

MOULTON NIGUEL WATER DISTRICT ANNEX

The Moulton Niguel Water District (MNWD) is a participant (Member Agency [MA]) in the Orange County Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan (HMP or Plan). As a participant MA, MNWD representatives were part of the HMP Planning Process and served on the Planning Team responsible for the Plan Update; refer to Section 2 of the Plan. The primary Plan, including the hazard mitigation plan procedural requirements and planning process apply to MNWD.

This Annex supplements information contained in the primary Plan and describes how MNWD’s risks vary from the planning area. The Risk Assessment (Section 3) summarizes the hazards and risks that pose a threat to Orange County. The primary 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 strategy.

HAZARD MITIGATION PLAN POINT OF CONTACT AND DEVELOPMENT TEAM

The following representatives attended the Planning Team meetings on behalf of MNWD and coordinated the hazard mitigation planning efforts with MNWD staff:

Primary Point of Contact

Rod Woods
Director of Engineering

Alternate Point of Contact

Todd Novacek
Director of Operations

In addition to participating on the Planning Team, an internal team was also formed to support Planning Team representatives and provide information for the Plan update. The following staff served as MNWD’s internal hazard mitigation planning development team.

Representative	Title	How Participated
Matt Collings	Assistant General Manager	Review, HMP Update
Jennifer Dooley	GIS Administrator	Reviewed Hazard Maps
Jeff Kosewick	GIS Technician	Reviewed Hazard Maps
Steve Merk	Superintendent of Engineering	Review, HMP Update
Todd Novacek	Director of Operations	Review, HMP Update
Rod Woods	Director of Engineering	Review, HMP Update

JURISDICTION PROFILE (Service Population: over 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. The District 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 service to over 170,000 customers. The District 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 MWDOC and approximately 25 percent recycled water serving landscape irrigation services.

HAZARDS

Detailed hazard profiles for the planning area are provided in Section 3. MNWD is located inland and therefore is not subject to coastal hazards, such as coastal storms/erosion and tsunamis. However, MNWD 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 climate change, drought, ground shaking from earthquakes, geologic hazards, and high wind. A large area within the MNWD service area is identified as a very high fire hazard zone. When compared to the region, there are no hazards that are unique to MNWD.

Based on the risk assessment, the MNWD development team identified the following hazards that affect MNWD and summarized their geographic extent, probability of future occurrence, magnitude/severity and significance; refer to Table K-1.

**Table K-1
MNWD Hazard Identification**

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/Severity	Significance
Climate Change	Extensive	Likely	Limited	Low
Contamination/ Salt Water Intrusion	Limited	Unlikely	Negligible	Low
Drought	Extensive	Highly Likely	Limited	High
Earthquake Fault Rupture & Seismic Hazards	Extensive	Occasional	Catastrophic	High
Flood	Limited	Likely	Critical	Medium
Geologic Hazards	Significant	Likely	Limited	Medium
High Winds/Santa Ana Winds	Extensive	Highly Likely	Limited	Medium
Landslide/Mudflow	Significant	Occasional	Limited	Medium
Wildland/Urban Fire	Extensive	Likely	Critical	Medium
Human-Caused Hazards	Limited	Occasional	Limited	Low
Power Outage	Significant	Highly Likely	Limited	Medium
Geographic Extent Limited: Less than 10% of planning area Significant: 10-50% of planning area Extensive: 50-100% of planning area		Magnitude/Severity Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths. Critical—25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability. Limited—10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability. Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid.		
Probability of Future Occurrences Highly Likely: Near 100% chance of occurrence in next year or happens every year. Likely: Between 10 and 100% chance of occurrence in next year or has a recurrence interval of 10 years or less. Occasional: Between 1 and 10% chance of occurrence in the next year or has a recurrence interval of 11 to 100 years. Unlikely: Less than 1% chance of occurrence in next 100 years or has a recurrence interval of greater than every 100 years.		Significance Low: Minimal potential impact Medium: Moderate potential impact High: Widespread potential impact		

The identification of hazards provided in Table K-1 is highly dependent on the location of facilities within each agencies 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 agencies' expertise and knowledge.

Hazard Maps

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

VULNERABILITY AND RISK ASSESSMENT

Assets Susceptible to Hazard Events

Table K-2, MNWD Infrastructure and Exposure to Hazards, identifies MNWD’s water and wastewater infrastructure assets that are located within the mapped hazard zones, identified above.

**Table K-2
MNWD Infrastructure and Exposure to Hazards**

Hazard		Infrastructure Type					
		Interties (#)	Pump Stations (#)	Reservoirs (#)	Potable Pipeline (miles)	Wastewater Pipeline (miles)	Effluent Pipeline (miles)
Fire Hazard Zone	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
FEMA Flood Zone	100-Year	0	0	0	4.5	6.5	0.5
	500-Year	0	0	0	9.2	7.3	2.1
Alquist-Priolo Rupture Zone		0	0	0	0	0	0
Ground Shaking	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	0.0	0
Liquefaction	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
Landslide Zone		1	4	0	24.5	6.9	2.8
Tsunami Zone		0	0	0	0	0	0.6

Much of Moulton Niguel Water District’s potable and wastewater pipeline systems are in very high fire hazard areas and high hazard ground shaking areas. Additionally, the district has infrastructure or pipelines in all hazard areas, except the Alquist-Priolo Rupture Zone.

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 Plan. MNWD’s internal development team revised the capabilities identified in the 2012 plan and collaborated to identify current local capabilities and mechanisms available to the MA for reducing damage from future hazard events. Tables K-1a through K-1d 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.

**Table K-3a
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, Dana Point, OCFA, AQMD	MNWD complies with applicable building codes and works with cities and agencies within the District service areas.
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 District 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 District 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 District service areas.
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.
General Plan	MNWD	Includes: Long Range Water Reliability Plan, Recycled Water Optimization Study, Urban Water Management Plan. Additionally, MNWD complies with applicable General Plans, within the District service areas.
Capital Improvements Plan	MNWD	Annual Capital Improvement Plan, 10-year Capital Improvement Plan.
Economic Development Plan	Local Cities	MNWD complies with applicable economic development plans and works with cities within the District service areas.
Emergency Response Plan	MNWD, Local Cities, State, Federal	MNWD Emergency Response Plan, work with local agencies to support local emergency response planning.
Water Discharge Requirements	State Water Resources Control Board	Regulatory requirements for the discharge of waste.

**Table K-3b
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	6 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.
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, OCIAC	Work with the County, WEROC, and OCIAC to assess vulnerabilities.
Personnel Skilled in GIS and/or HAZUS	Engineering	3 GIS Technicians.
Emergency Manager	MNWD	Director of Operations.
Grant Writers	Outside Consultants	MNWD staff utilizes outside consultants with input from staff, as necessary.
Lab Specialist & Lab Staff	South Orange County Wastewater Authority	Contract with South Orange County Wastewater Authority.

**Table K-3c
Financial Capabilities Summary**

Financial Resources	Agency or Department
Community Development Block Grants (CDBG)	MNWD
Capital Improvements Project Funding	MNWD
Authority to Levy Taxes for Specific Purposes	MNWD
Fees for Water, Sewer, Gas, or Electric Service	MNWD
Impact Fees for Homebuyers or Developers for New Developments/Homes	MNWD
Incur Debt Through General Obligation Bonds	MNWD
Incur Debt Through Private Activity Bonds	MNWD
Withhold Spending in Hazard-Prone Areas	MNWD

**Table K-3d
Education and Outreach Capability Summary**

Resource/Programs	Agency or Department	Description/Comments
Live Smart Event	Communications Coordinator	Event hosted by MNWD. Opportunity to educate residents on a variety of issues.
Monthly Newsletter	Communications Coordinator	Newsletter sent electronically to customers monthly. Different topics and events are highlighted each month.
Other Agency Outreach Events	Communications Coordinator	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 Coordinator	Use of customer email to disseminate information.
Speakers Bureau	Communications Coordinator	MNWD staff speak to community groups, such as schools, church groups, other community groups, about water related topics.

MITIGATION STRATEGY

Mitigation Goals

MNWD adopts the hazard mitigation goals developed by the Planning Team; refer to Section 4.

Mitigation Actions

The internal development team reviewed the mitigation actions identified in the 2012 plan and the updated risk assessment to determine if the mitigation actions were completed, require modification, should be removed because they are no longer relevant, and/or should remain in the Plan Update. New mitigation actions to address the updated risk assessment and capabilities identified above were also considered and added. Table K-4, MNWD Mitigation Actions, identifies the mitigation actions, including the priority, hazard addressed, risk, timeframe, and potential funding sources.

**Table K-4
MNWD Mitigation Actions**

Priority (High, Medium, or Low)	Action/Task/Project Description	Location/Facility	Risk (High, Medium, or Low)	Cost	Timeframe (Immediate, Short Term, or Long Term)	Possible Funding Sources	Status/Progress (New, Existing, Modified)	Status Rationale
Multi-Hazard								
Medium	Video Site Surveillance System	District Wide	Medium	\$500K	Long	Budget	Modified	Security/Remote Operations; same scope but modifications. Contamination/Human/ Other
Medium	Perform Potable Water System Master Plan Update	District Wide	Medium	\$800K	Long	Budget	Modified	Identify sufficient supplies for fire protection; changed cost. Drought/ Earthquake/ Other
Medium	Aliso Creek Parallel Sewer Force Main	Aliso Creek Lift Station	Medium	\$2.5M	Long	Budget	Modified	Mitigate unlawful sewer discharges into state waterways; changed name and scope. Contamination/Flood/ Other
High	Upgrade Existing Reservoir Management Systems	All Potable Reservoirs	Medium	\$15M	Long	Budget	Modified	Secure water quality systems with new masonry wall enclosures; changed cost and priority. Contamination/Human/ Other
High	Construct secondary supply pipeline to Mission Hospital.	Mission Viejo Hospital	Medium	\$800K	Short	Budget	Existing	Ensure water reliability during an emergency to critical facility; changed cost. Earthquake/ Fire/Other
Medium	Construct second take-out from South County Pipeline to MNWD Diemer 30" line.	South Orange County	Medium	\$2.5M	Long	Budget	Existing	Improve water reliability; improve access to water supply projects. Contamination/ Earthquake/Other
Low	Participate in the development and implementation of regional ocean desalination projects.	Orange County	Low	\$200M	Long	Budget	Existing	Improve water reliability; improve access to water supply projects. Climate Change/Drought/Other
Low	Connect IRWD's well field system to Allen-McColloch Pipeline.	IRWD/AMP; OC-72 Takeout	Low	\$500K	Long	Budget	Existing	Improve water reliability; improve access to water supply projects. Drought/ Earthquake/ Other

**Table K-4 [continued]
MNWD Mitigation Actions**

Priority (High, Medium, or Low)	Action/Task/Project Description	Location/Facility	Risk (High, Medium, or Low)	Cost	Timeframe (Immediate, Short Term, or Long Term)	Possible Funding Sources	Status/Progress (New, Existing, Modified)	Status Rationale
High	Replace existing force mains (20", 24" Techite pipe) from Regional Lift Station.	Regional Lift Station	Medium	\$10M	Short	Budget	Existing	Mitigate unlawful sewer discharges into state waterways. Contamination/Earthquake/Other
Medium	Relocate the existing Plant 3A transmission main away from the Oso and Trabuco Creeks.	Plant 3A Effluent Transmission Main	Medium	\$15M	Long	Budget	Existing	Mitigate unlawful sewer discharges into state waterways. Contamination/Earthquake/Other
High	Develop fuel management plan for auxiliary engines and implement.	All Lift Stations	Medium	\$100K	Short	Budget	Existing	Ensure continuous power source at all sewage lift stations. Power Outage/Fire/Other
High	Asset Management Program/CMMS Implementation.	District Wide	Medium	\$500K	Short	Budget	New	Efficient asset management improves system reliability. Fire/Drought/Other
Medium	Replacement of Point to Multi-Point Radios for SCADA System.	District Wide	Medium	\$800K	Short	Budget	New	Update ensures a maintainable communications system. High Winds/Human Hazards/Other
Low	Supply Reliability Enhancements - Fund 6.	District Wide	Medium	\$10M	Long	Budget	New	Improve system reliability. Drought/Contamination/Other
Low	Supply Reliability Enhancements - Fund 12.	District Wide	Medium	\$10M	Long	Budget	New	Improve system reliability. Contamination/Landslide/Other
High	54-Inch CIP Improvements	Oso Pkwy/Bridlewood	High	\$2.6M	Short	Budget	New	District's most critical water delivery facility. Earthquake/Geologic/Other
Medium	Easement Rehabilitation Program - Phase 1	District Wide	Medium	\$7.9M	Short	Budget	New	Address vulnerable district facilities that lie within easements. Geologic/Landslide/Other
Medium	Easement Rehabilitation Program - Phase 2	District Wide	Medium	\$6M	Long	Budget	New	Address vulnerable district facilities that lie within easements. Geologic/Earthquake/Other
Medium	Electrical System Improvements Program	District Wide	Medium	\$5M	Short	Budget	New	Replace susceptible electrical equipment to ensure reliability. Power Outage/Flood/Other

**Table K-4 [continued]
MNWD Mitigation Actions**

Priority (High, Medium, or Low)	Action/Task/Project Description	Location/Facility	Risk (High, Medium, or Low)	Cost	Timeframe (Immediate, Short Term, or Long Term)	Possible Funding Sources	Status/Progress (New, Existing, Modified)	Status Rationale
Low	Marguerite/Oso CIP Takeout Facility	Marguerite/Oso	Low	\$2.5M	Long	Budget	New	Provide backup water supply to area. Contamination/Earthquake/Other
High	Potable Water Main Replacement at 1-5 Oso Creek Crossing	Oso Creek/I-5	High	\$1.5M	Short	Budget	New	Supply reliability for critical facility with hazard history. Flood/Geologic/Other
Medium	Manhole Rehabilitation Program	District Wide	Medium	\$3.2M	Short	Budget	New	Improves system reliability and reduces risk of sanitary sewer overflow. Earthquake/Flood/Other
Medium	Sewer Lining Program	District Wide	Medium	\$2.4M	Short	Budget	New	Improves system reliability and reduces risk of sanitary sewer overflow. Earthquake/Flood/Other
High	Lower Salada LS Force Main Replacement	Lower Salada	High	\$5.9M	Short	Budget	New	Existing force main is deteriorated; reconstruction required to reduce risk of sanitary sewer overflow. Earthquake/Flood/Other
Medium	3A ETM Creek Bank Stabilization	Plant 3A Effluent Transmission Main	High	\$2M	Long	Budget	New	Address vulnerable alignment segment of secondary effluent pipeline. Flood/Earthquake/Other
Medium	3A ETM Replacement - Ave De La Vista	Plant 3A Effluent Transmission Main	High	\$2.5M	Long	Budget	New	Address vulnerable alignment segment of secondary effluent pipeline. Flood/Earthquake/Other
Medium	3A ETM Replacement - Camino Capo	Plant 3A Effluent Transmission Main	High	\$3.5M	Long	Budget	New	Address vulnerable alignment segment of secondary effluent pipeline. Flood/Earthquake/Other
Medium	Lower Salada Lift Station Overflow Wetwell	Lower Salada	Medium	\$1.25M	Short	Budget	New	Provide mobilization time in event of blockage, failure, or outage. Flood/Power Outage/Other
Medium	Plant 3A Improvements	Plant 3A	High	\$12.6M	Long	Budget	New	Improve facility's reliability and reduce risk of sanitary sewer overflow. Flood/Power Outage/Other

**Table K-4 [continued]
MNWD Mitigation Actions**

Priority (High, Medium, or Low)	Action/Task/Project Description	Location/Facility	Risk (High, Medium, or Low)	Cost	Timeframe (Immediate, Short Term, or Long Term)	Possible Funding Sources	Status/Progress (New, Existing, Modified)	Status Rationale
Medium	16" Crown Valley Pipeline	Crown Valley	Medium	\$10M	Long	Budget	New	Critical water transmission main susceptible to multiple hazards. Earthquake/Geologic/Other
High	Regional Lift Station Enhancements	Regional Lift Station	High	\$2M	Short	Budget	New	District's largest sewage lift station reliability. Flood/Earthquake/Other
Medium	Cathodic Protection Program	District Wide	Medium	T.B.D.	Long	Budget	New	Protection against extremely corrosive soil. Earthquake/Geologic/Other
Medium	Groundwater Storage and Exchange Program	Orange County	Low	T.B.D.	Short	Budget	New	Increase water reliability. Drought/Climate Change/Other
Medium	Sewer Interconnections with Adjacent Utilities	Aliso Creek & North Aliso	Medium	\$1M	Short	Budget	New	Improves system reliability and reduces risk of sanitary sewer overflow. Flood/Earthquake/Other
Medium	Relocate existing Oso Trabuco sewer away from Oso and Trabuco Creeks.	Oso Trabuco Sewer	Medium	\$25M	Long	Budget	New	Mitigate unlawful sewer discharges into state waterways. Flood/Contamination/Other
Medium	Expand Recycled Water System (Optimization)	District Wide	Medium	\$18M	Long	Budget	Modified	Reduce potable water demands; changed name and cost. Climate Change/Drought/Other
Low	Vertical Asset Improvements Program - Recycled Water	District Wide	Low	\$18M	Long	Budget	New	Improve system reliability. Climate Change/Drought/Other
Low	AMI Phase 2	District Wide	Low	\$8M	Long	Budget	New	Minimize water loss, identify leaks. Climate Change/Drought/Other
Medium	Steel Tanks Seismic & Structural Retrofits Program	District Wide	Medium	\$5.2M	Short	Budget	New	Bring all steel tanks to current seismic, structural and safety standards. Earthquake/Landslide/Other
High	Oso Trabuco and ETM Adjustments for Railroad Expansion	Oso/Trabuco	Medium	\$4.7M	Short	Budget	New	Address pipeline segments to ensure not impacted by rail traffic. Human/Climate Change/Other

Notes:

Timeframe to Completion of Project: "Immediate" is up to 1 year; "Short Term" is 1 to 3 years; "Long Term" is 3 years or longer.

Status: "New" refers to a mitigation initiative newly created as part of the plan update process; "Existing" refers to an unfinished initiative that is carried over from the 2012 plan; "Modified" refers to an existing initiative that carried over from the previous plan, but has changed to limit or expand its scope of activities.

Status Rationale: A statement of justification as to why the project is currently in the status it is in.

Completed or Removed Mitigation Initiatives

The following mitigation actions from the 2012 plan have been completed or are in progress and therefore are removed from the Plan update.

Mitigation: Harden facilities.

Status: Complete; Improve security/regulatory compliance.

Mitigation: Install wireless communication throughout the District.

Status: Complete.

Mitigation: Develop Baker Water Treatment Plant and connect to South County Pipeline.

Status: Complete.

Mitigation: Relocate the Plant 3A ETM lower within San Juan Creek.

Status: Complete.

Mitigation: Construct Pump Station and Interconnection facilities to supply Baker Water Treatment Plant from Irvine Lake.

Status: Complete.

PLAN INTEGRATION

MNWD's 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 HMP, the District will continue to integrate mitigation priorities into these documents.