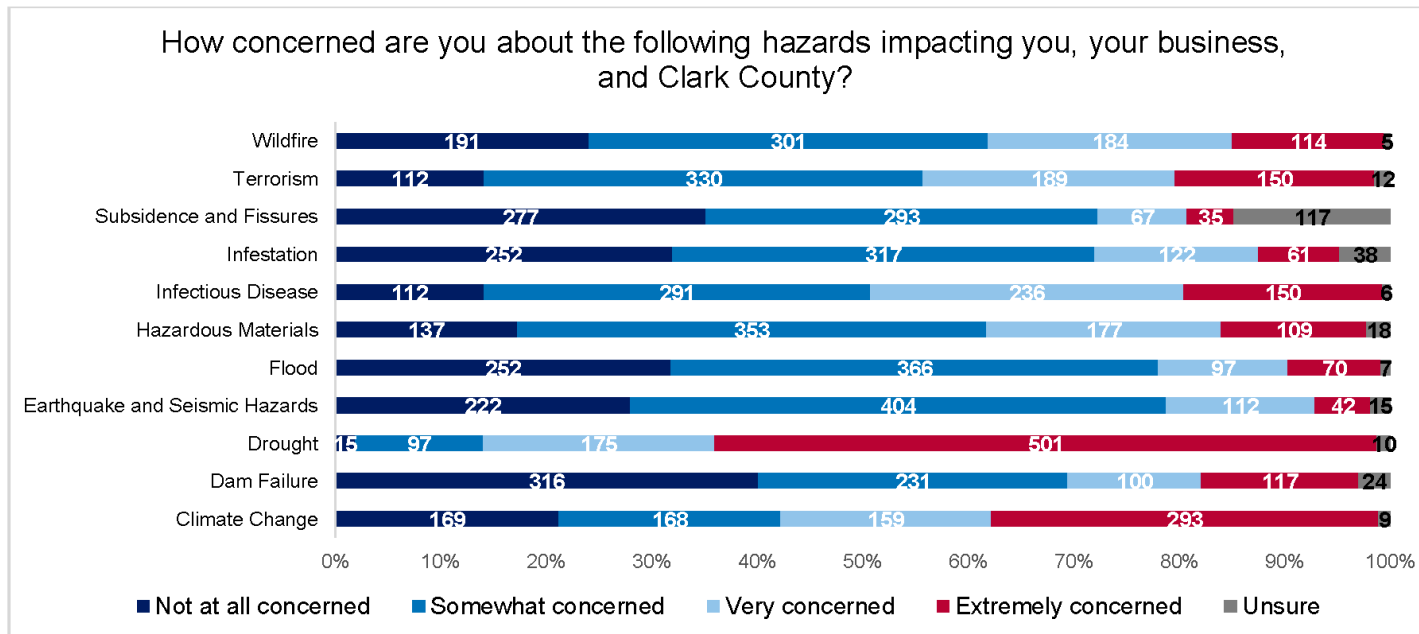




Question 2: Clark County residents and businesses may encounter a variety of hazards and/or disasters. How concerned are you about the following hazards impacting you, your business and Clark County? 1 (Not at all concerned), 2 (Somewhat concerned), 3 (Very concerned), or 4 (Extremely concerned)

Overall, respondents recognized drought (62%), climate change (36%), and infectious disease (18%) as hazards of extreme concern. Respondents were the least concerned about dam failure (40%), flood (31%), and earthquake and seismic hazards (27%).

Figure 2





Question 3: Which of the following steps has your household taken to prepare for hazardous events?

Respondents were asked to indicate which actions their households have taken to prepare for hazardous events. These questions allow the county to recognize common strengths in preparedness among household jurisdictions and identify gaps they may need to address and add to response efforts during emergency response.

There were 16 options for respondents to choose from, ranging from steps taken by the household to preparing a disaster supply kit. The full list of categories can be seen in the corresponding table :

Figure 3



Out of the 803 respondents in total to the survey, two skipped this question for a total of 803 responses. The most common steps taken by households in the county included:

- Installed smoke and carbon monoxide detectors on each floor of your house — 605 respondents
- Have working portable fire extinguishers in appropriate areas of the home — 494 respondents
- Stored a battery powered radio, flashlights, and extra batteries — 482 respondents

The least commonly taken actions included:

- None — 30 respondents
- Purchased earthquake insurance — 50 respondents
- Purchased flood insurance — 51 respondents

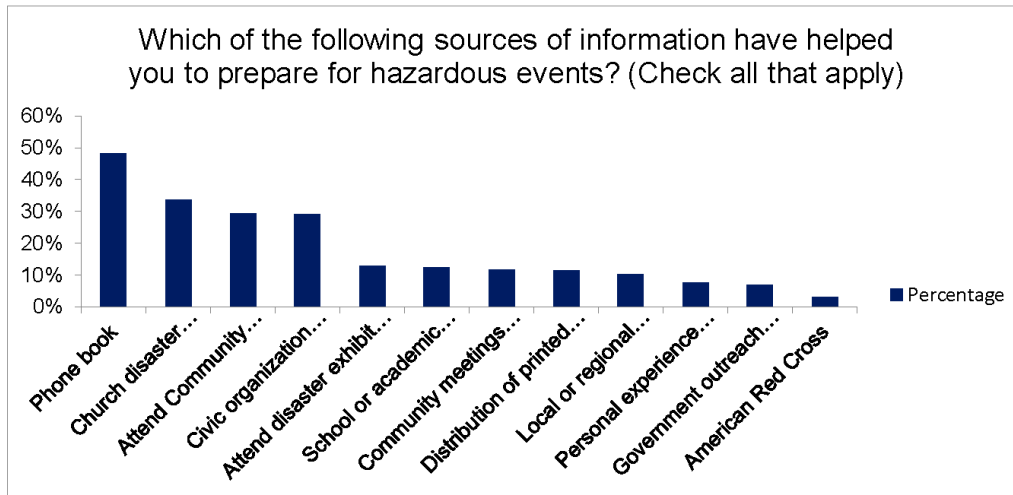
In addition to these actions, 400 respondents indicated that they had attended a first aid/CPR training and 88 indicated they had taken a local Community Emergency Response Team (CERT) class. This indicates that there is a large audience for community preparedness trainings in the county.



Question 5: Which of the following sources of information have helped you to prepare for hazardous events? (Check all that apply)

This question assists the county and each participating jurisdiction in identifying strengths in community engagement as well as identifying gaps in increasing whole community preparedness and education surrounding hazardous events.

Figure 5



From the 656 respondents that answered this question, 316 respondents (48%) stated that they gathered information to prepare for hazardous events from personal experience with hazardous events. This category was followed by 220 respondents (33%) who stated they received their information from local or regional media sources.

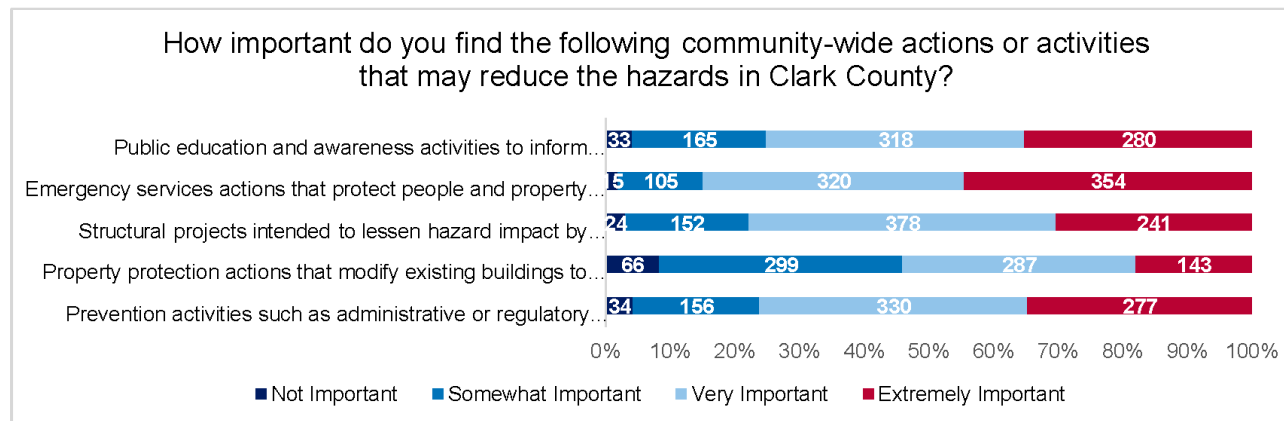
193 respondents (29%) identified government outreach for emergency preparedness such as federal, state, or local websites and social media as their primary source of information for preparation. This was the third most popular selection choice, which indicates there may be increased engagement with county residents from local government sources such as websites and social media.



Question 6: How important do you find the following community-wide actions and activities to increase preparations and reduce the risks of hazards in Clark County?

This question asks respondents to identify the importance of community-wide actions and activities to increase preparedness and reduce the risks of hazards in Clark County. 798 respondents responded to this question.

Figure 6



354 respondents (44%) identified emergency services actions as extremely important. Additionally, 280 respondents (35%) identified public education and awareness activities as extremely important. 277 respondents (34%) identified prevention activities such as administrative or regulatory actions that influence the way land is built or developed as extremely important.



Question 7: Do you or anyone in your household have disabilities and/or access and functional needs and would you be interested in early warning notifications or specialized response to evacuate during disasters?

This question allows the county a top-level look at the needs of their community to recognize areas where access and functional needs may surface during a hazards event response.

Of the 797 respondents to this question, 217 individuals indicated yes, that they do have additional access and functional needs and would be interested in early warning notifications or specialized response to evacuate during disasters.

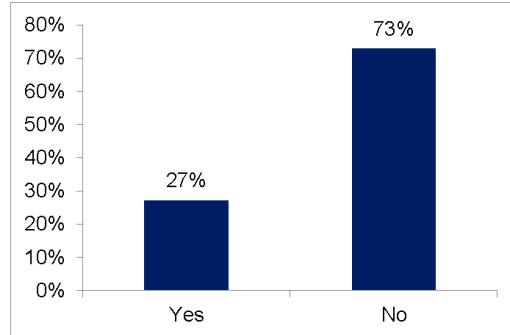


Figure 7

Question 8: If you answered yes to Question 7, do you have a certified service animal that you would be interested in evacuating with you or a household member to a shelter during a disaster?

Of the respondents that answered Question 7, 53 of respondents indicated that they do have a certified service animal that may evacuate with their household to a shelter during a disaster response.

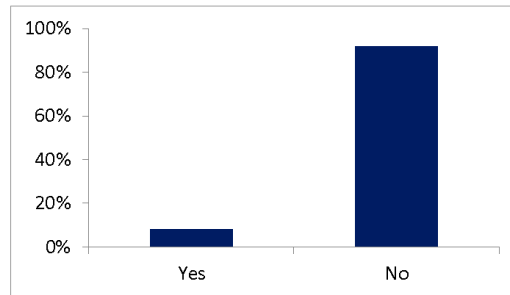


Figure 8

Question 9: If you answered yes to Question 7, would you be interested in more information about Disaster Assistance for people with disabilities and/or access and functional needs?

Of the respondents that answered Question 7, 165 respondents indicated that they would be interested in more information about Disaster Assistance for people with disabilities and/or access and functional needs.

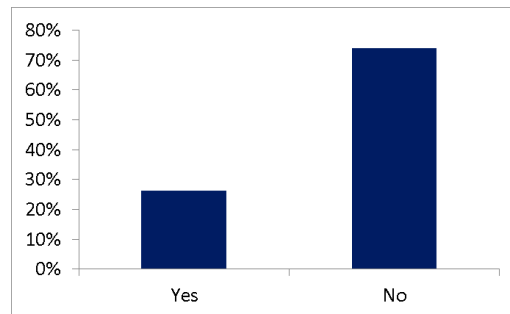


Figure 9

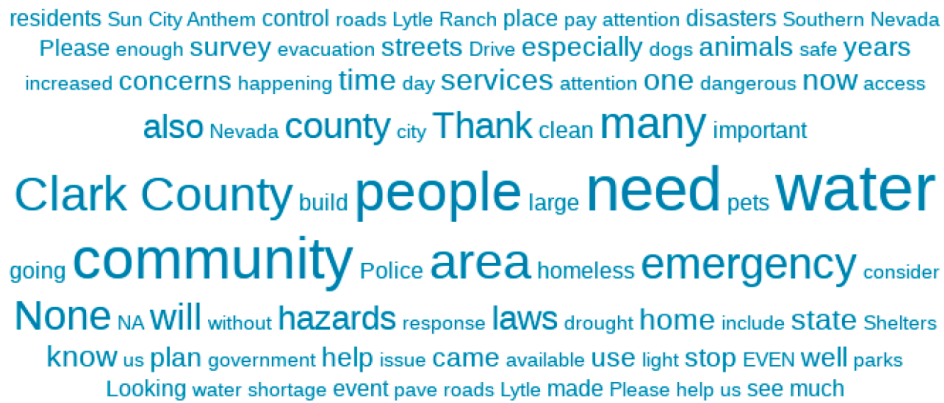


Question 11: Do you have any other comments, questions, or concerns?

The final question of the survey provided a short-answer option for participants to leave any short text form questions, comments, or feedback regarding the MJHMP update effort. The following word cloud captures some common phrases and terms pulled from feedback.

Overall, it's important to note that most open-ended responses were not relevant to the hazard mitigation planning process. However, some respondents pointed to the need for climate hazards to be considered in the plan, increased community outreach to individuals aged older than 65 years, and concerns regarding water scarcity in Southern Nevada.

Figure 11



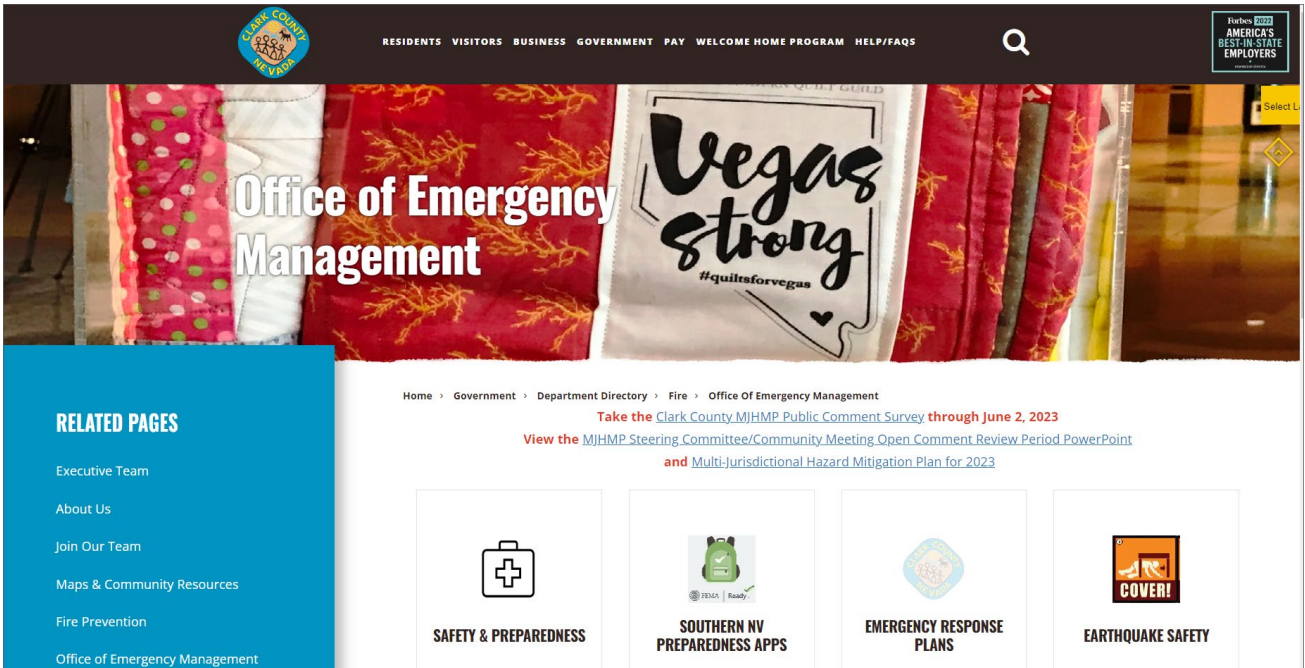
Public Review Period – May 1-21, 2023 (Extended to June 2, 2023)

Public Outreach Survey – Posting on Clark County Website for Review and Feedback

https://www.clarkcountynv.gov/agenda_detail_T43_R3677.php

The screenshot shows the top navigation bar of the Clark County website with the logo on the left and menu items: RESIDENTS, VISITORS, BUSINESS, GOVERNMENT, PAY, WELCOME HOME PROGRAM, HELP/FAQS. A search icon and a 'Forbes 2022 AMERICA'S BEST-IN-STATE EMPLOYERS' badge are on the right. A blue sidebar on the left is titled 'RELATED PAGES' and lists: Executive Team, About Us, Join Our Team, Maps & Community Resources, Fire Prevention, Office of Emergency Management, and Arson & Investigations. The main content area has a breadcrumb trail: Home > Government > Department Directory > Fire > Office Of Emergency Management > Local Emergency Planning Committee Meetings (LEPC). The title is 'Clark County Local Emergency Planning Committee & Multi-Jurisdictional Hazard Mitigation Plan Steering Committee'. It features two links: 'Take the MJHMP Public Comment Survey (May 1 through May 22, 2023)' and 'Review the MJHMP Steering Committee/Community Meeting PowerPoint'. A paragraph states: 'Clark County LEPC and MJHMP meetings are open to the public. If you wish to attend a meeting, please contact the Clark County Office of Emergency Management. These meetings are routinely held at the Fire Administration Office, 575 E. Flamingo Road. Meetings may be held via teleconference, please check the agenda of the respective meeting you are attending.' Below this is a section '2023 Meeting Agendas & Minutes' with a table containing one entry: '11/07/23 LEPC Meeting'.

This screenshot shows a more detailed page for a specific meeting. The breadcrumb trail is: Home > Government > Department Directory > Fire > Office Of Emergency Management > Local Emergency Planning Committee Meetings (LEPC) > Quarter 4 Meeting/Community Meeting. The date is 'Wednesday April 26, 2023 (04/26/23)'. Under 'Documents & Links:', there is a link: 'Wednesday April 26, 2023 04/26/23 Clark County MJHMP Community Meeting Agenda 4.26.23'. Under 'Additional Documents:', there are three links: 'Clark County MJHMP Public Comment Survey (May 1 through June 2, 2023)', 'MJHMP Steering Committee/Community Meeting Open Comment Review Period PowerPoint', and 'Multi-Jurisdictional Hazard Mitigation Plan for 2023'. The sidebar and navigation bar are identical to the previous screenshot.



Clark County
RESIDENTS VISITORS BUSINESS GOVERNMENT PAY WELCOME HOME PROGRAM HELP/FAQS

2022 AMERICA'S BEST-IN-STATE EMPLOYERS

Office of Emergency Management

Vegas Strong
#quitsforvegas

RELATED PAGES

- Executive Team
- About Us
- Join Our Team
- Maps & Community Resources
- Fire Prevention
- Office of Emergency Management

Home > Government > Department Directory > Fire > Office Of Emergency Management

Take the [Clark County MJHMP Public Comment Survey through June 2, 2023](#)

View the [MJHMP Steering Committee/Community Meeting Open Comment Review Period PowerPoint](#) and [Multi-Jurisdictional Hazard Mitigation Plan for 2023](#)

SAFETY & PREPAREDNESS

SOUTHERN NV PREPAREDNESS APPS

EMERGENCY RESPONSE PLANS

EARTHQUAKE SAFETY

Public Outreach Survey – Survey Monkey

<https://www.surveymonkey.com/r/ClarkCountyMJHMP23>

(April 2023)



Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Open Public Comment Survey

Overview

The Clark County Office of Emergency Management & Homeland Security, in partnership with CONSTANT Associates (CONSTANT), a third-party emergency management and public health consulting firm, is in the process of updating the County's Multi-Jurisdictional Hazard Mitigation Plan. Mitigation planning helps local leaders better understand risks from natural hazards and develop long-term strategies to reduce future events' impact on people, property, and the environment. As a part of this activity, the County is seeking feedback from residents and businesses to incorporate into the plan. The County includes the jurisdictions of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, and the Tribal Government of Las Vegas Paiute and Moapa Band of Paiutes. Please review the draft plan located on the County's website and use this survey to provide feedback and input on this Hazard Mitigation Plan. Your feedback will provide vital information before a final draft submission to the Nevada Division of Emergency/Homeland Security.

If you have any questions regarding this survey, please contact Misty Richardson at richardsonm@clarkcountynv.gov or Mona Bonnty at mona.bonnty@constantassociates.com.

On behalf of Clark County, your participation and input is greatly appreciated.

Please provide comments by May 22, 2023.

Clark County Office of Emergency Management & Homeland Security and CONSTANT Associates

1. Point of Contact

Name:
Email:
Zip Code:
Agency/Organization:
Job Title:

2. In relation to Section 1 (Hazard Mitigation Program and Requirements) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

3. In relation to Section 2 (Planning Process and Plan Maintenance Procedures) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

4. In relation to Section 3 (Planning Area Description) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

5. In relation to Section 4 (Hazard Analysis and Risk Assessment) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

6. In relation to Section 5 (Mitigation Strategy) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

7. Please provide any additional feedback or comments related to the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan.

Done



Privacy & Cookie Notice

Consultant: Public Review Period Press Release



[Date]

Public Notice

Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) Update

Public Comment Period

The Cities of Boulder City, Henderson, Las Vegas, North Las Vegas, and Mesquite. Tribal Nations of Las Vegas Paiute and Moapa Band of Paiute are partnering with the Clark County Water Reclamation District, Southern Nevada Health District, and Clark County School District to update the Clark County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). The Plan assesses risks posed by natural and human-caused hazards and develops current mitigating actions for reducing risk to Clark County.

Individuals who live, work, traverse, or frequent Clark County are invited to participate in the public comment period to provide valuable input on the likelihood of disasters occurring and the measures proposed to avoid or reduce short and long-term impacts. The Plan update is part of an ongoing process, required every five years, to evaluate hazards to local communities and set forth a risk reduction framework that is reviewed by the State of Nevada, approved by the Federal Emergency Management Agency (FEMA), and adopted by participating jurisdictions.

Requirements

The Disaster Mitigation Act of 2000 requires all states and local governments to have a Hazard Mitigation Plan to be eligible to apply for certain types of federal hazard mitigation project grant funding. These plans must be implemented on an ongoing basis and updated every five years to ensure they remain current and representative of local risks and locally preferred reduction strategies. Clark County's plan was last completed in 2018 and is available at: [2018 Clark Co Multi-Jurisdictional HMP.pdf \(nv.gov\)](#)

Open Comment Review Period, May 1-21, 2023

As a key part of the planning process, Clark County is seeking feedback from stakeholders and the public to incorporate into the plan. Each participating jurisdiction in Clark County has its own section within the overall Clark County MJHMP. Public input is a critical part of the process, so community members and residents are highly encouraged to participate, provide comments, and ask questions. A public comment period will be open May 1, 2023, through May 21, 2023.

A draft plan and public comment survey will be posted on the Clark County Website. Public comments and feedback are encouraged and submitted online here:

For More Information

For more information contact Clark County representative, Misty Richardson at richardsonm@clarkcountynv.gov or CONSTANT Representative, Mona Bontty at mona.bontty@constantassociate.com.



[Date]

PRESS RELEASE

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) Update Open Comment Period

Press Release

The Clark County Office of Emergency Management & Homeland Security, in partnership with [CONSTANT Associates](#) (CONSTANT), a third-party emergency management and public health consulting firm, is in the process of updating the County's Multi-Jurisdictional Hazard Mitigation Plan Update). Mitigation planning helps local leaders better understand risks from natural hazards and develop long-term strategies to reduce future events' impact on people, property, and the environment.

According to FEMA, the planning process itself is as important as the resulting plan because it encourages communities like Clark County and its participating jurisdictions (Cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, Nevada and the Tribal Communities of Las Vegas Paiute Tribe and Moapa Band of Paiute) to integrate mitigation with day-to-day decision-making regarding land use, floodplain management, site design, code enforcement, and other functions.

As a key part of the project, Clark County is seeking feedback from stakeholders and the public to incorporate into the MJHMP plan update. A public comment period will be open May 1, 2023, through May 21, 2023. Comments may be submitted online at [\(insert open comment survey link here\)](#).

For More Information

For more information contact Clark County representative, Misty Richardson at richardsonm@clarkcountynv.gov or CONSTANT Representative, Mona Bontty at mona.bontty@constantassociate.com.



**MJHMP
Public
Open
Comment
Period
May 1- 21,
2023**

Photo Source: Clark County Government Website



The Clark County Office of Emergency Management & Homeland Security, in partnership with CONSTANT Associates (CONSTANT), a third-party emergency management and public health consulting firm, is in the process of updating the County's Multi-Jurisdictional Hazard Mitigation Plan Update). Mitigation planning helps local leaders better understand risks from natural hazards and develop long-term strategies to reduce future events' impact on people, property, and the environment.

As a key part of the project, Clark County is seeking feedback from stakeholders and the public to incorporate into the plan. A draft plan will be posted on the Clark County LEPC Website.

A public comment period will be open May 1, 2023, through May 21, 2023. Comments may be submitted online at https://www.clarkcountynv.gov/agenda_detail_T43_R3677.php.

For More information

For more information about the MJHMP Open Comment Period, contact Clark County representative, Misty Richardson at richardsonm@clarkcountynv.gov or CONSTANT Representative, Mona Bontty at mona.bontty@constantassociates.com.



MITIGATION PLANNING
STEERING COMMITTEE

MJHMP OPEN COMMENT REVIEW PERIOD

MAY 1-21, 2023

As a key part of the planning process, Clark County is seeking feedback from stakeholders and the public to incorporate into the plan. Each participating jurisdiction in Clark County has its own section within the overall Clark County MJHMP.

Public input is a critical part of the process, so community members and residents are highly encouraged to participate, provide comments, and ask questions. **A draft plan and public comment survey will be posted on the Clark County Website.**

Public comments and feedback are encouraged and submitted between May 1-21, 2023, online here:
www.clarkcountynv.gov/agenda_detail_T43_R3677.php

For more information contact Clark County representative, Misty Richardson at richardsonm@clarkcountynv.gov or CONSTANT Representative, Mona Bontty at mona.bontty@constantassociates.com.

CLARK COUNTY, NEVADA
MULTI-JURISDICTIONAL
HAZARD MITIGATION
PLAN
2023

CLARKCOUNTY.GOV

CCSD
CLARK COUNTY
SCHOOL DISTRICT

SN/D
SOUTH NEVADA
DISTRICT

Clark County
Water Reclamation
DISTRICT

LAS VEGAS VALLEY
WATER DISTRICT

Mesquite
NEVADA

CITY OF
NORTH LAS VEGAS

STATE OF NEVADA

Media Campaign

County: Official Press Release (May 18, 2023)



County Commission:
James B. Gibson, Chairman
Justin Jones
Marilyn Kirkpatrick
William McCurdy II
Ross Miller
Michael Naft
Tick Segerblom

Kevin Schiller, County Manager

Office of Communications & Strategy • (702) 455-3546 • FAX (702) 455-3558 • www.ClarkCountyNV.gov

Contact: Stephanie Wheatley
Public Information Officer

Phone: (702) 455-3569
E-mail: Stephanie.Wheatley@ClarkCountyNV.gov

For Immediate Release

Thursday, May 18, 2022

Emergency Managers Seek Final Public Input on Local Hazards

Clark County and area emergency managers are asking community members to participate in a survey **through May 22** to gather final public input on the top hazards Southern Nevada faces and to support community resiliency. The seven-question, anonymous survey is part of a joint effort to update the County's Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). It's available here: <https://www.surveymonkey.com/r/2XZ2BL8>.

The County's Hazard Mitigation Plan is updated every five years in cooperation with the cities of Boulder City, Henderson, Las Vegas, North Las Vegas, Mesquite, the Las Vegas Band of Paiutes, the Moapa Band of Paiutes, the Clark County School District (CCSD), the Clark County Water Reclamation District (CCWRD), Las Vegas Metropolitan Police Department and the Las Vegas Valley Water District. It's an opportunity to re-assess risks posed by natural, technological, and human-caused disasters and identify ways to mitigate those risks. The draft of the 2023 MJHMP is posted here: <https://tinyurl.com/mtjhjsta>.

"We hope all residents, in rural and urban areas, take part in this final public survey for our community," said Clark County Deputy Fire Chief Billy Samuels, who oversees the Fire Department's Office of Emergency Management. "The feedback is crucial to better our preparedness when it comes to hazard mitigation planning."

The top hazards identified during past updates have been communicable disease, wildfire, flooding, earthquake and extreme heat. Power outages also can be sporadic concerns. Through the survey, Southern Nevadans can share which hazards they believe have the greatest impact on the community. The goal is to ensure that those who may be disproportionately affected by disasters are accounted for in the updated plan.

The Federal Disaster Mitigation Act of 2000 requires Hazard Mitigation Plan updates for communities to remain eligible to continue to receive certain forms of non-emergency disaster assistance. Requirements for the updates also are set by the State of Nevada and the Federal Emergency Management Agency (FEMA). The County's existing 2018 MJHMP can be found on the Fire Department's Office of Emergency Management website pages at <https://tinyurl.com/5n69k2f5>.

###

Clark County is a dynamic and innovative organization dedicated to providing top-quality service with integrity, respect and accountability. With jurisdiction over the world-famous Las Vegas Strip and covering an area the size of New Jersey, Clark is the nation's 11th-largest county and provides extensive regional services to 2.3 million citizens and 45.6 million visitors a year (2019). Included are the nation's 8th-busiest airport, air quality compliance, social services and the state's largest public hospital, University Medical Center. The County also provides municipal services that are traditionally provided by cities to 1 million residents in the unincorporated area. Those include fire protection, roads and other public works, parks and recreation, and planning and development.

Clark County news releases may be found at www.ClarkCountyNV.gov.
You may also follow the County on more than 40 social media sites, including **Facebook, Twitter, Instagram, LinkedIn, NextDoor, Pinterest and YouTube.**

County: Website

Link: https://www.clarkcountynv.gov/news_detail_T28_R902.php



Home > News List > News Post

Clark County and area emergency managers are asking community members to participate in a survey **through May 22** to gather final public input on the top hazards Southern Nevada faces and to support community resiliency. The anonymous survey is part of a joint effort to update the County's Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). It's available here: <https://www.surveymonkey.com/r/2XZ2BL8>

The County's Hazard Mitigation Plan is updated every five years in cooperation with the cities of Boulder City, Henderson, Las Vegas, North Las Vegas, Mesquite, the Las Vegas Band of Paiutes, the Moapa Band of Paiutes, the Clark County School District (CCSD), the Clark County Water Reclamation District (CCWRD), Las Vegas Metropolitan Police Department and the Las Vegas Valley Water District. It's an opportunity to re-assess risks posed by natural, technological, and human-caused disasters and identify ways to mitigate those risks. The draft of the 2023 MJHMP is posted here: <https://tinyurl.com/mtjhjsta>.

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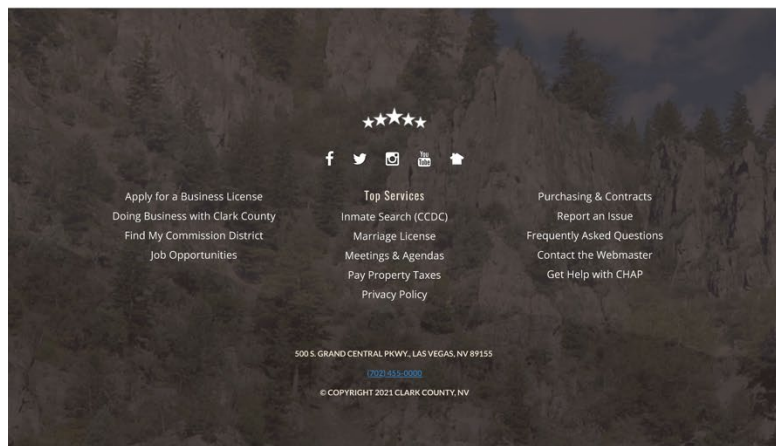
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County: Facebook (May 14, 2023)

facebook

Email or phone Password Log In Forgot Account?

Clark County, Nevada

Intro

Home to 2.3 million & visited by 45.6 million yearly, we are the 11th-largest U.S. county.

- Page - Government organization
- Clark County is responsible for this Page
- 500 S Grand Central Pkwy, Las Vegas, NV, United States, Nevada
- (702) 455-0000
- webmaster@ClarkCountyNV.gov
- ClarkCountyNV.gov
- Open now
- Rating - 2.7 (267 Reviews)
- Offers free Wi-Fi

Photos

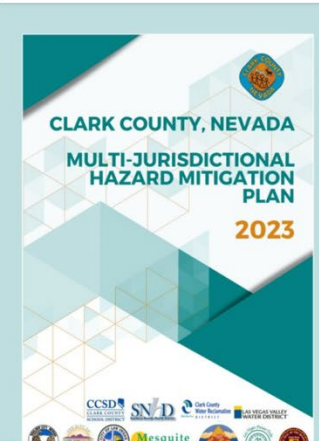


Clark County, Nevada May 14 at 2:00 PM

Our #ClarkCounty Office of Emergency Management is upgrading the County's Multi-Jurisdictional Hazard Mitigation Plan. Mitigation planning helps local leaders better understand risks from natural hazards and develop long-term strategies to reduce future events impact on people, property, and the environment.

You can review the survey here: <https://www.surveymonkey.com/r/2XZ2BL6> and review the Hazard Mitigation Plan for 2023 here: <https://tinyurl.com/mstfjdmc5>.

Additionally, here's a link to a PowerPoint presentation from the steering committee associated with the MJHMP: <https://tinyurl.com/4pkb4a55>.



Connect with Clark County, Nevada on Facebook

Log In or Create new account

Veronica Lamphier

https://www.facebook.com/photo/?fbid=616469113846991&set=a.219542206873019&_cft__[0]=AZWk6ioXN2ohBnLELT9PqcC137ubdvkKlCh02NEE1gsVKLfoEif2UuyyoFI_bSOSJATMwnptMGTxbeX---tuK29yc0sUI0KVoTwrDSAukhHRI0P37ejH9e...

Intro

Home to 2.3 million & visited by 45.6 million yearly, we are the 11th-largest U.S. county.

- Page - Government organization
- Clark County is responsible for this Page
- 500 S Grand Central Pkwy, Las Vegas, NV, United States, Nevada
- (702) 455-0000
- webmaster@ClarkCountyNV.gov
- ClarkCountyNV.gov
- Open now
- Rating - 2.7 (267 Reviews)
- Offers free Wi-Fi

Photos



8 likes 1 comment

Like Comment

Most relevant

Veronica Lamphier
What's the plan for escape from Vegas in the event of impending doom? Are the 95 and 15 enough freeway to get Vegas safely out of dodge quickly so we don't die from lack of resources in a dry and barren desert region not actually meant for humans to ... **See more**

County: Twitter:

Link: <https://twitter.com/ClarkCountyNV>

← **Clark County Nevada** ✓ 32.2K Tweets **Follow**

 **Clark County Nevada** ✓ @ClarkCountyNV · May 3 ...

Our #ClarkCounty Office of Emergency Mgmt. is updating its Hazard Mitigation Plan. It creates a roadmap to deal with risks and impacts of natural disasters and other hazards.

Check the plan out at tinyurl.com/2y52jkma and then share your thoughts at surveymonkey.com/r/2XZ2BL8.



2 6 10 3,513

Twitter - Clark County Commissioner

Link: <https://twitter.com/CommishJGibson/status/1656468675359277056?s=20>

 **Commissioner Jim Gibson**
995 Tweets Follow

Tweets Replies Media Likes

 **Commissioner Jim Gibson** @CommishJGibson · 5/10/23 ...

1) From now until May 22nd, there is a public comment survey available to help the Clark County Office of Emergency Management & Homeland Security, in partnership with Constant Associates to update the County's Multi-Jurisdictional Hazard Mitigation Plan.

 1   2  232 

 **Commissioner Jim Gibson** @CommishJGibson · 5/10/23 ...

2) Mitigation planning helps local leaders better understand risks from natural hazards and develop long-term strategies to reduce future events' impact on people, property, and the environment.

 1    140 

 **Commissioner Jim Gibson** @CommishJGibson · 5/10/23 ...

3) You can review the survey here: surveymonkey.com/r/2XZ2BL8

And review the Hazard Mitigation Plan for 2023 here: tinyurl.com/msfjdmc5

Additionally, here's a link to a PPT presentation from the steering committee associated with the MJHMP: tinyurl.com/4pkb4a55



Henderson

Henderson: Website


Link: <https://www.cityofhenderson.com/government/departments/emergency-management/hazard-mitigation>


The screenshot shows the Henderson City Website. The top navigation bar includes links for Pay, News, Jobs, Contact Us, and Service Finder. The main navigation menu features Residents, Our City, Government (highlighted), and Business, along with a search icon. A left sidebar lists various departments under 'EMERGENCY MANAGEMENT', with 'Hazard Mitigation' selected. The main content area displays the breadcrumb 'Government » Departments » Emergency Management »', the title 'Hazard Mitigation', and utility icons for font size, share, and print. The primary heading is 'Open Comment Review Period, May 1-21, 2023'. The text explains that Clark County is seeking public feedback for its Multi-Jurisdictional Hazard Mitigation Plan, with a comment period from May 1 to May 21, 2023. A draft plan and survey will be posted on the Clark County Website, with a link provided: https://www.clarkcountynv.gov/agenda_detail_T43_R3677.php.

Henderson: Facebook (May 18, 2023)

facebook.com

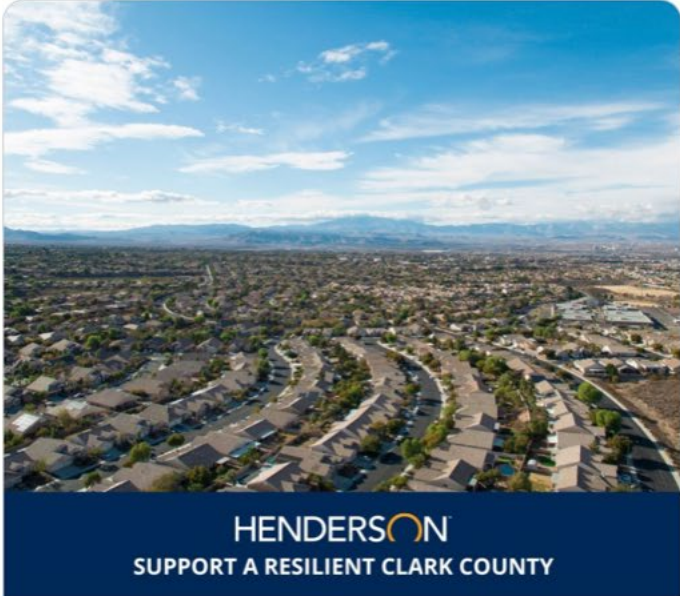
facebook Log In


 City of Henderson Government ...

 **City of Henderson Government** Verified
May 18 at 9:48 PM · Public

The open comment review period for the [Clark County, Nevada](#) Multi-Jurisdictional Hazard Mitigation Plan ends May 21! Add your feedback before it closes.

Find more information here [👉 https://bit.ly/ClarkCounty_HazardMitigation](https://bit.ly/ClarkCounty_HazardMitigation)



 **City of Henderson Government** Verified
May 11 at 6:30 PM · Public


Henderson, [Clark County, Nevada](#) wants your feedback! 🌐

The draft plan for the Multi-Jurisdictional Hazard Plan is ready for review and available for open comme... [See more](#)

👍 9 💬 3

👍 Like 💬 Comment

Most relevant ▾

 **John Berkhoff**
It would great if the city held construction companies

Connect with City of Henderson Government on Facebook

Log In or Create new account

Henderson: Twitter (May 11, 2023)



Thread



City of Henderson @cityofhenderson · 5/11/23

Have you participated in @ClarkCountyNV's Multi-Jurisdictional Hazard Mitigation Plan?



8 votes · Final results



716



City of Henderson @cityofhenderson

If you voted no, now is your chance! The open comment review period is open now until May 21!

Review the draft plan and provide your feedback and input.

Find more information and a link to the survey here bit.ly/ClarkCounty_Ha...



Tweet your reply

Henderson: Twitter (May 19, 2023)

Link: <https://twitter.com/cityofhenderson/status/1659545528831733761?s=20>

The screenshot shows a Twitter profile for the City of Henderson with 9,979 tweets. The main tweet, posted on 5/19/23, features an aerial photo of a street intersection and contains the following text: "The open comment review period for the @ClarkCountyNV Multi-Jurisdictional Hazard Mitigation Plan ends May 21! Add your feedback before it closes. Find more information here bit.ly/ClarkCounty_Ha...". Below this is a reply from the same account dated 5/11/23: "If you voted no, now is your chance! The open comment review period is open now until May 21! Review the draft plan and provide your feedback and input. Find more information and a link to the survey here bit.ly/ClarkCounty_Ha...". The thread concludes with a large image of a residential neighborhood under a blue sky, with a dark blue banner at the bottom that reads "HENDERSON SUPPORT A RESILIENT CLARK COUNTY".

Henderson: Vulnerable Population Outreach

Friday, May 26, 2023 at 15:40:41 Central Daylight Time

Subject: RE: e- introduction
Date: Tuesday, May 23, 2023 at 5:01:04 PM Central Daylight Time
From: Hayley Jarolimek
To: Josie Ross
CC: Emily Long, Stacy DiNicola
Attachments: image001.png

Thank you for the introduction, Jamie. I've copied Stacy DiNicola so that she and Emily can connect. Stacy is assigned various activities related to people experiencing homelessness and will be a good resource for Emily.

Stacy's phone number is 267-2031.

I hop you all have a great day.

From: Josie Ross <Josie.Ross@cityofhenderson.com>
Sent: Tuesday, May 23, 2023 1:59 PM
To: Hayley Jarolimek <Hayley.Jarolimek@cityofhenderson.com>
Cc: Emily Long <emily.long@constantassociates.com>
Subject: e- introduction

Good Afternoon,

This is an E-introduction; I feel so lucky to work with both of you.

Hayley works in Community Development, and is much more in tune with the vulnerable populations and homeless outreach aspect of the City. She also has the contacts you're looking for.

Emily is our amazing contractor that is putting together the update to the Clark County Multijurisdictional Hazard Mitigation Plan. She has done a fantastic job. She has a few questions about homeless outreach and vulnerable populations. While that does fall in my "EM bucket", it's in limited scope. I run the cooling shelter coordination and trigger points for those groups, monitor status during flood season and coordinate with PD and Fire, but at a 30,000 foot view. For the initial public comment period in September, we shared the plan on our website and social, advertised in our rec centers, cooling shelters and senior shelters, and worked with our 55+ HOAs to distribute the plan for review. I'll reach out to marketing to see if they can provide documentation for all of that. We also had tables at the Farmer's markets, which draw a large crowd of seniors.

I hope this introduction and background is helpful, and if either of you need anything, please don't hesitate to reach out. Thank you both so much for the work you do.

Josie Ross
Emergency Management Officer

HENDERSON
City of Henderson
Emergency Management

Page 1 of 2

Las Vegas

Las Vegas: Twitter (May 17, 2023)

Link: <https://twitter.com/CLVAlerts/status/1658879456495423488?s=20>



North Las Vegas

North Las Vegas: Mayor Newsletter

This bulletin was sent to the following groups of people:

Subscribers of Mayor Pamela Goynes-Brown (2082 recipients)



Hello Residents,

May flowers are finally here and I am excited for the warm weather activities the City of North Las Vegas has planned for our residents from youth camps, sports, community barbeques and much more!

Our City departments have been working diligently to prepare for the busy season ahead of us to make it the most memorable season yet! I hope you can join us at one of our many events this month whether it's to play or improve our community.

Yours in service,

Mayor Pamela Goynes-Brown

News From Your Mayor

NLVFD Annual Awards!

The City of North Las Vegas Fire Department recognized first responders for their exceptional efforts during the past year at its annual awards ceremony last month at the North Las Vegas City Hall. Commendations were awarded to North Las Vegas firefighters as well as Clark County firefighters and North Las Vegas police officers and dispatchers who performed life-saving actions during emergencies.

This annual award ceremony is a small way to recognize the huge impact and accomplishments of the City of North Las Vegas first responders within our communities. Thank you to each and every one of you!

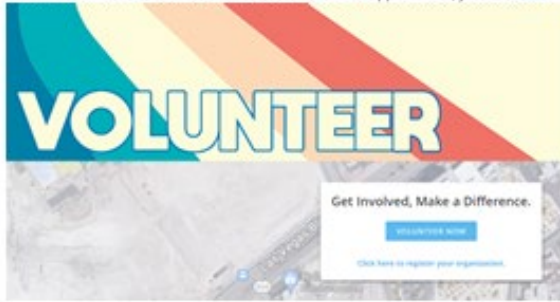
Volunteer with the City of North Las Vegas

The City of North Las Vegas is excited to provide the community an easy way to volunteer with the City of North Las Vegas and give back to their community!

The public can register at the new volunteer website - <https://www.volunteerlv.com/> - peruse upcoming opportunities and sign up online!

Whether you're looking for an opportunity for yourself, something you can do with your children, completing a student service learning requirement, or want to get your work team out together helping others, we would love your time, skills and knowledge.

To volunteer for this event or check out the list of current opportunities, just click here.



Events and Happenings



Page 10 of 21

A banner for the Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) 2023. It features a green and white geometric design. The text includes: "The Clark County Office of Emergency Management & Homeland Security, in partnership with CONSTANT Associates (CONSTANT), a third-party emergency management and public health consulting firm, is in the process of updating the County's Multi-Jurisdictional Hazard Mitigation Plan (Update). Mitigation planning helps local leaders better understand risks from natural hazards and develop long-term strategies to reduce future events' impact on people, property, and the environment." It also states: "As a key part of the project, Clark County is seeking feedback from stakeholders and the public to incorporate into the plan. A draft plan will be posted on the Clark County LEPC Website." and "A public comment period will be open May 1, 2023, through May 21, 2023. Comments may be submitted online at https://www.clarkcountynv.gov/lepc/online_survey." It includes a "For More information" section with contact details for Micky Richardson and Mona Boethy.

May 1 - 21, 2023

CLARK COUNTY, NEVADA
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN
2023

The Clark County Office of Emergency Management & Homeland Security, in partnership with CONSTANT Associates (CONSTANT), a third-party emergency management and public health consulting firm, is in the process of updating the County's Multi-Jurisdictional Hazard Mitigation Plan (Update). Mitigation planning helps local leaders better understand risks from natural hazards and develop long-term strategies to reduce future events' impact on people, property, and the environment.

As a key part of the project, Clark County is seeking feedback from stakeholders and the public to incorporate into the plan. A draft plan will be posted on the Clark County LEPC Website.

A public comment period will be open May 1, 2023, through May 21, 2023. Comments may be submitted online at https://www.clarkcountynv.gov/lepc/online_survey.

For More information
For more information about the MJHMP Open Comment Period, contact Clark County representative, Micky Richardson at richardson@clarkcountynv.gov or CONSTANT representative, Mona Boethy at mona.boethy@constantassociates.com.



North Las Vegas: Facebook

Link: <https://www.facebook.com/CityofNorthLasVegas/>

City of North Las Vegas, Nevada - Municipal Government

2d · 🌐

Don't miss out on your chance to comment from May 1 - 21!

CLARK COUNTY NEVADA MITIGATION PLANNING STEERING COMMITTEE

MJJHMP OPEN COMMENT REVIEW PERIOD

MAY 1-21, 2023

As a key part of the planning process, Clark County is seeking feedback from stakeholders and the public to incorporate into the plan. Each participating jurisdiction in Clark County has its own section within the overall Clark County MJHMP.

Public input is a critical part of the process, so community members and residents are highly encouraged to participate, provide comments, and ask questions. **A draft plan and public comment survey will be posted on the Clark County Website.**

Public comments and feedback are encouraged and submitted between May 1-21, 2023, online here: www.clarkcountynv.gov/agenda_detail_T43_R3677.php

For more information contact Clark County representative, Misty Richardson at richardsonm@clarkcountynv.gov or CONSTANT Representative, Mona Bontty at mona.bontty@constantassociates.com.

CLARKCOUNTY.GOV

1

North Las Vegas: Twitter

Link: https://twitter.com/cnlv/with_replies

City of North Las Vegas @CNLV · May 8

Don't miss out on your chance to comment from May 1 - 21!

CLARK COUNTY, NEVADA
MITIGATION PLANNING STEERING COMMITTEE

MJHMP OPEN COMMENT REVIEW PERIOD
MAY 1-21, 2023

As a key part of the planning process, Clark County is seeking feedback from stakeholders and the public to incorporate into the plan. Each participating jurisdiction in Clark County has its own section within the overall Clark County MJHMP.

Public input is a critical part of the process, so community members and residents are highly encouraged to participate, provide comments, and ask questions. A draft plan and public comment survey will be posted on the Clark County Website.

Public comments and feedback are encouraged and submitted between May 1-21, 2023, online here: www.clarkcountynv.gov/agenda_detail_T43_R3677.php

For more information contact Clark County representative, Misty Richardson at richardsonm@clarkcountynv.gov or CONSTANT Representative, Mona Bontty at mona.bontty@constantassociates.com.

CLARKCOUNTY.GOV

1 1 285

North Las Vegas: LinkedIn

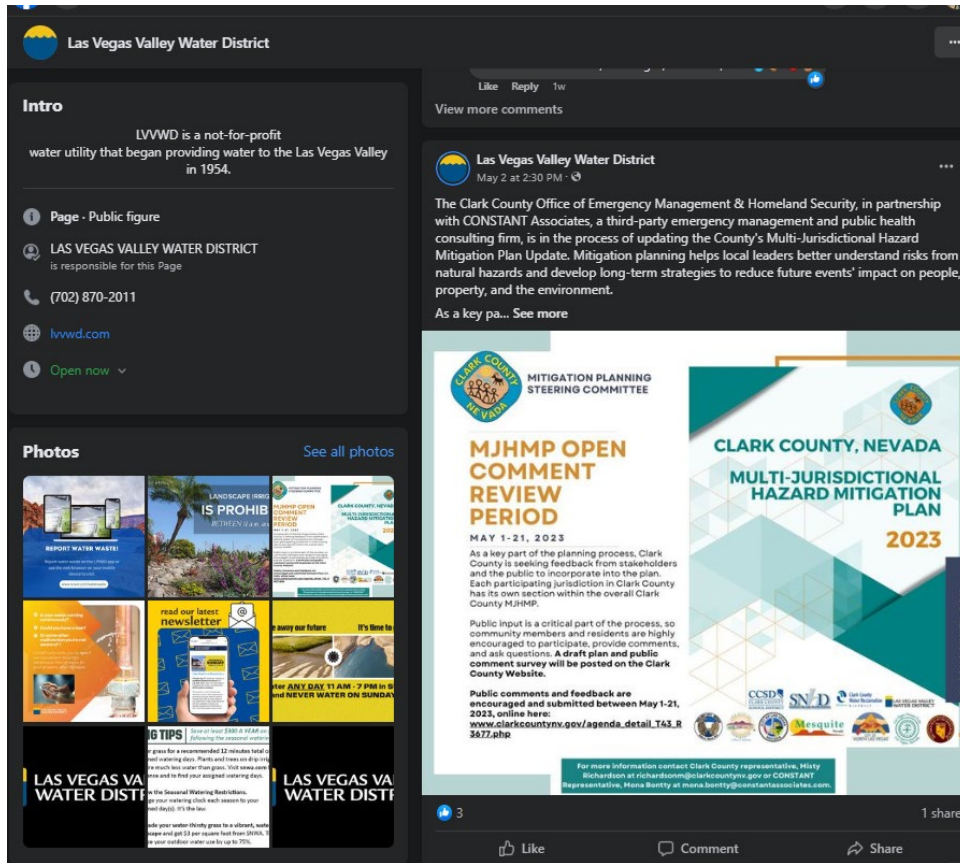
Link: <https://www.linkedin.com/company/city-of-north-las-vegas/>

The screenshot shows the LinkedIn profile for the City of North Las Vegas. At the top, there is a banner image of a 'WELCOME TO THE CITY OF NORTH LAS VEGAS' sign. Below the banner is the company logo and name, 'City of North Las Vegas', followed by a description: 'The City of North Las Vegas is one of the fastest growing cities in Nevada! Come grow your career with us #CNLVJobs'. It also states 'Government Administration - North Las Vegas, NV - 10,070 followers' and 'See all 745 employees on LinkedIn'. There are buttons for '+ Follow', 'Visit website', and 'More'. Below this is a navigation bar with 'Home', 'About', 'Posts', 'Jobs', 'People', and 'Insights'. The 'About' section is expanded, showing a paragraph of text about the city's location and history. Below the 'About' section is a 'Page posts' section with two posts. The first post is for 'Happy Teacher's Appreciation Week!!' with a colorful graphic and 1 comment. The second post is for 'Don't miss out on your chance to comment from May 1 - 21!' with a graphic for the 'MJJHMP OPEN COMMENT REVIEW PERIOD' and 'CLARK COUNTY, NEVADA MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 2023' and 3 comments. The bottom of the page shows a 'Page posts' section with two posts. The first post is for 'Happy Teacher's Appreciation Week!!' with a colorful graphic and 1 comment. The second post is for 'Don't miss out on your chance to comment from May 1 - 21!' with a graphic for the 'MJJHMP OPEN COMMENT REVIEW PERIOD' and 'CLARK COUNTY, NEVADA MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 2023' and 3 comments.

Las Vegas Valley Water District

Las Vegas Valley Water District: Facebook

Link: <https://www.facebook.com/lvwwd>



Las Vegas Valley Water District: Instagram

Link: <https://www.instagram.com/p/CrwDk34MHPM/>



Las Vegas Valley Water District: Twitter

Link: <https://twitter.com/lvvwd>

Las Vegas Valley Water District @lvvwd · May 2

As a key part of the Multi-Jurisdictional Hazard Mitigation Plan Update, Clark County is seeking feedback from stakeholders and the public.

A public comment period will be open through May 21, 2023. Comments may be submitted online at [clarkcountynv.gov/agenda_detail_...](https://www.clarkcountynv.gov/agenda_detail_...)

1 1 121

Las Vegas Valley Water District: LinkedIn

Link: <https://www.linkedin.com/company/lvvwd/posts/?feedView=all>

Las Vegas Valley Water District

7,366 followers

1w ·

The Clark County Office of Emergency Management & Homeland Security, in partnership with CONSTANT Associates, a third-party emergency management and public health consulting firm, is in the process of updating the County's Mu ...see more

3 2 comments

Like Comment Repost Send

Las Vegas Paiute Tribe

Las Vegas Paiute Tribe - Facility Posting of Physical Flyers Location 1



Las Vegas Paiute Tribe – Facility Posting of Physical Flyers Location 2



Las Vegas Paiute Tribe – Facility Posting of Physical Flyers Location 3



Las Vegas Paiute Tribe - Facility Posting of Physical Flyers Location 4



Moapa Band of Paiutes

Information to be provided by Moapa Band of Paiutes.

Open Comment Review Period Survey – Survey Result

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Open Public Comment Survey, May 1- May 22, 2023 EXTENDED UNTIL JUNE 2, 2023

#1

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Friday, May 26, 2023 4:31:09 PM
Last Modified: Friday, May 26, 2023 4:33:19 PM
Time Spent: 00:02:09
IP Address: 75.137.228.110

Page 1: Overview

Q1

Point of Contact

Name: **Corey Ross**
Email: **corey.ross@lvw.com**
Zip Code: **89153**
Agency/Organization: **Las Vegas Valley Water District/SWNA**
Job Title: **Emergency Management Coordinator, EHCS**

Q2

Respondent skipped this question

In relation to Section 1 (Hazard Mitigation Program and Requirements) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

Q3

In relation to Section 2 (Planning Process and Plan Maintenance Procedures) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

5/57; Page 24, MPSC Members, John Hines, Corporate Security Manager
Page 25 Also, update Las Vegas Valley Water District reference on page 25, Please remove the "City of" listed with Corey Ross, Emergency Management Coordinator.

Q4

In relation to Section 3 (Planning Area Description) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

7/57; Page 31, Please list LVVWD under Local Government
9/57; Page 44, Table 12, LVVWD is not listed as Participating Special District.
10/57; Page 47, Used term Clark County Water District, I assume you meant Clark County Water Reclamation District

Q5

In relation to Section 4 (Hazard Analysis and Risk Assessment) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

18/57; Page 118, SWNA supporting the water issues in Clark County and its participating agencies are as follows
19/57; Page 115, Las Vegas Water District should be Las Vegas Valley Water District

Q6

Respondent skipped this question

In relation to Section 5 (Mitigation Strategy) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

Q7

Respondent skipped this question

Please provide any additional feedback or comments related to the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan.

#2

COMPLETE

Collector: Web Link 3 (Web Link)
Started: Friday, May 26, 2023 4:38:56 PM
Last Modified: Friday, May 26, 2023 4:41:11 PM
Time Spent: 00:02:14
IP Address: 75.137.228.110

Page 1: Overview

Q1

Point of Contact

Name: **Jeremy Hynds**
Email: **hynds@cityofnorthlasvegas.com**
Zip Code: **89030**
Agency/Organization: **North Las Vegas Fire Department | Emergency Management**
Job Title: **Emergency Management Specialist**

Q2

Respondent skipped this question

In relation to Section 1 (Hazard Mitigation Program and Requirements) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

Q3

In relation to Section 2 (Planning Process and Plan Maintenance Procedures) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

My name is in the plan twice, once when I was with Henderson and once at CNLV. I don't think I need to be listed both times CNLV is the only one to keep.

Q4

Respondent skipped this question

In relation to Section 3 (Planning Area Description) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

Q5

In relation to Section 4 (Hazard Analysis and Risk Assessment) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

The CPRI for Wildland Fire for CNLV is marked as high, but that should be low as we do not have much of a wildland fire hazard. Not sure how all of the jurisdictions for that hazard marked the same values. This is not a high category for all jurisdictions. This also goes for infestation....

3. Hazards associated with the projects are not accurate. They are all listed as Subsistence/Fissures. (Page 708 and 811) Please change to appropriate hazards.

4. Please change the severity for Hazardous Materials from 1 to 2 and recalculate the new value. (Page 340 and 797)

5. Can you provide an explanation how the Risk Summary values were calculated and what the percentages mean next to them?

Q6

In relation to Section 5 (Mitigation Strategy) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

We are going to edit our financial capabilities page once we get back some better data.

Q7

Respondent skipped this question

Please provide any additional feedback or comments related to the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan.

#3

COMPLETE

Collector: Web Link 3 (Web Link)
Started: Friday, May 26, 2023 4:41:41 PM
Last Modified: Friday, May 26, 2023 4:43:03 PM
Time Spent: 00:01:22
IP Address: 75.137.228.110

Page 1: Overview

Q1

Point of Contact

Name: **Josie Ross**
Email: **josie.ross@cityofhenderson.com**
Zip Code: **89015**
Agency/Organization: **City of Henderson Emergency Management**
Job Title: **Emergency Management Office r**

Q2

Respondent skipped this question

In relation to Section 1 (Hazard Mitigation Program and Requirements) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan:Use the space below to provide your feedback and comments related to this section.

Q3

Respondent skipped this question

In relation to Section 2 (Planning Process and Plan Maintenance Procedures) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan:Use the space below to provide your feedback and comments related to this section.

Q4

Respondent skipped this question

In relation to Section 3 (Planning Area Description) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan:Use the space below to provide your feedback and comments related to this section.

Q5

Respondent skipped this question

In relation to Section 4 (Hazard Analysis and Risk Assessment) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

Q6

Respondent skipped this question

In relation to Section 5 (Mitigation Strategy) of the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Use the space below to provide your feedback and comments related to this section.

Q7

Please provide any additional feedback or comments related to the Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan.

- Jurisdictional Annex Updates for the City of Henderson:
- i. Page 731 – Change McCarran International Airport to “Harry Reid International Airport (McCarran)” in the planning area section
 - ii. Page 733 – First sentence where referenced “Boulder City” change to Henderson
 - iii. Page 735 – Change the building codes that were listed from Boulder City to the City of Henderson
-

Appendix D: Expanding and Improving Mitigation Projects Survey Responses

Clark County, NV

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Expanding & Improving Mitigation Programs Survey

#6

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, August 31, 2023 12:10:44 PM
Last Modified: Thursday, August 31, 2023 12:23:46 PM
Time Spent: 00:13:01
IP Address: 198.200.132.41

Page 1: Expanding & Improving Mitigation Programs

Q1

Point of Contact

Name:	Misty Richardson
Email:	richardsonm@clarkcountynv.gov
Agency/Organization:	Clark County Office of Emergency Management & Homeland Security
Job Title:	Assistant Emergency Manager

Q2

Please list the areas in your jurisdiction (region, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazards due to the development.

Industrial Growth:	all areas
Commercial Growth:	all areas
Residential Growth:	all areas

Q3

What mitigation actions has your jurisdiction accomplished in the past 5 years, to include with both local (building/zoning codes, incorporating mitigation into existing planning) and external (grants such as mitigation, CDBG, USDA, etc.) funding?

Unreinforced masonry - see CCBD for additional detail

Q4

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

flood diversion projects and avalanche studies of our spring mountain range. Urban Heat issues.

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Expanding & Improving Mitigation Programs Survey

Q5

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

funding

Boulder City

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Expanding & Improving Mitigation Programs Survey

#5

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, August 31, 2023 10:25:51 AM
Last Modified: Thursday, August 31, 2023 11:03:59 AM
Time Spent: 00:38:07
IP Address: 184.184.228.34

Page 1: Expanding & Improving Mitigation Programs

Q1

Point of Contact

Name: **Greg Chesser**
Email: **gchesser@bcnv.org**
Zip Code: **89005**
Agency/Organization: **Boulder City**
Job Title: **Deputy Fire Chief**

Q2

Please list the areas in your jurisdiction (region, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazards due to the development.

Industrial Growth: **Solar Field Leases in Eldorado Valley**
Commercial Growth: **None**
Residential Growth: **None**

Q3

What mitigation actions has your jurisdiction accomplished in the past 5 years, to include with both local (building/zoning codes, incorporating mitigation into existing planning) and external (grants such as mitigation, CDBG, USDA, etc.) funding?

Flood Control - Alleviate the damage associated with flooding through new and reinforced flood control projects, including storm drains, culverts, drop inlets, channels, and detention basins. North Railroad Conveyance Phase 2 & Hemenway Watershed Improvements Phase IIB – Hemenway channel improvements to meet flood control freeboard requirements, improve access for maintenance, and reduce erosion around existing facilities.

Electrical - we have completed several feeder projects

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Expanding & Improving Mitigation Programs Survey

Q4

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

Electrical - upgrading our system voltage from 4,160V to 12,470V in the next 5 years

Q5

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

None at this time

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Expanding & Improving Mitigation Programs Survey

#1

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Tuesday, August 29, 2023 5:00:12 PM
Last Modified: Tuesday, August 29, 2023 5:02:43 PM
Time Spent: 00:02:30
IP Address: 205.174.30.161

Page 1: Expanding & Improving Mitigation Programs

Q1

Point of Contact

Name: **Josie Ross**
Email: **josie.ross@cityofhenderson.com**
Zip Code: **89015**
Agency/Organization: **City of Henderson**
Job Title: **Emergency Management Officer**

Q2

Please list the areas in your jurisdiction (region, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazards due to the development.

Industrial Growth: **West Henderson**
Commercial Growth: **West Henderson**
Residential Growth: **all of Henderson, especially the Westside**

Q3

What mitigation actions has your jurisdiction accomplished in the past 5 years, to include with both local (building/zoning codes, incorporating mitigation into existing planning) and external (grants such as mitigation, CDBG, USDA, etc.) funding?

zoning and building codes, incorporating mitigation into existing planning, strategic planning and land use development

Q4

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

continue to incorporate mitigation into future development and focus on climate friendly initiatives and sustainability

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Expanding & Improving Mitigation Programs Survey

Q5

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

keeping up with population growth

2 / 12

Las Vegas

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Expanding & Improving Mitigation Programs Survey

#7

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Friday, September 01, 2023 12:08:34 PM
Last Modified: Friday, September 01, 2023 12:13:49 PM
Time Spent: 00:05:15
IP Address: 166.137.115.31

Page 1: Expanding & Improving Mitigation Programs

Q1

Point of Contact

Name: **Carolyn Levering**
Email: **Cleveting@lasvegadneveda.gov**
Zip Code: **89101**
Agency/Organization: **City of Las Vegas**
Job Title: **Emergency Manager**

Q2

Please list the areas in your jurisdiction (region, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazards due to the development.

Industrial Growth: **N/A**
Commercial Growth: **Downtown Las Vegas, East Las Vegas, West Las Vegas, Charleston (extreme heat from urban heat island effect, new water conservation measures)**
Residential Growth: **Kyle Canyon, La Madre Foothills, Tule Springs, Lone Mountain, Centennial Hills, Summerlin West (complications may include limits to Colorado River water capacity; threats of wildfires in desert or mountainous areas; spot flooding locations)**

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Expanding & Improving Mitigation Programs Survey

Q3

What mitigation actions has your jurisdiction accomplished in the past 5 years, to include with both local (building/zoning codes, incorporating mitigation into existing planning) and external (grants such as mitigation, CDBG, USDA, etc.) funding?

Mitigation measures have included

- Adoption of new SNWA water conservation strategies, including water use restrictions and regulations, turf reductions, septic and evaporative cooling moratorium
 - Adoption of Wildland Urban Interface Code
 - Preparation of City facilities to be cooling centers, including Homeless Resources Center
 - Development of better communication with utilities to determine action during extreme temperature events
 - Robust flood control infrastructure
-

Q4

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

Adoption of the following:

- Design future buildings, public spaces, and infrastructure to accommodate heat – modify building and zoning codes with respect to orientation, passive heating and cooling
 - Progressive adoption of updates to building codes
 - Increase urban tree canopy to provide more shading
 - Adjust working schedules for those that work outside
 - Completion of third intake to provide redundancy and additional intake for water at lower elevation
 - Construction of low lake level pumping station
 - Incorporate “bulletproof” drought tolerant species into Title 19 zoning standards
 - Addressing additional hazards that are exacerbated by drought, including flooding and wildfire
-

Q5

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

Challenges include:

- Funding
 - Budgeting for increased number of high heat days
 - Capacity to plant trees at a fast enough pace
 - Rapid development into environmentally sensitive areas
 - Acceptance of new policies from homebuilders and development industry
 - Acceptance of new / higher costs from customers
 - Uncertainty of Policy changes, negotiations, and agreements with other Colorado River Basin states
 - Ensure CLV facilities have trained staff that can address the needs of at-risk populations
 - Develop monitoring system for house-bound or other at-risk populations
-

Mesquite

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Expanding & Improving Mitigation Programs Survey

#4

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, August 31, 2023 9:32:27 AM
Last Modified: Thursday, August 31, 2023 9:42:35 AM
Time Spent: 00:10:07
IP Address: 72.19.33.34

Page 1: Expanding & Improving Mitigation Programs

Q1

Point of Contact

Name: **Spencer Lewis**
Email: **slewis@mesquitenv.gov**
Zip Code: **89027**
Agency/Organization: **Mesquite Fire Rescue**
Job Title: **Administrative Captain**

Q2

Please list the areas in your jurisdiction (region, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazards due to the development.

Industrial Growth: **a can manufacturing company will be coming online in the next month or two**
Commercial Growth: **We have seen steady growth here with a few new stores being built and the strip malls continue to be filled.**
Residential Growth: **We have seen a large increase in apartment buildings within our city which is good as the new industry coming into town will need more employees soon**

Q3

What mitigation actions has your jurisdiction accomplished in the past 5 years, to include with both local (building/zoning codes, incorporating mitigation into existing planning) and external (grants such as mitigation, CDBG, USDA, etc.) funding?

CDBG funds have been used to boost fire and EMS services. There are a few mitigation projects that involve USDA and other environmental agencies to increase mitigation efforts to the Virgin River, mainly flood prevention and flow path stabilization.

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Expanding & Improving Mitigation Programs Survey

Q4

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

Flood is always a top priority as it has affected our community several times. Power outages are an increasing problem and the durations seem to increase. Currently, our city only has one power supply line and the power district has been working on a second for several years now without any progress.

Q5

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

Funding is always a factor and grants are hard to get as we compete with the Las Vegas Valley which receives more funding due to their sizes, threats, and mostly the fact that they have people employed to do just grants.

North Las Vegas

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Expanding & Improving Mitigation Programs Survey

#2

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, August 30, 2023 12:49:17 PM
Last Modified: Wednesday, August 30, 2023 1:16:40 PM
Time Spent: 00:27:22
IP Address: 216.145.123.10

Page 1: Expanding & Improving Mitigation Programs

Q1

Point of Contact

Name: **Jeremy Hynds**
Email: **hynds@cityofnorthlasvegas.com**
Zip Code: **89030**
Agency/Organization: **City of North Las Vegas**
Job Title: **Emergency Management Specialist**

Q2

Please list the areas in your jurisdiction (region, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazards due to the development.

Industrial Growth: **North of Alexander, east of Simmons, to the northeast boundary of NLV**
Commercial Growth: **North of Alexander, east of Simmons, to the northeast boundary of NLV**
Residential Growth: **North of Ann to north, east and west boundary. 27% increase in population over the past 10 years.**

Q3

What mitigation actions has your jurisdiction accomplished in the past 5 years, to include with both local (building/zoning codes, incorporating mitigation into existing planning) and external (grants such as mitigation, CDBG, USDA, etc.) funding?

Upgrading storm water/flood channels to include flood detention basins.

Q4

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

Expand drought mitigation through turf conversion. Continue partnership with regional flood control district.

3 / 12

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Expanding & Improving Mitigation Programs Survey

Q5

What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

Providing the 25% match, application process, personnel time to commit to applying.

Tribal Nation : Las Vegas Paiute Tribe

Subject: FW: Expanding and Improving Mitigation Programs Survey-Please Complete and Submit
Date: Friday, September 1, 2023 at 12:16:29 PM Central Daylight Time
From: Mona Bontty <mona.bontty@constantassociates.com>
To: Harriett Parker <hparker@lvpaiute.com>
CC: Emily Long <emily.long@constantassociates.com>, Michelle Klein <michelle.klein@constantassociates.com>, Misty Richardson <richardsonm@ClarkCountyNV.gov>

Attachments: image001.png

Harriett,

We are in critical need of the information below to resubmit the MJHMP to FEMA. I have left you voicemail messages and hoping all is okay since I know you have been busy with storm impacts. Please contact our team member Michelle Klein and she would be happy to help you complete the survey. Michelle can be contacted at [REDACTED] it should take no more than 15 minutes to help you complete the survey as needed.

This is a very time sensitive request in which the information is needed in order to resubmit the MJHMP back to FEMA.

Thank you for your support and attention to this request. We appreciate and value your contributions to this process.

Regards,

CONSTANT Team

Mona Bontty (She/Her)

Senior Associate

(909) 263-8246

[8\(a\) and WOSB Certified Business](#)

[Website](#) | [Newsletter](#) | [LinkedIn](#) | [Facebook](#)



From: Mona Bontty

1 of 2

Sent: Monday, August 28, 2023 5:00 PM
To: Harriett Parker, LV Paiute Tribe <hparker@lvpaiute.com>
Cc: Dan Smith <Dan.Smith@constantassociates.com>; Emily Long (emily.long@constantassociates.com) <emily.long@constantassociates.com>; Misty Richardson <richardsonm@ClarkCountyNV.gov>
Subject: Expanding and Improving Mitigation Programs Survey-Please Complete and Submit

Harriett,

As you know, we recently submitted the MJHMP draft to the State of NV and FEMA, which began the State and FEMA Review portion of the planning process. As a result of the review, we have received feedback from FEMA that must include additional information from our stakeholders to be added to the plan draft. We need some information on the growth and development within your community. Please use the survey questions below to provide information on your respective jurisdiction.

<https://www.surveymonkey.com/r/3M2LSZS>

Please complete this survey by 12pm PST Thursday, August 31, 2023. A response from your jurisdiction is critical to ensure we can provide FEMA with this information in our resubmission of the MJHMP.

If you have any questions regarding this survey, please contact Constant Associates Representative Mona Bontty at mona.bontty@constantassociates.com.

On behalf of Clark County, we appreciate your continued participation in the MJHMP planning process.

Regards,

Mona Bontty (She/Her)

Senior Associate

(909) 263-8246

[8\(a\) and WOSB Certified Business](#)

[Website](#) | [Newsletter](#) | [LinkedIn](#) | [Facebook](#)



Tribal Nation: Moapa Band of Paiutes

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Expanding & Improving Mitigation Programs Survey

#3

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, August 30, 2023 2:28:22 PM
Last Modified: Wednesday, August 30, 2023 2:49:23 PM
Time Spent: 00:21:00
IP Address: 208.76.93.165

Page 1: Expanding & Improving Mitigation Programs

Q1

Point of Contact

Name:	Dean Hennesy
Email:	DHennesy@moapatribalpd.com
Zip Code:	89025
Agency/Organization:	Moapa River Indian Reservation Police Department
Job Title:	Emergency Manager

Q2

Please list the areas in your jurisdiction (region, subdivision, etc.) that have experienced growth in the past 10 years or are anticipated to have significant growth in the near future, as well as any potential complications from natural hazards due to the development.

Industrial Growth: **The Moapa Band of Paiutes have discussed expanding their Travel Plaza Business Operations. However, a final growth plan has not been determined at this time and the MBOP will update when a plan has been set.**

Q3

What mitigation actions has your jurisdiction accomplished in the past 5 years, to include with both local (building/zoning codes, incorporating mitigation into existing planning) and external (grants such as mitigation, CDBG, USDA, etc.) funding?

In the past 5 years, the Moapa River Indian Reservation has experienced heavy rain fall, which has damaged certain roadways in and around the housing area. The MBOP fixed these roadways without using any outside funding options.

Clark County, NV Multi-Jurisdictional Hazard Mitigation Plan: Expanding & Improving Mitigation Programs Survey

Q4

In what ways do you see opportunity to expand or enhance mitigation programs in your community?

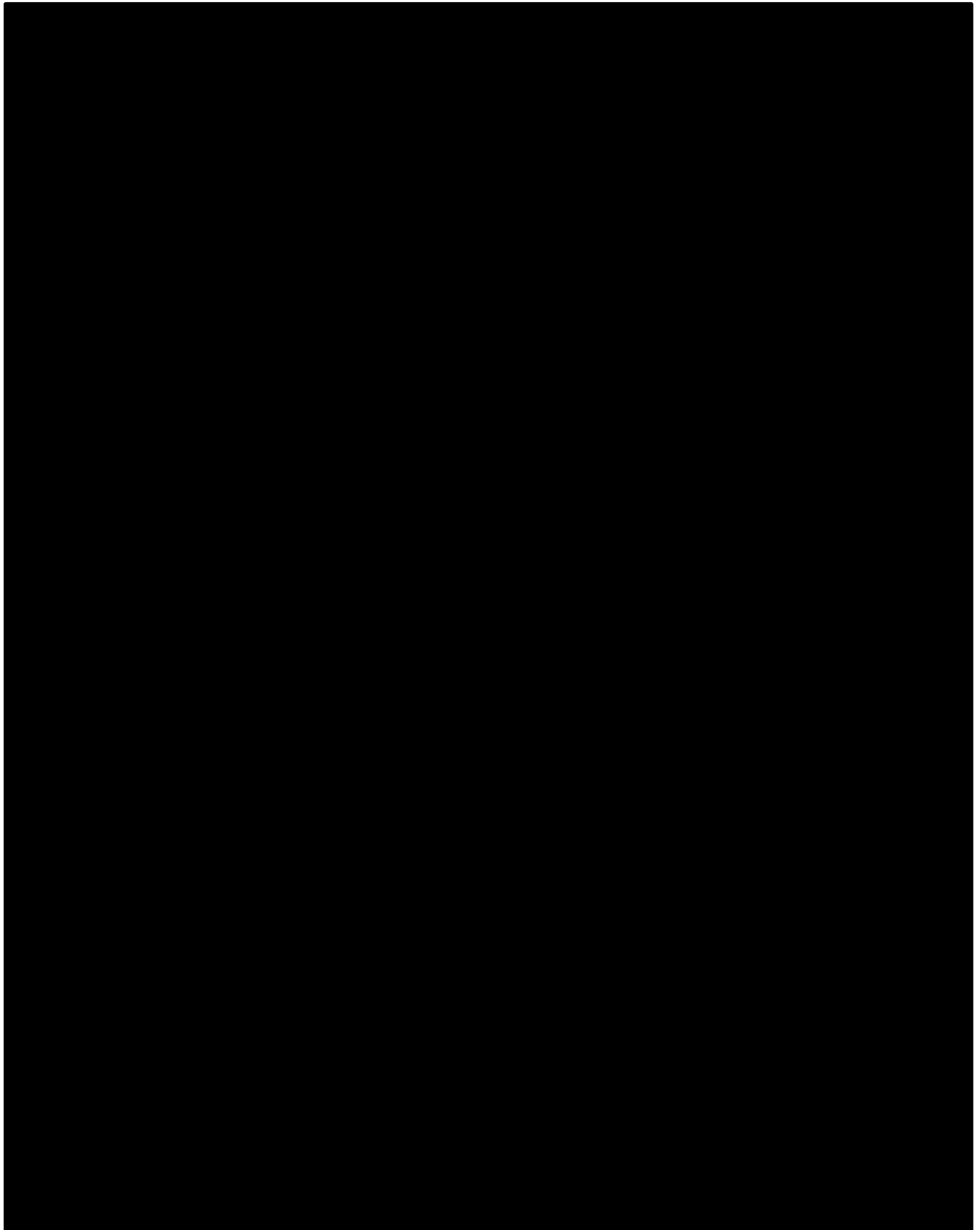
The Moapa Band of Paiutes have recently hired a police officer who is a retired emergency management professional from the LVMPD. As Dean Hennesy takes on the Tribes Emergency Manager position, he will enhance the Tribes mitigation programs. Within the next week, Dean will be completing a survey and assessment of the Reservation in its entirety and will report back with suggestions of ways to enhance the Tribes emergency planning and preparation.

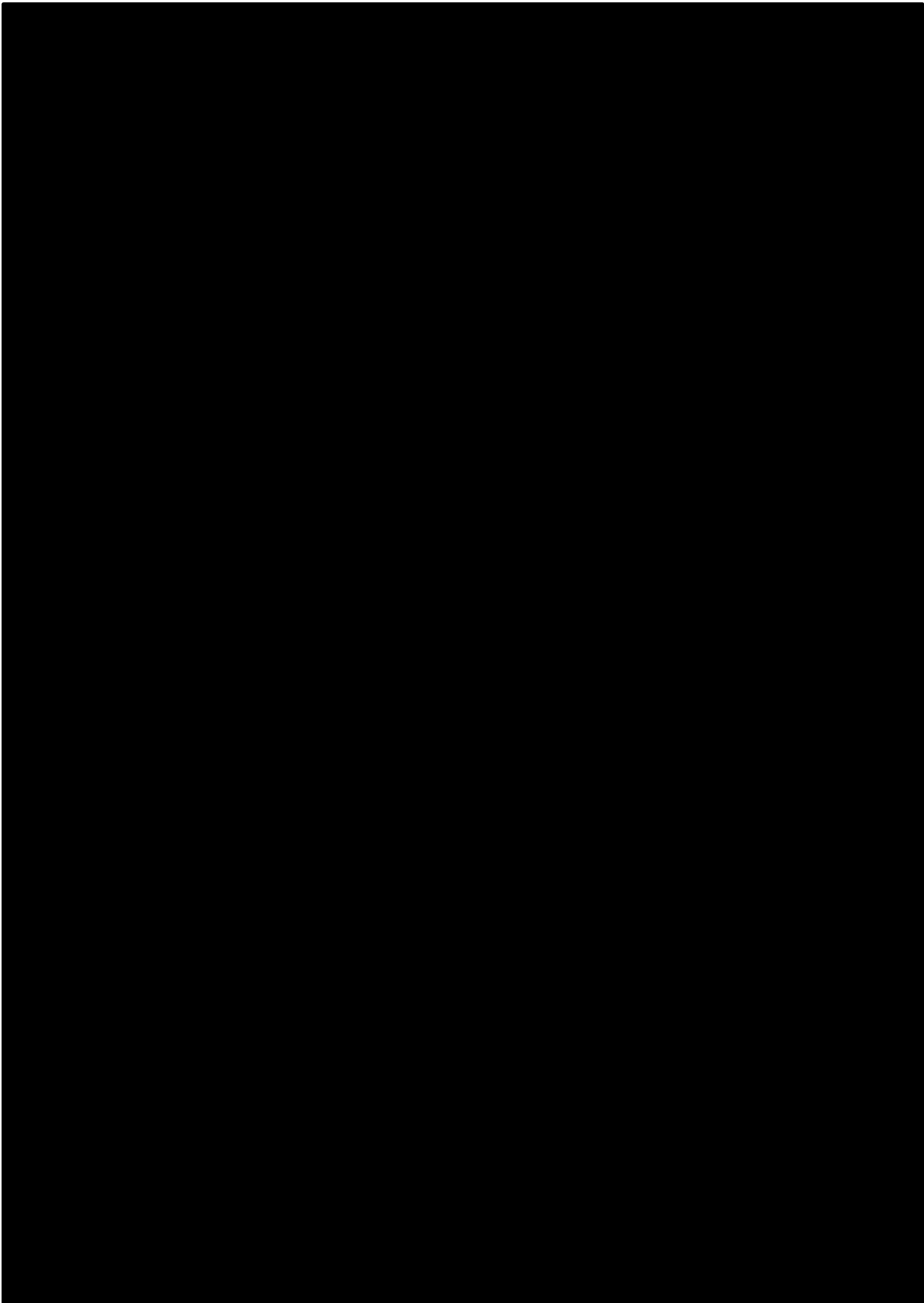
Q5

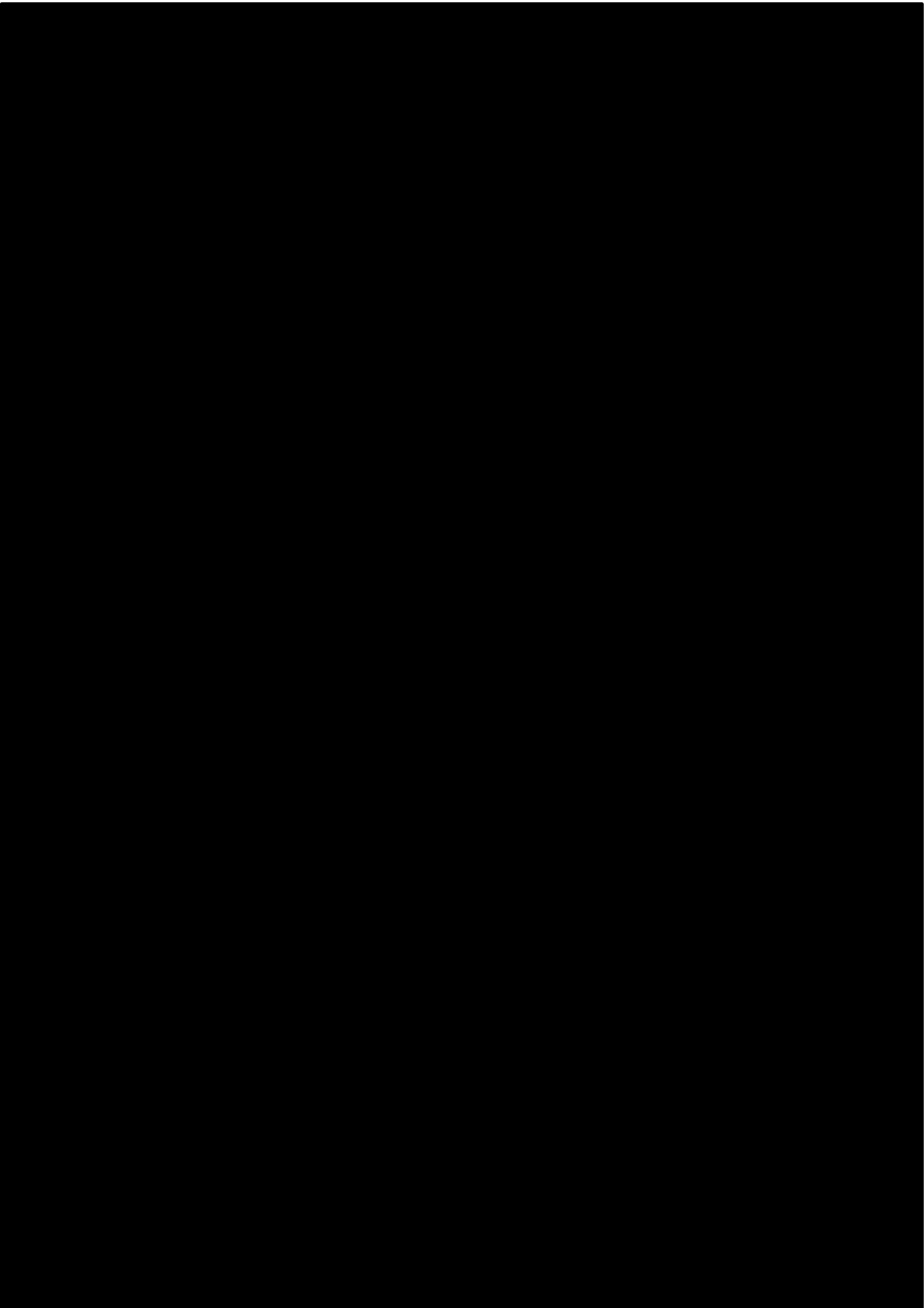
What challenges do you face in being able to implement and/or expand mitigation into your jurisdiction?

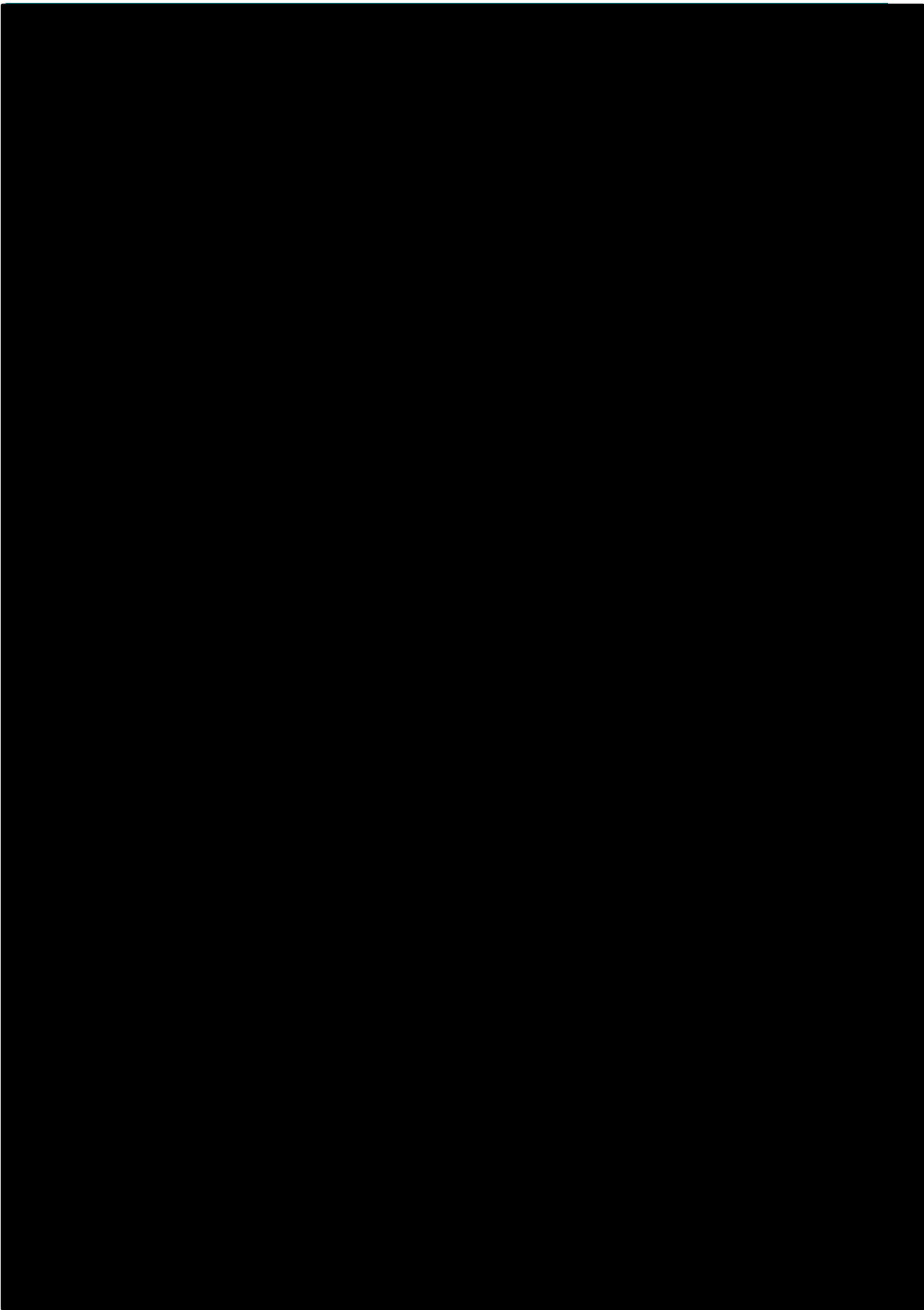
Like many agencies face, expanding our mitigation plans will have its budgetary restraints. The MBOP will continue to research funding options to improve this process.

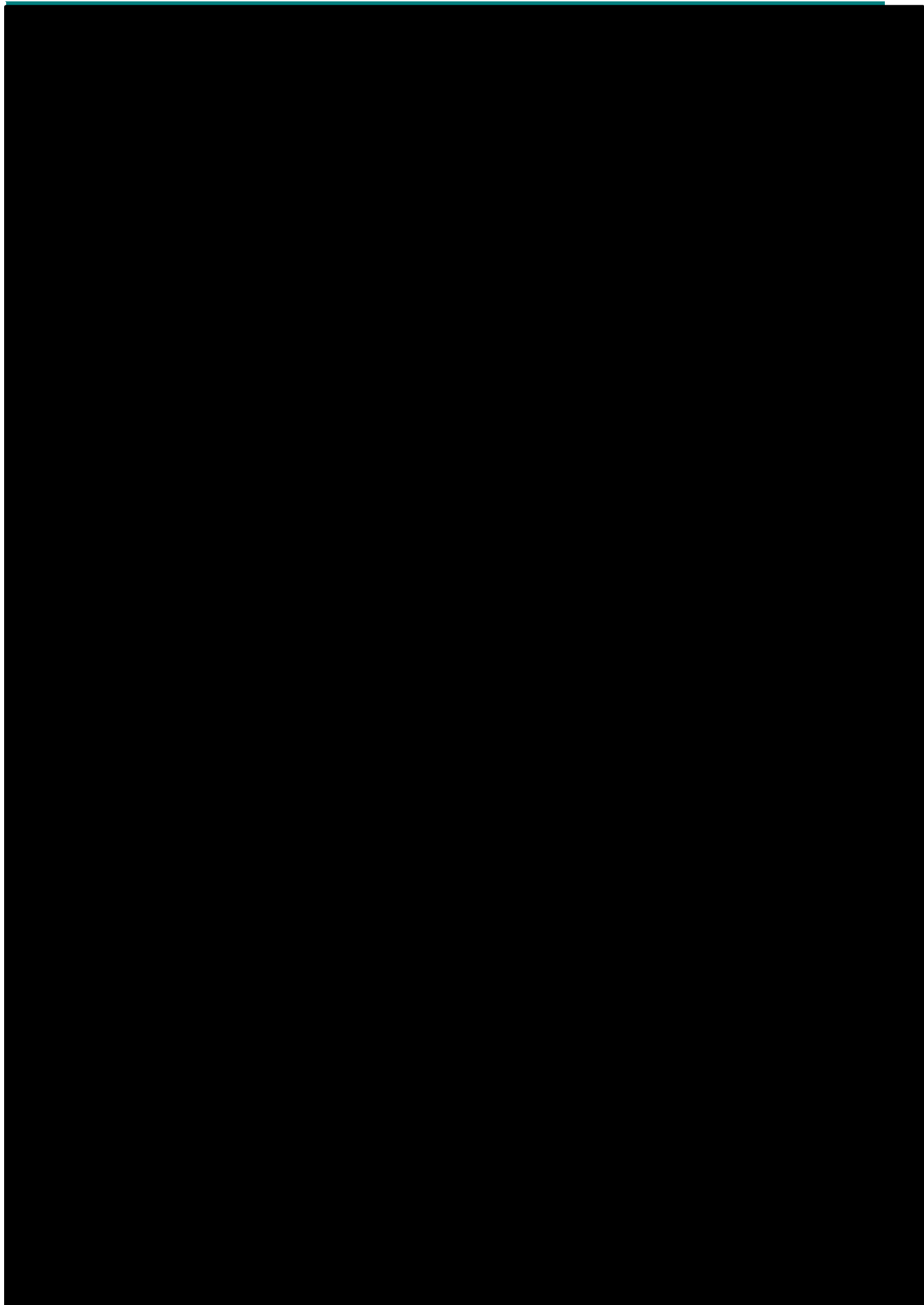
Appendix E: Critical Facilities and Infrastructure

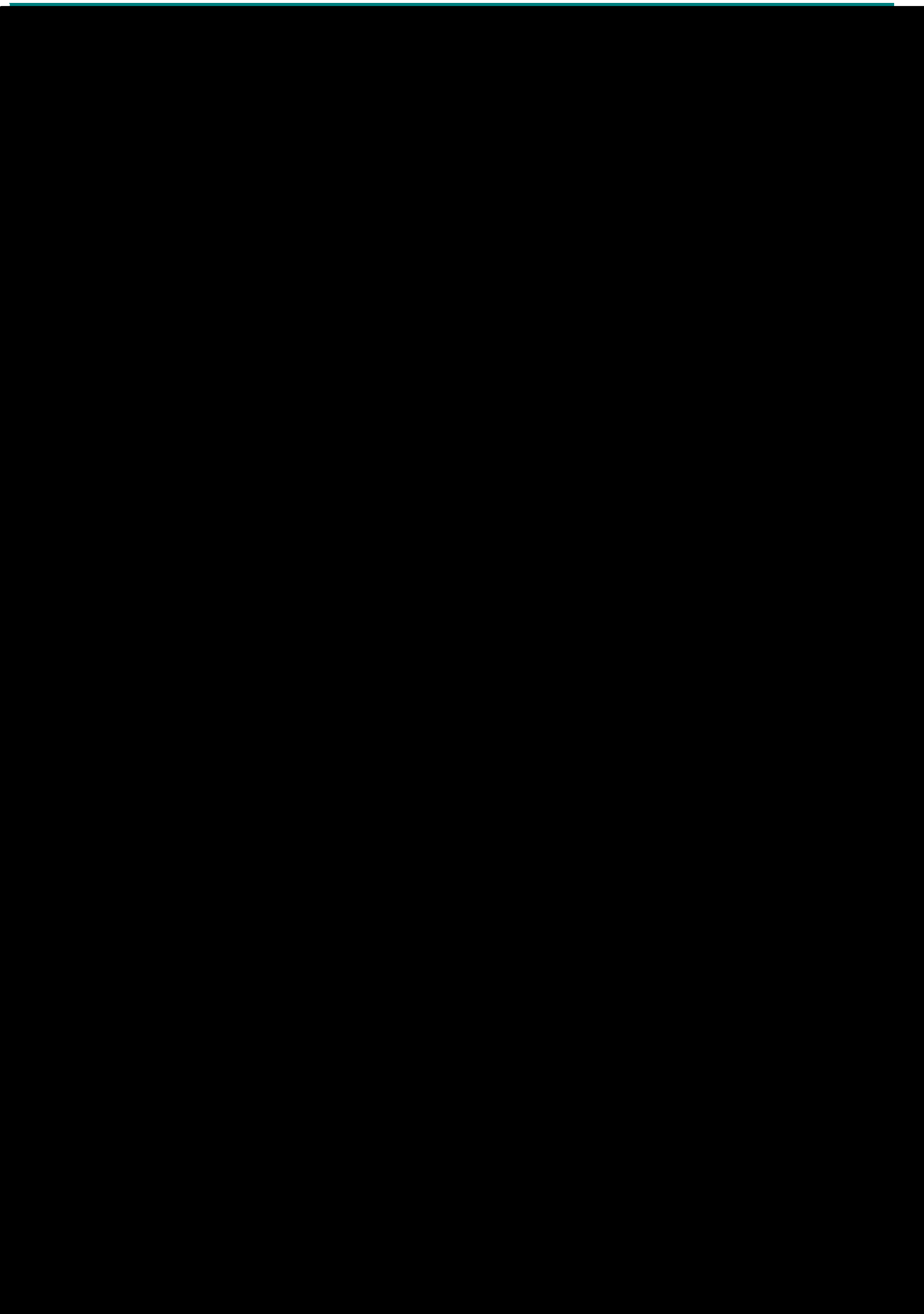


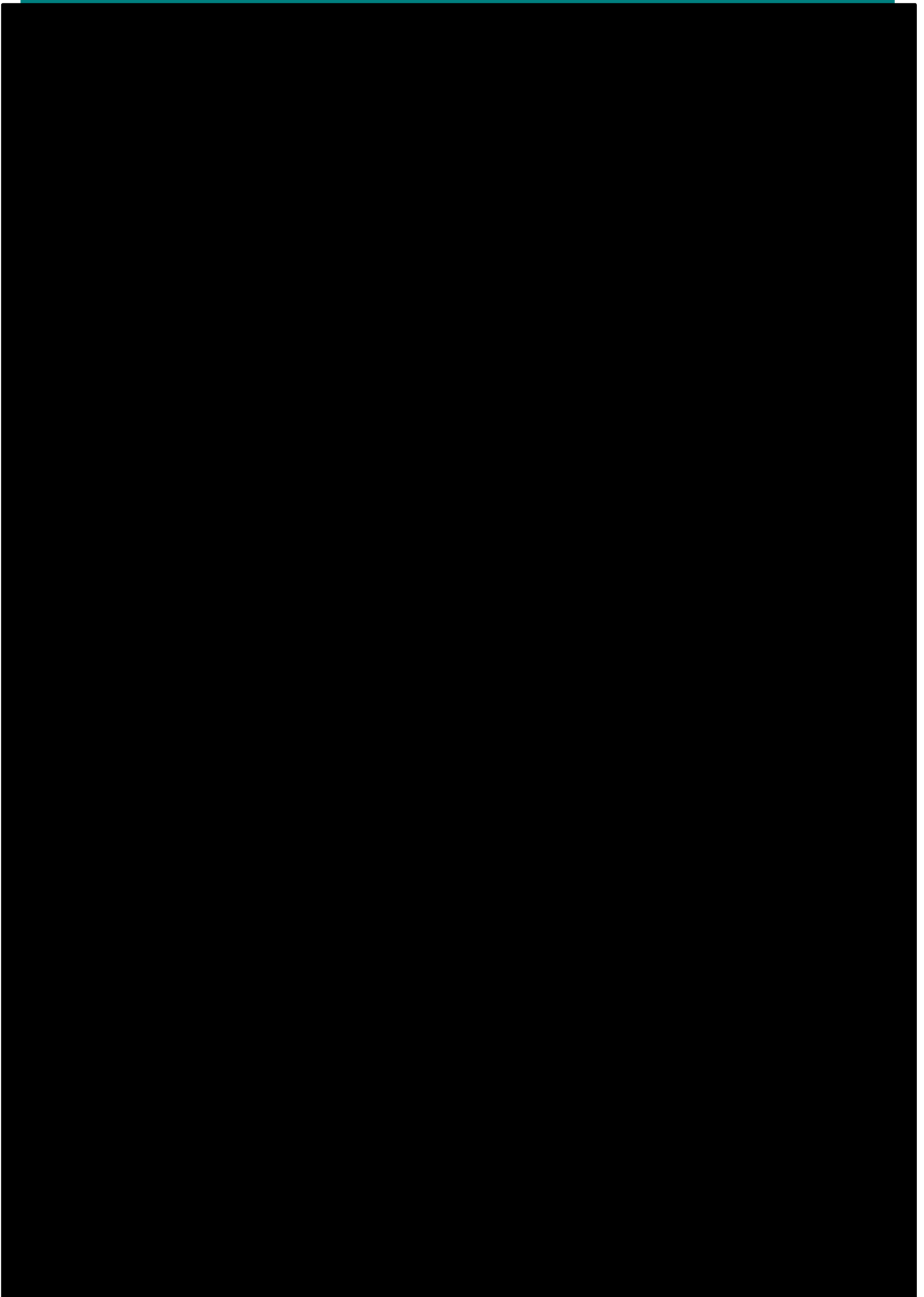


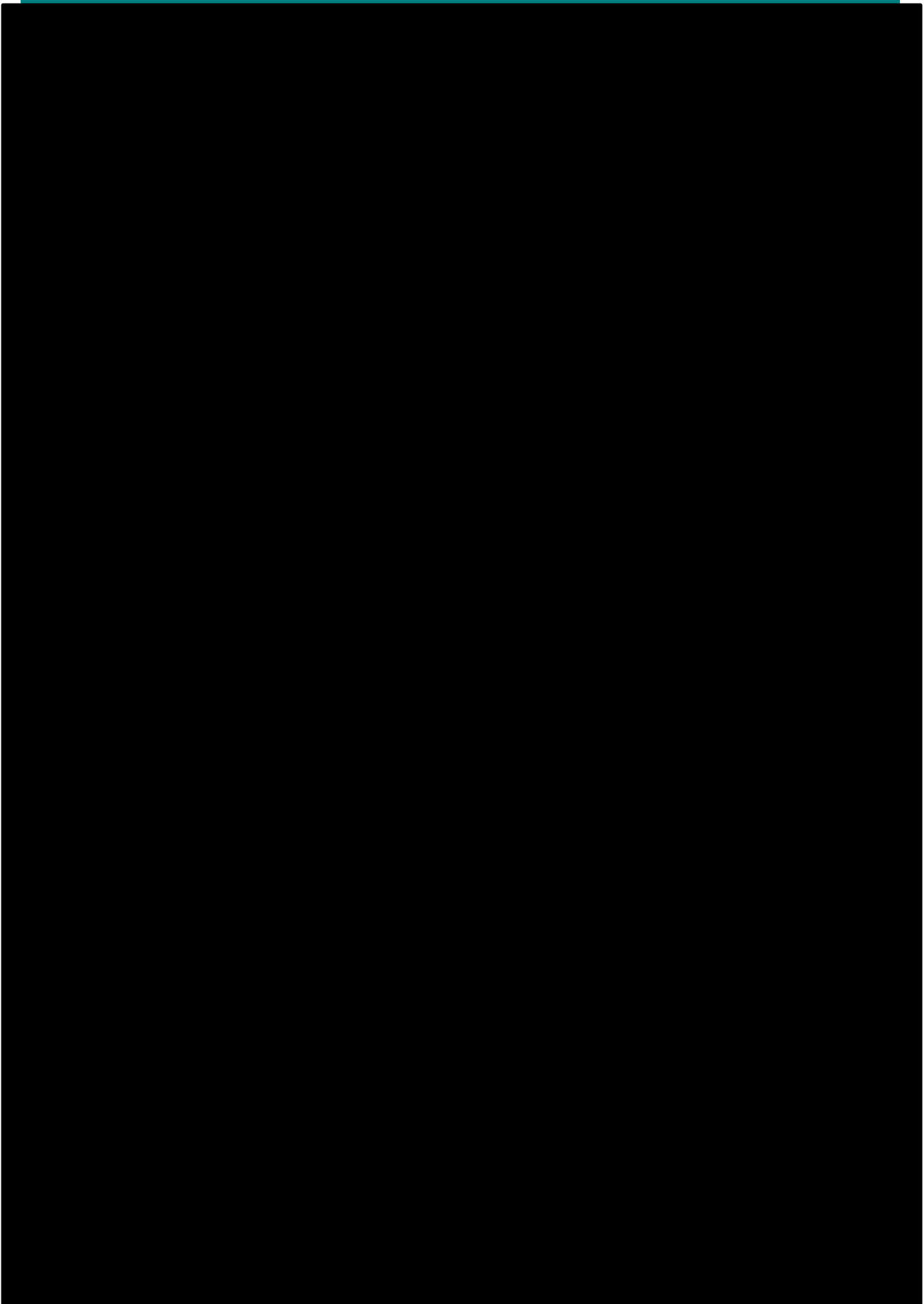


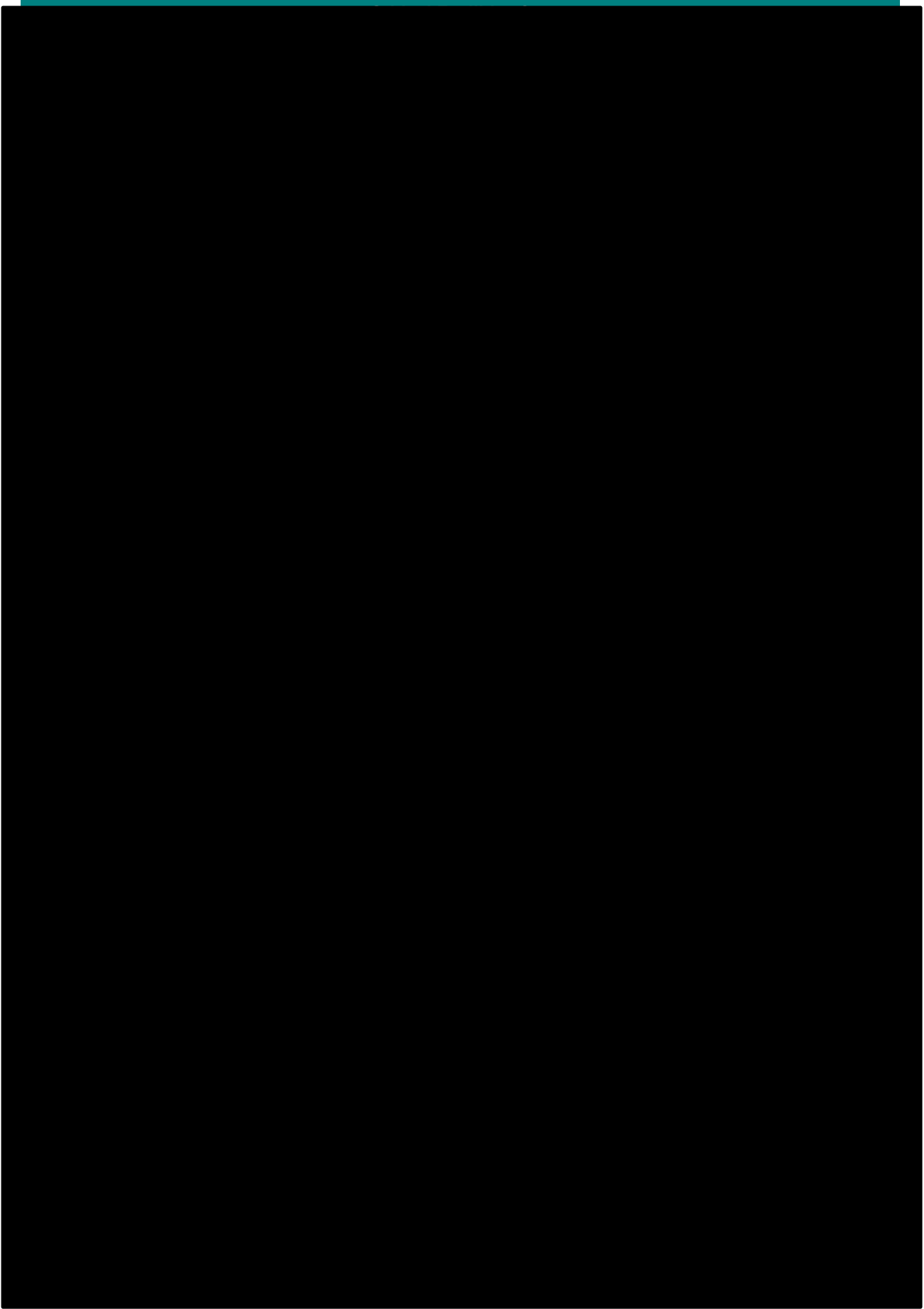


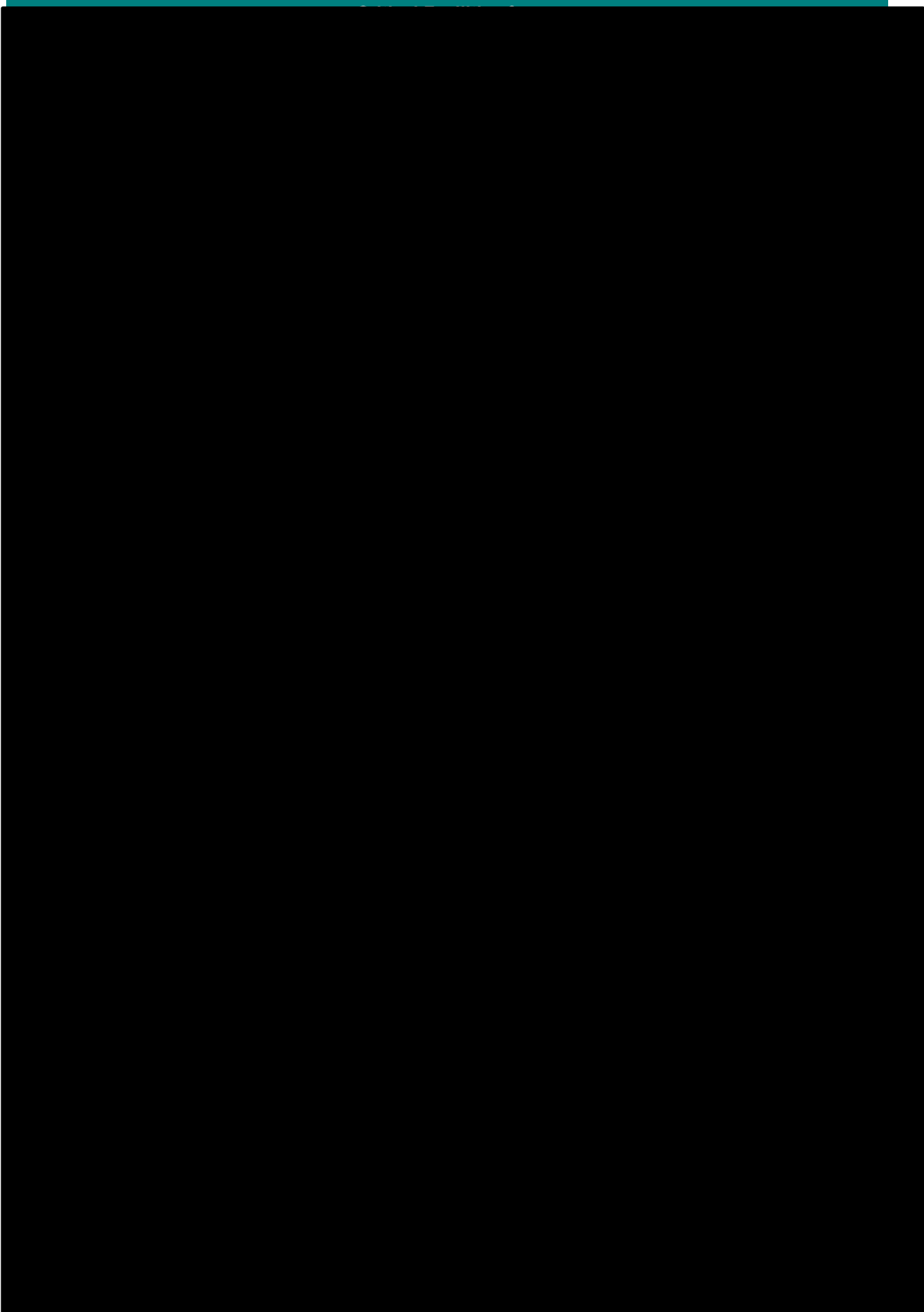


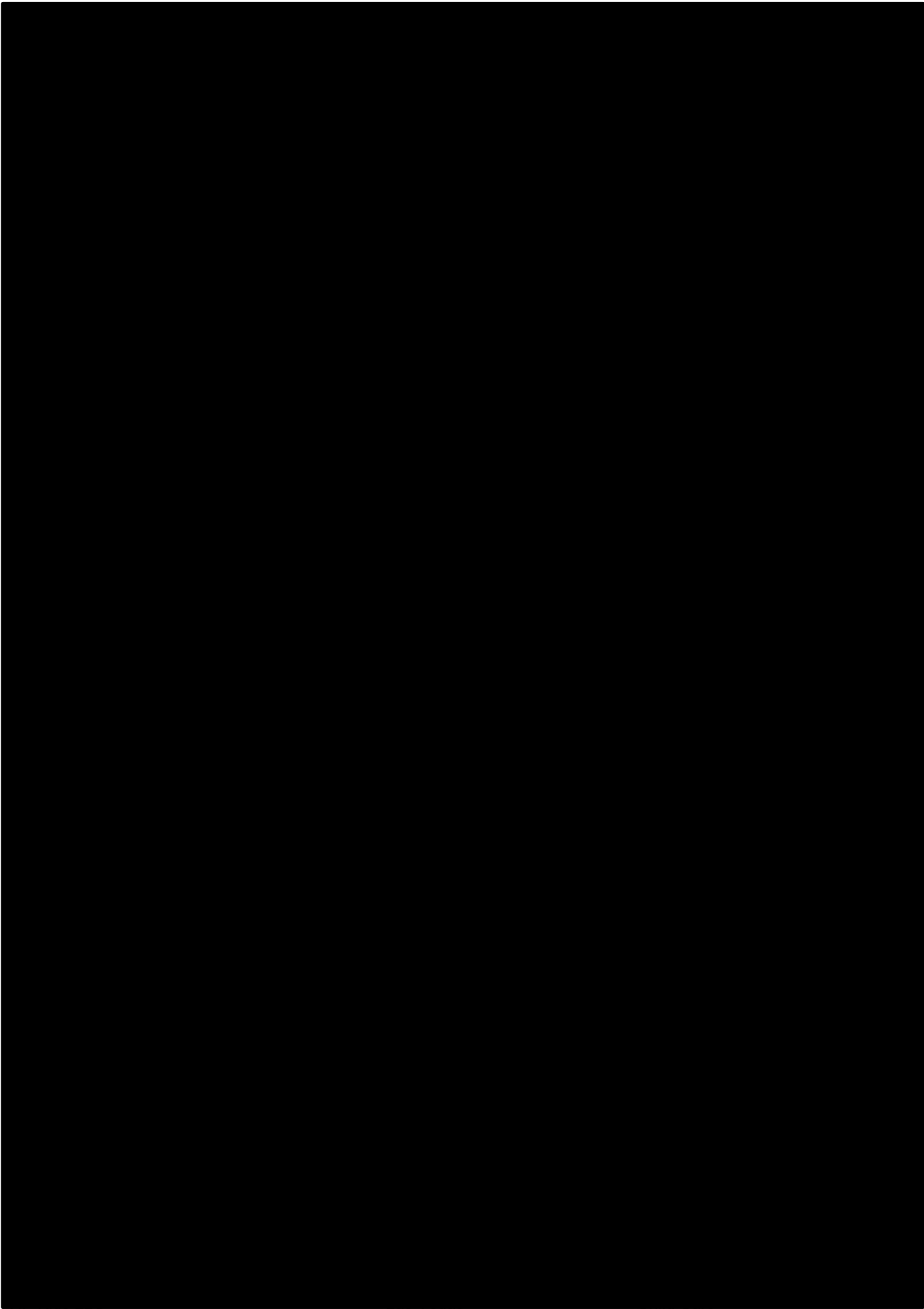


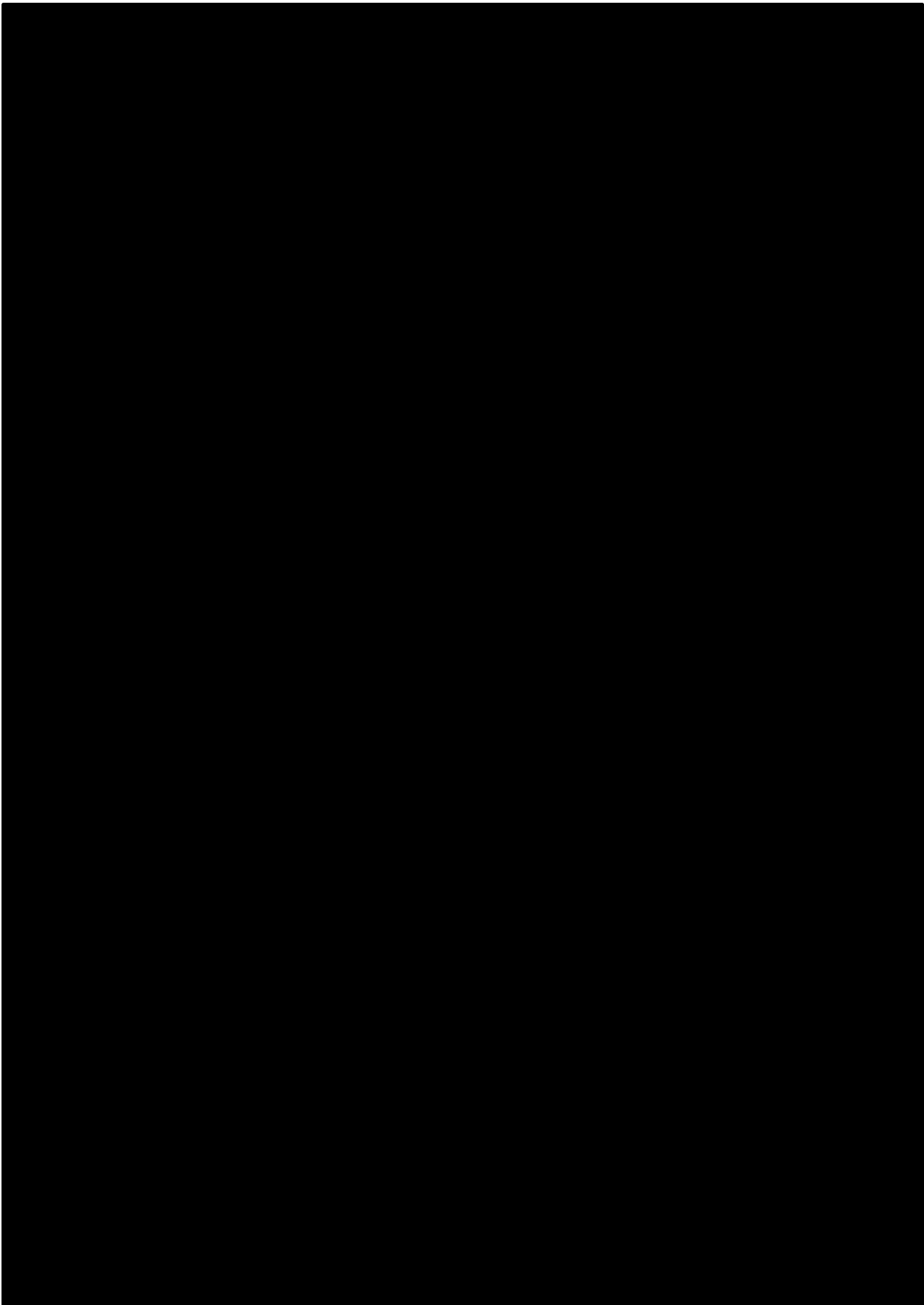


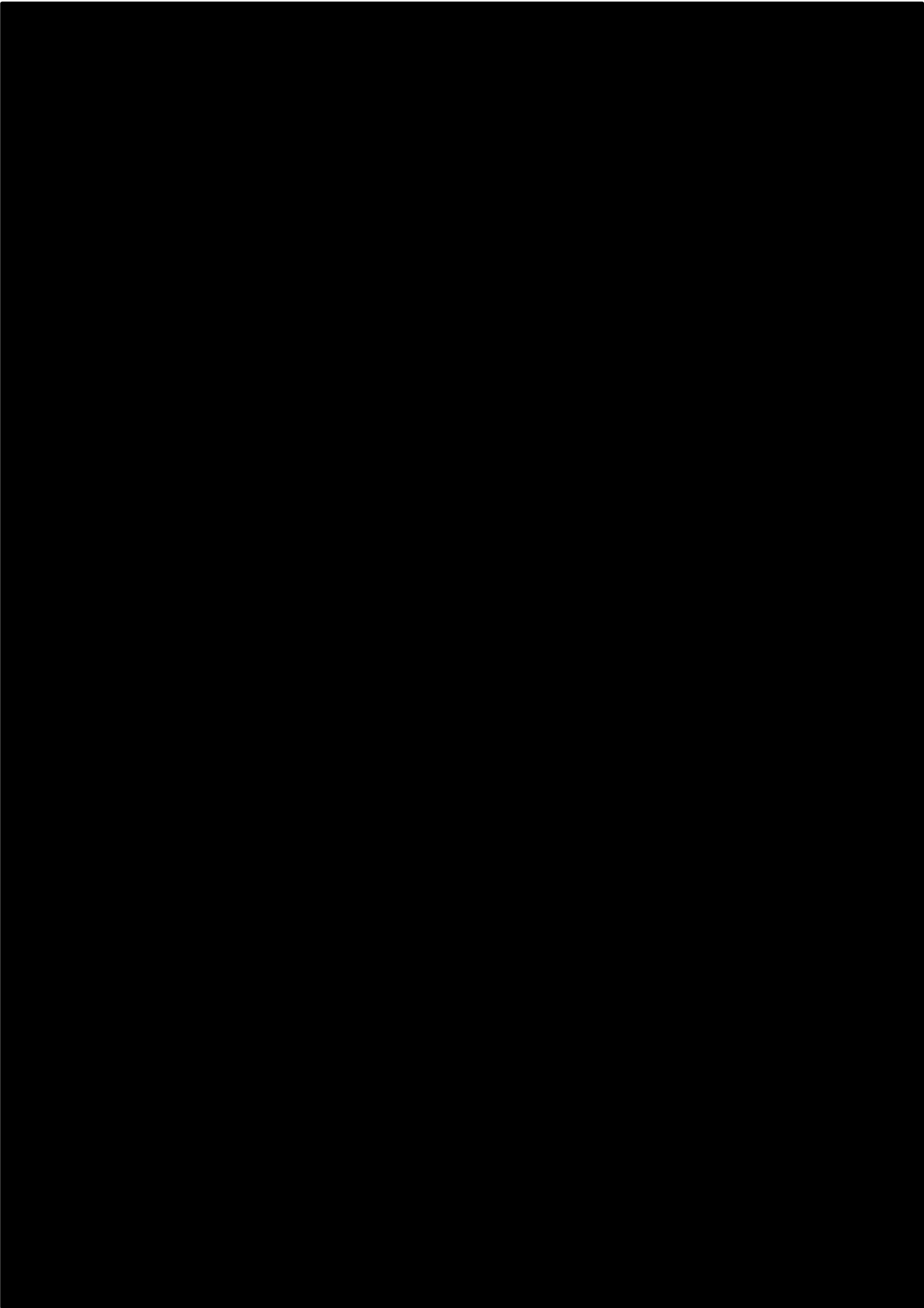


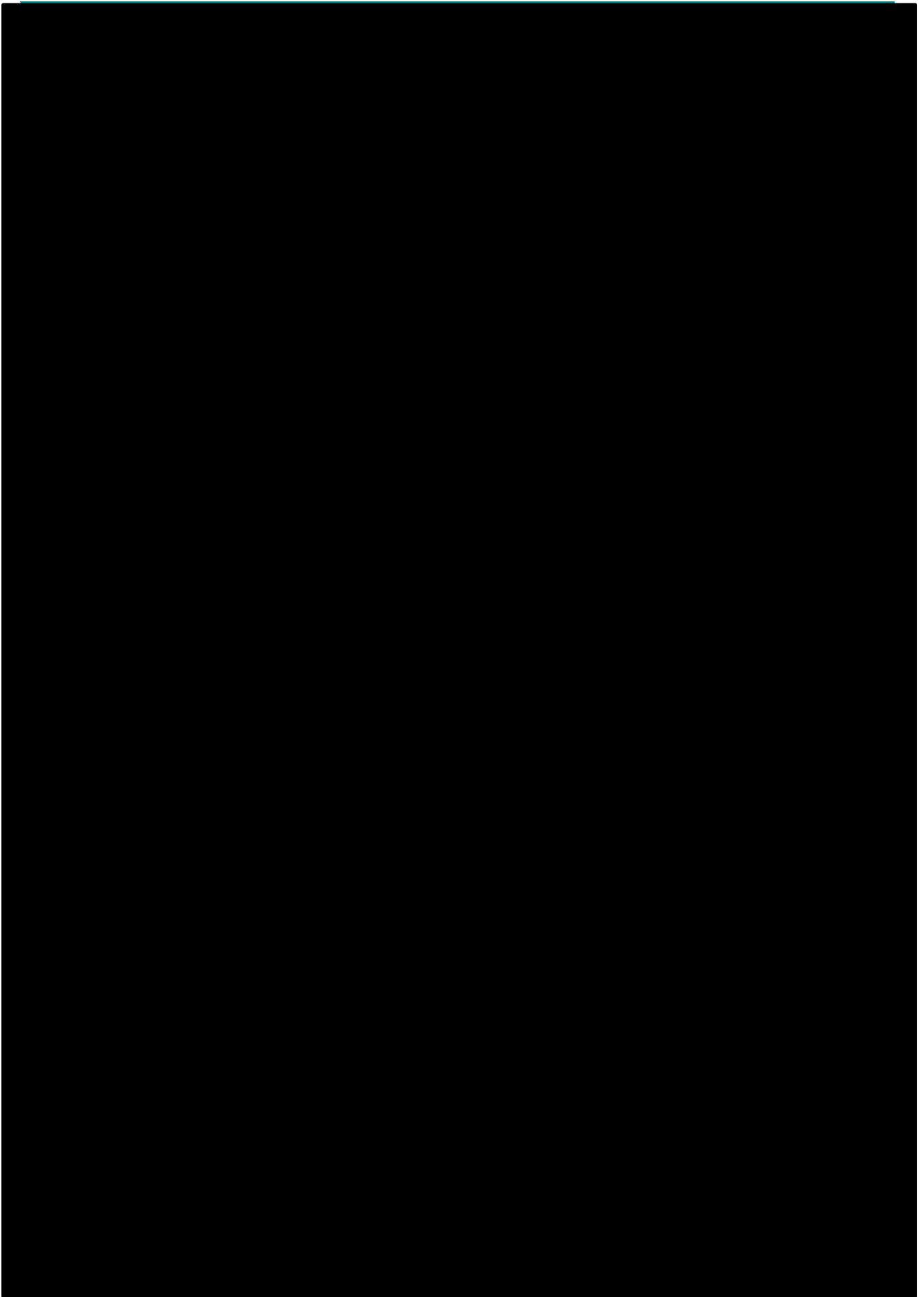


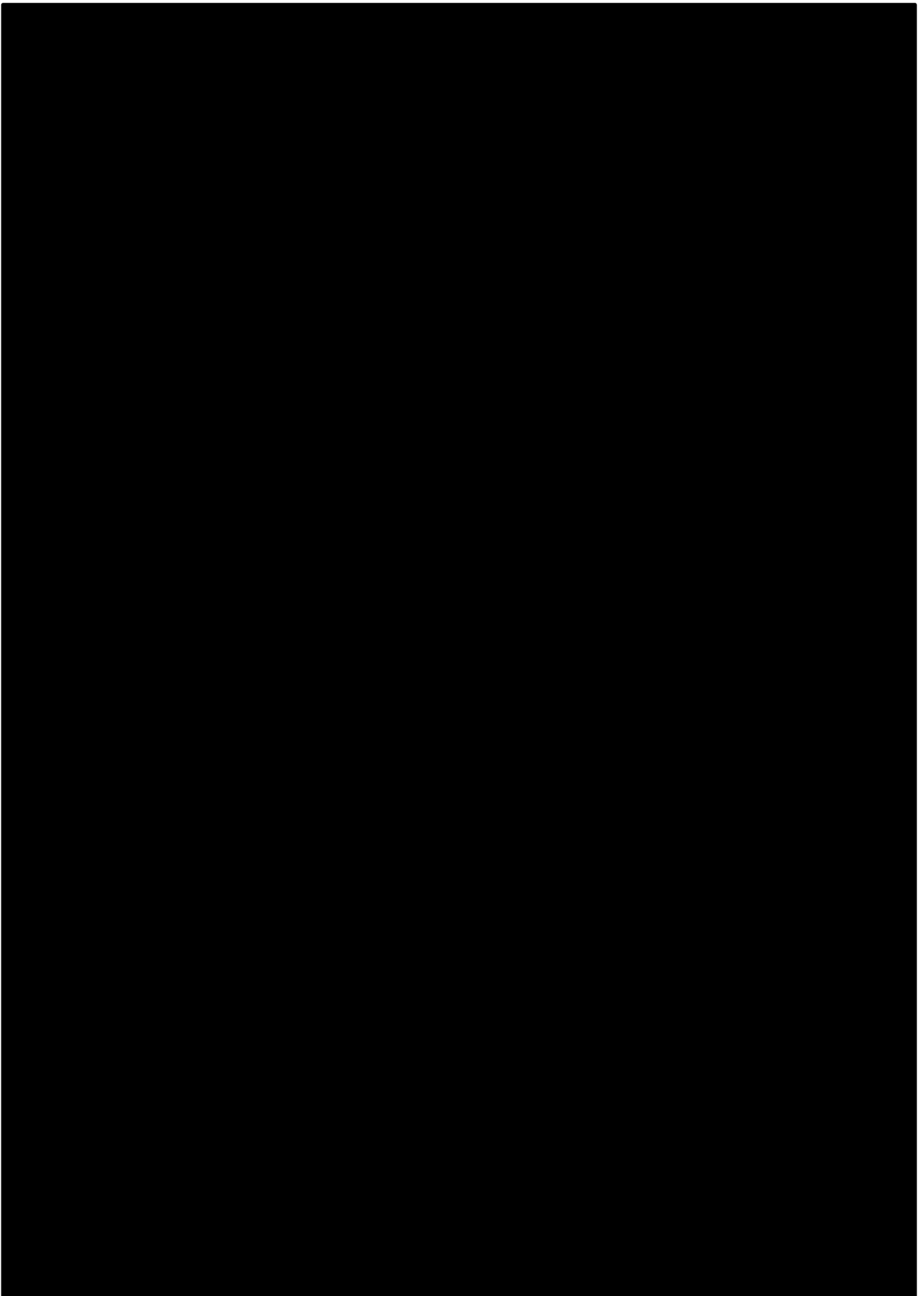


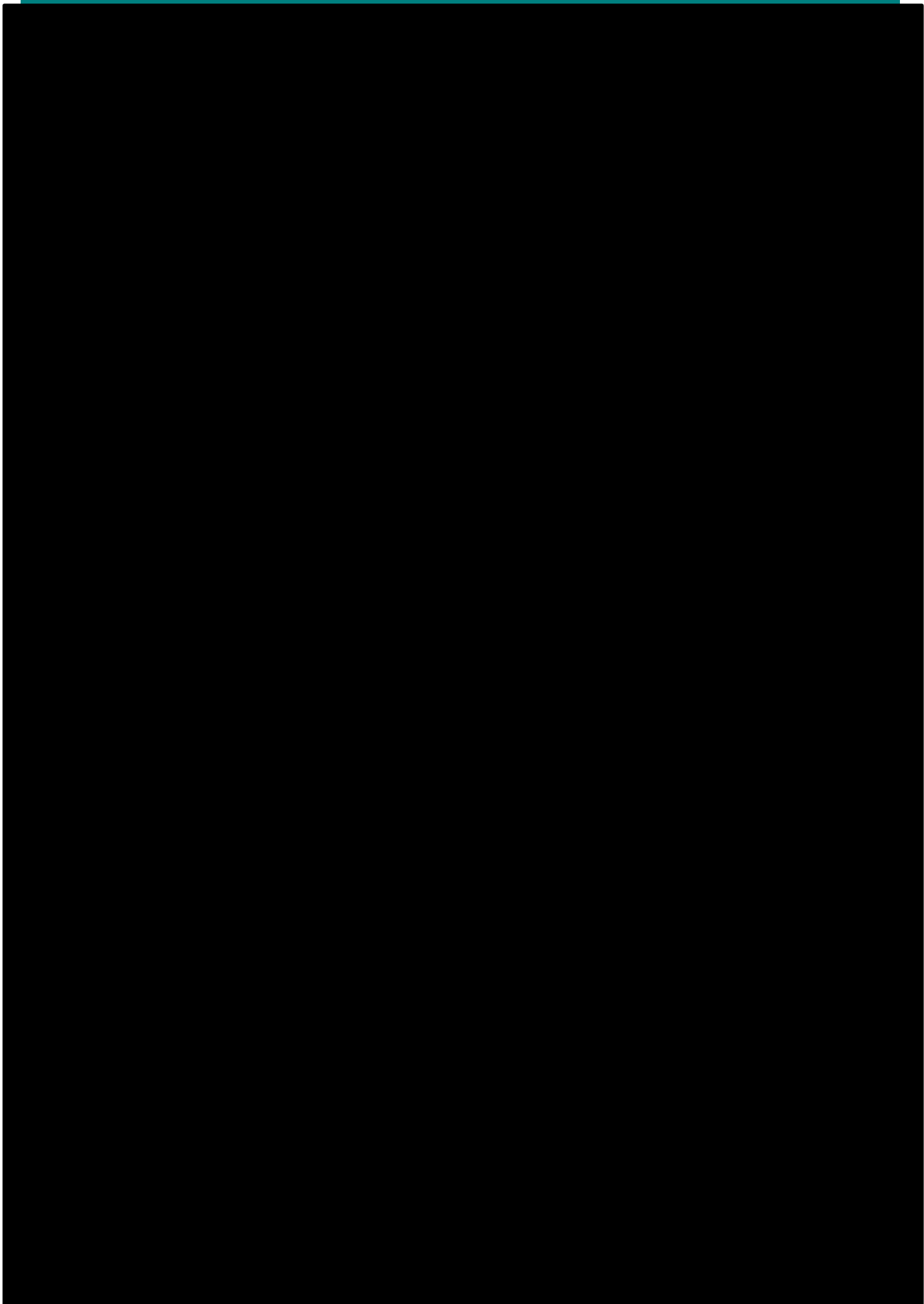


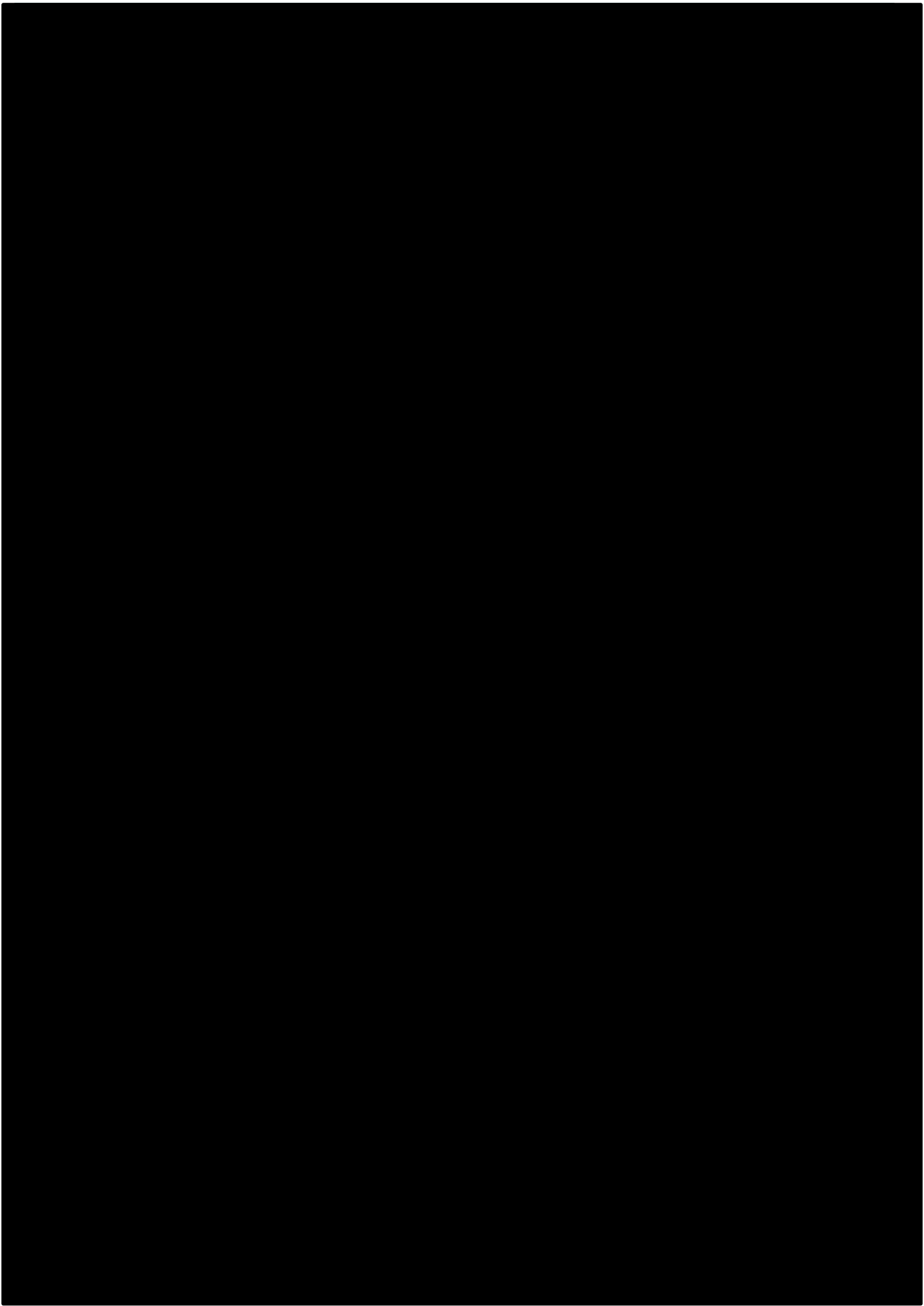


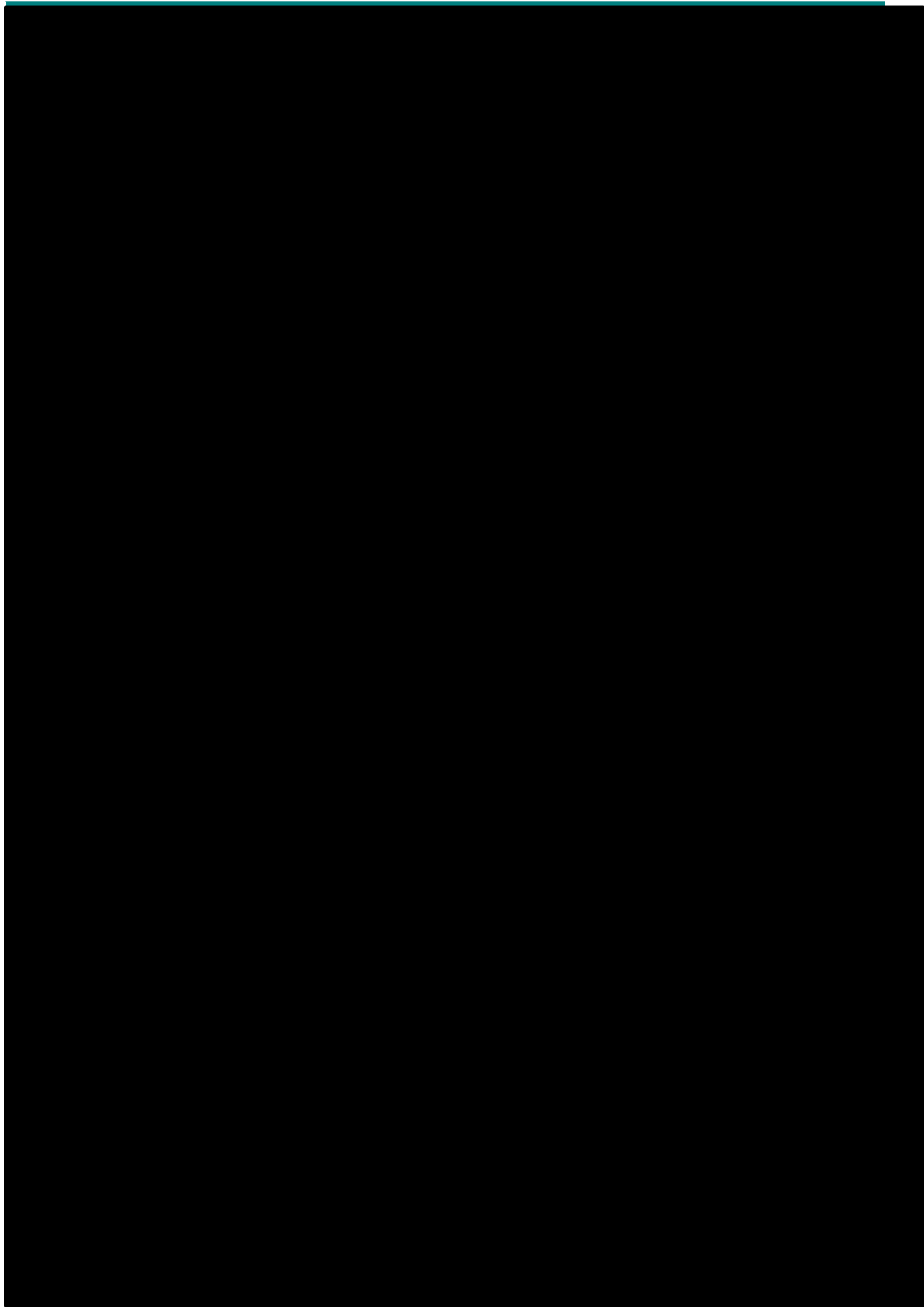


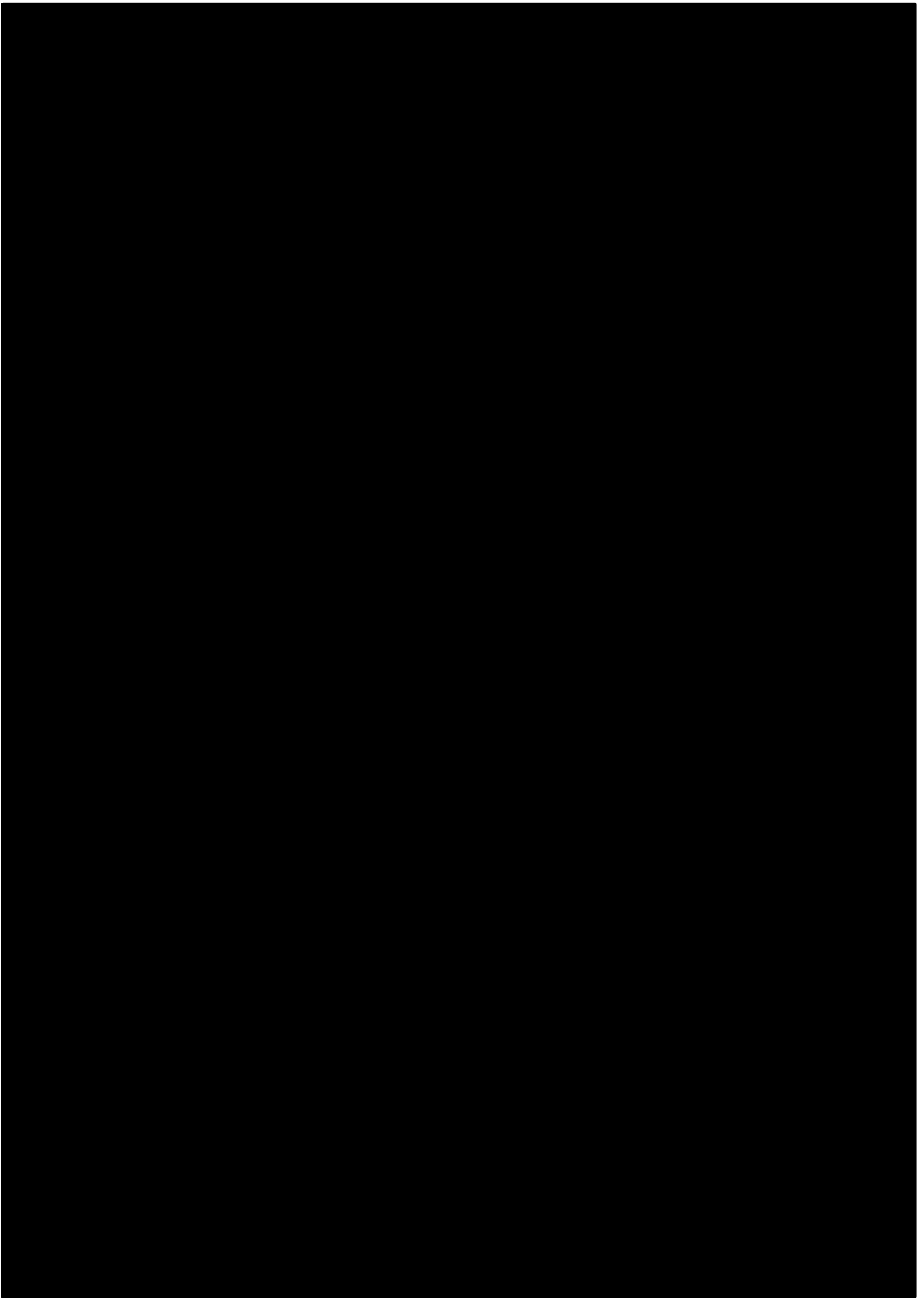


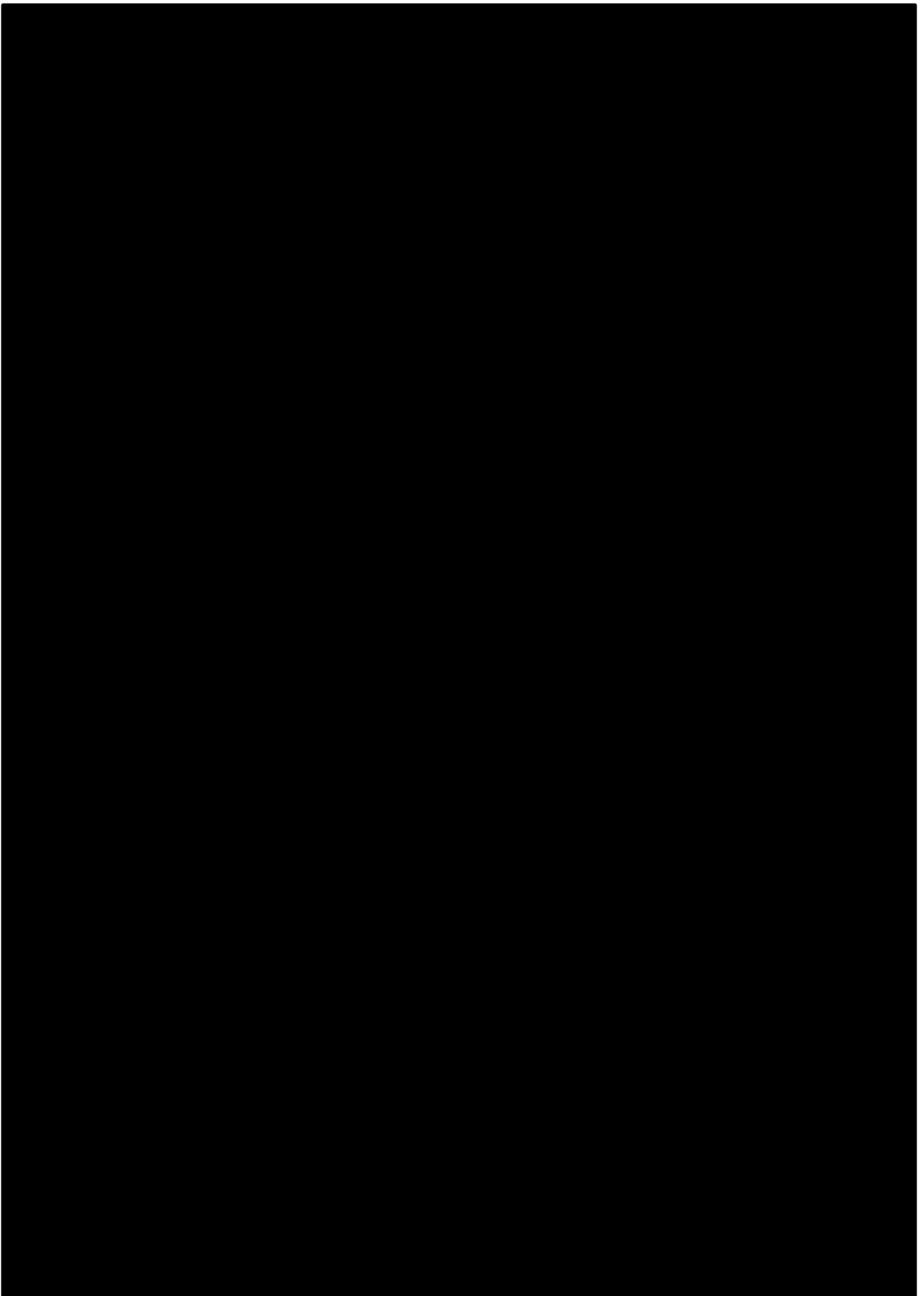


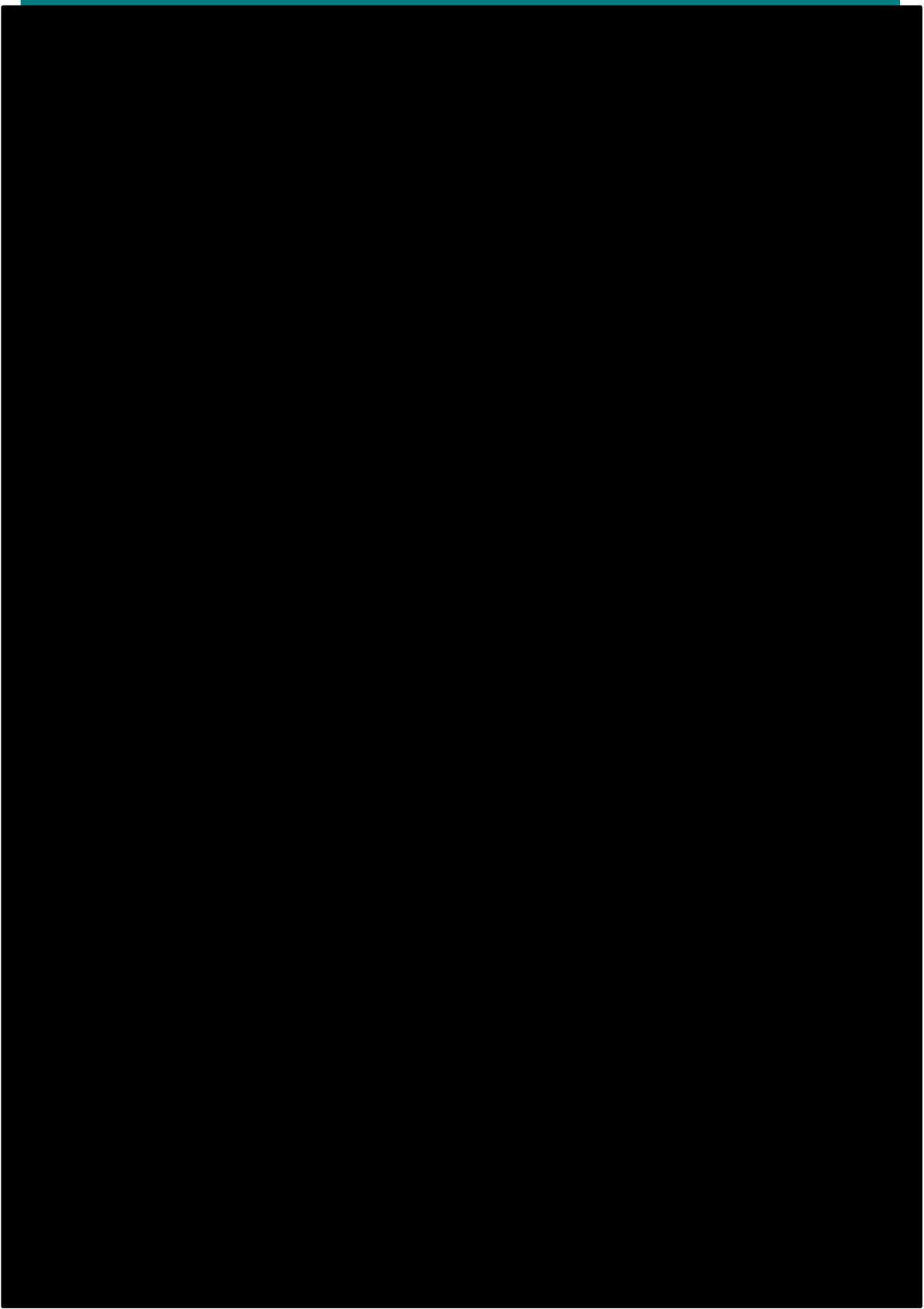


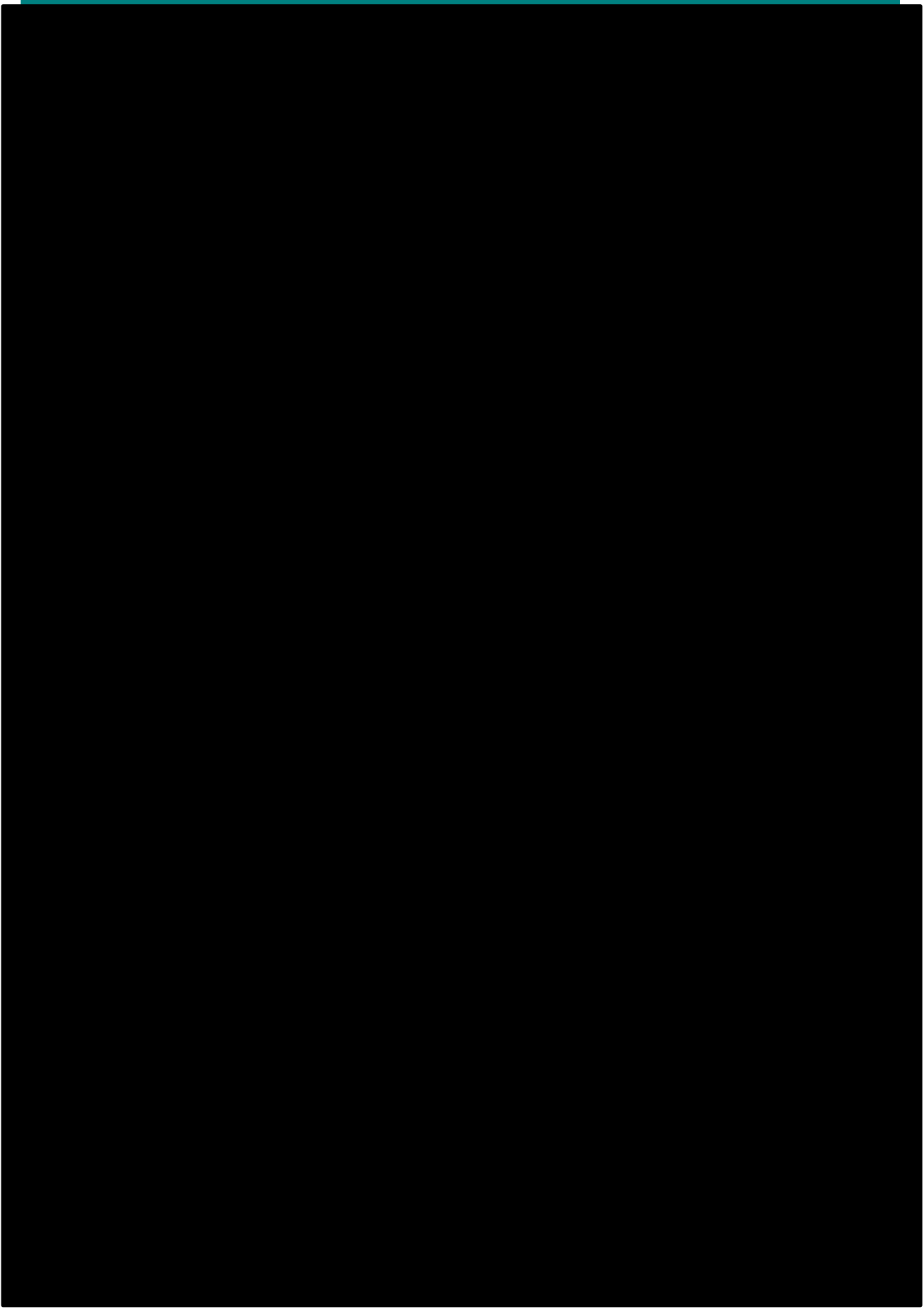


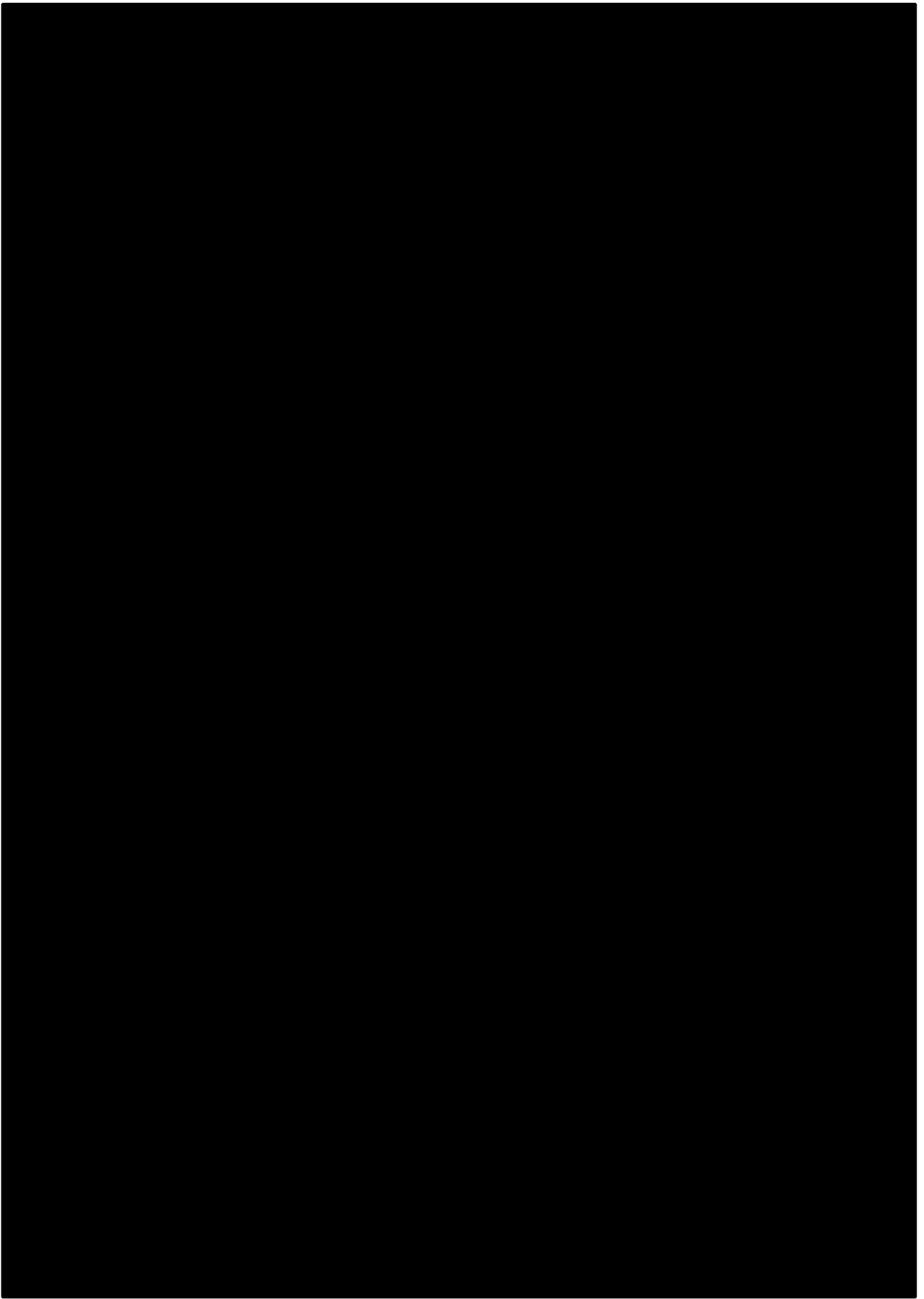


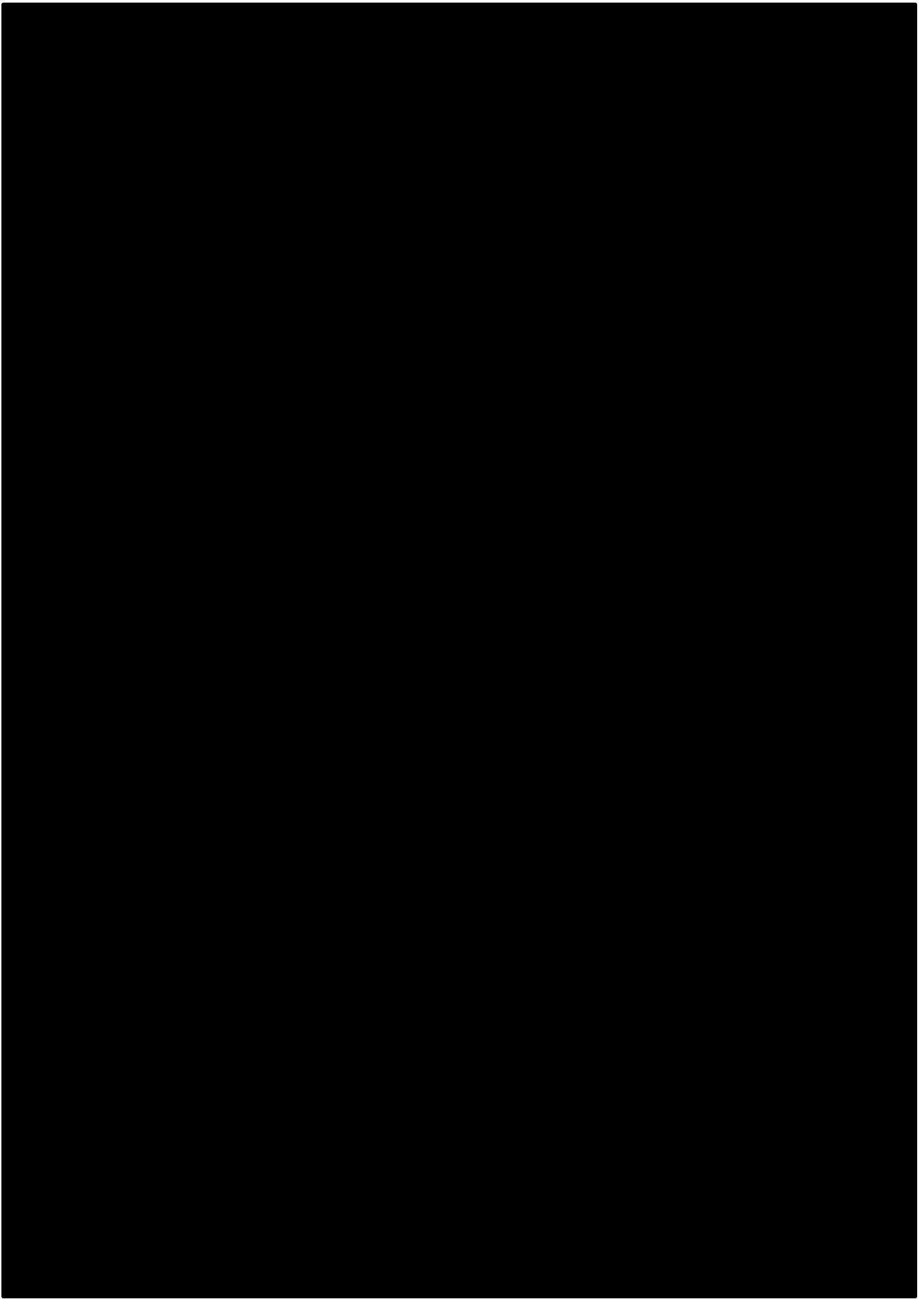


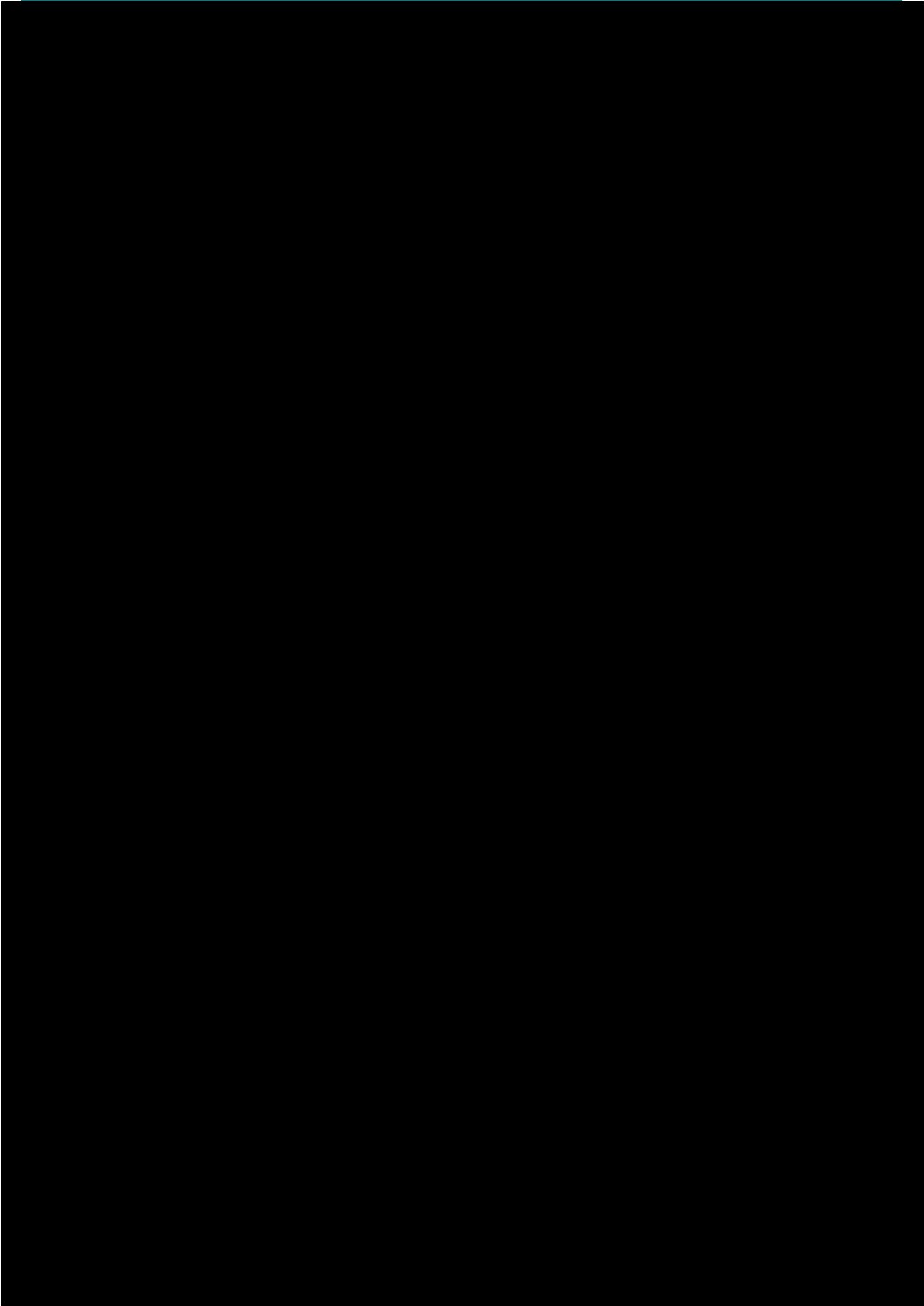


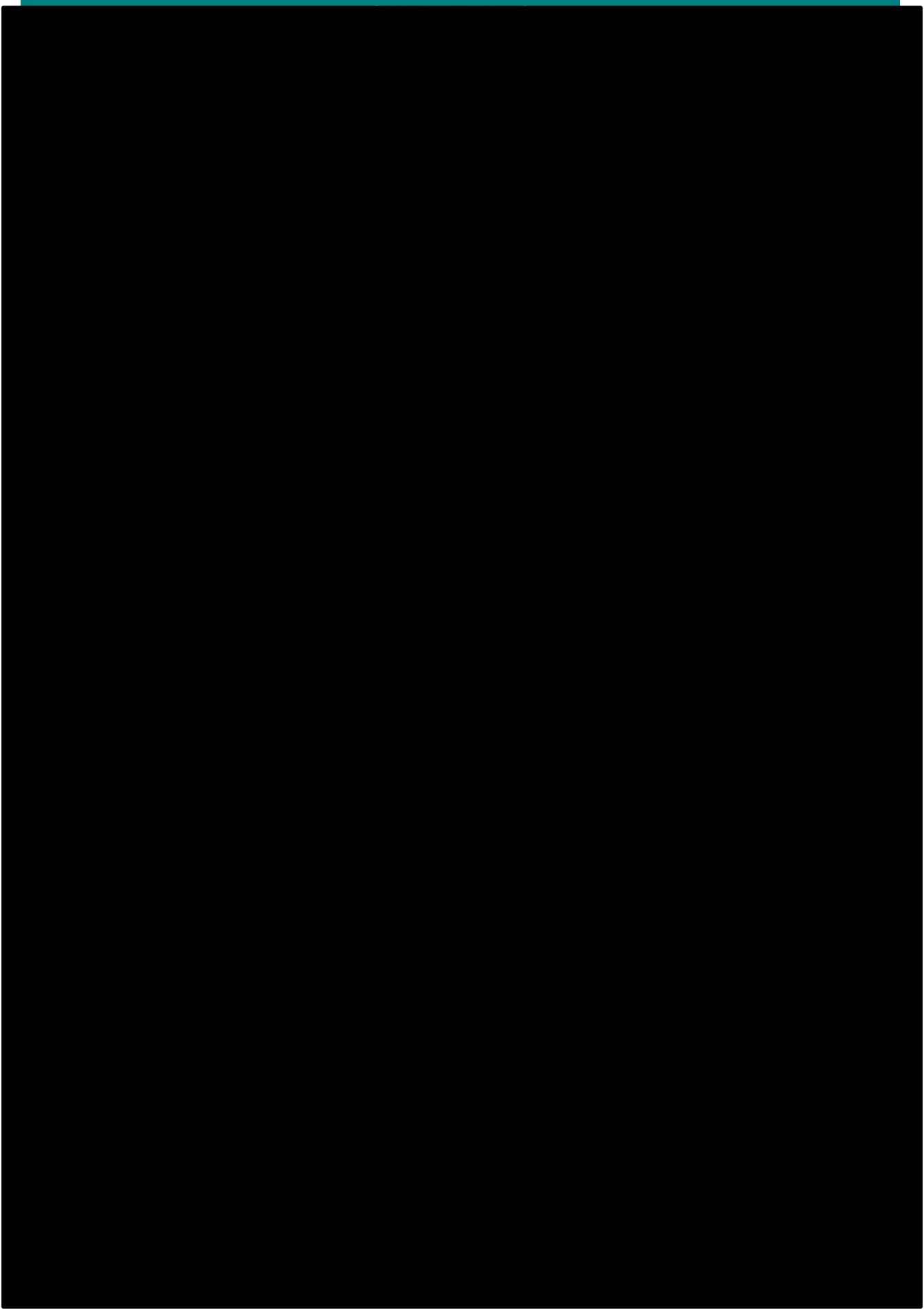


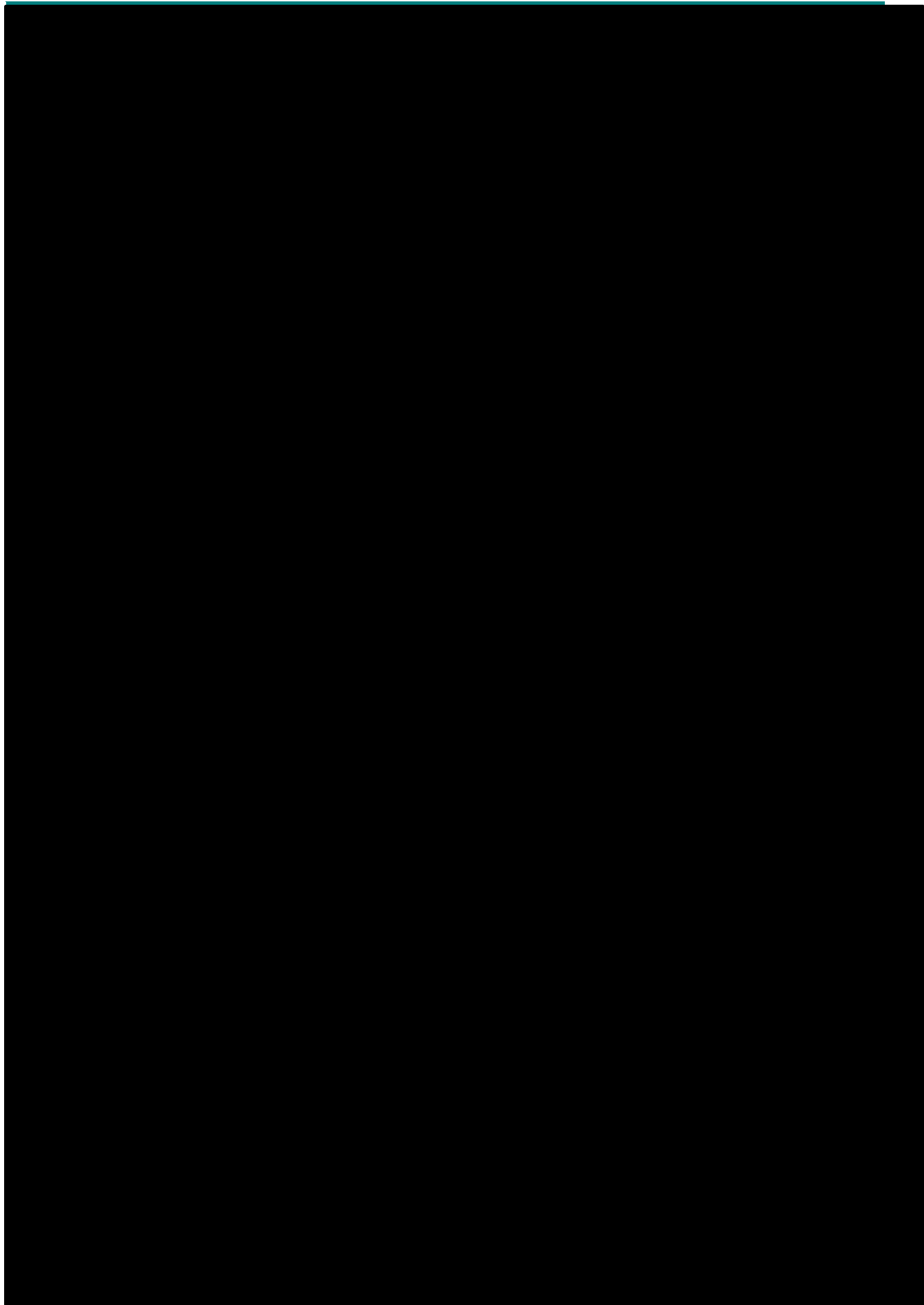


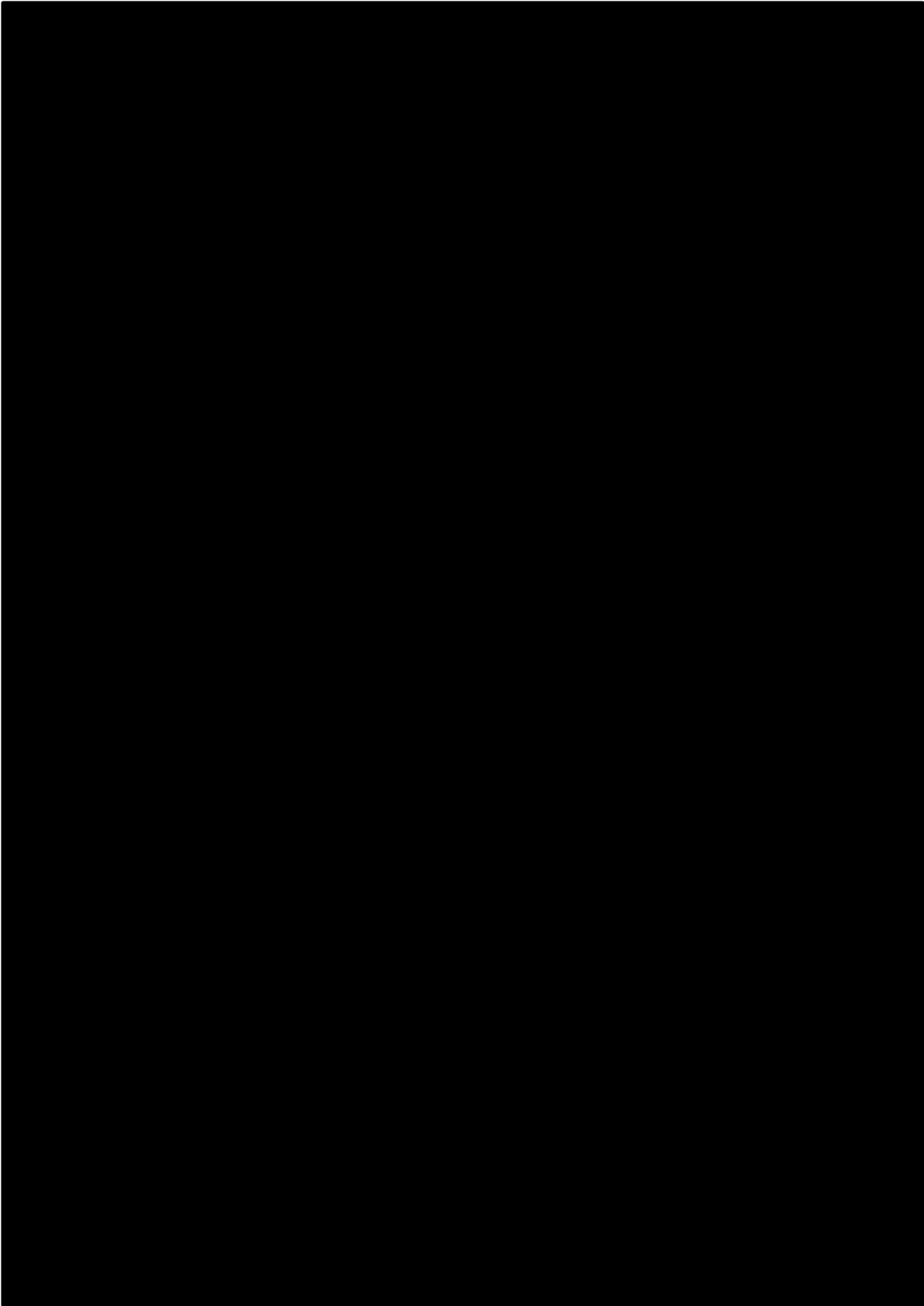


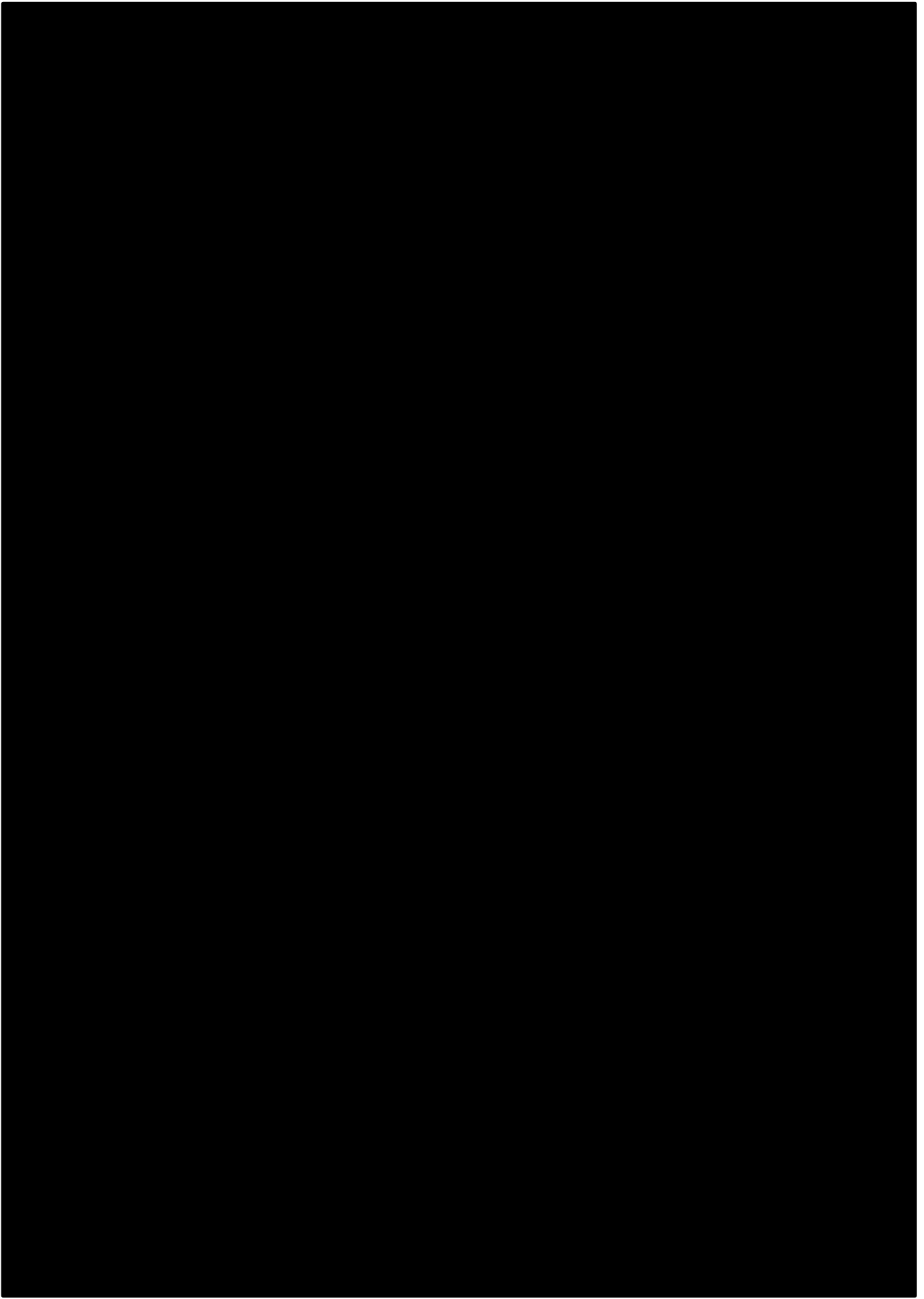


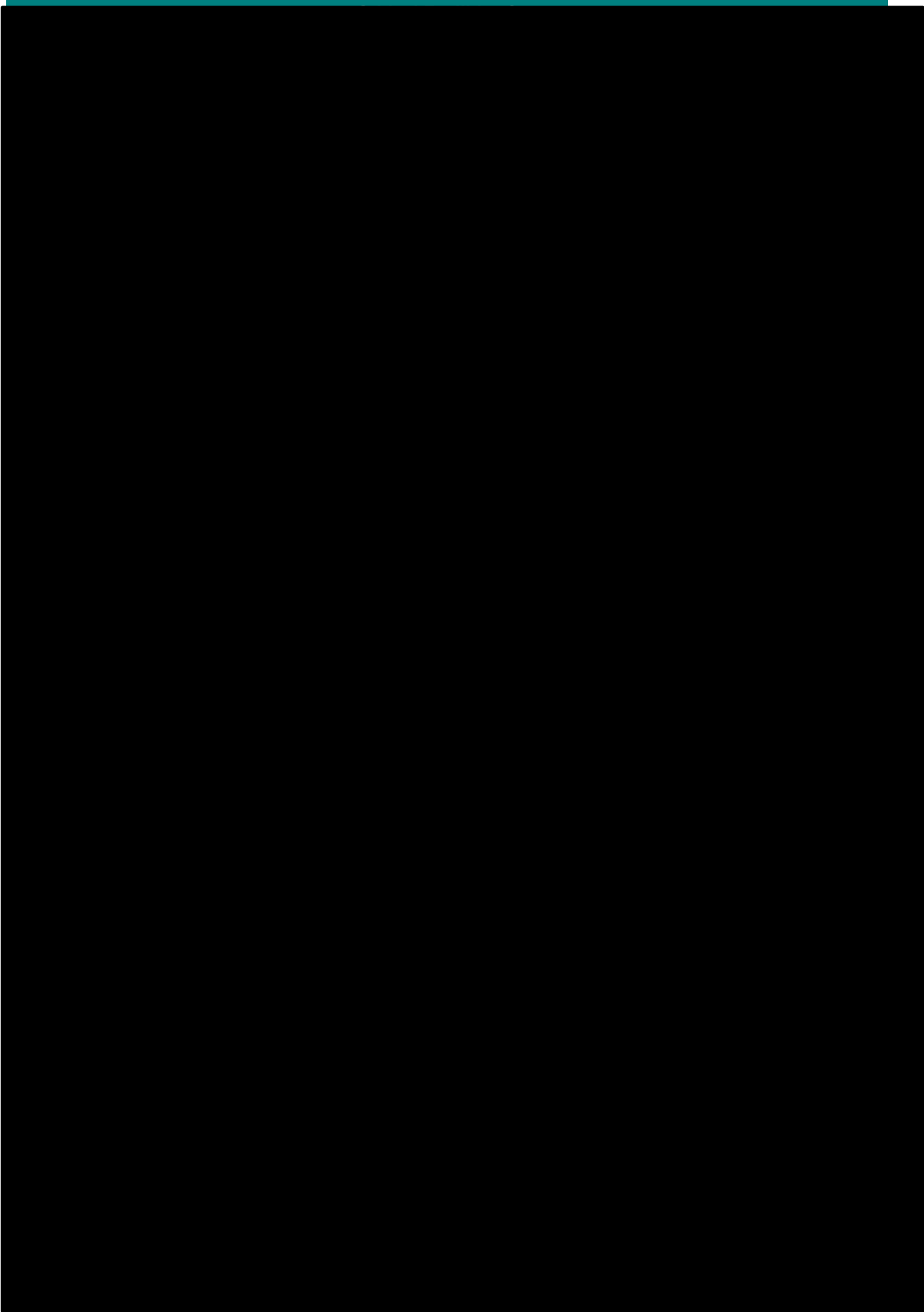


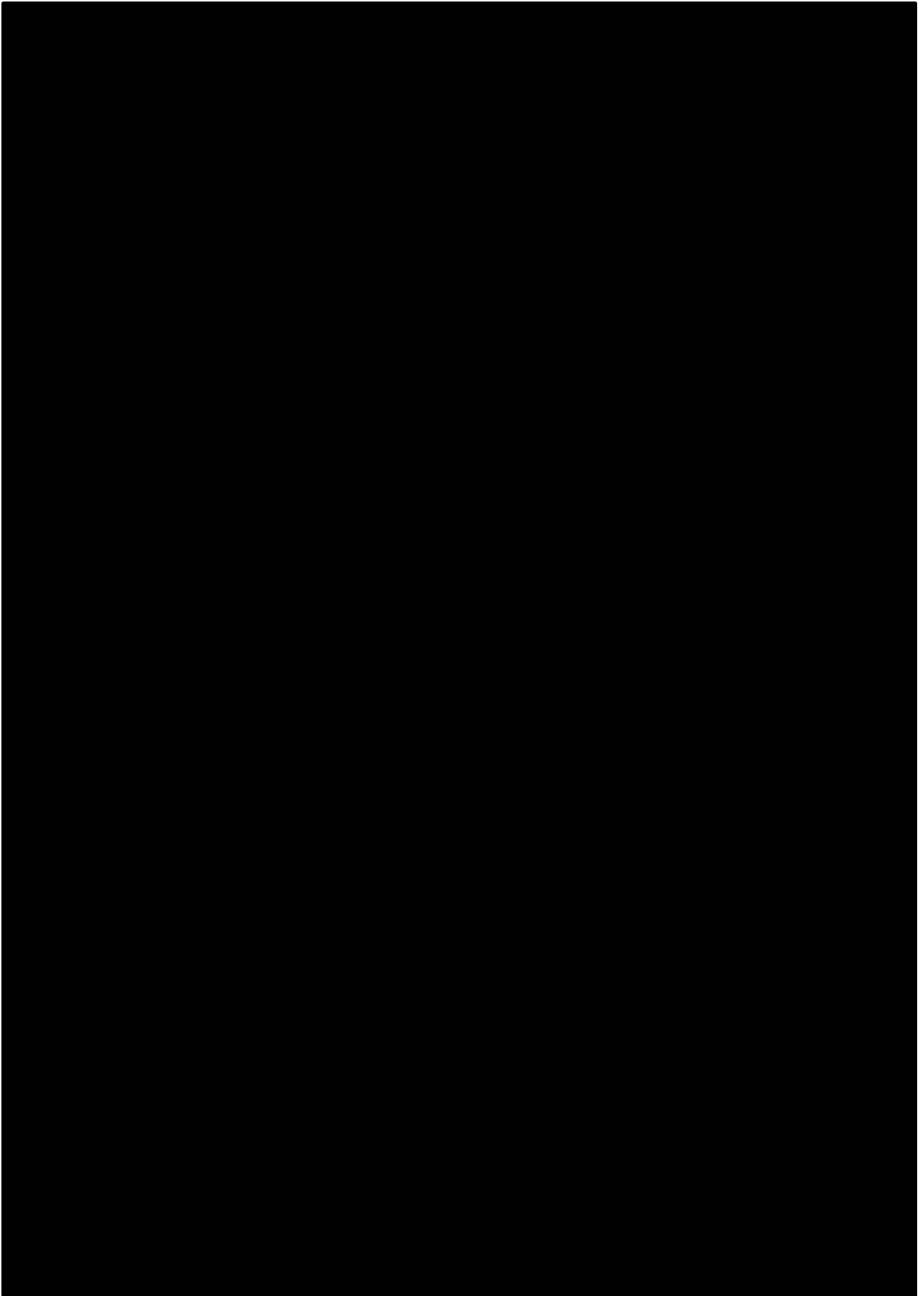


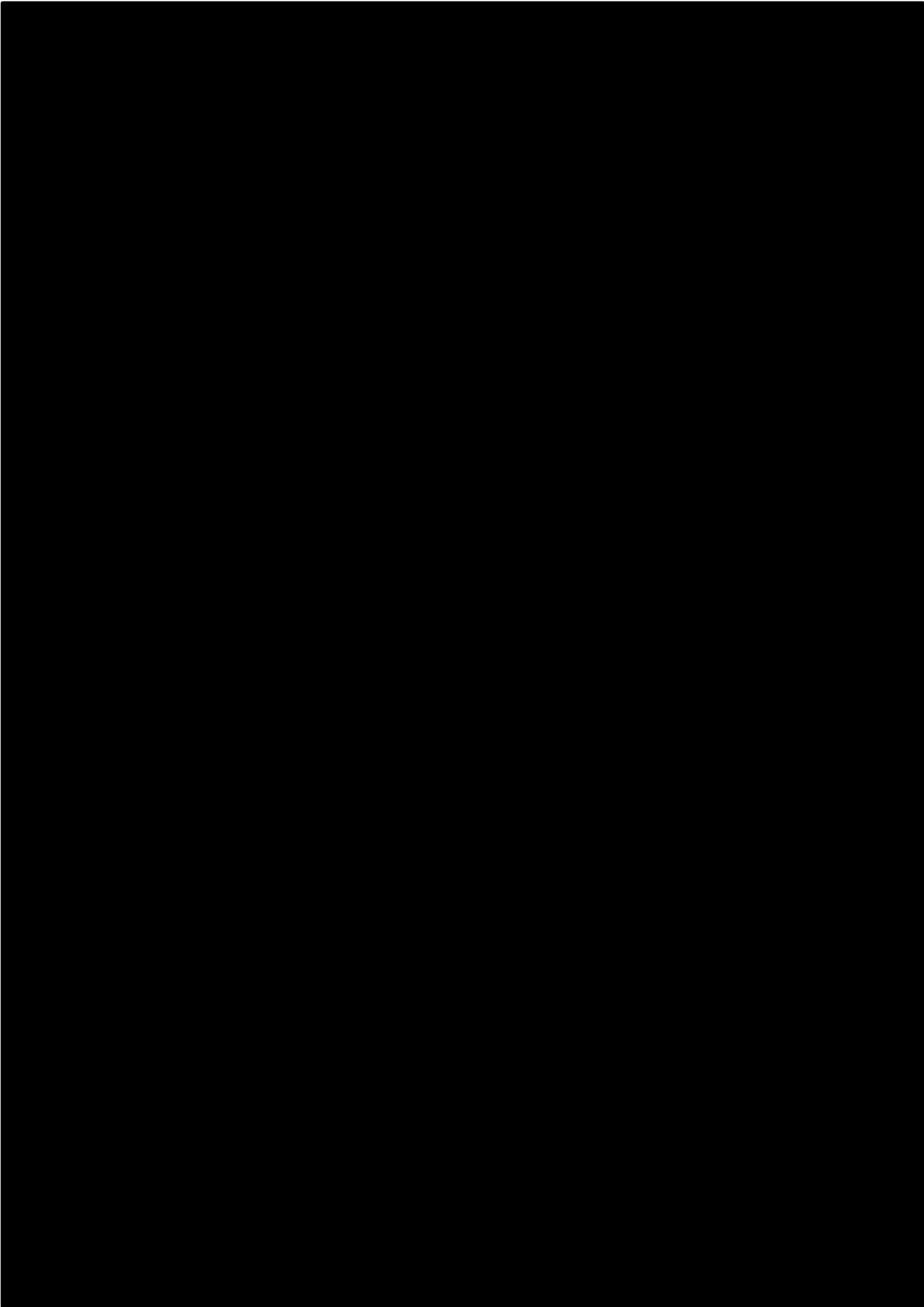


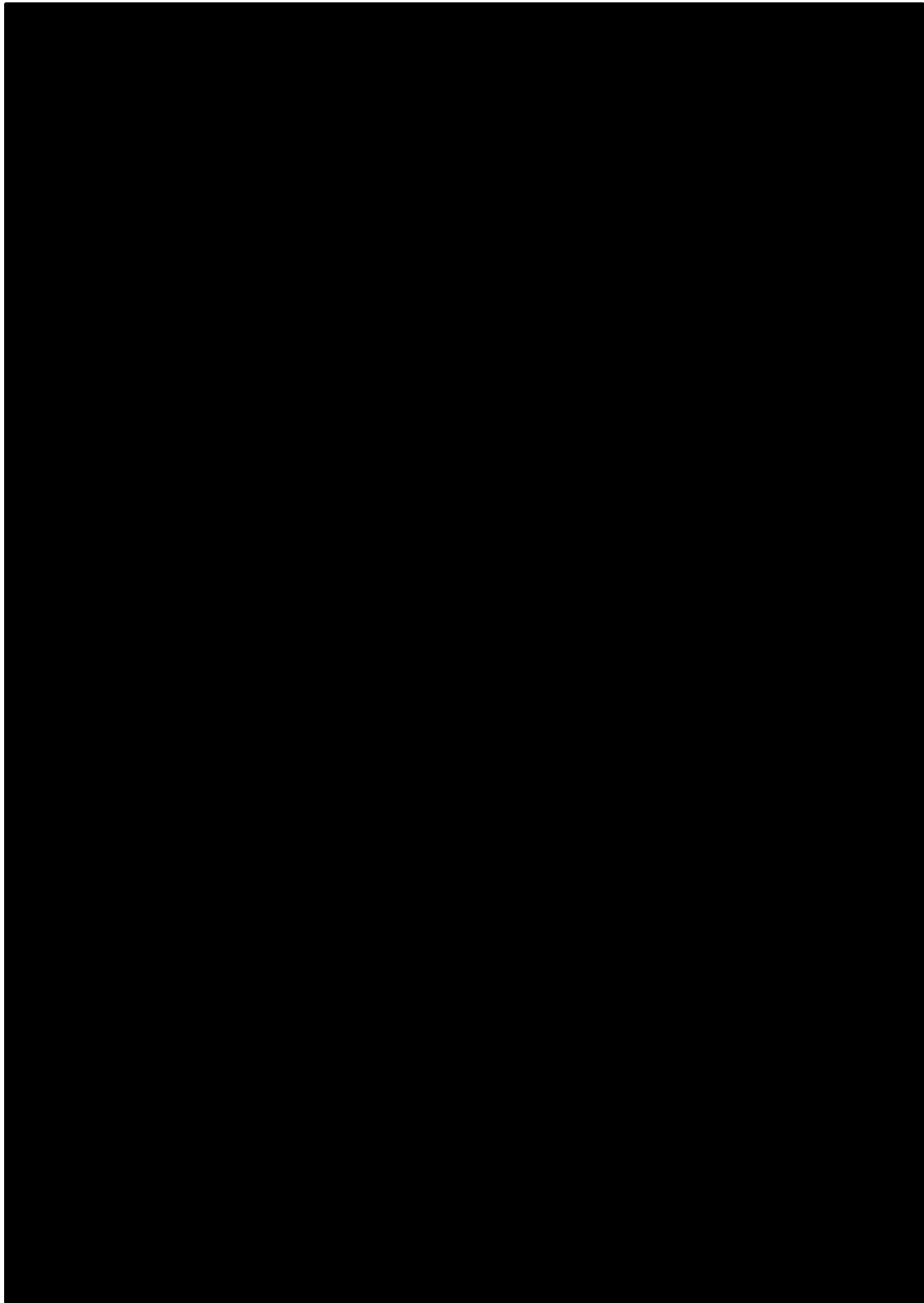


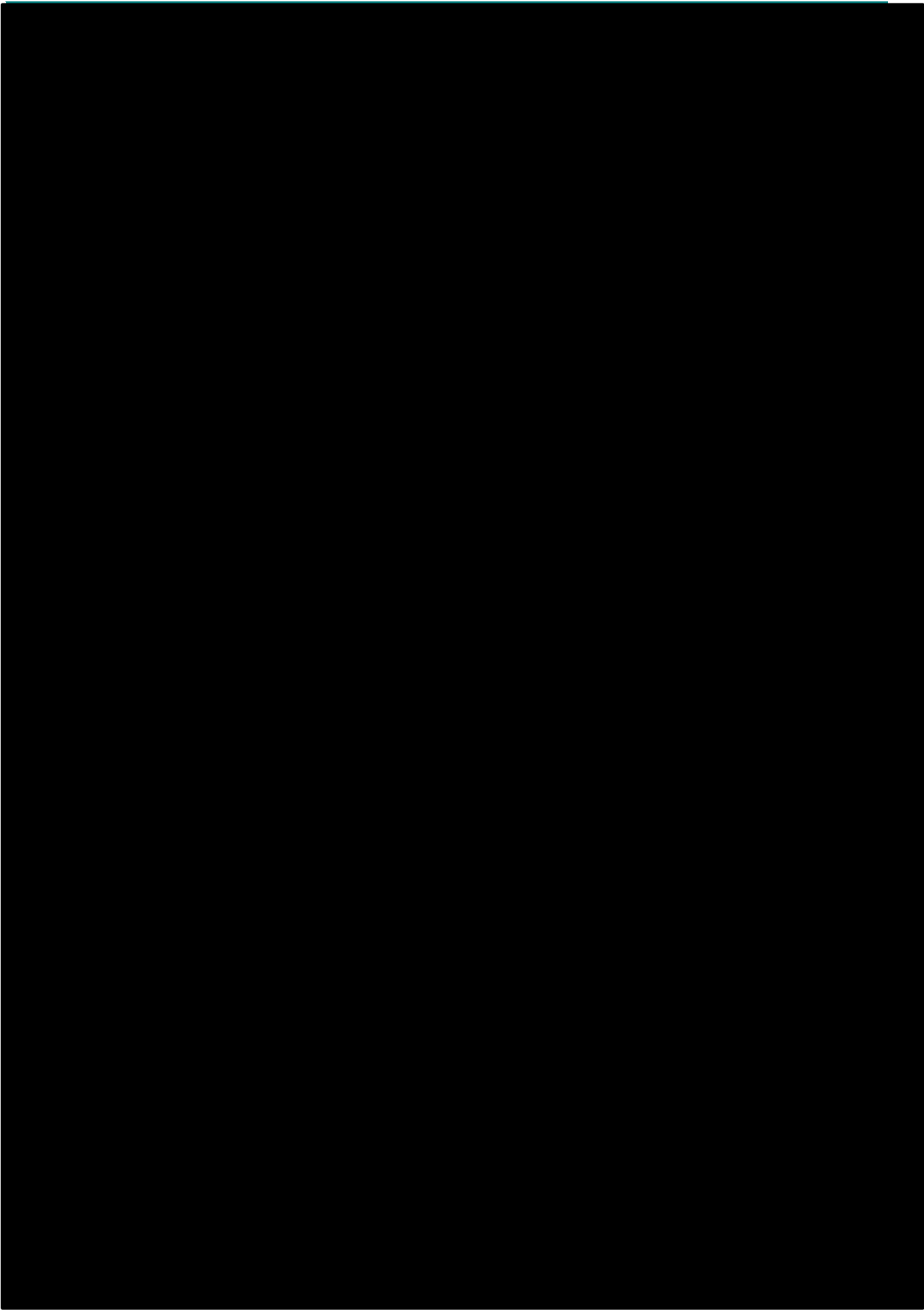


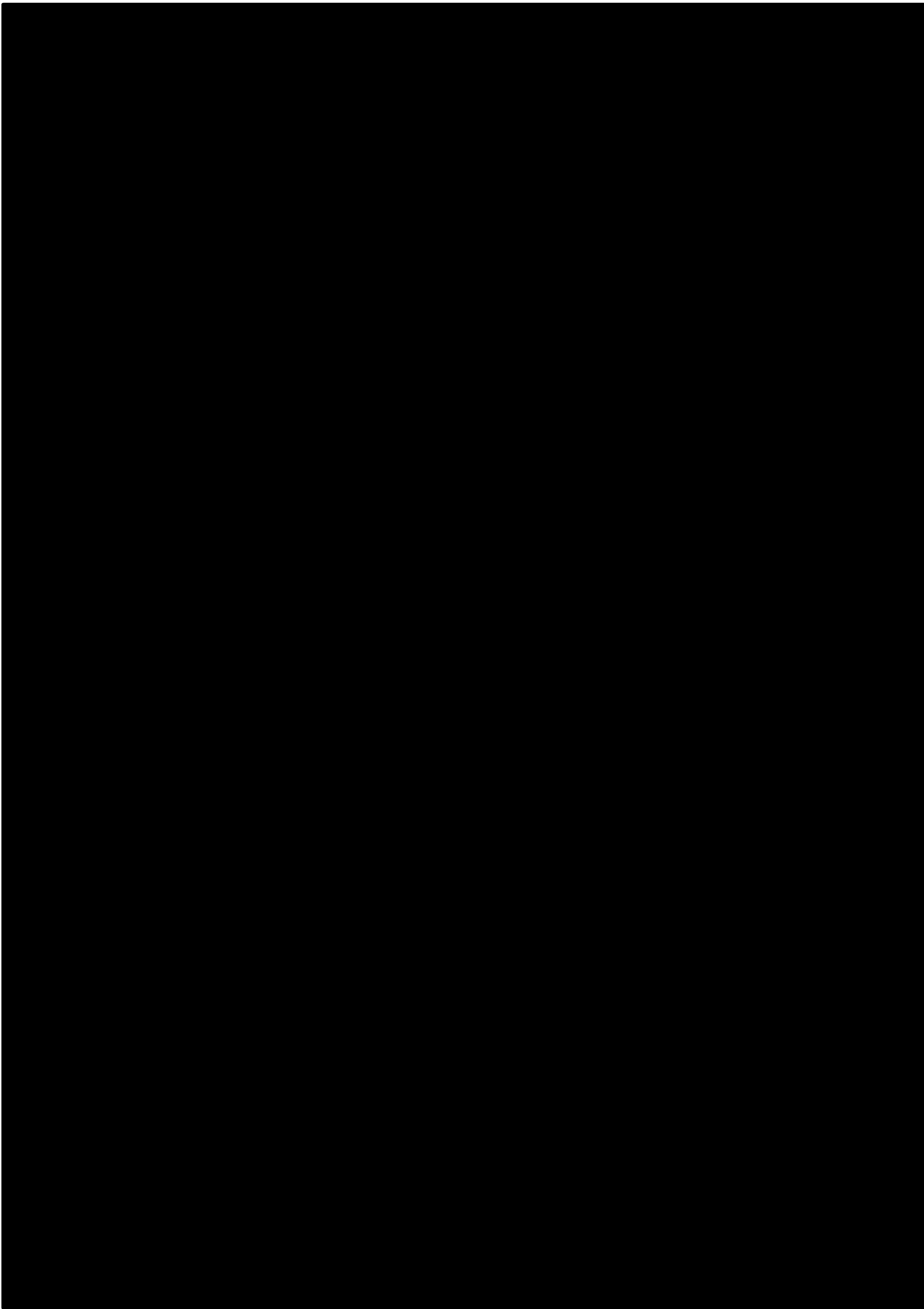


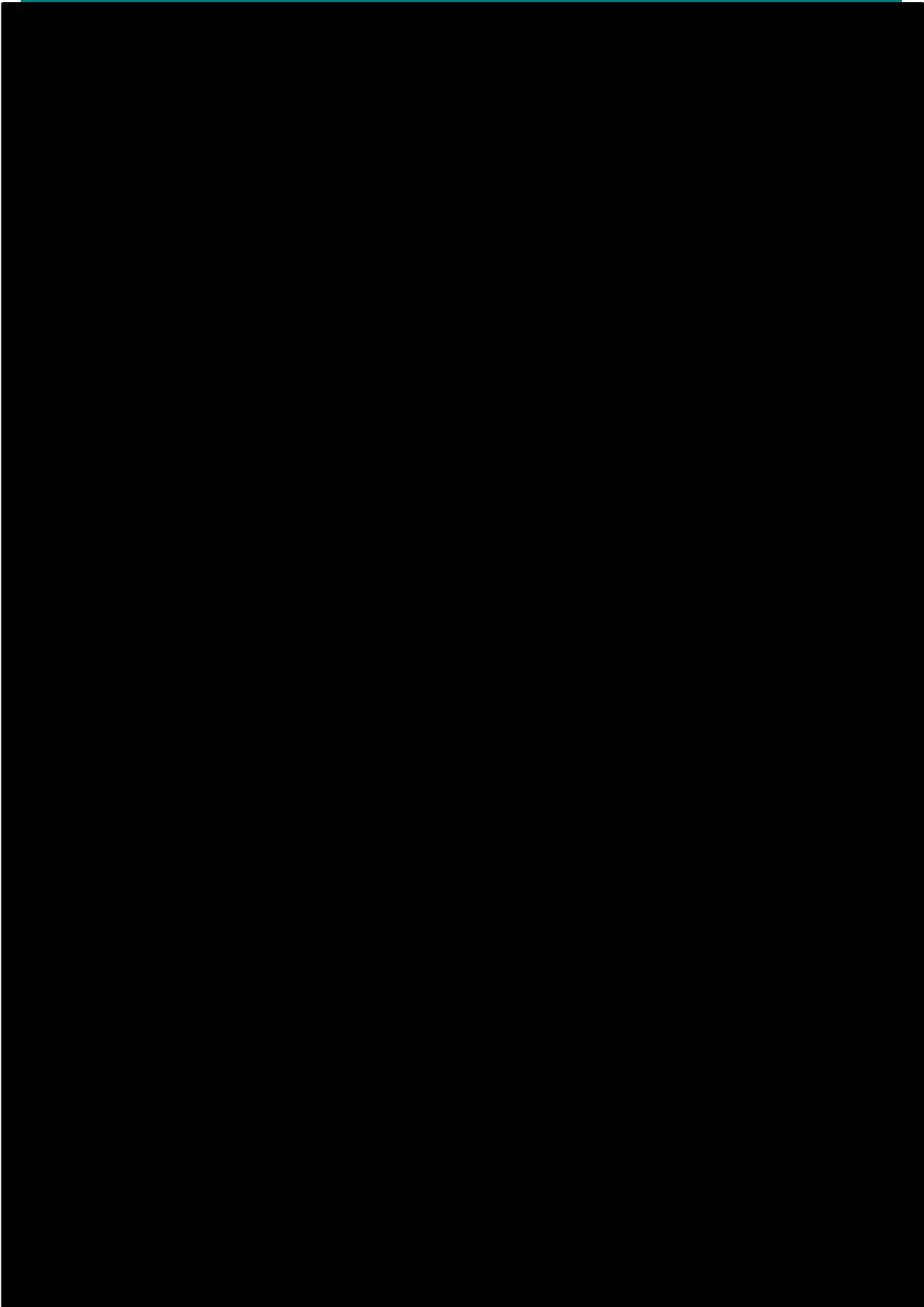


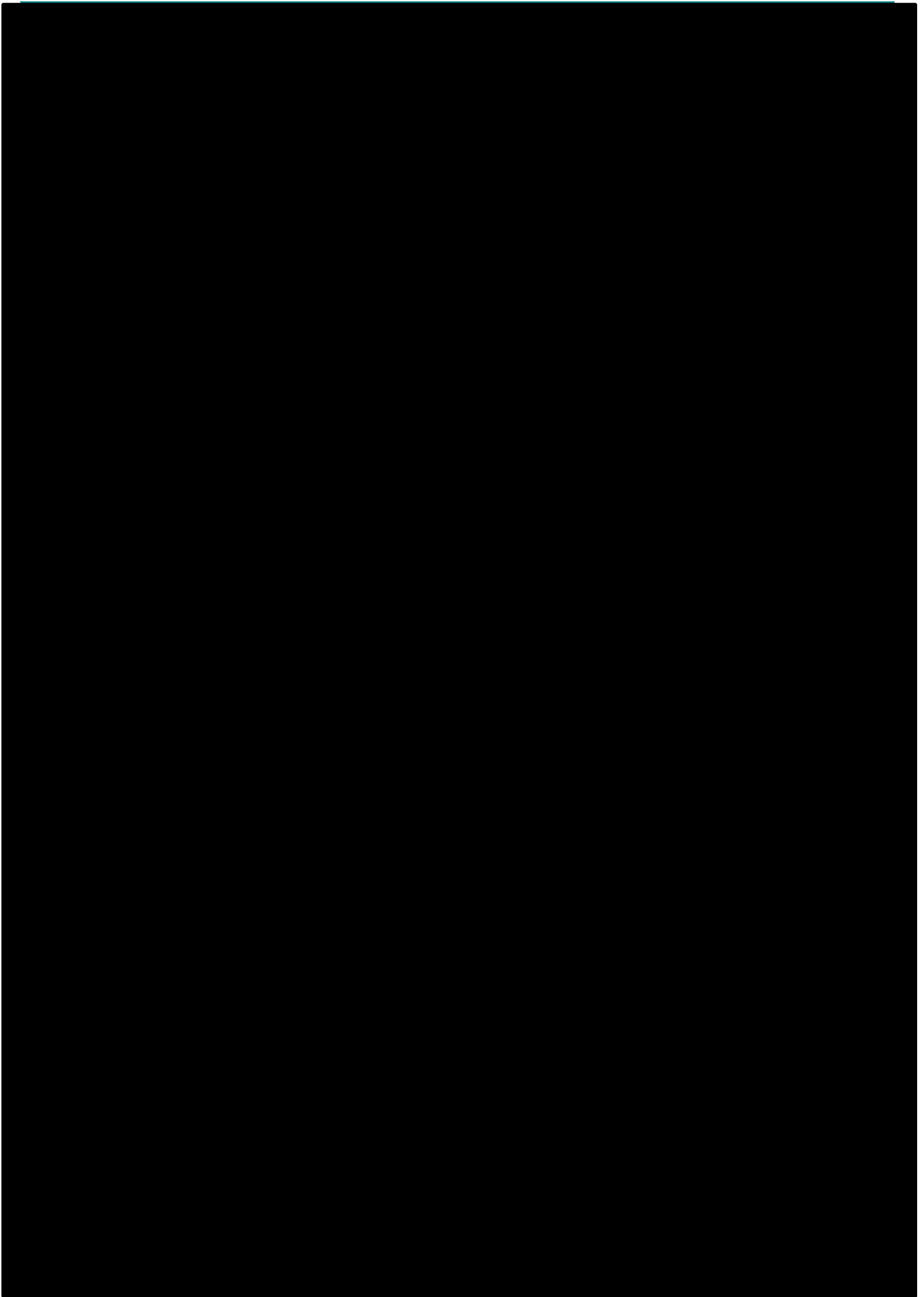


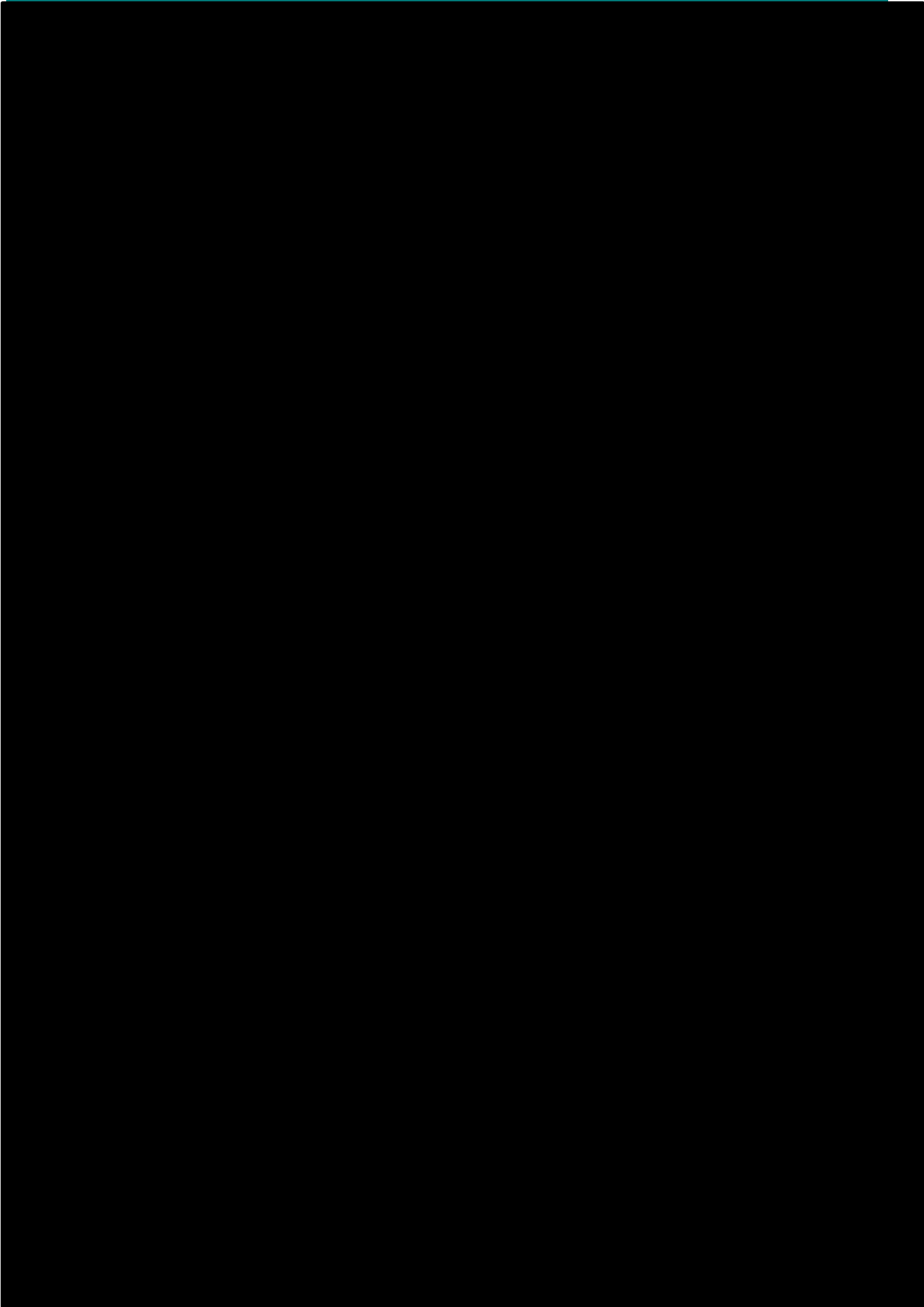


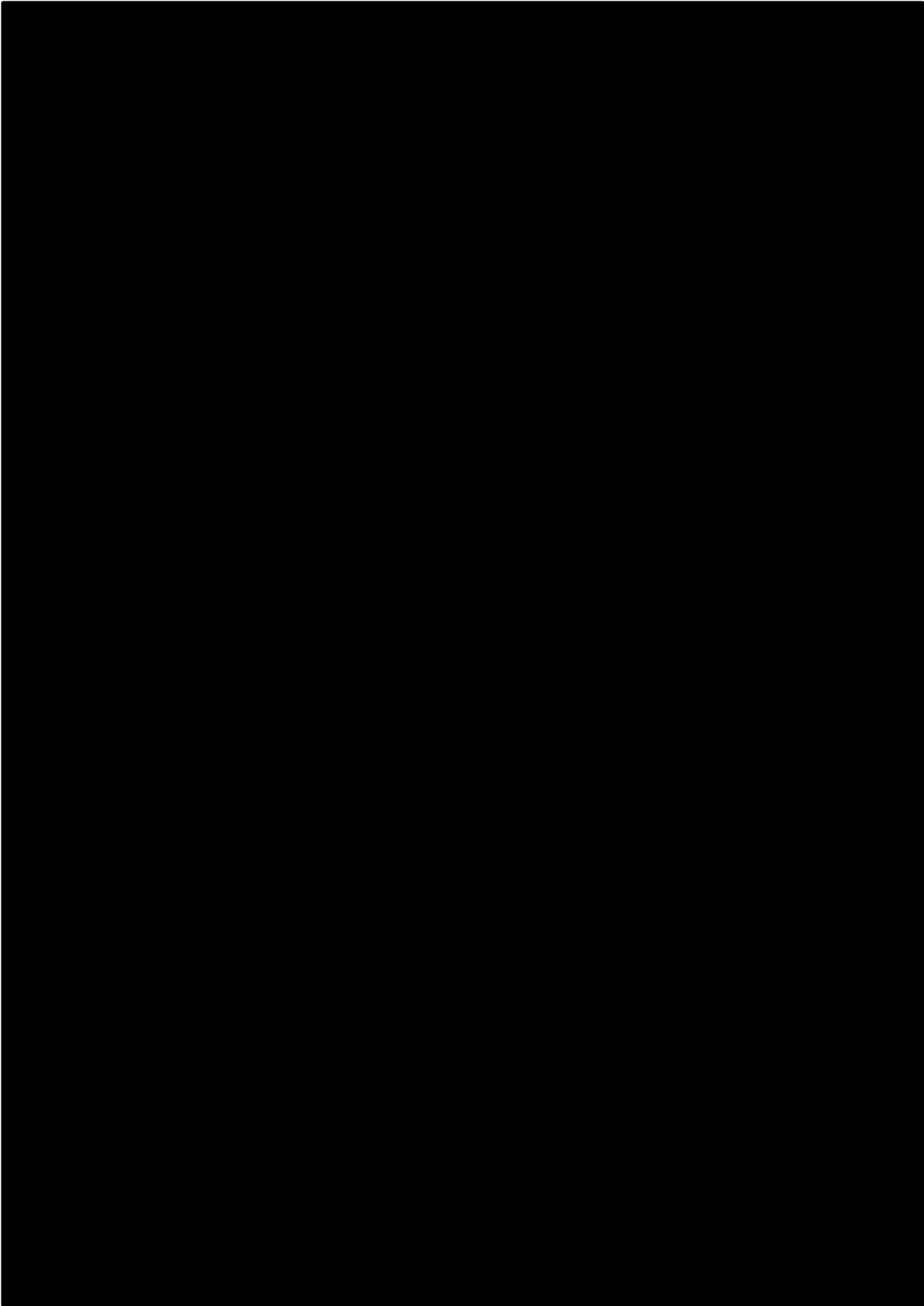


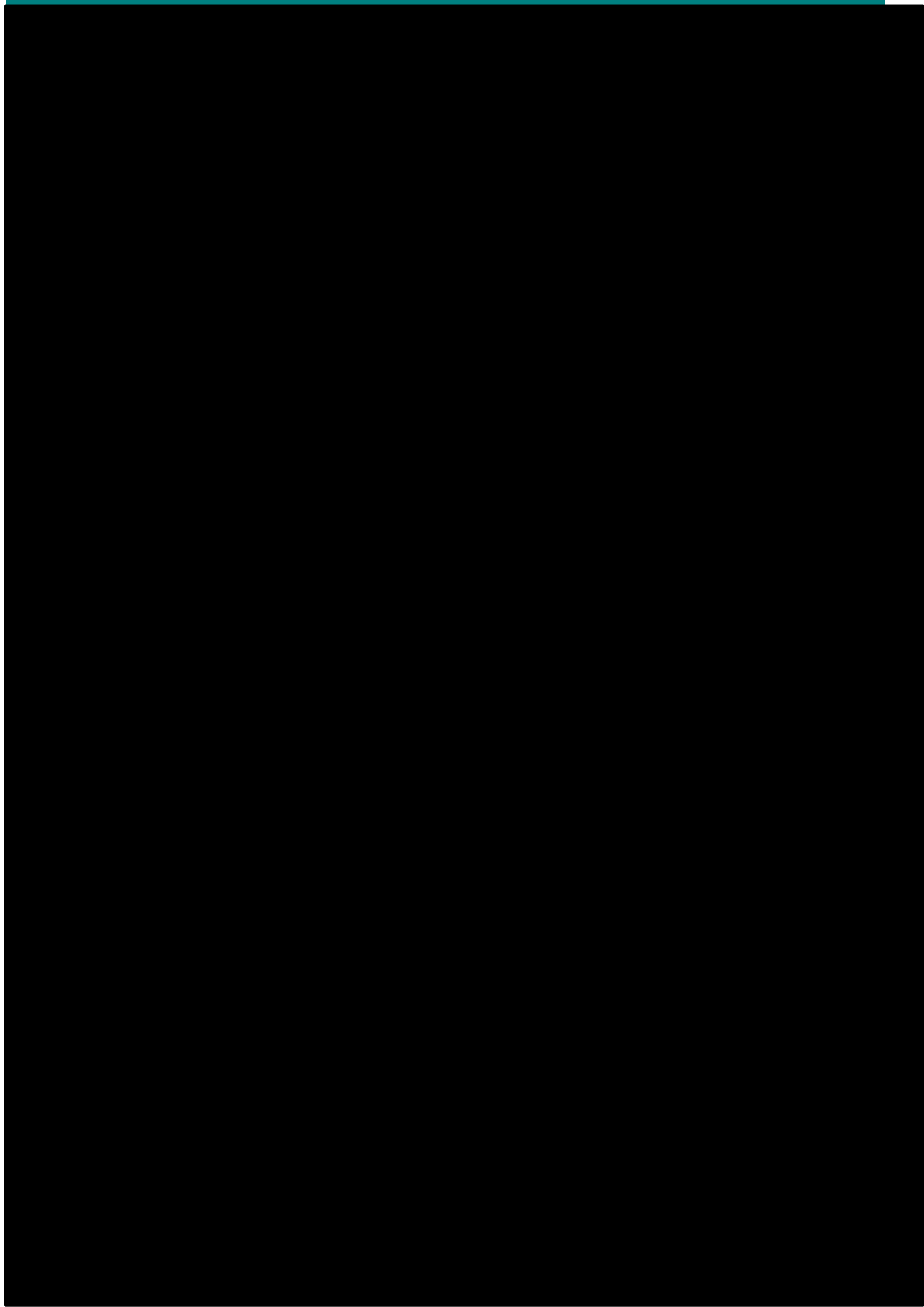


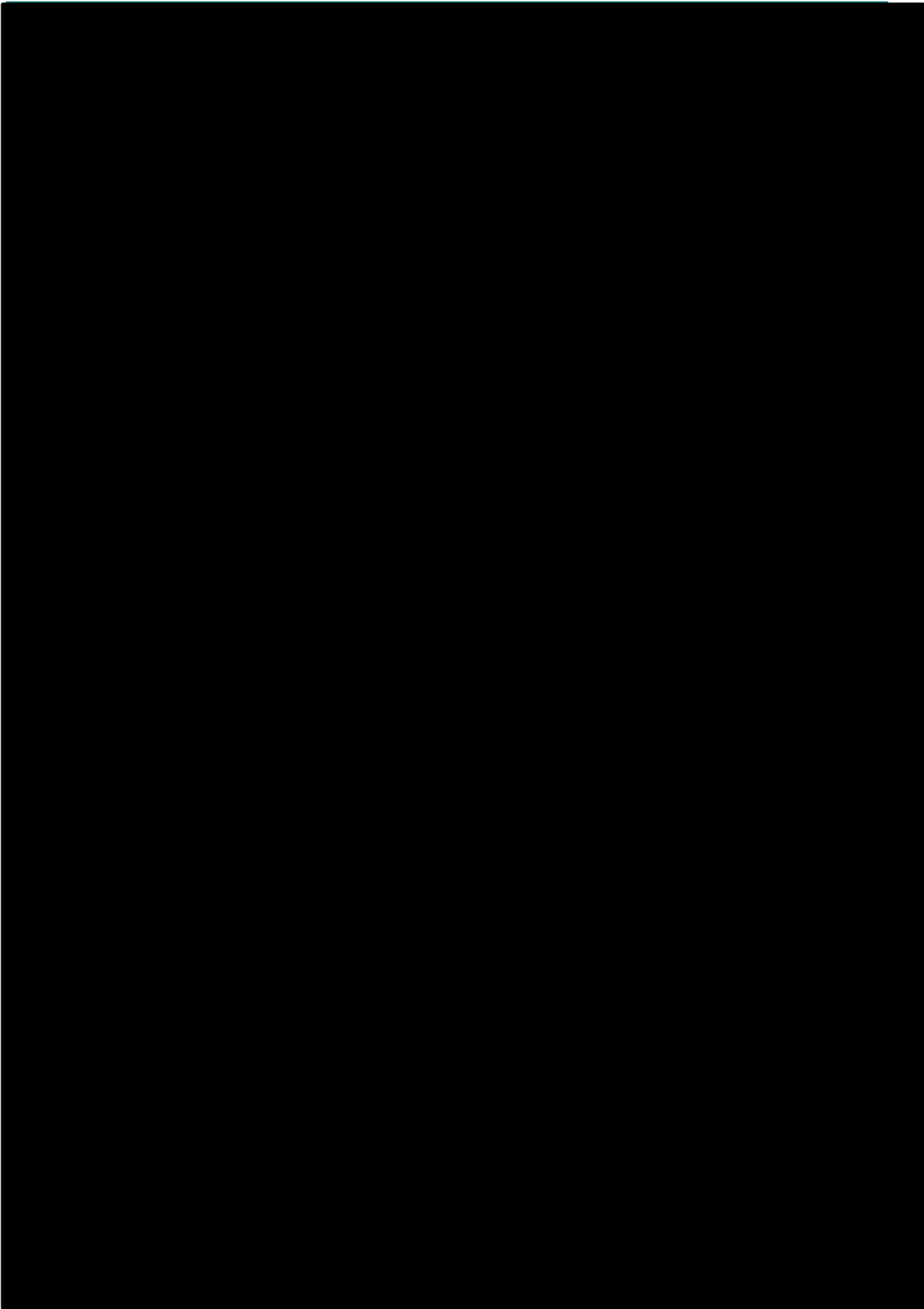


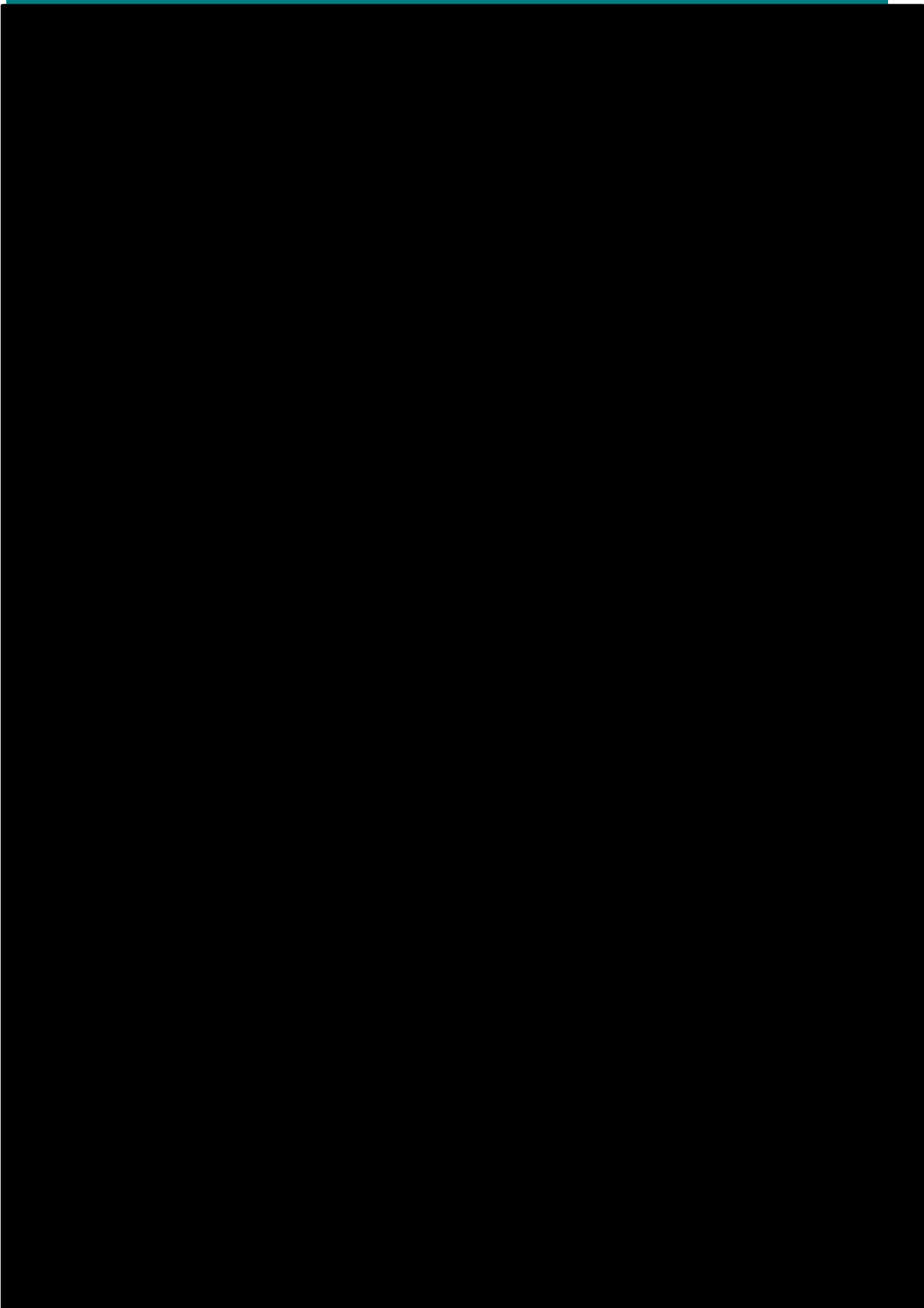


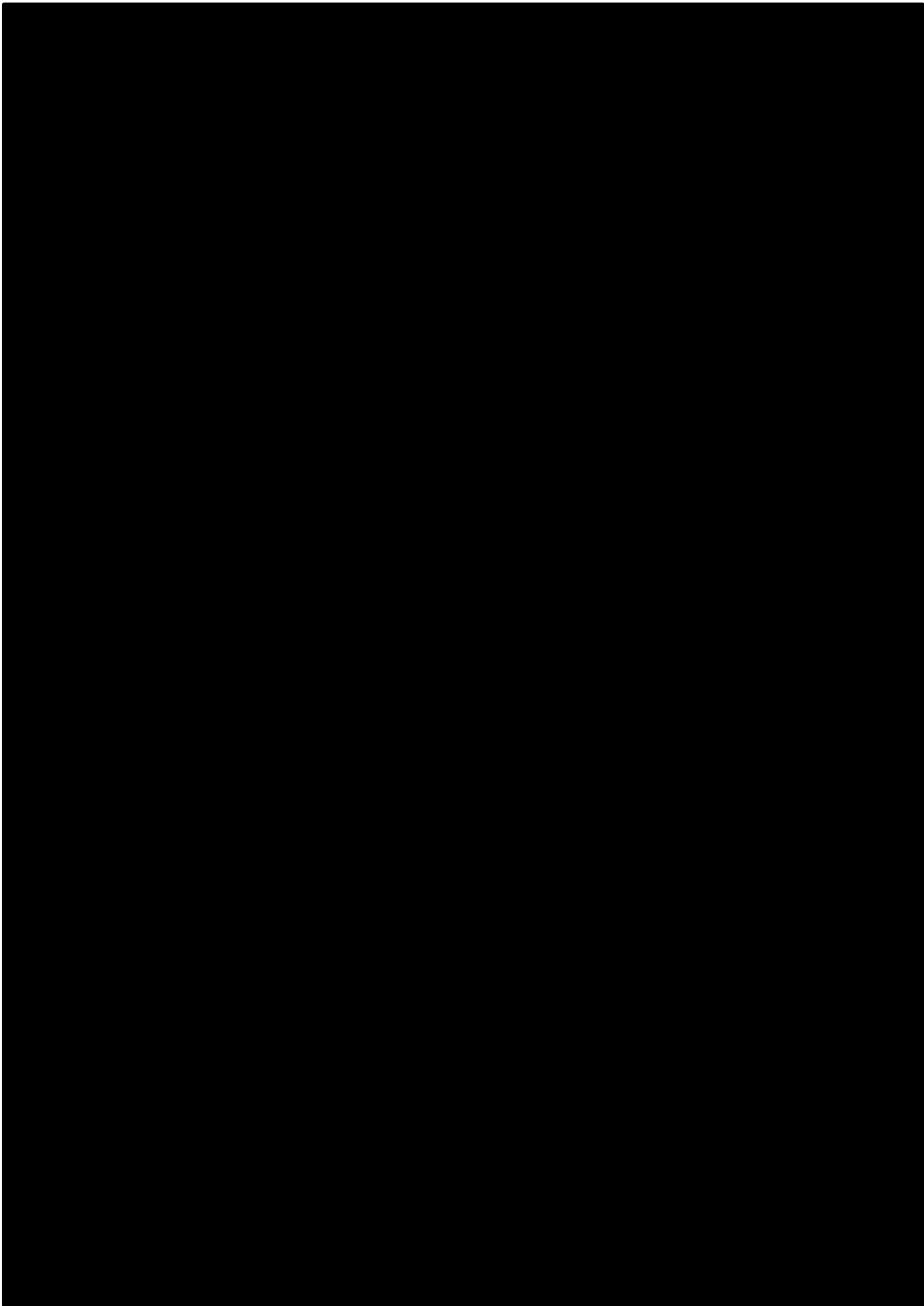


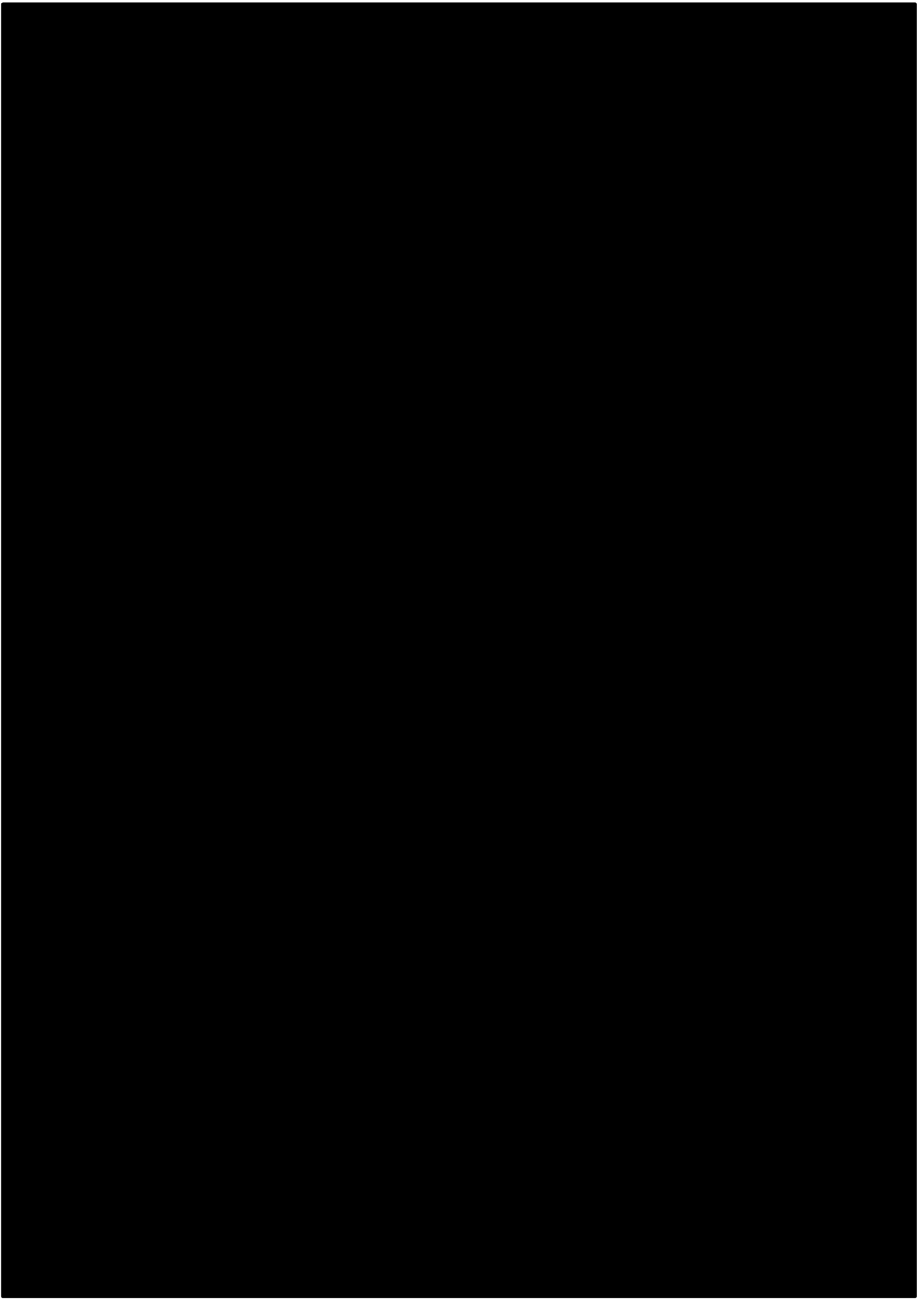


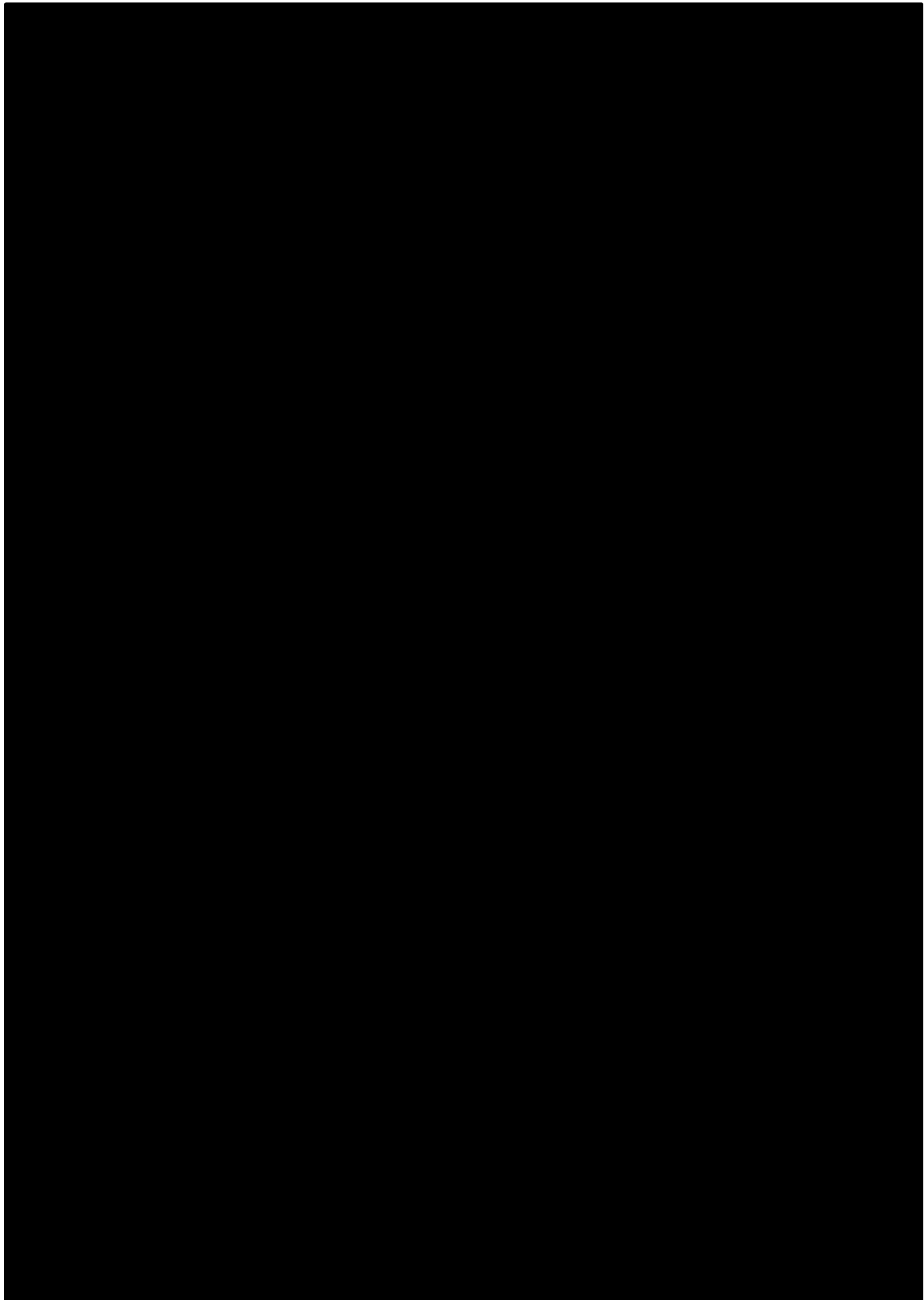


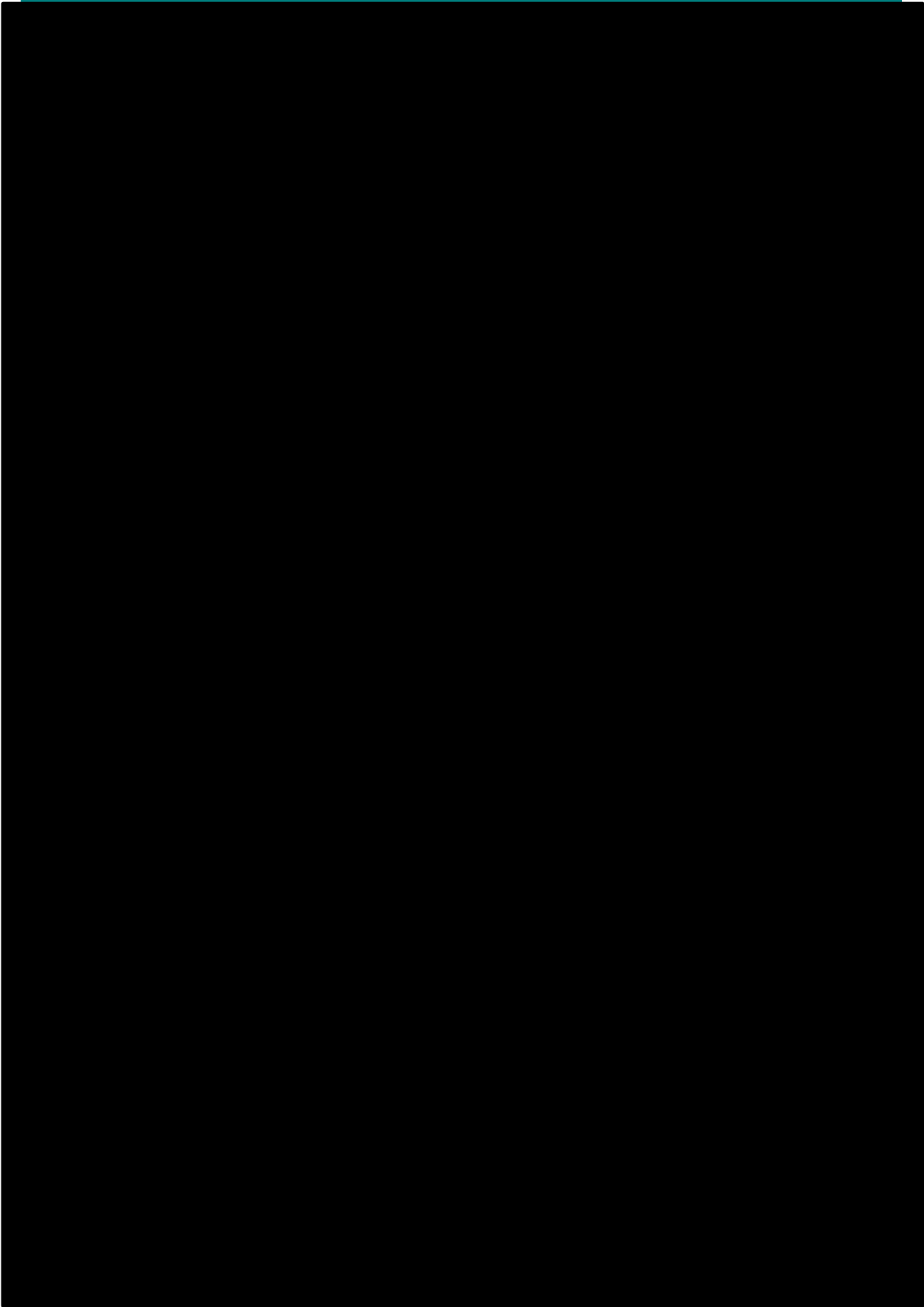


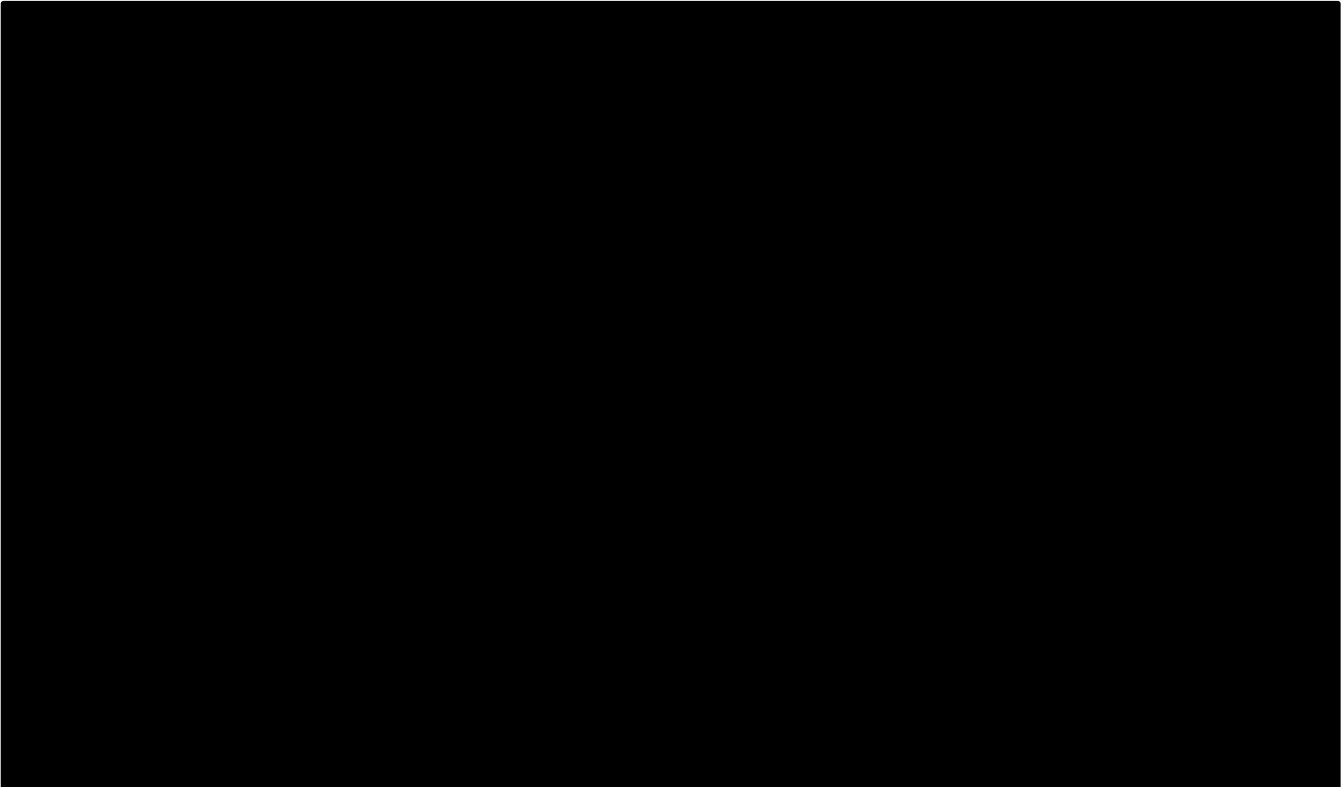












Appendix F: FEMA Presidential Declaration Maps

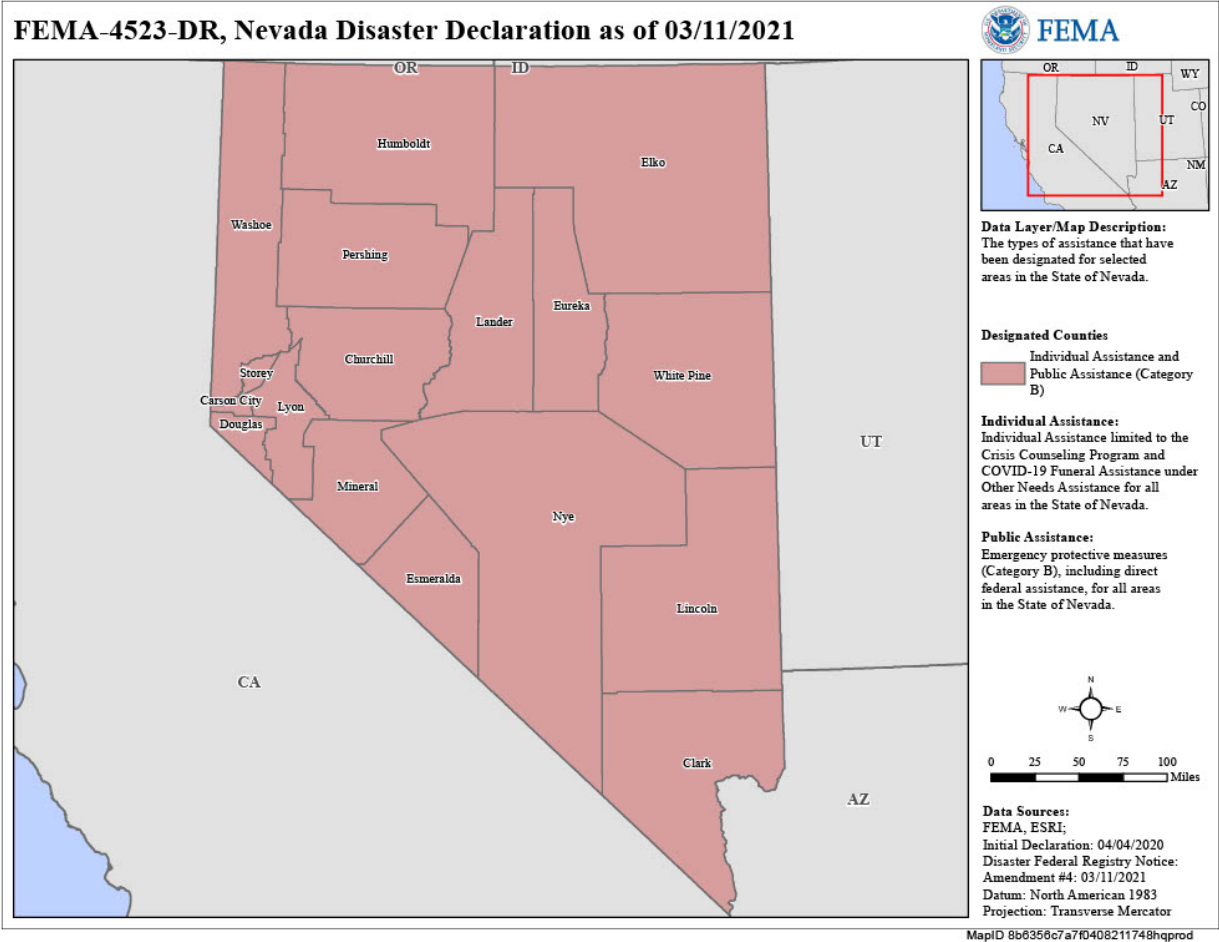
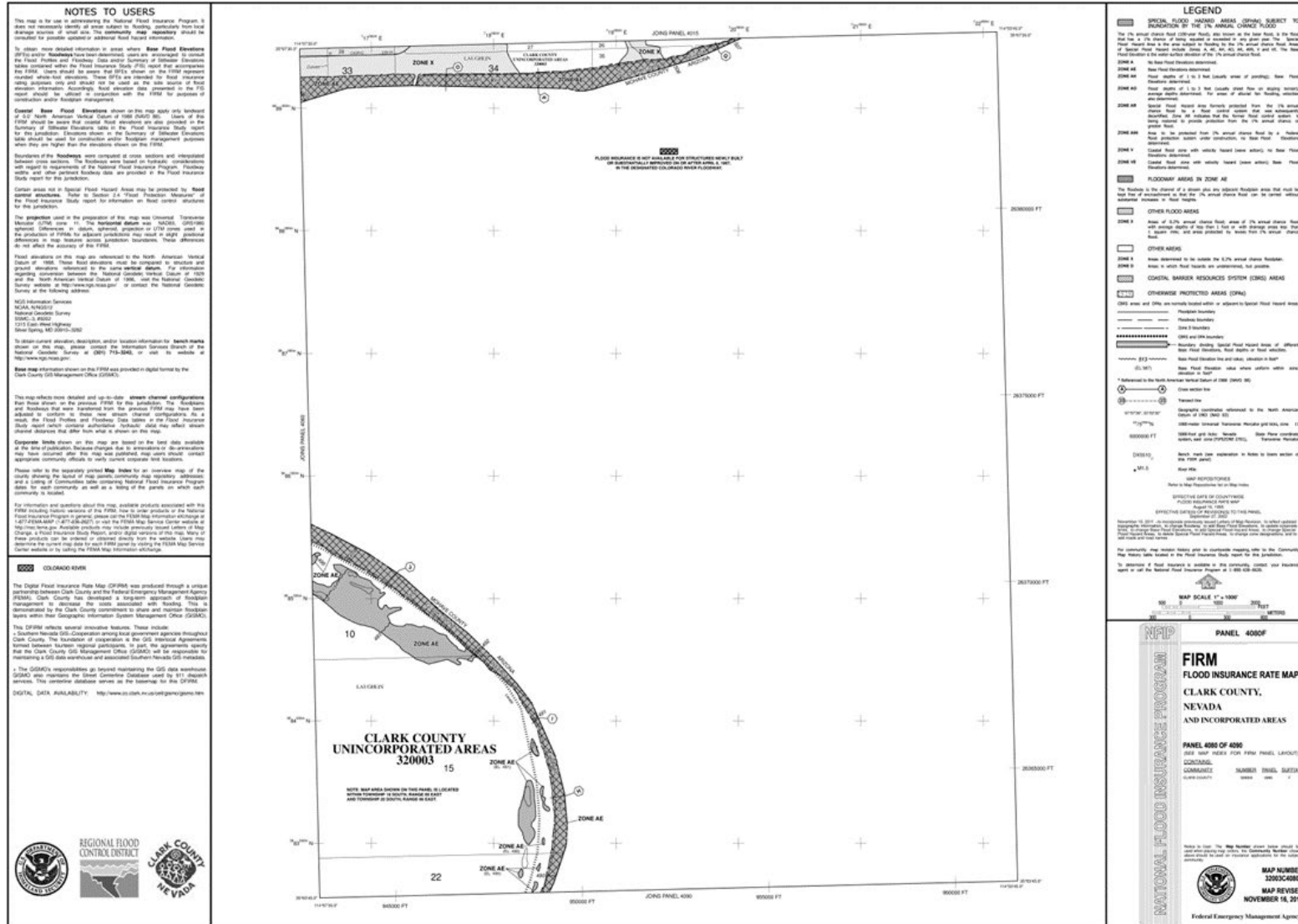


Figure 123: Presidential Disaster Declaration, COVID-19 (Map Source: FEMA)



NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map preparator** should be contacted for questions related to potential flood-prone areas.

To obtain more detailed information in areas where **Base Flood Elevation (BFE)** and/or **Roofways** have been determined, users are encouraged to consult the Flood Profile and Floodway Data Tables contained within the Flood Insurance Study Report for the community. The Flood Insurance Study Report also contains the BFEs shown on the FIRM represent rounded values for elevations. These BFEs are rounded to the nearest 0.1 foot. Floodway data is provided only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIRM should be used in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Barrier Resources System (CBRS) areas shown on this map apply only to land west of U.S. North American Vertical Datum (NAVD), Users of this FIRM should be aware that CBRS areas shown on this map may also be provided in the Summary of Significant Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Significant Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on the FIRM.

Boundaries of the Roofways were computed at cross sections and interpolated between cross sections. The Roofways were based on hydrologic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas that are Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is National Geospatial Intelligence (NGI) Zone 11. The **horizontal datum** is NAD83, GRS1980 datum. Vertical datum is NAVD. The **vertical datum** is NAVD83, GRS1980 datum. Differences in datum, projection, or other data may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations. Identification of areas subject to flooding is based on hydrologic information between the National Geospatial Vertical Datum of 1988 and the North American Vertical Datum of 1988. For the National Geospatial Survey website at www.nga.nps.gov or contact the National Geospatial Survey at the following address:

Vertical Network Branch, NCGS13
National Geospatial Survey
State-Spring Metro Center
1215 East State Highway
State-Spring, Maryland 20810
301.713.3781

To obtain current elevation, description, and/or location information for **landmarks** shown on this map, please contact the Information Services Branch of the National Geospatial Survey at (301) 713-3242, or visit their website at www.nga.gov.

Base map information shown on this FIRM was provided in digital format by Clark County Regional Flood Control District. This information was generated using Orthorectification, dated 1995 or earlier, and GIS/FIRM data. Segments were digitized from the orthorectification data as a series of connected lines.

Contours shown on this map are based on the best data available at the time of publication. Elevation changes due to construction or other activities may have occurred after this map was published. Map users should contact appropriate community officials to verify current contours and locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the extent of this district, community map boundaries, addresses, and a listing of Communities with National Flood Insurance Program data for each community as well as a listing of the parks in which each community is located.

An accompanying Flood Insurance Study report, Letter of Map Revision or Letter of Map Amendment, listing portions of this map, and digital versions of the FIRM, may be available. Contact the **FIRM Map Service Center** at the following phone numbers and internet address for information on all related products available from FEMA.

Phone: 800-368-9616
FAX: 800-358-9622
www.fema.gov

If you have **questions about this map** or **questions** concerning the National Flood Insurance Program in general, please call **877-FEMA-3647** (1-877-368-2627) or visit the FEMA website at www.fema.gov.

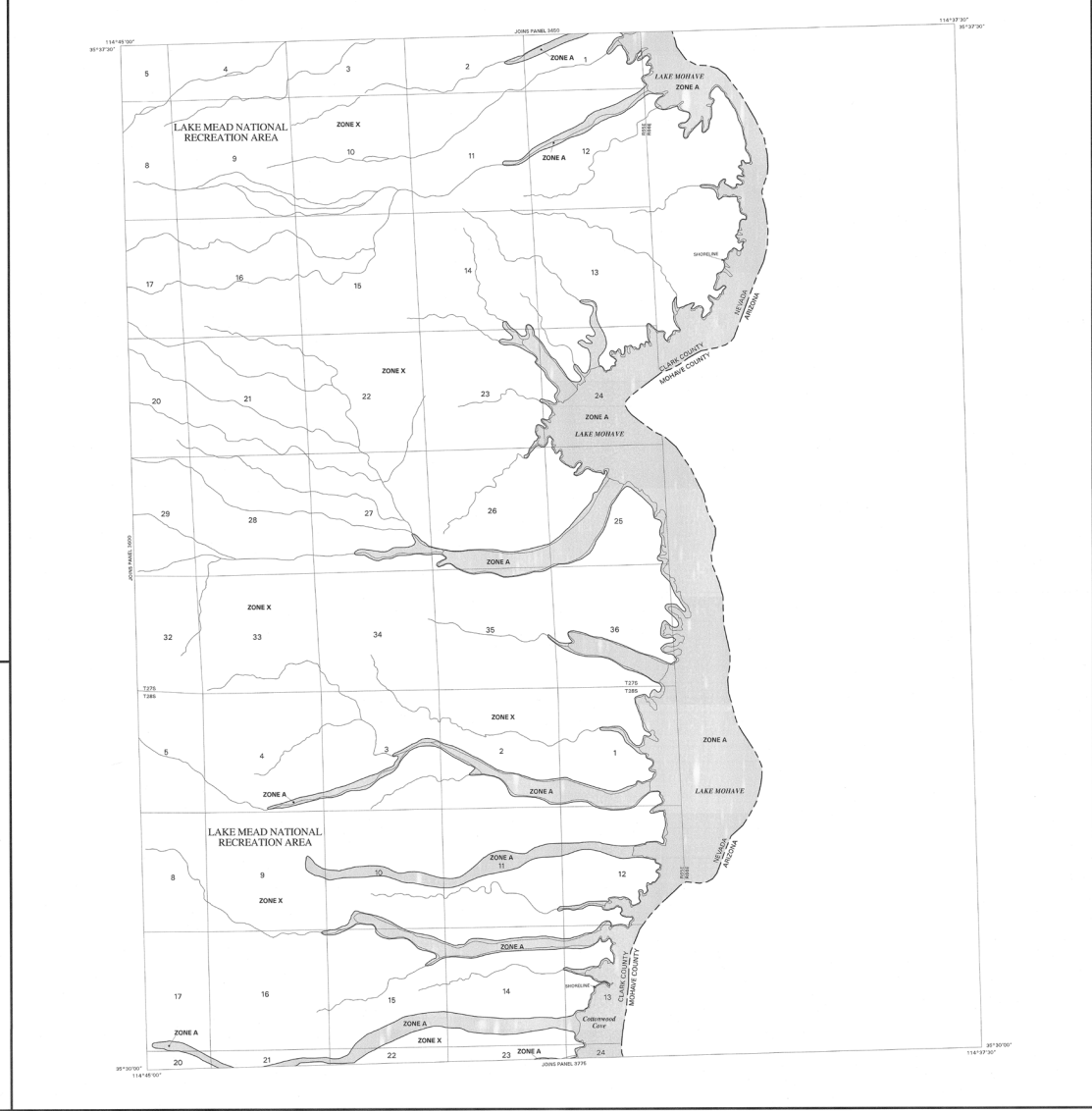
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The hydrologic and hydraulic data used in preparing this FIRM were derived from field data and hydrologic data which were collected from the previous FIRM. This data was then adjusted to conform to these new stream channel configurations. As a result, the flood profiles and floodway data shown in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

This Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach of floodplain management to decrease the risks associated with flooding. This is demonstrated by the Clark County commitment to share and maintain floodplain maps within their Geographic Information System Management Office (GISMO).

This DFIRM reflects several innovative features. These include:

- Southern Nevada GIS: Cooperation among governmental agencies throughout Clark County. The foundation of cooperation is the GIS Interlocal Agreement formed between Clark County and participating agencies. The agreement specifies that the Clark County GIS Management Office (CGMO) will be responsible for maintaining a GIS data warehouse and associated Southern Nevada GIS Metadata.
- The CGMO's responsibilities go beyond managing the GIS data warehouse. CGMO also maintains the Base Collective Database used by 31 regional services. This collective database serves as the base map for this DFIRM.

DIGITAL DATA AVAILABILITY: <http://www.clarkcountynv.us/arcgis/gisinfo.htm>



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

ZONE A1 Areas of 1% annual chance flood (100-year flood) also known as the Base Flood. In the Flood Insurance Study Report, the 1% annual chance flood is the depth of water that would be expected to occur over the return period of 1 year. The Base Flood Elevation (BFE) is the elevation of the water surface for the 1% annual chance flood.

ZONE A2 Areas of 1% annual chance flood (100-year flood) also known as the Base Flood. In the Flood Insurance Study Report, the 1% annual chance flood is the depth of water that would be expected to occur over the return period of 1 year. The Base Flood Elevation (BFE) is the elevation of the water surface for the 1% annual chance flood.

ZONE A3 Areas of 1% annual chance flood (100-year flood) also known as the Base Flood. In the Flood Insurance Study Report, the 1% annual chance flood is the depth of water that would be expected to occur over the return period of 1 year. The Base Flood Elevation (BFE) is the elevation of the water surface for the 1% annual chance flood.

ZONE A4 Areas of 1% annual chance flood (100-year flood) also known as the Base Flood. In the Flood Insurance Study Report, the 1% annual chance flood is the depth of water that would be expected to occur over the return period of 1 year. The Base Flood Elevation (BFE) is the elevation of the water surface for the 1% annual chance flood.

ZONE A5 Areas of 1% annual chance flood (100-year flood) also known as the Base Flood. In the Flood Insurance Study Report, the 1% annual chance flood is the depth of water that would be expected to occur over the return period of 1 year. The Base Flood Elevation (BFE) is the elevation of the water surface for the 1% annual chance flood.

ZONE A6 Areas of 1% annual chance flood (100-year flood) also known as the Base Flood. In the Flood Insurance Study Report, the 1% annual chance flood is the depth of water that would be expected to occur over the return period of 1 year. The Base Flood Elevation (BFE) is the elevation of the water surface for the 1% annual chance flood.

ZONE A7 Areas of 1% annual chance flood (100-year flood) also known as the Base Flood. In the Flood Insurance Study Report, the 1% annual chance flood is the depth of water that would be expected to occur over the return period of 1 year. The Base Flood Elevation (BFE) is the elevation of the water surface for the 1% annual chance flood.

ZONE A8 Areas of 1% annual chance flood (100-year flood) also known as the Base Flood. In the Flood Insurance Study Report, the 1% annual chance flood is the depth of water that would be expected to occur over the return period of 1 year. The Base Flood Elevation (BFE) is the elevation of the water surface for the 1% annual chance flood.

ZONE A9 Areas of 1% annual chance flood (100-year flood) also known as the Base Flood. In the Flood Insurance Study Report, the 1% annual chance flood is the depth of water that would be expected to occur over the return period of 1 year. The Base Flood Elevation (BFE) is the elevation of the water surface for the 1% annual chance flood.

ZONE A10 Areas of 1% annual chance flood (100-year flood) also known as the Base Flood. In the Flood Insurance Study Report, the 1% annual chance flood is the depth of water that would be expected to occur over the return period of 1 year. The Base Flood Elevation (BFE) is the elevation of the water surface for the 1% annual chance flood.

ZONE A11 Areas of 1% annual chance flood (100-year flood) also known as the Base Flood. In the Flood Insurance Study Report, the 1% annual chance flood is the depth of water that would be expected to occur over the return period of 1 year. The Base Flood Elevation (BFE) is the elevation of the water surface for the 1% annual chance flood.

ZONE A12 Areas of 1% annual chance flood (100-year flood) also known as the Base Flood. In the Flood Insurance Study Report, the 1% annual chance flood is the depth of water that would be expected to occur over the return period of 1 year. The Base Flood Elevation (BFE) is the elevation of the water surface for the 1% annual chance flood.

FLOODWAY AREAS IN ZONE A

OTHER FLOOD AREAS

OTHER AREAS

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

MAP REVISIONS

MAP REVISION 1

MAP REVISION 2

MAP REVISION 3

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MAP REVISION 99

MAP REVISION 100

PANEL 3625 E

FIRM FLOOD INSURANCE RATE MAP

CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 3625 OF 4000

SEE MAP INDEX FOR FIRM PANEL LAYOUT

CONTRACT: 360801 PANEL SUFFIX

DATE: 08/16/1995

MAP NUMBER: 360801-0000-0000-0000-0000-0000

MAP NUMBER: 360801-0000-0000-0000-0000-0000

MAP REVISION: SEPTEMBER 27, 2002

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage basins of small size. The community map preparator should be consulted for possible updates or additional flood hazard information.

To obtain more detailed information on areas where **Base Flood Elevation (BFE)** and/or **Flowways** have been determined, users are encouraged to consult the Flood Profile and/or Floodway Determination Report (FDR) for the Flood Insurance Study (FIS) report that accompanies the FIRMs. Users should be aware that BFEs shown on the FIRM represent rounded elevation elevations. These BFEs are presented for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (CBFE) shown on this map apply only to landward of O.P. North American Vertical Datum of 1988. The CBFE should be used to provide coastal flood elevations that are consistent with the Summary of Flood Elevations table in the Flood Insurance Study report for the community. Elevations shown in the Summary of Flood Elevations table should be used for construction, water resource management purposes when they are higher than the elevations shown on the FIRM.

Boundaries of the **Flowways** were computed at cross sections and interpolated between cross sections. The flowways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Flowway widths and other pertinent flowway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4, "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM), Zone 11, the **horizontal** datum is NAD83 (GRS1983) spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be adjusted to structural and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1988 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Vertical Network Branch, NGS13
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1215 East West Highway
Silver Spring, Maryland 20910
(301) 713-3131

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the National Geodetic Survey Branch at the National Geodetic Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on the FIRM was provided in digital format by Clark County Regional Flood Control District. This information was generated using Orthophotography, dated 1999 or newer, and GPRFEM data. Segments with significant differences from the orthophotography based on color of pavement.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limits locations.

Please refer to the appropriate printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a listing of Communities of Interest. The National Flood Insurance Program details for each community as well as a listing of the panels on which each community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment (including digital and hard copy versions of the FIRM) may be available. Contact the **FEMA Map Service Center** at the following phone numbers and Internet address for information on all related products available from FEMA:

Phone: 800-358-9416
Fax: 800-358-9020
www.fema.gov/nsc

If you have **questions about this map** or questions concerning the National Flood Insurance Program, please call 1-877-FEMA-8282 (1-877-368-2527) or visit the FEMA website at www.fema.gov.

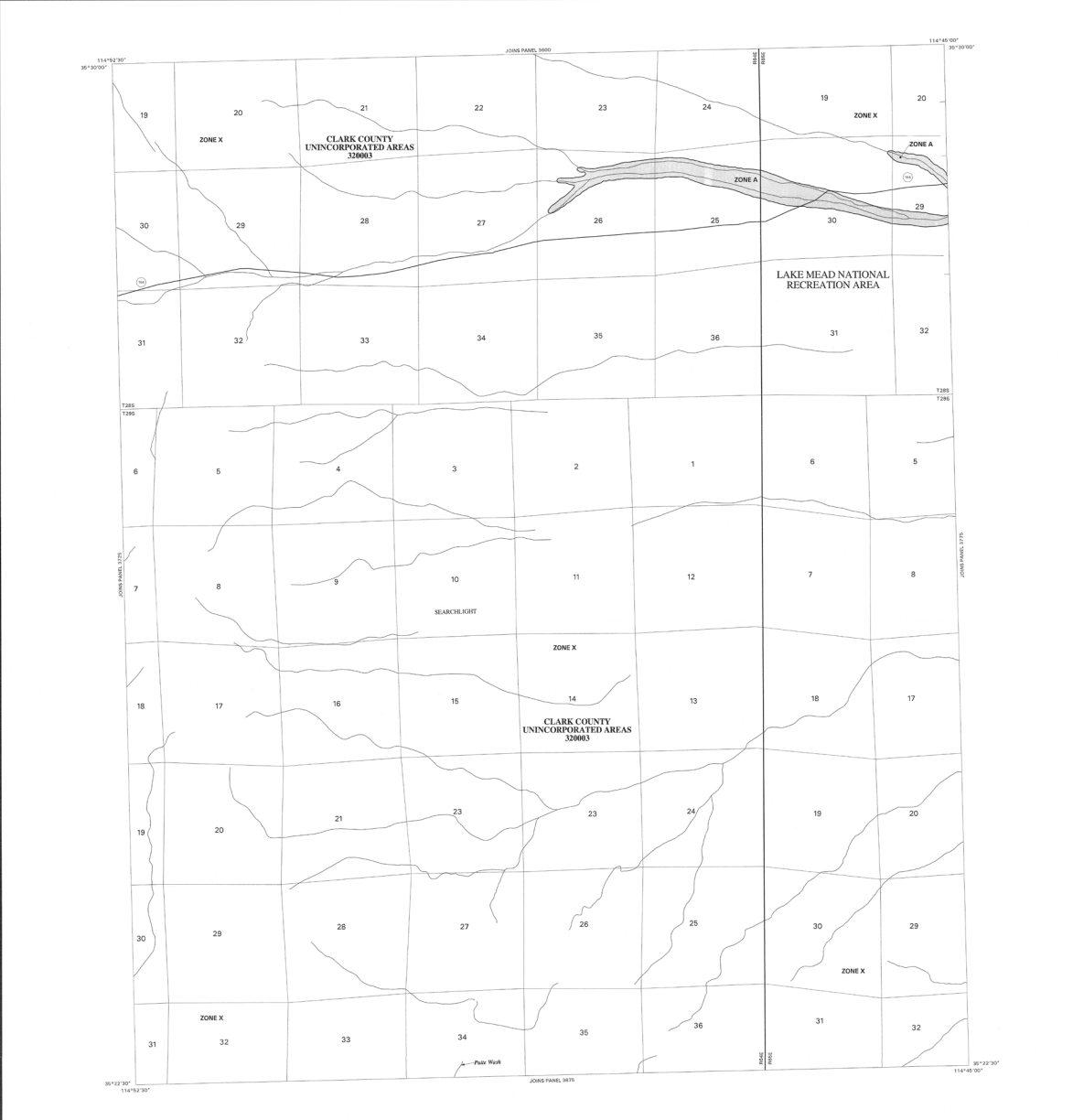
This map reflects more detailed and accurate stream channel configurations than those shown on the previous FIRM for this jurisdiction. The Flowways and Floodways data were derived from the previous FIRM but have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profile and Floodway Data table in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on the map.

This Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach of Floodplain Management, and FEMA has provided the financial assistance that is demonstrated by the Clark County commitment to share and maintain floodplain maps within their designated information systems.

This DFIRM reflects several innovative features. These include:

- Southern Nevada GIS - Cooperation among budget-neutral agencies throughout Clark County. The facilitation of cooperation in the GIS Insurance Agency formed between the regional participants. In part, the agreements specify that the Clark County GIS Management Office (GISMO) will be responsible for maintaining GIS data infrastructure and associated Southern Nevada databases.
- The GISMO's responsibilities go beyond maintaining the GIS data warehouse. GISMO also maintains the Street Centerline Database used by 911 dispatch services. This database database serves as the base map for the DFIRM.

DIGITAL DATA AVAILABILITY: <http://www.sdc.clark.nv.us/cgi-bin/gispage.htm>



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

- ZONE AE** - Base flood elevations determined.
- ZONE AO** - Flood depths of 3 to 6 feet (locally areas of ponding); base flood elevations determined.
- ZONE AR** - Flood depths of 1 to 3 feet (locally areas that are slightly ponded); average depths determined. For areas of actual fan flooding, velocities also determined.
- ZONE AR1** - Area of special flood hazard formerly produced from the 1% annual chance flood event by the Flood Control System that was subsequently retrofitted. This AR1 indicates that the former flood control system is being replaced to provide protection from the 1% annual chance flood event.
- ZONE AR9** - Area to be protected from 1% annual chance flood event by a Federal Flood Control System under construction; no base flood elevations determined.
- ZONE AV** - Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE** - Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The Floodway is the channel of a stream plus any adjacent floodway areas that must be kept free of encroachments so that the 1% annual chance flood can be carried without substantial increases in flood height.

OTHER FLOOD AREAS

- ZONE X** - Areas of 0.2% annual chance flood with average depths of less than 1 foot or with average areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS** - Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** - Areas in which flood hazards are unestimated, but are possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are coastal hazard areas or adjacent to Special Flood Hazard Areas.

- Floodway Boundary
- Floodway Boundary
- Zone D Boundary
- Coastal Barrier Boundary
- Boundary of Special Flood Hazard Areas of different Base Flood Elevations, Flood Depth or Velocity
- Base Flood Elevation line and value, elevation in feet
- IL 9071 - Base Flood Elevation value where uniform within zone
- IL 9072 - Cross Section Line
- Transverse Line
- 42797000 - Triangulation coordinates referenced to the North American Datum of 1983 (NAD 83)
- 62797000 - 1000-meter Universal Transverse Mercator grid values, zone 11
- 6200000 FT - 10000-foot grid value
- DX5510 - Bench mark (see explanation in Notes to Users section of this FIRM panel)
- 461.5 - Sea Mean

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
AUGUST 16, 1995

September 27, 2002, to update computer errors, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to delete special flood hazard areas, to change zone designations, to add reach and road areas, to incorporate designated special letters of map revision, to incorporate previously issued letters of map amendment, and to change Floodways.

The community map revision history table in accompanying report, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 800-358-9420.

MAP SCALE 1" = 2000'

FIRM FLOOD INSURANCE RATE MAP CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 3750 OF 4090

DATE: YEAR MONTH YEAR HOUR PANEL LAYOUT: EASTING, NORTH, PANEL, SUFFIX

CLARK COUNTY UNINCORPORATED AREAS 3750 176 6

MAP NUMBER 3209C3750 E

SEPTEMBER 27, 2002

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources or from dams. The community map preparator should be consulted for areas subject to additional Flood Hazard information.

To obtain more detailed information on areas where **Base Flood Elevation (BFE)** and/or **roadways** have been determined, users are encouraged to consult the Flood Profile and Floodway Data tables determined by the Flood Hazard and Study (FHS) report that accompanied this FIRMA. Users should be aware that BFEs shown on the FIRMA represent the most accurate elevations. These BFEs are intended for Flood Insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FHS should be utilized in conjunction with the FIRMA for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (CBFE) shown on this map apply only land west of U.S. North American Vertical Datum (NAVD) lines of this map should be aware that coastal flood elevations may also be provided in the Summary of Elevations table in the Flood Insurance Study report for the community. Elevations shown in the Summary of Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRMA.

Boundaries of the **roadways** were computed at cross sections and interpolated between cross sections. The roadways were based on hydrologic computations with regard to reconstruction of the National Flood Insurance Program. Floodway widths and other pertinent roadway data are provided in the Flood Insurance Study report for jurisdiction.

Certain areas not in Special Flood Hazard Areas may be entered by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in the jurisdiction.

The projection used in the production of this map is Universal Transverse Mercator (UTM), Zone 11. The horizontal datum is NAD83, GRS1980 geoid. Differences in datum, projection, and UTM zone used in the production of FIRMA for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRMA.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding correspondence between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Vertical Reference Bureau, NCGS-13
National Geodetic Survey, NOAA
Spartanburg, South Carolina 29583
1315 East-West Highway
Spartanburg, Maryland 21081
(301) 713-3191

To obtain current elevation, description, and/or location information for **benchmarks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRMA was provided in digital format by Clark County Regional Flood Control District. This information was generated using Orthorectified, dated 1989 or newer, and GPS/DEM data. Segments were digitized off of the orthorectified imagery based on color of pavement.

Corrections shown on this map are based on the last data available at the time of publication. Because changes due to construction or deconstruction may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate data locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of maps covering community map preparation areas; and a listing of Communities table containing National Flood Insurance Program data for each community as well as a listing of the panels on which each community is located.

An accompanying Flood Insurance Study report, Letter of Map Revision and Letters of Amendment covering portions of the area, and digital versions of the FIRMA, may be available. Contact the **FIRMA Map Service Center** at the following phone numbers and Internet address for information on all related products available from FEMA.

Phone: 800-358-8916
FAX: 800-358-9820
www.fema.gov

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2327) or visit the FEMA website at www.fema.gov.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRMA for this jurisdiction. The floodway and floodway data that were transferred from the previous FIRMA may have been adjusted in certain areas to better show stream channel configurations. As a result, the Flood Profile and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

This Digital Flood Insurance Rate Map (DFIRMA) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the Clark County commitment to share and maintain floodplain layers within their Geographic Information System Management Office (GISMO).

The FIRMA reflects several provisions related to the Flood Insurance Study (FIS) - Cooperative among local governmental agencies throughout Clark County. The Flood Insurance Study is the GIS Working Agreement formed between fourteen regional participants. In part, the agreement specifies that the Clark County GIS Management Office (GISMO) will be responsible for managing a GIS data warehouse and associated Southern Nevada GIS Metadata.

The GISMO's responsibilities go beyond managing the GIS data warehouse. GISMO also maintains the Statewide Database used by FEMA to disseminate digital data availability. <http://www.co.clark.nv.us/gis/gisinfo.htm>



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

- ZONE A** Areas of special flood hazard formerly protected from the 1% annual chance flood event by an artificial floodway or levee system that are determined to be unable to provide protection from the 1% annual chance or greater flood event.
- ZONE AE** Areas of special flood hazard formerly protected from the 1% annual chance flood event by a levee system that are determined to be unable to provide protection from the 1% annual chance or greater flood event.
- ZONE AO** Areas of special flood hazard formerly protected from the 1% annual chance flood event by a levee system that are determined to be unable to provide protection from the 1% annual chance or greater flood event.
- ZONE AR** Areas of special flood hazard formerly protected from the 1% annual chance flood event by a levee system that are determined to be unable to provide protection from the 1% annual chance or greater flood event.
- ZONE AR0** Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
- ZONE AY** Coastal flood zone with velocity hazard (waves action); no base flood elevations determined.
- ZONE AV** Coastal flood zone with velocity hazard (waves action); no base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depth of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are unmitigated, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)
CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
- Zone B Boundary
- Coastal Barrier Boundary
- Boundary of Special Flood Hazard Areas of different Base Flood Elevation, Flood Depth or Velocity
- Base Flood Elevation line and value; elevation in feet
- Base Flood Elevation value where uniform within zone; elevation in feet

Referenced to the North American Vertical Datum of 1988

- Contour Interval
- Treaded Line
- Depth of 2000 (1988 AD) referenced to the North American Datum of 1988 (NAVD)
- 427600M
- 1000-meter Universal Transverse Mercator grid values, zone 11
- 600000 FT
- 5000-foot grid lines
- DMS15
- Bench mark spot explanation in Note to Users section of this FIRMA
- M 1.5
- River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTY-WIDE FLOOD INSURANCE RATE MAP
AUGUST 16, 2002

EFFECTIVE DATES OF REVISIONS TO THIS PANEL
September 27, 2002 (to update information to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to delineate special flood hazard areas, to change special flood hazard areas, to incorporate previously issued letters of map amendment, and to change floodway data)

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.
To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 858-8620.

MAP SCALE 1" = 2000'
1000 500 0 500 1000 METERS

NATIONAL FLOOD INSURANCE PROGRAM

FIRM FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 3850 E

PANEL 3850 OF 4090
SEE MAP INDEX FOR FIRM PANEL LAYOUT

DATE: 08/16/02
COMMUNITY: NUMBER: PANEL: SURVEY:
CLARK COUNTY, NEVADA AND INCORPORATED AREAS 320003 3850 E

MAP NUMBER 3200033850 E

MAP REVISED: SEPTEMBER 27, 2002

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify areas subject to flooding, particularly from local drainage sources or small flows. The community map preparator should be contacted for possible updates of additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevation (BFE)** and/or **Floodway** have been determined, users are encouraged to consult the Flood Profile and Floodway Data tables contained within the Flood Hazard Study (FHS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent elevated whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevations presented in the FHS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (CBFE) shown on this map apply only to land west of US North American Vertical Datum Mean Sea Level of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Station Elevations table in the Flood Insurance Study report for the community. Elevations shown in the Summary of Station Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **Floodways** were computed at cross sections and interpolated between cross sections. The Floodways were based on hydraulic computations which require the requirements of the National Flood Insurance Program. Floodway width and other pertinent floodway data are provided in the Flood Insurance Study report for the jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **Flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM) Zone 12. The **horizontal datum** is NAD83. GPS/IGPS00 apparent differences in datum, apparent projections of UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features between jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding correspondence between the National Geodetic Vertical Datum of 1928 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Vertical Datum Bureau, NCEC13
National Geodetic Survey, NOAA
Signal Corps Station 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3181

To obtain current elevation, description, and/or location information for **benchmarks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by Clark County Regional Flood Control District. This information was converted using Orthophotography, dated 1998 or newer, and GIS/IMDI data. Segments were digitized off of the orthophotography based on center of pavement.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or dis-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate and locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the areas of map sheets, community area relationships, address, and a listing of Communities table containing National Flood Insurance Program data for each community as well as a listing of the panels on which each community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment, listing portions of the area and/or portions of this PANEL may be available. Contact the **FEMA Map Revision Center** at the following phone numbers and internet address for information on related products available from FEMA:

Phone: 800-358-6118
FAX: 800-358-6920
www.fema.gov

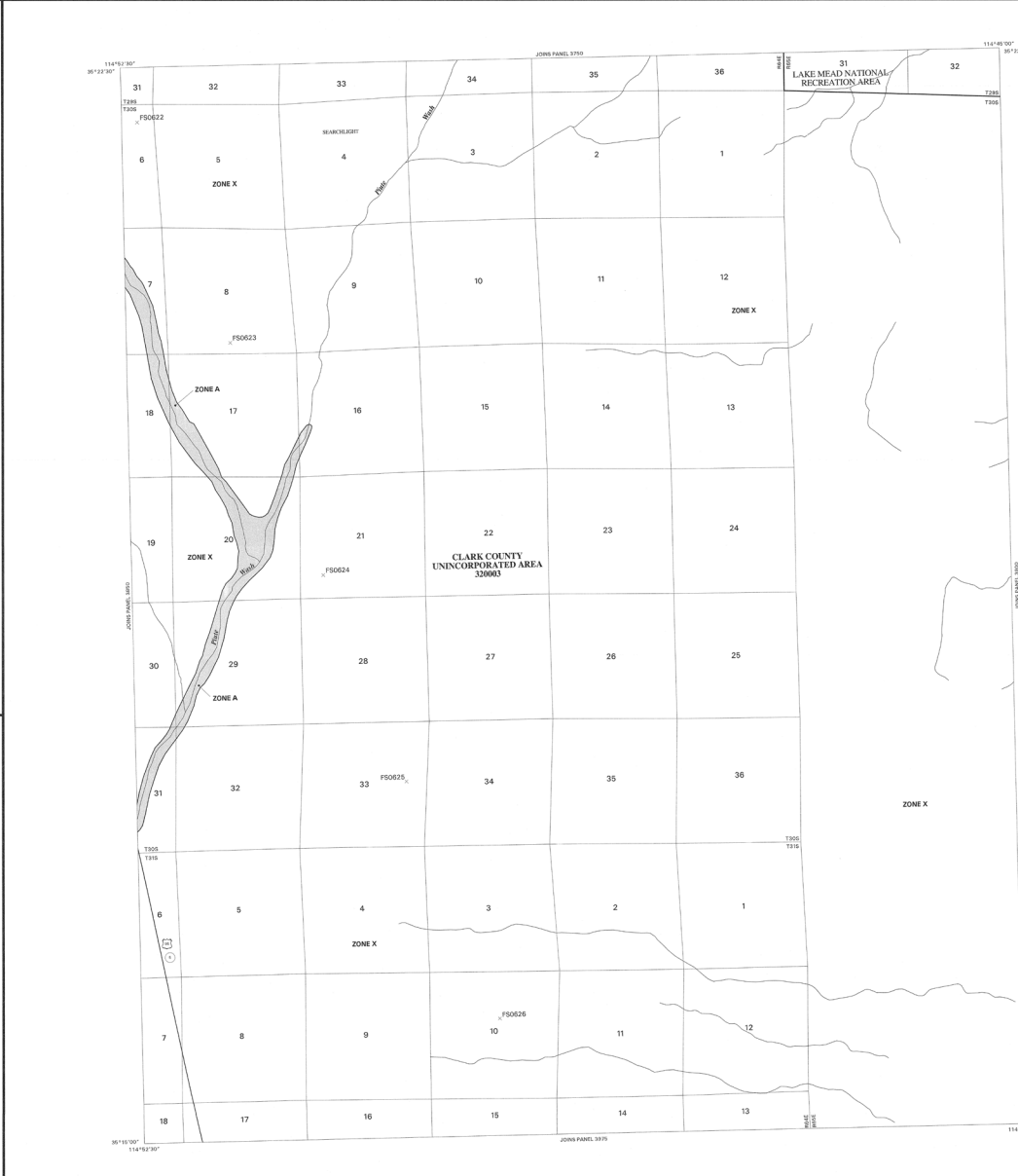
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at www.fema.gov.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways shown on this map were computed using the most current data available in accordance with these more detailed channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

The Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long term approach of flood management to decrease the costs associated with flooding. This is demonstrated by the Clark County's investment in state-of-the-art floodplain layers within their Geographic Information System Management Office (GISMO).

This DFIRM reflects several innovative features. These include:
- Southern Nevada GIS: Cooperation among local governmental agencies throughout Clark County. The foundation of cooperation is the GIS Interlocal Agreement formed between southern regional participants. In fact, the agreement specifies that the Clark County GIS Management Office (GISMO) will be responsible for managing a GIS data warehouse and associated Southern Nevada GIS Metadata.
- The GISMO's responsibilities go beyond maintaining the GIS data warehouse. GISMO also maintains the Statewide Database used by 311 dispatch services. This contains database entries as the base map for this DFIRM.

DIGITAL DATA AVAILABILITY: <http://www.dss.clark-nv.gov/gis/gisinfo.htm>



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

- ZONE A** Special Flood Hazard Areas (SFHA) subject to inundation by the 1% annual chance flood (100-year flood), also known as the base flood, in the flood hazard area in the area subject to flooding by the 1% annual chance flood. These areas are shown in light gray on this map. The elevation of the base flood is shown in the Flood Profile and Floodway Data tables in the Flood Insurance Study report for the jurisdiction.
- ZONE AE** Base flood elevations determined.
- ZONE AH1** Flood depths of 1 to 3 feet (locally areas of ponding); base flood elevations determined.
- ZONE AH2** Flood depths of 1 to 3 feet (locally areas of ponding); average depths determined; for areas of shallow fan flooding, velocities also determined.
- ZONE AR** Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently removed. Areas AR indicate that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
- ZONE A99** Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood area of 1% annual chance flood with average depths of less than 1 foot or with damage areas less than 1 square mile; not more protected by levees than 1% annual chance flood.

OTHER AREAS

ZONE E Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are unassessable, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- Coastal Barrier Boundary
- Boundary showing Special Flood Hazard Areas of different Base Flood Elevations, Flood depths or velocities
- Base Flood Elevation line and value, elevation in feet
- Base Flood Elevation value where uniform within panel
- Cross Section Line
- Elevation Line
- Diagonal line, coordinates, referenced to the North American Vertical Datum of 1988 (NAVD 88)
- 4276000 1000-foot Universal Transverse Mercator grid value, north
- 600000 FT 5000-foot grid ticks
- Dashed line with elevation in feet to US datum section of this panel
- MAP

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF CURRENT FLOOD INSURANCE RATE MAP
October 16, 1995

EFFECTIVE DATES OF REVISIONS TO THIS PANEL
September 27, 2002 To update response limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to change special flood hazard areas, to add new and old areas, to incorporate previously issued letters of map revision, to incorporate previously issued letters of map amendment, and to change boundary.

For comments map revision history prior to September 27, 2002, refer to the Community Map History tables located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6820.



PANEL 3875 E

FIRM FLOOD INSURANCE RATE MAP CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 3875 OF 4090

(SEE MAP INDEX FOR FIRM PANEL LAYOUTS)

JOINTLY:

COMPLETED: FEBRUARY 2002

CLARK COUNTY UNINCORPORATED AREAS 00000 0000 0000 E

Notes to User: The Map Number shown below should be used when referring to the community. Community names shown above should be used on insurance applications for the subject community.

MAP NUMBER 3206033875 E

MAP REVISED: SEPTEMBER 27, 2002

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from low stage sources of small size. The community map preparator should be consulted for possible updates or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevation (BFE)** and/or **Floodway** have been determined, users are encouraged to consult the Flood Profile and Floodway Data tables included within the Flood Hazard Study. The Flood Profile report that accompanies this FIRMA Users should be aware that BFEs shown on the FIRMA represent reported elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIRMA should be utilized in conjunction with the FIRMA for purposes of construction and/or floodway management.

Coastal Base Flood Elevation (CBFE) shown on this map apply only to landward of 100' North American Vertical Datum (NAVD). Users of this FIRMA should be aware that coastal flood elevations may also be provided in the Summary of Flood Hazard Data in the Flood Insurance Study report for this community. Elevations shown in the Summary of Flood Hazard Data should be used for construction and/or floodway management purposes when they are higher than the elevations shown on this FIRMA.

Boundaries of the **Floodway** were computed at cross sections and interpolated between cross sections. The Floodway were based on hydraulic computations with regard to requirements of the National Flood Insurance Program. Floodway width and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **Flood Control Structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The projection used in the preparation of this map is Universal Transverse Mercator (UTM), Zone 11. The horizontal datum is NAD83. GRS1983 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMA for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRMA.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Vertical Datum of 1988 and the North American Vertical Datum of 1988, visit the National Geographic Survey website at www.ngs.noaa.gov or contact the National Geographic Survey at the following address:

Vertical Network Branch, NCGI-3
National Geographic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3181

To obtain current elevation, description, and/or location information for **benchmarks** shown on this map, please contact the Information Services Branch of the National Geographic Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRMA was provided in digital format by Clark County Regional Flood Control District. This information was converted using Orthophotography, dated 1999 or newer, and GRTX02E data. Segments were clipped off of the orthophotography based on color of pavement.

Corporate **Boundaries** shown on this map are based on the best data available at the time of publication. Because changes due to annexations or disincorporations may have occurred since this map was published, map users should contact appropriate community officials for any future corporate boundary changes.

Please refer to the separate period **Map Index** for an overview map of the county showing the layout of map sheets, community map repository addresses, and a listing of Communities labels containing National Flood Insurance Program data for each community as well as a listing of the panels on which each community is located.

An accompanying Flood Insurance Study report, Letter of Map Revision or Letter of Map Amendment listing actions of the panel, and digital version of this PANEL may be available. Contact the **FEMA Map Service Center** at the following phone numbers and internet address for information on all related products available from FEMA:

Phone: 800-338-8916
Fax: 800-338-8920
www.fema.gov

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2327) or visit the FEMA website at www.fema.gov.

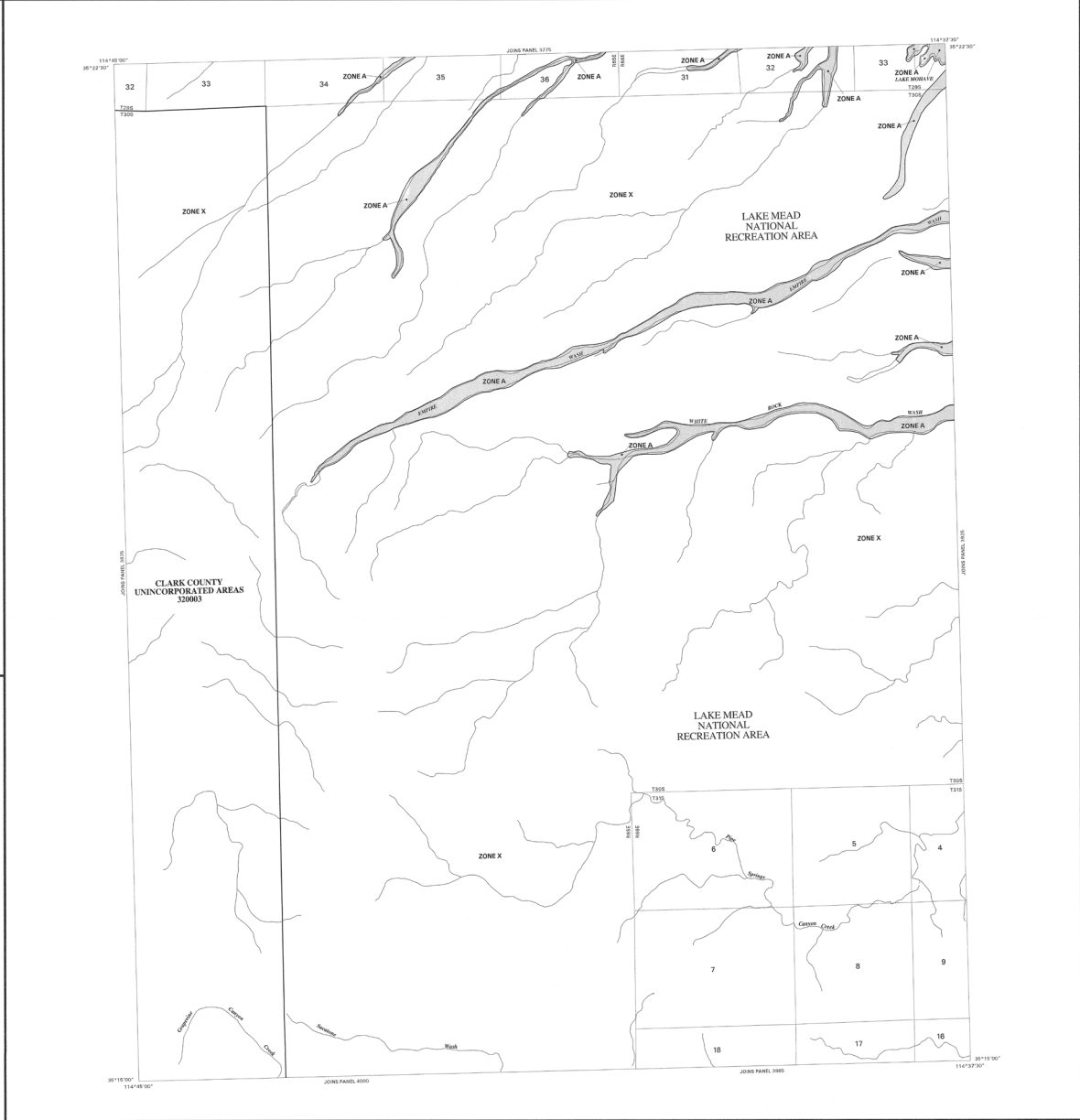
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRMA for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRMA may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profile and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

This Digital Flood Insurance Rate Map (DFIRM) was produced through a joint partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long term approach of floodway management to address the needs associated with flooding. This is demonstrated by the Clark County commitment to share and maintain floodplains data within their Geographic Information System (GIS).

The DFIRM reflects several innovative features. These include a Southern Nevada Regional Flood Insurance Study (R-FIS) agreement through Clark County. The foundation of cooperation is the GIS Interlocal Agreements formed between various regional communities. In the agreement, the community that the Clark County GIS Management Office (GISMO) will be responsible for maintaining a GIS data warehouse and associated Southern Nevada GIS Metadata.

The GISMO's responsibilities go beyond maintaining the GIS data warehouse. GISMO has maintained the Storm Control Database used by 111 dispatch services. This extensive database serves as the base map for the DFIRM.

DIGITAL DATA AVAILABILITY: <http://www.co.clark.nv.us/cti/gis/gisinfo.htm>



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

- ZONE AE** Special Flood Hazard Areas (SFHA) subject to inundation by the 1% annual chance flood (100-year flood), also known as the base flood. In the Flood Hazard Area in the area subject to flooding by the 1% annual chance flood, areas of Special Flood Hazard Zones A, AE, X, and V. The Base Flood Elevation (BFE) is shown on this map.
- ZONE A** No base flood elevation determined.
- ZONE AE** Base flood elevations determined.
- ZONE AH** Floodway areas (W) that include areas of potential base flood elevation determined.
- ZONE AD** Flood elevations of 1 to 3 feet locally above flow on existing terrain; average depths determined. For areas of urban fan flooding, average depths determined.
- ZONE AR** Area of special flood hazard boundary protected from the 1% annual chance flood event by the 1% annual chance flood event, but not necessarily with a 100' North American Vertical Datum (NAVD) elevation. Areas of special flood hazard boundary protected from the 1% annual chance of greater frequency.
- ZONE ARB** Area to be protected from 1% annual chance flood event by a Federal Flood Protection System (FFPS) construction; no base flood elevation determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); no base flood elevation determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); base flood elevation determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encumbrance to allow the 1% annual chance flood to be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with average areas less than 1 square foot, and areas protected by levees from the 1% annual chance flood.
- ZONE K** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

Otherwise protected areas (OPAs) CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodway Boundary
- Floodway Boundary
- Zone B Boundary
- Coastal Barrier Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevation, Floodway or velocity.
- Base Flood Elevation line and value; elevation in feet*
- (EL 887)** Base Flood Elevation value where uniform within zone.

*Referenced to the North American Vertical Datum of 1988

- Cross Section Line
- Transit Line
- Geographic coordinates, referenced to the North American Datum of 1983 (NAD 83)
- 100-meter National Transverse Mercator grid values, zone 11
- 5000-foot grid lines
- DXS510** Bench mark; base elevation in fathoms to datum section of this FIRMA panel.
- ▲** 411.5

MAP REPOSITORY

Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

AUGUST 16, 1999

EFFECTIVE DATES OF REVISIONS TO THIS PANEL

September 27, 2002: To update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to delete special flood hazard areas, to change area designations, to add roads and road names, to incorporate previously unincorporated areas, to incorporate previously unincorporated areas (OPAs), and to change floodways.

For comments, map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction. To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6622.

MAP SCALE 1" = 2000'

1000 5 2000 4000 METERS

800 0 600 1200

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 3900 E

FIRM FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 3900 OF 4090
SEE MAP INDEX FOR FIRM PANEL LAYOUT

COMMUNITY: JARBER, PABEL, BURFL

CLARK COUNTY UNINCORPORATED AREAS: 00000 0000 0000

MAP NUMBER 32003C3900 E

MAP REVISED: SEPTEMBER 27, 2002

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not constitute a warranty of any kind for flood damage or loss. The community map regularly should be consulted for current information on flood hazard information.

To obtain more detailed information in areas where Base Flood Elevation (BFE) and/or Floodways have been determined, users are encouraged to consult the Flood Profile and Floodway Data (as appropriate) with the Flood Insurance Study (FIS) report that accompanies the FIRMs. Users should be aware that BFEs shown on the FIRM represent modeled water-foot elevations. These BFEs are intended for flood damage prevention purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data obtained from the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Certain Base Flood Elevation (BFE) shown on this map apply only to land used for North American Vertical Datum (NAVD). Users of this FIRM should be aware that certain flood elevations may also be provided in the community map. Flood elevations shown on the Flood Insurance Study report for the community map should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the Floodways were computed at cross sections and interpolated between cross sections. The Floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The projection used in the preparation of this map is Universal Transverse Mercator (UTM). Zone 11. The horizontal datum is NAD83. Orthometric differences in datum, spheroid, projection or UTM shown used in the production of FIRMs for adjacent jurisdictions may result in slight horizontal differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geospatial Vertical Datum of 1988 and the North American Vertical Datum of 1988, visit the National Geospatial Vertical Datum website at www.ngv.doh.gov or contact the National Geospatial Vertical Datum website at the following address:

Vertical Network Branch, NOAA
National Geospatial Survey, NOAA
Silver Spring Metro Center 3
1215 Silver Spring Highway
Silver Spring, Maryland 20910
301-713-2131

To obtain current elevation, description, and/or location information for benchmark marks shown on this map, please contact the Information Services Branch of the National Geospatial Survey at (301) 713-3342, or visit their website at www.ngv.noaa.gov.

Base map information shown on this FIRM was provided in digital format by Clark County Regional Flood Control District. This information was generated using Orthophotography, Aerial 1999 or newer, and GPS/IMR data. Segments were captured at 1:25,000 scale based on a center of instrument.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to incorporations or disincorporations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate and local boundaries.

Please refer to the separate printed Map Index for an overview map of the County showing the limits of map panels, community map relative addresses and a listing of Communities Data containing National Flood Insurance Program data for each community as well as a listing of the panels on which each community is located.

An accompanying Flood Insurance Study report, Letter of Map Revision or Letter of Map Amendment (revised portions of this report) and digital versions of the FIRM may be available. Contact the FEMA Map Service Center at the following phone numbers and internet address for information on all products available from FEMA:

Phone: 800-368-5616
FAX: 800-368-8620
www.fema.gov/firm

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-368-2627) or visit the FEMA website at www.fema.gov.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodlines and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profile and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

The Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach to floodplain management to decrease the costs associated with flooding. This approach is based on the Clark County commitment to adopt and maintain floodplain management standards that meet or exceed the Federal Emergency Management Agency (FEMA) standards.

The DFIRM reflects several innovative features. These include:

- A Southern Nevada GIS - Cooperation among local governmental agencies throughout Clark County. The facilitation of cooperation in the GIS digital age.
- Expanded stream channel and floodplain data. In order to determine floodplain boundaries, the Clark County GIS Management Office (GISMO) will be responsible for acquiring GIS data and maps and associated Southern Nevada GIS data.
- The GISMO's responsibilities go beyond maintaining the GIS data warehouse. GISMO also maintains the Stream Channel Database used by FEMA's National Flood Insurance Program (NFIP) to determine floodplain boundaries.

This content database serves as the base map for the DFIRM.

DIGITAL DATA AVAILABILITY: <http://www.co.clark.nv.us/isd/gis/gisinfo.htm>



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 31 SOUTH, RANGE 68 EAST 3

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood) also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Flood Hazard Area is the area within a community that is subject to the 1% annual chance flood. The Flood Hazard Area is the area within a community that is subject to the 1% annual chance flood. The Flood Hazard Area is the area within a community that is subject to the 1% annual chance flood.

ZONE A
Base Flood Elevation Determination.

ZONE AH
Special Flood Hazard Area (SFHA) that has a limited amount of protection from the 1% annual chance flood. The flood depth is 1.5 to 2 feet greater than the average water surface elevation. Floodway boundaries are determined. For areas of actual flood flooding, additional elevation information is provided.

ZONE AD
Area of special flood hazard boundary protection from the 1% annual chance flood. The flood depth is 1.5 to 2 feet greater than the average water surface elevation. Floodway boundaries are determined. For areas of actual flood flooding, additional elevation information is provided.

ZONE A99
Area to be protected from the 1% annual chance flood event by a Federal Flood protection system. Floodway boundaries are determined. For areas of actual flood flooding, additional elevation information is provided.

ZONE Y
Coastal Flood zone with velocity based wave action. Base Flood Elevation Determination.

ZONE VE
Coastal Flood zone with velocity based wave action. Base Flood Elevation Determination.

FLOODWAY AREAS IN ZONE AE
The floodway is the area of a special flood hazard floodplain area that must be kept free of encumbrance so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X
Area of 0.2% annual chance flood; areas of 1% annual chance flood with average depth of less than 1 foot or with storage area less than 1 square mile, and areas protected by levees from 1% annual chance flood.

OTHER AREAS
Areas determined to be outside the 0.2% annual chance floodplain.

ZONE B
Areas in which flood hazards are substantial but periodic.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)
CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

BOUNDARIES
Floodplain Boundary
Jurisdiction Boundary
Zone D Boundary
Coastal Barrier Boundary

BOUNDARY DIVIDING SPECIAL FLOOD HAZARD AREAS OF DIFFERENT BASE FLOOD ELEVATIONS AND/OR OTHER AREAS
Base Flood Elevation values where uniform within areas.
(EL 100)
Cross Section Line
Transect Line
Boundary description referenced to the North American Datum of 1988 (NAD 83)
100-foot Universal Transverse Mercator grid values, zone 11
8000-foot grid lines

BOUNDARY DIVIDING SPECIAL FLOOD HAZARD AREAS OF DIFFERENT BASE FLOOD ELEVATIONS AND/OR OTHER AREAS
Base Flood Elevation values where uniform within areas.
(EL 100)
Cross Section Line
Transect Line
Boundary description referenced to the North American Datum of 1988 (NAD 83)
100-foot Universal Transverse Mercator grid values, zone 11
8000-foot grid lines

MAP REPOSITORY
Refer to Repository Listing on Intra-Map
EFFECTIVE DATE OF COMMUNITY FLOOD INSURANCE RATE MAP:
August 15, 1988
EFFECTIVE DATES OF REVISIONS TO THIS PANEL:
September 27, 2006 - to update corporate limits, to change base flood elevations, to add base flood elevation, to update flood hazard areas, to change special flood hazard areas, to incorporate previously issued letters of map revision, to incorporate previously issued letters of map amendment, and other revisions.

FOR COMMUNITY MAP REVISION HISTORY prior to countywide mapping, refer to the Community Map History tab located in the Flood Insurance Study report for this jurisdiction.
To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 800-368-5626.

MAP SCALE 1:2000
1000 0 1000 2000
METERS

PANEL 3925 E

FIRM FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 3925 OF 4000
SEE MAP INDEX FOR FIRM PANEL LAYOUT

COMMUNITY

COMMUNITY	NUMBER	PANEL	SUFFIX
CLARK COUNTY INCORPORATED AREAS	0000	000	E

MAP NUMBER 32003C3925 E
MAP REVISED: SEPTEMBER 27, 2006

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources or small levees. The community map repository should be consulted for possible updates or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevation (BFE)** and/or **Floodways** have been determined, users are encouraged to consult the Flood Profile and/or Floodway Determination Report (FDR) and Flood Profile and/or Floodway Determination Report (FDR) report that accompanies this FIRMA. Users should be aware that BFEs shown on the FIRMA represent modeled elevation information. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data generated in the FIS should be utilized in conjunction with the FIRMA for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (CBFE) shown on this map apply only to landward of 0.2 North American Vertical Datum (NAVD). Users of this BFE should be aware that coastal flood elevations may also be provided in the Community of Jurisdiction Inventory table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Significant Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRMA.

Boundaries of the **Floodways** were computed at cross sections and interpolated between cross sections. The Floodways were based on hydraulic computations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **Flood Control Structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM), Zone 11. The **horizontal datum** is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMA for adjacent jurisdictions may result in slight planimetric differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRMA.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Vertical Datum Branch, NCG13
National Geodetic Survey, NOAA
256 Burgin Meade Center 3
1215 East Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3342, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRMA was provided in digital format by Clark County Regional Flood Control District. This information was derived using Orthophotography, aerial 1999 or newer, and GPS/DEM data. Segments were digitized off of the orthophotography based on color contrast.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexation or de-annexation may have occurred after this map was published, map users should contact appropriate community officials or verify current corporate limit locations. Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a listing of Communities tables containing National Flood Insurance Program data for each community as well as a listing of the parcels on which each community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment listing actions of this panel, and digital versions of this PANEL may be available. Contact the **FEMA Map Service Center** at the following phone numbers and Internet address for information on all revised products available from FEMA.

Phone: 800-358-8846
FAX: 800-358-9620
www.fema.gov/mc

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2377) or visit the FIRMA website at www.firma.gov.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRMA for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRMA may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

This Digital Flood Insurance Rate Map (DFIRMA) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach of floodplain management to increase the costs associated with flooding. This is demonstrated by the Clark County commitment to share and maintain floodplain data within their Geographic Information System Management Office (GISMO).

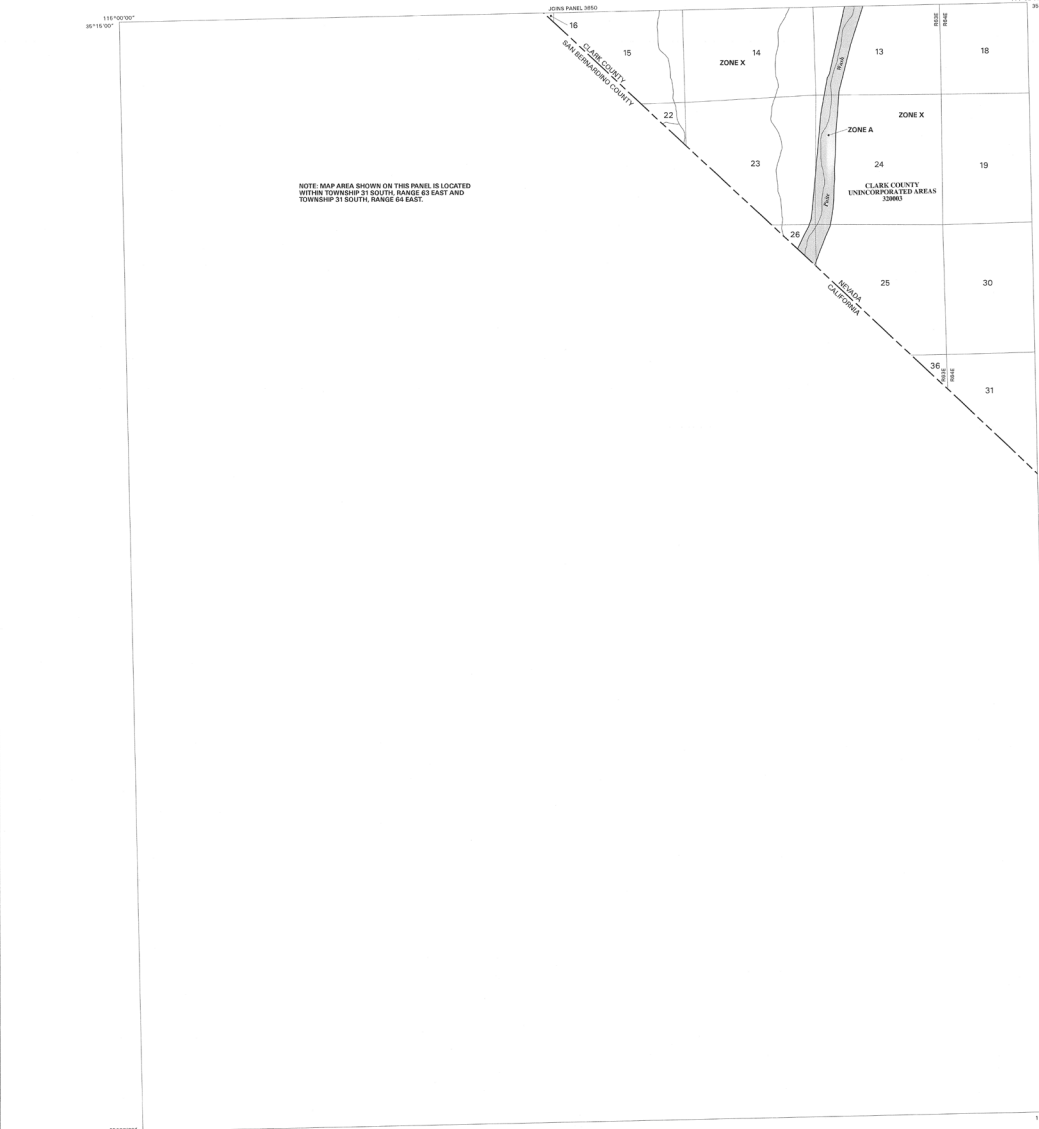
The DFIRMA reflects several innovative features. These include a Geographic Information System (GIS) database and management system throughout Clark County. The foundation of cooperation is the GIS Interlocal Agreements formed between various regional partners. In fact, the agreement specifies that the Clark County GIS Management Office (GISMO) will be responsible for maintaining a GIS data warehouse and associated location Nevada GIS Metadata.

The GISMO's responsibilities go beyond maintaining the GIS data warehouse. GISMO also maintains the Base Elevation Database used by IT dispatch services. This corporate database serves as the base map for this DFIRMA.

DIGITAL DATA AVAILABILITY: <http://www.co.clark.nv.us/cei/gis/mo.htm>



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 31 SOUTH, RANGE 63 EAST AND TOWNSHIP 31 SOUTH, RANGE 64 EAST.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the Flood Hazard Area in the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard Areas are shown in the Flood Hazard Area Inventory table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Significant Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRMA.

- ZONE A** No base flood elevation determined.
- ZONE AE** Base flood elevation determined.
- ZONE AH** Areas of special flood hazard boundary protected from the 1% annual chance flood event by a flood control system that uses substantial structural protection. Zone AH indicates that the storm flood control system is designed to prevent overtopping from the 1% annual chance of greater flooding.
- ZONE AR** Areas to be protected from 1% annual chance flood event by a Federal Flood Protection System under construction; no base flood elevations determined.
- ZONE AV** Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The Floodway is the channel of a stream that any adjacent floodplain area that must be kept free of encumbrance to allow the 1% annual chance flood to pass without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X** Areas of 0.2% annual chance flood areas of 1% annual chance flood with average depths of less than 1 foot or with damage areas less than 1% of total area, and areas protected by levees from 1% annual chance of greater flooding.
- OTHER AREAS**
- ZONE D** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE E** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and Other Community Based Areas are adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
- Zone X Boundary
- Coastal Barrier Boundary
- Boundary Showing Special Flood Hazard Areas of different Base Flood Elevation, Flood Depth or Intensity
- Base Flood Elevation line and values in feet*
- (E 567) Base Flood Elevation value when uniform within cross-section
- Transverse Line
- (A 567) Transverse Line
- (A 567) Transverse Line

*Referenced to the North American Vertical Datum of 1988

07°47'30" N, 112°12'30" W
422,996 ft
600000 FT
5000-foot grid ticks

DK5519; Bench mark data explanation in Notes to Users section of this FIRMA panel.

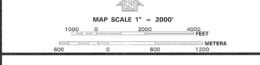
MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
AUGUST 10, 1995

EFFECTIVE DATES OF REVISIONS TO THIS PANEL
September 27, 2002; to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to delete special flood hazard areas, to change area designations, to add reach and road names, to incorporate amendments, to delete areas of non-protected floodplains, to delete areas of non-protected floodplains, to delete areas of non-protected floodplains, to delete areas of non-protected floodplains.

For community map metadata before prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

If alternate flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 800-638-6622.



**FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY,
NEVADA AND
INCORPORATED AREAS**

PANEL 3950 OF 4090

SEE MAP INDEX FOR FIRM PANEL LAYOUT

COUNTY	COMMUNITY	NUMBER	SHEET
CLARK COUNTY	INCORPORATED AREAS	3950	6

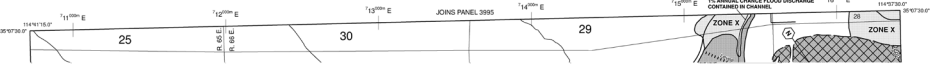
**MAP NUMBER
32000C3950 E**
**MAP REVISED:
SEPTEMBER 27, 2002**

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and Floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO JURISDICTION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Areas are delineated by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AV, A1, A2, A3, A9, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

NOTES TO USERS

This map is for use in addressing the National Flood Insurance Program. It does not necessarily identify areas subject to elevation, but does show local drainage sources of small size. The community map repository should be consulted for complete information on flood elevations.

To obtain more detailed information in areas where Base Flood Elevations (BFE) are shown, refer to the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report. These elevations were derived from the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report. These elevations were derived from the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report. These elevations were derived from the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report.

Coastal Base Flood Elevations shown on this map apply only to lowland of 0.7' from American Vertical Datum of 1988 (AVD 88). Users of the FIS should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction or flood management purposes when they are higher than the elevations shown on this FIS.

Elevations of the floodway have been computed at cross sections and interpolated between cross sections. The floodway was based on hydraulic considerations and subject to requirements of the National Flood Insurance Program. Floodway widths and other pertinent roadway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map is Universal Transverse Mercator (UTM) zone 11. The horizontal datum was NAD83, GRS1980 spheroid. Distances in linear alignment in UTM zones are constant to the production of FRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIS.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to the ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1988 and North American Vertical Datum of 1988, refer to the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NGA, NAD83
National Geodetic Survey
5500 S. Yuma Road
1315 East-West Highway
Silver Spring, MD 20910-0202

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (901) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIS was provided in digital format by the Clark County GIS Management Office (GISMO).

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIS for this jurisdiction. The floodway and floodway data were transferred from the previous FIS. The floodway and floodway data were transferred from the previous FIS. The floodway and floodway data were transferred from the previous FIS.

Corporate limits shown on this map are based on the best data available at the time of publication. Corporate limits are subject to change and should be verified with the appropriate community officials to verify current corporate limits locations.

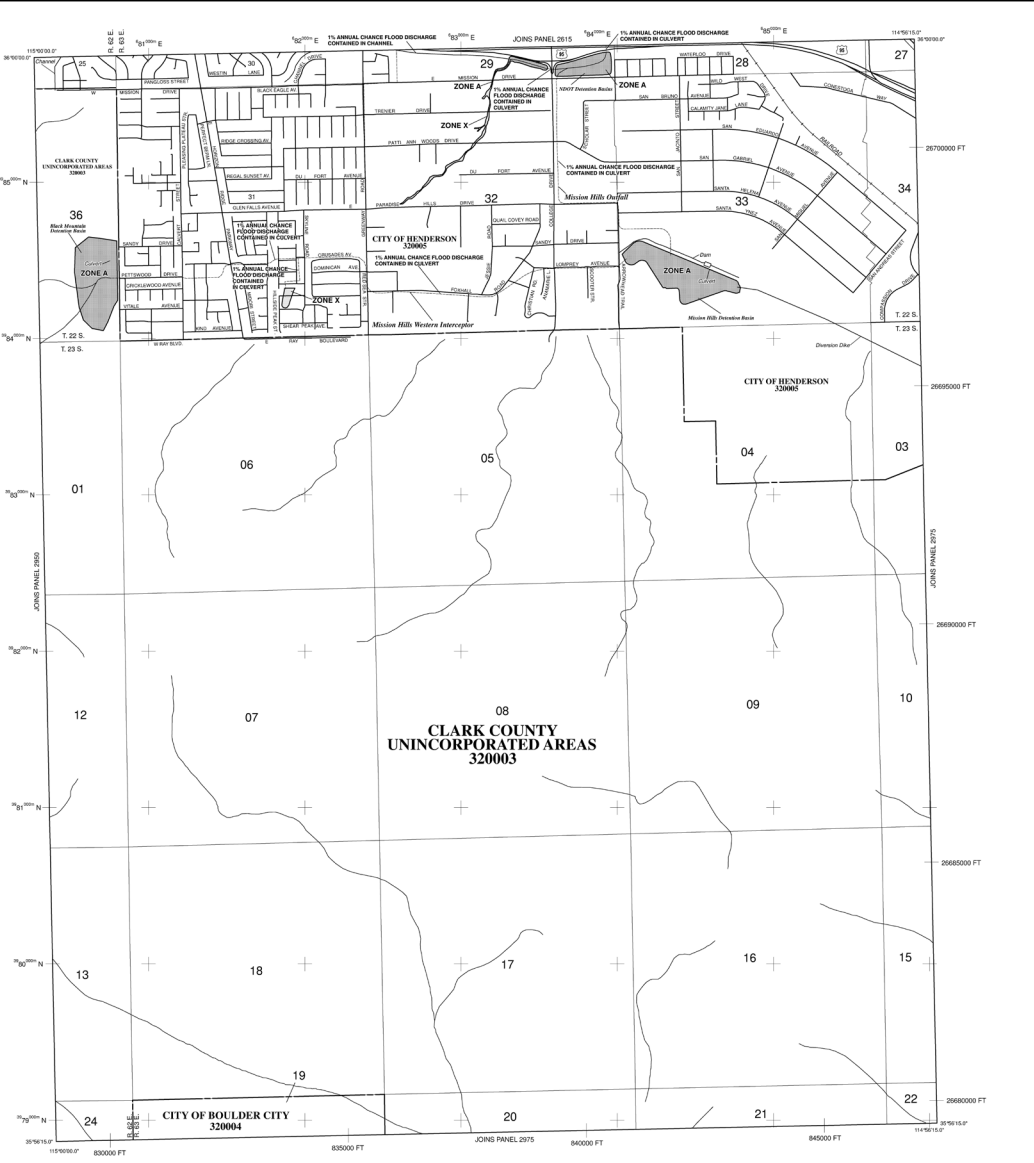
Please refer to the separately printed Map Index for an overview map of the county showing the location of map sheets, community map repository, addresses, and a listing of Communities with Contiguous National Flood Insurance Program data for each community as well as a listing of the panels on which each community is located.

For information and questions about this map, available products associated with this FIS including historic versions of this FIS, base map products or the National Flood Insurance Program (NFIP) general, please visit the FEMA Map Service Center website at <http://www.fema.gov>. Available products may include previous final editions of the FIS, Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIS panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eExchange.

The Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the Clark County commitment to share and maintain floodplain layers within their Geographic Information System Management Office (GISMO).

The DFIRM reflects several innovative features. These include:
 • Southern Nevada GIS-Cooperation among local government agencies throughout Clark County. The foundation of cooperation is the GIS Technical Agreement formalized between fourteen regional participants. In part, the agreements specify that the Clark County GIS Management Office (GISMO) will be responsible for maintaining a GIS data warehouse and associated Southern Nevada GIS metadata.
 • The GISMO's responsibilities go beyond maintaining the GIS data warehouse. GISMO also maintains the Street Centerline Database used by 111 dispatch services. This centerline database serves as the baseline for this DFIRM.

DIGITAL DATA AVAILABILITY: <http://www.clark.nv.us/ce/gis/gisinfo.htm>



LEGEND

- SPECIAL FLOOD HAZARD AREAS (SFHA) SUBJECT TO MODIFICATION BY THE 1% ANNUAL CHANCE FLOOD**
 The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Areas (SFHA) are shown on this map. The 1% annual chance flood areas are shown in light gray. The 1% annual chance flood areas are shown in light gray. The 1% annual chance flood areas are shown in light gray.
- ZONE A**
 No Base Flood Elevations determined.
- ZONE AE**
 Base Flood Elevations determined.
- ZONE AH**
 Flood depths of 1 to 3 feet (usually sheet flow on existing terrain); average depths determined for areas of actual base flooding; velocity also determined.
- ZONE AR**
 Special Flood Hazard Areas (SFHA) are shown on this map. The 1% annual chance flood (100-year flood) is shown in light gray. The 1% annual chance flood (100-year flood) is shown in light gray. The 1% annual chance flood (100-year flood) is shown in light gray.
- ZONE AW**
 Area to be protected from 1% annual chance flood by a Federal Flood Protection System under construction; no Base Flood Elevations determined.
- ZONE V**
 Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE**
 Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE**
 The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS**
ZONE X
 Areas determined to be outside the 0.2% annual chance floodplain with average depths of less than 1 foot or with average areas less than 1 square mile; areas protected by levees from 1% annual chance flood.
- OTHER AREAS**
ZONE C
 Areas determined to be outside the 0.2% annual chance floodplain. Areas in Zone C are shown in light gray.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OPA)**
 CBRS areas and OPAs are normally based on an adjacent to Special Flood Hazard Areas.
- BOUNDARY**
 Floodplain boundary
 Floodway boundary
 Zone boundary
 CBRS and OPA boundary
- BOUNDARY, DOTTED**
 Boundary, Dotted Special Flood Hazard Areas of different Base Flood Elevations, Flood Depths or Flood Velocity
- BOUNDARY, DASHED**
 Base Flood Elevation line and value, elevation in feet
- BOUNDARY, SOLID**
 Base Flood Elevation value where uniform within zone; elevation in feet
- BOUNDARY, DOTTED**
 Refer to the North American Vertical Datum of 1988 (NAVD 88)
- BOUNDARY, SOLID**
 Cross section line
- BOUNDARY, SOLID**
 Transit line
- BOUNDARY, SOLID**
 Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
 97°07'37" 32°02'30"
 3600-meter Universal Transverse Mercator grid 480a, zone 11
 6000000 FT
 5000-foot grid ticks: Northing State Plane coordinate system used (NAD83/2011)
 Transverse Mercator
- BOUNDARY, SOLID**
 Bench mark data (application in Notes to Users section of the FIS report)
- BOUNDARY, SOLID**
 River Mile
- BOUNDARY, SOLID**
 MAP REPRODUCTION
 Refer to Map Reproduction on Map Index
- BOUNDARY, SOLID**
 EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
 August 16, 1975
 EFFECTIVE DATE OF REVISION TO THIS PANEL
 July 16, 2011

November 16, 2011, to update corporate limits, to change Base Flood Elevations, to add Base Flood Elevations, to add Special Flood Hazard Areas, to change Flood Hazard Areas, to incorporate previously issued Changes of Map Revision, to reflect updated geographic information, and to update floodway boundaries.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-438-6626.

NATIONAL FLOOD INSURANCE PROGRAM

FIRM FLOOD INSURANCE RATE MAP

CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 2955 OF 4090
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLARK COUNTY	30000	2955	F
BOULDER CITY, CITY OF	30000	2955	F
REDFORTION CITY OF	30000	2955	F

MAP NUMBER 32003C2955F
MAP REVISED NOVEMBER 16, 2011

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify areas subject to flooding, but rather provides information on potential damage sources of small size. The community map repository should be consulted for possible water elevations.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or Floodway Data are shown, please contact the Flood Insurance Study (FIS) report for the community. The FIS report contains the Flood Profiles and Floodway Data and/or Summary of Floodway Data. Users should be aware that BFEs shown on the FIS report represent water-foot elevations. These BFEs are intended for flood damage rating purposes only and should not be used as the sole source of flood elevation information. Flood elevation data presented in the FIS report should be utilized in conjunction with the FIS report for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only to landward of 400 feet from the National Wetlands of 1986 (NWD86). Users of the FIS report should be aware that coastal flood elevations are also provided in the Summary of Floodway Data table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Floodway Data table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIS report.

Boundaries of the floodways were completed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway study and other performance data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The horizontal datum was NAD83. GIS/RSO alignment differences in datum, alignment, projection or UTM zones used in the production of FIS data for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIS.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to elevations and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NGA-M, NGS01512
National Geodetic Survey
SIOC-A, #3002
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIS report was provided in digital format by the Clark County GIS Management Office (GISMO).

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIS report for this jurisdiction. The floodplains and floodways that were transferred from the previous FIS report have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables on the Flood Insurance Study report (which contain authoritative hydraulic data) may reflect stream channel configurations that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexation or de-annexation may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limits locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map sheets, community map repository addresses, and a listing of Communities with concerning National Flood Insurance Program data for each community as well as a listing of the panels on which each community is located.

For information and questions about this map, available products associated with this FIS report, or information about the FIS report, please contact the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-4465 (1-877-369-6269) or visit the FEMA Map Service Center website at mfc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of the map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIS report by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Provisionally Accredited Levies to Users: Check with your local community to obtain more information, such as the structural level of protection provided, which may exceed the 1-percent-annual-chance level, and Emergency Action Plans, on the levee system shown as providing protection for areas on this map. To maintain accreditation, the levee owner or community is required to submit the data and documentation necessary to comply with Section 65.11 of the NFIP regulations by December 16, 2010. If the community or owner does not provide the necessary data and documentation by the date and documentation provided, indicate the levee system does not comply with Section 65.10 requirements, FEMA will revise the flood hazard information for this area to reflect the accreditation of the levee system. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at <http://www.fema.gov/business/mf/index.shtml>.

The Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach of floodplain management to decrease the costs associated with flood damage. This is demonstrated by the Clark County commitment to share and maintain floodplain layers within their Geographic Information System Management Office (GISMO).

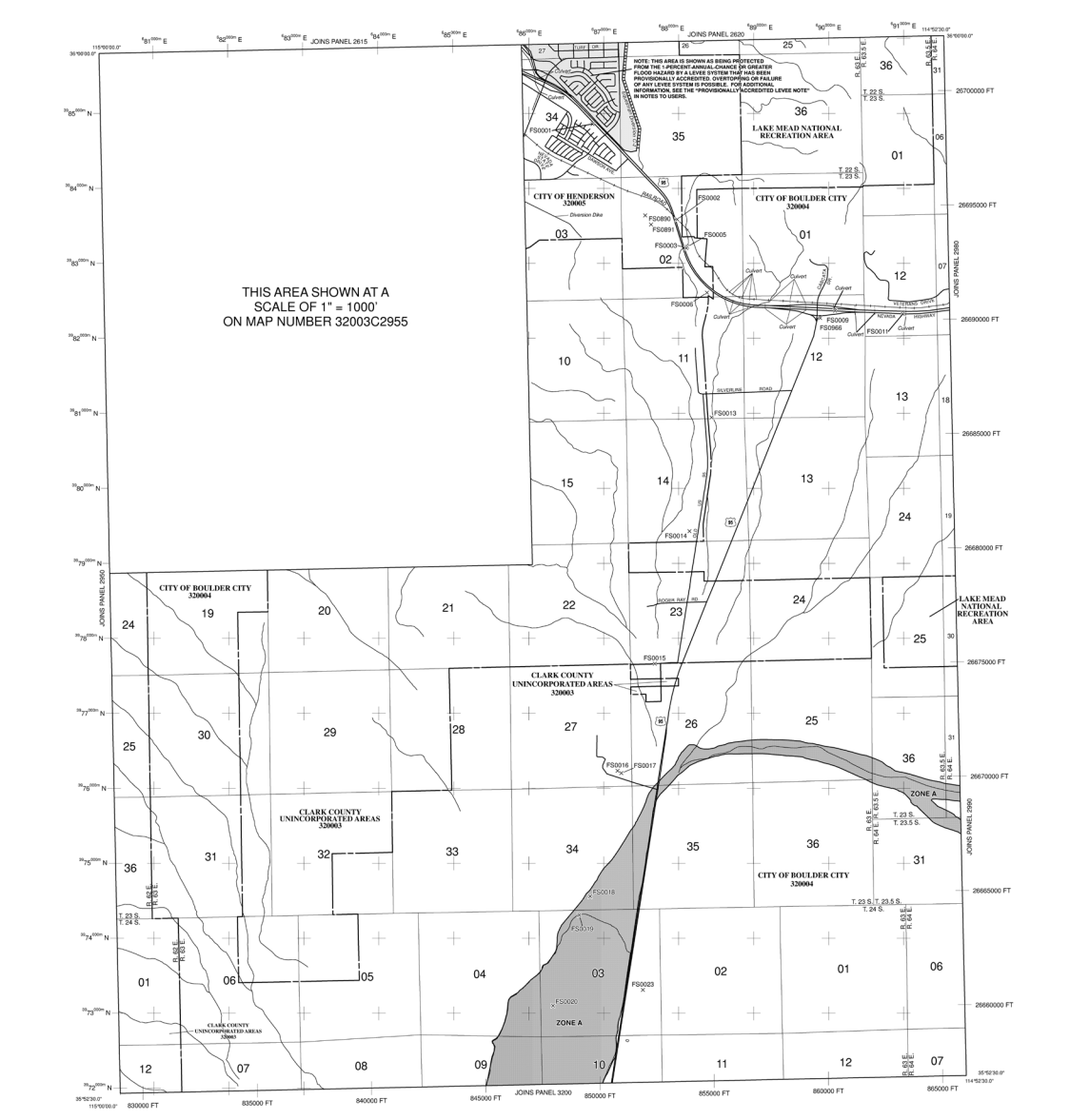
This DFIRM reflects several innovative features. These include:

- Southern Nevada GIS-Cooperation among local government agencies throughout Clark County. The foundation of cooperation is the GIS Interlocal Agreements formed between fourteen regional participants. In part, the agreements specify that the Clark County GIS Management Office (GISMO) will be responsible for maintaining a GIS data warehouse and associated Southern Nevada GIS metadata.

The GISMO's responsibilities go beyond maintaining the GIS data warehouse. GISMO also maintains the Street Corridor Database used by 311 dispatch services. This database serves as the basis for this DFIRM.

DIGITAL DATA AVAILABILITY: <http://www.co.clark.nv.us/ce/gis/gisinfo.htm>

THIS AREA SHOWN AT
SCALE OF 1" = 1000'
ON MAP NUMBER 32003C2955



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHA) SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Areas in the area subject to flooding by the 1% annual chance flood are of Special Flood Hazard Zones A, AE, AH, AO, and V, and are off the Base Flood Elevation determination.

ZONE A: No Base Flood Elevation determination.
ZONE AE: Base Flood Elevation determination.
ZONE AH: Flood depths of 1 to 3 feet (usually street flow on sloping terrain); average depths determined for areas of about 500-foot flooding; velocities also determined.
ZONE AO: Special Flood Hazard has been determined from the 1% annual chance flood. Areas in a flood protection system under construction; no Base Flood Elevation determination.
ZONE AV: Areas to be protected from 1% annual chance flood by a Federal Flood Protection System under construction; no Base Flood Elevation determination.
ZONE V: Coastal flood zone with velocity hazard (wave action); no Base Flood Elevation determination.
ZONE VE: Coastal flood zone with velocity hazard (wave action); no Base Flood Elevation determination.

FLOODWAY AREAS IN ZONE AE

The floodway in the channel of a stream and any adjacent floodplain areas that must be kept free of encroachment to maintain the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X: Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; areas protected by levees from 1% annual chance flood.
ZONE X1: Areas determined to be outside the 0.2% annual chance flood.
ZONE D: Areas in which flood hazards are undetermined, not possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPA)

OPA areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Provisional boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different base flood elevations, flood depths or flood velocities
Base Flood Elevation line and value; elevation in feet (EL 867)
Base Flood Elevation value uniform within zone; elevation in feet
* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

Cross section line
Bench mark
Geographic coordinates; referenced to the North American Datum of 1983 (NAD 83)
Study report bench control authoritative hydraulic data
500-foot grid lines; Nevada State Plane Coordinate system, west zone (FPCZONE 2001), Transverse Meridian
DMS10 S
M 1.5

MAP REPOSITORIES
Refer to Map Repository List for this FIS report

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 1, 1999
September 27, 2002

REPLACES THE PREVIOUS PANEL
November 16, 2011 - An improvement project under the Map Revision, to reflect updated BFEs. To change Base Flood Elevation, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to change Floodway Data, to change Floodway Data, and to add roads and road names.

The community map repository prior to available mapping data in the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your insurance agent or visit the National Flood Insurance Program at 1-800-485-6848.

MAP SCALE 1" = 1000'

1000 0 1000 FEET
300 0 300 METERS

PANEL 2975F

FIRM FLOOD INSURANCE RATE MAP CLARK COUNTY, NEVADA AND INCORPORATED AREAS

SEE MAP INDEX FOR FIRM PANEL LAYOUT

COUNTY	NUMBER	PANEL	SHEET
CLARK COUNTY	30001	2975	F
CLARK COUNTY CITY OF	30001	2975	F
HENDERSON CITY OF	30000	2975	F

MAP NUMBER 32003C2975F
MAP REVISED NOVEMBER 16, 2011
Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from those drainage sources or storm flows. The **community map preparator** should be consulted for additional information.

To obtain more detailed information in areas where **Base Flood Elevation (BFE)** and/or **Floodway** have been determined, users are encouraged to consult the Flood Profile and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies the FIRMs. Users should be aware that BFEs shown on the FIRM represent elevated whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevations presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (CBFE) shown on this map apply only land west of 122° North American Vertical Datum (NAVD) lines of this FIRM. Users should be aware that coastal flood elevations may also be provided in the Summary of Flood Hazard Labels in the Flood Insurance Study report for this community. Elevations shown in the Summary of Flood Hazard Labels should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **Floodways** were computed at cross sections and represented between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent features are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM), Zone 11. The **horizontal datum** is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in different maps may require adjustments. Users should be aware that differences in map features, vertical datum, projection, or UTM zones do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structural and ground elevations referenced to the same vertical datum. For information regarding conversions between the National Geodetic Vertical Datum of 1988 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

National Geodetic Survey, NGS13
National Geodetic Survey, NGA
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3181

To obtain current elevation, description, and/or location information for **benchmarks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by Clark County Register Flood Control District. This information was converted using Orthorectification, dated 1993 or newer, and GIS/DMG data. Segments were digitized from the orthorectification based on center of pavement.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or disincorporations may have occurred after this map was published, map users should contact municipal community officials to verify correct corporate limit locations.

Please refer to the **separately printed Map Index** for an overview map of the county showing the layout of map sheets, community map repository addresses, and a listing of Communities with Controlling National Flood Insurance Program data for each community as well as a listing of the panels on which each community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment relating portions of this panel, and digital versions of this FIRM, may be available. Contact the **FEMA Map Service Center** at the following phone numbers and internet address for information on all related products available from FEMA:

Phone: 800-368-5816
FAX: 800-368-5822
www.fema.gov/

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA-MAP** (1-877-336-2527) or visit the FEMA website at www.fema.gov.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profile and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

This Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the Clark County commitment to share and maintain floodplain data within their Geographic Information Systems Management Office (GIS/DMG).

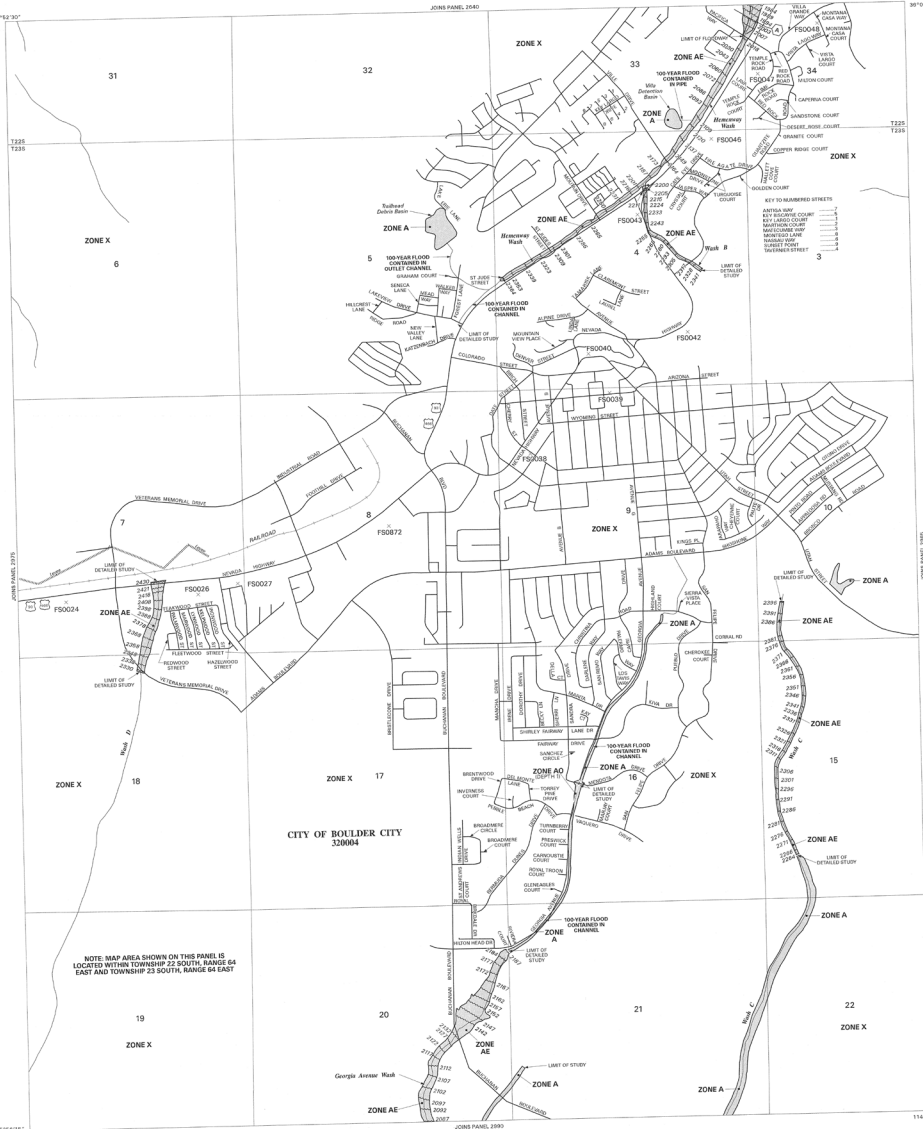
This DFIRM reflects several innovative features. These include:
• **Source-Related Data** - Geospatial information (point-to-point) throughout Clark County. The foundation of cooperation is the GIS Interlocal Agreement formed between local government agencies. In fact, the agreement specifies that the Clark County GIS Management Office (GIS/DMG) will be responsible for maintaining a GIS data warehouse and associated Southern Nevada GIS Metadata.

• **GIS/DMG** responsibilities go beyond maintaining the GIS data warehouse. GIS/DMG also maintains the Source-Related Database used by FEMA for floodplain mapping. This database serves as the base map for this DFIRM.

DIGITAL DATA AVAILABILITY: <http://www.co.clark.nv.us/geoinfo/gisinfo.htm>



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 22 SOUTH, RANGE 64 EAST AND TOWNSHIP 23 SOUTH, RANGE 64 EAST



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the Flood Hazard Area in the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard Zone A, AE, X, and AD are shown on this map. The Base Flood Elevation (BFE) is the minimum water elevation that the 1% annual chance flood will reach.

- ZONE A** No base flood elevations determined.
- ZONE AE** Base flood elevations determined.
- ZONE AD** Flood depths of 1 to 3 feet (locally areas of ponding); base flood elevations determined.
- ZONE X** Flood depths of 1 to 3 feet (locally areas of ponding); average depths determined. For areas of unusual fan flooding, average depths determined.
- ZONE AR** Area of special flood hazard (exterior protection from the 1% annual chance flood event) by a flood control system that may substantially overtop. Zone AR indicates that the higher Flood Hazard Areas in the vicinity are protected from the 1% annual chance flood event by a flood control system under construction; no base flood elevations determined.
- ZONE AV** Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (waves action); no base flood elevations determined.
- ZONE VZ** Coastal flood zone with velocity hazard (waves action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of obstructions so that the 1% annual chance flood can be passed without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood areas of 1% annual chance flood with average depths of less than 1 foot or with average wave less than 1 foot; flood depths determined.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance flood.

ZONE X Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Friction Boundary
- Floodway Boundary
- Dam Boundary
- Coastal Barrier Boundary
- Boundary of Special Flood Hazard Areas of different Base Flood Elevation (BFE) depths or relations
- Base Flood Elevation line and value, elevation in feet
- (EL 557)
- Base Flood Elevation value where uniform within zones
- (EL 557)
- (A) --- Tinned Line
- (A) --- Boundary, coordinate referenced to the North American Datum of 1988 (NAD 83)
- (A) --- 100-meter Universal Transverse Mercator grid lines, zone 11
- 500-foot grid lines
- DX5510, --- Bench mark (see explanation in Notes to Users section of this FIRM panel).
- Mile Markers

MAP REPOSITORY

Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTRYWIDE FLOOD INSURANCE RATE MAP

AUGUST 18, 1995

EFFECTIVE DATE OF REVISIONS TO THIS PANEL

September 27, 2002 to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to delete special flood hazard areas, to change some designations, to add roads and road names, to incorporate proposed stream channel, to incorporate proposed stream channel map amendments, and to change floodways.

For community map revision history prior to countrywide mapping, refer to the Community Map History located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6622.



MAP SCALE 1" = 1000'

900 0 1000 200 FEET

800 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

FIRM FLOOD INSURANCE RATE MAP

CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 2980 OF 4090

SEE MAP INDEX FOR FIRM PANEL LAYOUT

CORNAME: _____

COMMUNITY: _____

DATE: _____

MAP NUMBER 32003C2980 E

MAP REVISED: SEPTEMBER 27, 2002

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources or small creeks. This emergency map **must** be updated as soon as possible to reflect additional flood hazard information.

The above map is derived from information in areas where Base Flood Elevation (BFE) and/or Floodway (FW) data have been determined. Users are encouraged to consult the Flood Profile and Floodway Data for their community within the Flood Hazard Study. If you are not a resident of the community, you should consult the BFE data shown on the FIRMs reports to determine whether flood elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevations data presented in the FIRMs should be utilized in conjunction with the FIRMs for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (CBFE) shown on this map apply only land west of U.S. North American Vertical Datum (NAVD) 1988. Users of this map should be aware that coastal flood elevations may also be provided in the Summary of Station Elevations table in the Flood Hazard Study report for this community. Elevations shown in the Summary of Station Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the Floodway were computed at cross sections and interpolated between cross sections. The Floodway was computed based on hydraulic considerations and subject to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Hazard Study report for information on flood control structures in the jurisdiction.

The projection used in the preparation of this map is Universal Transverse Mercator (UTM) Zone 11. The horizontal datum is NAD83. GRS1980 optional differences in datum adjustment projection on UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structures and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geospatial Vertical Datum of 1988 and the North American Vertical Datum of 1988, visit the National Geospatial Survey website at www.ngs.noaa.gov or contact the National Geospatial Survey at the following address:

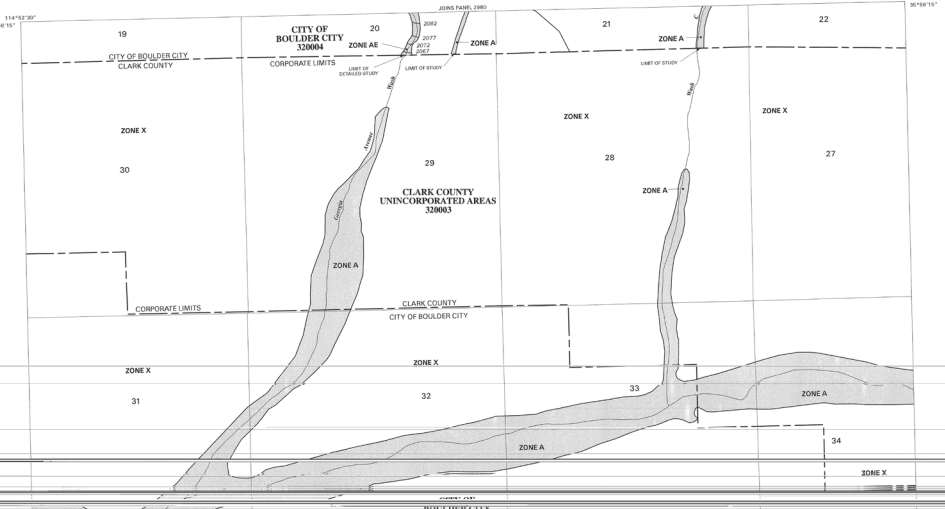
Vertical Network Branch, NCE13
National Geospatial Survey, NOAA
Signal Group, 3
1315 East West Highway
Silver Spring, Maryland 20910
(301) 771-3731

To obtain a detailed elevation, elevation, or other location information for **highways** shown on this map, please contact the Information Services Branch of the National Geospatial Survey at (301) 771-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was derived in digital format by Clark County Regional Flood Control District. This information was converted using Orthorectification, about 1988 or newer, and GRS1980 base map information were digitized off of the orthorectification based on center of pavement.

Corporate limits shown on this map are based on the best data available to the USACE. Boundaries are subject to change due to annexation or other jurisdictional changes. Users should consult the appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone AE, Zone A, Zone AR, Zone X, and VE. The Base Flood Elevation is the elevation of the 1% annual chance flood.

- ZONE AE** Base Flood Elevation Determined.
- ZONE A** Flood depths of 1 to 3 feet locally above base. Base Flood Elevation Determined.
- ZONE AO** Flood depths of 1 to 3 feet locally above base on existing terrain. Average depth determined. The area of actual base flood elevation, including areas of protection.
- ZONE AR** Area of special flood hazard boundary protection from the 1% annual chance flood event by a flood control system that has substantially completed. Flood depths are based on the existing flood control system. Flood depths are not intended to provide protection from the 1% annual chance or greater flood event.
- ZONE AR0** Area to be protected from 1% annual chance flood event by a Federal flood control system under construction or the base flood elevation determined.
- ZONE AV** Coastal flood zone with velocity hazard areas within. Base Flood Elevation Determined.
- ZONE VE** Coastal flood zone with velocity hazard areas within. Base Flood Elevation Determined.

FLOODWAY AREAS IN ZONE AE

The Floodway is the portion of a river, lake, or adjacent floodable area that must be kept free of obstructions to the 1% annual chance flood so that the 1% annual chance flood can be carried without substantial increases in flood heights.

- OTHER FLOOD AREAS**
- ZONE X** Areas of 0.2% annual chance flood areas of 1% annual chance flood with average depth of one foot 1 foot or less. Average area less than 1 square foot; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS**
- ZONE D** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

CBRS areas and OFAs are normally located within or adjacent to Special Flood Hazard Areas.

OTHERWISE PROTECTED AREAS (OPAs)

OPAs are areas that are normally located within or adjacent to Special Flood Hazard Areas.

- Boundary**
- Boundary**
- Zone D Boundary**
- Linear barrier boundary**
- Zone D Boundary**
- Base Flood Elevation line and value elevation in feet**

Base Flood Elevation "water elevation" water elevation in feet.

Referenced to the North American Vertical Datum of 1988

Geographic coordinates

Transect Line

Geographic coordinates referenced to the North American Vertical Datum of 1988

FIRM PANEL LAYOUT MAP



Scale: 1" = 1000 feet

FIRM FLOOD INSURANCE RATE MAP CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 2990 OF 4090
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

DATE: 20080927
COMMITTEE: 20080927
CONTRACT NUMBER: 20080927

MAP NUMBER 32003C2990 E
MAP REVISED: SEPTEMBER 27, 2002

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources or small creeks. The community map repository should be consulted for possible additional information.

To obtain more detailed information on areas shown as **Base Flood Elevation (BFE)** and/or **Floodway** areas, users are encouraged to consult the Flood Profile and Floodway Study Report for the Floodway Study. BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FRM for purposes of construction and/or floodway management.

Coastal Base Flood Elevation (CBFE) shown on this map apply only land west of 120° North American Vertical Datum. Users of this map should be aware that coastal flood elevations may also be provided in the Summary of Station Elevations table in the Flood Insurance Study report for the community. Elevations shown in the Summary of Station Elevations table should be used for construction, marine floodway management purposes when they are higher than the elevations shown on this FIS.

Boundaries of the **Floodway** were computed at cross sections and interpolated between cross sections. The floodway was based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for the jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The projection used in the preparation of this map is Universal Transverse Mercator (UTM) Zone 11. The horizontal datum is NAD83. GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zone used in the production of FRM for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referred to the same datum. For information regarding conversion between the National Geospatial Vertical Datum of 1985 and the North American Vertical Datum of 1988, visit the National Geospatial Survey website at www.ngs.noaa.gov or contact the National Geospatial Survey at the following address:

Vertical Network Branch, NCG13
National Geospatial Survey, NOAA
Coast Survey Center 3
1515 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3131

To obtain current elevation, description, and location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geospatial Survey at (800) 778-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this map was provided in digital format to Clark County Regional Flood District. This information was converted using Orthophotography dated 1989 or newer, and GRS1980 data. Surfaces were digitized off of the orthophotography based on center of pavement.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexation or de-annexations may have occurred since this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the regulatory **printed map index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a listing of Communities of Interest for the National Flood Insurance Program data for each community as well as a listing of the parcels on which each community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment covering portions of this district and digital version of this FIS may be available. Contact the **FEMA Map Service Center** at the following address for details and internet address for information on related products available from FEMA.

Phone: 800-368-5819
FAX: 800-368-9820
www.fema.gov/mc

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA-MAP** (1-877-336-2327) or visit the FEMA website at www.fema.gov.

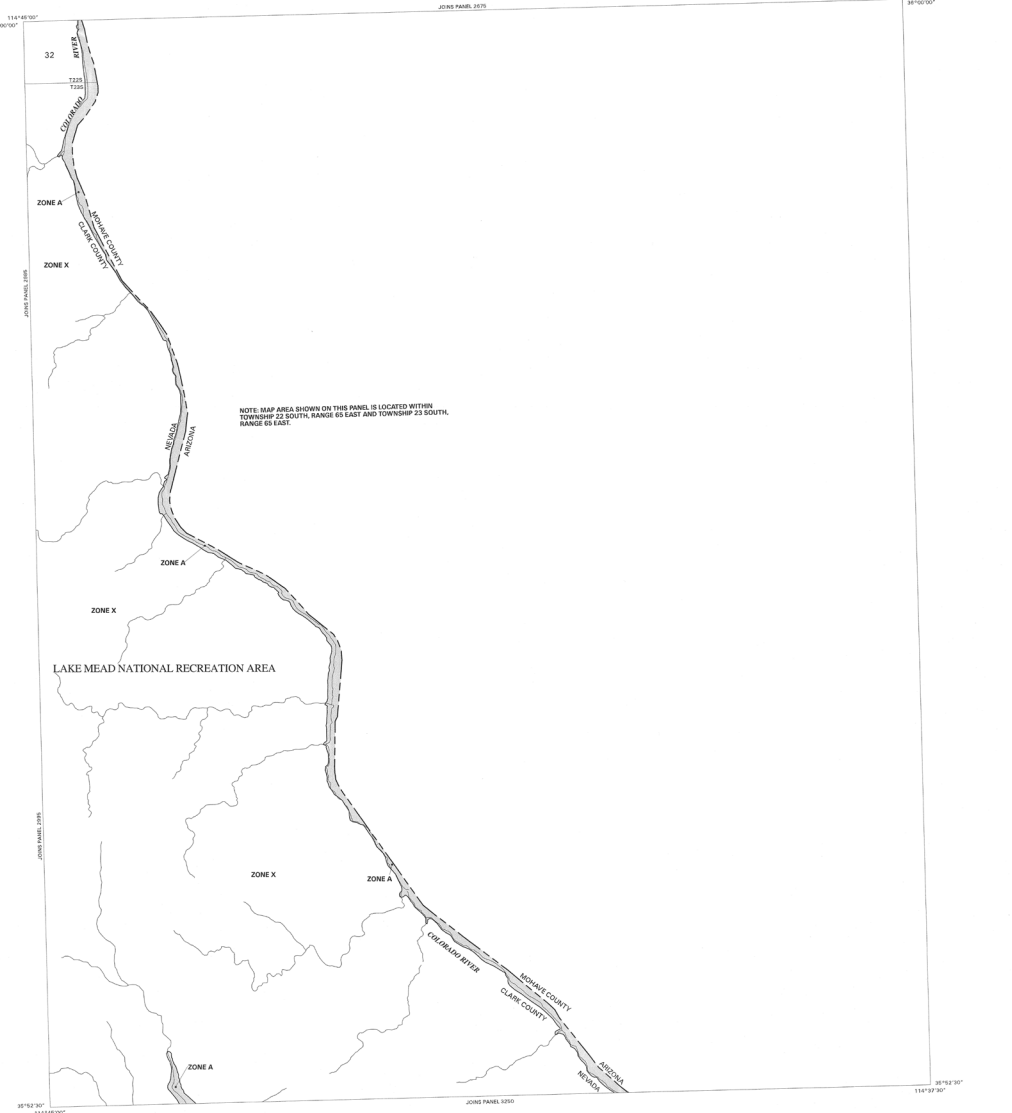
This map reflects more detailed and accurate stream channel configurations than those shown on the previous FRM for this jurisdiction. The floodway and floodway boundaries that were transferred from the previous FRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profile and Floodway Study tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

This Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach of floodway management to decrease the costs associated with flooding. This is demonstrated by the Clark County commitment to share and maintain floodway data within their Geographic Information System Management Office (GISMDO).

This DFIRM reflects several innovative features. These include a **Coastal Flood Elevation (CFE)** coverage area throughout Clark County. The foundation of cooperation is the GIS Interlocal Agreements signed between fourteen regional participants. In fact, the agreements specify that the Clark County GIS Management Office (GISMDO) will be responsible for maintaining a GIS data warehouse and associated Southern Nevada GIS Metadata.

The GISMDO's responsibilities go beyond maintaining the GIS data warehouse. GISMDO may maintain the Statewide Database under its 911 dispatch services. This contains database services as the base map for this DFIRM.

DIGITAL DATA AVAILABLE AT: <http://www.co.clark.nv.us/cogis/gis/metadata.htm>



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 22 SOUTH, RANGE 18 EAST AND TOWNSHIP 23 SOUTH, RANGE 18 EAST.

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

- ZONE A** Base Flood Elevation determined.
- ZONE AE** Areas subject to 1% to 10% flood hazard areas of ponding; base flood elevation determined.
- ZONE AD** Flood depths of 1 to 3 feet; usually sheet flow on existing terrain; average depths determined; for areas of shallow fan flooding, velocities are determined.
- ZONE AR** Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was substantially being removed to provide protection from the 1% annual chance of greater flood event.
- ZONE ARB** Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevation determined.
- ZONE AV** Coastal flood zone with velocity hazard (wave action); base flood elevation determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); base flood elevation determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the drainage of a certain area and adjacent floodway areas that must be kept free of encroachment so that the 1% annual chance flood can be raised without excessive backwater to flood heights.

OTHER FLOOD AREAS

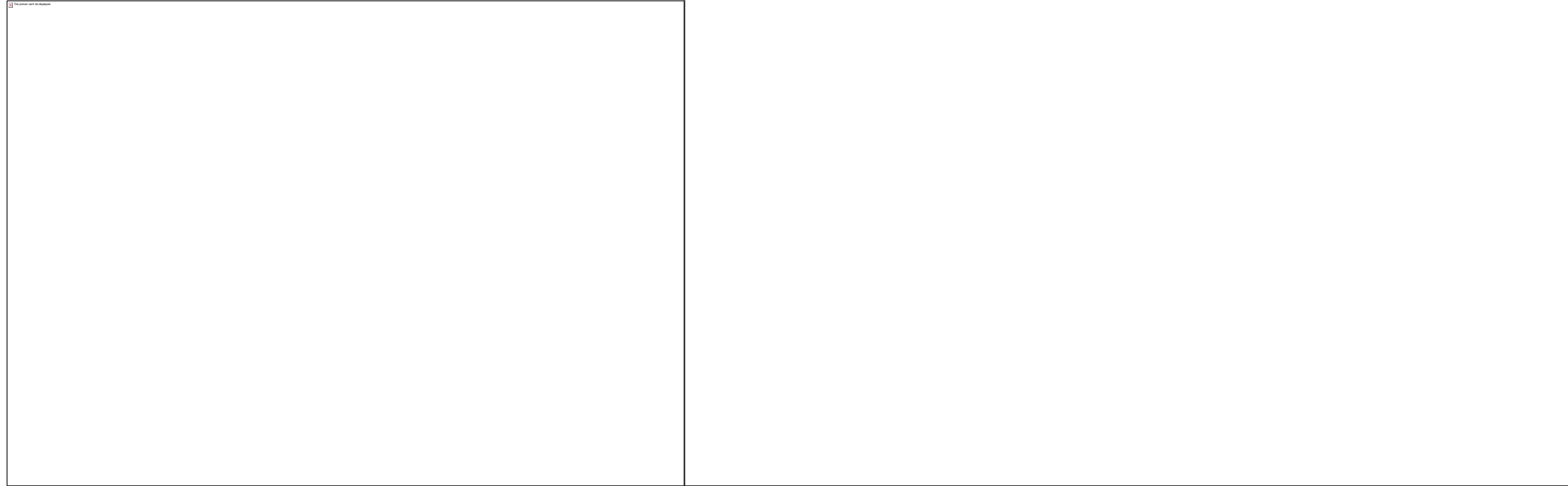
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot with average wave action that is 1/8 inch high; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS** Areas determined to be outside the 0.2% annual chance floodway.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

OPAs areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodway Boundary
- Floodway Boundary
- Zone D Boundary
- Coastal Barrier Boundary
- Boundary defining Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities
- Base Flood Elevation (with other elevations in feet)
- (EL 987)
- (Reference to the North American Vertical Datum of 1988)
- Cross Section Line
- (A) — (B)
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NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage ditches or urban lots. The community map preparator should be consulted for possible locations of additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevation (BFE)** or **Zone X** floodways have been determined, users are encouraged to consult the Flood Profile and Floodway Data sheet prepared within the Flood Insurance Study (FIS) report that accompanies the FIRMA. Users should be aware that BFEs shown on the FIRMA represent estimated whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRMA for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (CBFE) shown on this map apply only land west of 127° North American Vertical Datum (NAVD) Meridian. Users of this map should be aware that coastal flood elevations may vary in the Flood Insurance Study report for the community. Elevations shown in the Summary of Elevation Tables should be used for construction, and/or floodplain management activities when they are higher than the elevations shown on this FIRMA.

Boundaries of the **Floodways** were compiled at cross sections and interspersed between cross sections. The floodways were based on hydraulic computations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for the jurisdiction.

Certain areas not in Special Flood Hazard Area may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in the jurisdiction.

The projection used in the preparation of this map is Universal Transverse Mercator (UTM) Zone 11. The horizontal datum is NAD83. GRS1980 spherical coordinates are used. Specific projection is UTM zone 11 and the production of FIRMA for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRMA.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structural and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geospatial Data of 1929 and the North American Vertical Datum of 1988, visit the National Geospatial Survey website at www.ngs.noaa.gov or contact the National Geospatial Survey at the following address:

Vertical Network Branch, NCEC-13
National Geospatial Survey, NOAA
Scripps Spring Mesa Center 3
1315 East Vista Highway
Scripps Spring, Maryland 20110
(301) 713-3191

For accurate elevation, description, and/or location information for **benchmarks** shown on this map, please contact the Information Services Branch of the National Geospatial Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRMA was provided in digital format by Clark County Regional Flood Control District. This information was converted using Orthorectification, dated 1998 or revised, and GDS 0088 data. Segments were digitized off of the orthorectification based on center of pavement.

Corporate limits shown on this map are based on the best data available at the time of publication. Boundary changes due to annexations or de-annexations may have occurred after this map was published. Map users should contact appropriate community officials to verify current corporate limit locations. Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map sheets, community map repository addresses, and a listing of Communities Table containing National Flood Insurance Program data for each community as well as a listing of the zones on which each community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment covering portions of this panel, and digital versions of this FIRMA may be available. Contact the **FIRMA Map Service Center** at the following phone number and Internet address for information on all related products available from FEMA:

Phone: 800-368-9616
FAX: 800-368-9620
www.fema.gov

If you have questions about this map or questions concerning the National Flood Insurance Program, please call 1-877-FEMA-MAP 1-877-336-2621 or visit the FEMA website at www.fema.gov.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRMA for the jurisdiction. The floodways and floodways that were transferred from the previous FIRMA may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profile and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

This Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has deviated a long-term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the Clark County Geographic Information System (GIS) data within their Geographic Information System Management Office (GISMO).

This DFIRM reflects several innovative features. These include:
- **Southern Nevada GIS**: Cooperation among local governmental agencies throughout Clark County. The foundation of cooperation is the GIS Interlocal Agreement formed between regional participants. In part, the agreement specifies that the Clark County GIS Management Office (GISMO) will be responsible for maintaining a GIS data warehouse and associated Southern Nevada GIS Metadata.
- **GISMO**: A commitment to better managing the GIS data warehouse. GISMO also maintains the Street Centroid Database used by 311 dispatch services. This centroid database serves as the base map for the DFIRM.
DIGITAL DATA AVAILABILITY: <http://www.co.clark.nv.us/cgi-bin/gis/gisinfo.htm>



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

- ZONE AE** Special Flood Hazard Area (SFHA) subject to inundation by the 1% annual chance flood (100-year flood), also known as the base flood, in the Special Flood Hazard Area in the area subject to flooding by the 1% annual chance flood. Areas of coastal high water penetration are AE-1, AE-2, AE-3, AE-4, AE-5, and AE-6. The Base Flood Elevation (BFE) is shown on this map.
- ZONE A** No base flood elevations determined. Base flood elevations determined.
- ZONE AO** Flood depths of 1 to 1.5 feet locally (area of ponding); base flood elevations determined. Flood depths of 1 to 1.5 feet locally (area of ponding); average depths determined. For areas of about 100-foot width, average depths determined.
- ZONE AR** Area of special flood hazard (severity) protection from the 1% annual chance flood event by a Federal flood control structure that was substantially being restored to provide protection from the 1% annual chance of greater flood event.
- ZONE ARB** Area to be protected from 1% annual chance flood event by a Federal flood control structure under construction to base flood elevation determined.
- ZONE AV** Coastal flood zone with velocity based (wave action); base flood elevations determined.
- ZONE VE** Coastal flood zone with velocity based (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodways that must be kept free of encumbrances to allow the 1% annual chance flood to be carried without overtopping the adjacent floodway walls.

OTHER FLOOD AREAS

- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with average areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

Otherwise protected areas (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodway Boundary
- Zone B Boundary
- Coastal Barrier Boundary
- Boundary of Special Flood Hazard Area of different Base Flood Elevation and/or elevation in feet
- Base Flood Elevation value where contours within zone

- Reference to the North American Vertical Datum of 1988
- Ocean Shore Line
- Transit Line
- Dependent coordinates referenced to the North American Datum of 1983
- 100-metre Universal Transverse Mercator grid values, zone 11
- 600000 FT
- 5000-foot grid lines
- Bench mark name explanation in Notes to Users section of the DFIRM
- M1.5
- River Mile

MAP REPOSITORY
Refer to Repository Listing in Index Map

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
AUGUST 18, 2002

EFFECTIVE DATES OF REVISIONS TO THIS PANEL
September 21, 2002 to correct erroneous data, to change flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to delete special flood hazard areas, to change zone designations, to add zones and add names to incorporate FEMA revisions, to incorporate FEMA revisions, to incorporate previously revised letters of map amendment, and to change flood elevations.

For community map revision history prior to computerized mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.
To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6632.



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 3175 E

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY,
NEVADA AND
INCORPORATED AREAS

PANEL 3175 OF 4090

USE MAP INDEX FOR THIS PANEL LAYOUT

SHEET	NUMBER	PANEL	SUFFIX
CLARK COUNTY UNINCORPORATED AREAS	3175	E	2

MAP NUMBER
32003C3175 E

MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency





NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources or small size. The community may request additional information for possible updates of additional flood hazard information.

To obtain more detailed information on areas where **Base Flood Elevation (BFE)** and/or **Floodway** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data Tables. Users should be aware that BFEs shown on this FIRM represent national whole-flood elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FDS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (CBFE) shown on this map apply only land west of 0.2 North American Vertical Datum (NAVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Elevation Elevations table in the Flood Insurance Study report for this panel. CBFEs are shown in the Summary of Elevation Elevations table and should be used for construction, floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **Floodways** were computed at cross sections and interpolated between cross sections. The Floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4, "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM), Zone 17. The horizontal datum is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geospatial Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geospatial Survey website at www.ngs.noaa.gov or contact the National Geospatial Survey at the following address:

Vertical Network Branch, NCEC13
National Geospatial Survey, NOAA
Silver Spring, Maryland 20910
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3131

To obtain current elevation, description, and/or location information for **benchmarks** shown on this map, please contact the information Services Branch of the National Geospatial Survey at (801) 733-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by Clark County Regional Flood Control District. This information was converted using Orthophotography, dated 1998 or newer, and GDS/DEM data. Discrepancies were digitized off of the orthophotography based on center of pavement.

Corporate bench marks on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separate printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program data for each community, as well as a listing of the panels in which each community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment relating portions of this panel, and digital versions of this panel, may be available. Contact the **FIRM Map Service Center** at the following phone numbers and internet address for information on all related products available from FEMA:

Phone: 800-358-9816
FAX: 800-358-9820
www.fema.gov

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2527) or visit the FEMA website at www.fema.gov.

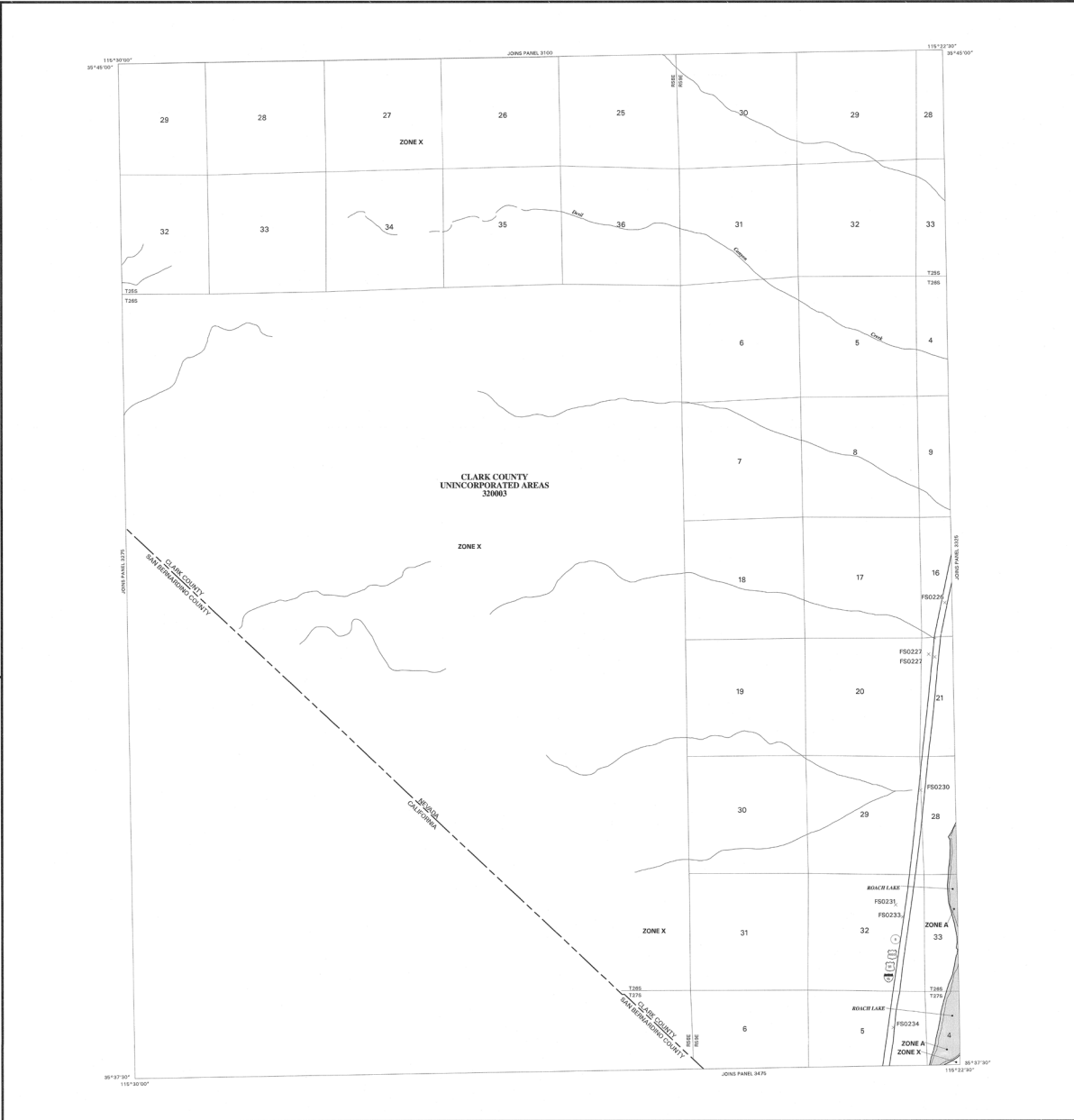
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted in conformance with these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

The Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach of floodplain management to decrease the costs associated with flooding. This is a commitment by the Clark County Government to share and maintain floodplain layers within their Geographic Information System Management Office (GISMO).

This DFIRM reflects several innovative features. These include:

- Geospatial Data (GIS) - Cooperation among local governmental agencies throughout Clark County. The foundation of cooperation is the GIS Interlocal Agreements formed between fourteen regional participants. In part, the agreements specify that the Clark County GIS Management Office (GISMO) will be responsible for managing a GIS data warehouse and associated Clark County Network GIS Metadata.
- The GISMO's responsibilities go beyond maintaining the GIS data warehouse. GISMO also maintains the Statewide Database used by 21 regional services. This central database serves as the base map for this DFIRM.

DISTAL DATA AVAILABILITY: <http://www.co.clark.nv.us/cis/gis/gisinfo.htm>



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood elevation that would be expected to be equaled or exceeded once in every 100 years. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard Areas are shown on this FIRM as follows:

ZONE A
Base Flood Elevation determined.
No base flood elevations determined.

ZONE AE
Flood areas of 1 to 3 feet (smaller areas of ponding); base flood elevations determined.

ZONE AO
Flood areas of 1 to 3 feet (smaller areas of ponding); no base flood elevations determined. Areas within this zone are subject to flooding, velocities and other hazards.

ZONE AR
Area of special flood hazard formerly protected from the 1% annual chance flood by a levee control system that was subsequently abandoned. Zone AR indicates that the former flood control system is being removed or greatly reduced from the 1% annual chance or greater flood event.

ZONE AV
Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.

ZONE VE
Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.

FLOODWAY AREAS IN ZONE AE
No base flood elevations determined.

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encumbrances to pass the 1% annual chance flood over the named without substantial increases in flood height.

OTHER FLOOD AREAS

ZONE X
Areas of 0.2% annual chance flood areas of 1% annual chance flood with average depth or less than 1 foot or with average depth from 1 to 3 feet. Areas of 0.2% annual chance flood are indicated by a wavy line.

OTHER AREAS

ZONE B
Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D
Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
No base flood elevations determined.

OTHERWISE PROTECTED AREAS (OPA)
CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

BOUNDARIES

- Floodplain Boundary
- Precinct Boundary
- Zone D Boundary
- County Boundary
- Coastal Barrier Boundary
- County, Precinct, Special Flood Hazard Area of different Base Flood Elevations, Flood depths or velocities.

BASE FLOOD ELEVATION (BFE) AND VELOCITY (V) DATA

— BFE (ft) — Base Flood Elevation (one and two decimal values in feet)
— V (ft/s) — Base Flood Velocity (one and two decimal values in feet per second)

OTHER SYMBOLS

- (IL 887) — "Referenced to the North American Vertical Datum of 1988"
- (A) — (B) — Cross Section Line
- (C) — (D) — Traversed Line
- 9707' NAD 83, 32722' — Geographic coordinates referenced to the North American Vertical Datum of 1988
- 4276M — 100-foot Universal Transverse Mercator grid values, zone 11
- 600000 FT — 5000-foot grid ticks
- DX5510, — M1.5 — Bench mark base explanation in Notes to Users section of this FIRM panel
- — — — — River Mile

MAP REPOSITORY
Refer to Repository Listing on Inside Map

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 16, 1990

EFFECTIVE DATES OF REVISIONS TO THIS PANEL
September 27, 2002 - to add corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to delete special flood hazard areas, to change zone designations, to add depth and flow areas, to incorporate previously issued letters of map revision, to incorporate previously issued letters of map amendments, and to change floodway.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6830.



PANEL 3300 E

FIRM FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 3300 OF 4090
SEE MAP INDEX FOR FIRM PANEL LAYOUT

CONTRACT NUMBER: 33000 3000 E

DATE: 08/16/90

DATE: 09/27/02

MAP NUMBER 32003C3300 E
MAP REVISED: SEPTEMBER 27, 2002

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updates or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevation** (BFE) and/or **Floodway** have been determined, users are encouraged to consult the Flood Hazard and Mitigation Study Report for the community. The Flood Hazard and Mitigation Study Report that accompanies this FIRMA. Users should be aware that BFEs shown on the FIRMA represent floodway elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood hazard information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRMA for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (CBFE) shown on this map apply only landward of 0.0 North American Vertical Datum (NAVD). Users of this FIRMA should be aware that coastal flood elevations may also be provided in the Summary of Elevation Elevations table in the Flood Insurance Study report for this community. Information shown in the Summary of Elevation Elevations table should be used for construction, flood risk management purposes when they are higher than the elevations shown on this FIRMA.

Boundaries of the **Floodways** were computed as cross sections and interpolated between cross sections. The Floodways were based on hydraulic computations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **Flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM), Zone 11. The horizontal datum is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMA for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRMA.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Vertical Network Branch, NCG13
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1215 East-West Highway
Silver Spring, Maryland 20910
301 713 3117

To obtain current elevation, description, and/or location information for **benchmarks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (DPO) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on the FIRMA was provided in digital format by Clark County Regional Flood Control District. This information was converted using Orthophotography, aerial 1999 or newer, and GROUND data. Segments were digitized off of the orthophotography based on center of pavement.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limits locations.

Please refer to the separate period **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program codes for each community as well as a listing of the panels on which each community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment (revising portions of this panel), and digital versions of this FIRMA may be available. Contact the **FIRMA Map Service Center** at the following phone numbers and internet address for information on all related products available from FIRMA.

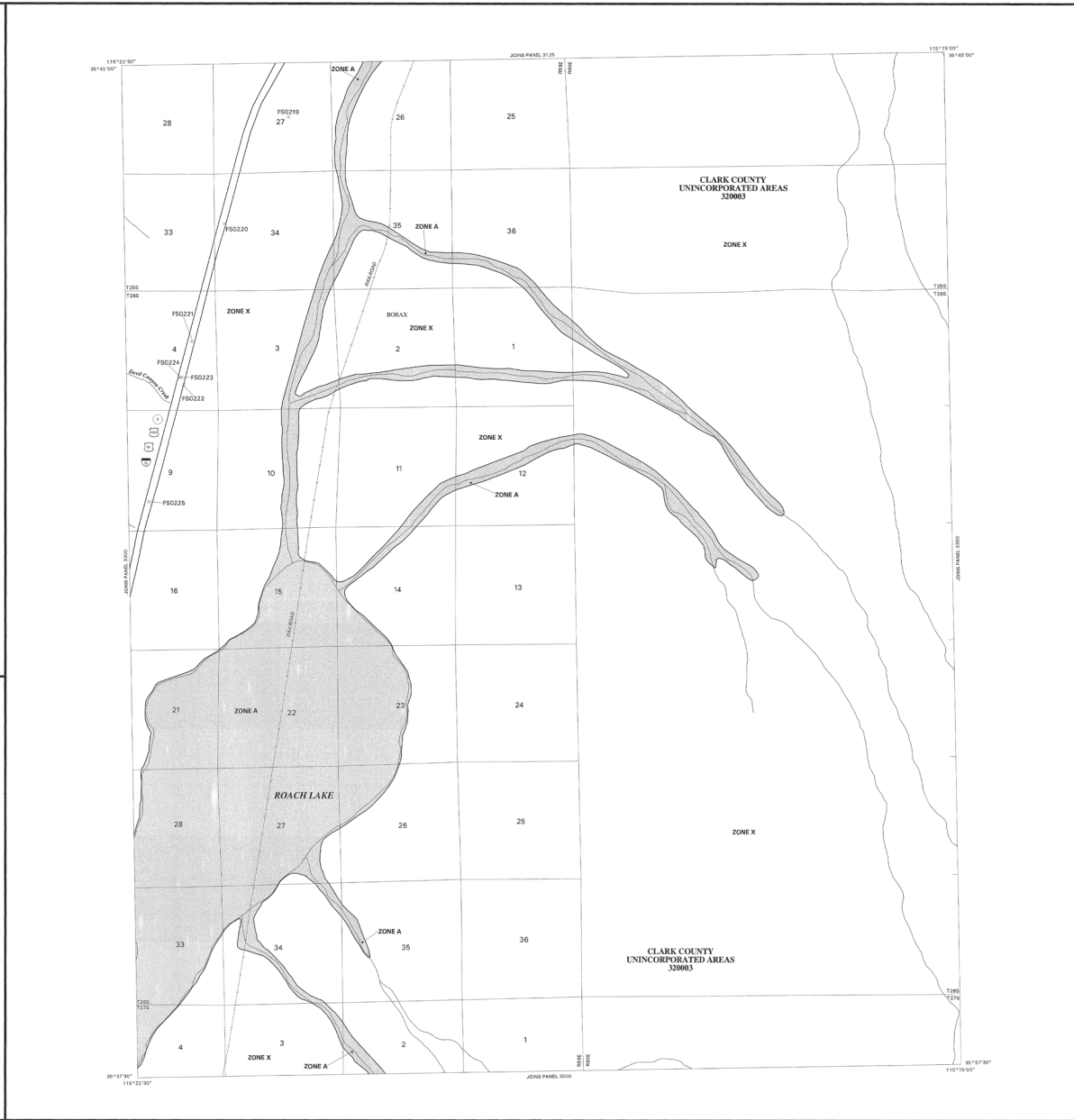
Phone: 800-368-9616
FAX: 800-358-9620
www.firma.gov

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at www.fema.gov.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRMA for this jurisdiction. The floodways and floodways that were transferred from the previous FIRMA may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

This Digital Flood Insurance Risk Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Cooperation among local government agencies throughout Clark County. The foundation of cooperation is the Interlocal Agreement formalized by the local government entities. In fact, the agreement specifies that the Clark County Data Management Office (DMO) will be responsible for maintaining a GIS data warehouse and associated Southern Nevada GIS Metadata. The DMO's responsibilities go beyond maintaining the GIS data warehouse. GDMO also maintains the Elevation Contour Database and/or DT elevation services. This center database serves as the base map for this DFIRM.

DIGITAL DATA AVAILABILITY: <http://www.coc.clark.nv.us/geoinfo/gis/home.htm>



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood) shown on this map is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Flood elevations are the water surface elevation of the 1% annual chance flood.

ZONE A Areas at risk of flooding are shown with the 1% annual chance flood elevation.

ZONE AE Areas of special flood hazard determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevation determined.

ZONE AO Flood depths of 1 to 3 feet (usually areas of flow on existing terrain); average depth determined. For areas of shallow low flooding, determine.

ZONE AR Areas of special flood hazard determined from the 1% annual chance flood. Areas of special flood hazard determined from the 1% annual chance flood. Areas of special flood hazard determined from the 1% annual chance flood.

ZONE AP Areas at risk of flooding from the 1% annual chance flood event by a Floodway Flood Protection System under construction; no base flood elevation determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no base flood elevation determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); base flood elevation determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of obstructions so that the 1% annual chance flood can be carried without substantial increases in flood height.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with damage areas less than adjacent areas; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

Areas in which flood hazard are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

— Floodplain Boundary
— Floodway Boundary
— Zone D Boundary
— Coastal Barrier Boundary
— Boundary defining Special Flood Hazard Areas of different Base Flood Elevations, Flood depths or velocities
— Base Flood Elevation line and value; elevation in feet*
— Flood Elevation value refers uniform water surface elevations in feet*
— *As related to the North American Vertical Datum of 1988

— Cross Section Line
— Truncated Line
— Depth/width contours; referenced to the North American Vertical Datum of 1988
— 1000-foot Universal Transverse Mercator grid values; zone 11
— 600000 FT
— 6000-foot grid ticks
— DXXS10; Bench mark data explanations in Notes to Users section of the FIRMA report
— M1.5 River Mile
— MAP REPOSITORY
Refer to Repository Listing on Index Map
EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 16, 1999
EFFECTIVE DATES OF REVISIONS TO THIS PANEL
February 27, 2002 to update contours, to change base flood elevation, to add base flood elevation, to add special flood hazard areas, to change special flood hazard areas, to incorporate previously issued letters of map revision, to incorporate previously issued letters of map amendments and other changes.

For community map revision history prior to quarterly mapping, refer to the Community Map History table included in the Flood Insurance Study report for this jurisdiction.
To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

MAP SCALE 1" = 2000'

1000 2000 4000 METERS
600 0 600 1200 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY,
NEVADA AND
INCORPORATED AREAS

PANEL 3325 E

PANEL 3325 OF 4090
SEE MAP INDEX FOR FIRM PANEL LAYOUT

COORDINATE: JAMBA, JANEL, JEFF, JEFF
DATE OF NEXT FLOOD INSURANCE RATE MAP: 0000 000 0 E

MAP NUMBER
3200C3325 E

MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency





NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community may regularly should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevation (BFE) and/or Floodway Data have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies the FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (CBFE) shown on this map apply only landward of 0.2 North American Vertical Datum (NAVD) feet of the FIRM should be aware that coastal flood elevations may also be provided in the Summary of Seilwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Seilwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on the FIRM.

Boundaries of the Floodways were computed at cross sections and interpolated between cross sections. The Floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for the jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The projection used in the preparation of this map is Universal Transverse Mercator (UTM) Zone 11. The National datum is NAD83 GRS1980 adjusted. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight systematic differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geospatial Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geospatial Survey website at www.ngs.noaa.gov or contact the National Geospatial Survey at the following address:

National Geospatial Survey, NGS13
National Service Branch, NOAA
Silver Spring Metro Center 3
1115 Silver Spring Highway
Silver Spring, Maryland 20910
(301) 713-3131

To obtain current elevation, description, and/or location information for benchmarks shown on this map, please contact the Information Services Branch of the National Geospatial Survey at (800) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by Clark County Regional Flood Control District. This information was converted using Orthophotography, dated 1999 or newer, and DEM/DEM data. Degraded were digitized off of the orthophotography based on center of pavement.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or disannexations may have occurred since this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels. Community map inventory addresses, and a listing of Communities with existing National Flood Insurance Program data for each community as well as a listing of the panels on which such community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment revealing portions of this panel, and digital versions of this PANEL, may be available. Contact the FIRM Map Service Center at the following phone numbers and Internet address for information on all related products available from FEMA.

Phone: 800-368-8616
FAX: 800-338-8620
www.fema.gov/firm

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at www.fema.gov.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and Floodways that were transferred from the previous FIRM may have been adjusted to conform to these more stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

This Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the Clark County commitment to share and maintain floodplain leaves within their Geographic Information System Management Office (GISMO).

This DFIRM reflects several innovative features. These include:
- Southern Nevada GIS - Cooperation among local governmental agencies throughout Clark County. The foundation of cooperation is the GIS Interlocal Agreement formed between Southern regional participants. In fact, the agreement specifies that the Clark County GIS Management Office (GISMO) will be responsible for managing a GIS data warehouse and associated Southern Nevada GIS Metadata.

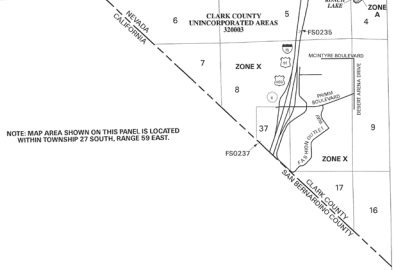
- The GISMO's responsibilities go beyond maintaining the GIS data warehouse. GISMO also maintains the Real-Centrics Database used to 311 dispatch services. This database database serves as the Base Map for the DFIRM.
- DIGITAL DATA AVAILABILITY: http://www.clark.nv.us/department/gis/mo.htm



118°30'00"
35°30'00"

118°30'00"
35°30'00"

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 27 SOUTH, RANGE 59 EAST.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT
The 1% annual chance flood (100 year flood), also known as the base flood, is the flood hazard shown on this map. The 1% annual chance flood is the flood hazard shown on the Flood Insurance Study report for this jurisdiction. The 1% annual chance flood is the flood hazard shown on the Flood Insurance Study report for this jurisdiction. The 1% annual chance flood is the flood hazard shown on the Flood Insurance Study report for this jurisdiction.

ZONE A - Base flood elevations determined.
ZONE AH - Flood hazard zone with 1 to 3 feet (locality areas of ponding); base flood elevations determined.
ZONE AO - Flood hazard zone with 1 to 3 feet (locality areas of ponding); base flood elevations determined. For areas of unusual fan flood, additional data are determined.

ZONE AR - Area of special flood hazard, formerly protected from the 1% annual chance flood hazard by a flood control system that was subsequently abandoned. Zone AR indicates that the former flood control system is being restored to the water surface elevation of the 1% annual chance flood.

ZONE ARB - Area protected from the 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.

ZONE V - Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.

ZONE VE - Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE
The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be passed without substantial increases in flood heights.

OTHER FLOOD AREAS
ZONE X - Areas of 0.2% annual chance flood areas of 1% annual chance flood with average depths of one foot to 1 foot 6 inches with average wave heights from 1 to 6 feet and wave periods of 10 to 20 seconds.

OTHER AREAS
ZONE A - Areas identified to be outside the 0.2% annual chance floodplain.
ZONE D - Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)
OPAs are areas normally located within or adjacent to Special Flood Hazard Areas.

BOUNDARIES
Floodway Boundary
Floodplain Boundary
Zone D Boundary
Coastal Barrier Boundary

BOUNDARY, SPECIAL FLOOD HAZARD AREAS OF DIFFERENT BASE FLOOD ELEVATIONS, AND FLOODWAY AREAS
1/2 - Base Flood Elevation line and wave direction to right
1/2 - Base Flood Elevation value shown within zone boundary

BOUNDARY, SPECIAL FLOOD HAZARD AREAS OF DIFFERENT BASE FLOOD ELEVATIONS, AND FLOODWAY AREAS
1/2 - Base Flood Elevation line and wave direction to right
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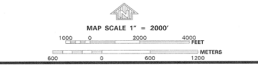
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1/2 - Base Flood Elevation line and wave direction to right
1/2 - Base Flood Elevation value shown within zone boundary

BOUNDARY, SPECIAL FLOOD HAZARD AREAS OF DIFFERENT BASE FLOOD ELEVATIONS, AND FLOODWAY AREAS
1/2 - Base Flood Elevation line and wave direction to right
1/2 - Base Flood Elevation value shown within zone boundary

BOUNDARY, SPECIAL FLOOD HAZARD AREAS OF DIFFERENT BASE FLOOD ELEVATIONS, AND FLOODWAY AREAS
1/2 - Base Flood Elevation line and wave direction to right
1/2 - Base Flood Elevation value shown within zone boundary

BOUNDARY, SPECIAL FLOOD HAZARD AREAS OF DIFFERENT BASE FLOOD ELEVATIONS, AND FLOODWAY AREAS
1/2 - Base Flood Elevation line and wave direction to right
1/2 - Base Flood Elevation value shown within zone boundary



PANEL 3475 E
FIRM FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS
PANEL 3475 OF 4090
SEE MAP INDEX FOR FIRM PANEL LAYOUT
DATE:
COMMENTS: NUMBER PANEL SURVEY
CLARK COUNTY: UNINCORPORATED AREAS 3475 3475 E
Notes to User: The Map Number shown below should be used when ordering maps and/or information. Please refer to the National Flood Insurance Program website for the latest information on how to purchase maps for the latest information.
MAP NUMBER 3475 OF 4090
MAP REVISED: SEPTEMBER 27, 2002
Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map preparator should be consulted for possible updates or additional flood hazard information.

To obtain flood hazard information, users should consult the Flood Insurance Study (FIS) and/or Flood Hazard Boundary Study (FHBS) report that accompanies this FIRN. Users should be aware that while shown on the FIRN, elevations are not necessarily flood elevations. These elevations are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRN for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (BFE) shown on this map apply only land west of 0.2 North American Vertical Datum (NAVD). Users of this FIRN should be aware that coastal flood elevations may also be provided in the Summary of Individual Elevations table in the Flood Insurance Study report for the community. Elevations shown in the Summary of Individual Elevations table should be used for construction, water floodplain management purposes when they are higher than the elevations shown on this FIRN.

Boundaries of the Floodways were computed at cross sections and interpolated between cross sections. The Floodways were based on hydrologic computations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood wood enclosures. Refer to Section 2.3, "Flood Protection Enclosures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The projection used in the preparation of this map is Universal Transverse Mercator (UTM), Zone 17. The horizontal datum is NAD83 (GRS1980 spheroid). Differences in datum, spheroid, projection or UTM zones used in the production of FIRN for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRN.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and equipment elevation elevations based on the North American Vertical Datum of 1988. For information on datum conversions, visit the National Geospatial Information Administration website at the following address:

<http://www.ngs.noaa.gov/DAOS/>

Agency Information: Clark County, Silver Spring Metro Center 3 1313 Silver Spring Blvd Silver Spring, MD 20910

Map Information: This map was prepared by Clark County Regional Flood Control District. The information was derived from the Flood Insurance Study report for this jurisdiction.

Base map information shown on this FIRN was provided in digital format by Clark County Regional Flood Control District. This information was derived from the Flood Insurance Study report for this jurisdiction.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to redistricting or organizational changes may occur, users should verify current corporate limits locations with appropriate community officials to verify current corporate limits locations.

Users refer to the community report for an inventory list of the data for each community as well as a listing of the points on which each community is located.

For more information, contact the Flood Insurance Study report for this jurisdiction. Visit the National Geospatial Information Administration website at the following address: <http://www.flood.gov/>

Scale: 1 inch = 500 feet

Effective Date: September 27, 2002

For community use: This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map preparator should be consulted for possible updates or additional flood hazard information.

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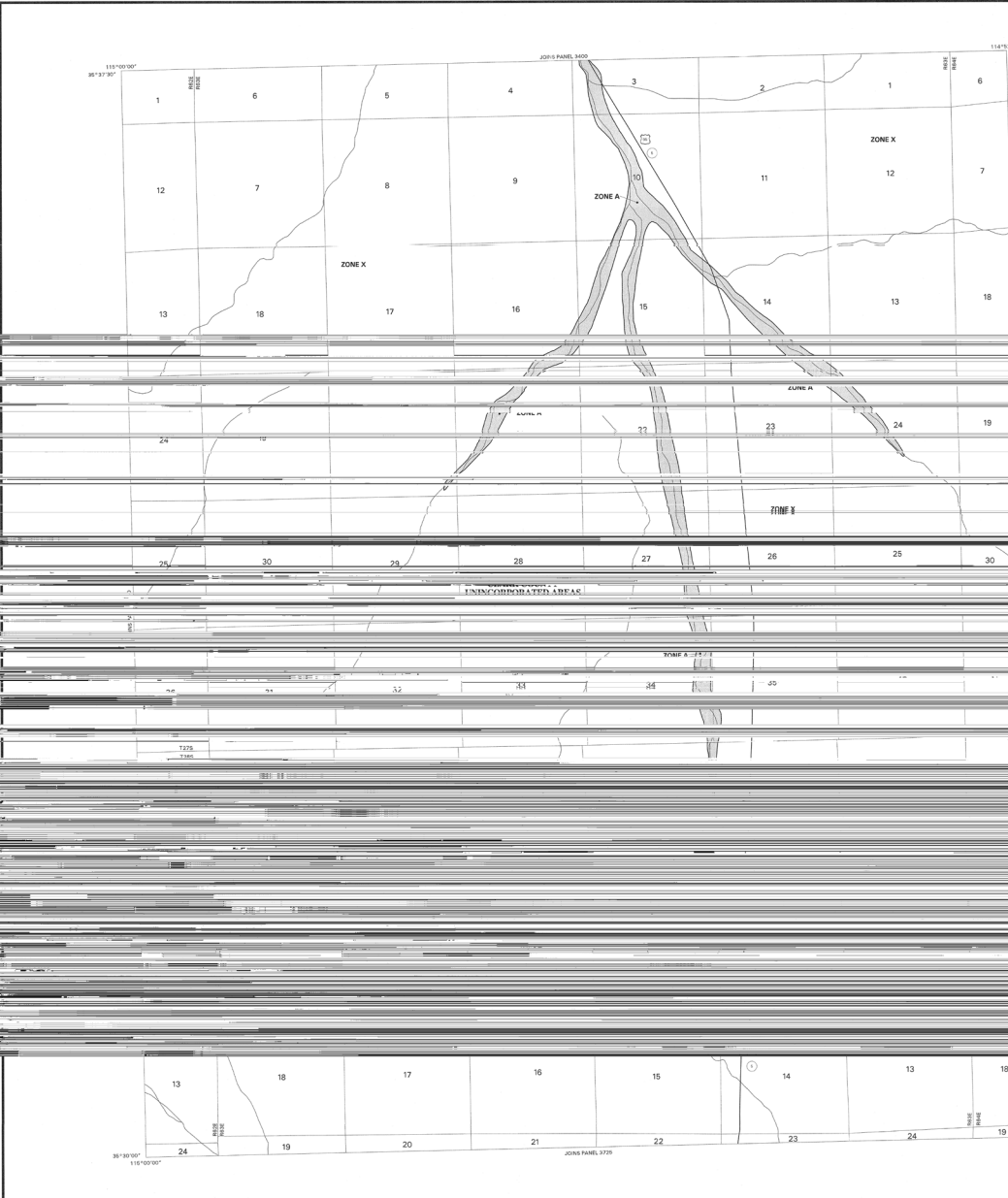
For community use: This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map preparator should be consulted for possible updates or additional flood hazard information.

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LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

ZONE AE Special Flood Hazard Area (SFHA) subject to inundation by the 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area in the area subject to flooding by the 1% annual chance flood is the Special Flood Hazard Area (SFHA) subject to inundation by the 1% annual chance flood.

ZONE AH No base flood elevations determined.

ZONE AR Flood depths of 1 to 3 feet (average area of ponding); base flood elevations determined.

ZONE AD Flood depths of 3 to 6 feet (average area of ponding); base flood elevations determined. For areas of about fan flooding, structure and elevation determined.

ZONE AR Area of special flood hazard (SFHA) protected from the 1% annual chance flood event by a flood control system that was substantially completed by the date of the Flood Insurance Study report for this jurisdiction. An asterisk (*) indicates that the former flood control system is being maintained to provide protection from the 1% annual chance of special flood event.

ZONE AAD Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The Floodway is the shaded area of a stream that are adjacent floodways such that must be kept free of obstructions to maintain the 1% annual chance flood stage without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas in 0.2% annual chance flood areas of 1% annual chance flood with average heights of less than 1 foot or with drainage areas less than 1 square foot, and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodway.

Other symbols: Floodway boundary, Zone D boundary, Boundary dividing Special Flood Hazard Areas of different zones, Base Flood Elevation (line and value, elevation in feet).

References: Referenced to the North American Vertical Datum of 1988.

Scale: 1 inch = 500 feet

Effective Date: September 27, 2002

For community use: This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map preparator should be consulted for possible updates or additional flood hazard information.

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NATIONAL FLOOD INSURANCE PROGRAM

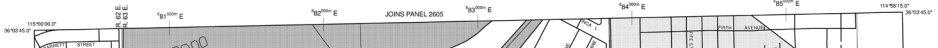
Map Number: 300050570 E
Map Revised: September 27, 2002

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updates or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or Roadways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INSURATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A No base flood elevations determined.

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly those flood damage sources of small scale community map respondents that require further consideration for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or Floodway Data are not shown, users are encouraged to contact the Flood Protection and Floodway Data and/or Survey of Submarine Elevations (SSE) entities within the Flood Insurance Study (FIS) report that encompasses this FIRM. Users should be aware that BFEs shown on the FIS represent mapped water-foot elevations. These BFEs are intended for flood insurance rate purposes. Elevations shown in the Survey of Submarine Elevations information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIS for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation shown on this map apply only to landward of the coastal base flood elevation of 1000 years return period. The FIS report should be used for coastal flood elevations also provided in the Summary of Submarine Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Survey of Submarine Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 24 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The horizontal datum was NAD83. GPS/RTK approach. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. The flood elevations are based on the datum and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1988 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NADS Information Services
NOAA, NAD83
1215 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, observation, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (901) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was provided in digital format by the Clark County GIS Management Office (GISMO).

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM. The stream channels, floodplains, and floodways that were transferred from the previous FIRM may have been adjusted to conform to these more detailed stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report which contain authoritative hydraulic data may reflect stream channel dimensions that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexation or de-annexations may occur after the map is published, users are encouraged to consult appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the extent of map sheets, community map repository addresses, and a listing of Communities with National Flood Insurance Program status for each community as well as a listing of the panels on which each community is located.

For information and questions about this map, available products associated with this FIRM including historic versions of the FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information Center at 1-877-FEMA-MAP (1-877-362-7627) or visit the FEMA Map Service Center website at <http://www.fema.gov>. Available products may include digitally issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of the map. Many of those products can be ordered or obtained directly from the website. Users may determine the correct map data for each panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information Center.

Accredited License Notes to Users: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed that of a 1-percent-annual-chance-flood) and Emergency Action Plans on the levee systems) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at <http://www.fema.gov/business/firm/index.htm>.

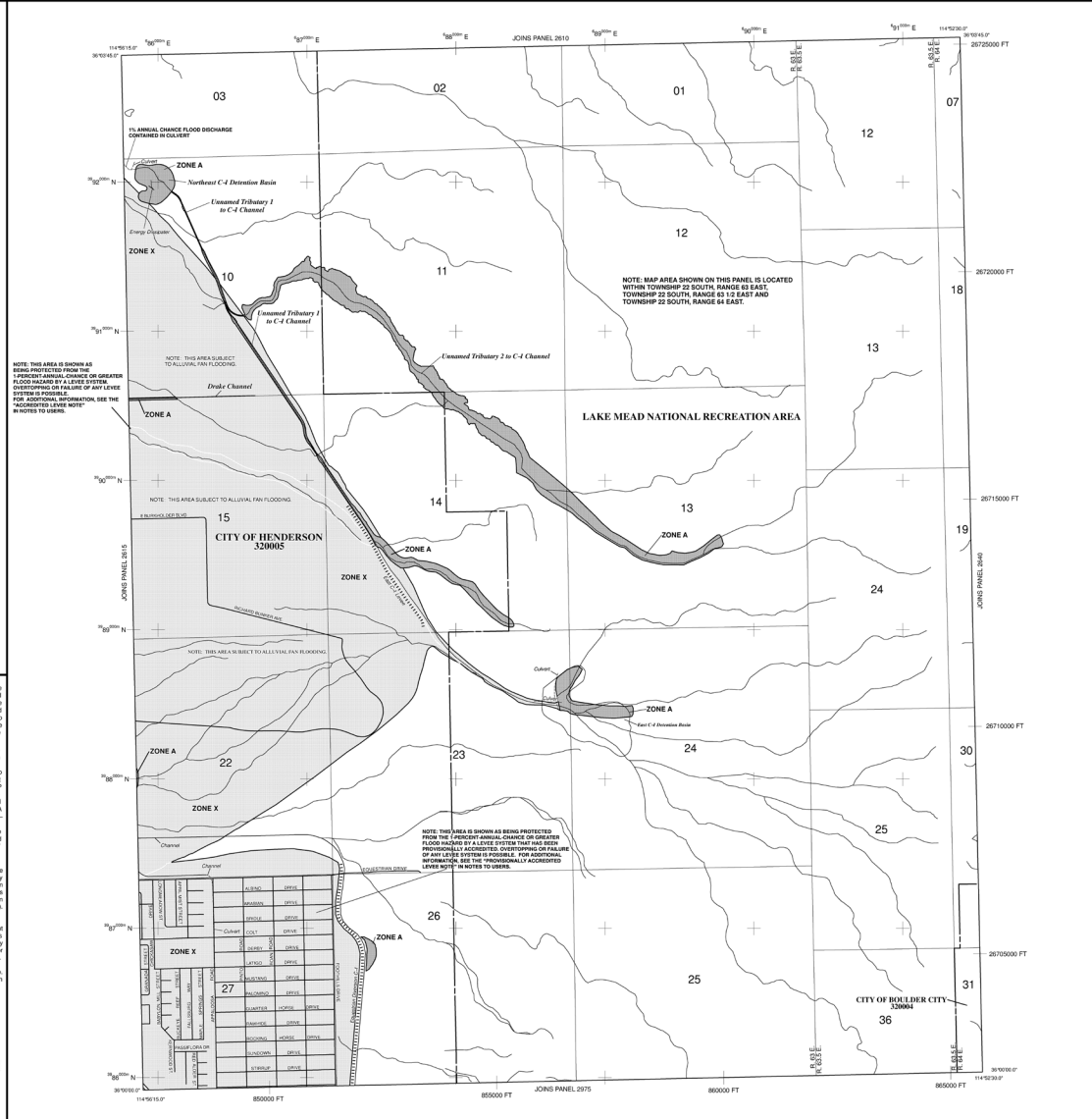
Professionally Accredited License Notes to Users: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance-flood) and Emergency Action Plans on the levee systems) shown as providing protection for areas on this panel. To maintain accreditation, the levee owner or community is required to submit the data and documentation necessary to comply with Section 65.10 of the NFIP regulations by December 15, 2010. If the community or owner does not provide the necessary data and documentation or if the data and documentation provided indicates the levee system does not comply with Section 65.10 requirements, FEMA will revise the flood hazard data distribution for the area to reflect the accreditation of the levee system. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at <http://www.fema.gov/business/firm/index.htm>.

The Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the Clark County commitment to share and maintain floodplain layers within their Geographic Information System Management Office (GISMO). This DFIRM reflects several innovative features. These include:

- A Southern Nevada GIS-Cooperation among local government agencies throughout Clark County. The foundation of cooperation is the GIS Interlocal Agreements between fourteen regional participants. In part, the agreements specify that the Clark County GIS Management Office (GISMO) will be responsible for managing a GIS data warehouse and associated Southern Nevada GIS metadata.

The GISMO responsibility also includes maintaining the GIS data warehouse. GISMO also maintains the Street Centerline Database used by 911 dispatch services. This database is also available as the basis for the GIS DFIRM.

DIGITAL DATA AVAILABILITY: <http://www.co.clark.nv.us/geo/gis/mo/gis/mo.htm>



LEGEND

- SPECIAL FLOOD HAZARD AREAS (SPECIAL SUBJECT TO FURTHER STUDY BY THE ANNUAL CHANCE FLOOD STUDY)**
 - 1% Annual Chance Flood (100-year flood) and areas known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Rate Map (SFHM) shows the 1% Annual Chance Flood. The Base Flood Elevation (BFE) is the elevation of the water surface of the 1% Annual Chance Flood.
 - ZONE A: No Base Flood Elevations determined. Inland flood areas determined.
 - ZONE AH: Flood depths of 1 to 3 feet (usually areas of ponds); Base Flood Elevation determined.
 - ZONE AD: Flood depths of 1 to 3 feet (usually areas of ponds) on steeply sloping terrain; Base Flood Elevation determined. For areas of shallow flood, vehicles not determined.
 - ZONE AR: Special Flood Hazard Area formerly protected from the 1% Annual Chance Flood by a flood control system that was substantially destroyed or removed; Base Flood Elevation determined. Flood control system is being restored to protect Base Flood Elevation and prevent the greater flood.
 - ZONE AN: Area to be protected from the 1% Annual Chance Flood by a flood flow protection system under construction; no Base Flood Elevation determined.
 - ZONE AV: Coastal flood zone with velocity hazard (wave action); no Base Flood Elevation determined.
 - ZONE VE: Coastal flood zone with velocity hazard (wave action); Base Flood Elevation determined.

FLOODWAY AREAS IN ZONE AE
The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of obstructions so that the 1% Annual Chance Flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS
Areas of 0.2% Annual Chance Flood, areas of 1% Annual Chance Flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from the 1% Annual Chance Flood.

OTHER AREAS
ZONE X: Areas determined to be outside the 0.2% Annual Chance Floodplain.
ZONE D: Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIERS RESOURCES SYSTEM (CBRS) AREAS
CBRS areas and Offis are normally located within or adjacent to Special Flood Hazard Areas.

OTHERWISE PROTECTED AREAS (OPA)
CBRS areas and Offis are normally located within or adjacent to Special Flood Hazard Areas.

- Floodway boundary
- Zone boundary
- Zone D boundary
- CBRS and Offis boundary
- Boundary defining Special Flood Hazard Areas of different flood hazard categories
- Base Flood Elevation line and velocity elevation in feet
- Base Flood Elevation values where uniform within area; elevation in feet
- Referenced to the North American Vertical Datum of 1988 (NAVD 88)
- Cross section line
- Tinned line
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 100-meter Universal Transverse Mercator grid; scale: 11 500-meter grid; UTM; NAD 83
- State Plane coordinates system; scale: 63,000 FT
- North arrow (see explanation in Notes to users section of the FIRM panel)
- River Mile
- MAP REPOSITORIES: Refer to Map Repositories list on Map Index
- EFFECTIVE DATE OF COURTYWIDE FLOOD INSURANCE RATE MAP: August 16, 2010
- EFFECTIVE DATE OF INDIVIDUAL TO THIS PANEL: November 16, 2011

The community map revision history prior to courtwide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or the National Flood Insurance Program at 1-800-558-6633.

MAP SCALE 1" = 1000'
0 500 1000 2000 METERS

NATIONAL FLOOD INSURANCE PROGRAM

FIRM FLOOD INSURANCE RATE MAP

CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 2620F OF 4090
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY: HENDERSON PANEL: 2620 PREFIX: 00000 CITY OF HENDERSON, NV

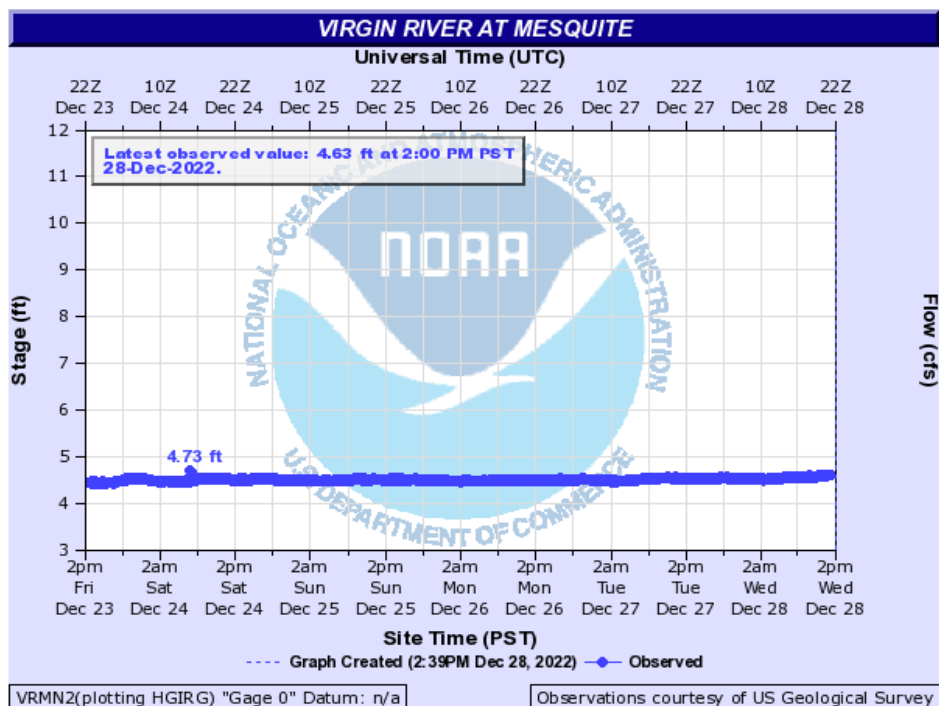
MAP NUMBER 32003C2620F
MAP REVISED NOVEMBER 16, 2011

Federal Emergency Management Agency

Appendix H: Flooding, Storm Gauges, and Historical Crest Data

1. Virgin River at Mesquite

National Weather Service
 Advanced Hydrologic Prediction Service
water.weather.gov/ahps/



Observations courtesy of US Geological Survey.

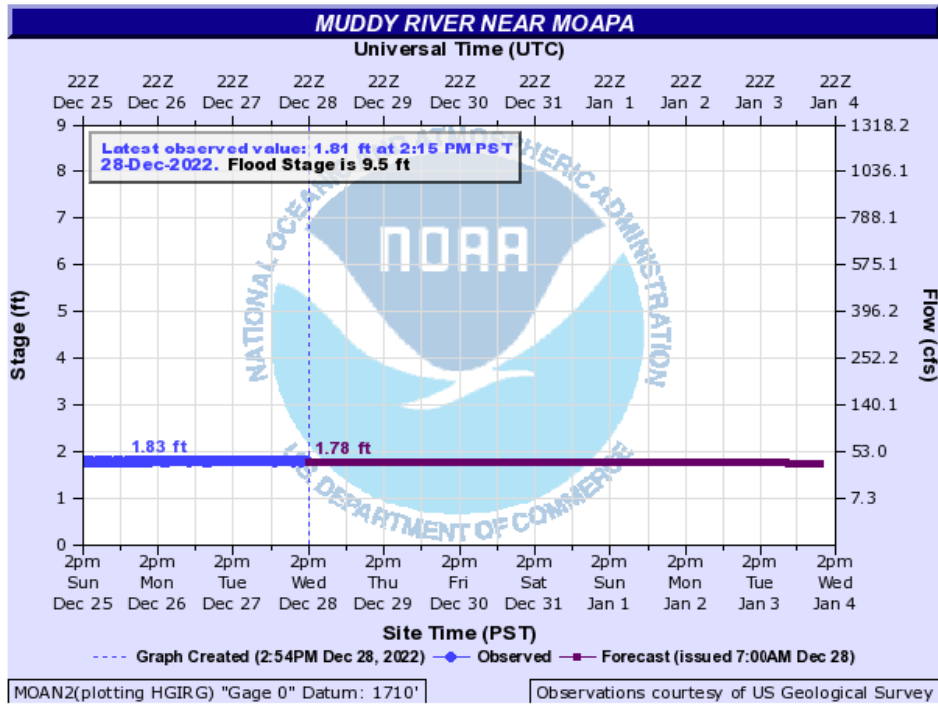
Forecasts are not available for the Virgin River at Mesquite. Only observed stages are available for this point.

Historical Crest Data for Virgin River at Mesquite

Ranking	Height	Date
1	8.08 ft	3/14/2020

2. Muddy River near Moapa

National Weather Service
 Advanced Hydrologic Prediction Service
water.weather.gov/ahps/



Observations courtesy of US Geological Survey.

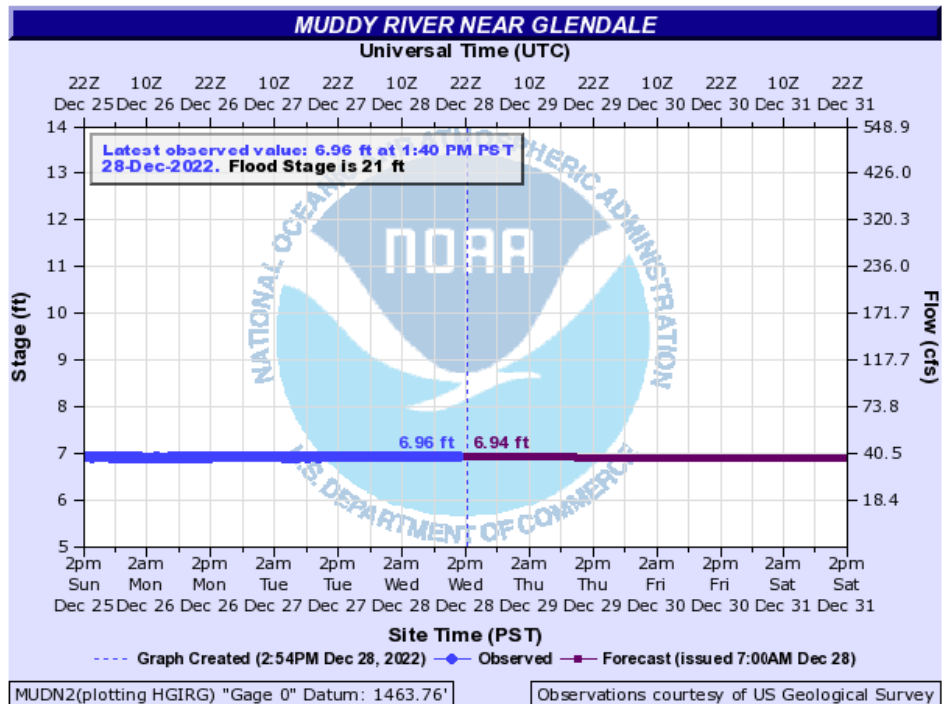
Forecasts for the Muddy River near Moapa are issued routinely year-round.

Historical Crest Data for Muddy River near Moapa

Ranking	Height	Date
1	14.26 ft	09/27/2014
2	13.64 ft	08/13/1979

3. Muddy River Near Glendale

National Weather Service
 Advanced Hydrologic Prediction Service
water.weather.gov/ahps/



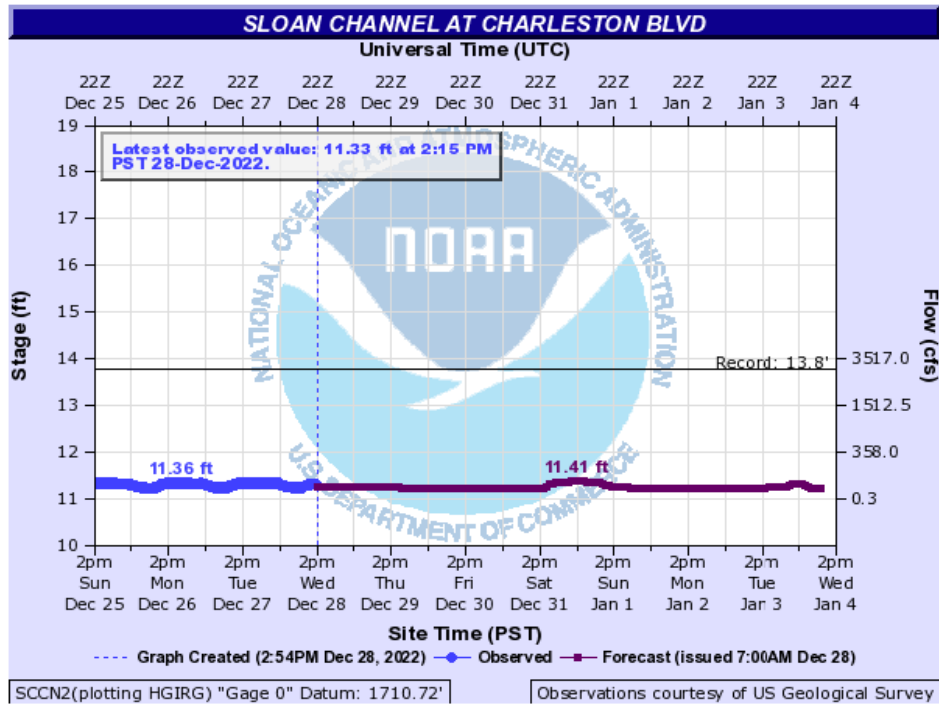
Observations courtesy of US Geological Survey.

Forecasts for the Muddy River near Glendale are issued routinely year-round.

Historical Crest Data for Muddy River near Glendale		
Ranking	Height	Date
1	27.10 ft	08/10/1981
2	27.06 ft	09/09/2014
3	24.89 ft	01/11/2005

4. Sloan Channel at Charleston Blvd

National Weather Service
 Advanced Hydrologic Prediction Service
water.weather.gov/ahps/



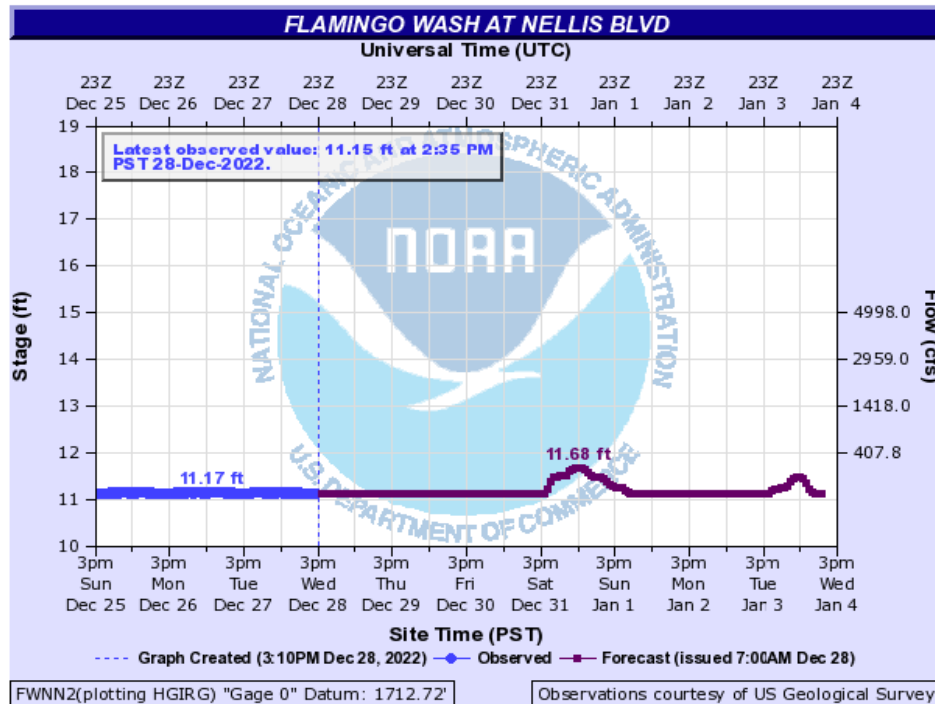
Observations courtesy of [US Geological Survey](https://www.usgs.gov/).
 Forecasts for the Sloan Channel at Charleston Blvd are issued routinely year-round.

Historical Crest Data for Sloan Channel at Charleston Blvd

Ranking	Height	Date
1	13.79 ft	12/29/2004
2	13.24 ft	09/11/2012
3	13.14 ft	08/22/2016
4	13.09 ft	10/12/2012
5	12.48 ft	12/22/2010

5. Flamingo Wash at Nellis Blvd

National Weather Service
 Advanced Hydrologic Prediction Service
water.weather.gov/ahps/



Observations courtesy of US Geological Survey.

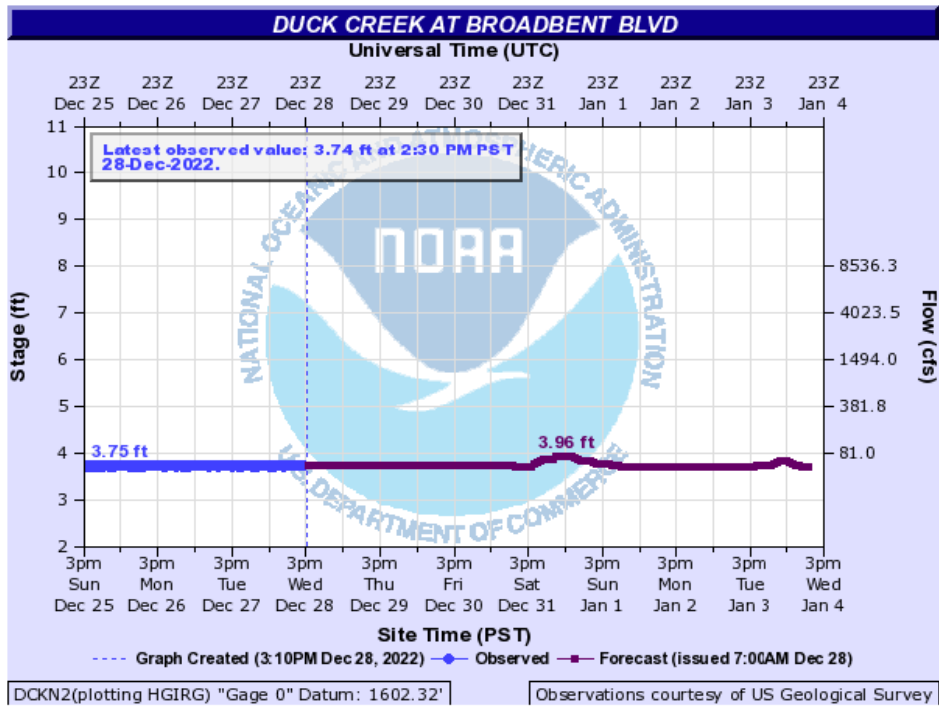
Forecasts for the Flamingo Wash at Nellis Blvd are issued routinely year-round.

Historical Crest Data for Flamingo Wash at Nellis Blvd

Ranking	Height	Date
1	13.85 ft	03/12/2020
2	13.21 ft	01/09/2018
3	13.15 ft	02/14/2019
4	12.58 ft	02/18/2017
5	11.90 ft	07/26/2021

6. Duck Creek at Broadbent Blvd

National Weather Service
 Advanced Hydrologic Prediction Service
water.weather.gov/ahps/



Observations courtesy of US Geological Survey.

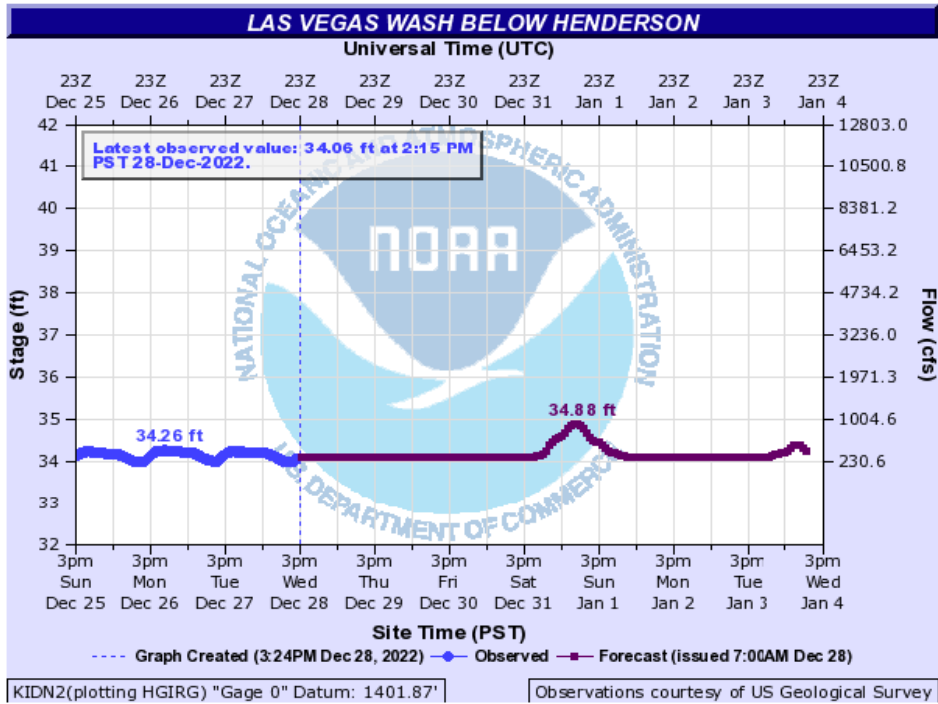
Forecasts for the Duck Creek at Broadbent Blvd are issued routinely year-round.

Historical Crest Data for Duck Creek at Broadbent Blvd

Ranking	Height	Date
1	8.70 ft	07/06/2001
2	8.21 ft	06/30/2016
3	8.16 ft	08/22/2012
4	7.57 ft	09/10/1984
5	7.21 ft	03/12/2020

7. Las Vegas Wash below Henderson

National Weather Service
 Advanced Hydrologic Prediction Service
water.weather.gov/ahps/



Observations courtesy of US Geological Survey.

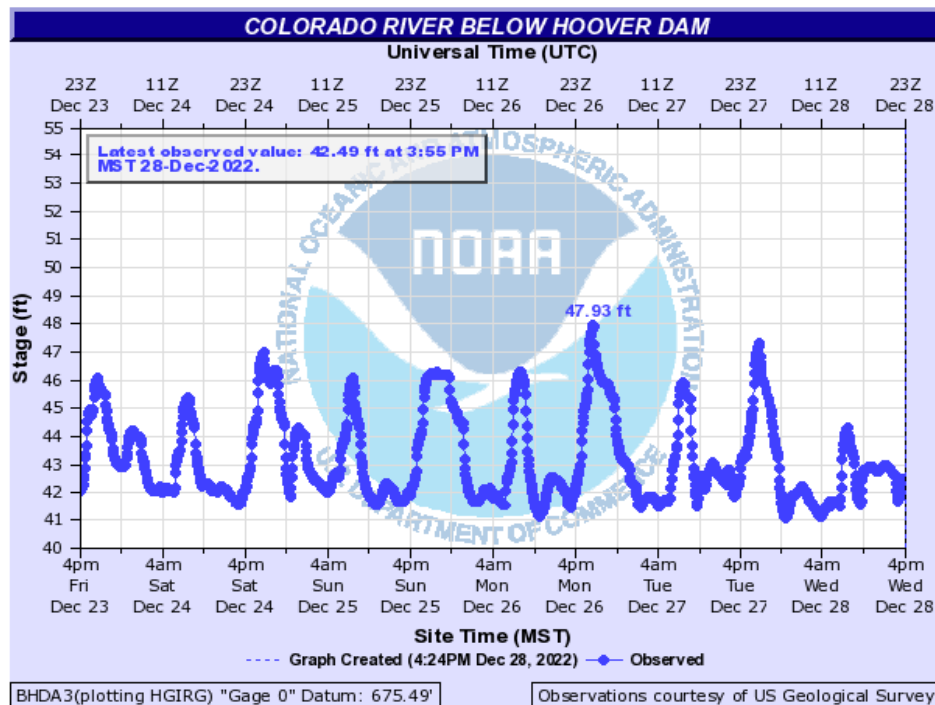
Forecasts for the Las Vegas Wash below Henderson are issued routinely year-round.

Historical Crest Data for Las Vegas Wash below Henderson

Ranking	Height	Date
Currently, there is no historic crest date for Las Vegas Wash below Henderson available		

8. Colorado River below Hoover Dam

National Weather Service
 Advanced Hydrologic Prediction Service
water.weather.gov/ahps/



Observations courtesy of [US Geological Survey](https://www.usgs.gov/).

Forecasts are not available for the Colorado River below Hoover Dam. Only observed stages are available for this point.

Historical Crest Data for Colorado River below Hoover Dam

Ranking	Height	Date
Currently, there is no historic crest date for the Colorado River below Hoover Dam available		

9. Colorado River at Lake Mohave/Davis Dam

Historical Crest Data for Colorado River at Lake Mohave/Davis Dam

<i>Ranking</i>	<i>Height</i>	<i>Date</i>
Currently, there is no historic crest date for the Colorado River Lake Mohave/Davis Dam available		

Appendix I: Mitigation Action Prioritization Table

Mitigation Action Project Prioritization, Clark County Department (Clark County Unincorporated)

Mitigation Project Prioritization, Clark County Departments (Clark County Unincorporated)

Mitigation Project or Activity	STAPLE+E	MPE	Hazards												Hazard Total	HRT Value	Priority	
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Storms	Wildfire	Infestation	Infection Disease	Hazardous Materials				Terrorism
Implementing Benchmarking Ordinance with Energy/Water Assistance for Building	28	Medium (1)			10											10	10	Medium
Efficiency Program Stacking Model	28.91	Medium (1)	15	5	10	10		15	5		15	10	5	15	15	120	10.91	Medium
Develop and implement a regional education program on topics like resilience and sustainability	25.91	Medium (1)	15	5	10	10		15	5		15	10	5	15	15	120	10.91	Low
State Renewable Portfolio Standard Advocacy Initiatives	27.91	Medium (1)	15	5	10	10		15	5		15	10	5	15	15	120	10.91	Medium

Mitigation Project Prioritization, Clark County Departments (Clark County Unincorporated)

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Storms	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Expansion of Community Solar Program	28.91	Medium (1)	15	5	10	10		15	5		15	10	5	15	15	120	10.91	Medium
Community Resilience Hubs	26.91	Medium (1)	15	5	10	10		15	5		15	10	5	15	15	120	10.91	Medium
Community Wildfire Protection Plans	32.5	1.5									15					15	15	Medium
Homeowner Education and Outreach	21	0.5									15					15	15	Low
Fire Breaks Near Public Lands	32	1									15					15	15	Medium
Generator Installation, Searchlight FS 75	33.31	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846154	Medium
Generator Installation, Indian Springs FS 83	33.31	1.5	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846154	Medium
Bunkerville Generator Replacement	33.31	1.5	15	5	10	10		15	5		15	10	5	15	15	150	11.53846154	Medium
Phase II- Unreinforced Masonry Structure Survey	16	1				10										10	10	Low

Mitigation Project Prioritization, Clark County Departments (Clark County Unincorporated)

Mitigation Project or Activity	STAPLE+E	MPE	Hazards												Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Storms	Wildfire	Infestation	Infection Disease	Hazardous Materials			
Research into earthquake hazard	16.5	0.5				10									10	10	Low
Wildfire Awareness	16.5	0.5								15					15	15	Low
Flood Projects through the CCRFCD - Blue Diamond Channel 02, Decatur-Le Baron to Richma	37.5	1.5									15				15	15	Medium
Flood Projects through the CCRFCD - Wagon Trail Channel, Sunset Road to Teco Ave	37.5	1.5									15				15	15	Medium
Flood Projects through the CCRFCD - Blue Diamond Wash, Arville Street	37.5	1.5									15				15	15	Medium
Flood Projects through the CCRFCD- Harry Reid Airport Peaking Basin - East Outfall	37.5	1.5									15				15	15	Medium

Mitigation Project Prioritization, Clark County Departments (Clark County Unincorporated)

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Storms	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Emergency Power	28	1	15			10		15			15				55	13.75	Medium	
Fuel Management	28	1									15				15	15	Medium	
Mosquito Abatement Program	22	1											10	5	15	7.5	Low	
Flamingo Wash, Maryland Parkway to Palos Verdes Street	27.5	1.5						15							15	15	Medium	
Jim McGaughey Detention Basin, Collection & Outfall	27.5	1.5						15							15	15	Medium	

Mitigation Project Prioritization, Clark County Departments (Clark County Unincorporated)

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority	
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Storms	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism				
Las Vegas Wash -Branch 02 - Monson Channel - Jimmy Durante to Boulder Hwy	27.5	1.5						15									15	15	Medium
Orchard Detention Basin Collector - Charleston to Linden	27.5	1.5						15									15	15	Medium
Goodsprings Phase I	27.5	1.5						15									15	15	Medium
Blue Diamond Railroad Channel	27.5	1.5						15									15	15	Medium
Windmill Wash Detention Basin Expansion and Jess Waite Levee Facilities	22	1						15									15	15	Low
SR163 at Casino Drive - Phase 2 Sediment Basin	27.5	1.5						15									15	15	Medium

Mitigation Project Prioritization, Clark County Departments (Clark County Unincorporated)

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Storms	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Airport Channel - Naples	27.5	1.5						15								15	15	Medium
Duck Creek/Blue Diamond, Bermuda Road to Las Vegas Blvd	27.5	1.5						15								15	15	Medium
Blue Diamond Channel Amigo to Haven	27.5	1.5						15								15	15	Medium
Flamingo, Cimarron Branch - Russell Road to Patrick Lane	27.5	1.5						15								15	15	Medium
Hiko Springs Wash Detention Basin Expansion	27.5	1.5						15								15	15	Medium
Flamingo Wash, UPRR to Hotel Rio Drive	27.5	1.5						15								15	15	Medium
Sunset Park - Duck Creek Wash to Eastern Avenue	27.5	1.5						15								15	15	Medium
Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11,538 46154	Low

Mitigation Project Prioritization, Clark County Departments (Clark County Unincorporated)

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Storms	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Annual Review and Update of Local Emergency Operations Plan (LEOP)	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Animal Evacuation Measures Public Awareness Campaign	17.77	0.5	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Procure Emergency Evacuation Trailer	23.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Temporary Sheltering Needs for Animal Services	17.77	0.5	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Community Wildfire Protection Plans	32.5	1.5									15					15	15	Medium

Mitigation Project Prioritization, Clark County Departments (Clark County Unincorporated)

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Storms	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Homeowner Education and Outreach	21	0.5									15					15	15	Low
Fire Breaks Near Public Lands	32	1									15					15	15	Medium

Mitigation Action Project Prioritization, Clark County Water Reclamation District

Mitigation Project Prioritization, Clark County Water Reclamation District

Mitigation Project or Activity	STAPLE+E	MPE	Hazards												Hazard Total	HRT Value	Priority	
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials				Terrorism
Emergency Power	22.25	0.5	10			10			15			15				50	12.5	Low
Mosquito Abatement Program	21.5	1										5	10			15	7.5	Low
Green Energy Projects	20	1	10			10		15	10		15			5	5	70	10	Low
Surge Pond Overflow Protection	34.5	1.5						15								15	15	Medium

Mitigation Action Project Prioritization, Boulder City, NV

Mitigation Project Prioritization, Boulder City, NV																		
Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Implement floodplain and stream restoration projects	37.5	1.5						15								15	15	Medium
Maximize Maintenance Funding for Existing Flood Control Facilities	31	1						15								15	15	Medium
Continue Water Conservation Measures	25	1			10											10	10	Low
Flood Control Improvements	37.5	1.5						15								15	15	Medium
Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low

Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Annual Review and Update of Local Emergency Operations Plan (LEOP)	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low

Mitigation Action Project Prioritization, Henderson, NV

Mitigation Project Prioritization, Henderson, NV

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Unreinforced Masonry Database	25.75	1	15			10		15			15					55	13.75	Medium
Critical Infrastructure Flood Risk Reduction	22	1		5				15								20	10	Low
Critical Facilities & Infrastructure Seismic Retrofit or Replacement	21	1	15	5		10										30	10	Low
Flood Control	22	1		5				15								20	10	Low
Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846 154	Low
Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846 154	Low

Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846 154	Low
Annual Review and Update of Local Emergency Operations Plan (LEOP)	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846 154	Low

Mitigation Action Project Prioritization, Las Vegas, NV

Mitigation Project Prioritization, Las Vegas, NV

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Severe Storms	Fissures & Subsidence	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Hazard Prevention Framework	17.68	0.5	15	5	10	10		15		10	15	10	5	15	15	125	11.36	Low
Cooling Infrastructure Investment	30	1.5			10											10	10	Medium
Hazard Economic Recovery Framework	19.68	0.5	15	5	10	10		15		10	15	10	5	15	15	125	11.36	Low
Update of RFCDC Master Plan Improvements within the City	35.5	1.5						15								15	15	Medium
Seasonal Monsoon Season Study	19.5	0.5						15								15	15	Low
Low Impact Development of Natural Drainage Techniques	28.5	1						15		10						25	12.5	Medium

Mitigation Project Prioritization, Las Vegas, NV

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Storms	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Early Warning Notification Education Program	23.5	0.5						15								15	15	Low
Turf Limits Program	21.25	0.5	15		10											25	15	Low
Critical Infrastructure Flood Risk Reduction (Bonneville Stormwater)	31	1						15								15	15	Medium
Aquifer Storage and Recovery (Water Use and Conservation)	27	1			10				10							20	10	Medium
NIPP's Security and Resilience Challenge (Smart City)	30	1												15	15	30	15	Medium
NIPP's Security and Resilience Challenge (Connected Corridors)	30	1												15	15	30	15	Medium

Mitigation Project Prioritization, Las Vegas, NV

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority	
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Storms	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism				
Aquifer Storage and Recovery (Water Use and Conservation)	27	1			10					10							20	10	Medium
Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low	
Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low	
Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low	
Annual Review and Update of Local Emergency Operations Plan (LEOP)	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low	

Mitigation Action Project Prioritization, Las Vegas Valley Water District/SWNA

Mitigation Project Prioritization, Las Vegas Valley Water District/SWNA

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Storms	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Installation of Perimeter Fence	30	1													15	15	15	Medium
Septic to Sewer Conversions	30.5	1	15		10											25	12.5	Medium
Treatment Facility Network Improvements	30	1													15	15	15	Medium
Risk Solutions Software for Continuity of Operations Plan Management	27.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11,538 6154	Medium
Equip Riverbank Well	22.25	0.5	15		10											25	12.5	Low
Replace Aging/Failed Surveillance and Networking Equipment	21.5	0.5													15	15	15	Low

Mitigation Project Prioritization, Las Vegas Valley Water District/SWNA

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Storms	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Design and Installation of Horizon Lateral	22.875	0.5	15			10		15			15					55	13.75	Low
Purchase generators and develop plan to use well water to provide critical service water supply if treatment plants operations are disrupted	28.75	1	15			10		15			15					55	13.75	Medium
Turf Limits	21.25	0.5	15		10											25	12.5	Low
Water Conservation Program	28.5	1	15		10											25	12.5	Medium

Mitigation Action Project Prioritization, Mesquite, NV

Mitigation Project Prioritization, Mesquite, NV

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Damage Assessment Forms for Flooding and Earthquake	26	1	15			10		15								40	13.333 33333	Medium
Flooding-Levy Build Up	30.3636365	1.5						15								15	15	Medium
Senior Center Backup Power Supply	25.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Medium
Recreation Center Backup Power Supply	25.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Medium
Drought-Water Conservation Planning	21.5	0.5	15			10										25	12.5	Low
Mesquite Town Wash, Abbott Wash Channel, Pulsipher Wash Channel	38.5	1.5						15								15	15	Medium
Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low

Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Annual Review and Update of Local Emergency Operations Plan (LEOP)	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low

Mitigation Action Project Prioritization, North Las Vegas

Mitigation Project Prioritization, North Las Vegas, NV

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Lower Las Vegas Wash Detention Basin Inflow Channel	35.5	1.5							15							15	15	Medium
Range Wash - Las Vegas Diversion Channel	35.5	1.5							15							15	15	Medium
Las Vegas Boulevard Storm Drain	35.5	1.5							15							15	15	Medium
Range Wash Beltway Conveyance	35.5	1.5							15							15	15	Medium
Beltway Collection System - Pecos	35.5	1							15							15	15	Medium
Speedway North Detention Basin and Outfall	35.5	1.5							15							15	15	Medium

Mitigation Project Prioritization, North Las Vegas, NV

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Storms	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
North Apex - System 1 Detention Basin and Outfall	29	1						15								15	15	Medium
Flood Control	27	1		5				15								30	15	Medium
Turf Conversion Subsidy	24	1			10											20	10	Low
Emergency Power	20.5	0.5	15			15		15								60	15	Low
Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Annual Review and Update of Local Emergency Operations	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low

Plan (LEOP)																			
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Mitigation Action Project Prioritization, Las Vegas Paiute Tribe

Mitigation Project Prioritization, Las Vegas Paiute Tribe																		
Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Purchase of Law Enforcement Facility Generator	25.3333				10	10		15			15					50	12.5	Medium
Flood Control Project Maintenance Project - US 95 Highway Culvert	30							15								15	15	Medium
Flood Control Project - Paiute Golf Course - Wolf Course Channel Extension	30							15								15	15	Medium
Protect Snow Mountain Water Well	26.5				10	10	15				15					50	12.5	Medium
Acquire Water Well Backup Generator for Snow Mountain	27.333				10	10		15			15			15	15	80	13.333333	Medium
Create a Tribal Continuity of Operations Plan (COOP)	18.769231		15	5	10	15	15	15	5	15	15	10	5	15	15	150	11.5384615	Low

Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Annual Review and Update of Local Emergency Operations Plan (LEOP)	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low

Mitigation Action Project Prioritization, Moapa Band of Paiutes

Mitigation Project Prioritization, Moapa Band of Paiutes																		
Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Emergency Power for Admin and Law Enforcement	34.4825	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	21.4285	Medium
Tribal Emergency Preparation (Training, Purchasing, Planning, and Events Planning)	34.825		15	5	10	10	15	15	5	15	15	10	5	15	15	150	21.4285	Medium
Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846 154	Low
Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846 154	Low
Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846 154	Low
Annual Review and Update of Local Emergency Operations Plan (LEOP)	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846 154	Low

Appendix J: Jurisdictional Annexes

City of Boulder City

Planning Area

The City of Boulder City is known to be a small town with big adventure. The [Boulder City Visitor Brochure](#) mentions that it's just beyond the glitz and glam is Boulder City, the town that built [Hoover Dam](#). It doesn't take long to feel its thrill-seeking spirit and welcoming charm. But it may take a while to see all of the recreational and outdoor activities. There are so many ways to explore, whether it be by land, water or air. If you're passing through, or staying a while, welcome.

Figure 124: City of Boulder City Community Profile Map

Data Source: [Boulder City GIS Department](#)

Jurisdiction Profile

- Planning Area
- Demographics & Hazard Vulnerabilities
- Critical Facilities Information

Hazard Risk Assessment

- National Flood Insurance Program (NFIP) Summary

Mitigation Strategy & Capabilities

- Capabilities Assessment
- Completed and Deferred Mitigation Projects (2018)
- Proposed Mitigation Activities (including STAPLE+E)

Demographics and Hazard Vulnerabilities

Demographic data is crucial to effective hazard mitigation planning. This is especially true for the numbers associated with population, housing units, and building permits as they, over time, can increase or decrease a planning area's vulnerabilities to any/all identified natural hazards. It is important to note, however, that demographic data can fluctuate or even lag in the short term, i.e., one to two years. While these numbers tend to self-correct over time, temporary decreases or increases in population and/or the number of housing units may occur. In these instances, it is best to consider demographic data from longer periods, such as ten (10) to 20 years, for mitigation planning purposes.

As for Boulder City, the U.S. Census Bureau determined its population to be 14,996 in 2000. That number increased by 0.381% to 15,023 in 2010. In 2020, the U.S. Census Bureau determined the Boulder City population to be 14,885, a decrease of 0.919%.

Similarly, the U.S. Census Bureau determined the number of housing units in Boulder City to be 7,412 in 2021 and 7,423 in 2020, a 0.1484% increase.

The following table provides a visual representation of Boulder City’s demographic information (as previously described) and how it specifically relates to hazard probability and the planning area’s vulnerabilities to all identified natural hazards.

Table 142: Demographics and Vulnerability, Boulder City

Demographics & Vulnerability, Boulder City								
Population (2000 U.S. Census)	Population 2010 U.S. Census	Population (2020 U.S. Census)	% of Population Change (2010-2020)	# of Housing Units (2020 Census)	% of Housing Units (2010-2020)	Identified Hazards	CPRI Results	Probability of Hazards (From Risk Summary)
14,966	15,023	14,855	0.919%	7,423	0.1484%	Climate Change	M (2.5)	Highly Likely
						Drought	H (3.25)	Highly Likely
						Extreme/ Excessive Heat	H (3.3)	Highly Likely
						Fissures & Subsidence	L (1)	Occasional
						Flood, Landslides & Debris Flow, Flooding	H (3.25)	Likely
						Geohazards-Earthquake and Seismic Hazards	M (2.05)	Likely
						Severe Weather (including Thunderstorms, Hail, Wind, Lightning, and Tornadoes)	L (1.75)	Highly Likely
						Fire, Wildland Urban Interface (Wildfire)	L (1.15)	Highly Likely
						Hazardous Materials	H (3.15)	Highly Likely
						Infrastructure, Dam Failure	L (1)	Occasional
						Infestation	M (2.0)	Likely
						Infectious Disease	H (3.25)	Occasional
						Terrorism	M (2.2)	Highly Likely

Data Source: [U.S. Census Bureau, Nevada: 2010 Population and Housing Unit Count](#); and [U.S. Census Bureau, Profile: data.census.gov](#); Percent of Population Change Calculation Change: <https://www.omnicalculator.com/math/percentage-change#how-to-calculate-the-percent-change>

Critical Facilities Information

As previously stated in this MJHMP Update, certain facilities have a net positive value on the community, i.e., they contribute to the public good by facilitating the basic functions of society. These facilities maintain order, public health, education, and help the local economy function. Additionally, there are facilities and infrastructure integral to disaster response and recovery operations. Conversely, some of these are of extreme importance due to the negative externalities created when impacted by a disaster. What fits these definitions varies slightly from community to community, but the definitions remain as a guideline for identifying critical infrastructure and facilities.

The following table and map summarize the identified critical facilities and infrastructure for Boulder City. A complete list can be found in [Appendix E](#) of this plan update.

City of Boulder City - Critical Facilities Listing																					
	Casinos/Resorts/ Hotels	Child Care	City Hall	Communications	Community Colleges	Correctional Facilities	Court House	Fire Stations	Government Offices	Hazardous Materials	Hospitals	Native Reservations	Natural Gas	Places of Worship	Police	Schools	Solar	Stadiums	Transportation	University	Water/Sewer
Boulder City	-	5	1	14	-	-	1	1	24	2	3	-	1	20	1	5	8	-	3	-	22

National Flood Insurance Program (NFIP) and Community Rating System (CRS) Summary

According to FEMA, the National Flood Insurance Program (NFIP) is a federal insurance program that enables property owners in member communities to purchase flood insurance. This insurance is only made available to municipalities that adopt and enforce a floodplain management ordinance. The fundamental goal of NFIP floodplain management requirements is to reduce the threat to lives and the potential for property damage in flood-prone areas. Each municipality that participates in the NFIP has a Flood Insurance Rate Map (FIRM) that is issued by FEMA. This document maps out flood hazard areas in the municipality.

Like several other jurisdictions in Clark County, Boulder City participates in the NFIP. However, it is not listed as an eligible community of the Community Rating System (CRS), <https://www.fema.gov/cis/NV.html>, as of February 2023. CRS is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirement of NFIP.

The following tables contain NFIP & CRS Community Status information specific to Boulder City.

NFIP & CRS Community Status, Boulder City					
CID	CRS Rating	Initial FHBM Identified	Initial Firm Identified	Current Effective Map Date	Registration/Entry Date
320004#	N/A	06/28/74	09/16/81	11/16/11	09/16/81

Data Source: FEMA - Nevada National Flood Insurance Program Community Status Book (<https://www.fema.gov/cis/NV.html>), February 2023

Building Codes Ordinance for Boulder City

City Code [Flood Hazard Reduction ordinance – Title 11, Chapter 40](#). Also, Boulder City has adopted the Clark County Regional Flood Control District Rules, Regulations and Construction Standards effective September 30, 2022. A copy of the Uniform Regulations Reference Document for CCRFD can be found [here](#). For more information related to floodplain management in Boulder City, NV, contact Jim Kean at jkean@bcnv.org.

NFIP Policies, Claims & Payments, Boulder City					
Jurisdiction	Comm ID	# of Policies	Total Coverage	Total Written Premium + FPF	Floodplain Management Role
Boulder City	320004#	12	\$3,544,000	\$5,954	Provides in-house floodplain management. Participant of the CCFCD.

Note: *Indicates CRS participating jurisdiction.

Data Source: *Dictionary as mentioned in the NFIP Policy Information by State and Community document:*

- Community ID: The 6-character community ID in which the policy resides.
- # of Policies: The number of policies in force for a given state and combination of attributes.
- Total Coverage: The total building and contents coverage for the policies in force.

Total Written Premium + FPF: This represents the sum of the premium and the FPF (federal policy fee) for the policies in force.

Data Sources: *Participation – FEMA’s Community Status Book Report, Nevada, 03/01/2023. Policy statistics (current as of 03/01/2023)*

<https://www.fema.gov/cis/NV.html>

NFIP Policy Information by State (Policy statistics current as of 1/31/2023) https://nfipservices.floodsmart.gov/sites/default/files/nfip_policy-information-by-state_20230131.xlsx

Repetitive Loss (RL) Properties

As of December 5, 2022, there are Repetitive Loss (RL) properties, and subsequently, NFIP-insured properties within Clark County. The following table, provided by the State of Nevada Division of Emergency Management (NVDEM), indicates the locations, number of losses, and number of policies.

Community Name	Community Number	Mitigated	Occupancy 1	Cumulative Building Payment	Cumulative Contents Payment	Total Paid	Is NFIP Repetitive Loss Flag	Is NFIP Severe Repetitive Loss Flag	Is FMA Repetitive Loss Flag	Is FMA Severe Repetitive Loss Flag	Not Repetitive Loss Flag
BOULDER CITY, CITY OF	320004	NO	SINGLE FMLY (OLD METHODOLOGY)	13935.24	0	13935.24	N	N	N	N	Y

Mitigation Strategy and Capabilities

Capabilities Assessment, Boulder City

As with any jurisdiction, there are numerous stakeholders involved in developing a mitigation strategy. Each type of stakeholder provides a set of capabilities, in some cases broad and in others narrow, by which they can help increase the planning area’s resiliency. The broadest form of mitigation capabilities comes from counties, such as Clark County, and municipal governments, such as Boulder City. Their inherent legal authority allows them to institute the greatest regulatory and developmental changes.

The primary capabilities of Clark County and Boulder City are 1) institutional, 2) political, 3) technical, and 4) fiscal. Representing the City of Boulder City. A capability assessment was conducted of the MJHMP participating jurisdictions’ authorities, policies, programs, and resources. From the assessment, goals and mitigation actions were developed. Capabilities for Boulder City are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory Capabilities

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Planning and Regulatory Capability Assessment for Boulder City

PLANS	Yes/No	Does the plan address hazards? Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Community Wildfire Protection Plan	No	The city does not have a substantial wildfire risk.
Comprehensive/Master Plan	No	Does not address hazard mitigation directly.
Continuity of Operations Plan	Yes	Yes. All departments have a COOP that was revised in 2023.
Capital Improvement Plan	Yes	Some foreseen hazards, but not unknown. FY 23, FY 24 will be approved in May 2024.
Economic Development Plan	Yes	The plan does not address hazards.
Emergency Operations Plan	Yes	2019. Yes, the current EOP addresses hazards & mitigation strategies. It is undergoing a revision in 2023.
Stormwater Management Plan	Yes	2023. Regional Flood Control Masterplan addresses hazards & mitigation strategies.
Transportation Plan	No	Pavement Management System due to growth ordinance that addresses hazards & mitigation strategies.
Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	What type of codes? Are codes adequately enforced?
Building Codes	Yes	The 2018 ICC codes, 2018 U-codes, NFPA 72 are all adequately enforced. More information regarding the City of Boulder City building codes can be found online here .
Site plan review requirements	Yes	2018 IRC, IBC are enforced in the site plan reviews.
Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		
LAND USE PLANNING & ORDINANCES	Yes/No	Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Floodplain ordinance	Yes	Yes, Flood Hazard Reduction Ordinance – Title 11, Chapter 40 , as current as 01/23/2023. This ordinance does address hazard impacts and is adequately administered and enforced.
Subdivision ordinance	Yes	Yes, Subdivision Regulation – Chapter 39 as current as 01/23/2023, does address hazard impacts and is adequately administered and enforced.
Zoning ordinance	Yes	Same Title as Subdivisions and Floodplain which addresses hazard mitigation. The current codes (as current as 01/23/2023) can be found online here .
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		
How can capabilities be expanded and improved to reduce risk?	Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.	

Administrative and Technical Capabilities

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, and floodplain managers. Small communities may rely on other government entities such as counties or special districts for resources. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administrative and Technical Capability Assessment for Boulder City

ADMINISTRATION	Yes/No	Describe capability. <ul style="list-style-type: none"> Is coordination effective?
Mutual aid agreements	Yes	Yes, the city is multiple, current mutual aid agreements.
Planning Commission	Yes	They are effective in communication with the city council.
TECHNICAL STAFF	Yes/No FT/PT	<ul style="list-style-type: none"> Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes	Yes, to all.
Community Planner	Yes	For the Community Development Director who oversees the Planner, yes to all.
Emergency Manager	Yes	Yes, to all.
Engineer	Yes	Yes, to all.
Fire Chief	Yes	Yes, to all.
Floodplain Manager/Administrator	Yes	Yes, to all.
GIS/HAZUS Coordinator	Yes	Yes, to all.
How can capabilities be expanded and improved to reduce risk?		Additional training of staff in hazard mitigation and financial resources to pursue mitigation projects.

Financial Capabilities

The following table contains a list of administrative and financial capabilities available to Boulder City. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Financial Capability Assessment for Boulder City

FINANCIAL	Yes/No	<ul style="list-style-type: none"> • Has the funding resource been used in past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Building Resilient Infrastructure and Communities Grant (BRIC)	No	FEMA's BRIC grant program give states, local communities, tribes and territories funding to address future risks to natural disasters, including ones involving wildfires, drought, hurricanes, earthquakes, extreme heat, and flooding. Addressing these risks helps make communities more resilient. Boulder City could apply for assistance for such a project.
Hazard Mitigation Grant Program (HMPG)	No	
Pre-Disaster Mitigation grant program (PDM)	No	
Earthquake Mitigation Funds (Nevada Earthquake Safety Council)	No	
Flood Mitigation Assistance grant program (FMA)	No	Flood Mitigation Assistance funds may be used for projects such as Project Scoping; Technical Assistance; Community Flood Mitigation Projects; Individual Structure/Property-Level Flood Mitigation Projects; and Management Costs. Boulder City could apply for a apply for assistance for such a project.
Water Preservation Funds (SWNA)	Yes	Currently participating in rebate program for Water Smart Landscaping
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)	Yes	The fire department has a current, two-year agreement with the Division of Forestry to provide response and training services.
Capital improvements project funding	Yes	Receive funding from both RTC and CCRFC
Community Development Block Grant	Yes	Annually receives approximately \$35K that is provided to Lend a Hand and Emergency Aid. Currently using grant for improvements to a building that will house Lend a Hand.
Authority to levy taxes for specific purposes	No/Yes	Have not used this in the past.
Impact fees for new development	No	
Incur debt through special tax bond	No	Debt over \$1M must be approved by voters
Incur debt through general obligation bonds	Yes	Debt over \$1M must be approved by voters. Before ballot question was approved debt was used for water line infrastructure.
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.

Education and Outreach Capabilities

The following table lists education and public outreach capabilities. These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Table 60: Education and Outreach Capability Assessment for Boulder City

PROGRAM / ORGANIZATION	Changes since 2018 Plan Update Yes or No	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. <ul style="list-style-type: none"> Could the program/organization help implement future mitigation activities?
Jurisdiction (County/City/Tribe) Website and Social Media (PIO/PAO Programming)	No	Yes	The city maintains a website and accounts with Facebook , Instagram , Twitter , and YouTube . County libraries, law enforcement, and fire/rescue agencies also maintain social media accounts. These resources are regularly used to convey hazard mitigation and disaster-related information to the public, as well as develop awareness of in-person and online events. They can be used to support future mitigation activities.
Firewise Communities certification	No	No	
Storm Ready certification	No		
Citizen groups focused on emergency preparedness, environmental protection, etc.	No	No	This does not currently exist in Boulder City
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)	No	Yes	The Boulder City Fire Dept frequently addresses public information needs through a variety of mechanisms. The fire department social media sites and city website is a primary tool for dissemination of public information.
Public-private partnership initiatives addressing disaster-related issues	No	Yes	Examples of organizations for this effort include VOAD (Volunteer Organizations Active in Disaster), LEPC (Local Emergency Planning Committee) for addressing hazardous materials issues,
How can capabilities be expanded and improved to reduce risk?			This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

Planning Integration, Boulder City

Mitigation does not end at plan approval. Plan approval is only the beginning. The successful implementation of any number of mitigation activities and projects requires the coordination and collaboration of a number of local agencies, departments, and organizations. Each group has varying decision-making processes and authorities governing their actions. This plan, once approved, must be integrated into their decision-making processes as a tool for improving their respective resiliencies.

Clark County intends to incorporate this Clark County MJHMP Update into other planning documents the County and its participating jurisdiction(s)' (which includes Clark County Unincorporated Area, cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, NV, and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) utilizes. Where applicable, portions of the previous MJHP (2012 and 2018) were considered for incorporation into other jurisdictions plans (i.e., participating cities and tribal government comprehensive/master plans) and programs. Also, portions of the previous MJHMP (2012 and 2018) in some form was incorporated into the Clark County Emergency Operations Plan (2019), and other existing or future public safety-related plans. This plan is not only useful for implementing mitigation activities and projects but also critical in creating development plans and capital improvement projects. The risk assessment in this plan can prevent unmanaged and dangerous development in identified hazard areas or other portions of the planning area that decrease a community's overall resiliency.

Boulder City, NV

Existing Planning Mechanisms – Boulder City, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates.
Local Emergency Operations Plan	Yes	Identifies major capabilities. The Boulder City EOP is being revised in 2023, this is a key opportunity for integration.
Local Continuity of Operations Plan (COOP)	Yes	Identifies major capabilities. The Boulder City COOP is being revised in 2023, this is a key opportunity for integration.
Master Plan	No	Identifies policies on both manmade and natural hazards. At the time of this plan update, the City of Boulder City's Master Plan does not address hazard mitigation directly. The next update of the integration of the MJHMP into the revised Boulder City Master Plan would be a key opportunity for integration.

Existing Planning Mechanisms – Boulder City, NV

Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
Capital Improvement Plan	Yes	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions, mitigation strategies. The Boulder City Capital Improvement Plan is being revised in 2023-2024, this is a key opportunity for integration.
Building and Zone Codes and Ordinances	Yes	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy. Boulder City has adopted and adheres to the 2018 Building Codes.
Stormwater Management Plan	Yes	Capability assessment, mitigation strategies.
Clark County, NV Climate Vulnerability Assessment	Yes	Identifies the current and future impacts of climate change in Clark County including the City of Boulder City.
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County, including Boulder City.
Community Wildfire Protection Plan	No	Identifies the County’s priorities for wildfire fuel reduction projects. At the time of this update the CWPP was outdated (2005). The City does not have a CWPP due to not having a substantial wildfire risk.
Transportation Plan	No	Identifies transportation plans, programs, and projects within the County. At the time of this update the City has a Pavement Management System due to growth ordinance that addresses hazard and mitigation strategies.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction.
FEMA’s National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction.
U.S Census Bureau	Yes	Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

Mitigation Projects/Activities

Boulder City completed two (2) mitigation projects in the last MJHMP update (2018).

Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Structural Emphasis (in 2018 MHJMP)	Cost Estimate	Estimated Timeline	Potential Funding Source	Status
Flood Control	<p>Alleviate the damage associated with flooding through new and reinforced flood control projects, including storm drains, culverts, drop inlets, channels, and detention basins. Hemenway Watershed Improvements Phase IIB – Hemenway channel improvements to meet flood control freeboard requirements, improve access for maintenance, and reduce erosion around existing facilities.</p> <p><u>Project Update:</u> Since the last plan update (2018), the Hemenway Watershed Improvements Phase IIB – Hemenway channel improvements to meet flood control freeboard requirements, improve access for maintenance, and reduce erosion around existing facilities maintenance and freeboard extensions was completed in 2022.</p>	Flood, Dam Failure	Boulder City Public Works Department	New	\$5.5M	1-5 years	FEMA Grants; Potential CIP Funding	Completed
Flood Control	<p>Alleviate the damage associated with flooding through new and reinforced flood control projects, including storm drains, culverts, drop inlets, channels, and detention basins. North Railroad Conveyance Phase 2 – Improvements to install a channel around the Veterans Home to convey flows from the drainage basin to the North Railroad Detention Basin. The project will also increase the capacity of the North Railroad Detention Basin to accommodate additional flows.</p> <p><u>Project Update:</u> Since the last plan update (2018), North Railroad Conveyance Phase 2 – Improvements to install a channel around the Veterans Home to convey flows from the drainage basin to the North Railroad Detention Basin. The project will also increase the capacity of the North Railroad Detention Basin to accommodate additional flow was completed in 2019.</p>	Flood, Dam Failure	Boulder City Public Works Department	New	\$2.5M	1-5 years	FEMA Grants; Potential CIP Funding	Complete

To support the planning area’s mitigation goals, the Clark County MPSC identified 61 possible and unique mitigation projects and activities. Of these, five are from Boulder City as identified in the following table.

Mitigation & Projects Summary, Boulder City	
Mitigation Project or Activity	Hazard(s) Addressed
Implement floodplain and stream restoration projects	Flooding
Maximize Maintenance Funding for Existing Flood Control Facilities	Flooding
Continue Water Conservation Measures	Drought
Flood Control Improvements	Flooding
Emergency Power	Earthquake, Flood, Climate Change, Wildfire
Implement floodplain and stream restoration projects	Flooding
Maximize Maintenance Funding for Existing Flood Control Facilities	Flooding
Annual Review and Update of Hazard Mitigation Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)

Mitigation & Projects Summary, Boulder City

Annual Review and Update of Local Emergency Operations Plan (LEOP)

All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)

STAPLE+E Rankings, Boulder City

STAPLE+E Rankings, Boulder City																								
X = N/A - Even Impact	+ = Positive Influence											- = Negative Influence												
STAPLE+E Criteria	Social		Technical			Administrative			Political			Legal			Economic				Environmental					Total Impact
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Goals	Consistent with Federal Laws	
Implement floodplain and stream restoration projects	+	X	+	+	-	+	-	+	+	X	+	X	+	+	+	X	+	-	+	+	X	+	+	
Maximize Maintenance Funding for Existing Flood Control Facilities	+	-	+	+	-	+	+	+	+	X	+	X	+	+	+	+	+	+	-	-	-	+	+	16
Continue Water Conservation Measures	+	-	X	+	-	+	+	+	+	+	+	X	+	+	+	X	-	+	+	-	-	+	+	15
Flood Control Improvements	+	-	+	+	-	+	+	+	+	+	+	X	+	-	+	+	+	+	X	X	X	+	X	15
Emergency Power	+	-	+	+	-	+	-	+	+	+	+	X	+	-	+	X	+	-	X	-	-	X	X	11

Proposed and Carry-Over Mitigation Activities – Boulder City

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Boulder City 1	Implement floodplain and stream restoration projects	Alleviate the damage associated with flooding through new and reinforced flood control projects, including storm drains, culverts, drop inlets, channels, and detention basins. Implement floodplain and stream restoration projects to reduce flood risk and erosion by providing stable reaches and also mitigate drought impacts by providing baseflow recharge, water supply augmentation, floodwater storage, terrestrial and aquatic wildlife habitat, and recreation opportunities by restoring the site's soil, hydrology and vegetation conditions that mimic pre-development channel flow and floodplain connectivity.	Flooding	Boulder City Public Works	Medium (37.5)	New	\$33M	1-5 years	CCRFCD	Carry-over project from the 2018 plan. Project Update: Maximize the use of maintenance funding provided by the Clark County Regional Flood Control District for the maintenance of existing flood control facilities.
Boulder City 2	Flood Control Improvements	Facilitate design and construction of flood control improvements identified in the 2023 Boulder City Flood Control Master Plan Update.	Flooding	Boulder City Public Works	Medium (37.5)	New	\$32.6M	1-5 years	CCRFCD	Proposed project for the 2024 plan update.
Boulder City 3	Emergency Power	Provide additional emergency power, such as a generator equipment, for new and existing critical facilities to operate continuously but cannot do so for long durations of power outage.	Earthquake, Flooding, Climate Change, Wildfire	Boulder City Fire Department	Medium (31.625)	Existing	\$300K	1-5 years	CIP	Carry-over project from the 2018 plan. Project Update: In the last five years, the emergency generators for critical facilities projects is partially complete and will be carried over to the 2024 plan update.

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
										The facilities were a emergency generator was added or maintenance were the following: PD, FD, WWTP, Red Mountain communicati on site, City Hall/Parks & Rec. are complete. The maintenance yard with fueling site 1 should be complete within a year. (Generator is on site and electrical work needs to be completed.)
Boulder City 4	Maximize Maintenance Funding for Existing Flood Control Facilities (also known as Flood Control in 2018 MJHMP)	Maximize the use of maintenance funding provided by the Clark County Regional Flood Control District for the maintenance of existing flood control facilities.	Flooding	Boulder City Public Works	Medium (31)	Existing	\$2.0M	Ongoing, Continuous through the five-year plan cycle.	CCRFCD	Carry-over project from the 2018 plan. This project was included in the last MJHMP update but due to the lack of staff and funding, this project is being carried over to the 2024 MJHMP update.
Boulder City 5	Continue Water	Continue water conservation measures in coordination with	Drought	Boulder City Public Works,	Medium (25)	Existing	\$6.5M	Ongoing, Continuous	ARPA Funds	Carry-over project from

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
	Conservation Measures	the Southern Nevada Water Authority (SNWA) and other purveyor members. Measures include prohibiting new golf course development, reducing golf course water budgets, converting cool season turf, implementing large water user policy, implementing AB356 (non-functional turf removal), implementing pool development standards, enhancing leak resolutions, implementing park efficiency improvements, implementing cooling efficiency standards, enhancing landscape watering compliance, making asset management investments, limiting new turf installations, implementing pricing changes, and optimizing return-flow credits.		Community Development, &Utilities				through the five-year plan cycle.		the 2018 plan. This project was included in the last MJHMP update but due to the lack of staff and funding, this project is being carried over to the 2024 MJHMP update.
Boulder City 6	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2023 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infectious Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Boulder City 7	Annual Review and Update of Continuity of Operations (COOP) Plan	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes				January 2024.		
Boulder City 8	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Boulder City 9	Annual Review and Update of Local Emergency Operations Plan (LEOP)	Annual review and updated the County's LEOP to ensure compliance with NV DEM requirements	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; Clark County Local Emergency Planning Commission (LEPC); All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Deferred Projects List from Clark County MJHMP (2018) for Boulder City

Boulder City did not have any deferred projects.

Mitigation Prioritization Tables for Boulder City

Mitigation Project Prioritization, Boulder City																		
Mitigation Project or Activity	STAPLE+ E	MPE	Hazards												Hazard Total	HRT Value	Priority	
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infectious Disease	Hazardous Materials				Terrorism
Unreinforced Masonry Database	25.75	1	15			10			15			15				55	13.75	Medium
Critical Infrastructure Flood Risk Reduction	22	1		5					15							20	10	Low
Critical Facilities & Infrastructure Seismic Retrofit or Replacement	21	1	15	5		10										30	10	Low
Flood Control	22	1		5					15							20	10	Low

Mitigation Project Prioritization, Boulder City

Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.5384615 4	Low
Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.5384615 4	Low
Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.5384615 4	Low
Annual Review and Update of Local Emergency Operations Plan (LEOP)	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.5384615 4	Low

City of Henderson

Planning Area

The City of Henderson was officially incorporated on April 16, 1953. According to the [city's website](#), today, the City of Henderson has grown to more than 103 square miles and is the second largest city in Nevada. Henderson is often referred to as having small town values with big city efficiencies. The city's official slogan "Henderson-a Place to Call Home" reflects a community that enjoys small town values while benefiting from big city efficiencies. Henderson is also located just a few miles from Harry Reid International Airport (previously known as McCarran International Airport), and the Henderson Executive Airport, has completed major renovations and serves as a reliever airport to Harry Reid International Airport (McCarran). With the I-215 highway into Henderson, the City is just minutes away from the famous Las Vegas Strip.

Jurisdiction Profile

- Planning Area
- Demographics & Hazard Vulnerabilities
- Critical Facilities Information

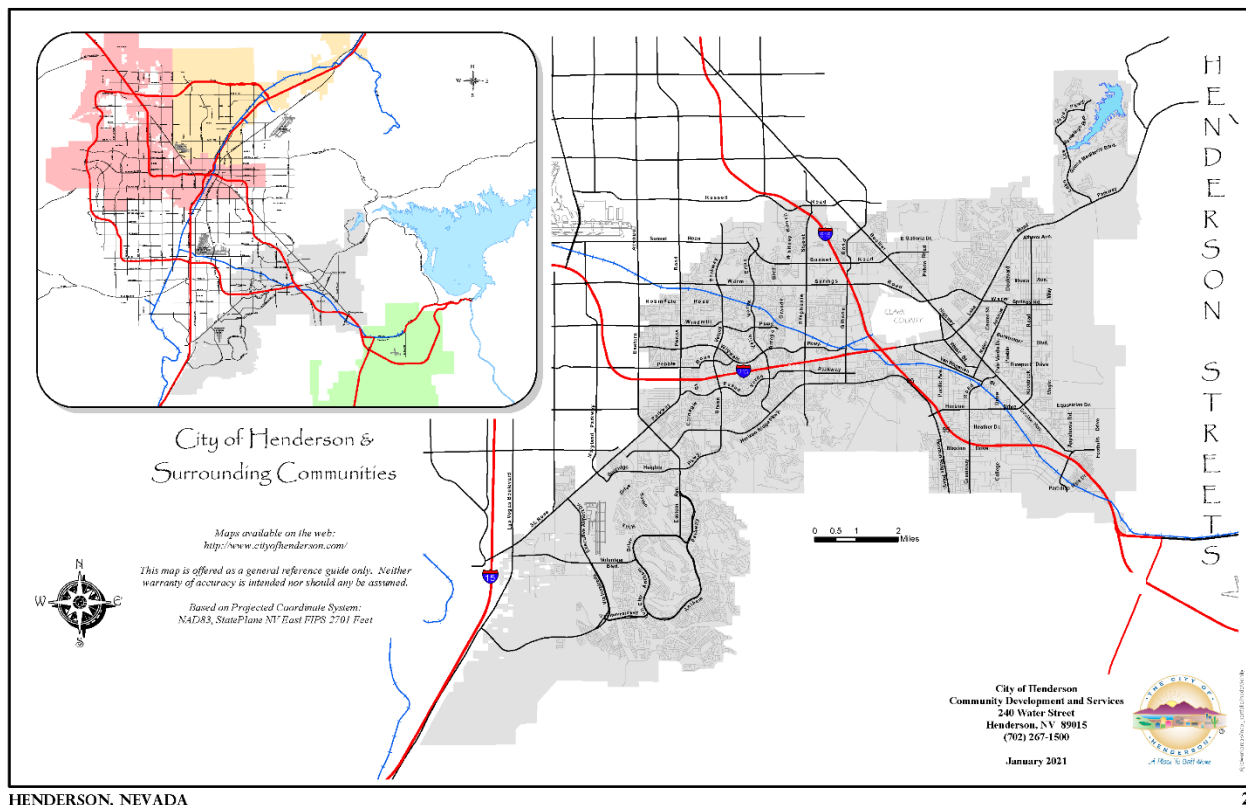
Hazard Risk Assessment

- National Flood Insurance Program (NFIP) Summary

Mitigation Strategy & Capabilities

- Capabilities Assessment
- Completed and Deferred Mitigation Projects (2018)
- Proposed Mitigation Activities (including STAPLE+E)

Figure 125: City of Henderson, NV Community Profile Map: City Limits Map (Source: City of Henderson's website)



Demographics and Hazard Vulnerabilities

Demographic data is crucial to effective hazard mitigation planning. This is especially true for the numbers associated with population, housing units, and building permits as they, over time, can increase or decrease a planning area's vulnerabilities to any/all identified natural hazards. It is important to note, however, that demographic data can fluctuate or even lag in the short term, i.e., one to two years. While these numbers tend to self-correct over time, temporary decreases or increases in population and/or the number of housing units may occur. In these instances, it is best to consider demographic data from longer periods, such as ten (10) to 20 years, for mitigation planning purposes.

As for the City of Henderson, the U.S. Census Bureau determined its population to be 175,381 in 2000. That number increased by 47% to 257,729 in 2010. In 2020, the U.S. Census Bureau determined the City of Henderson population to be 317,610, an increase of 23.23%.

Similarly, the U.S. Census Bureau determined the number of housing units in The City of Henderson to be 113,586 in 2010 but increased its estimate by 20% to 136,325 in 2020.

The following table provides a visual representation of Henderson’s demographic information (as previously described) and how it specifically relates to hazard probability and the planning area’s vulnerabilities to all identified natural hazards.

Demographics & Vulnerability, City of Henderson								
Population (2000 U.S. Census)	Population 2010 U.S. Census	Population (2020 U.S. Census)	% of Population Change (2010-2020)	# of Housing Units (2020 Census)	% of Housing Units (2010-2020)	Identified Hazards	CPRI Results	Probability of Hazards (From Risk Summary)
175,381	257,729	317,610	23.23%	136,325	20%	Climate Change	H (3.55)	Highly Likely
						Drought	S (4.0)	Highly Likely
						Extreme/ Excessive Heat	S (4.0)	Highly Likely
						Fissures & Subsidence	H (3.25)	Likely
						Flood, Landslides & Debris Flow, Flooding	H (3.0)	Likely
						Geohazards-Earthquake and Seismic Hazards	H (3.25)	Likely
						Severe Weather (including Thunderstorms, Hail, Wind, Lightning, and Tornadoes)	H (3.55)	Highly Likely
						Fire, Wildland Urban Interface (Wildfire)	L (1.15)	Highly Likely
						Hazardous Materials	H (3.55)	Highly Likely
						Infrastructure, Dam Failure	M (2.0)	Occasional
						Infestation	L (1.0)	Likely
						Infectious Disease	H (3.25)	Occasional
						Terrorism	S (4)	Highly Likely

Data Source: U.S. Census Bureau, Nevada: 2010 Population and Housing Unit Count; and U.S. Census Bureau, Profile: data.census.gov; Percent of Population Change Calculation Change: <https://www.omnicalculator.com/math/percentage-change#how-to-calculate-the-percent-change>

Critical Facilities Information

As previously stated in this MJHMP Update, certain facilities have a net positive value on the community, i.e., they contribute to the public good by facilitating the basic functions of society. These facilities maintain order, public health, education, and help the local economy function. Additionally, there are facilities and infrastructure integral to disaster response and recovery operations. Conversely, some of these are of extreme importance due to the negative externalities created when impacted by a disaster. What fits these definitions varies slightly from community to community, but the definitions remain as a guideline for identifying critical infrastructure and facilities.

The following table and map summarize the identified critical facilities and infrastructure for the City of Henderson. A complete list can be found in [Appendix E](#) of this plan update.

City of Henderson - Critical Facilities Listing																					
	Casinos/Resorts/ Hotels	Child Care	City Hall	Communications	Community Colleges	Correctional Facilities	Court House	Fire Stations	Government Offices	Hazardous Materials	Hospitals	Native Reservations	Natural Gas	Places of Worship	Police	Schools	Solar	Stadiums	Transportation	University	Water/Sewer
City of Henderson	18	63	1	66	1	1	1	11	77	5	11	-	-	41	4	69	-	-	3	2	1578

National Flood Insurance Program (NFIP) & Community Rating System (CRS) Summary

According to FEMA, the National Flood Insurance Program (NFIP) is a federal insurance program that enables property owners in member communities to purchase flood insurance. This insurance is only made available to municipalities that adopt and enforce a floodplain management ordinance. The fundamental goal of NFIP floodplain management requirements is to reduce the threat to lives and the potential for property damage in flood-prone areas. Each municipality that participates in the NFIP has a Flood Insurance Rate Map (FIRM) that is issued by FEMA. This document maps out flood hazard areas in the municipality.

Like several other jurisdictions in Clark County, the City of Henderson participates in the NFIP. However, it is not listed as an eligible community of the Community Rating System (CRS), <https://www.fema.gov/cis/NV.html>, as of February 2023. CRS is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirement of NFIP.

The following tables contain NFIP & CRS Community Status information specific to the City of Henderson.

NFIP & CRS Community Status, City of Henderson					
CID	CRS Entry Data	Initial FHBM Identified	Initial Firm Identified	Current Effective Map Date	Registration/Entry Date
320005#	10/01/1991	06/28/1974	06/15/1985	11/16/2011	06/15/2013

Data Source: FEMA - Nevada National Flood Insurance Program Community Status Book (<https://www.fema.gov/cis/NV.html>), February 2023

Building Codes Ordinance for Henderson

City Code Flood Control and Control of Drainage – [Title 15 Building and Construction, Chapter 15.50](#). Also, the City of Henderson follows these regulations by Clark County Regional Flood District related to drainage and drainage design:

Title 15.50.010 – [Uniform Regulations for Control Drainage](#), effective September 30, 2022

Title 19.14.6 – [Hydrologic Criteria and Drainage Design Manual](#), as of September 1999

For more information related to floodplain management in Henderson, NV, contact Al Jankowiak at Albert.Jankowiak@cityofhenderson.com.

NFIP Policies, Claims & Payments, City of Henderson					
Jurisdiction	Comm ID	# of Policies	Total Coverage	Total Written Premium + FPF	Floodplain Management Role
Henderson*	320005#	199	\$66,119,100	\$107,188	Provides in-house floodplain management. Participant of the CCFCD.

Note:*Indicates CRS participating jurisdiction.
 Data Dictionary as mentioned in the [NFIP Policy Information by State and Community document](#):
 Community ID: The 6-character community ID in which the policy resides.
 # of Policies: The number of policies in force for a given state and combination of attributes.
 Total Coverage: The total building and contents coverage for the policies in force.

NFIP Policies, Claims & Payments, City of Henderson

Jurisdiction	Comm ID	# of Policies	Total Coverage	Total Written Premium + FPF	Floodplain Management Role
Total Written Premium + FPF: This represents the sum of the premium and the FPF (federal policy fee) for the policies in force.					
<p><i>Data Sources: Participation – FEMA’s Community Status Book Report, Nevada, 03/01/2023. Policy statistics (current as of 03/01/2023)</i> https://www.fema.gov/cis/NV.html</p> <p>NFIP Policy Information by State (Policy statistics current as of 1/31/2023) https://nfpiservices.floodsmart.gov/sites/default/files/nfip_policy-information-by-state_20230131.xlsx</p>					

Repetitive Loss (RL) Properties

As of December 5, 2022, there are Repetitive Loss (RL) properties, and subsequently, NFIP-insured properties within Clark County. The following table, provided by the State of Nevada Division of Emergency Management (NVDEM), indicates the locations, number of losses, and number of policies.

Community Name	Community Number	Mitigated	Occupancy 1	Cumulative Building Payment	Cumulative Contents Payment	Total Paid	Is NFIP Repetitive Loss Flag	Is NFIP Severe Repetitive Loss Flag	Is FMA Repetitive Loss Flag	Is FMA Severe Repetitive Loss Flag	Not Repetitive Loss Flag
HENDERSON, CITY OF	320005	YES	SINGLE FMLY (OLD METHODOLOGY)	6442.62	4968.19	11410.81	N	N	N	N	Y
HENDERSON, CITY OF	320005	NO	SINGLE FMLY (OLD METHODOLOGY)	9426.19	0	9426.19	Y	N	N	N	N

Mitigation Strategy and Capabilities

Capabilities Assessment, City of Henderson

As with any jurisdiction, there are numerous stakeholders involved in developing a mitigation strategy. Each type of stakeholder provides a set of capabilities, in some cases broad and in others narrow, by which they can help increase the planning area's resiliency. The broadest form of mitigation capabilities comes from counties, such as Clark County, and municipal governments, such as the City of Henderson. Their inherent legal authority allows them to institute the greatest regulatory and developmental changes.

The primary capabilities of Clark County and the City of Henderson are 1) institutional, 2) political, 3) technical, and 4) fiscal. Representing the City of Henderson. A capability assessment was conducted of the MJHMP participating jurisdictions' authorities, policies, programs, and resources. From the assessment, goals and mitigation actions were developed. Capabilities for the City of Henderson are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory Capabilities

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

The Planning and Regulatory Capability Assessment for the City of Henderson

PLANS	Yes/No	<ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Capital Improvements Plan	Yes	2022. Yes, includes project identification and addresses community hazards, can be used to implement mitigation actions as needed.
Community Wildfire Protection Plan		
Comprehensive/Master Plan	Yes	2017. Describes hazard areas and regulates current and future development based on known hazard areas.
Continuity of Operations Plan	Yes	Annually updated, includes a COG and all city departments, includes relocation strategies and devolution, succession and alternative sites.
Economic Development Plan	Yes	2017. Component of the Comprehensive Plan.
Emergency Operations Plan	Yes	All Hazards EOP updated biannually, includes all ESFs, basic plan, pandemic plan and recovery plan.
Stormwater Management Plan	Yes	2011. Yes, to all.
Transportation Plan	Yes	2022. Component of the Comprehensive Plan.
Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	<ul style="list-style-type: none"> What type of codes? Are codes adequately enforced?
Building Codes	Yes	2018-2021 IBC Code Suite. Codes are enforced. Plan reviews, inspections, regulated construction and structures in Henderson. More information for the City of Henderson Building Codes can be found here .
Site plan review requirements	Yes	2022 Title 19 Development Code. Code is enforced.
Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		
LAND USE PLANNING & ORDINANCES	Yes/No	<ul style="list-style-type: none"> Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Floodplain ordinance	Yes	Yes, City Code Chapter 15.50- Flood Control and Control of Draining can be found online here .
Subdivision ordinance	Yes	Multiple Subdivision ordinances can be found online here .
Zoning ordinance	Yes	Yes, to all. Known as Codes of Ordinances (Development Code – Zoning) can be found online here . The purpose of this code is to establish the minimum requirements to safeguard public health, safety, and general welfare through structural strength, means of egress facilities, and stability; access for persons with disabilities, sanitation, adequate lighting, ventilation and energy conservation; and safety for life and property from fire and other hazards attributed to the built environment.
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		

Administrative and Technical Capabilities

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, and floodplain managers. Small communities may rely on other government entities such as counties or special districts for resources. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administrative and Technical Capability Assessment for the City of Henderson

ADMINISTRATION	Yes/No	Describe capability <ul style="list-style-type: none"> Is coordination effective?
Mutual aid agreements		
Planning Commission		
TECHNICAL STAFF	Yes/No FT/PT	<ul style="list-style-type: none"> Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes FT	All trained on hazards and mitigation, and we adhere to the NIMS training program
Community Planner	Yes FT	Yes, develops and maintains the Comprehensive Plan, including the safety element. Develops area plans based on the Comprehensive Plan, to provide more specific guidance for the development of more specific areas. Reviews private development projects and proposed capital improvements projects and other physical projects involving property for consistency and conformity with the Comprehensive Plan. Anticipates and acts on the need for new plans, policies, and code changes. Applies the approved plans, policies, code provisions, and other regulations to proposed land uses.
Emergency Manager	Yes FT	Yes, all hazards trained, NIMS certified, ICS training, CBCP, coordinates with all departments and staff, uses skills to mitigate and assess risk, experience managing a variety of incidents.
Engineer	Yes FT	Yes. Oversees the effective, efficient, fair, and safe enforcement of the Nevada Building Code. Provides direct or contract civil, structural, and mechanical engineering services, including contract, project, and construction management. Maintains and operates a wide range of local equipment and facilities as well as providing assistance to members of the public. These include providing sufficient clean fresh water and reliable sewer services. Maintains and operates of a wide range of local equipment and facilities as well as providing assistance to members of
Fire Chief		Yes, all hazards trained, NIMS certified, ICS training, coordinates with all departments and staff, uses skills to mitigated and assess risk, experience managing a variety of incidents.
Floodplain Manager/Administrator	Yes FT	Yes, enforces the jurisdiction's floodplain management ordinance, which requires that new development proposals do not increase flood risk, and that new developments are not located below the 100 year flood level. In addition, the Floodplain Administrator is responsible for planning and managing flood risk reduction projects throughout the jurisdiction.
GIS/HAZUS Coordinator	Yes FT	Yes, all staff go through ICS training and are equipped to identify and assess hazards

ADMINISTRATION	Yes/No	Describe capability <ul style="list-style-type: none"> Is coordination effective?
How can capabilities be expanded and improved to reduce risk?		Additional training of staff in hazard mitigation and financial resources to pursue mitigation projects.

Financial Capabilities

Table 5-14 contains a list of administrative and financial capabilities available to the City of Henderson. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Financial Capability Assessment for the City of Henderson

FINANCIAL	Yes/No	<ul style="list-style-type: none"> Has the funding resource been used in the past and for what type of activities? Could the resource be used to fund future mitigation actions?
Building Resilient Infrastructure and Communities Grant (BRIC)	Yes	
Hazard Mitigation Grant Program (HMPG)	Yes	Supports pre- and post-disaster mitigation plans and projects. Available to Nevada communities after a Presidentially declared disaster has occurred in Nevada.
Pre-Disaster Mitigation grant program (PDM)	Yes	Supports pre-disaster mitigation plans and projects. Available on an annual basis as a nationally competitive grant.
Earthquake Mitigation Funds (Nevada Safety Council)	Yes	Allocates FEMA money for earthquake mitigation efforts/.
Flood Mitigation Assistance grant program (FMA)	Yes	Mitigates repetitively flooded structures and infrastructure. Available on an annual basis, distributed to Nevada communities by the Nevada DEM
Water Preservation Funds (SWNA)	Yes	Provides incentives to conserve and preserve water resources.
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)	Yes	Administers funding from FEMA, BLM, and U.S. Forest Service for certain types of wildfire emergency and mitigation funding
Capital improvements project funding	Yes	Can be used to address community hazards and implement mitigation actions as needed.
Community Development Block Grant	Yes	Acquisition of real property, relocation and demolition, rehabilitation of residential and non-residential structures, construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes
Authority to levy taxes for specific purposes	Yes	
Impact fees for new development	Yes	Established an assessment contribution on certain land uses to establish the equitable funding of infrastructure within a geographic boundary.
Incur debt through special tax bond	Yes	

FINANCIAL	Yes/No	<ul style="list-style-type: none"> • Has the funding resource been used in the past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Incur debt through general obligation bonds	Yes	General obligation bonds are appropriately used for the construction and/or acquisition of improvements to real property broadly available to residents and visitors. Such facilities include, but are not limited to, libraries, hospitals, parks, public safety facilities, and cultural and educational facilities
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.

Education and Outreach Capabilities

The following table lists education and public outreach capabilities. These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Education and Outreach Capability Assessment for the City of Henderson

PROGRAM / ORGANIZATION	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. <ul style="list-style-type: none"> • Could the program/organization help implement future mitigation activities?
City Website and Social Media (PIO/PAO Programming)	Yes	The City maintains a website and accounts with Facebook, Instagram, Twitter, and YouTube. City libraries, law enforcement, and fire/rescue agencies also maintain social media accounts. These resources are regularly used to convey hazard mitigation and disaster-related information to the public, as well as develop awareness of in-person and online events. They can be used to support future mitigation activities.
Firewise Communities certification	Yes	ISO classification Class 1
Storm Ready certification	Yes	
Citizen groups focused on emergency preparedness, environmental protection, etc.	Yes	
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)	Yes	CERT (Community Emergency Response Team), MRC (Medical Reserve Corps), ARES (Amateur Radio Emergency Services), Faith Based organizations such as the First Baptist support group, Salvation Army, and United Way of Northern Arizona. These organizations provide First Responder Support and Emergency Management and EOC support to local communities and local government during times of disaster and preparedness training for local needs. The City also has a robust volunteer program that includes police and fire volunteers
Public-private partnership initiatives addressing disaster-related issues	Yes No (for water use)	The City frequently addresses public information needs through a variety of mechanisms. The local government organizations utilize a well-developed and coordinated PIO group with partners from all levels of government including city, county departments, and federal and state offices. This is especially effective during times of disaster Emergency Management utilizes public presentations and media outlets (e.g. radio,

PROGRAM / ORGANIZATION	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. <ul style="list-style-type: none"> • Could the program/organization help implement future mitigation activities?
		print) to provide public outreach on emergency preparedness. The City website is a primary tool for dissemination of public information
How can capabilities be expanded and improved to reduce risk?		This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

Planning Integration, City of Henderson

Mitigation does not end at plan approval. Plan approval is only the beginning. The successful implementation of any number of mitigation activities and projects requires the coordination and collaboration of a number of local agencies, departments, and organizations. Each group has varying decision-making processes and authorities governing their actions. This plan, once approved, must be integrated into their decision-making processes as a tool for improving their respective resiliencies.

Clark County intends to incorporate this Clark County MJHMP update into other planning documents the County and its participating jurisdiction(s)' (which includes Clark County Unincorporated Area, cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, NV, and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) utilizes. Where applicable, portions of the previous MJHP (2012 and 2018) were considered for incorporation into other jurisdictions plans (i.e., participating cities and tribal government comprehensive/master plans) and programs. Also, portions of the previous MJHMP (2012 and 2018) in some form was incorporated into the Clark County Emergency Operations Plan (2019), and other existing or future public safety-related plans. This plan is not only useful for implementing mitigation activities and projects but also critical in creating development plans and capital improvement projects. The risk assessment in this plan can prevent unmanaged and dangerous development in identified hazard areas or other portions of the planning area that decrease a community's overall resiliency.

Henderson, NV

Existing Planning Mechanisms – Henderson, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates.
Local Emergency Operations Plan	Yes	Identifies major capabilities. The City of Henderson's EOP is revised in biannually, this is a key opportunity for integration.
Local Continuity of Operations Plan (COOP)	Yes	Identifies major capabilities. The Henderson City COOP is revised annually, this is a key opportunity for integration.
Master Plan	Yes	Identifies policies on both manmade and natural hazards. The City of Henderson's Master Plan was last revised in 2017. During the next revision plan process is a key opportunity for integration.

Existing Planning Mechanisms – Henderson, NV

Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
Capital Improvement Plan	Yes	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions, mitigation strategies. The Henderson City Capital Improvement Plan was revised in 2022 and includes project identification and addresses community hazards that can be used to implement mitigation actions, as needed.
Building and Zone Codes and Ordinances	Yes	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy. Henderson City has adopted and adheres to the 2018-2021 Building Code Suite.
Stormwater Management Plan	Yes	Capability assessment, mitigation strategies
Clark County, NV Climate Vulnerability Assessment	Yes	Identifies the current and future impacts of climate change in Clark County including the City of Henderson.
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County, including Henderson.
Community Wildfire Protection Plan	No	Identifies the County’s priorities for wildfire fuel reduction projects. At the time of this update the CWPP was outdated (2005). The City does not have a CWPP.
Transportation Plan	Yes	Identifies transportation plans, programs, and projects within the County. The City of Henderson’s Transportation Plan is a component of the Cities Comprehensive/Master Plan that was revised in 2022.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction.
FEMA’s National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction.
U.S Census Bureau		Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

Mitigation Projects and Activities

The City of Henderson did not complete a mitigation project in the last MJHMP update (2018).

To support the planning area's mitigation goals, the Clark County MPSC identified 61 possible and unique mitigation projects and activities. Of these, four are from the City of Henderson as identified in the following table.

Mitigation & Projects Summary, City of Henderson	
Mitigation Project or Activity	Hazard(s) Addressed
Unreinforced Masonry Database	Earthquake, Flood, Climate Change, Wildfire
Critical Infrastructure Flood Risk Reduction	Flood, Dam Failure
Critical Facilities & Infrastructure Seismic Retrofit or Replacement	Earthquake, Dam Failure, Climate Change
Flood Control	Flood, Dam Failure
Annual Review and Update of Hazard Mitigation Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Annual Review and Update of Local Emergency Operations Plan (LEOP)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)

STAPLE+E Rankings, City of Henderson

STAPLE+E Rankings, Insert Jurisdiction Name																								
STAPLE+E Criteria	+ = Positive Influence											- = Negative Influence												
	Social		Technical			Administrative			Political			Legal			Economic				Environmental					Total Impact
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Goals	Consistent with Federal Laws	
Unreinforced Masonry Database	+	-	+	+	-	X	-	X	+	+	X	+	+	X	+	X	+	+	X	X	X	+	+	12
Critical Infrastructure Flood Risk Reduction	X	X	+	+	-	X	-	+	+	X	X	+	+	X	+	X	+	+	+	X	X	+	+	12
Critical Facilities & Infrastructure Seismic Retrofit or Replacement	X	-	+	X	-	X	-	+	+	X	X	+	+	X	+	X	+	+	+	X	X	+	+	11
Flood Control	+	-	+	X	-	X	-	+	+	X	X	+	+	X	+	X	+	+	+	X	X	+	+	12

Proposed and Carry-Over Mitigation Activities – City of Henderson

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Henderson 1	Unreinforced Masonry Database	Continue to update and validate the Clark County Unreinforced Masonry (URM) Inventory Database by undertaking the following activities: complete screening for structures that were not able to be screened during this phase of the project; expand the scope of project to include screening of URMs within the incorporated cities in Clark County; prepare a GIS enabled map layer showing the validated database of URM structures; work collectively with state and local officials to determine the next appropriate step in mitigating the potential hazards associated with URM structures.	Earthquake, Flood, Climate Change	City of Henderson Community Development	Medium (25.75)	New	1-5 years	\$1M	Federal and State Funding	Proposed project for 2024 plan.
Henderson 2	Critical Infrastructure Flood Risk Reduction	Reinforce roads/bridges that are prone to repetitive flooding and/or flash flooding through protection activities, including elevating the roads/bridges and installing/widening culverts beneath the roads/bridges or upgrading storm drains.	Flood, Dam Failure	City of Henderson Public Works	Low (22)	New	5 years	\$45M	Federal and State Funding, CIP, Maintenance	Proposed project for 2024 plan.
Henderson 3	Flood Control	Alleviate the damage associated with flooding through new and reinforced flood control projects, including storm drains, culverts, drop inlets, channels, and detention basins. Implement the Clark County Regional Flood Control District (CCRFCD) Capital	Flood, Dam Failure	City of Henderson Public Works	Low (22)	Existing	1-5 years	\$20M	FEMA grant Funding, CIP, Maintenance	Carry-over project from the 2018 plan. This project was included in the last MJHMP update but due to the lack of staff

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		Improvement Plan to design and construct master plan flood control facilities.								and funding, this project is being carried over to the 2024 MJHMP update.
Henderson 4	Critical Facilities & Infrastructure Seismic Retrofit or Replacement	Seismically retrofit or replace critical facilities and infrastructure that are categorized as structurally deficient and are located in strong to very strong ground shaking areas and/or are necessary to use during and/or immediately after a disaster or emergency. Retrofit existing potable water reservoirs with seismic couplings at inlet and outlet connections	Earthquake, Dam Failure, Climate Change	City of Henderson Public Work; City of Henderson Parks and Recreation; City of Henderson Utilities	Low (21)	Existing	5 Years	\$5M	Federal and State Funding	Carry-over project from the 2018 plan. This project was included in the last MJHMP update but due to the lack of staff and funding, this project is being carried over to the 2024 MJHMP update.
Henderson 5	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2024 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infectious Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Henderson 6	Annual Review and Update of Continuity of	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought, Earthquake,	Clark County OEM; All Jurisdictions (Clark County Departments,	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
	Operations (COOP) Plan		Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes				conducted annually beginning January 2024.		
Henderson 7	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Henderson 8	Annual Review and Update of Local Emergency Operations Plan (LEOP)	Annual review and updated the County's LEOP to ensure compliance with NV DEM requirements	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous	Clark County OEM; Clark County Local Emergency Planning Commission (LEPC); All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Materials, and Terrorism)	Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes						

Deferred Projects List from Clark County MJHMP (2018) for the City of Henderson

Deferred Projects List from Clark County MJHMP (2018) for the City of Henderson						
Project Name	Project Description	Hazard(s) Addressed	Lead Department	Cost Estimate	Potential Funding Source(s)	Project Update
Regional Flood Control Maintenance Work Program	Annual program to inspect and maintain Regional Flood Control District facilities to ensure the system conveys flows safely and efficiently. Funded by the Clark County Regional Flood Control District.	Flood, Dam Failure	City of Henderson	N/A	Funded by the Clark County Regional Flood Control District.	Deferred Project from the 2018 MJHMP, due to lack of staff, time, and resources.
Drop Inlet Inspection and Maintenance Program	Annual program to inspect and maintain drop inlets to ensure the system conveys flows safely and efficiently.	Flood	City of Henderson	N/A	N/A	Deferred Project from the 2018 MJHMP, due to lack of staff, time, and resources.

Deferred Projects List from Clark County MJHMP (2018) for the City of Henderson

Turf Limits Program	Turf limits restrict or prohibit the amount of grass to be planted at new properties. The restrictions prohibiting types of grass that can be planted apply to all property owners.	Drought	City of Henderson	N/A	N/A	Deferred Project from the 2018 MJHMP, due to lack of staff, time, and resources.
Emergency Power	Provide additional emergency power, such as generator equipment, for new and existing critical facilities to operate continuously but cannot do so for long durations of power outage. Acquire and install permanent emergency generators and appropriate connections for the permanent generators at Downtown and Multi-Generational Recreation Centers. Acquire one (1) portable emergency generator and acquire and install appropriate connections for the portable emergency generator at Heritage Park, Whitney Ranch and Heritage Aquatics Recreation Centers. These centers will potentially be used as shelter locations.	All Hazards	City of Henderson Public Works Parks and Recreation	N/A	FEMA grant funding	Deferred Project from the 2018 MJHMP.

Mitigation Prioritization Tables for the City of Henderson

Mitigation Project Prioritization, City of Henderson																		
Mitigation Project or Activity	STAPLE+ E	MP E	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Unreinforced Masonry Database	25.75	1	15			10			15							55	13.75	Medium
Critical Infrastructure Flood Risk Reduction	22	1		5					15							20	10	Low
Critical Facilities & Infrastructure Seismic Retrofit or Replacement	21	1	15	5		10										30	10	Low
Flood Control	22	1		5					15							20	10	Low

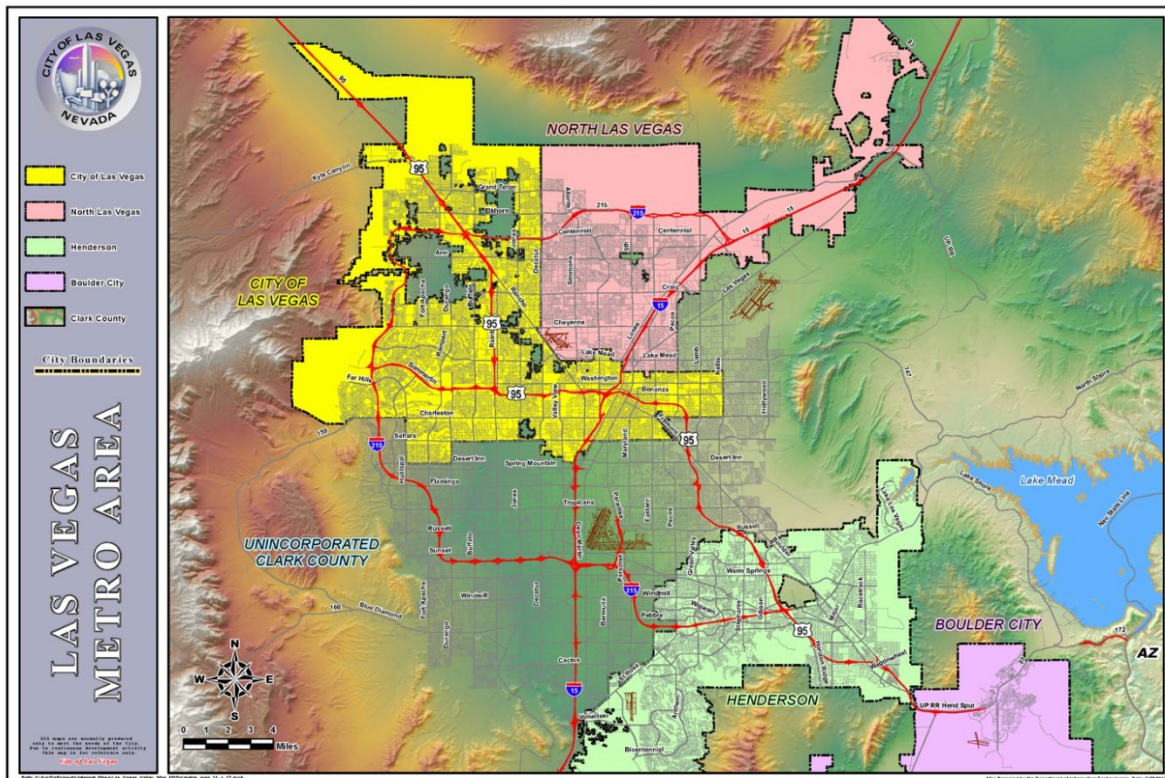
Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.5384615 4	Low
Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.5384615 4	Low
Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.5384615 4	Low
Annual Review and Update of Local Emergency Operations Plan (LEOP)	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.5384615 4	Low

City of Las Vegas

Planning Area

The City of Las Vegas began with a land auction in 1905 and has grown into a world-class city with a rich history. The history portion of the City of Las Vegas [website](#) mentions that Las Vegas was founded as a city on May 15, 1905, when 110 acres of land situated between Stewart Avenue on the north, Garces Avenue to the south, Main Street to the west, and Fifth Street (Las Vegas Boulevard) to the east, were auctioned off by the railroad company. Also, Las Vegas was incorporated on June 1, 1911. On that day, voters in the unincorporated township of Las Vegas went to the polls and voted on the issue of incorporation.

Figure 126: Las Vegas Metro Area Map



Source: City of Las Vegas, Website

Jurisdiction Profile

- Planning Area
- Demographics & Hazard Vulnerabilities
- Critical Facilities Information

Hazard Risk Assessment

- National Flood Insurance Program (NFIP) Summary

Mitigation Strategy & Capabilities

- Capabilities Assessment
- Completed and Deferred Mitigation Projects (2018)
- Proposed Mitigation Activities (including STAPLE+E)

Demographics and Hazard Vulnerabilities

Demographic data is crucial to effective hazard mitigation planning. This is especially true for the numbers associated with population, housing units, and building permits as they, over time, can increase or decrease a planning area's vulnerabilities to any/all identified natural hazards. It is important to note, however, that demographic data can fluctuate or even lag in the short term, i.e., one to two years. While these numbers tend to self-correct over time, temporary decreases or increases in population and/or the number of housing units may occur. In these instances, it is best to consider demographic data from longer periods, such as ten (10) to 20 years, for mitigation planning purposes.

As for the City of Las Vegas, the U.S. Census Bureau determined its population to be 479,137 in 2000. That number increased by 21.83% to 583,756 in 2010. In 2020, the U.S. Census Bureau determined the City of Las Vegas population to be 641,903, an increase of 9.96%.

Similarly, the U.S. Census Bureau determined the number of housing units in the City of Las Vegas to be 243,701 in 2010 but increased its estimate by 5.34% to 256,713 in 2020.

The following table provides a visual representation of the City of Las Vegas demographic information (as previously described) and how it specifically relates to hazard probability and the planning area’s vulnerabilities to all identified natural hazards.

Demographics & Vulnerability, City of Las Vegas								
Population (2000 U.S. Census)	Population 2010 U.S. Census	Population (2020 U.S. Census)	% of Population Change (2010-2020)	# of Housing Units (2020 Census)	% of Housing Units (2010-2020)	Identified Hazards	CPRI Results	Probability of Hazards (From Risk Summary)
479,137	583,756	641,903	9.96%	256,713	5.34%	Climate Change	M (2.8)	Highly Likely
						Drought	H (3.25)	Highly Likely
						Extreme/ Excessive Heat	M (2.85)	Highly Likely
						Fissures & Subsidence	L (1.85)	Likely
						Flood, Landslides & Debris Flow, Flooding	H (3.75)	Highly Likely
						Geohazards-Earthquake and Seismic Hazards	H (3.7)	Likely
						Severe Weather (including Thunderstorms, Hail, Wind, Lightning, and Tornadoes)	M (2.30)	Highly Likely
						Fire, Wildland Urban Interface (Wildfire)	L (1.75)	Highly Likely
						Hazardous Materials	H (3.2)	Highly Likely
						Infrastructure, Dam Failure	M (2.4)	Occasional
						Infestation	L (1.35)	Likely
						Infectious Disease	H (3.7)	Occasional
						Terrorism	H (3.85)	Highly Likely

Data Source: U.S. Census Bureau, Nevada: 2010 Population and Housing Unit Count; and U.S. Census Bureau, Profile: data.census.gov; Percent of Population Change Calculation Change: <https://www.omnicalculator.com/math/percentage-change#how-to-calculate-the-percent-change>

Critical Facilities Information

As previously stated in this MJHMP Update, certain facilities have a net positive value on the community, i.e., they contribute to the public good by facilitating the basic functions of society. These facilities maintain order, public health, education, and help the local economy function. Additionally, there are facilities and infrastructure integral to disaster response and recovery operations. Conversely, some of these are of extreme importance due to the negative externalities created when impacted by a disaster. What fits these definitions varies slightly from community to community, but the definitions remain as a guideline for identifying critical infrastructure and facilities.

The following table and map summarize the identified critical facilities and infrastructure for the City of Las Vegas. A complete list can be found in [Appendix E](#) of this plan update.

City of Las Vegas - Critical Facilities Listing																					
	Casinos/Resorts/ Hotels	Child Care	City Hall	Communications	Community Colleges	Correctional Facilities	Court House	Fire Stations	Government Offices	Hazardous Materials	Hospitals	Native Reservations	Natural Gas	Places of Worship	Police	Schools	Solar	Stadiums	Transportation	University	Water/Sewer
City of Las Vegas	190	264	1	797	1	10	5	69	361	40	99	4	9	591	18	344	5	7	23	2	25,106

National Flood Insurance Program (NFIP) & Community Rating System (CRS) Summary

According to FEMA, the National Flood Insurance Program (NFIP) is a federal insurance program that enables property owners in member communities to purchase flood insurance. This insurance is only made available to municipalities that adopt and enforce a floodplain management ordinance. The fundamental goal of NFIP floodplain management requirements is to reduce the threat to lives and the potential for property damage in flood-prone areas. Each municipality that participates in the NFIP has a Flood Insurance Rate Map (FIRM) that is issued by FEMA. This document maps out flood hazard areas in the municipality.

Like several other jurisdictions in Clark County, the City of Las Vegas participates in the NFIP. However, it is not listed as an eligible community of the Community Rating System (CRS), <https://www.fema.gov/cis/NV.html>, as of February 2023. CRS is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirement of NFIP.

The following tables contain NFIP & CRS Community Status information specific to the City of Las Vegas.

NFIP & CRS Community Status, City of Las Vegas					
CID	CRS Entry Date	Initial FHBM Identified	Initial Firm Identified	Current Effective Map Date	Registration/Entry Date
325276#	10/01/1991	12/02/1972	09/30/1980	10/01/2013	10/01/1991

Data Source: FEMA - Nevada National Flood Insurance Program Community Status Book (<https://www.fema.gov/cis/NV.html>), February 2023

Building Codes Ordinance for Las Vegas

City Code [Title 20- Flood Control](#). Also, the City of Las Vegas follows the Clark County Regional Flood Control District Title 15.50.010 – [Uniform Regulations for Control Drainage](#), effective September 30, 2022. For more information related to floodplain management in Las Vegas, NV, contact pjackson@LasVegasNevada.com.

NFIP Policies, Claims & Payments, City of Las Vegas					
Jurisdiction	Comm ID	# of Policies	Total Coverage	Total Written Premium + FPF	Floodplain Management Role
Las Vegas*	325276#	330	\$103,217,600	\$186,150	Provides in-house floodplain management. Participant of the CCFCO.

Notes:*Indicates CRS participating jurisdiction.

Data Dictionary as mentioned in the [NFIP Policy Information by State and Community document](#):

- Community ID: The 6-character community ID in which the policy resides.
- # of Policies: The number of policies in force for a given state and combination of attributes.
- Total Coverage: The total building and contents coverage for the policies in force.

Total Written Premium + FPF: This represents the sum of the premium and the FPF (federal policy fee) for the policies in force.

Data Sources: Participation – FEMA’s Community Status Book Report, Nevada, 03/01/2023. Policy statistics (current as of 03/01/2023) <https://www.fema.gov/cis/NV.html>

NFIP Policy Information by State (Policy statistics current as of 1/31/2023) https://nfipservices.floodsmart.gov/sites/default/files/nfip_policy-information-by-state_20230131.xlsx

Repetitive Loss (RL) Properties

As of December 5, 2022, there are Repetitive Loss (RL) properties, and subsequently, NFIP-insured properties within Clark County. The following table, provided by the State of Nevada Division of Emergency Management (NVDEM), indicates the locations, number of losses, and number of policies.

Community Name	Community Number	Mitigated	Occupancy 1	Cumulative Building Payment	Cumulative Contents Payment	Total Paid	Is NFIP Repetitive Loss Flag	Is NFIP Severe Repetitive Loss Flag	Is FMA Repetitive Loss Flag	Is FMA Severe Repetitive Loss Flag	Not Repetitive Loss Flag
LAS VEGAS, CITY OF	325276	YES	SINGLE FMLY (OLD METHODOLOGY)	10156.76	0	10156.76	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	YES	SINGLE FMLY (OLD METHODOLOGY)	14607.13	0	14607.13	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	YES	OTHR-NONRES (OLD METHODOLOGY)	5381.09	1332	6713.09	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	NO	SINGLE FMLY (OLD METHODOLOGY)	71336.57	34991.86	106328.43	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	YES	SINGLE FMLY (OLD METHODOLOGY)	4820.42	0	4820.42	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	YES	SINGLE FMLY (OLD METHODOLOGY)	6351.69	14378.14	20729.83	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	YES	SINGLE FMLY (OLD METHODOLOGY)	4271.16	408	4679.16	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	NO	OTHR-NONRES (OLD METHODOLOGY)	0	39633.9	39633.9	N	N	N	N	Y
LAS VEGAS, CITY OF	325276	YES	OTHR-NONRES (OLD METHODOLOGY)	103353.28	116445	219798.28	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	YES	OTHR-NONRES (OLD METHODOLOGY)	0	23786.4	23786.4	Y	N	N	N	N

Community Name	Community Number	Mitigated	Occupancy 1	Cumulative Building Payment	Cumulative Contents Payment	Total Paid	Is NFIP Repetitive Loss Flag	Is NFIP Severe Repetitive Loss Flag	Is FMA Repetitive Loss Flag	Is FMA Severe Repetitive Loss Flag	Not Repetitive Loss Flag
LAS VEGAS, CITY OF	325276	YES	OTHR-NONRES (OLD METHODOLOGY)	0	112460.01	112460.01	Y	Y	N	Y	N
LAS VEGAS, CITY OF	325276	NO	SINGLE FMLY (OLD METHODOLOGY)	17975.75	1893.5	19869.25	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	NO	OTHR-NONRES (OLD METHODOLOGY)	57007.85	59843.93	116851.78	Y	N	N	N	N
LAS VEGAS, CITY OF	325276	NO	BUSI-NONRES (OLD METHODOLOGY)	244270.67	54773.56	299044.23	Y	Y	N	Y	N
LAS VEGAS, CITY OF	325276	NO	SINGLE FMLY (OLD METHODOLOGY)	7358.35	0	7358.35	Y	N	N	N	N

Mitigation Strategy and Capabilities

Capabilities Assessment, City of Las Vegas

As with any jurisdiction, there are numerous stakeholders involved in developing a mitigation strategy. Each type of stakeholder provides a set of capabilities, in some cases broad and in others narrow, by which they can help increase the planning area’s resiliency. The broadest form of mitigation capabilities comes from counties, such as Clark County, and municipal governments, such as the City of Las Vegas. Their inherent legal authority allows them to institute the greatest regulatory and developmental changes.

The primary capabilities of Clark County and the City of Las Vegas are 1) institutional, 2) political, 3) technical, and 4) fiscal. Representing the City of Las Vegas. A capability assessment was conducted of the MJHMP participating jurisdictions’ authorities, policies, programs, and resources. From the assessment, goals and mitigation actions were developed. Capabilities for the City of Las Vegas are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory Capabilities

These include local ordinances, policies, and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Planning and Regulatory Capability Assessment for the City of Las Vegas

PLANS	Yes/No	<ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Community Wildfire Protection Plan	N/A	City of Las Vegas is an urban environment with no wildfire protection zone to manage
Comprehensive/Master Plan	Yes	CLV 2050 Master Plan identifies hazards, mitigation strategies. Approved by Council July 2022
Continuity of Operations Plan	Yes	CLV continuously updates COOP by department. Approved by City Manager’s Office 2023 (on-going)
Capital Improvement Plan	Yes	Managed by Public Works, this plan is updated annually.
Economic Development Plan	Yes	Economic & Urban Development partners with Redevelopment Agency (RDA) and Las Vegas Global and Economic Alliance
Emergency Operations Plan	Yes	CLV certifies or updates EOP annually (2022)
Stormwater Management Plan	Yes	The Stormwater Quality Management Committee (SQMC) is a community partnership of the Clark County Regional Flood Control District and is committed to the development and implementation of stormwater pollution monitoring, control and outreach efforts within the Las Vegas Valley.
Transportation Plan	N/A	CLV participates on Clark County Regional Transportation Commission’s ITS

PLANS	Yes/No	<ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	<ul style="list-style-type: none"> What type of codes? Are codes adequately enforced?
Building Codes	Yes	The 2021 International Building Code (IBC) and International Fire Code (IFC) were adopted in September 2022. The effective date of these codes is March 23, 2023. More information for the City of Las Vegas Building Codes can be found here .
Site plan review requirements	Yes	Routine, Land Use and Fire Reviews for Buildings conducted by Community Development Dept
Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		
LAND USE PLANNING & ORDINANCES	Yes/No	<ul style="list-style-type: none"> Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Floodplain ordinance	Yes	Las Vegas Municipal Code 20.08.040 - Methods of reducing flood losses (1987). This code can be found online here .
Subdivision ordinance	Yes	Las Vegas Municipal Code 20.08.370 - Subdivision proposals (1987). This code can be found online here .
Zoning ordinance	Yes	Las Vegas Municipal Code Title 19 (2011). This code can be found online here .
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		

Administrative and Technical Capabilities

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, and floodplain managers. Small communities may rely on other government entities such as counties or special districts for resources. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administrative and Technical Capability Assessment for the City of Las Vegas

ADMINISTRATION	Yes/No	Describe capability
		<ul style="list-style-type: none"> Is coordination effective?
Mutual aid agreements	Yes	Nevada Emergency Management Assistance Compact
Planning Commission	Yes	Members appointed by City Council, monthly meetings open to public
TECHNICAL STAFF	Yes/No	<ul style="list-style-type: none"> Is staff trained on hazards and mitigation?

ADMINISTRATION	Yes/No	Describe capability <ul style="list-style-type: none"> Is coordination effective?
	FT/PT	<ul style="list-style-type: none"> Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes	Full Time position; yes to all.
Community Planner	Yes	Full Time position; yes to all.
Emergency Manager	Yes	Full Time position; yes to all.
Engineer	Yes	Full Time position; yes to all.
Fire Chief	Yes	Full Time position; yes to all.
Floodplain Manager/Administrator	Yes	Full Time position; yes to all.
GIS/HAZUS Coordinator	Yes	Full Time position; yes to all.
Sheriff	Yes	Full Time position; yes to all.
Procurement Services Manager	Yes	Full Time position; yes to all.
How can capabilities be expanded and improved to reduce risk?		Additional training of staff in hazard mitigation and financial resources to pursue mitigation projects.

Financial Capabilities

The following table contains a list of administrative and financial capabilities available to the City of Las Vegas. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Financial Capability Assessment for the City of Las Vegas

FINANCIAL	Yes/No	<ul style="list-style-type: none"> Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Building Resilient Infrastructure and Communities Grant (BRIC)	No	Some mitigation activities planned in the next 5 years are eligible under this grant program.
Hazard Mitigation Grant Program (HMPG)	Yes	HMPG-Post Fire FFY2020, planning grant in progress.
Pre-Disaster Mitigation grant program (PDM)	No	Have not used this funding source in at least 15 years.
Earthquake Mitigation Funds (Nevada Earthquake Safety Council)	No	Potential source for seismic mitigation activities.
Flood Mitigation Assistance grant program (FMA)	No	Not a direct recipient, CLV supports applications made by Regional Flood Control District
Water Preservation Funds (SNWA)	No	Southern Nevada will soon surpass the region's 2035 goal to reduce consumption through conservation to 199 GPCD, CLV participates in the SNWA conservation planning.
Wildfire Emergency and Mitigation Funds	No	City of Las Vegas is an urban environment and is generally not involved in wildfire mitigation.

FINANCIAL	Yes/No	<ul style="list-style-type: none"> Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
(Nevada Division of Forestry)		
Capital improvements project funding	Yes	The Public Works Department manages all CIP funding on an annual basis. CIP may be used as a match source for PDM, HMPG or BRIC.
Community Development Block Grant	Yes	Most CDBG grants are used in support of low-income housing initiatives, may be used to support context-sensitive planning efforts.
Authority to levy taxes for specific purposes	No	The city is a political subdivision of the state and is not authorized to levy taxes.
Impact fees for new development	Yes	The city imposes fees for various development activities to support cost of government support services.
Incur debt through special tax bond	No	The city is a political subdivision of the state and is not authorized to levy taxes.
Incur debt through general obligation bonds	Yes	The city has utilized bonds for projects such as city hall, municipal court and the civic plaza.
How can capabilities be expanded and improved to reduce risk?		Utilize subject matter experts to identify and apply for FEMA program grants.

Education and Outreach Capabilities

The following table lists education and public outreach capabilities. These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Education and Outreach Capability Assessment for the City of Las Vegas

PROGRAM / ORGANIZATION	Changes since 2018 Plan Update Yes or No	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. <ul style="list-style-type: none"> Could the program/organization help implement future mitigation activities?
Jurisdiction (County/City/Tribe) Website and Social Media (PIO/PAO Programming)	Yes	Yes	The city maintains a website and accounts with Facebook , Instagram , Twitter , and YouTube . The Office of Emergency Management maintains a Twitter handle, @civalerts and manages a mass notification / IPAWS system countywide, as well as maintains the Southern Nevada Emergency Preparedness app. City libraries, law enforcement, and fire/rescue agencies also maintain social media accounts. These resources are regularly used to convey hazard mitigation and disaster-related information to the public, as well as develop awareness of in-person and online events. They can be used to support future mitigation activities.
Firewise Communities certification	N/A	N/A	The city is an urban environment and supports urban fire prevention programs. Firewise is designed for wildfire prevention and resistance.
Storm Ready certification	Yes	Yes	Storm Ready Certification issued through the National Weather Service is due for renewal.

PROGRAM / ORGANIZATION	Changes since 2018 Plan Update Yes or No	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. <ul style="list-style-type: none"> • Could the program/organization help implement future mitigation activities?
Citizen groups focused on emergency preparedness, environmental protection, etc.	Yes	Yes	CERT (Community Emergency Response Team), MRC (Medical Reserve Corps), ARES (Amateur Radio Emergency Services), American Red Cross, Faith Based organizations such as Latter-Day Saints support group, Salvation Army, Red Rock Search and Rescue, Fire Explorers and United Way of Southern Nevada. These organizations, along with state VOAD, provide First Responder Support and Emergency Management and EOC support to local communities and local government during times of disaster and preparedness training for local needs.
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)	Yes	Yes	The City of Las Vegas frequently addresses public information needs through a variety of mechanisms. The local government organizations utilize a well-developed and coordinated PIO group with partners from all levels of government including city, county departments. and federal and state offices. This is especially effective during times of disaster. City of Las Vegas Emergency Management utilizes public presentations and media outlets (e.g. radio, print) to provide public outreach on emergency preparedness. The City of Las Vegas government website is a primary tool for dissemination of public information.
Public-private partnership initiatives addressing disaster-related issues	Yes	Yes	Examples of organizations for this effort include VOAD (Volunteer Organizations Active in Disaster), LEPC (Local Emergency Planning Committee) for addressing hazardous materials issues. The city Office of Emergency Management established a Downtown Resort Emergency Management Working Group to address issues specific to the Fremont Street Experience corridor.
How can capabilities be expanded and improved to reduce risk?			Additional interaction with faith-based organizations outside of the VOAD structure to build community wide credibility for government announcements of emergency conditions.

Planning Integration, City of Las Vegas

Mitigation does not end at plan approval. Plan approval is only the beginning. The successful implementation of any number of mitigation activities and projects requires the coordination and collaboration of a number of local agencies, departments, and organizations. Each group has varying decision-making processes and authorities governing their actions. This plan, once approved, must be integrated into their decision-making processes as a tool for improving their respective resiliencies.

Clark County intends to incorporate this Clark County MJHMP update into other planning documents the County and its participating jurisdiction(s)' (which includes Clark County Unincorporated Area, cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, NV, and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) utilizes. Where applicable, portions of the previous MJHP (2012 and 2018) were considered for incorporation into other jurisdictions plans (i.e., participating cities and tribal government comprehensive/master plans) and programs. Also, portions of the previous MJHMP (2012 and 2018) in some form was incorporated into the Clark County Emergency Operations Plan (2019), and other existing or future public safety-related plans. This plan is not only useful for implementing mitigation activities and projects but also critical in creating development plans and capital improvement projects. The risk assessment in this plan can prevent unmanaged and dangerous development in identified hazard areas or other portions of the planning area that decrease a community's overall resiliency.

Las Vegas, NV

Existing Planning Mechanisms – Las Vegas, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates.
Local Emergency Operations Plan	Yes	Identifies major capabilities. The City of Las Vegas EOP is revised (2022) in annually, this is a key opportunity for integration.
Local Continuity of Operations Plan (COOP)	Yes	Identifies major capabilities. The City of Las Vegas COOP is revised (2022) continuously by departments, this is a key opportunity for integration.
Master Plan	Yes	The City of Las Vegas's 2050 Master Plan was revised in 2022 and identifies hazards and mitigation strategies.

Existing Planning Mechanisms – Las Vegas, NV

Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
Capital Improvement Plan	Yes	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions, mitigation strategies. The City of Las Vegas Capital Improvement plan is revised annually, this is a key opportunity for integration.
Building and Zone Codes and Ordinances	Yes	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy. Las Vegas City has adopted and adheres to the 2021 Building Code Suite.
Stormwater Management Plan	Yes	Capability assessment, mitigation strategies.
Clark County, NV Climate Vulnerability Assessment	Yes	Identifies the current and future impacts of climate change in Clark County including the City of Las Vegas.
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County, including the City of Las Vegas.
Community Wildfire Protection Plan	No	Identifies the County's priorities for wildfire fuel reduction projects. At the time of this update the CWPP was outdated (2005). The City does not have a CWPP because the city is an urban environment with no wildfire protection zone to manage.
Transportation Plan	No	Identifies transportation plans, programs, and projects within the County. The City of Las Vegas participates on the Clark County Regional Transportation Commission therefore does not have a developed transportation plan.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction.
FEMA's National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction.
U.S Census Bureau	Yes	Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

Mitigation Projects and Activities

The City of Las Vegas did not complete a mitigation project in the last MJHMP update (2018).

To support the planning area's mitigation goals, the Clark County MPSC identified 61 possible and unique mitigation projects and activities. Of these, 13 are from the City of Las Vegas as identified in the following table.

Mitigation & Projects Summary, City of Las Vegas	
Mitigation Project or Activity	Hazard(s) Addressed
Hazard Prevention Framework	All Hazards
Cooling Infrastructure Investment	Drought
Hazard Economic Recovery Framework	All Hazards
Update of RFCD Master Plan Improvements within the City	Flooding
Seasonal Monsoon Season Study	Flooding
Low Impact Development of Natural Drainage Techniques	Flooding; Subsidence & Fissures
Early Warning Notification Education Program	Flooding
Turf Limits Program	Drought, Climate Change
Critical Infrastructure Flood Risk Reduction (Bonneville Stormwater)	Flood
Emergency Power (Shelter Generators)	Earthquake, Dam Failure, Flood, Climate Change
Aquifer Storage and Recovery (Water Use and Conservation)	Drought, Subsidence & Fissures
NIPP's Security and Resilience Challenge (Smart City)	Hazardous Materials, Terrorism
NIPP's Security and Resilience Challenge (Connected Corridors)	Hazardous Materials, Terrorism
Hazard Prevention Framework	All Hazards
Cooling Infrastructure Investment	Drought
Hazard Economic Recovery Framework	All Hazards

Annual Review and Update of Hazard Mitigation Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Annual Review and Update of Local Emergency Operations Plan (LEOP)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)

STAPLE+E Rankings, City of Las Vegas

STAPLE+E Rankings, City of Las Vegas																								
X = N/A - Even Impact	+ = Positive Influence											- = Negative Influence												
STAPLE+E Criteria	Social		Technical			Administrative			Political			Legal			Economic				Environmental			Total Impact		
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites		Consistent with Community Goals	Consistent with Federal Laws

STAPLE+E Rankings, City of Las Vegas

Hazard Prevention Framework	+	X	+	X	-	+	+	X	+	X	X	+	+	X	+	+	+	+	X	X	X	+	X	12
Cooling Infrastructure Investment	+	X	+	X	-	+	+	+	+	X	X	+	+	X	+	+	+	+	+	X	X	+	+	15
Hazard Economic Recovery Framework	+	+	+	+	X	+	+	+	X	X	X	+	+	X	+	X	+	+	-	-	-	+	+	14
Update of RFCD Master Plan Improvements within the City	+	X	+	+	X	X	X	+	+	X	+	+	+	-	+	+	+	+	+	X	X	X	X	13
Seasonal Monsoon Season Study	-	-	+	+	-	+	+	+	X	X	X	+	+	-	+	+	+	+	-	-	-	+	X	12
Low Impact Development of Natural Drainage Techniques	+	X	+	+	X	+	+	+	X	X	X	+	+	+	+	+	+	+	+	X	X	+	+	16
Early Warning Notification Education Program	-	-	+	+	-	+	+	+	+	X	+	+	+	+	+	+	+	+	-	-	-	+	+	16
Turf Limits Program	-	-	+	+	-	+	+	+	+	X	X	+	+	+	+	X	+	+	+	+	X	X	+	15
Critical Infrastructure Flood Risk Reduction (Bonneville Stormwater)	-	-	+	+	-	+	+	+	+	X	+	+	+	-	+	X	+	+	+	X	+	+	+	16
Emergency Power (Shelter Generators)	-	-	+	-	-	+	+	+	+	X	+	+	+	-	+	X	+	+	X	X	X	+	+	13

STAPLE+E Rankings, City of Las Vegas

Aquifer Storage and Recovery (Water Use and Conservation)	-	-	+	+	-	+	+	+	+	X	+	+	+	+	+	X	+	+	+	+	X	+	+	17
NIPP's Security and Resilience Challenge (Smart City)	-	-	+	+	-	+	+	+	+	X	+	+	+	+	+	X	+	+	-	-	-	+	+	15
NIPP's Security and Resilience Challenge (Connected Corridors)	-	-	+	+	-	+	+	+	+	X	+	+	+	+	+	X	+	+	-	-	-	+	+	15

Proposed and Carry-Over Mitigation Activities – City of Las Vegas

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Las Vegas 1	Update of RFCD Master Plan Improvements within the City	Construct the recommended improvements contained within the RFCD's Master Plan to eliminate as much of the FEMA designated flood zone within the City as possible, thereby protecting residents and property	Flooding	Las Vegas Public Works, RFCD	Medium (35.5)	New	\$200M+	5+ years	CIP, General Fund, BRIC	Proposed project for the 2024 plan update.
Las Vegas 2	Critical Infrastructure Flood Risk Reduction (Bonneville Stormwater)	Reinforce roads/bridges that are prone to repetitive flooding and/or flash flooding through protection activities, including elevating the roads/bridges and installing/widening culverts beneath the roads/bridges or upgrading storm drains. Bonneville Underpass is constructed below the groundwater table, so constant groundwater dewatering is required to keep the underpass dry. Groundwater is contaminated and requires treatment before discharge into storm drain. The project is ongoing since 1992. The maintenance of pumping station costs approximately \$40,000 per year.	Flooding	Las Vegas Public Works	Medium (31)	Existing	\$7Million to replace pump and \$40,000 annual maintenance cost	Ongoing, Continuous through the five-year plan cycle.	CIP, Clark County Regional Flood Control District Grant Programs	Carry-over project from the 2018 plan. Project Update: New pump and generator installation will start this year and will be completed in approximately 2-year. The cost of this replaces is approximately \$7million. The maintenance of pumping station will continue with approximate annual cost of \$40,000 per year.

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Las Vegas 3	Cooling Infrastructure Investment	Prepare for long-term, seasonal hazards such as extreme heat by investing in cooling infrastructure and developing urban design standards that mitigate the urban heat island effect	Drought	Las Vegas Community Development; Las Vegas Public Works; Las Vegas Parks & Recreation	Medium (30)	New	\$50M+	5+ years	CIP, BRIC	Proposed project for the 2024 plan update.
Las Vegas 4	NIPP's Security and Resilience Challenge (Smart City)	Strengthen the security and resilience of critical infrastructure through state-of-the-art, cost-effective technology, tools, processes, and methods as part of the 2017 National Infrastructure Protection Plan's (NIPP) Security and Resilience Challenge. The city is underway with a robust connected vehicle corridor deployment. To date, 14 traffic signals within the region have been instrumented with Dedicated Short-Range Communications (DSRC) radios. Our experience includes the installation, inspection, and integration of the data into our regional traffic system. The city is developing a network of connected corridors within our Innovation District for deployment of Connected Autonomous Vehicles (CAVS). The roadways include Main and Fourth streets, Stewart, Bonneville and Clark avenues and Casino Center Boulevard. The connected corridor project is underway and will install 24 additional DSRC radios in the downtown Innovation District again using our significant fiber optic investment. This project will provide a solid backbone for the safe assessment of CAVs, that use this area as a proving ground, and offers the capability of monitoring the performance of various technology deployments.	Hazardous Materials, Terrorism	Public Works, Operations and Maintenance, Information Technologies, Planning / City of Las Vegas	Medium (30)	Existing	\$10M+	1-2 year (2025)	CIP	Carry-over project from the 2018 plan. Project Update: This project was carried over from 2018 MJHMP update due to lack of staffing and funding.
Las Vegas 5	NIPP's Security and Resilience Challenge	Strengthen the security and resilience of critical infrastructure through state-of-the-art, cost-effective technology, tools, processes, and methods as part of the 2017 National Infrastructure	Hazardous Materials, Terrorism	Public Works, Innovation and Technology	Medium (30)	Existing	\$10M+	2-5 years	CIP	Carry-over project from the 2018 plan. Project

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
	(Connected Corridors)	Protection Plan's (NIPP) Security and Resilience Challenge. The city is underway with a robust connected vehicle corridor deployment. To date, 14 traffic signals within the region have been instrumented with Dedicated Short-Range Communications (DSRC) radios. Our experience includes the installation, inspection, and integration of the data into our regional traffic system. The city is developing a network of connected corridors within our Innovation District for deployment of Connected Autonomous Vehicles (CAVS). The roadways include Main and Fourth streets, Stewart, Bonneville and Clark avenues and Casino Center Boulevard. The connected corridor project is underway and will install 24 additional DSRC radios in the downtown Innovation District again using our significant fiber optic investment. This project will provide a solid backbone for the safe assessment of CAVs, that use this area as a proving ground, and offers the capability of monitoring the performance of various technology deployments.		Planning / City of Las Vegas						Update: This project was carried over from the 2018 MJHMP update due to lack of staffing and funding.
Las Vegas 6	Low Impact Development of Natural Drainage Techniques	Increase the number of multi-use facilities and utilize low-impact development and other natural drainage techniques	Flooding; Subsidence & Fissures	Las Vegas Parks & Recreation; Las Vegas Public Works	Medium (28.5)	New	\$1M	5+ years	CIP, General Fund, BRIC	Proposed project for the 2024 plan update.
Las Vegas 7	Aquifer Storage and Recovery (Water Use and Conservation)	Maximize the use of recycled water in areas where return flow to the Colorado River system is not practical, by creating aquifer storage and recovery (ASR). Source waters for injection into ASR wells range from potable water, reclaimed water, partially treated surface water, and raw groundwater. Explore use of Aquifer Recharge and Recovery (ARAR), where water is recharged to	Drought, Subsidence & Fissures	Parks and Rec, Planning / City of Las Vegas	Medium (27)	Existing	\$1M	1-5 years	CIP	Carry-over project from the 2018 plan. Project Update: This project was carried over from the 2018 MJHMP

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		<p>an aquifer either under gravity or injected for the purpose of recharging the aquifer. The primary source of water for the Las Vegas region is the Colorado River. The city plays a crucial role in the conservation and management of the water supply for its residents and businesses by supporting regional management efforts by the Southern Nevada Water Authority. Since 2008, the city has reduced its water consumption from 1.47 billion gallons to 1.18 billion gallons in 2016. These savings were achieved through the replacement of more than 40-acres of grass with synthetic turf at city sports fields and parks. City landscaping utilizes drought tolerant plants and public art. More than 75 million gallons of water per day have been recycled at the city's wastewater treatment plants and used at golf courses around the valley or returned to Lake Mead. In the community, water use has declined from approximately 350 gallons per person per day (GPCD) in 1990 to less than 220 GPCD today. Southern Nevada will soon surpass the region's 2035 goal to reduce consumption through conservation to 199 GPCD. Overall Colorado River water consumption has decreased 40 billion gallons despite an increase of 500,000 residents over the last decade.</p>								update due to lack of staffing and funding.
Las Vegas 8	Emergency Power (Shelter Generators)	<p>Provide additional emergency power, such as a generator equipment, for new and existing critical facilities to operate continuously but cannot do so for long durations of power outage. Two shelter locations have been identified with a need for back-up power improvements. At least two new trailer mounted diesel generator</p>	<p>Earthquake, Dam Failure, Flood, Climate Change</p>	<p>Building and Safety, Community Services, Facilities, Emergency Management / City of Las Vegas</p>	<p>Low (24.25)</p>	<p>Existing</p>	<p>\$50,000</p>	<p>1-3 years</p>	<p>EMPG; CIP</p>	<p>Carry-over project from the 2018 plan. Project Update: This project was carried over from the 2018</p>

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		sets with quick connection cables and temporary fencing will be required.								MJHMP update due to lack of staffing and funding.
Las Vegas 9	Early Warning Notification Education Program	Continue coordinating with the RFCD and National Weather Service on early warning notifications and education on the risks of flooding	Flooding	Las Vegas Emergency Management; RFCD; NWS; Las Vegas Communications	Low (23.5)	New	\$50,000	5+years	General Fund, EMPG	Proposed project for the 2024 plan update.
Las Vegas 10	Turf Limits	Turf limits restrict or prohibit the amount of grass to be planted at new properties. The restrictions prohibiting types of grass that can be planted apply to all property owners.	Drought; Climate Change	Las Vegas Parks & Rec, Las Vegas Planning Department	Low (21.5)	Existing	\$50,000	5+ years	General Fund, EMPG	Carry-over project from the 2018 plan. Project Update: This project was carried over from the 2018 MJHMP update due to lack of staffing and funding. This is an ongoing project into 2024.
Las Vegas 11	Hazard Economic Recovery Framework	To lessen economic severity of all types of hazards, develop a comprehensive economic recovery framework that's context sensitive and adaptable to a variety of hazard scenarios	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure,	Las Vegas Emergency Management, Las Vegas Economic & Urban Development, Las Vegas Community Development and Las Vegas Public Works	Low (19.77)	New	\$200,000	5 years	EMPG, PDM, General Fund	Proposed project for the 2024 plan update.

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Epidemic/Infections Disease, Hazardous Materials, and Terrorism)							
Las Vegas 12	Seasonal Monsoon Season Study	Determine the effect an increasingly active monsoonal season may have on storm water infrastructure	Flooding	Las Vegas Public Works, National Weather Service	Low (19.5)	New	\$100,000	2-4 years	General Fund	Proposed project for the 2024 plan update.
Las Vegas 13	Hazard Prevention Framework	Develop hazard prevention, mitigation, vulnerability, and recovery frameworks that apply to hazards	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Las Vegas Emergency Management, Las Vegas Economic & Urban Development, Las Vegas Community Development and Las Vegas	Low (17.77)	New	\$200,000	5 years	EPMG, PDM, General Fund	Proposed project for the 2024 plan update.
Las Vegas 14	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2024 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Las Vegas 15	Annual Review and Update of Continuity of Operations (COOP) Plan	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Las Vegas 16	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Las Vegas 17	Annual Review and Update of Local Emergency Operations Plan (LEOP)	Annual review and updated the County's LEOP to ensure compliance with NV DEM requirements	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; Clark County Local Emergency Planning Commission (LEPC); All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson,	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes						

Deferred Projects List from Clark County MJHMP (2018) for the City of Las Vegas

The City of Las Vegas did not have any deferred mitigation projects.

Mitigation Prioritization Tables for the City of Las Vegas

Mitigation Project Prioritization, City of Las Vegas																		
Mitigation Project or Activity	STAPLE+ E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Hazard Prevention Framework	17.77	0.5	15	5	10	10	15	15	10	15	15	10	5	15	15	150	11,538 4615	Low
Cooling Infrastructure Investment	30	1.5			10											10	10	Medium
Hazard Economic Recovery Framework	19.77	0.5	15	5	10	10	15	15	10	15	15	10	5	15	15	150	11.36	Low
Update of RFCD Master Plan Improvements within the City	35.5	1.5								15						15	15	Medium
Seasonal Monsoon Season Study	19.5	0.5								15						15	15	Low

Mitigation Project Prioritization, City of Las Vegas

Low Impact Development of Natural Drainage Techniques	28.5	1						15	10							25	12.5	Medium
Early Warning Notification Education Program	23.5	0.5						15								15	15	Low
Turf Limits Program	21.25	0.5	15													25	15	Low
Critical Infrastructure Flood Risk Reduction (Bonneville Stormwater)	31	1						15								15	15	Medium
Aquifer Storage and Recovery (Water Use and Conservation)	27	1				10			10							20	10	Medium
NIPP's Security and Resilience Challenge (Smart City)	30	1											15	15		30	15	Medium
NIPP's Security and Resilience Challenge (Connected Corridors)	30	1											15	15		30	15	Medium
Aquifer Storage and Recovery (Water Use and Conservation)	27	1				10			10							20	10	Medium

Mitigation Project Prioritization, City of Las Vegas

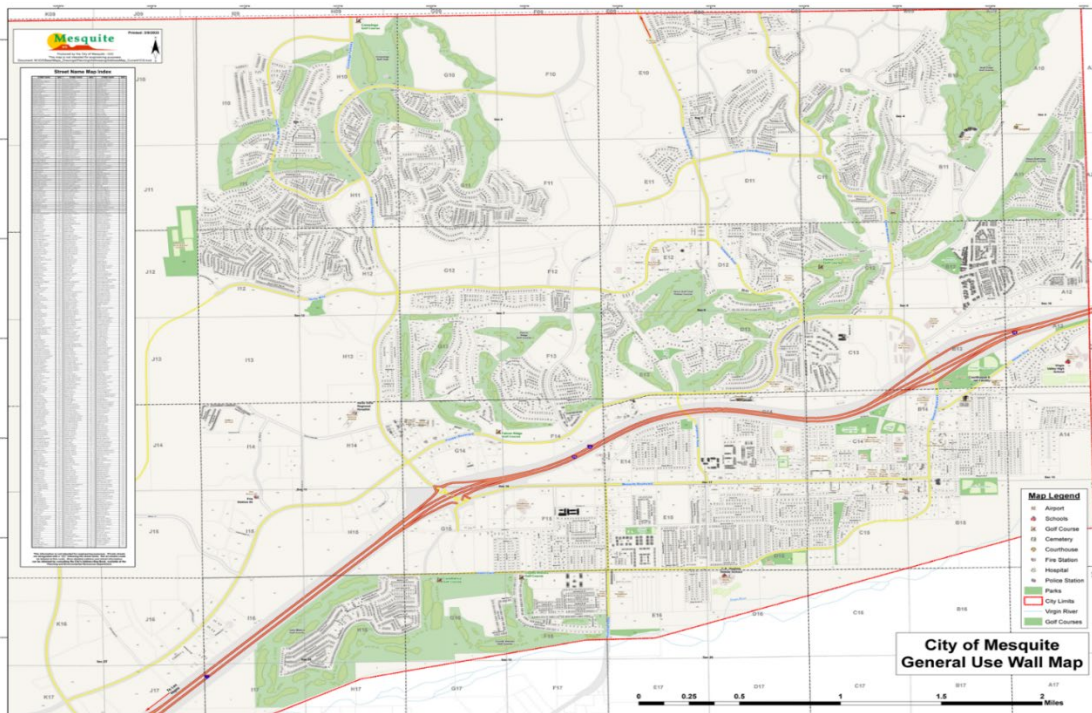
Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Annual Review and Update of Local Emergency Operations Plan (LEOP)	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low

City of Mesquite

Planning Area

Since incorporation Mesquite has experienced rapid growth, at one time being named “The fastest growing city in America” for its size. The population stands at 25,000. Per its [website](#), since its incorporation, with this growth has come an increase of businesses and services never before enjoyed by residents of the area. A new hospital, medical and dental clinics brought care that had only been possible by traveling outside the valley. Stores, restaurants, movie theaters, art galleries, golf courses, hotels and casinos are providing employment and services for the lifestyle that has become a trademark of Mesquite. The construction of a new high school, a new middle school and two new elementary schools reflect the increase of young families in the population. Housing developments are creating beautiful neighborhoods for residents of all ages. Access to newly opened land west of Mesquite has been made possible by the addition of a new I-15 interchange encouraging the construction of new light industry. Mesquite has long been a stop on a busy western highway but now it is a destination!

Figure 127: City of Mesquite Area Map



Source: City of Mesquite, Website

Jurisdiction Profile

- Planning Area
- Demographics & Hazard Vulnerabilities
- Critical Facilities Information

Hazard Risk Assessment

- National Flood Insurance Program (NFIP) Summary

Mitigation Strategy & Capabilities

- Capabilities Assessment
- Completed and Deferred Mitigation Projects (2018)
- Proposed Mitigation Activities (including STAPLE+E)

Demographics and Hazard Vulnerabilities

Demographic data is crucial to effective hazard mitigation planning. This is especially true for the numbers associated with population, housing units, and building permits as they, over time, can increase or decrease a planning area's vulnerabilities to any/all identified natural hazards. It is important to note, however, that demographic data can fluctuate or even lag in the short term, i.e., one to two years. While these numbers tend to self-correct over time, temporary decreases or increases in population and/or the number of housing units may occur. In these instances, it is best to consider demographic data from longer periods, such as ten (10) to 20 years, for mitigation planning purposes.

As for the City of Mesquite, the U.S. Census Bureau determined its population to be 9,389 in 2000. That number increased by 62.7% to 15,276 in 2010. In 2020, the U.S. Census Bureau determined the City of Mesquite population to be 20,471, an increase of 34%.

Similarly, the U.S. Census Bureau determined the number of housing units in the City of Mesquite to be 8,911 in 2010 but increased its estimate by 25.66% to 11,198 in 2020.

The following table provides a visual representation of the City of Mesquite demographic information (as previously described) and how it specifically relates to hazard probability and the planning area’s vulnerabilities to all identified natural hazards.

Demographics & Vulnerability, City of Mesquite								
Population (2000 U.S. Census)	Population 2010 U.S. Census	Population (2020 U.S. Census)	% of Population Change (2010-2020)	# of Housing Units (2020 Census)	% of Housing Units (2010-2020)	Identified Hazards	CPRI Results	Probability of Hazards (From Risk Summary)
9,389	15,276	20,471	34%	11,198	25.66%	Climate Change	H (3.25)	Highly Likely
						Drought	H (3.25)	Highly Likely
						Extreme/ Excessive Heat	H (3.25)	Highly Likely
						Fissures & Subsidence	M (2.5)	Occasional
						Flood, Landslides & Debris Flow, Flooding	H (3.15)	Ocassional
						Geohazards-Earthquake and Seismic Hazards	H (3.15)	Likely
						Severe Weather (including Thunderstorms, Hail, Lightning, Wind and Tornadoes)	H (3.15)	Highly Likely
						Fire, Wildland Urban Interface (Wildfire)	M (2.3)	Highly Likely
						Hazardous Materials	M (2.85)	Highly Likely
						Infrastructure, Dam Failure	H (3.1)	Occasional
						Infestation	M (2.05)	Likely
						Infectious Disease	H (3.1)	Occasional
						Terrorism	M (2.8)	Highly Likely

Data Source: [U.S. Census Bureau, Nevada: 2010 Population and Housing Unit Count](#); and [U.S. Census Bureau, Profile: data.census.gov](#); Percent of Population Change Calculation Change: <https://www.omnicalculator.com/math/percentage-change#how-to-calculate-the-percent-change>

Critical Facilities Information

As previously stated in this MJHMP Update, certain facilities have a net positive value on the community, i.e., they contribute to the public good by facilitating the basic functions of society. These facilities maintain order, public health, education, and help the local economy function. Additionally, there are facilities and infrastructure integral to disaster response and recovery operations. Conversely, some of these are of extreme importance due to the negative externalities created when impacted by a disaster. What fits these definitions varies slightly from community to community, but the definitions remain as a guideline for identifying critical infrastructure and facilities.

The following table and map summarize the identified critical facilities and infrastructure for the City of Mesquite. A complete list can be found in [Appendix E](#) of this plan update.

City of Mesquite - Critical Facilities Listing																					
	Casinos/Resorts/ Hotels	Child Care	City Hall	Communications	Community Colleges	Correctional Facilities	Court House	Fire Stations	Government Offices	Hazardous Materials	Hospitals	Native Reservations	Natural Gas	Places of Worship	Police	Schools	Solar	Stadiums	Transportation	University	Water/Sewer
City of Mesquite	3	2	1	1	1	1	1	3	22	-	2	-	-	3	2	4	-	-	2	-	55

National Flood Insurance Program (NFIP) and Community Rating System (CRS) Summary

According to FEMA, the National Flood Insurance Program (NFIP) is a federal insurance program that enables property owners in member communities to purchase flood insurance. This insurance is only made available to municipalities that adopt and enforce a floodplain management ordinance. The fundamental goal of NFIP floodplain management requirements is to reduce the threat to lives and the potential for property damage in flood-prone areas. Each municipality that participates in the NFIP has a Flood Insurance Rate Map (FIRM) that is issued by FEMA. This document maps out flood hazard areas in the municipality.

Like several other jurisdictions in Clark County, the City of Mesquite participates in the NFIP. However, it is not listed as an eligible community of the Community Rating System (CRS), <https://www.fema.gov/cis/NV.html>, as of February 2023. CRS is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirement of NFIP.

The following tables contain NFIP & CRS Community Status information specific to the City of Mesquite.

NFIP & CRS Community Status, City of Mesquite					
CID	CRS Entry Date	Initial FHBM Identified	Initial Firm Identified	Current Effective Map Date	Registration/Entry Date
350035#	10/01/202	11/01/1985	09/28/1990	05/01/2007	09/28/1990

Data Source: FEMA - Nevada National Flood Insurance Program Community Status Book (<https://www.fema.gov/cis/NV.html>), February 2023

Building Codes Ordinance for Mesquite

City Code [Title 8 - Flood Control Ordinance](#). The City of Mesquite also follow the Clark County Flood Control Districts [Uniform Regulation for Control Drainage](#) effective September 30, 2022. Also, the following ordinances have passed regarding Flood Control and Draining within the City of Mesquite:

City Ordinance 160: an ordinance of the city of Mesquite, Nevada, amending the Mesquite Municipal Code, Title 8, Chapter 10, Section 10-080 (A) to conform to action of City Council and Section 10-040(A) deleting typographical errors in the original ordinance not consistent with the adopted draining regulations and all matters relating thereto.

City Ordinance #40: An ordinance amending ordinance #39, dated jus, Mesquite Municipal Code Chapter 3, Title 1, Enacting Uniform Regulations for the control of drainage, wording in Section 10 regarding flood hazard reduction, defining and identifying floodways, and certain other word changes throughout, and any other matters properly related thereto.

City Ordinance #62: An ordinance of the City of Mesquite, repealing Ordinance #39 Uniform Regulations for control of drainage and all amendments thereto, repealing Mesquite Municipal Code Title 3 in its entirety, and adopting the following set of Uniform Regulations for the Control of Drainage as mandated by NRS 543.595(1), governing the subdivision of land, parcel maps, division of land and any new development and/or substantial improvement of land in order to be eligible to participate in the regional fund for control of floods, and any other matters relating thereto.

City Ordinance #292: An ordinance amending Mesquite Municipal code, Title 8, Chapter 1, Section 9 there of entitled “definitions” and specifically amending the revision of the definitions entitled “Base Flood Elevation”; amending section 10.020 thereof entitled “areas of Special Flood Hazard” and specifically amending the subsections thereof entitled “Floodway Fringe: and “Areas of Shallow Flooding”; amending

section 10.100 thereof entitled “Hazard Mitigation” and specifically amending the subsections thereof entitled “General Standards” (Elevation and Floodproofing) and “Specific Standards” (Residential Construction, Non-Residential Construction and Manufactured Homes); and other matters properly related thereto.

City Ordinance #273: An ordinance amending Mesquite Municipal Code, Title 8, Chapter 1, Part 1, Sub Part B, Section 10.020, entitled “Areas of Special Flood Hazard” and amending Mesquite Municipal Code, Title 9, Chapter 7, Article K, Section 9, Subsection K93) entitled “Duties of Operator” and Subsection M entitled “Prohibited Activities;” incorporating conditions related to recreational vehicles required to be adopted by the Federal Emergency Management Agency (FEMA).

City Ordinance #472: An ordinance of the City Council of the City of Mesquite, Nevada, amending Title 8 of the Mesquite Municipal Code, entitled “Drainage Control Regulation: by amending Section 8: “Definitions;” Section 10.020: Areas of Special Flood Hazard;” Section 20: Effective Date”; Section 32: “Definitions”; Section 34: Permit Requirements”; and other matters properly related thereto.

City Ordinance #510: An ordinance amending City of Mesquite Code, Title 8 Flood Control Ordinance, replacing section 8-1-Part II: Excavation and Grading with a New Section 8-2 Excavation and Grading Standards, and to provide for other matters properly related thereto.

For more information related to floodplain management for Mesquite, NV, contact Travis Anderson at tanderson@mesquitenv.gov.

NFIP Policies, Claims & Payments, City of Mesquite					
Jurisdiction	Comm ID	# of Policies	Total Coverage	Total Written Premium + FPF	Floodplain Management Role
Mesquite	320035#	34	\$30,101,000	\$19,811	Provides in-house floodplain management. Participant of the CCFCF.
<p>Notes: *Indicates CRS participating jurisdiction. Data Dictionary as mentioned in the NFIP Policy Information by State and Community document: Community ID: The 6-character community ID in which the policy resides. # of Policies: The number of policies in force for a given state and combination of attributes. Total Coverage: The total building and contents coverage for the policies in force. Total Written Premium + FPF: This represents the sum of the premium and the FPF (federal policy fee) for the policies in force.</p> <p>Data Sources: Participation – FEMA’s Community Status Book Report, Nevada, 03/01/2023. Policy statistics (current as of 03/01/2023) https://www.fema.gov/cis/NV.html NFIP Policy Information by State (Policy statistics current as of 1/31/2023) https://nfipservices.floodsmart.gov/sites/default/files/nfip_policy-information-by-state_20230131.xlsx</p>					

Repetitive Loss (RL) Properties

As of December 5, 2022, there are Repetitive Loss (RL) properties, and subsequently, NFIP-insured properties within Clark County. The City of Mesquite did not have any recorded RL properties.

Mitigation Strategy and Capabilities

Capabilities Assessment, City of Mesquite

As with any jurisdiction, there are numerous stakeholders involved in developing a mitigation strategy. Each type of stakeholder provides a set of capabilities, in some cases broad and in others narrow, by which they can help increase the planning area's resiliency. The broadest form of mitigation capabilities comes from counties, such as Clark County, and municipal governments, such as the City of Mesquite. Their inherent legal authority allows them to institute the greatest regulatory and developmental changes.

The primary capabilities of Clark County and the City of Mesquite are 1) institutional, 2) political, 3) technical, and 4) fiscal. Representing the City of Mesquite. A capability assessment was conducted of the MJHMP participating jurisdictions' authorities, policies, programs, and resources. From the assessment, goals and mitigation actions were developed. Capabilities for the City of Mesquite are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory Capabilities

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Planning and Regulatory Capability Assessment for the City of Mesquite

PLANS	Yes/No	<ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Community Wildfire Protection Plan	No	The city follows under the County and State mitigation work related to the river that are related to wildland fire risk
Comprehensive/Master Plan	N/A	Per the last MJHMP (2018), the City of Mesquite indicated that the State of Nevada requires jurisdictions to address seismic activity. Mesquite is working to confirm if have an updated copy of this plan for MJHMP record
Continuity of Operations Plan	Yes	Yes, updated in 2022
Capital Improvement Plan	Yes	Yes, updated October 2022
Economic Development Plan	Yes	Yes, updated October 2022
Emergency Operations Plan	Yes	Yes, and EOP was reviewed and updated January 2023 to meet state of NV compliance
Stormwater Management Plan	Yes	Yes, updated October 2022
Transportation Plan	Yes	Yes, updated October 2022
Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	<ul style="list-style-type: none"> What type of codes? Are codes adequately enforced?
Building Codes	Yes	The IBC 2018 Code, however the City will be working to adopt 2004 IBC Code Suite. These codes are adequately enforced. More information for the City of Mesquite Building Codes can be found here .
Site plan review requirements	Yes	Yes, the City Building Inspector completed site plan review related to flooding and earthquake and the City Fire Inspector completes review for fire hazards.
Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses..		
LAND USE PLANNING & ORDINANCES	Yes/No	<ul style="list-style-type: none"> Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Floodplain ordinance	Yes	Yes, updated October 2022. Title – Flood Control District Ordinance can be found online here .
Subdivision ordinance	Yes	Yes, updated October 2022, Chapter 6 Subdivision Regulations can be found online here .
Zoning ordinance	Yes	Yes, updated October 2022, Chapter 7 – Zoning Districts Ordinance can be found online here .
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		

Administrative and Technical Capabilities

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, and floodplain managers. Small communities may rely on other government entities such as counties or special districts for resources. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administrative and Technical Capability Assessment for the City of Mesquite

ADMINISTRATION	Yes/No	Describe capability <ul style="list-style-type: none"> Is coordination effective?
Mutual aid agreements	Yes	Yes, the City with Littlefield Beaver Dam Fire Dept (AZ), Clark County Station 71 in Bunkerville, and Lincoln County, NV for fire/rescue efforts. The City is written into the HAZMAT response plan for the County and will come into further MAA beginning in 2024.
Planning Commission	Yes	They are effective in communication with the City Council.
TECHNICAL STAFF	Yes/No FT/PT	<ul style="list-style-type: none"> Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes	Yes, to all.
Community Planner	Yes	Yes, to all.
Emergency Manager	Yes	Yes, to all. The Fire Chief also serves as the Emergency Manager for the City.
Engineer	Yes	Yes, to all.
Fire Chief	Yes,	Yes, to all. The Fire Chief also serves as the Emergency Manager for the City.
Floodplain Manager/Administrator	Yes	Ask Travis
GIS/HAZUS Coordinator	Yes	Yes, to all.
Sheriff	Yes	Yes, to all.
Procurement Services Manager	Yes	Yes, to all.
How can capabilities be expanded and improved to reduce risk?		By continuing to utilize and seek improved methods for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts. An important component is the use of trained grant writers with the knowledge and skill sets to research and apply for federal funding opportunities.

Financial Capabilities

The following table contains a list of administrative and financial capabilities available to the City of Mesquite. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Financial Capability Assessment for the City of Mesquite

FINANCIAL	Yes/No	<ul style="list-style-type: none"> Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Building Resilient Infrastructure and Communities Grant (BRIC)	NA	The City has not utilized this funding in the past. It is unknown if it could be a resource the city could utilize to fund mitigation actions.
Hazard Mitigation Grant Program (HMPG)	Yes	
Pre-Disaster Mitigation grant program (PDM)	Yes	
Earthquake Mitigation Funds (Nevada Earthquake Safety Council)	Yes	Project Specific
Flood Mitigation Assistance grant program (FMA)	Yes	Yes, it has been used in the past. Unknown if the resource could be used to fund future mitigation actions since the Flood Control District controls the resource funding
Water Preservation Funds (SWNA)	Yes	Project Specific
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)	Yes	Project specific – the City receives RFPs for the NV Division of Forestry to apply to secure funds for related projects
Capital improvements project funding	No	
Community Development Block Grant	Yes	Yes, as mentioned in the previous HMP (2018), acquisition of real property, relocation and demolition, rehabilitation of residential and non-residential structures, construction of public facilities and improvements, such as water and sewer facilities, streets, neighborhood centers, and the conversion of school buildings for eligible purposes. Grant award based on specific projects as they are identified.
Authority to levy taxes for specific purposes	Yes	Yes, it is allowable to use. Ability to use as a resource but has not been used yet.
Impact fees for new development	Yes	Yes, this has been used in the past, unknown at this time type of activities. Could be used in the future to fund mitigation activities
Incur debt through special tax bond	Yes	Yes, this has been used in the past, unknown at this time type of activities. Could be used in the future to fund mitigation activities
Incur debt through general obligation bonds	Yes	Yes, this has been used in the past, unknown at this time type of activities. Could be used in the future to fund mitigation activities
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.

Education and Outreach Capabilities

The following table lists education and public outreach capabilities. These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Education and Outreach Capability Assessment for the City of Mesquite

PROGRAM / ORGANIZATION	Changes since 2018 Plan Update Yes or No	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. <ul style="list-style-type: none"> • Could the program/organization help implement future mitigation activities?
Jurisdiction (County/City/Tribe) Website and Social Media (PIO/PAO Programming)		Yes	The County maintains a website and accounts with Facebook and Twitter . County libraries, law enforcement, and fire/rescue agencies also maintain social media accounts. These resources are regularly used to convey hazard mitigation and disaster-related information to the public, as well as develop awareness of in-person and online events. They can be used to support future mitigation activities.
Firewise Communities certification			
Storm Ready certification		Yes	The County Storm Ready Certification issued through the National Weather Service is current and due for renewal in July 2021 (i.e. applies to all of the County). The City fall under the County Certification
Citizen groups focused on emergency preparedness, environmental protection, etc.		Yes	CERT (Community Emergency Response Team), ARIS, and Volunteer police. These organizations provide First Responder Support and Emergency Management and EOC support to local communities and local government during times of disaster and preparedness training for local needs.
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)		Yes No (for water use)	The City frequently addresses public information needs through a variety of mechanisms. The local government organizations utilize a well-developed and coordinated PIO group with partners from all levels of government including city, county departments. and federal and state offices. This is especially effective during times of disaster. City of Mesquite Emergency Management utilizes public presentations and media outlets (e.g. radio, print) to provide public outreach on emergency preparedness. The City teaches the NFPA messaging to school and participates in Safety Rodeo events as community outreach
Public-private partnership initiatives addressing disaster-related issues		Yes	Examples of organizations for this effort include Mesquite Emergency Planning Committee meets twice a year and the faith based meets once a year for addressing all hazard events in the City as well as the City has a seat on the County LEPC.
How can capabilities be expanded and improved to reduce risk?			This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

Planning Integration, City of Mesquite

Mitigation does not end at plan approval. Plan approval is only the beginning. The successful implementation of any number of mitigation activities and projects requires the coordination and collaboration of a number of local agencies, departments, and organizations. Each group has varying decision-making processes and authorities governing their actions. This plan, once approved, must be integrated into their decision-making processes as a tool for improving their respective resiliencies.

Clark County intends to incorporate this Clark County MJMP update into other planning documents the County and its participating jurisdiction(s)' (which includes Clark County Unincorporated Area, cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, NV, and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) utilizes. Where applicable, portions of the previous MJHP (2012 and 2018) were considered for incorporation into other jurisdictions plans (i.e., participating cities and tribal government comprehensive/master plans) and programs. Also, portions of the previous MJHMP (2012 and 2018) in some form was incorporated into the Clark County Emergency Operations Plan (2019), and other existing or future public safety-related plans. This plan is not only useful for implementing mitigation activities and projects but also critical in creating development plans and capital improvement projects. The risk assessment in this plan can prevent unmanaged and dangerous development in identified hazard areas or other portions of the planning area that decrease a community's overall resiliency.

Mesquite, NV

Existing Planning Mechanisms – Mesquite, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates.
Local Emergency Operations Plan	Yes	Identifies major capabilities. The City of Mesquite EOP was reviewed and updated in 2023 to meet the State compliance. This is a key opportunity for integration.
Local Continuity of Operations Plan (COOP)	Yes	Identifies major capabilities. The Mesquite COOP revised in 2022, this is a key opportunity for integration.
Master Plan	No	Identifies policies on both manmade and natural hazards. At the time of this plan update the City of Mesquite does not indicate having a Master Plan.

Existing Planning Mechanisms – Mesquite, NV

Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
Capital Improvement Plan	Yes	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions, mitigation strategies. The City of Mesquite Capital Improvement plan is revised annually, this is a key opportunity for integration.
Building and Zone Codes and Ordinances	Yes	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy. Mesquite has adopted and adheres to the 2018 Building Code Suite; however, the City will be working to adopt the 2004 IBC Suite. This is a key opportunity for integration.
Stormwater Management Plan	Yes	Capability assessment, mitigation strategies. The City of Mesquite's Stormwater Management Plan was revised in October 2022, this is a key opportunity for integration.
Clark County, NV Climate Vulnerability Assessment	Yes	Identifies the current and future impacts of climate change in Clark County including the City of Mesquite.
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County, including Mesquite.
Community Wildfire Protection Plan	No	Identifies the County's priorities for wildfire fuel reduction projects. At the time of this update the CWPP was outdated (2005). The City does not have a CWPP because it falls under the County and State mitigation work related to the river which is a related wildfire risk.
Transportation Plan	Yes	Identifies transportation plans, programs, and projects within the County and City. The City of Mesquite's Transportation Plan was revised (2022), this is a key opportunity for integration.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction.
FEMA's National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction.
U.S Census Bureau	Yes	Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

Mitigation Projects and Activities

The City of Mesquite did complete a mitigation project in the last MJHMP update (2018).

Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Structural Emphasis (in 2018 MHJMP)	Cost Estimate	Estimated Timeline	Potential Funding Source	Status
Emergency Power	Provide additional emergency power, such as a generator equipment, for new and existing critical facilities to operate continuously but cannot do so for long durations of power outage. Generator power needed a primary shelter (City of Mesquite Fire & Rescue)	Earthquake, Flood, Climate Change, Wildfire	City of Mesquite Fire and Rescue	New/Proposed	\$280,000	1-5 years	FEMA Grant (PDM)	Completed
Mesquite Town Wash, Abbott Wash	Assessment of wash, inspection, cleaning and reshaping, vegetation control, species survey and removal, erosion control	Flood	City of Mesquite Public Works	Existing	\$300,000	Ongoing	City Budget, FDA, NDA	Completed

To support the planning area's mitigation goals, the Clark County MPSC identified 61 possible and unique mitigation projects and activities. Of these, six are from the City of Mesquite as identified in the following table.

Mitigation & Projects Summary, City of Mesquite	
Mitigation Project or Activity	Hazard(s) Addressed
Damage Assessment Forms for Flooding and Earthquake	Earthquake, Flood, Climate Change
Flooding-Levy Build Up	Flood
Senior Center Backup Power Supply	All Hazards
Recreation Center Backup Power Supply	All Hazards
Drought-Water Conservation Planning	Drought, Climate Change

Mitigation & Projects Summary, City of Mesquite	
Annual Review and Update of Hazard Mitigation Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Annual Review and Update of Local Emergency Operations Plan (LEOP)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)

STAPLE+E Rankings, City of Mesquite

STAPLE+E Rankings, City of Mesquite																							
X = N/A - Even Impact		+ = Positive Influence									- = Negative Influence												
STAPLE+E Criteria	Social		Technical			Administrative			Political			Legal			Economic				Environmental				Total Impact
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Goals	

STAPLE+E Rankings, City of Mesquite

Damage Assessment Forms for Flooding and Earthquake	X	-	+	X	-	X	-	X	+	+	X	+	+	X	+	+	X	+	+	X	X	+	+	11
Flooding-Levy Build Up	X	+	+	+	X	X	+	+	+	+	X	+	+	X	+	+	-	+	-	X	X	+	+	14
Senior Center Backup Power Supply	+	+	+	X	-	+	-	+	+	+	X	+	+	X	+	+	-	+	-	X	X	+	+	14
Recreation Center Backup Power Supply	+	+	+	X	-	+	-	+	+	+	X	+	+	X	+	+	-	+	-	X	X	+	+	14
Drought-Water Conservation Planning	X	-	+	X	-	+	+	X	+	+	X	+	+	X	+	+	+	+	+	X	X	+	+	14
Channel, Pulsipher Wash Channel"	+	+	+	+	-	X	+	+	+	+	X	+	+	X	+	+	+	-	+	X	X	+	+	16
Town Wash Detention Basin, Abbott Wash Detention Basin, Pulsipher Wash Detention Basin	+	+	+	+	-	X	+	+	+	+	X	+	+	X	+	+	+	-	+	X	X	+	+	16

Proposed and Carry-Over Mitigation Activities – City of Mesquite

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Mesquite 1	Town Wash Detention Basin, Abbott Wash Detention Basin, Pulsipher Wash Detention Basin	Assessment of basin, inspection, cleaning and reshaping, vegetation control, species survey and removal, erosion control	Flood	City of Mesquite Public Works	Medium (38.5)	Existing	\$500,000	Ongoing, Continuous through the five-year plan cycle.	City Budget, FDA, NDR	Carry-over project from the 2018 plan. Project Update: This project is being carried over to this plan update because it is still in process and is 80% complete.
Mesquite 2	Flooding-Levy Build Up	Build up the Levy of the Virgin River to ensure homes, building and resources are protected during floods.	Flood	City of Mesquite Public Works	Medium (30.3636365)	New	\$20 million	5 years	Regional Flood Control District	Proposed Project for the 2024 plan update.
Mesquite 3	Damage Assessment Forms for Flooding and Earthquake	Provide training for building inspector to properly perform building assessment after earthquakes or floods	Earthquake, Flood, Climate Change	City of Mesquite Developmental Services and Emergency Management	Medium (26)	New	\$10,000	1-2 years	Mesquite General Fund Federal Funds	Proposed Project for the 2024 plan update.
Mesquite 4	Recreation Center Backup Power Supply	Provide backup power supply to the Recreation Center as the identified shelter facility to operate independently.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections, Disease, Hazardous Materials,	City of Mesquite Public Works	Medium (25.54)	New	\$200,000	1-2 Years	ARPA	Proposed Project for the 2024 plan update.

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			and Terrorism)							
Mesquite 5	Senior Center Backup Power Supply	Provide backup power supply to the Senior Center as the identified shelter facility to operate independently.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	City of Mesquite Public Works	Medium (25.54)	New	\$100,000	1 Year	ARPA	Proposed Project for the 2024 plan update.
Mesquite 6	Drought-Water Conservation Planning	Develop and implement a city education program, focusing on resilience and drought conservation topics. Community members will be more prepared for climate hazards and can learn how to practice drought conservation sustainable planning	Drought, Climate Change	Virgin Valley Water District	Low (21.5)	New	\$250,000	Ongoing, Continuous through the five-year plan cycle.	Virgin Valley Water District (VVWD)	Proposed Project for the 2024 plan update.
Mesquite 7	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2024 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials,	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			and Terrorism)	Moapa Band of Paiutes						
Mesquite 8	Annual Review and Update of Continuity of Operations (COOP) Plan	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Mesquite 9	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Mesquite 10	Annual Review and Update of Local Emergency	Annual review and updated the County's LEOP to ensure compliance with NV DEM requirements	All Hazards (Climate Change, Drought, Earthquake, Excessive	Clark County OEM; Clark County Local Emergency Planning Commission	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
	Operations Plan (LEOP)		Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	(LEPC); All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes				conducted annually beginning January 2024.		

Deferred Projects List from Clark County MJHMP (2018) for the City of Mesquite

The City of Mesquite did not have any deferred projects.

Mitigation Prioritization Tables for the City of Mesquite

Mitigation Project Prioritization, City of Mesquite																		
Mitigation Project or Activity	STAPLE+ E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Damage Assessment Forms for Flooding and Earthquake	26	1	15			10		15								40	13.33333333	Medium
Flooding-Levy Build Up	30.3636365	1.5						15								15	15	Medium
Senior Center Backup Power Supply	25.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846154	Medium
Recreation Center Backup Power Supply	25.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846154	Medium
Drought-Water Conservation Planning	21.5	0.5	15			10										25	12.5	Low
Mesquite Town Wash, Abbott Wash Channel, Pulsipher Wash Channel	38.5	1.5						15								15	15	Medium

Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low
Annual Review and Update of Local Emergency Operations Plan (LEOP)	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.538 46154	Low

City of North Las Vegas

Planning Area

The City of North Las Vegas has become one of the fastest growing cities within the State of Nevada. As indicated on its website, <https://www.cityofnorthlasvegas.com/our-city/about-north-las-vegas>, North Las Vegas is a premier place to live, work and play, the City of North Las Vegas leads Southern Nevada in both new home construction and economic development. Our fast-and-faster, business-friendly approach has made the City a top destination nationally for development opportunities. The City of North Las Vegas has become a hub for new job creation and economic diversification, attracting multiple fortune 500 and global brands, including Amazon, Sephora, Ball Corp., Crocs Inc. and Kroger. This success has enabled the City to reinvest in the community with expanded police and fire service, new parks, roads and amenities, and additional programming to serve residents' diverse needs.

Figure 128: City of North Las Vegas Metro Area Map (Source: City of North Las Vegas, Website)

Jurisdiction Profile

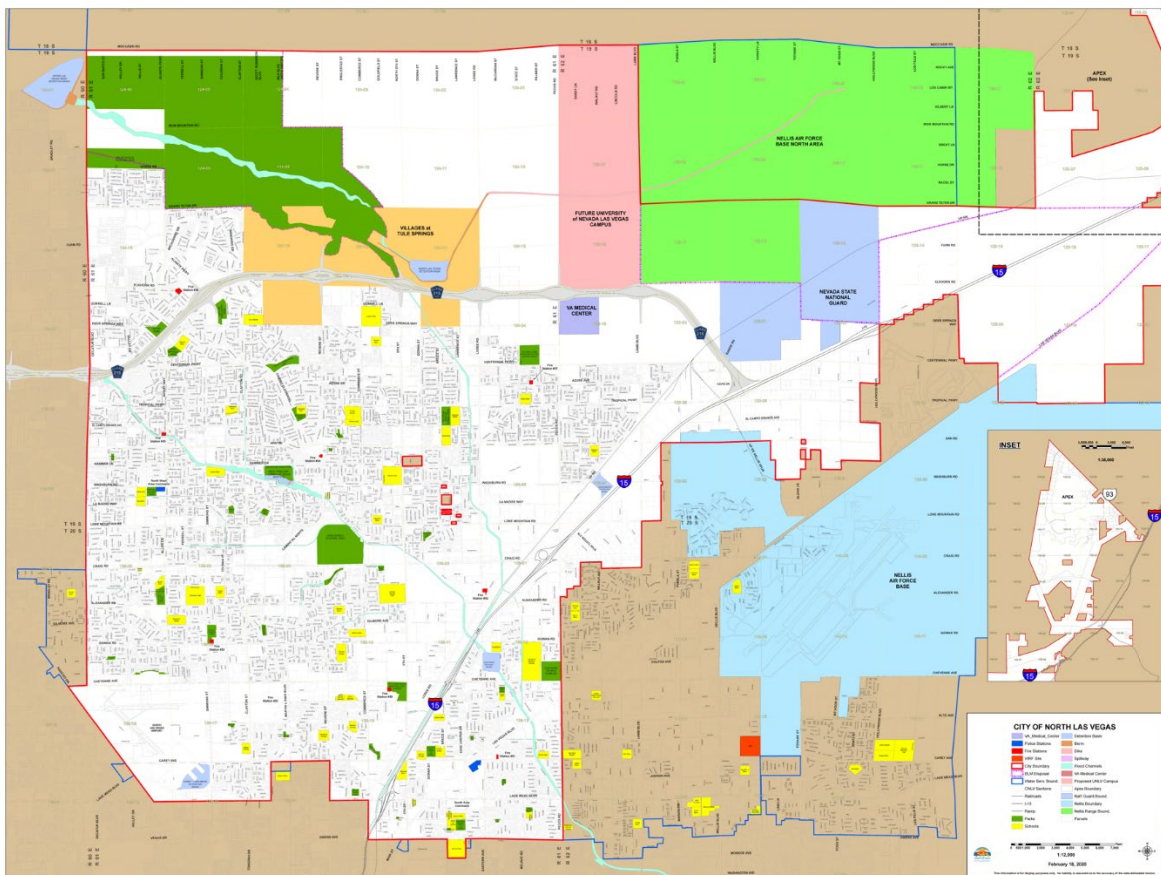
- Planning Area
- Demographics & Hazard Vulnerabilities
- Critical Facilities Information

Hazard Risk Assessment

- National Flood Insurance Program (NFIP) Summary

Mitigation Strategy & Capabilities

- Capabilities Assessment
- Completed and Deferred Mitigation Projects (2018)
- Proposed Mitigation Activities (including STAPLE+E)



Demographics and Hazard Vulnerabilities

Demographic data is crucial to effective hazard mitigation planning. This is especially true for the numbers associated with population, housing units, and building permits as they, over time, can increase or decrease a planning area's vulnerabilities to any/all identified natural hazards. It is important to note, however, that demographic data can fluctuate or even lag in the short term, i.e., one to two years. While these numbers tend to self-correct over time, temporary decreases or increases in population and/or the number of housing units may occur. In these instances, it is best to consider demographic data from longer periods, such as ten (10) to 20 years, for mitigation planning purposes.

As for the City of North Las Vegas, the U.S. Census Bureau determined its population to be 115,488 in 2000. That number increased by 87.9% to 216,961 in 2010. In 2020, the U.S. Census Bureau determined the City of North Las Vegas population to be 262,527, an increase of 21%.

Similarly, the U.S. Census Bureau determined the number of housing units in the City of North Las Vegas to be 76,073 in 2010 but increased its estimate by 13.5% to 86,353 in 2020.

The following table provides a visual representation of the City of North Las Vegas demographic information (as previously described) and how it specifically relates to hazard probability and the planning area’s vulnerabilities to all identified natural hazards.

Demographics & Vulnerability, City of North Las Vegas								
Population (2000 U.S. Census)	Population 2010 U.S. Census	Population (2020 U.S. Census)	% of Population Change (2010-2020)	# of Housing Units (2020 Census)	% of Housing Units (2010-2020)	Identified Hazards	CPRI Results	Probability of Hazards (From Risk Summary)
111,488	216,961	262,527	21%	86,353	13.5%	Climate Change	H (3.55)	Highly Likely
						Drought	S (4)	Highly Likely
						Extreme/ Excessive Heat	M (2.75)	Highly Likely
						Fissures & Subsidence	L (1.65)	Likely
						Flood, Landslides & Debris Flow, Flooding	H (3)	Occasional
						Geohazards-Earthquake and Seismic Hazards	H (3.1)	Likely
						Severe Storms	M (2.9)	Highly Likely
						Fire, Wildland Urban Interface (Wildfire)	L (1.0)	Highly Likely
						Hazardous Materials	M (2.75)	Highly Likely
						Infrastructure, Dam Failure	M (2.65)	Occasional
						Infestation	L (1.6)	Likely
						Infectious Disease	H (3.25)	Occasional
						Terrorism	M (2.2)	Highly Likely

Data Source: [U.S. Census Bureau, Nevada: 2010 Population and Housing Unit Count](#); and [U.S. Census Bureau, Profile: data.census.gov](#); Percent of Population Change Calculation Change: <https://www.omnicalculator.com/math/percentage-change#how-to-calculate-the-percent-change>

Critical Facilities Information

As previously stated in this MJHMP Update, certain facilities have a net positive value on the community, i.e., they contribute to the public good by facilitating the basic functions of society. These facilities maintain order, public health, education, and help the local economy function. Additionally, there are facilities and infrastructure integral to disaster response and recovery operations. Conversely, some of these are of extreme importance due to the negative externalities created when impacted by a disaster. What fits these definitions varies slightly from community to community, but the definitions remain as a guideline for identifying critical infrastructure and facilities.

The following table and map summarize the identified critical facilities and infrastructure for the City of North Las Vegas. A complete list can be found in [Appendix E](#) of this plan.

City of North Las Vegas - Critical Facilities Listing																					
	Casinos/Resorts/ Hotels	Child Care	City Hall	Communications	Community Colleges	Correctional Facilities	Court House	Fire Stations	Government Offices	Hazardous Materials	Hospitals	Native Reservations	Natural Gas	Places of Worship	Police	Schools	Solar	Stadiums	Transportation	University	Water/Sewer
City of North Las Vegas	7	33	1	46	1	3	1	8	44	9	9	-	-	39	3	52	2	-	5	-	1,044

National Flood Insurance Program (NFIP) and Community Rating System (CRS) Summary

According to FEMA, the National Flood Insurance Program (NFIP) is a federal insurance program that enables property owners in member communities to purchase flood insurance. This insurance is only made available to municipalities that adopt and enforce a floodplain management ordinance. The fundamental goal of NFIP floodplain management requirements is to reduce the threat to lives and the potential for property damage in flood-prone areas. Each municipality that participates in the NFIP has a Flood Insurance Rate Map (FIRM) that is issued by FEMA. This document maps out flood hazard areas in the municipality.

Like several other jurisdictions in Clark County, the City of North Las Vegas participates in the NFIP. However, it is not listed as an eligible community of the Community Rating System (CRS), <https://www.fema.gov/cis/NV.html>, as of February 2023. CRS is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirement of NFIP.

The following tables contain NFIP & CRS Community Status information specific to the City of North Las Vegas.

NFIP & CRS Community Status, City of North Las Vegas					
CID	CRS Entry Date	Initial FHBM Identified	Initial Firm Identified	Current Effective Map Date	Registration/Entry Date
320007#	10/01/1991	02/15/1974	01/16/1981	11/16/2011	01/16/1981

Data Source: FEMA - Nevada National Flood Insurance Program Community Status Book (<https://www.fema.gov/cis/NV.html>), February 2023

Building Codes Ordinance for North Las Vegas

City Code [Chapter 8.50 – Stormwater Regulations](#). Also, the City of North Las Vegas follows Clark County Regional Flood Control District's [Uniform Regulations for Control Drainage](#) effective September 30, 2022

Note: Information related to Repetitive Loss properties in the planning area can be found in Flooding Hazard profile of this MJHMP update under – [Repetitive Loss Structure](#).

The Clark County Regional Flood Control District (CCRFCD) reviews all plans related to land development to ensure compliance with NFIP and local floodplain regulations can be found on the CCRFCD website under "[Land Development](#) ." This compliance includes construction adjacent to and within the floodplain with the County. This process meets the minimum federal regulations set forth by the NFIP. CCRFCD website mentions that the submission of land development can be submitted electronically. For more information about the land development review process, can be found here: <https://www.regionalflood.org/programs-services/projects-engineering/land-development-review-status>. For more information related to floodplain management in the North Las Vegas, NV, contact Mark Escobedo at escobedom@cityofnorthlasvegas.com.

NFIP Policies, Claims & Payments, City of North Las Vegas

Jurisdiction	Comm ID	# of Policies	Total Coverage	Total Written Premium + FPF	Floodplain Management Role
North Las Vegas*	320007#	96	\$30,101,000	\$57,771	Provides in-house floodplain management. Participant of the CCFCFCD

Notes: *Indicates CRS participating jurisdiction.

Data Dictionary as mentioned in the [NFIP Policy Information by State and Community document](#):

Community ID: The 6-character community ID in which the policy resides.

of Policies: The number of policies in force for a given state and combination of attributes.

Total Coverage: The total building and contents coverage for the policies in force.

Total Written Premium + FPF: This represents the sum of the premium and the FPF (federal policy fee) for the policies in force.

Data Sources: Participation – FEMA’s Community Status Book Report, Nevada, 03/01/2023. Policy statistics (current as of 03/01/2023) <https://www.fema.gov/cis/NV.html>

NFIP Policy Information by State (Policy statistics current as of 1/31/2023)

https://nfpiservices.floodsmart.gov/sites/default/files/nfip_policy-information-by-state_20230131.xlsx

Repetitive Loss (RL) Properties

As of December 5, 2022, there are Repetitive Loss (RL) properties, and subsequently, NFIP-insured properties within Clark County. The City of North Las Vegas did not have any recorded RL properties.

Mitigation Strategy and Capabilities

Capabilities Assessment, City of North Las Vegas

As with any jurisdiction, there are numerous stakeholders involved in developing a mitigation strategy. Each type of stakeholder provides a set of capabilities, in some cases broad and in others narrow, by which they can help increase the planning area’s resiliency. The broadest form of mitigation capabilities comes from counties, such as Clark County, and municipal governments, such as the City of North Las Vegas. Their inherent legal authority allows them to institute the greatest regulatory and developmental changes.

The primary capabilities of Clark County and the City of North Las Vegas are 1) institutional, 2) political, 3) technical, and 4) fiscal. Representing the City of North Las Vegas. A capability assessment was conducted of the MJHMP participating jurisdictions’ authorities, policies, programs, and resources. From the assessment, goals and mitigation actions were developed. Capabilities for the City of North Las Vegas are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory Capabilities

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Planning and Regulatory Capability Assessment for the City of North Las Vegas

PLANS	Yes/No	<ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Community Wildfire Protection Plan	No	No plan. No use for mitigation strategy or actions
Comprehensive/Master Plan	Yes	No, the plan address land development. No use for mitigation strategy or actions.
Continuity of Operations Plan	Yes	Annual updates. Yes, it addresses all hazards, identifies projects and includes mitigation strategies, and can be used to implement mitigation actions.
Capital Improvement Plan	Yes	Annual with forward projection. Yes, it addresses all hazards, identifies projects and includes mitigation strategies, and can be used to implement mitigation actions.
Economic Development Plan	Yes	Annual with forward projection. Yes, it addresses all hazards, identifies projects and includes mitigation strategies, and can be used to implement mitigation actions.
Emergency Operations Plan	Yes	Updated 2021. Yes, it addresses all hazards, identifies projects and includes mitigation strategies, and can be used to implement mitigation actions.
Stormwater Management Plan	Yes	The plan address city and developer storm water protection. No use for mitigation strategy or actions.
Transportation Plan	Yes	The plan address roadways. No use for mitigation strategy or actions.
Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	<ul style="list-style-type: none"> What type of codes? Are codes adequately enforced?
Building Codes	Yes	The 2018 IBC Code Suite. Yes, codes are adequately enforced. ICC, yes enforced. For more information about the City of North Las Vegas Building Codes can be found here .
Site plan review requirements	Yes	Regional criteria. Yes, enforced by inspectors and engineers
Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		
LAND USE PLANNING & ORDINANCES	Yes/No	<ul style="list-style-type: none"> Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Floodplain ordinance	Yes	Yes, as of March 14, 2023, City Ordinance Chapter 8.50 – Stormwater Regulations can be found online here .
Subdivision ordinance	Yes	Yes, as of March 14, 2023, City Ordinance Title 16 – Development Code, Title 16.01.190 – Subdivision can be found online here .
Zoning ordinance	Yes	Yes, as of March 14, 2023, City Ordinance Title 17 – Zoning Ordinances can be found online here .
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		
PLANS		<ul style="list-style-type: none"> Does the plan address hazards?

	Yes/No	<ul style="list-style-type: none"> Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Community Wildfire Protection Plan	No	The city follows under the County and State mitigation work related to the river that are related to wildland fire risk
Comprehensive/Master Plan	N/A	Per the last MJHMP (2018), the City of Mesquite indicated that the State of Nevada requires jurisdictions to address seismic activity. Mesquite is working to confirm if have an updated copy of this plan for MJHMP record
Continuity of Operations Plan	Yes	Yes, updated in 2022
Capital Improvement Plan	Yes	Yes, updated October 2022
Economic Development Plan	Yes	Yes, updated October 2022
Emergency Operations Plan	Yes	Yes, and EOP was reviewed and updated January 2023 to meet state of NV compliance
Stormwater Management Plan	Yes	Yes, updated October 2022
Transportation Plan	Yes	Yes, updated October 2022
Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	<ul style="list-style-type: none"> What type of codes? Are codes adequately enforced?
Building Codes	Yes	The IBC 2018 Code, however the City will be working to adopt 2004 IBC Code Suite. These codes are adequately enforced. More information for the City of Mesquite Building Codes can be found here .
Site plan review requirements	Yes	Yes, the City Building Inspector completed site plan review related to flooding and earthquake and the City Fire Inspector completes review for fire hazards.
Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses..		
LAND USE PLANNING & ORDINANCES	Yes/No	<ul style="list-style-type: none"> Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Floodplain ordinance	Yes	Yes, updated October 2022. Title – Flood Control District Ordinance can be found online here .
Subdivision ordinance	Yes	Yes, updated October 2022, Chapter 6 Subdivision Regulations can be found online here .
Zoning ordinance	Yes	Yes, updated October 2022, Chapter 7 – Zoning Districts Ordinance can be found online here .
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		

Administrative and Technical Capabilities

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, and floodplain managers. Small communities may rely on other government entities such as counties or special districts for resources. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administrative and Technical Capability Assessment for the City of North Las Vegas

ADMINISTRATION	Yes/No	Describe capability. Is coordination effective?
Mutual aid agreements	Yes	Yes
Planning Commission	Yes	They are effective in communication with the City Council.
TECHNICAL STAFF	Yes/No FT/PT	Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes	Yes, to all.
Community Planner	Yes	Yes, to all.
Emergency Manager	Yes	Yes, to all.
Engineer	Yes	Yes, to all.
Fire Chief	Yes	Yes, to all.
Floodplain Manager/Administrator	Yes	Yes, to all.
GIS/HAZUS Coordinator	Yes	Yes, to all.
Sheriff	No.	City Police Chief
Procurement Services Manager	Yes	Procurement Manager and Accounting Manager
How can capabilities be expanded and improved to reduce risk?		By continuing to utilize and seek improved methods for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts. An important component is the use of trained grant writers with the knowledge and skill sets to research and apply for federal funding opportunities.

Financial Capabilities

The following table contains a list of administrative and financial capabilities available to the City of North Las Vegas. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Financial Capability Assessment for the City of North Las Vegas

FINANCIAL	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Has the funding resource been used in past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Building Resilient Infrastructure and Communities Grant (BRIC)	No	
Hazard Mitigation Grant Program (HMPG)	No	No prior awards. However, the City would like to pursue funding through this program for mitigation or flood activities.
Pre-Disaster Mitigation grant program (PDM)	No	No, the City does not currently have activities planned to fit into that funding.
Earthquake Mitigation Funds (Nevada Earthquake Safety Council)	No	No, the City does not currently have activities planned to fit into that funding.
Flood Mitigation Assistance grant program (FMA)	No	
Water Preservation Funds (SWNA)	Yes	Yes, the City currently has an active project funded through SNPLMA to support Water Preservation. The City is in the process of a Citywide Turf Reductions Program in Parks. The City also participates in Regional Water Preservation Programs with Southern Nevada Water Authority (SWNA). Additionally, the City plan to apply for BOR funding to increase water preservation abilities.
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)	No	No, the City does not currently have activities planned to fit into that funding.
Capital improvements project funding	Yes	Yes, The CIP is approved annually by City Council and managed by the Public Works Department. Many of the CIP projects are funded through a blend of local and federal grant dollars. Current CIP items included flood mitigation and control activities, water preservation, protection systems for water and sewer systems, City turf reduction, and park irrigation improvements.
Community Development Block Grant	Yes	Yes, CDBG formula grant is received annually by the City. These funds can be used for mitigation projects, but 51% or more beneficiaries must be low to moderate income persons. Additionally, the highest need for these funds at this time is community services. The City has requested HUD Community Project Funding for preparedness activities.
Authority to levy taxes for specific purposes	No	No, Per NRS, the City is not authorized to levy taxes.
Impact fees for new development	Yes	The City has a schedule for development fees. These fees are used to support the infrastructure growth and operational costs to services developing areas.
Incur debt through special tax bond	No	The City may, under the City Charter, levy a special assessment tax. However, the City does

		not have plans to do so.
Incur debt through general obligation bonds	Yes	Yes, the City may, under the City Charter, levy a special assessment or tax. However, the City does not have plans to do so. It has done so in the past for infrastructure, projects including water facilities.
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.
FINANCIAL	Yes/No	<ul style="list-style-type: none"> • Has the funding resource been used in past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMPG)	No	
Pre-Disaster Mitigation grant program (PDM)	No	
Earthquake Mitigation Funds (Nevada Earthquake Safety Council)	No	
Flood Mitigation Assistance grant program (FMA)	No	
Water Preservation Funds (SWNA)	No	
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)		
Capital improvements project funding	No	
Community Development Block Grant	No	
Authority to levy taxes for specific purposes	No	
Impact fees for new development	No	
Incur debt through special tax bond	No	
Incur debt through general obligation bonds	No	
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.

Education and Outreach Capabilities

The following table lists educational and public outreach capabilities. These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Education and Outreach Capability Assessment for the City of North Las Vegas

PROGRAM / ORGANIZATION	Changes since 2018 Plan Update Yes or No	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Jurisdiction (County/City/Tribe) Website and Social Media (PIO/PAO Programming)		Yes	The County maintains a website and accounts with Facebook , Instagram , Nextdoor , Twitter , and YouTube . County libraries, law enforcement, and fire/rescue agencies also maintain social media accounts. These resources are regularly used to convey hazard mitigation and disaster-related information to the public, as well as develop awareness of in-person and online events. They can be used to support future mitigation activities.
Firewise Communities certification		Yes	The Community Wildfire Protection Plans also serve to establish future mitigation projects and actions to support disaster resilience.
Storm Ready certification		Yes	The County Storm Ready Certification issued through the National Weather Service is current and due for renewal in 2023 (i.e., applies to all of the County).
Citizen groups focused on emergency preparedness, environmental protection, etc.		Yes	CERT (Community Emergency Response Team), MRC (Medical Reserve Corps), ARES (Amateur Radio Emergency Services), Faith Based organizations such as the First Baptist support group, Salvation Army, and United Way of Southern Nevada. These organizations provide responder Support and Emergency Management and EOC support to local communities and local government during times of disaster and preparedness training for local needs.
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)		Yes	The County frequently addresses public information needs through a variety of mechanisms. The local government organizations utilize a well-developed and coordinated PIO group with partners from all levels of government including city, county departments, and federal and state offices. This is especially effective during times of disaster. Clark County Emergency Management utilizes public presentations and media outlets (e.g., radio, print) to provide public outreach on emergency preparedness. The County website is a primary tool for dissemination of public information.
Public-private partnership initiatives addressing disaster-related issues		Yes	Examples of organizations for this effort include VOAD (Volunteer Organizations Active in Disaster), LEPC (Local Emergency Planning Committee) for addressing all hazard issues.
How can capabilities be expanded and improved to reduce risk?			This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

Planning Integration, City of North Las Vegas

Mitigation does not end at plan approval. Plan approval is only the beginning. The successful implementation of any number of mitigation activities and projects requires the coordination and collaboration of a number of local agencies, departments, and organizations. Each group has varying decision-making processes and authorities governing their actions. This plan, once approved, must be integrated into their decision-making processes as a tool for improving their respective resiliencies.

Clark County intends to incorporate this Clark County Multi-Jurisdictional Hazard Mitigation Plan (update) into other planning documents the County and its participating jurisdiction(s)' (which includes Clark County Unincorporated Area, cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, NV, and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) utilizes. Where applicable, portions of the previous MJHP (2012 and 2018) were considered for incorporation into other jurisdictions plans (i.e., participating cities and tribal government comprehensive/master plans) and programs. Also, portions of the previous MJHMP (2012 and 2018) in some form was incorporated into the Clark County Emergency Operations Plan (2019), and other existing or future public safety-related plans. This plan is not only useful for implementing mitigation activities and projects but also critical in creating development plans and capital improvement projects. The risk assessment in this plan can prevent unmanaged and dangerous development in identified hazard areas or other portions of the planning area that decrease a community's overall resiliency.

North Las Vegas, NV

Existing Planning Mechanisms – North Las Vegas, NV		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates.
Local Emergency Operations Plan	Yes	Identifies major capabilities. The City of North Las Vegas EOP is revised in annually, this is a key opportunity for integration.
Local Continuity of Operations Plan (COOP)	Yes	Identifies major capabilities. The City of North Las Vegas COOP is revised in annually, this is a key opportunity for integration.
Master Plan	No	Identifies policies on both manmade and natural hazards. At the time of this plan update the City of North Las Vegas has a Master Plan but it addresses land development and not mitigation strategy or actions. This is a key opportunity for integration in the future.

Existing Planning Mechanisms – North Las Vegas, NV

Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
Capital Improvement Plan	Yes	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions, mitigation strategies. The City of North Las Vegas Capital Improvement plan is revised annually, this is a key opportunity for integration.
Building and Zone Codes and Ordinances	Yes	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy. North Las Vegas has adopted and adheres to the 2018 Building Code Suite. However, the City will be working to adopt the 2004 IBC Suite, this is a key opportunity for integration.
Stormwater Management Plan	Yes	Capability assessment, mitigation strategies. The City of North Las Vegas Stormwater Management Plan addresses city and developer stormwater protection but not mitigation strategy or actions. This is a key opportunity for integration in the future.
Clark County, NV Climate Vulnerability Assessment	Yes	Identifies the current and future impacts of climate change in Clark County including the City of North Las Vegas.
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County, including North Las Vegas.
Community Wildfire Protection Plan	No	Identifies the County’s priorities for wildfire fuel reduction projects. At the time of this update the CWPP was outdated (2005). The City does not have a CWPP and there is no use for mitigation strategies or actions related to wildfire fuel reduction projects.
Transportation Plan	Yes	Identifies transportation plans, programs, and projects within the County. The City of North Las Vegas Transportation Plan addresses roadways, but not mitigation strategy or actions, this is a key opportunity for integration.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction.
FEMA’s National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction.
U.S Census Bureau	Yes	Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

Mitigation Projects and Activities

The City of North Las Vegas did not complete a mitigation project in the last MJHMP update (2018). To support the planning area’s mitigation goals, the Clark County MPSC 61 possible and unique mitigation projects and activities. Of these, eleven (11) are from the City of North Las Vegas as identified in the following table.

Mitigation & Projects Summary, City of North Las Vegas	
Mitigation Project or Activity	Hazard(s) Addressed
Lower Las Vegas Wash Detention Basin Inflow Channel	Flooding
Range Wash - Las Vegas Diversion Channel	Flooding
Las Vegas Boulevard Storm Drain	Flooding
Range Wash Beltway Conveyance	Flooding
Beltway Collection System - Pecos	Flooding
Speedway North Detention Basin and Outfall	Flooding
Speedway #3 Detention Basin Expansion and Inflow/Outflow Facilities	Flooding
North Apex - System 1 Detention Basin and Outfall	Flooding
Turf Conversion Subsidy	Drought
Flood Control	Flood, Dam Failure
Emergency Power	Earthquake, Flood, Climate Change, Wildfire
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections)
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections)

Mitigation & Projects Summary, City of North Las Vegas	
Mitigation Project or Activity	Hazard(s) Addressed
Annual Review and Update of Hazard Mitigation Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections)
Annual Review and Update of Local Emergency Operations Plan (LEOP)	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections)

STAPLE+E Rankings, City of North Las Vegas

STAPLE+E Rankings, City of North Las Vegas																									
X = N/A - Even Impact		+ = Positive Influence										- = Negative Influence													
STAPLE+E Criteria		Social		Technical		Administrative			Political			Legal			Economic			Environmental				Total Impact			
Considerations		Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species		Effect on HAZMAT / Waste Sites	Consistent with Community Goals	Consistent with Federal Laws
Aquifer Storage and Recovery (Water Use and Conservation)		-	-	+	+	-	+	+	+	+	X	+	+	+	+	+	X	+	+	+	+		X	+	+
NIPP's Security and Resilience Challenge (Smart City)		-	-	+	+	-	+	+	+	+	X	+	+	+	+	+	X	+	+	-	-	-	+	+	15
NIPP's Security and Resilience Challenge (Connected Corridors)		-	-	+	+	-	+	+	+	+	X	+	+	+	+	+	X	+	+	-	-	-	+	+	15

Proposed and Carry-Over Mitigation Activities – City of North Las Vegas

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
NLV 1	Lower Las Vegas Wash Detention Basin Inflow Channel	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (35.5)	New	\$4M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV2	Range Wash - Las Vegas Diversion Channel	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (35.5)	New	\$11M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV 3	Las Vegas Boulevard Storm Drain	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (35.5)	New	\$10M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV 4	Range Wash Beltway Conveyance	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (35.5)	New	\$15M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV 5	Beltway Collection System - Pecos	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (35.5)	New	\$5M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV 6	Speedway North Detention Basin and Outfall	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (35.5)	New	\$16.5M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV 7	Speedway #3 Detention Basin Expansion and Inflow/Outflow Facilities	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (35.5)	New	\$5M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV 8	Turf Conversion Subsidy	Turf Conversion Study - Provide an additional turf conversion to supplement the already existing Southern Nevada Water Authority Program	Drought	North Las Vegas Public Works	Medium (29)	Existing	\$500,000	2-5 years	Federal and State Funds	Carry-over project from the 2018 plan. This project was carried over from the 2018 MJHMP update due to lack of staffing and funding.
NLV 9	North Apex - System 1 Detention Basin and Outfall	Repair and replacement of channel bottom areas and basin erosion damage.	Flooding	North Las Vegas Public Works	Medium (28)	New	\$31M	2-5 years	RFCD and Grants (Federal and State)	Proposed Project for 2024 plan.
NLV 10	Flood Control	Alleviate the damage associated with flooding through new and	Flood, Dam Failure	North Las Vegas Public Works	Medium (27)	Existing	Upon receipt of grant funding,		FEMA Grants with Match from Clark County	Carry-over project from the 2018

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		reinforced flood control projects, including storm drains, culverts, drop inlets, channels, and detention basins. Oak Island Storm Drain Mitigation Project: The City will eliminate the last residential Flood Zone "A" lots in the City's jurisdiction; 100% capture of water flow; flow redirect conservation. Protect existing county/city assets and new developments from effects of floods within the 100-year floodplain.					within grant funding period.	2-5 years	Regional Flood Control District	plan. This project was carried over from the 2018 MJHMP update due to lack of staffing and funding.
NLV 11	Emergency Power	Provide additional emergency power, such as a generator equipment, for new and existing critical facilities to operate continuously but cannot do so for long durations of power outage. Emergency Generators for Critical Infrastructure and Sheltering Facilities	Earthquake Flood Climate Change Wildfire	North Las Vegas Public Works	Low (20.5)	Existing	Grant Application Opportunities	2-5 years	FEMA Grants; Potential CIP Funding	Carry-over project from the 2018 plan. This project was carried over from the 2018 MJHMP update due to lack of staffing and funding.
NLV 12	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2024 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections, Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
NLV 13	Annual Review and Update of Continuity of Operations (COOP) Plan	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
NLV 14	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes)	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
NLV 15	Annual Review and Update of Local Emergency Operations Plan (LEOP)	Annual review and updated the County's LEOP to ensure compliance with NV DEM requirements	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/F issues,	Clark County OEM; Clark County Local Emergency Planning Commission (LEPC); All Jurisdictions (Clark County Departments,	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes						

Note: Mitigation Project Labeled "NLV 8 – Turf Conversion Subsidy" was a project that was listed under Clark County Unincorporated as an ongoing project from the 2012 MJHMP. In the last plan update (2018), the responsible party for this project was the Southern Nevada Water Authority Program (SWNA). During the planning process, North Las Vegas Public Works included this project in their mitigation project/action this planning cycle due to their collaborative work between the North Las Vegas Public Works Department and the Southern Nevada Water Authority Program (SWNA).

Deferred Projects List from Clark County MJHMP (2018) for the City of North Las Vegas

The City of North Las Vegas did not have any deferred projects.

Mitigation Prioritization Tables for the City of North Las Vegas

Mitigation Project Prioritization, North Las Vegas, NV																		
Mitigation Project or Activity	STAPLE+ E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Lower Las Vegas Wash Detention Basin Inflow Channel	35.5	1.5						15								15	15	Medium
Range Wash - Las Vegas Diversion Channel	35.5	1.5						15								15	15	Medium
Las Vegas Boulevard Storm Drain	35.5	1.5						15								15	15	Medium
Range Wash Beltway Conveyance	35.5	1.5						15								15	15	Medium
Beltway Collection System - Pecos	35.5	1						15								15	15	Medium
Speedway North Detention Basin and Outfall	35.5	1.5						15								15	15	Medium
Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11,538 46154	Low
Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11,538 46154	Low

Mitigation Project Prioritization, North Las Vegas, NV

Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11,538 46154	Low
Annual Review and Update of Local Emergency Operations Plan (LEOP)	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11,538 46154	Low

Mitigation Project Prioritization, North Las Vegas, NV

Mitigation Project or Activity	STAPLE+ E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
North Apex - System 1 Detention Basin and Outfall	29	1						15								15	15	Medium
Flood Control	27	1		5				15								30	15	Medium
Turf Conversion Subsidy	24	1			10											20	10	Low
Emergency Power	20.5	0.5	15			15		15								60	15	Low

Las Vegas Paiutes Tribe

Planning Area

The Tudinu (or Desert People), ancestors of the Las Vegas Paiute Tribe, occupied the territory encompassing part of the Colorado River, most of Southeastern Nevada and parts of both Southern California and Utah. Per their website, <https://www.lvpaiutetribes.com>, the tribe established the Las Vegas Paiute Colony on December 30, 1911, ranch owner Helen J. Stewart deeded 10 acres of her land in downtown Las Vegas to the Paiutes, establishing the Las Vegas Paiute Colony. The Paiutes became a Sovereign Tribal Nation when the Indian Reorganization Act of June 18, 1934, in conjunction with the Las Vegas Paiute Tribal Constitution, approved on July 22, 1970, recognized the Tribe as a Sovereign nation.

Note: At the time of this plan update, Las Vegas Paiute Tribe did not provide any culturally sensitive information or maps to include in this plan update.

Jurisdiction Profile

- Planning Area
- Demographics & Hazard Vulnerabilities
- Critical Facilities Information

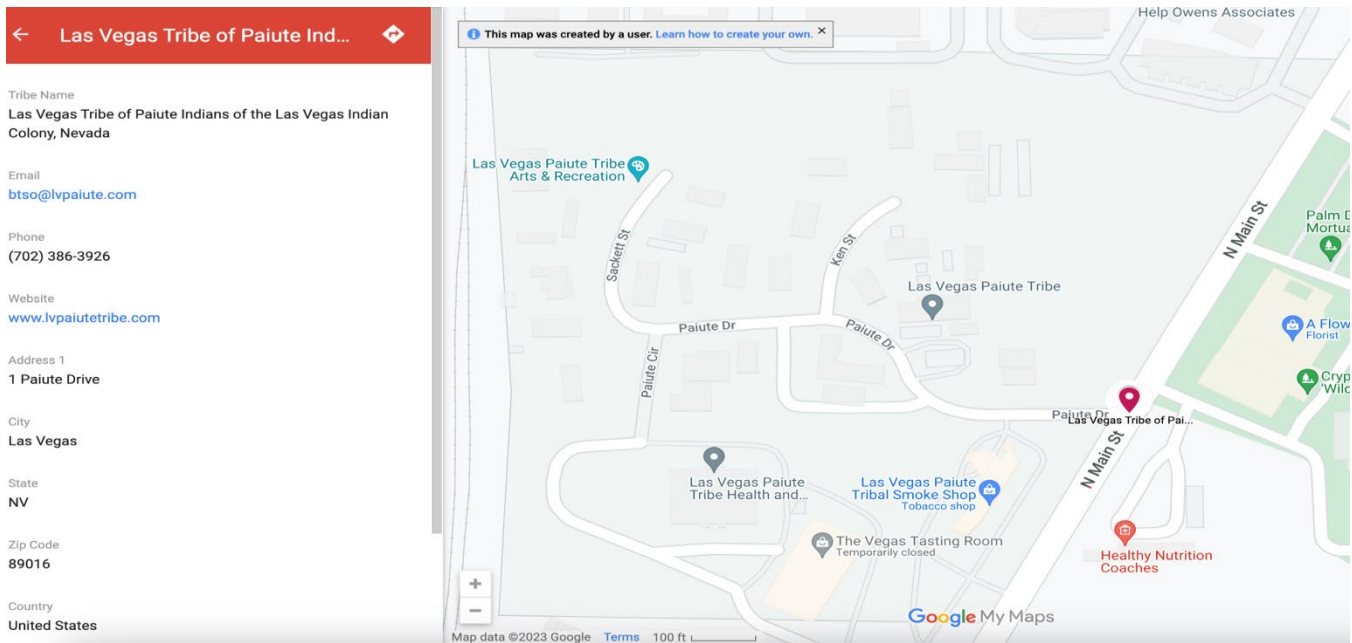
Hazard Risk Assessment

- Hazard Analysis and Risk Assessment

Mitigation Strategy & Capabilities

- Capabilities Assessment
- Completed and Deferred Mitigation Projects (2018)
- Proposed Mitigation Activities (including STAPLE+E)

Figure 129: Las Vegas Tribe of Paiute Indians Map



Source: US Native American Indian Tribal Database - MyGoogleMap

Demographics and Hazard Vulnerabilities

Demographic data is crucial to effective hazard mitigation planning. This is especially true for the numbers associated with population, housing units, and building permits as they, over time, can increase or decrease a planning area's vulnerabilities to any/all identified natural hazards. It is important to note, however, that demographic data can fluctuate or even lag in the short term, i.e., one to two years. While these numbers tend to self-correct over time, temporary decreases or increases in population and/or the number of housing units may occur. In these instances, it is best to consider demographic data from longer periods, such as ten (10) to 20 years, for mitigation planning purposes.

As for Clark County (including the Las Vegas Paiute Tribe), the U.S. Census Bureau determined the Las Vegas Paiute Tribe has a population of 111 residents with 37 housing units as reported by the [U.S. Census Bureau's My Tribal Area website](#). This website provide U.S. Census data from 2017-2021 American Community Survey 5-Year Estimates from Tribal Nations.

The following table provides a visual representation of Las Vegas Paiute Tribe demographic information (as previously described) and how it specifically relates to hazard probability and the planning area’s vulnerabilities to all identified natural hazards.

Demographics & Vulnerability, Las Vegas Paiute Tribe				
Population (2017-2021 ACS 5-year Estimates)	# of Housing Units (2017-2021 ACS 5-year Estimates)	Identified Hazards	CPRI Results	Probability of Hazards (From Risk Summary)
111	37	Climate Change	H (3.55)	Highly Likely
		Drought	H (3.55)	Highly Likely
		Extreme/ Excessive Heat	H (3.25)	Highly Likely
		Fissures & Subsidence	L (1.85)	Occasional
		Flood, Landslides & Debris Flow, Flooding	H (3.55)	Highly Likely
		Geohazards-Earthquake and Seismic Hazards	H (3.7)	Likely
		Severe Storms	H (3)	Highly Likely
		Fire, Wildland Urban Interface (Wildfire)	M (2)	Highly Likely
		Hazardous Materials	H (3.6)	Highly Likely
		Infrastructure, Dam Failure	L (1)	Occasional
		Infestation	M (2.05)	Likely
		Infectious Disease	M (2.05)	Occasional
		Terrorism	H (3.85)	Highly Likely

Note: On the U. S Census Bureau, My Tribal Area website, the Las Vegas Paiute tribe is mentioned as the Las Vegas Indian Colony
 Data Source: [U.S. Census Bureau, My Tribal Area, 2017-2021 American Community Survey 5-Year Estimates](#)

Critical Facilities Information

As previously stated in this MJHMP Update, certain facilities have a net positive value on the community, i.e., they contribute to the public good by facilitating the basic functions of society. These facilities maintain order, public health, education, and help the local economy function. Additionally, there are facilities and infrastructure integral to disaster response and recovery operations. Conversely, some of these are of extreme importance due to the negative externalities created when impacted by a disaster. What fits these definitions varies slightly from community to community, but the definitions remain as a guideline for identifying critical infrastructure and facilities.

The following table and map summarize the identified critical facilities and infrastructure for the Las Vegas Paiute Tribe. A complete list can be found in [Appendix E](#) of this plan update.

Critical Facilities: Tribal Nation - Las Vegas Paiute Tribe																					
	Casinos/Resorts/ Hotels	Child Care	City Hall	Communications	Community Colleges	Correctional Facilities	Court House	Fire Stations	Government Offices	Maintenance	Hospitals\ Medical Clinic	Native Reservations	Natural Gas	Places of Worship	Police	Schools	Power Station	Stadiums	Transportation	University	Water/Sewer
Las Vegas Paiute Tribe	0	1	0	0	0	0	0	0	2	0	1	0	0	0	1	0	1	0	0	0	2

Hazard Analysis and Risk Assessment

Per FEMA Guidance, the first step in developing the Risk Assessment is identifying the hazards that have a reasonable risk of occurring in Clark County and its participating jurisdictions which included Clark County Unincorporated area, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation. Proper identification allows for appropriate and well-planned action in order to mitigate the extent and impact of a hazard event. It also helps facilitate emergency response and recovery operations. Further, while not all disaster contingencies can be planned for, applying an all-hazards approach to the mitigation process does yield greater awareness and better preparedness for unforeseen hazard events overall.

[Table 24: Summary of Hazards for 2024, Clark County MJHMP](#) noted earlier in this document lists the fourteen (14) hazards identified in the State of Nevada Enhanced Hazard Mitigation Plan (2018), as well as the justification for their inclusion/exclusion within this Clark County HMP update. Research indicates eleven of the 21 hazards do pose some level of risk to Clark County and/or at least one of its participating jurisdictions. These are, namely, drought, earthquake, epidemic, flood, heat extreme, infestation, severe storms, land subsidence and ground failure, tornado, wildland fire, and windstorm (combined with severe weather. Two additional unnatural or (or human-caused) hazards – hazmat and terrorism/WMD – also pose a risk to Clark County due to the location within the state of Nevada. Clark County is home to the Country's 7th largest airport and world-renowned Casinos, which makes it a famous tourism market coupled with major interstate highway and rail transportation routes within the County as a target for terrorism/WMD. For this reason, hazmat and terrorism are included in this HMP update. Details for each of these thirteen (13) hazards and their potential impact on Clark County and its participating jurisdictions which included Clark County Unincorporated area, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation can be found in [Section 4 – Hazard Analysis and Risk Assessment](#).

Note: Related to Calculating Future Probability using Qualitative Data, Las Vegas Paiute Tribe's future probability using qualitative data is based off Clark County and its unincorporated areas since the tribal lands fall within the planning area

Mitigation Strategy and Capabilities

Capabilities Assessment, Las Vegas Paiute Tribe

As with any jurisdiction, there are numerous stakeholders involved in developing a mitigation strategy. Each type of stakeholder provides a set of capabilities, in some cases broad and in others narrow, by which they can help increase the planning area's resiliency. The broadest form of mitigation capabilities comes from counties, such as Clark County, and municipal governments, such as the Las Vegas Paiute Tribe. Their inherent legal authority allows them to institute the greatest regulatory and developmental changes.

The primary capabilities of Clark County and the Las Vegas Paiute Tribe are 1) institutional, 2) political, 3) technical, and 4) fiscal. Representing the Las Vegas Paiute Tribe. A capability assessment was conducted of the MJHMP participating jurisdictions' authorities, policies, programs, and resources. From the assessment, goals and mitigation actions were developed. Capabilities for the Las Vegas Paiute Tribe are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability.

Planning and Regulatory Capabilities

These include local ordinances, policies, and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Planning and Regulatory Capability Assessment for Las Vegas Paiute Tribe

PLANS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
Community Wildfire Protection Plan	No	
Comprehensive/Master Plan	No	
Continuity of Operations Plan	No	Though the Tribe doesn't have a COOP they understand the need and has included the creation and development of this plan as a priority/mitigation project for the next plan cycle
Capital Improvement Plan	N/A	
Economic Development Plan	N/A	
Emergency Operations Plan	Yes	Yes, there is one however, it is in draft but due to COVID, the Tribe is working to update the document to reflect the current capabilities of the Tribe
Stormwater Management Plan	N/A	
Transportation Plan	N/A	
Plan reviews and updates will include consideration of the hazards identified in the MJHMP including new hazards in the 2024 update.		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> What type of codes? Are codes adequately enforced?
Building Codes	N/A	
Site plan review requirements	N/A	
Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		
LAND USE PLANNING & ORDINANCES	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> Is the ordinance effective for reducing hazard impacts?

PLANS	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID project to include in the mitigation strategy? Can the plan be used to implement mitigation actions? Include date of the most recent plan.
		<ul style="list-style-type: none"> Is the ordinance adequately administered and enforced?
Floodplain ordinance	N/A	
Subdivision ordinance	N/A	
Zoning ordinance	N/A	
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		

Administrative and Technical Capabilities

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, and floodplain managers. Small communities may rely on other government entities such as counties or special districts for resources. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administrative and Technical Capability Assessment for Las Vegas Paiute Tribe

ADMINISTRATION	Yes/No	Describe capability. Is coordination effective?
Mutual aid agreements	Yes	
Planning Commission	No	
TECHNICAL STAFF	Yes/No and include if Full Time (FT) or Part Time (PT) position	Answer these questions in the space below: <ul style="list-style-type: none"> Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	N/A	
Community Planner	N/A	
Emergency Manager	FT	Yes, to all

Engineer	FT	Yes, to all
Fire Chief	N/A	
Floodplain Manager/Administrator	N/A	
GIS/HAZUS Coordinator	N/A	
Chief of Police	FT	Yes, to all
Procurement Services Manager	N/A	
By continuing to utilize and seek improved methods for including the necessary technical and planning staff in the development and updates of emergency operations plans, financial planning and mitigation planning efforts. An important component is the use of trained grant writers with the knowledge and skill sets to research and apply for federal funding opportunities.		

Financial Capabilities

The following table contains a list of administrative and financial capabilities available to the Las Vegas Paiute Tribe. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Financial Capability Assessment for Las Vegas Paiute Tribe

FINANCIAL	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Has the funding resource been used in the past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Building Resilient Infrastructure and Communities Grant (BRIC)	N/A	
Hazard Mitigation Grant Program (HMPG)	Yes	
Pre-Disaster Mitigation grant program (PDM)	Yes	
Earthquake Mitigation Funds (Nevada Earthquake Safety Council)	No	
Flood Mitigation Assistance grant program (FMA)	Yes	
Water Preservation Funds (SWNA)	Yes	
Wildfire Emergency and Mitigation Funds (Nevada Division of Forestry)	No	
Capital improvements project funding	No	
Community Development Block Grant	No	
Authority to levy taxes for specific purposes	No	
Impact fees for new development	No	

FINANCIAL	Yes/No	Answer these questions in the space below: <ul style="list-style-type: none"> • Has the funding resource been used in the past and for what type of activities? • Could the resource be used to fund future mitigation actions?
Incur debt through special tax bond	No	
Incur debt through general obligation bonds	No	
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.

Education and Outreach Capabilities

The following table lists education and public outreach capabilities. These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Education and Outreach Capability Assessment for Las Vegas Paitue Tribe

PROGRAM / ORGANIZATION	Changes since 2018 Plan Update Yes or No	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Jurisdiction (County/City/Tribe) Website and Social Media (PIO/PAO Programming)		Yes	The Tribe maintains a website and a Facebook account. Currently, in the event of a disaster, Law Enforcement officer go door to door to notify residents of a hazard related events within the tribe. Law enforcement is currently working on methods to convey hazard mitigation and disaster related information to the public. The Golf Course makes notifications via a PA system to visitors about hazard related information. They can be used to support future mitigation activities
Firewise Communities certification		No	
Storm Ready certification		No	
Citizen groups focused on emergency preparedness, environmental protection, etc.		No	
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)		Yes	In the future, the Tribe has a PIO which is also the Tribal Chairperson. The Police Department uses a group text to notify residents related to public outreach to Tribal residents. The Tribe is looking to implement a vendor to help with the creation of a notification system for the Tribe in the event hazard in the area.
Public-private partnership initiatives addressing disaster-		No	

related issues			
How can capabilities be expanded and improved to reduce risk?			This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

Planning Integration, Las Vegas Paiutes Tribe

Mitigation does not end at plan approval. Plan approval is only the beginning. The successful implementation of any number of mitigation activities and projects requires the coordination and collaboration of a number of local agencies, departments, and organizations. Each group has varying decision-making processes and authorities governing their actions. This plan, once approved, must be integrated into their decision-making processes as a tool for improving their respective resiliencies.

Coordination with other community planning efforts was paramount to the success of this plan. Mitigation planning involves identifying existing policies, tools, and actions that will reduce a community’s risk and vulnerability to hazards. Clark County and its participating jurisdictions uses a variety of planning mechanisms such as land development regulations and ordinances to guide growth and development. Integrating existing planning efforts and mitigation policies and action strategies into this plan establishes a credible and comprehensive plan that ties into and supports other community programs.

The following tables identify the existing planning mechanisms for each jurisdiction in the planing area that were reviewed and how they were incorporated into the 2024 Hazard Mitigation Plan Update.

Las Vegas Paiute Tribe

Existing Planning Mechanisms – Las Vegas Paiute Tribe		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates. The Tribe was included in the previous Clark County MJHMP.
Tribal Emergency Operations Plan	Yes	Identifies major capabilities. The Las Vegas Paiute Tribe is working to update their EOP to reflect the current capabilities of the Tribe, this is a key opportunity for integration.
Tribal Continuity of Operations Plan (COOP)	No	Identifies major capabilities. At the time of this plan update, the Las Vegas Paiute Tribe does not have a COOP. The Tribe understands the need for. This plan and has included the development of this plan as a priority/mitigation project, which is a key opportunity for integration.
Master Plan	No	Identifies policies on both manmade and natural hazards.
Capital Improvement Plan	N/A	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions, mitigation

Existing Planning Mechanisms – Las Vegas Paiute Tribe

Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
		strategies.
Building and Zone Codes and Ordinances	N/A	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy.
Stormwater Management Plan	N/A	Capability assessment, mitigation strategies.
Clark County, NV Climate Vulnerability Assessment	Yes	Identifies the current and future impacts of climate change in Clark County, including the Las Vegas Paiute Tribe.
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County.
Community Wildfire Protection Plan	No	Identifies the County's priorities for wildfire fuel reduction projects.
Transportation Plan	N/A	Identifies transportation plans, programs, and projects within the County.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction.
FEMA's National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction.
U.S Census Bureau	Yes	Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

Democratic Governments and Boards

These organizations rely on agenda proposals, deliberation and discussion, and voting to solidify their decision-making. This type of decision-making makes up the majority of the Las Vegas Paiute Tribe and stakeholders.

This plan should be integrated into agenda proposal designs and cross-referenced during deliberation and discussion of the proposed activity. By using this Clark County Multi-Jurisdictional Hazard Mitigation Plan

(update) risk assessment, development and capital improvement projects can be appropriately implemented taking into consideration a community's resiliency.

The Clark County Multi-Jurisdictional Hazard Mitigation Plan (update) which includes the Las Vegas Paiute Tribe will be incorporated into existing planning mechanisms in varying processes. These processes will be tailored to the unique characteristics of the planning mechanism and the governing structure of the Las Vegas Paiute Tribe.

Budget Reviews

The local government conduct an annual budget review for a period of two months (although the dates are not rigid from year to year). Typically, they begin in the summer months. During this period, the Las Vegas Paiute Tribe will review this, and conduct a feasibility and resiliency review of suggested mitigation actions and projects.

Infrastructure, Development & Construction Projects

All participating jurisdictions (which includes Clark County Unincorporated Area, cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, NV, and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) in Clark County approach infrastructure, development, and construction projects related to hazard mitigation in the same way. The demographics of Clark County allows for planning to exist through collaboration with their Local Emergency Planning Committee (LEPC) and planning area stakeholders.

Mitigation Projects & Actions Implementation

Upon adoption of the MJHMP, the Las Vegas Paiute Tribe will notify all stakeholders when the next MPSC meeting topic will be reviewing mitigation project and action selections. Each stakeholder then approves a list of mitigation and projects they want to pursue according to the mechanism outlined in [Section 5 – Planning Integration](#). However, the tribe will meet before the Clark County MPSC meeting to determine which grant program and path will be appropriate for the project.

Capital Improvement & Economic Development Planning Related to Hazard Mitigation

All of the participating jurisdictions (which included Clark County and the cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, NV, and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) currently have capital improvement or economic development plans.

Upon adoption of this plan, CCOEM will notify each participating jurisdictions' governing authority. The notification will also contain a special notice to incorporate the following procedure into any capital improvement or economic development plans related to hazard mitigation that may be developed in the future.

Upon project conception, the county commissioners, mayors, council members, and tribal government officials, may contact CCOEM for funding guidance and grant assistance. In Clark County and its participating jurisdictions' improvement and development projects rely on grant funding. CCOEM may advise the project proposing jurisdiction on which grant program is appropriate.

Following a funding source decision, the proposals will then be returned to the project proposing jurisdiction and undergo a vote by the appropriate governing body for approval. Upon approval by the governing body, CCOEM may assist in applying for grant funding for the new improvement or development project.

Mitigation Projects and Activities

The Las Vegas Paiute Tribe did not complete a mitigation project in the last MJHMP update (2018).

To support the planning area's mitigation goals, the Clark County MPSC identified 61 possible and unique mitigation projects and activities. Of these, six (6) are from the Las Vegas Paiute as identified in the following table.

Mitigation & Projects Summary, Las Vegas Paiute Tribe	
Mitigation Project or Activity	Hazard(s) Addressed
Purchase of Law Enforcement Facility Generator	Drought, Earthquake, Flooding, Wildfire, Hazardous Materials, and Terrorism
Flood Control Project Maintenance Project - US 95 Highway Culvert	Flooding
Flood Control Project - Paiute Golf Course - Wolf Course Channel Extension	Flooding
Protect Snow Mountain Water Well	Drought, Excessive Heat, Wildfire, Earthquake
Acquire Water Well Backup Generator for Snow Mountain	Drought, Earthquake, Flooding, Wildfire, Hazardous Materials, and Terrorism
Create a Tribal Continuity of Operations Plan (COOP)	All Hazards
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)

Mitigation & Projects Summary, Las Vegas Paiute Tribe

Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
-----------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

STAPLE+E Rankings, Las Vegas Paiutes Tribe

STAPLE+E Rankings, Las Vegas Paiute Tribe																								
X = N/A - Even Impact	+ = Positive Influence											- = Negative Influence												
STAPLE+E Criteria	Social		Technical			Administrative			Political			Legal			Economic			Environmental						Total Impact
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Goals	Consistent with Federal Laws	
Purchase of Law Enforcement Facility Generator	+	-	+	x	x	-	-	+	+	+	+	x	+	x	+	+	-	+	x	-	-	+	+	
Flood Control Project Maintenance Project - US 95 Highway Culvert	+	+	+	+	-	-	-	+	+	+	+	x	+	x	+	+	+	+	x	-	-	+	+	15
Flood Control Project - Paiute Golf Course - Wolf Course Channel Extension	+	+	+	+	-	-	-	+	+	+	+	x	+	x	+	+	+	+	x	-	-	+	+	15

STAPLE+E Rankings, Las Vegas Paiute Tribe																								
Protect Snow Mountain Water Well	+	+	+	+	-	+	-	+	+	+	X	X	+	X	+	+	-	+	X	-	-	+	+	14
Acquire Water Well Backup Generator for Snow Mountain	+	+	+	+	-	+	-	+	+	+	X	X	+	X	+	+	-	+	X	-	-	+	+	14
Create a Tribal Continuity of Operations Plan (COOP)	+	-	+	+	-	+	-	+	+	+	X	X	+	X	+	+	-	+	X	-	-	+	+	13

Proposed and Carry-Over Mitigation Activities – Las Vegas Paiute Tribe

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Las Vegas Paiute 1	Flood Control Project Maintenance Project - US 95 Highway Culvert	Reinforce roads/bridges that are prone to repetitive flooding and/or flash flooding through protection activities, including elevating the roads/bridges and installing/widening culverts beneath the roads/bridges or upgrading storm drains. The Las Vegas Paiute Tribe is seeking funding for continued channel maintenance near U.S. 95 due to flooding. Following the 2013 flooding event, the highway was reconstructed to widen the culverts under the freeway to drain water past the resorts. The Tribe wants to continue channel maintenance efforts along U.S. 95 before another significant flooding event.	Flooding	Las Vegas Paiute Tribe (LVPT) Police Department	Medium (30)	New	\$30,000-\$50,000	1-5 years	Federal Grants and State Grants	Proposed Project for the 2024 Plan Update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Las Vegas Paiute 2	Flood Control Project - Paiute Golf Course - Wolf Course Channel Extension	The Tribe is seeking funds to extend a flood channel located on the Paiute Golf Resort - Wolf Course. The existing channel must be extended past the east fence on the golf course grounds. The extension of this channel will alleviate the damage associated with flooding through existing ends near Wolf Course, where river rocks have filled up over the past five years.	Flooding	Las Vegas Paiute Emergency Management Team; Las Vegas Paiute Public Works Department; NV Department of Transportation; Las Vegas Valley Water District	Medium (30)	New	\$350,000-\$500,000	1-5 years	Federal Grants and State Grants	Proposed Project for the 2024 Plan Update
Las Vegas Paiute 3	Acquire Water Well Backup Generator for Snow Mountain	The Tribe does not have portable water access during a hazard event on the reservation and is looking to provide additional potable water (new water tank) to operate continuously for long durations during drought, severe storms, floods, or other disaster situations where water availability may be limited. Bringing 220v power to the existing water tank and adding an emergency power generator will allow the water pump at Snow Mountain to work during an extended power outage that could leave the residents of Snow Mountain without access to water in the event of an emergency.	Drought, Earthquake, Flooding, Wildfire, Hazardous Material, and Terrorism	Las Vegas Paiute Golf Resort and LVPT Maintenance Dept;	Medium (27.33333)	New	\$200,000-\$400,000	1-5 years	Federal Grants	Proposed Project for the 2024 Plan Update
Las Vegas Paiute 4	Protect Snow Mountain Water Well	The Snow Mountain Water Well is a vital critical facility to the Tribe and provides water to the residents of this part of the Tribe. The Tribe seeks funds to protect with measures like	Drought, Excessive Heat, Wildfire, and Earthquake	LVPT Maintenance Department	Medium (26.5)	New	\$50,000-\$100,000	1-5 years	Federal Grants and State Grants	Proposed Project for the 2024 Plan Update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
		updating the tank, ensuring the well has the proper fencing, and protection against hazards like drought, earthquake, excessive heat, and wildfires.								
Las Vegas Paiute 5	Purchase of Law Enforcement Facility Generator	Law Enforcement Department is looking to purchase a generator due to power supply issues causing loss in communication with tribal citizens and their officers in the field in the event of an emergency.	Drought, Earthquake, Flooding, Wildfire, Hazardous Materials, and Terrorism	LVPT Maintenance Department	Medium (25.333)	New	\$90,000-\$100,000	1-5 years	Federal Grants and State Grants	Proposed Project for the 2024 Plan Update
Las Vegas Paiute 6	Create a Tribal Continuity of Operations Plan (COOP)	The Las Vegas Valley Paiute Tribe is seeking funding for professional contracted services to develop a Continuity of Operations Plan (COOP) to ensure the capability exists to continue essential Tribal functions in the event of an all-hazards event. The COOP will provide for the continuation of vital Tribal services across a wide range of potential emergencies. The professional contractor will work with Tribal Governments Officials and Tribal Government Departments to develop a continuity plan.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Las Vegas Paiute Emergency Management Team; Las Vegas Paiute Tribal Government	Low (18.769231)	New	\$5,000-\$10,000	1-5 years	Federal Grants and State Grants	Proposed Project for the 2024 Plan Update
Las Vegas Paiute 7	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2024 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes						
Las Vegas Paiute 8	Annual Review and Update of Continuity of Operations (COOP) Plan	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Las Vegas Paiute 9	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Las Vegas Paiute 10	Annual Review and	Annual review and updated the County's	All Hazards (Climate	Clark County OEM; Clark	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous	Federal and State Grants;	Proposed Project for

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
	Update of Local Emergency Operations Plan (LEOP)	LEOP to ensure compliance with NV DEM requirements	Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	County Local Emergency Planning Commission (LEPC); All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes				through the five-year plan cycle. Will be conducted annually beginning January 2024.	City/County General Fund	the 2024 Plan update

Deferred Projects List from Clark County MJHMP (2018) for the Las Vegas Paiute

The Las Vegas Paiute Tribe did not have any deferred mitigation projects.

Mitigation Prioritization Tables for the Las Vegas Paiute Tribe

Mitigation Project Prioritization, Las Vegas Paiute Tribe																		
Mitigation Project or Activity	STAPLE+E	MPE	Hazards												Hazard Total	HRT Value	Priority	
			Climate Change	Dam Failure	Droughts	Earthquake	Flood	Extreme Heat	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials				Terrorism
Purchase of Law Enforcement Facility Generator	25.3333				10	10			15							50	12.5	Medium
Flood Control Project Maintenance Project - US 95 Highway Culvert	30								15							15	15	Medium
Flood Control Project - Paiute Golf Course - Wolf Course Channel Extension	30								15							15	15	Medium

Mitigation Project Prioritization, Las Vegas Paiute Tribe

Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority	
			Climate Change	Dam Failure	Droughts	Earthquake	Flood	Extreme Heat	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism				
Protect Snow Mountain Water Well	26.5				10	10	15					15					50	12.5	Medium
Acquire Water Well Backup Generator for Snow Mountain	27.333				10	10			15			15			15	15	80	13.3333333	Medium
Create a Tribal Continuity of Operations Plan (COOP)	18.769231		15	5	10	15	15	15	5	15	15	10	5	15	15	150	11.5384615	Low	
Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846154	Low	
Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846154	Low	

Mitigation Project Prioritization, Las Vegas Paiute Tribe

Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846154	Low
Annual Review and Update of Local Emergency Operations Plan (LEOP)	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846154	Low

Moapa Band of Paiutes

Planning Area

The Moapa Band of Paiutes resides on the Moapa River Indian Reservation (MRIR) in Clark County, Nevada. The MRIR is situated in the southern part of the state. The Tribe became federally recognized under a Constitution approved by the Secretary of Interior on April 17, 1942. The tribal lands originally set aside in 1873 consisted of two million acres, but in 1875 it was reduced to 1000 acres. In December 1980, an additional 70,000 acres was returned back to the Tribe. The current total land base is 71,954. Moapa Paiutes strive to preserve their legends, songs and dances. (<https://www.moapabandofpaiutes.com/tribal-history>)

However, cultural disruption during the past two centuries have threatened the continuation of traditional life. Their [mission statement](#) is to advance the Moapa Band of Paiutes and preserve their homeland by building an independent and self-governing community that provides an opportunity for all people who have made a commitment to this mission.

Note: At the time of this plan update, Moapa Band of Paiutes did not provide any culturally sensitive information or maps to include in this plan update.

Figure 130: Moapa Band of Paiutes Area Map

Jurisdiction Profile

- Planning Area
- Demographics & Hazard Vulnerabilities
- Critical Facilities Information

Hazard Risk Assessment

- Hazard Analysis and Risk Assessment

Mitigation Strategy & Capabilities

- Capabilities Assessment
- Completed and Deferred Mitigation Projects (2018)
- Proposed Mitigation Activities (including STAPLE+E)

Source: Moapa Band of Paiutes Website

Demographics and Hazard Vulnerabilities

Demographic data is crucial to effective hazard mitigation planning. This is especially true for the numbers associated with population, housing units, and building permits as they, over time, can increase or decrease a planning area's vulnerabilities to any/all identified natural hazards. It is important to note, however, that demographic data can fluctuate or even lag in the short term, i.e., one to two years. While these numbers tend to self-correct over time, temporary decreases or increases in population and/or the number of housing units may occur. In these instances, it is best to consider demographic data from longer periods, such as ten (10) to 20 years, for mitigation planning purposes.

As for Clark County (including the Moapa Band of Paiutes), the U.S. Census Bureau determined Moapa Band of Paiutes has a population of 286 residents with 131 housing units as reported by the [U.S. Census Bureau's My Tribal Area website](#). This website provide U.S. Census data from 2017-2021 American Community Survey 5-Year Estimates from Tribal Nations.

The following table provides a visual Moapa Band of Paiutes demographic information (as previously described) and how it specifically relates to hazard probability and the planning area’s vulnerabilities to all identified natural hazards.

Demographics & Vulnerability, Moapa Band of Paiutes Tribe				
Population (2017-2021 ACS 5-year Estimates)	# of Housing Units (2017-2021 ACS 5-year Estimates)	Identified Hazards	CPRI Results	Probability of Hazards (From Risk Summary)
286	131	Climate Change	L (1.65)	Highly Likely
		Drought	H (3.25)	Highly Likely
		Extreme/ Excessive Heat	H (3.60)	Highly Likely
		Fissures & Subsidence	L (1.95)	Occasional
		Flood, Landslides & Debris Flow, Flooding	H (3.75)	Likely
		Geohazards-Earthquake and Seismic Hazards	L (1.90)	Likely
		Severe Weather (including Thunderstorms, Hail, Lighting, Wind, and Tornadoes)	M (2.45)	Highly Likely
		Fire, Wildland Urban Interface (Wildfire)	M (2.55)	Highly Likely
		Hazardous Materials	H (3.05)	Highly Likely
		Infrastructure, Dam Failure	H (3.60)	Occasional
		Infestation	M (2.35)	Likely
		Infectious Disease	H (3.75)	Occasional
		Terrorism	L (1.55)	Highly Likely

Data Source: [U.S. Census Bureau, Nevada: 2010 Population and Housing Unit Count](#); and [U.S. Census Bureau, Profile: data.census.gov](#); Percent of Population Change Calculation Change: <https://www.omnicalculator.com/math/percentage-change#how-to-calculate-the-percent-change>

Critical Facilities Information

As previously stated in this MJHMP Update, certain facilities have a net positive value on the community, i.e., they contribute to the public good by facilitating the basic functions of society. These facilities maintain order, public health, education, and help the local economy function. Additionally, there are facilities and infrastructure integral to disaster response and recovery operations. Conversely, some of these are of extreme importance due to the negative externalities created when impacted by a disaster. What fits these definitions varies slightly from community to community, but the definitions remain as a guideline for identifying critical infrastructure and facilities.

The following table and map summarize the identified critical facilities and infrastructure for the Moapa Band of Paiutes. A complete list can be found in [Appendix E](#) of this plan update.

Critical Facilities: Tribal Nation – Moapa Band of Paiutes																					
	Casinos/Resorts/ Hotels	Child Care	City Hall	Communications	Community Colleges	Correctional Facilities	Court House	Fire Stations	Government Offices	Maintenance	Hospitals\ Medical Clinic	Native Reservations	Natural Gas	Places of Worship	Police	Schools	Power Station	Stadiums	Transportation	University	Water/Sewer
Moapa Band of Paiutes	0	1	1	0	0	0	1	0	1	2	1	1	0	1	1	1	2	0	0	0	0

Hazard Analysis and Risk Assessment

Per FEMA Guidance, the first step in developing the Risk Assessment is identifying the hazards that have a reasonable risk of occurring in Clark County and its participating jurisdictions which included Clark County Unincorporated area, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation. Proper identification allows for appropriate and well-planned action in order to mitigate the extent and impact of a hazard event. It also helps facilitate emergency response and recovery operations. Further, while not all disaster contingencies can be planned for, applying an all-hazards approach to the mitigation process does yield greater awareness and better preparedness for unforeseen hazard events overall.

[Table 24: Summary of Hazards for 2024, Clark County MJHMP](#) noted earlier in this document lists the fourteen (14) hazards identified in the State of Nevada Enhanced Hazard Mitigation Plan (2018), as well as the justification for their inclusion/exclusion within this Clark County HMP update. Research indicates eleven of the 21 hazards do pose some level of risk to Clark County and/or at least one of its participating jurisdictions. These are, namely, drought, earthquake, epidemic, flood, heat extreme, infestation, severe storms, land subsidence and ground failure, tornado, wildland fire, and windstorm (combined with severe weather). Two additional unnatural or (or human-caused) hazards – hazmat and terrorism/WMD – also pose a risk to Clark County due to the location within the state of Nevada. Clark County is home to the Country's 7th largest airport and world-renowned Casinos, which makes it a famous tourism market coupled with major interstate highway and rail transportation routes within the County as a target for terrorism/WMD. For this reason, hazmat and terrorism are included in this HMP update. Details for each of these thirteen (13) hazards and their potential impact on Clark County and its participating jurisdictions which included Clark County Unincorporated area, and the Tribal areas of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation can be found in [Section 4 – Hazard Analysis and Risk Assessment](#).

Note: Related to Calculating Future Probability using Qualitative Data, Moapa Band of Paiute's future probability using qualitative data is based off Clark County and its unincorporated areas since the tribal lands fall within the planning area.

Mitigation Strategy and Capabilities

Capabilities Assessment, Moapa Band of Paiutes

As with any jurisdiction, there are numerous stakeholders involved in developing a mitigation strategy. Each type of stakeholder provides a set of capabilities, in some cases broad and in others narrow, by which they can help increase the planning area's resiliency. The broadest form of mitigation capabilities comes from counties, such as Clark County, and municipal governments, such as the Moapa Band of Paiutes. Their inherent legal authority allows them to institute the greatest regulatory and developmental changes.

The primary capabilities of Clark County and the Moapa Band of Paiutes are 1) institutional, 2) political, 3) technical, and 4) fiscal. Representing the Moapa Band of Paiutes. A capability assessment was conducted of the MJHMP participating jurisdictions' authorities, policies, programs, and resources. From the assessment, goals and mitigation actions were developed. Capabilities for the Moapa Band of Paiutes are described in detail below. The Yes/No column denotes if a particular jurisdiction has that specific capability

Planning and Regulatory Capabilities

These include local ordinances, policies and laws to manage growth and development. Examples include land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes and zoning ordinances. Based upon the specific authorities contained in each of these planning and regulatory capabilities, they may be used to support mitigation activities.

Planning and Regulatory Capability Assessment for Moapa Band of Paiutes

PLANS	Yes/No Year	<ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Capital Improvements Plan	Yes, 2015	As per the 2015 Moapa Band of Paiutes Hazard Mitigation Plan, the tribe has a 5-year Master Plan.
Community Wildfire Protection Plan	N/A	
Comprehensive/Master Plan	Yes	
Continuity of Operations Plan	N/A	
Economic Development Plan	Yes	As per the 2015 Moapa Band of Paiutes Hazard Mitigation Plan, the tribe has an Economic Development Plan (Economic Development Department).
Emergency Operations Plan	Yes	Yes, the 2015 Moapa Band of Paiutes Hazard Mitigation Plan does mention having a stormwater management program within its regulatory capabilities.
Stormwater Management Plan	Yes	Yes, the 2015 Moapa Band of Paiutes Hazard Mitigation Plan does mention having a stormwater management program within its regulatory capabilities. However, the Stormwater Management Program needed to be reconstructed.
Transportation Plan	N/A	
How can these capabilities be expanded and improved to reduce risk?		
BUILDING CODES, PERMITTING, INSPECTIONS	Yes/No	What type of codes? <ul style="list-style-type: none"> Are codes adequately enforced?
Building Codes	Yes	Yes, as mentioned in the 2015 Moapa Band of Paiutes Hazard Mitigation Plans regulatory capabilities, the tribe follows unified building code.
Site plan review requirements	No	No, the 2015 Moapa Band of Paiutes Hazard Mitigation Plan does not mention any site plan review requirement within its regulatory capabilities.
How can these capabilities be expanded and improved to reduce risk?		Codes and requirements will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.
LAND USE PLANNING & ORDINANCES		<ul style="list-style-type: none"> Is the ordinance effective for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Floodplain ordinance	No	No, the 2015 Moapa Band of Paiutes Hazard Mitigation Plan does not mention any ordinances like floodplain for the tribal reservation.

PLANS	Yes/No Year	<ul style="list-style-type: none"> Does the plan address hazards? Does the plan ID projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Subdivision ordinance	N/A	N/A, the 2015 Moapa Band of Paiutes Hazard Mitigation Plan does not mention any ordinances like subdivision for the tribal reservation.
Zoning ordinance	N/A	N/A, the 2015 Moapa Band of Paiutes Hazard Mitigation Plan does not mention any ordinances like zoning for the tribal reservation.
Planning and land use regulations will be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.		

Note: As mentioned in the [2015 Moapa Band of Paiutes Hazard Mitigation Plan \(April 2015\)](#), will adhere to the regulations, policies, program, regulatory capabilities related to hazard prone areas as described in the Clark County Plan, including pre-disaster hazard mitigation management and post-disaster mitigation management.

Administrative and Technical Capabilities

These capabilities include community (public and private) staff and their skills and tools which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, and floodplain managers. Small communities may rely on other government entities such as counties or special districts for resources. Based upon the specific expertise contained in each of these administrative and technical capabilities, they may be used to support mitigation activities.

Administrative and Technical Capability Assessment for Moapa Band of Paiutes

ADMINISTRATION	Yes/No	Describe capability <ul style="list-style-type: none"> Is coordination effective?
Mutual aid agreements		
Planning Commission		
TECHNICAL STAFF	Yes/No FT/PT	<ul style="list-style-type: none"> Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? Have skills/expertise been used to assess/mitigate risk in the past?
Building Official	Yes	Yes, Public Works Director
Community Planner	No	
Emergency Manager	Yes	Yes, Emergency Services Manager
Engineer	Yes	Yes, Tribal Planner
Floodplain Manager/Administrator	Yes	
GIS/HAZUS Coordinator	No	No, Indian Health Service
Grant writer	Yes	
How can capabilities be expanded and improved to reduce risk?		Additional training of staff in hazard mitigation and financial resources to pursue mitigation projects.

Note: As mentioned in the [2015 Moapa Band of Paiutes Hazard Mitigation Plan \(April 2015\)](#), the Moapa Band of Paiutes Emergency Management Program operates under the direction of the Moapa Band of Paiutes Tribal Council. Day-to-day operations and direction for the program is conducted under the management of the Tribal Chairman who has delegated coordination actions to the Moapa Band of Paiutes Emergency Coordinator. The final responsibility for all emergency management belongs to the Tribal Chairman. The Tribal Chairman and Council are responsible for all policy-level decisions. They are also required to be the approving body for public information releases to the public. During response operations, the elected officials will be available to their constituents to handle non-routine problems. The Tribal Emergency Management has responsibility for coordinating the entire emergency management program, within the boundaries of the Reservation, and can make routine decisions within the limits of disaster authority. During emergency operations, the Emergency Manager ensures that all parties are working in a concerted, supportive effort to overcome the disaster.

Financial Capabilities

The following table contains a list of administrative and financial capabilities available to the Moapa Band of Paiute. Based upon procedures for each resource, these financial capabilities may be used to support mitigation activities.

Financial Capability Assessment for Moapa Band of Paiutes

FINANCIAL	Yes/No	<ul style="list-style-type: none"> Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Hazard Mitigation Grant Program (HMPG)	N/A	
Pre-Disaster Mitigation grant program (PDM)	Yes	
Flood Mitigation Assistance grant program (FMA)	Yes	
Capital improvements project funding	Yes	
Community Development Block Grant	Yes	
Authority to levy taxes for specific purposes	Yes	
Impact fees for new development	Yes	
Incur debt through special tax bond	Yes	
Incur debt through general obligation bonds	No	
How can capabilities be expanded and improved to reduce risk?		Apply for FEMA program grants. Develop new and creative ways to acquire funding such as new legislation proposals to open the doors for improved funding opportunities.

Note: As mentioned in the [2015 Moapa Band of Paiutes Hazard Mitigation Plan \(April 2015\)](#), identifies financial tools or resources that Moapa Band of Paiutes could potentially used to help fund activities in addition to Economic Development Activities.

Education and Outreach Capabilities

The following table lists education and public outreach capabilities. These capabilities include programs such as fire safety programs, hazard awareness campaigns, public information or communications offices. Education and outreach capabilities can be used to inform the public on current and potential mitigation activities.

Education and Outreach Capability Assessment for Moapa Band of Paiutes Tribe

PROGRAM / ORGANIZATION	Changes since 2018 Plan Update Yes or No	Access / Eligibility (Yes/No)	Describe program/organization and how it relates to disaster resilience and mitigation. <ul style="list-style-type: none"> • Could the program/organization help implement future mitigation activities?
Jurisdiction (County/City/Tribe) Website and Social Media (PIO/PAO Programming)			
Firewise Communities certification			
Storm Ready certification			
Citizen groups focused on emergency preparedness, environmental protection, etc.			
Public education/information programs (fire safety, household preparedness, responsible water use, etc.)			
Public-private partnership initiatives addressing disaster-related issues			
How can capabilities be expanded and improved to reduce risk?			This can be accomplished by including the organizations in our public outreach, planning, training and overall preparedness efforts and real time events.

Note: The [2015 Moapa Band of Paiutes Hazard Mitigation Plan \(April 2015\)](#), did not identify any education and outreach capabilities for the Tribe.

Planning Integration, Moapa Band of Paiutes

Mitigation does not end at plan approval. Plan approval is only the beginning. The successful implementation of any number of mitigation activities and projects requires the coordination and collaboration of a number of local agencies, departments, and organizations. Each group has varying decision-making processes and authorities governing their actions. This plan, once approved, must be integrated into their decision-making processes as a tool for improving their respective resiliencies.

Coordination with other community planning efforts was paramount to the success of this plan. Mitigation planning involves identifying existing policies, tools, and actions that will reduce a community’s risk and vulnerability to hazards. Clark County and its participating jurisdictions uses a variety of planning mechanisms such as land development regulations and ordinances to guide growth and development. Integrating existing planning efforts and mitigation policies and action strategies into this plan establishes a credible and comprehensive plan that ties into and supports other community programs.

The following tables identify the existing planning mechanisms for each jurisdiction in the planing area that were reviewed and how they were incorporated into the 2024 Hazard Mitigation Plan Update.

Moapa Band of Paiutes

Existing Planning Mechanisms – Moapa Band of Paiutes		
Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
State of Nevada Enhanced Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies.
Nevada Threats and Hazards – September 2020	Yes	Identifies standardized list of threats and hazards to be used in the planning process.
County Hazard Mitigation Plan	Yes	Analyze previous plan for updates. The Tribe was included in the previous Clark County MJHMP. As mentioned in the 2015 Moapa Band of Paiutes Hazard Mitigation Plan (April 2015), will adhere to the regulations, policies, program, regulatory capabilities related to hazard prone areas as described in the Clark County Plan, including pre-disaster mitigation management and post-disaster mitigation management.
Tribal Emergency Operations Plan	Yes	Identifies major capabilities. As of the 2015 Moapa Tribal HMP, the Tribe has a Tribal EOP. The revision of this plan is a key opportunity for integration.
Tribal Continuity of Operations Plan (COOP)	N/A	Identifies major capabilities.
Master Plan	Yes	Identifies policies on both manmade and natural hazards. As of the 2015 Moapa Tribal HMP, the Tribe has a 5-year Master Plan. The revision of this plan is a key opportunity for integration.

Existing Planning Mechanisms – Moapa Band of Paiutes

Existing Planning Mechanism	Reviewed? (Yes/No)	Methods of Use in Hazard Mitigation Planning
Capital Improvement Plan	N/A	Analyzes financing infrastructure improvements, government facility construction improvements, and equipment acquisitions, mitigation strategies. As of the 2015 Moapa Tribal HMP, the Tribe has a 5-year Master Plan. The revision of this plan is a key opportunity for integration.
Building and Zone Codes and Ordinances	N/A	Identifies where land is developed in the planning area and how new building are constructed which is necessary for mitigation strategy. As of the 2015 Moapa Tribal HMP, the Tribe follows unified building code.
Stormwater Management Plan	Yes	Capability assessment, mitigation strategies. As of the 2015 Moapa Tribal HMP, the Tribe has a stormwater management program, but the program needed to be reconstructed. The revision of this plan and reconstruction of the program is a key opportunity for integration.
Clark County, NV Climate Vulnerability Assessment	Yes	Identifies the current and future impacts of climate change in Clark County, including the Moapa Tribe.
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the County.
Community Wildfire Protection Plan	N/A	Identifies the County's priorities for wildfire fuel reduction projects.
Transportation Plan	N/A	Identifies transportation plans, programs, and projects within the County.
CDC Social Vulnerability Index	Yes	Analyze vulnerable populations in the jurisdiction.
FEMA's National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction.
U.S Census Bureau	Yes	Analyze community demographic data and trends.
NOAA Archives	Yes	Analyze weather data and trends.

These and other documents were reviewed and considered, as appropriate, during the collection of hazard identification, vulnerability assessment, and capability assessment. Data from these plans and ordinances were incorporated into the risk assessment and hazard vulnerability sections of the plan as appropriate. The

data was also used in determining the capability of the community in being able to implement certain mitigation strategies.

Democratic Governments and Boards

These organizations rely on agenda proposals, deliberation and discussion, and voting to solidify their decision-making. This type of decision-making makes up the majority of Moapa Band of Paiutes and stakeholders.

This plan should be integrated into agenda proposal designs and cross-referenced during deliberation and discussion of the proposed activity. By using this Clark County Multi-Jurisdictional Hazard Mitigation Plan (update) risk assessment, development and capital improvement projects can be appropriately implemented taking into consideration a community's resiliency.

The Clark County Multi-Jurisdictional Hazard Mitigation Plan (update) which includes the Moapa Band of Paiutes will be incorporated into existing planning mechanisms in varying processes. These processes will be tailored to the unique characteristics of the planning mechanism and the governing structure of the Moapa Band of Paiutes.

Budget Reviews

The local government conduct an annual budget review for a period of two months (although the dates are not rigid from year to year). Typically, they begin in the summer months. During this period, the Moapa Band of Paiutes will review this, and conduct a feasibility and resiliency review of suggested mitigation actions and projects.

Infrastructure, Development & Construction Projects

All participating jurisdictions (which includes Clark County Unincorporated Area, cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, NV, and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) in Clark County approach infrastructure, development, and construction projects related to hazard mitigation in the same way. The demographics of Clark County allows for planning to exist through collaboration with their Local Emergency Planning Committee (LEPC) and planning area stakeholders.

Mitigation Projects & Actions Implementation

Upon adoption of the MJHMP, the Moapa Band of Paiutes will notify all stakeholders when the next MPSC meeting topic will be reviewing mitigation project and action selections. Each stakeholder then approves a list of mitigation and projects they want to pursue according to the mechanism outlined in [Section 5 – Planning Integration](#). However, the tribe will meet before the Clark County MPSC meeting to determine which grant program and path will be appropriate for the project.

Capital Improvement & Economic Development Planning Related to Hazard Mitigation

All of the participating jurisdictions (which included Clark County and the cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas, NV, and the Tribal Nations of the Las Vegas Paiute Tribe and the Moapa Band of Paiutes/Moapa River Indian Reservation) currently have capital improvement or economic development plans.

Upon adoption of this plan, CCOEM will notify each participating jurisdictions' governing authority. The notification will also contain a special notice to incorporate the following procedure to any capital improvement or economic development plans related to hazard mitigation that may be developed in the future.

Upon project conception, the county commissioners, mayors, council members, and tribal government officials, may contact CCOEM for funding guidance and grant assistance. In Clark County and its participating jurisdictions' improvement and development projects rely on grant funding. CCOEM may advise

the project proposing jurisdiction on which grant program is appropriate.

Following a funding source decision, the proposals will then be returned to the project proposing jurisdiction and undergo a vote by the appropriate governing body for approval. Upon approval by the governing body, CCOEM may assist in applying for grant funding for the new improvement or development project.

Mitigation Projects/Activities

The Moapa Band of Paiutes Tribe completed one (1) mitigation project in the last MJHMP update (2018).

Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Structural Emphasis (in 2018 MHJMP)	Cost Estimate	Estimated Timeline	Potential Funding Source	Status
Emergency Power	Alleviate the damage associated with flooding through new and reinforced flood control projects including storm drains, culverts, drop inlets, channels, and detention basins	Flood	Moapa Band of Paiutes Business Department	New/Proposed	\$2 Million	1-5 years	FEMA Grant	Completed. This mitigation project was a priority of Tribe during the last plan update period and was completed in 2020.

To support the planning area’s mitigation goals, the Clark County MPSC identified 61 possible and unique mitigation projects and activities. Of these, two (2) are from the Moapa Band of Paiute as identified in the following table.

Mitigation & Projects Summary, Moapa Band of Paiutes	
Mitigation Project or Activity	Hazard(s) Addressed
Emergency Power for Admin and Law Enforcement	All Hazards
Tribal Emergency Preparation (Training, purchasing, Planning, and Events Planning)	All Hazards
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
Annual Review and Update of County Continuity of Operations (COOP) Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)

Mitigation & Projects Summary, Moapa Band of Paiutes

Development of a County Sheltering Plan	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flood, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)
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STAPLE+E Rankings, Moapa Band of Paiutes

STAPLE+E Rankings, Moapa Band of Paiutes																									
X = N/A - Even Impact	+ = Positive Influence											- = Negative Influence													
STAPLE+E Criteria	Social		Technical			Administrative			Political			Legal			Economic				Environmental						Total Impact
Considerations	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contribute to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Goals	Consistent with Federal Laws		
Emergency Power for Admin and Law Enforcement	+	-	+	X	-	X	-	+	+	+	+	X	+	+	+	+	-	+	X	X	X	+	+	13	
Tribal Emergency Preparation (Training, purchasing, planning and events planning)	+	-	+	X	-	X	-	+	+	+	+	X	+	+	+	+	-	+	X	X	X	+	+	13	

Proposed and Carry-Over Mitigation Activities – Moapa Band of Paiutes

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
Moapa 1	Emergency Power for Admin and Law Enforcement	The tribe is seeking to purchase and install backup generators for the Admin and Law enforcement buildings. The purpose would be to keep the Government working during Power Outages and have cooling stations during emergency events within the Tribal land.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Moapa Band of Paiutes Business Department; Moapa Band of Paiutes Government, and Moapa Band of Paiutes Law Enforcement	Medium (34.4285)	New	\$1 Million	1-5 years	Federal and State Grants; Moapa Band of Paiutes	Proposed Project for the 2024 Plan Update
Moapa 2	Tribal Emergency Preparation (Training, purchasing, planning and events planning)	The Tribal Emergency Manager will work on preparing the community (Elders) and help prepare for events (Emergency or Non-Emergency) disasters by assessing Tribe's Emergency Preparedness and Event Planning efforts.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Moapa Band of Paiutes Business Department; Moapa Band of Paiutes Government, and Moapa Band of Paiutes Law Enforcement	Medium (34.4285)	New	\$500,000	1-5 years	Federal and State Grants; Moapa Band of Paiutes	Proposed Project for the 2024 Plan Update
Moapa 3	Annual Review and Update of Hazard Mitigation Plan	All jurisdictions review the Hazard Mitigation Plan at least annually to ensure implementation of the mitigation projects addressed in the 2024 plan update.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
			Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes						
Moapa 4	Annual Review and Update of Continuity of Operations (COOP) Plan	Annually review and update the Clark County COOP to ensure compliance.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Moapa 5	Development of a County Sheltering Plan	A regional plan based upon the newly developed Shelter Inventory Catalog, needs to be developed pulling all existing city plans together into one overarching document so as to deconflict resource needs and identify gaps as well introduce a common operating picture and how county resources such as one example, the Department of Social Service and how they would be asked to support across the region.	All Hazards (Climate Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	Clark County OEM; All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous through the five-year plan cycle. Will be conducted annually beginning January 2024.	Federal and State Grants; City/County General Fund	Proposed Project for the 2024 Plan update
Moapa 6	Annual Review and	Annual review and updated the County's	All Hazards (Climate	Clark County OEM; Clark	Low (24.54)	New	Staff Time and Resources	Ongoing, continuous	Federal and State Grants;	Proposed Project for

Action ID	Project Name	Project Description	Hazard (s) Addressed	Responsible Party (ies)	Overall Priority (STAPLE+E)	Structural Emphasis	Cost Estimate	Estimated Timeline	Potential Funding Source	Current Status
	Update of Local Emergency Operations Plan (LEOP)	LEOP to ensure compliance with NV DEM requirements	Change, Drought, Earthquake, Excessive Heat, Flooding, Subsidence/Fissures, Severe Weather, Wildfire, Dam Failure, Epidemic/Infections Disease, Hazardous Materials, and Terrorism)	County Local Emergency Planning Commission (LEPC); All Jurisdictions (Clark County Departments, Cities of Boulder City, Henderson, Las Vegas, Mesquite, North Las Vegas, Clark County Water Reclamation District, and the Tribes of Las Vegas Paiute and Moapa Band of Paiutes				through the five-year plan cycle. Will be conducted annually beginning January 2024.	City/County General Fund	the 2024 Plan update

Deferred Projects List from Clark County MJHMP (2018) for the Moapa Band of Paitues

The Moapa Band of Paiutes did not have any deferred mitigation projects.

Mitigation Prioritization Tables for the Moapa Band of Paiutes

Mitigation Project Prioritization, Moapa Band of Paiutes																		
Mitigation Project or Activity	STAPLE+E	MPE	Hazards													Hazard Total	HRT Value	Priority
			Climate Change	Dam Failure	Droughts	Earthquake	Extreme Heat	Flood	Fissures & Subsidence	Severe Weather	Wildfire	Infestation	Infection Disease	Hazardous Materials	Terrorism			
Emergency Power for Admin and Law Enforcement	34.4825	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	21.4825	Medium
Tribal Emergency Preparation (Training, Purchasing, Planning and Events Planning)	34.4825	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	21.4825	Medium
Annual Review and Update of Hazard Mitigation Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846154	Low
Annual Review and Update of Continuity of Operations (COOP) Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846154	Low
Development of a County Sheltering Plan	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846154	Low

Mitigation Project Prioritization, Moapa Band of Paiutes

Annual Review and Update of Local Emergency Operations Plan (LEOP)	24.54	1	15	5	10	10	15	15	5	15	15	10	5	15	15	150	11.53846154	Low
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