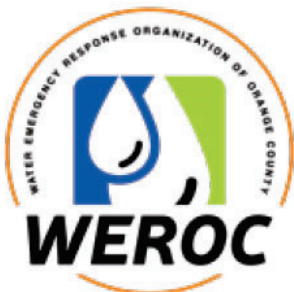


# 2024



## Orange County Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan

### Annex H: Moulton Niguel Water District



## Contents

<b>H.1 Hazard Mitigation Plan Point of Contact and Development Team .....</b>	<b>1</b>
<b>H.2 Jurisdiction Profile.....</b>	<b>2</b>
<b>H.3 Hazards .....</b>	<b>2</b>
<b>H.4 Hazard Maps .....</b>	<b>4</b>
<b>H.5 Vulnerability and Risk Assessment.....</b>	<b>15</b>
<b>H.6 Capabilities Assessment .....</b>	<b>17</b>
<b>H.7 Mitigation Strategy .....</b>	<b>22</b>
H.7.1 Mitigation Goals .....	22
H.7.2 Mitigation Actions.....	22
H.7.3 Completed or Removed Mitigation Initiatives.....	26
<b>H.8 Plan Integration.....</b>	<b>26</b>

## Exhibits

Exhibit H-1. Planning Team Leads .....	1
Exhibit H-2. Internal Hazard Mitigation Planning Development Team.....	1
Exhibit H-3. MNWD Hazard Identification.....	3
Exhibit H-4. Fire Hazard and MNWD Potable Infrastructure.....	5
Exhibit H-5. Fire Hazard and MNWD Wastewater Infrastructure .....	6
Exhibit H-6. Flood Hazard and MNWD Potable Infrastructure.....	7
Exhibit H-7. Flood Hazard and MNWD Wastewater Infrastructure .....	8
Exhibit H-8. Seismic Shaking Hazard and MNWD Potable Infrastructure .....	9
Exhibit H-9. Seismic Shaking and MNWD Wastewater Infrastructure.....	10
Exhibit H-10. Liquefaction Hazard and MNWD Potable Infrastructure .....	11
Exhibit H-11. Liquefaction Hazard and MNWD Wastewater Infrastructure.....	12
Exhibit H-12. Landslide Hazard and MNWD Potable Infrastructure.....	13
Exhibit H-13. Landslide Hazard and MNWD Wastewater Infrastructure .....	14
Exhibit H-14. Moulton Niguel Infrastructure and Exposure to Hazards.....	15
Exhibit H-15a. Planning and Regulatory Capabilities Summary .....	17
Exhibit H-15b. Administrative and Technical Capabilities Summary .....	19
Exhibit H-15c. Financial Capabilities Summary .....	20
Exhibit H-15d. Education and Outreach Capability Summary.....	21
Exhibit H-16. Moulton Niguel Mitigation Actions .....	23

## MOULTON NIGUEL WATER DISTRICT ANNEX

Moulton Niguel Water District (MNWD) is a participant (Member Agency [MA]) in the Orange County Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). As a participant MA, MNWD representatives were part of the MJHMP planning process and served on the planning team responsible for the plan update; refer to **Section 2** of the MJHMP. The base plan, including the MJHMP procedural requirements and planning process apply to MNWD.

This annex details the hazard mitigation planning elements specific to MNWD and describes how MNWD’s risks vary from the planning area. This annex is not intended to be a standalone document but supplements the information contained in the base plan. All sections of the MJHMP, including the planning process and other procedural requirements, apply to and were met by MNWD. The base plan treats the entire county as the planning area and identifies which MAs are subject to a profiled hazard. The purpose of this annex is to provide additional information specific to MNWD with a focus on the risk assessment and mitigation strategies.

### H.1 HAZARD MITIGATION PLAN POINT OF CONTACT AND DEVELOPMENT TEAM

The representative listed in **Exhibit H-1** lead the MNWD planning team, attended meetings, and coordinated the hazard mitigation planning efforts with MNWD staff and the consultant team supporting the effort.

**Exhibit H-1. Planning Team Leads**

Primary Point of Contact	Alternate Point of Contact
Name: Len Barton	Name: Cristina Garcia
Title: Safety & Emergency Manager	Title: Admin Analyst
Telephone: (949) 416-1646	Telephone: (949) 425-3568
Email: lbarton@mnwd.com	Email: cgarcia@mnwd.com

MNWD followed the planning process detailed in **Section 2** and formed an internal team to support and provide information for the plan update. The following staff served as MNWD’s internal hazard mitigation planning development team.

**Exhibit H-2. Internal Hazard Mitigation Planning Development Team**

Name	Title
Matthew Brown	IT Officer
Adrian Tasso	Operations
Dan Horn	Operations
Jesus Garibay jr.	Water reuse
Vicki Osborn	Support
Dan West	Operations
Kelsey Coleman	Communications
Ronin Goodall	Operations
Todd Dmytryshyn	Engineering
Jennifer Dooley	GIS Administrator

Outreach to the public within MNWD’s service area was performed to ensure residents could access information on this planning effort. To reach the largest number of people possible, MNWD

published a webpage with information on the MJHMP process. The MJHMP survey was posted to their website to increase engagement.

## H.2 JURISDICTION PROFILE

### *Service Population: 170,000*

MNWD was formed in November 1960 under provisions of the California Water District Law, Division 13 of the Water Code of the State of California. MNWD is governed by a publicly elected Board of Directors comprised of seven directors. The Board of Directors approves policy, establishes rates and charges for service, and adopts an annual budget to ensure ratepayers have a reliable, sustainable, and economic water and wastewater treatment services. MNWD is in the southern portion of the County of Orange and provides water and wastewater treatment services to over 170,000 customers. MNWD is almost entirely developed and encompasses all or portions of the cities of Aliso Viejo, Laguna Niguel, Laguna Hills, Mission Viejo, Dana Point, and San Juan Capistrano. MNWD, water supplies include approximately 75 percent imported water from Metropolitan through Multi-Jurisdictional Hazard Mitigation Plan (MWDOC) and approximately 25 percent recycled water serving landscape irrigation services.

## H.3 HAZARDS

This section is intended to profile the hazards and assess the vulnerabilities that MNWD faces, distinct from that of the county-wide planning area. The hazard profiles in the MJHMP discuss overall impacts to the planning area and describe the hazard problem description, hazard extent, magnitude/severity, previous occurrences of hazard events and the likelihood of future occurrences. For more information on risk assessment methodologies, see **Section 3**.

MNWD's service area is subject to most of the other hazards identified for the planning area. Many of these hazards are dispersed and may affect the entire region, including power outages, drought, seismic shaking, and windstorms. Based on the risk assessment, the MNWD development team discussed which hazards should or should not be profiled in the base plan. This discussion resulted in the identification of the following hazards that affect MNWD and summarized their probability of future occurrence, level of impact and significance as outlined in **Exhibit H-3**. Detailed hazard profiles for the planning area are provided in **Section 3** of the base plan.

**Exhibit H-3. MNWD Hazard Identification**

Hazard Type	Occurrence Probability*	Affected Area*	Primary Impact*	Secondary Impact*	Hazard Planning Consideration*	Significance to Moulton Niguel Water
Human-Caused Hazards: Power Outage	Highly Likely	Medium	Catastrophic	High	High	High
Wildfire	Highly Likely	Medium	Critical	High	High	High
Human-Caused Hazards: Terrorism (Cyber Threat)	Highly Likely	Medium	Critical	Limited	High	High
Seismic Hazards: Seismic Shaking	Likely	Medium	Catastrophic	High	High	High
Seismic Hazards: Seismic Liquefaction	Likely	Medium	Catastrophic	High	High	High
Severe Weather: Windstorm	Highly Likely	Large	Limited	Negligible	Medium	Medium
Severe Weather: Extreme Heat	Likely	Medium	Critical	Moderate	Medium	Medium
Severe Weather: Drought	Highly Likely	Large	Negligible	Negligible	Medium	High
Dam/Reservoir Failure	Somewhat Likely	Medium	Catastrophic	High	Medium	Medium
Flood	Likely	Medium	Limited	Negligible	Medium	High
Coastal Hazards: Coastal Storms	Likely	Small	Limited	Limited	Medium	High
Coastal Hazards: Coastal Erosion	Likely	Isolated	Limited	Limited	Medium	High
Seismic Hazards: Fault Rupture	Somewhat Likely	Isolated	Catastrophic	Limited	Medium	High
Geological Hazards: Landslide and Mudflow	Somewhat Likely	Small	Limited	Moderate	Medium	High
Coastal Hazards: Sea Level Rise	Likely	Isolated	Limited	Negligible	Medium	Low
Human-Caused Hazards: Contamination/ Saltwater Intrusion	Unlikely	Small	Critical	High	Low	High
Human-Caused Hazards: Terrorism (MCJ)	Unlikely	Isolated	Critical	Moderate	Low	High
Human-Caused Hazards: Hazardous Materials	Unlikely	Isolated	Limited	Moderate	Low	Low
Urban Fire	Unlikely	Isolated	Limited	Negligible	Low	High
Geological Hazards: Land Subsidence	Unlikely	Isolated	Negligible	Limited	Low	High
Geological Hazards: Expansive Soils	Unlikely	Isolated	Negligible	Limited	Low	Medium
Coastal Hazards: Tsunami	Unlikely	Isolated	Negligible	Negligible	Low	High

\*The values within these columns are representative of the entire planning area of Orange County and are not narrowed down to MNWD's service area.

<p><b>Geographic Affected Area</b></p> <ul style="list-style-type: none"> <li>▪ Isolated: Less than 10% of planning area</li> <li>▪ Small: 10-30% of planning area</li> <li>▪ Medium: 30-60% of planning area</li> <li>▪ Large: 60-100% of planning area</li> </ul>	<p><b>Significance</b></p> <ul style="list-style-type: none"> <li>▪ Low: Minimal potential impact</li> <li>▪ Medium: Moderate potential impact</li> <li>▪ High: Widespread potential impact</li> </ul>
<p><b>Probability of Future Occurrences</b></p> <ul style="list-style-type: none"> <li>▪ Highly Likely: Near 100% chance of occurrence in next year or happens every year.</li> <li>▪ Likely: Between 10 and 100% chance of occurrence in next year or has a recurrence interval of 10 years or less.</li> <li>▪ Occasional: Between 1 and 10% chance of occurrence in the next year or has a recurrence interval of 11 to 100 years.</li> <li>▪ Unlikely: Less than 1% chance of occurrence in next 100 years or has a recurrence interval of greater than every 100 years</li> </ul>	<p><b>Magnitude/Severity</b></p> <ul style="list-style-type: none"> <li>▪ Catastrophic: More than 50% of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths.</li> <li>▪ Critical: 25-50% of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability.</li> <li>▪ Limited: 10-25% of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable; does not result in permanent disability.</li> <li>▪ Negligible: Less than 10% of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid</li> </ul>

The Federal Emergency Management Agency (FEMA) Local Mitigation Planning Handbook requires each agency to identify the magnitude/severity of each hazard to their infrastructure. The identification of hazards provided in **Exhibit H-3** is highly dependent on the location of facilities within each agency’s jurisdiction and takes into consideration the history of the hazard and associated damage (if any), information provided by agencies specializing in a specific hazard (e.g., FEMA, California Geological Survey), and relies upon each agency’s expertise and knowledge. The table was created with input from the Water Emergency Response Organization of Orange County (WEROC), consultant staff, and MNWD.

## H.4 HAZARD MAPS

The following maps show the location of hazard zones within the jurisdiction relative to potable water and wastewater systems, as applicable.

Exhibit H-4. Fire Hazard and MNWD Potable Infrastructure

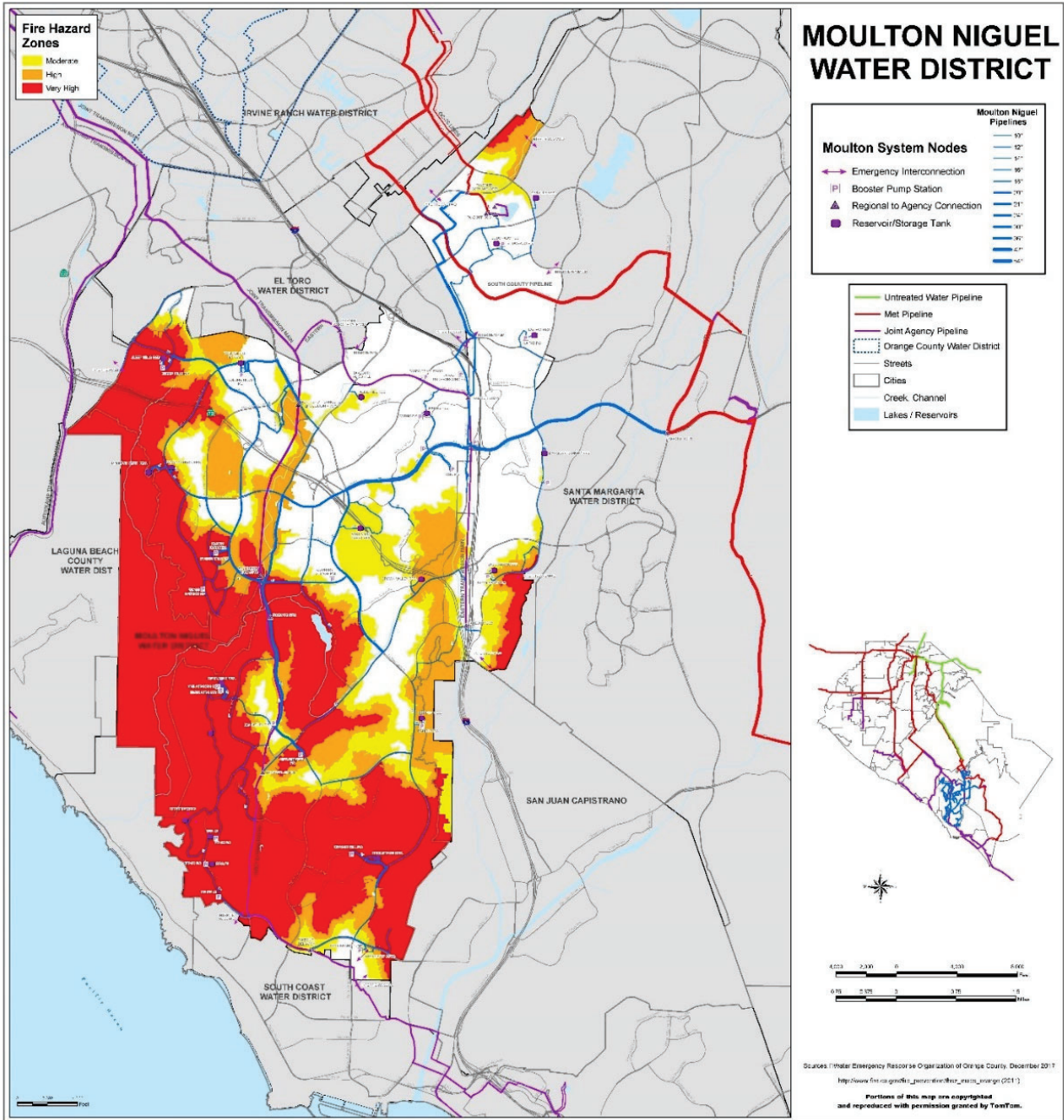


Exhibit H-5. Fire Hazard and MNWD Wastewater Infrastructure

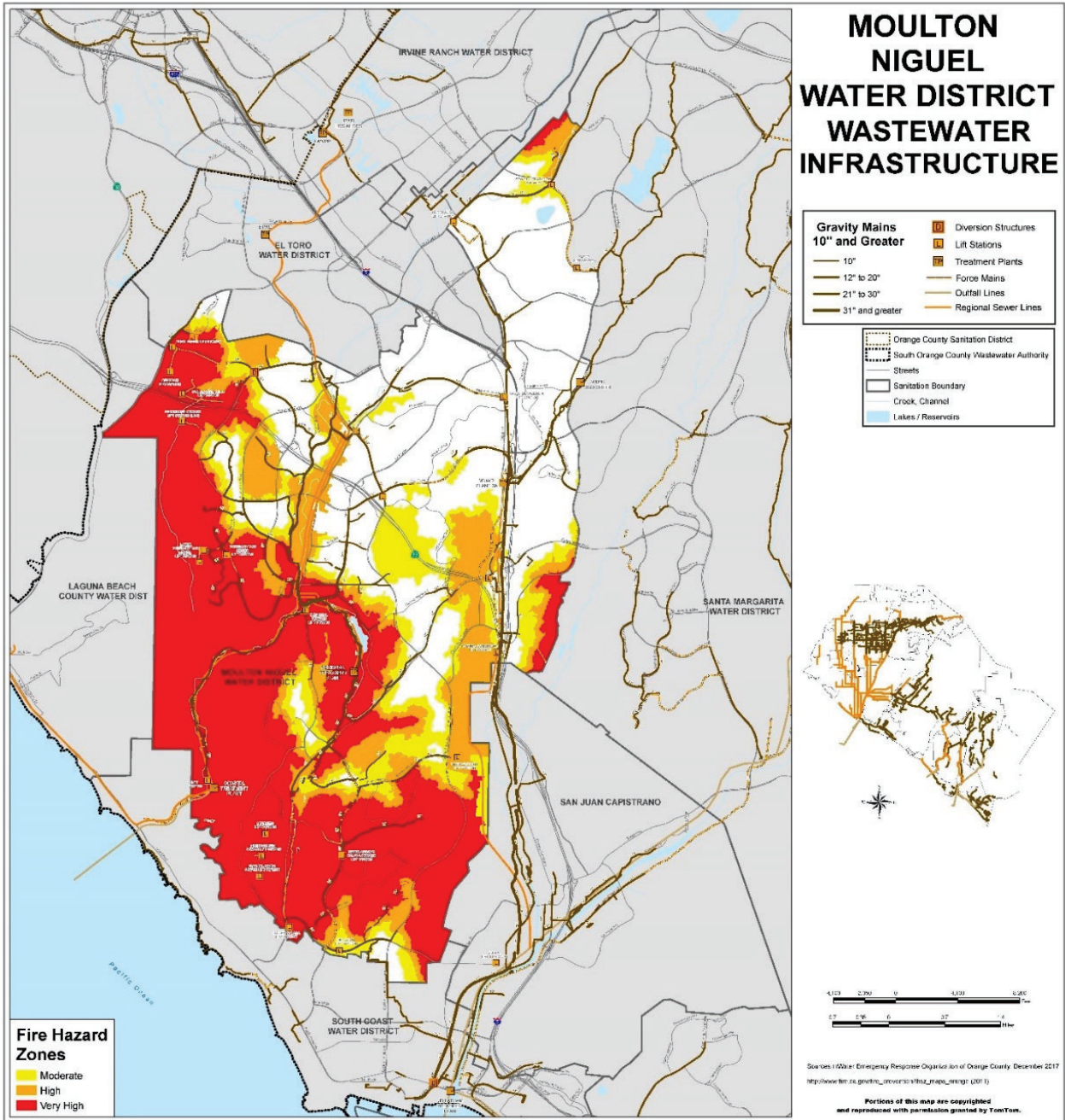




Exhibit H-6. Flood Hazard and MNWD Potable Infrastructure

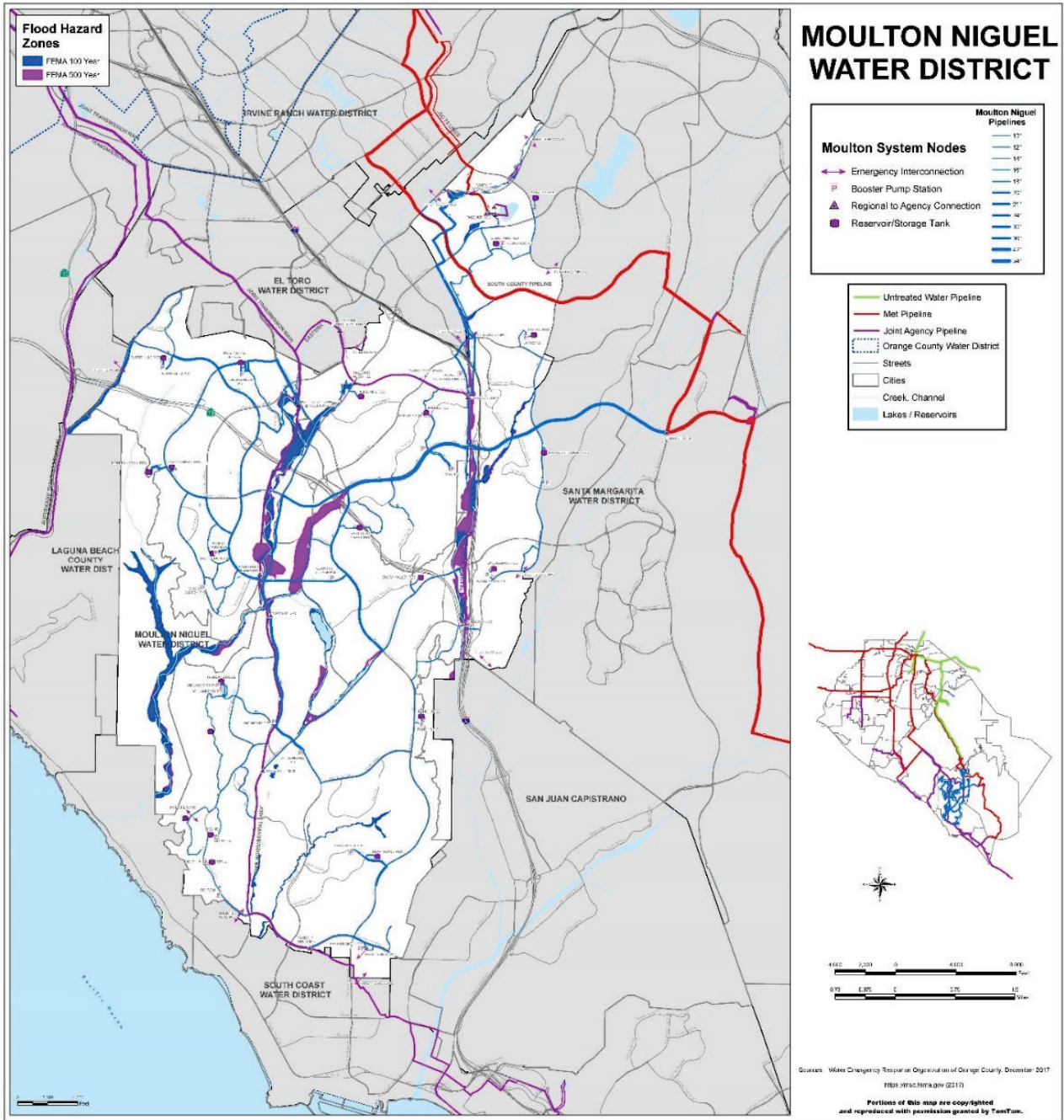


Exhibit H-7. Flood Hazard and MNWD Wastewater Infrastructure

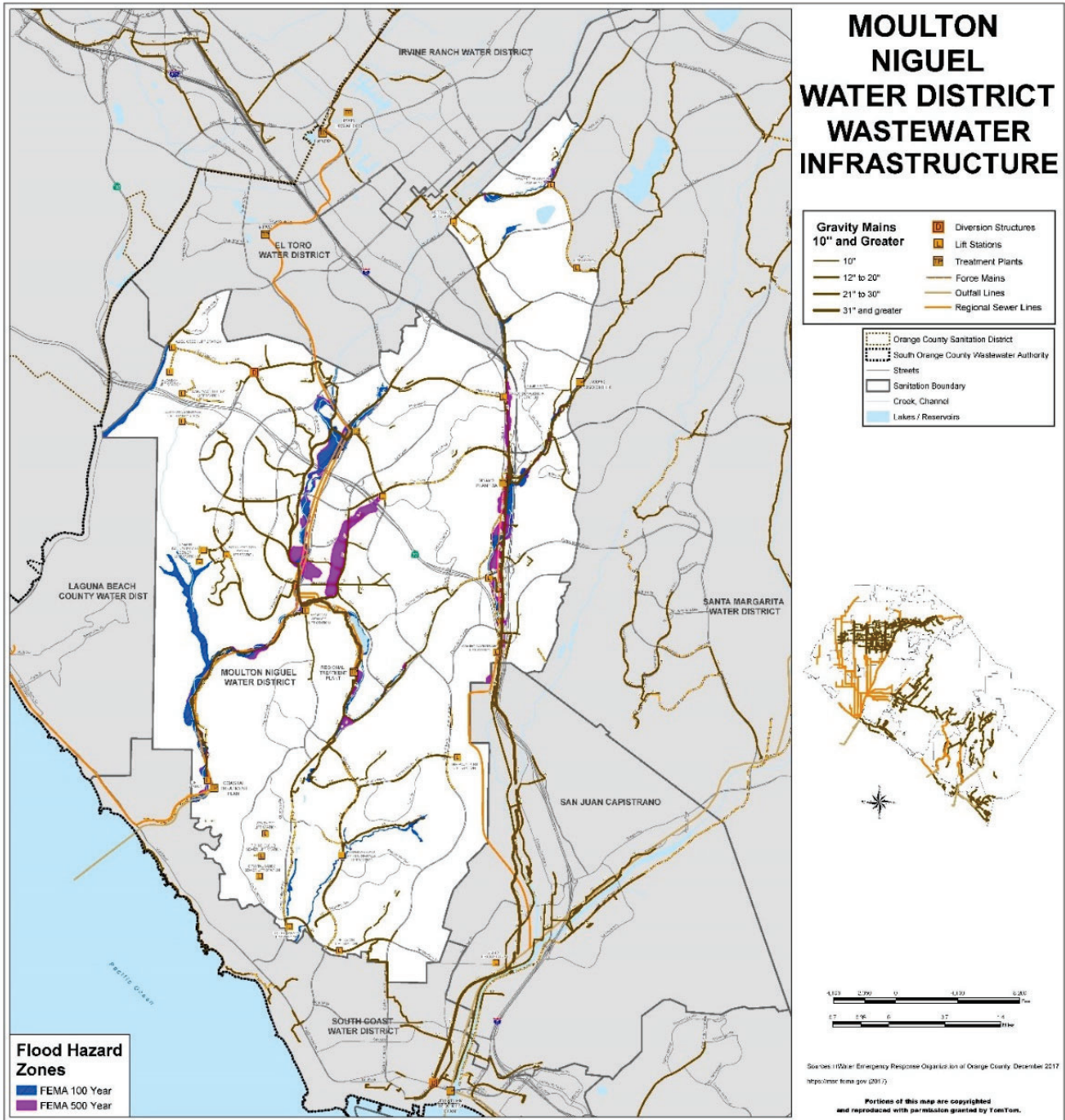


Exhibit H-8. Seismic Shaking Hazard and MNWD Potable Infrastructure

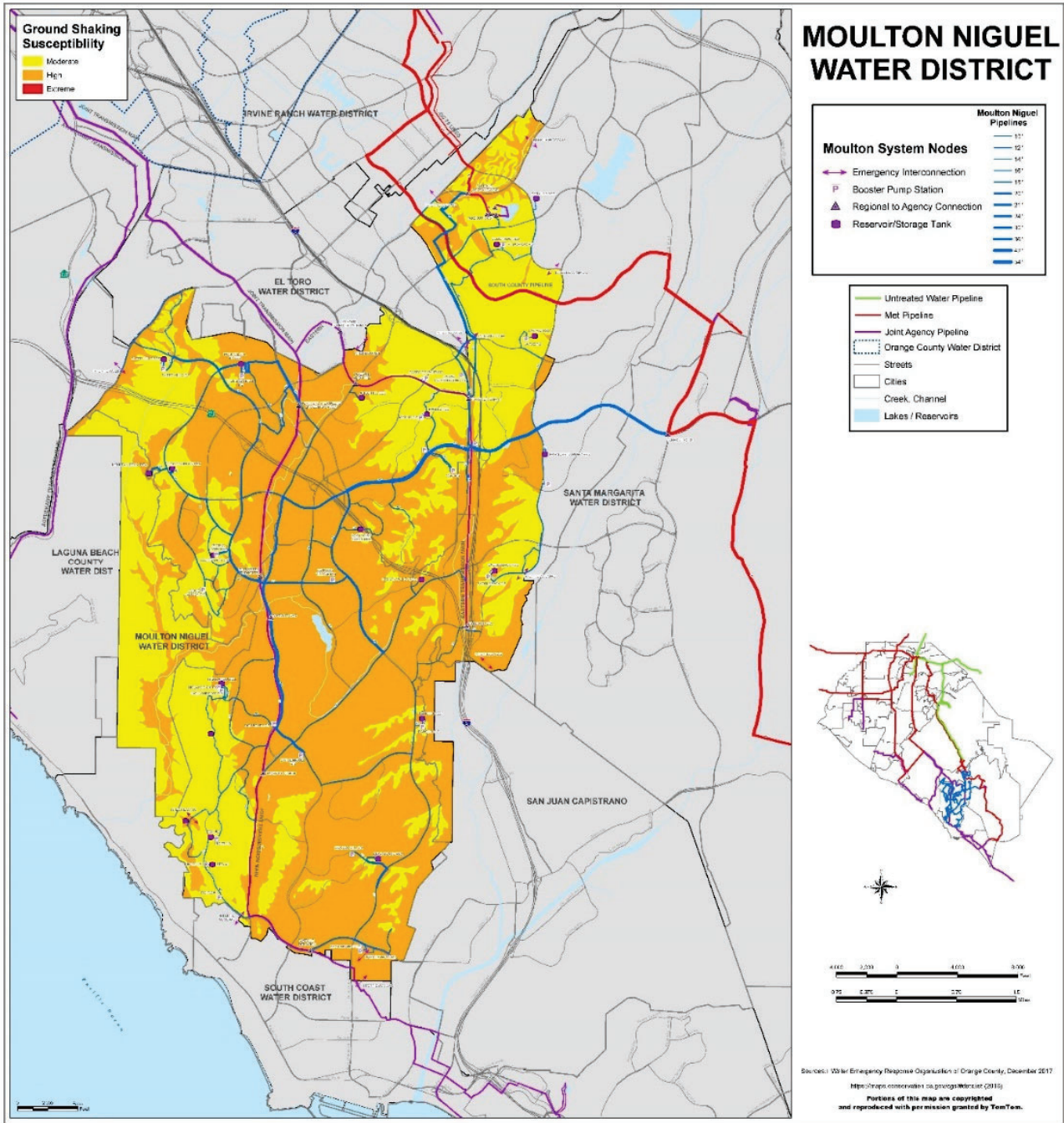


Exhibit H-9. Seismic Shaking and MNWD Wastewater Infrastructure

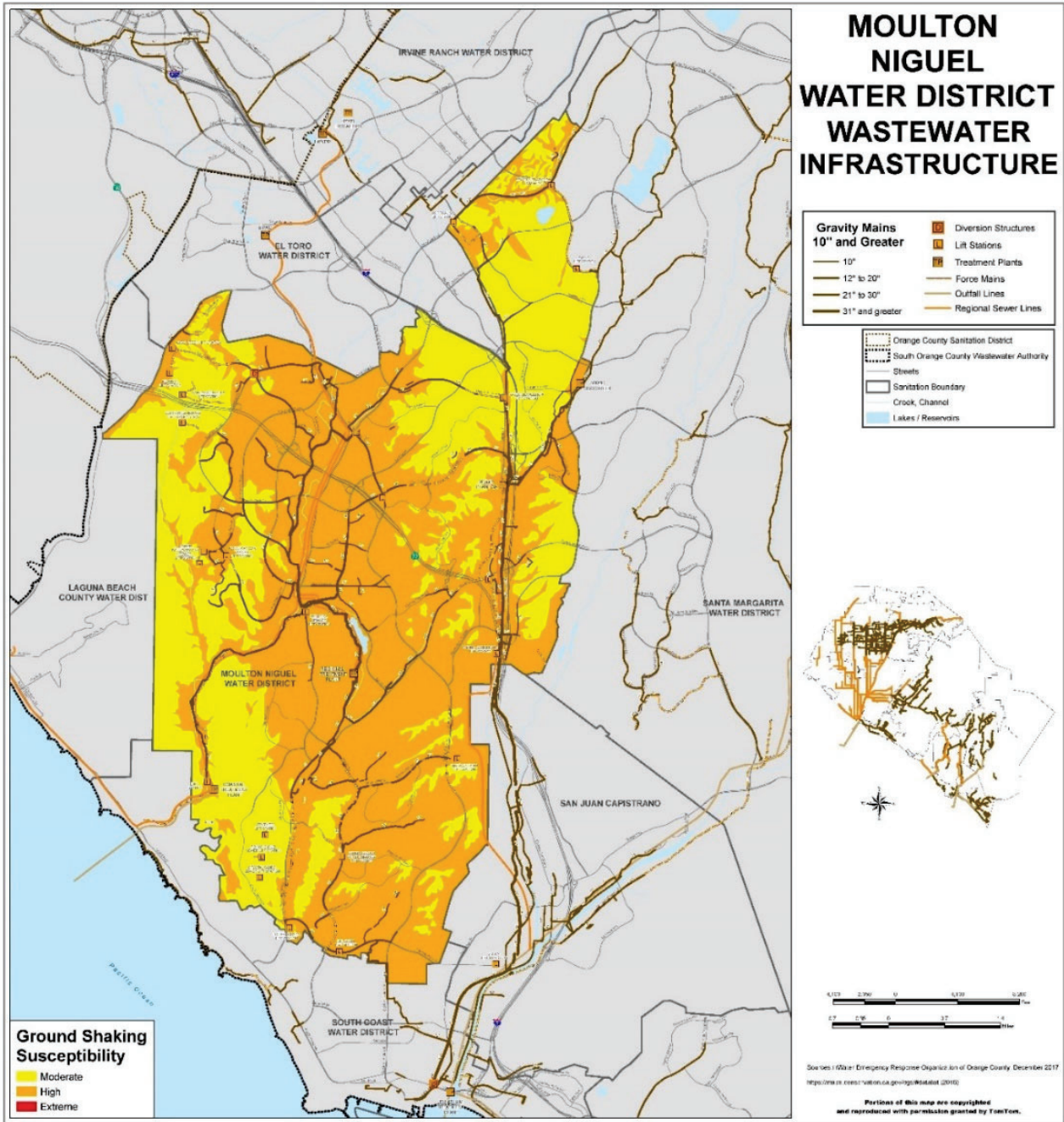


Exhibit H-10. Liquefaction Hazard and MNWD Potable Infrastructure

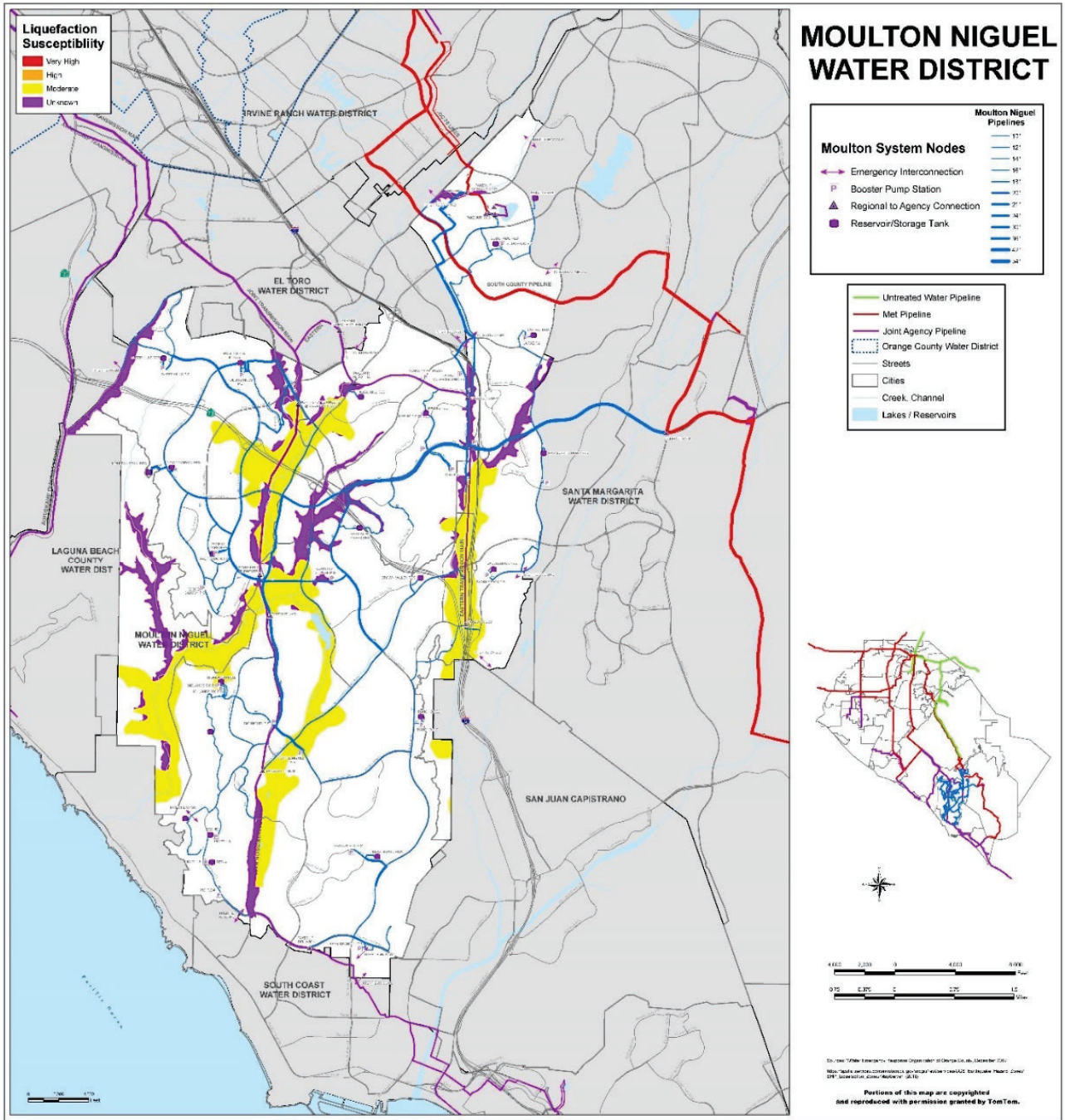


Exhibit H-11. Liquefaction Hazard and MNWD Wastewater Infrastructure

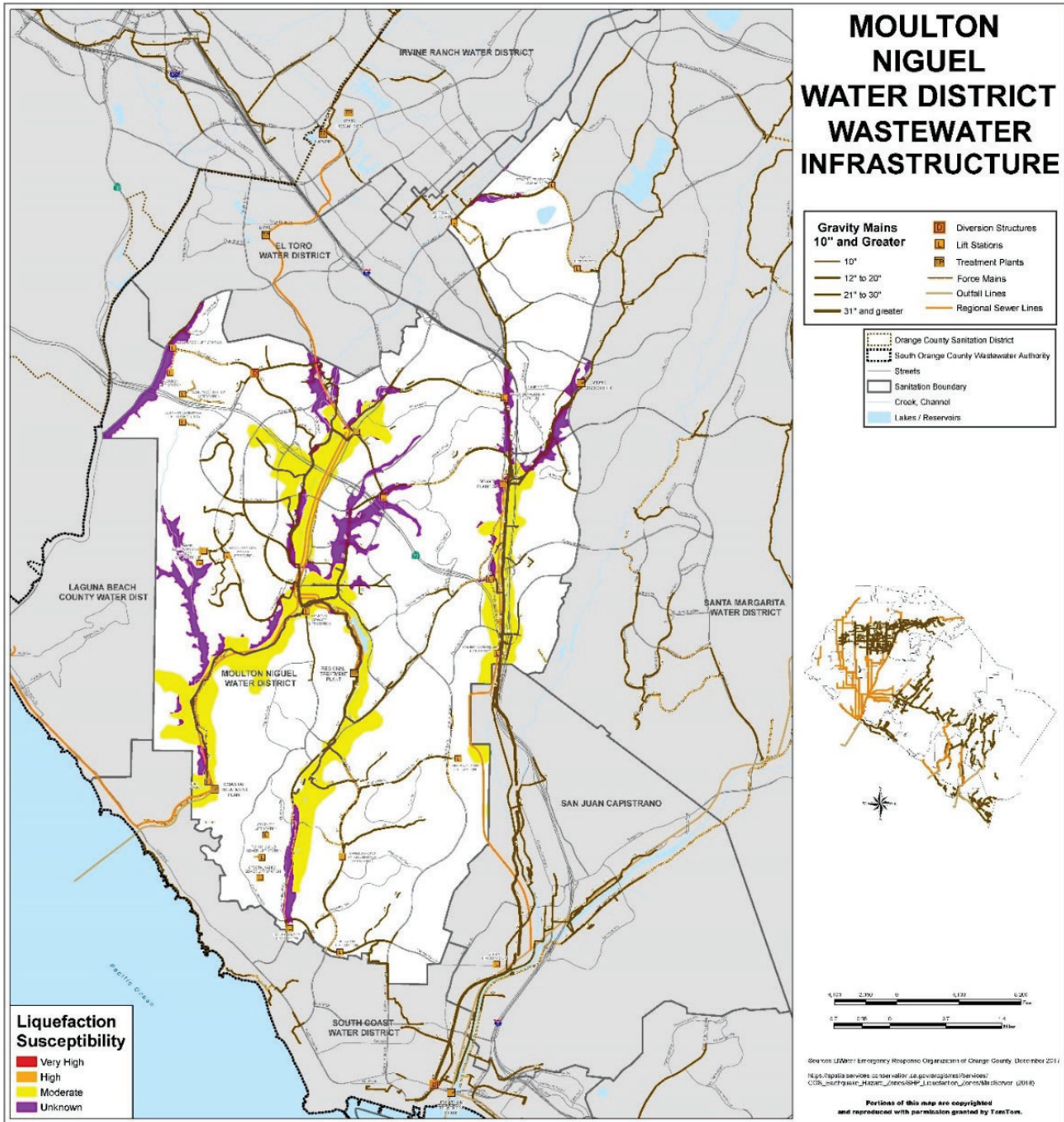


Exhibit H-12. Landslide Hazard and MNWD Potable Infrastructure

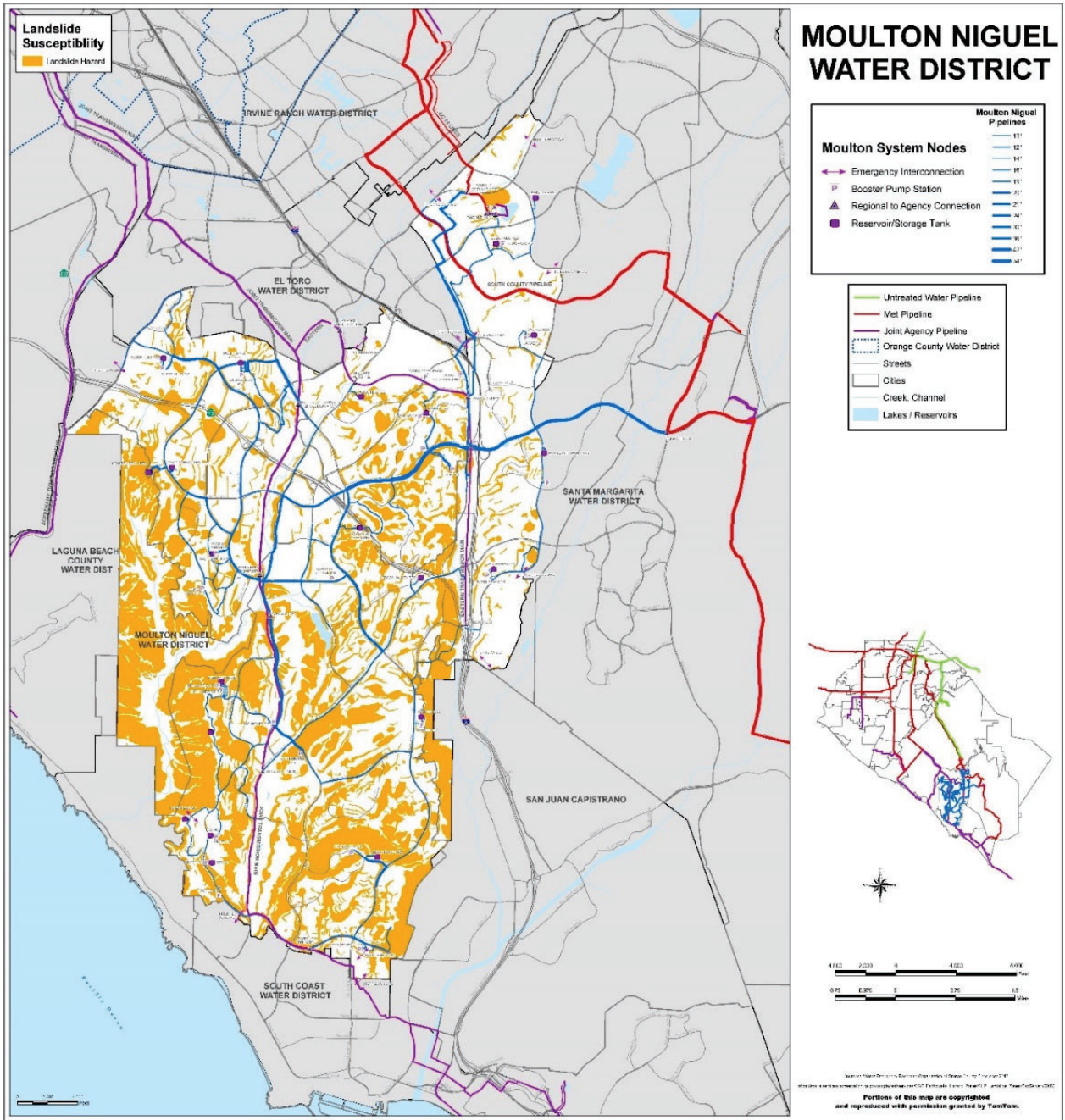
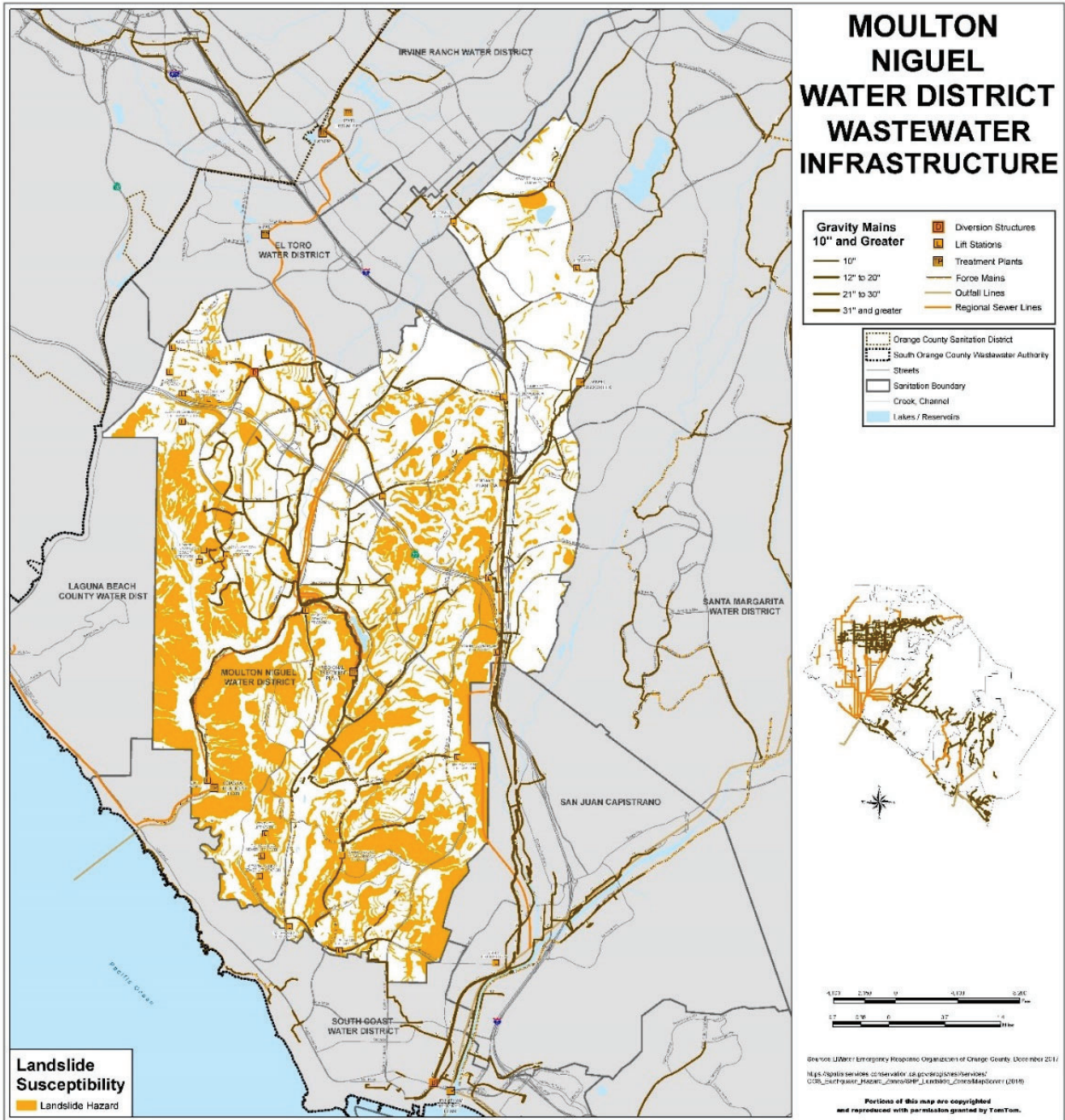


Exhibit H-13. Landslide Hazard and MNWD Wastewater Infrastructure





## H.5 VULNERABILITY AND RISK ASSESSMENT

Assessing vulnerabilities shows the unique characteristics of individual hazards and begins the process of narrowing down locations within MNWD’s service area that are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying method for examining such vulnerabilities more in depth. Using these methods vulnerable populations, infrastructure, and potential losses from hazards can be estimated.

### *Assets Susceptible to Hazard Events*

MNWD’s infrastructure is outlined in **Exhibit H-14**, which lists the number infrastructure assets are located within the mapped hazard zones identified above.

**Exhibit H-14. Moulton Niguel Infrastructure and Exposure to Hazards**

Hazard		Infrastructure Type					
		Interties (#)	Pump Stations (#)	Reservoirs (#)	Potable Pipeline (miles)	Wastewater Pipeline (miles)	Effluent Pipeline (miles)
<b>Fire Hazard Zone</b>	Moderate	1	1	1	30.7	8.0	0.5
	High	1	3	5	40.5	9.9	1.0
	Very High	5	9	11	61.5	21.4	1.6
<b>FEMA Flood Zone</b>	100-Year	0	0	0	4.5	6.5	0.5
	500-Year	0	0	0	9.2	7.3	2.1
<b>Alquist-Priolo Rupture Zone</b>		0	0	0	0	0	0
<b>Seismic Shaking</b>	Moderate	5	14	19	74.1	9.1	0
	High	7	8	6	165.2	59.3	5.2
	Extreme	0	0	0	0	0	0
<b>Liquefaction</b>	Moderate	0	3	1	8.3	39.0	0
	High	0	0	0	0	1.2	0
	Very High	0	0	0	0	0	0
	Unknown	2	1	0	30.9	22.0	0
<b>Landslide Zone</b>		1	4	0	24.5	6.9	2.8
<b>Tsunami Zone</b>		0	0	0	0	0	0.6

Much of MNWD’s potable and wastewater assets are in very high fire hazard areas and high hazard seismic shaking areas. MNWD does not contain infrastructure or pipelines in the Alquist-Priolo Rupture Zone.

### *Changes in Land Use and Development*

The service area of MNWD covers approximately 18,577 acres with over 50% of the service area being used for residential land uses such as single-family homes and multi-family homes. The second largest land use within the MNWD service area is open space and park lands that cover just under 6,000 acres. The future growth within the service area is anticipated to be restricted to redevelopment and infill activities due to the restricted amount of developable land, including the pending sale of the approximate 91 acre Cet Holifield Federal Building located at 24000 Avila Road in Laguna Niguel To meet planned water demands outlined in the 2021 Urban Water Management

in Laguna Niguel To meet planned water demands outlined in the 2021 Urban Water Management Plan, MNWD has had several projects running in the past five years and has a variety of projects planned. Projects such as the Aliso Creek Lift Station Rehabilitation and the Crown Valley Parkway Pipeline Replacement will increase the resilience of MNWD wastewater infrastructure to allow the system to meet current and future demand and avoid potential spills or overflows of sewage. Within the MNWD potable water system, projects such as reservoir seismic retrofits, replacement of the reservoir management systems, rehabilitation of pipelines, rehab of pressure reducing stations, and generator replacement have all been completed or being completed, to increase the resilience of the potable water system and ensure the continued delivery of drinking water to MNWD’s customers.

***Vulnerabilities Associated with Climate Change***

Hazard	Climate Change Vulnerabilities
<b>Hazards of High Concern</b>	
<b>Coastal Hazards: Coastal Erosion</b>	The anticipated impacts associated with coastal erosion to MNWD’s service area from climate change will mirror the impacts discussed in the base plan.
<b>Coastal Hazards: Coastal Storms</b>	The anticipated impacts associated with coastal storms to MNWD’s service area from climate change will mirror the impacts discussed in the base plan.
<b>Coastal Hazards: Tsunami</b>	MNWD’s vulnerability to tsunamis is not expected to change due to climate change.
<b>Flood</b>	Climate change is expected to cause some higher-level flood waters within MNWD along Aliso Creek with the 100-year flooding event potentially expanding into the 500-year flood zones on a more frequent basis.
<b>Geological Hazards: Land Subsidence</b>	MNWD’s vulnerability to land subsidence is not expected to change due to climate change and is anticipated to be similar to those described in the base plan.
<b>Geological Hazards: Landslide and Mudflow</b>	Climate change could indirectly affect the conditions for landslides across MNWD’s service area as increased precipitation and storm intensities may cause more moisture-induced landslides.
<b>Human-Caused Hazards: Contamination/ Saltwater Intrusion</b>	Changes in contamination and saltwater intrusion vulnerability due to climate change are expected to follow the changes outlined in the base plan.
<b>Human-Caused Hazard: Power Outage</b>	Climate change will likely increase MNWD’s vulnerability to power outages as local electric companies implement protocols such as rolling blackouts or targeted shutoffs that may impact MNWD facilities.
<b>Human-Caused Hazards: Terrorism (Cyber Threat)</b>	Connections between climate change and cyber based terrorism have not been identified.
<b>Human-Caused Hazards: Terrorism (MCI)</b>	Climate change has no direct link to human-caused hazards and is expected to follow the impacts described in the base plan.
<b>Seismic Hazards: Seismic Shaking</b>	Climate change is not expected to cause any changes to the frequency or intensity of seismic shaking occurring within MNWD’s service area.
<b>Seismic Hazards: Seismic Liquefaction</b>	Climate change is anticipated to impact liquefaction potential within the MNWD service area as periods of both intense rain and drought could potentially increase or decrease groundwater elevations affecting the risk of liquefaction, depending on the circumstances.
<b>Seismic Hazards: Fault Rupture</b>	There are no expected changes to the frequency or intensity of fault ruptures occurring within MNWD’s service area as a result of climate change.

Hazard	Climate Change Vulnerabilities
<b>Severe Weather: Drought</b>	Droughts are expected to increase in length and frequency due to climate change and impact MNWD as described in the base plan.
<b>Urban Fire</b>	There is no anticipated impact to how climate change could influence the ignition or behavior of urban fires.
<b>Wildfire</b>	Climate change is expected to increase the risk wildfires within MNWD’s service area, especially in the areas near Laguna Niguel Regional Park, Dripping Cave, and adjacent to Crystal Cove State Park.
<b>Hazards of Medium Concern</b>	
<b>Dam/Reservoir Failure</b>	There are no expected climate change impacts on dam/reservoir failure. However, fluctuations in the amount of precipitation and intensity of events could cause stress on dam/reservoir facilities not previously anticipated during initial design. These types of issues could increase the vulnerability of these facilities, which is described in the base plan.
<b>Geological Hazards: Expansive Soils</b>	Climate change is not expected to impact expansive soils within MNWD’s service area. The vulnerability follows that described in the Base Plan.
<b>Severe Weather: Extreme Heat</b>	Temperatures are expected to increase due to climate change and impact MNWD’s service area as described in the base plan.
<b>Severe Weather: Windstorm</b>	The challenges to MNWD from climate change’s impacts on Windstorms are expected to follow the impacts described in the base plan.
<b>Hazards of Low Concern</b>	
<b>Coastal Hazards: Sea Level Rise</b>	The anticipated impacts to vulnerability to sea level rise for MNWD from climate change will mirror the impacts discussed in the base plan.
<b>Human-Caused Hazards: Hazardous Materials</b>	Climate change has the potential of increasing hazardous materials releases resulting from transportation crashes or damage to storage vessels.

## H.6 CAPABILITIES ASSESSMENT

The capabilities assessment is designed to identify existing local agencies, personnel, planning tools, public policy and programs, technology, and funds that have the capability to support hazard mitigation activities and strategies outlined in this MJHMP. MNWD’s internal development team revised the capabilities identified in the 2019 plan and collaborated to identify current local capabilities and mechanisms available to the MA for reducing damage from future hazard events. **Exhibits H-15a through H-15d** assess the authorities, policies, programs, and resources that the jurisdiction has in place that are available to help with the long-term reduction of risk through mitigation. These capabilities include planning and regulatory tools, administrative and technical resources, financial resources, and education and outreach programs. MNWD has the ability to expand on and improve existing emergency management policies and programs to implement mitigation programs. In some instances, methods of expansion and improvement have been identified within a specific capability, while a majority of these capabilities are anticipated to be expanded and improved upon through additional projects/initiatives already underway by the agency. These have been included at the bottom of each table.

**Exhibit H-15a. Planning and Regulatory Capabilities Summary**

Ordinance, Plan, Policy, Program	Responsible Agency or Department	Description/Comments
Building Code	Cities of Aliso Viejo, Laguna Hills, Laguna Niguel, Mission Viejo,	MNWD complies with applicable building codes and works with cities and agencies within the service areas.

Ordinance, Plan, Policy, Program	Responsible Agency or Department	Description/Comments
	Dana Point, Orange County Fire Authority, Air Quality Management District	<b>Expansion and Improvement:</b> As retrofits and replacement projects are identified MNWD will anticipate meeting or exceeding the latest building codes to ensure greater resilience is incorporated into their infrastructure.
Zoning Ordinance	Cities of Aliso Viejo, Laguna Hills, Laguna Niguel, Mission Viejo, Dana Point, County of Orange	MNWD complies with applicable zoning ordinances and works with cities and agencies within the service areas.
Subdivision Ordinance or Regulations	Cities of Aliso Viejo, Laguna Hills, Laguna Niguel, Mission Viejo, Dana Point, County of Orange	MNWD complies with applicable subdivision ordinances and regulations and works with cities and agencies within the service areas.
Special Purpose Ordinance	County of Orange, Army Corps. of Engineers, Fish & Game (Fed/State), SWRCB, RWQCB	MNWD complies with applicable special purpose ordinances and works with agencies as necessary.
Growth Management Ordinances	Cities of Aliso Viejo, Laguna Hills, Laguna Niguel, Mission Viejo, Dana Point, County of Orange	MNWD complies with applicable growth management ordinances and works with cities and agencies within the service areas. <b>Expansion and Improvement:</b> Growth management ordinances need to take into account water needs and available supplies for existing and future populations. Working closely with the Cities and County in the region, MNWD can help better understand how growth management ordinances could impact these resources.
Site Plan Review Requirements	Cities of Aliso Viejo, Laguna Hills, Laguna Niguel, Mission Viejo, Dana Point, County of Orange, OCFA, OCTA, CAL Trans, MNWD	MNWD uses District Standards for project submittals and works with local agencies for any additional requirements. <b>Expansion and Improvement:</b> Developing better methods and techniques to support site plan reviews within Orange County can help ensure adequate planning, design, and engineering analysis is available to Cities and the County when new subdivisions are proposed.
General Plan	MNWD	Includes: Long-Range Water Reliability Plan, Recycled Water Optimization Study, Urban Water Management Plan, and Resiliency Action Plan (RAP). Additionally, MNWD complies with applicable General Plans within the service areas. <b>Expansion and Improvement:</b> Integration of future projects from Urban Water Management Plans (UWMPs) into Local Hazard Mitigation Plans can ensure both plans are supporting the necessary improvements needed to ensure future water supplies and minimize risks to hazards and disasters.

Ordinance, Plan, Policy, Program	Responsible Agency or Department	Description/Comments
Capital Improvements Plan (CIP)	MNWD	Annual Capital Improvement Plan, 10-year Capital Improvement Plan. <b>Expansion and Improvement:</b> Incorporation of mitigation strategies into the CIP can help support future funding of improvements necessary to enhance water/wastewater systems.
Economic Development Plan	Local Cities	MNWD complies with applicable economic development plans and works with cities within the service areas.
Emergency Response Plan (ERP)	MNWD, Local Cities, State, Federal	MNWD Emergency Response Plan, work with local agencies to support local emergency response planning. <b>Expansion and Improvement:</b> Continued improvement and enhancement of emergency response plans can help ensure MNWD is better prepared for future incidents and can anticipate their communities' needs.
Water Discharge Requirements	State Water Resources Control Board	Regulatory requirements for the discharge of waste.
Short/Long-term Comprehensive Plans	MNWD, Local Districts	MNWD has several long and short term plans including Urban Water Management Plan; Water Shortage Contingency Plan; Long-Range Water Reliability Plan; and Integrated Regional Water Management Plan. These plans are reviewed and updated/edited on a regular basis to ensure mitigation strategies adequately meet MNWD needs.
Continuity of Operations Plan (COOP)	MNWD	In development. MNWD currently relies on their Emergency Response Plan.

**How can these capabilities be expanded and improved to reduce risk?**

- Evaluate ability to contract with local fuel distributors and gas stations for emergency backup supply.
- Include hazard mitigation actions in annual updates of all appropriate planning documents.
- Continue to enhance interagency cooperation with neighboring water districts, WEROC and OCFA on procedures to obtain resources in case of emergency.
- Implement outputs of MNWD's Resiliency Action Plan (RAP) starting with Business Continuity Plan development.

**Exhibit H-15b. Administrative and Technical Capabilities Summary**

Staff/Personnel or Type of Resource	Responsible Agency or Department	Description/Comments
Planner(s) or Engineer(s) with Knowledge of Land Development and Land Management Practices	Engineering Department	Provides information regarding MNWD development standards.
Engineer(s) or Professional(s) Trained in Construction Practices Related to Buildings and/or Infrastructure	Engineering Department	Eleven Engineers responsible for designing and building code compliant infrastructure.
Planners or Engineer(s) with an Understanding of Natural and/or Human-Caused Hazards	Local Cities, Outside Consultants	City, county, and agency has planners with expertise in land development practices.

Staff/Personnel or Type of Resource	Responsible Agency or Department	Description/Comments
Floodplain Manager	County of Orange	The agency coordinates with the County Floodplain Manager.
Surveyors	Outside Consultants	MNWD staff utilizes outside consultants with input from staff, as necessary.
Staff with Education or Expertise to Assess the Community's Vulnerability to Hazards	County of Orange, WEROC, Orange County Intelligence Assessment Center	Work with the County, WEROC, and OCIAC to assess vulnerabilities.
Personnel Skilled in GIS and/or HAZUS	Engineering	3 GIS Technicians.
Emergency Manager	MNWD	Deputy General Manager
Grant Writers	Outside Consultants	MNWD staff utilizes outside consultants with input from staff, as necessary.
Lab Specialist and Lab Staff	South Orange County Wastewater Authority	Contract with South Orange County Wastewater Authority.
Mutual Aid Agreements	WEROC & CalWARN	Formal mutual aid agreements with WEROC and CalWARN
Information Technology and Communications Staff	MNWD	5 IT staff responsible for maintaining IT and communications equipment with support from outside consultants. <b>Expansion and Improvement:</b> Ensure all IT staff attend Urban Area Security Initiative (UASI) Cyber Security Fundamentals for Response Operations and Continuity course,

How can these capabilities be expanded and improved to reduce risk?
<ul style="list-style-type: none"> <li>▪ Develop water loss mass balance model to strategically identify water loss for Proactive Leak Detection team.</li> <li>▪ Have all agency-registered engineers and other qualified individuals attend California Governor's Office of Emergency Services (Cal OES) Safety Assessment Program (SAP) training for building inspections.</li> </ul>

**Exhibit H-15c. Financial Capabilities Summary**

Financial Resources	Agency or Department	Description/Comments
Capital Improvements Project Funding	MNWD	<b>Expansion and Improvement:</b> During annual budgeting MNWD can highlight hazard mitigation strategies that support funding needs for the CIP.
Authority to Levy Taxes for Specific Purposes	MNWD	MNWD has the authority to levy taxes for the purpose of funding debt service payments on voter approved general obligation debt.
Fees for Water, Sewer, Gas, or Electric Service	MNWD	MNWD does have fees for water and sewer services.
Impact Fees for Homebuyers or Developers for New Developments/Homes	MNWD	MNWD charges capacity fees to new or expanded developments that are intended to establish parity between the

Financial Resources	Agency or Department	Description/Comments
		new connection and the existing customers who have invested in the system.
Incur Debt Through General Obligation Bonds (GOBs)		MNWD has the ability to incur debt through general obligation bonds, however the last GOB was paid in 2017.
Incur Debt Through Private Activity Bonds		The MNWD Board has the authority to acquire private bonds from the bank when necessary.

How can these capabilities be expanded and improved to reduce risk?
<ul style="list-style-type: none"> <li>▪ Continue to track any and all available funding opportunities related to hazard mitigation and natural disasters. Apply for, secure, and implement as many as possible.</li> </ul>

**Exhibit H-15d. Education and Outreach Capability Summary**

Resource/ Programs	Agency or Department	Description/Comments
Community Forum	Communications	Event hosted by MNWD. Opportunity to educate residents on a variety of issues.
Monthly Newsletter/Bill Insert	Communications	Newsletter sent electronically to customers monthly. Different topics and events are highlighted each month. <b>Expansion and Improvement:</b> Incorporate mitigation information and analysis into newsletters to continue sharing information with customers.
Other Agency Outreach Events	Communications	MNWD attends multiple events each year that are hosted by other agencies. We communicate with the community about a variety of topics including emergency preparedness.
Customer Emails	Communications	Use of customer email to disseminate information. <b>Expansion and Improvement:</b> Incorporate mitigation information and analysis into emails to continue sharing information with customers.
Business Continuity Planning	Multi-Departmental	MNWD staff meets bi-weekly to proactively maintain operating during and after disruptive events. Key aspects of business continuity planning include risk assessment, business impact analysis, strategic planning, and communication.
Resiliency Action Plan (RAP)	Multi-Departmental	Over the past 18 months, MNWD staff has worked to develop a RAP. RAP outlines a sequence of actions for implementing global best practices and insights from various industries, providing a comprehensive framework aimed at enhancing organization resiliency and business continuity.
Speakers Bureau	Communications	MNWD staff speak to community groups, such as schools, church groups, other community groups, about water related topics.

**How can these capabilities be expanded and improved to reduce risk?**

- Participation in WEROC-led efforts to develop standardized messaging for water outages, dam events, and general disaster response. Ensure that messaging will work for the general community, as well as the Access, Disability, and Functional Needs community specific to MNWD.
- Incorporate an emergency preparedness message into District social media outreach at least once monthly

## **H.7 MITIGATION STRATEGY**

### **H.7.1 Mitigation Goals**

MNWD adopts the hazard mitigation goals developed by the planning team; refer to **Section 4**.

### **H.7.2 Mitigation Actions**

The internal development team reviewed the mitigation actions identified in the 2019 plan and the updated risk assessment to determine if the mitigation actions were completed, required modification, should be removed because they are no longer relevant, and/or should remain in the MJHMP update. New mitigation actions to address the updated risk assessment and capabilities identified above were also considered and added. **Exhibit H-16**, MNWD Mitigation Actions, identifies the mitigation actions, including the priority, hazard addressed, risk, timeframe, and potential funding sources.



**Exhibit H-16. Moulton Niguel Mitigation Actions**

Action/Task/Project Description	Location/ Facility	Hazard	Cost	Responsible	Timeframe	Possible Funding Sources	Status
<b>HIGH PRIORITY</b>							
Cybersecurity enhancements and ongoing capabilities to improve ability to withstand cyber threats.	District Wide	Human-Caused Hazards: Terrorism (Cyber Threat)	\$150,000/yr	IT/Operations	Short Term	Budget	Existing, Ongoing
OASIS Water Resource Center Direct Potable Reuse Facility	Regional Treatment Plant	Severe Weather: Drought	\$200-300 Million	Engineering /Operations	Short Term	Budget	New
Orange County Water District (OCWD) Groundwater Basin Emergency Interconnection with City of Santa Ana's East Station Well Site.	City of Santa Ana East Station Site	Severe Weather: Drought	\$20 Million	Engineering /Operations	Short Term	Budget	New
Plant 3A Liquids Handling Improvements	Plant 3A	Flood; Human-Caused Hazard: Power Outage	\$14.5 Million	Engineering /Operations	Short Term	Budget	New
Lower Salada (LS) Force Main Replacement	Lower Salada	Flood	\$10 Million	Engineering /Operations	Short Term	Budget	In Progress
Replace existing force mains (20", 24" Techite pipe) from Regional Lift Station.	Regional Lift Station	All Hazards	\$30 Million	Engineering /Operations	Short Term	Budget	Existing, Ongoing
Upgrade existing reservoir management systems	All Potable Reservoirs	All Hazards	\$20 Million	Engineering /Operations	Short Term	Budget	In Progress
<b>MEDIUM PRIORITY</b>							
Supervisory Control and Data Acquisition (SCADA) Pole Replacements	District Wide	Human-Caused Hazards: Terrorism (Cyber Threat)	\$300,000	IT/Operations	Short Term	Budget	New
Eastern Transmission Main Rehabilitation	Eastern TM	Flood; Seismic Hazards: Seismic Shaking	\$2 Million	Engineering /Operations	Long Term	Budget	New
Northern Transmission Main Rehabilitation	Northern TM	Flood; Seismic Hazards: Seismic Shaking	\$1.5 Million	Engineering /Operations	Long Term	Budget	New
Southwestern Transmission Main Rehabilitation	Southwestern TM	Flood; Seismic Hazards: Seismic Shaking	\$7 Million	Engineering /Operations	Long Term	Budget	New
Upper Salada Lift Station Force Main Rehabilitation and Replacement	Upper Salada FM	Flood; Seismic Hazards: Seismic Shaking	\$6 Million	Engineering /Operations	Long Term	Budget	New

Orange County Water & Wastewater Multi-Jurisdictional Hazard Mitigation Plan  
2024

Action/Task/Project Description	Location/ Facility	Hazard	Cost	Responsible	Timeframe	Possible Funding Sources	Status
North Aliso Lift Station Reconstruction	North Aliso Lift Station	Flood; Human-Caused Hazards: Contamination	\$11.2 Million	Engineering /Operations	Short Term	Budget	New
Aliso Creek Lift Station Rehabilitation	Aliso Creek Lift Station	Flood; Human-Caused Hazards: Contamination	\$9 Million	Engineering /Operations	Short Term	Budget	New
Lower Salada Lift Station Rehabilitation	Lower Salada Lift Station	Flood; Human-Caused Hazards: Contamination	\$5.4 Million	Engineering /Operations	Short Term	Budget	New
Beacon Hill Pump Station Rehabilitation	Beacon Hill Pump Station	Flood; Human-Caused Hazards: Contamination	\$3.2 Million	Engineering /Operations	Short Term	Budget	New
1050-Zone Secondary Feed Pump Station and Transmission Main	PID 2 Site		\$8.5 Million	Engineering /Operations	Short Term	Budget	New
Plant 3A Power Generation Implementation	Plant 3A	Flood; Human-Caused Hazards: Power Outage	\$6.8 Million	Engineering /Operations	Long Term	Budget	New
3A ETM Creek Bank Stabilization to address vulnerable alignment segments of secondary effluent pipeline.	Plant 3A Effluent Transmission Main	Flood; Seismic Hazards: Seismic Shaking	\$2 Million	Engineering /Operations	Long Term	Budget	Existing, Ongoing
3A ETM Replacement - Ave De La Vista	Plant 3A Effluent Transmission Main	Flood; Seismic Hazards: Seismic Shaking	\$2.5 Million	Engineering /Operations	Long Term	Budget	Existing, Ongoing
3A ETM Replacement - Camino Capo	Plant 3A Effluent Transmission Main	Flood; Seismic Hazards: Seismic Shaking	\$3.5 Million	Engineering /Operations	Long Term	Budget	Existing, Ongoing
Construct second takeout from South County Pipeline to MNWD Diemer 30" line.	South Orange County	Flood; Human-Caused Hazards: Contamination; Seismic Hazards: Seismic Shaking	\$10 Million	Engineering /Operations	Long Term	Budget	Existing, Ongoing
Electrical System Improvements Program to replace susceptible electrical equipment to ensure reliability.	District Wide	Flood; Human-Caused Hazards: Power Outage	\$5 Million	Engineering /Operations	Short Term	Budget	In Progress
Lower Salada Lift Station Overflow Wetwell	Lower Salada	Flood; Human-Caused Hazards: Power Outage	\$1.25 Million	Engineering /Operations	Short Term	Budget	Existing, Ongoing

Action/Task/Project Description	Location/ Facility	Hazard	Cost	Responsible	Timeframe	Possible Funding Sources	Status
Manhole Rehabilitation Program to improve system reliability and reduce risk of sanitary sewer overflow.	District Wide	Flood; Seismic Hazards: Seismic Shaking	\$2.5 Million	Engineering /Operations	Short and Long Term	Budget	In Progress
Mitigate unlawful sewer discharges into state waterways at Aliso Creek Parallel Sewer Force Main	Aliso Creek Lift Station	All Hazards	\$2.5 Million	Engineering /Operations	Long Term	Budget	Existing, Ongoing
Plant 3A Solids Handling Improvements	Plant 3A	Flood; Human-Caused Hazards: Power Outage	\$53.8 Million	Engineering /Operations	Short Term	Budget	In Progress
PW Easement Rehabilitation Program to address vulnerable facilities within easement.	District Wide	Geological Hazards: Landslide and Mudflow	\$5 Million	Engineering /Operations	Short and Long Term	Budget	Existing, Ongoing
Relocate the existing Plant 3A transmission main away from the Oso and Trabuco Creeks.	Plant 3A Effluent Transmission Main	Human-Caused Hazards: Contamination; Seismic Hazards: Seismic Shaking	\$15 Million	Engineering /Operations	Long Term	Budget	Existing, Ongoing
Sewer Lining Program (Niguel West, Crown Valley Parkway, Pacific Island Drive) to improve system reliability and reduce risk of sanitary sewer overflow.	District Wide	Flood; Seismic Hazards: Seismic Shaking	\$5.5 Million	Engineering /Operations	Short Term	Budget	Existing, Ongoing
Video Site Surveillance System	All facilities	Human-Caused Hazards: Terrorism (MC) and Human-Caused Hazards: Contamination	\$300,000	IT/Operations	Short Term	Budget	Existing, Ongoing
<b>LOW PRIORITY</b>							
Connect Irvine Ranch Water District's (IRWD's) well field system to Allen-McColloch Pipeline.	IRWD/AMP; OC-72 Takeout	Severe Weather: Drought; Seismic Hazards: Seismic Shaking	\$500,000	Engineering /Operations	Long Term	Budget	Existing, Ongoing
Marguerite/Oso CIP Takeout facility to provide backup water supply to area.	Marguerite /Oso	Human-Caused Hazards: Contamination; Seismic Hazards: Seismic Shaking	\$5 Million	Engineering /Operations	Long Term	Budget	Existing, Ongoing
Participate in the development and implementation of regional ocean desalination projects.	Orange County	Severe Weather: Drought	\$200 Million	Engineering	Long Term	Budget	Existing, Ongoing
Perform Potable Water System Master Plan Update	All Facilities	All Hazards	\$800,000	Engineering /Operations	Long Term	Budget	Existing, Ongoing

### H.7.3 Completed or Removed Mitigation Initiatives

The following mitigation actions from the 2019 plan have been completed or are in progress and therefore are removed from this plan update.

- **Mitigation:** Asset Management Program/CMMS Implementation.
  - **Status:** Completed.
- **Mitigation:** 54-Inch CIP Improvements.
  - **Status:** Completed.
- **Mitigation:** Construct secondary supply pipeline to Mission Hospital.
  - **Status:** Completed.
- **Mitigation:** Develop fuel management plan for auxiliary engines and implement.
  - **Status:** Completed.
- **Mitigation:** Replacement of Point to Multi-Point Radios for SCADA System.
  - **Status:** Completed.
- **Mitigation:** Potable Water Main Replacement at 1-5 Oso Creek Crossing.
  - **Status:** Completed.
- **Mitigation:** Easement Rehabilitation Program - Phase 2.
  - **Status:** Removed. No longer phasing.
- **Mitigation:** Supply Reliability Enhancements - Fund 6.
  - **Status:** Removed. Became OCWD Groundwater Basin Emergency Interconnection.
- **Mitigation:** Supply Reliability Enhancements - Fund 12.
  - **Status:** Removed. Became OCWD Groundwater Basin Emergency Interconnection.

## H.8 PLAN INTEGRATION

MNWD capital budget, Water Master Plan, Wastewater Master Plan and Capital Improvement Plan are all used to implement mitigation initiatives identified in this annex. After adoption of the MJHMP, MNWD will continue to integrate mitigation priorities into these documents.

Since the previous plan update, MNWD incorporated information from the MJHMP in its CIP, in addition to the following planning mechanisms:

- The risk assessment and mitigation actions were used to inform the MNWD's Water and Wastewater Master Plans.
- Mitigation actions were incorporated into the capital budget.