



Jennifer Mael is the Owner and Principal Engineer of Mission Consulting Services. She has over fourteen years of experience in water, wastewater, and recycled water system planning, and design and construction of utilities, including water mains, wastewater gravity and force mains and pump stations for new, rehabilitation, and expansion projects. Her career emphasis has been in water, sewer, and recycled water system planning, with an expertise in hydraulic modeling. Her relevant project experience includes:

**Public Sector**

**Otay Water District 2014 Water Facilities Master Plan Update, California.** Project manager and hydraulic modeler charged with the development of a new InfoWATER hydraulic model development using GIS data, potable water system calibration using SCADA, system evaluation under specified conditions, CIP development and verification, and assisting with the development of a comprehensive master plan document. (2014 – current)

**Helix Water District Water Model Upgrade, California.** Project manager and hydraulic modeler for the development of a new H2OMAP hydraulic model development using SmallWorld data, water system calibration using SCADA, system evaluation under specified conditions, CIP development and verification, and model training workshops with District staff. (2014 – current)

**Helix Water District On-Call Modeling Services, California.** Project manager and hydraulic modeler for on-call hydraulic modeling services. (2014 – current)

**Otay Water District Otay Mesa Conveyance and Disinfection System Project, California.** Hydraulic modeler on the AECOM team for this project to bring desalinated seawater produced at Rosarito Beach, Baja California, to the District. The project is currently in the preliminary design and EIR/EIS preparation phase and responsibilities include overall project management and coordination with the District and NSC Agua, pipeline and disinfection system planning, coordination with CDPH, and preparation of a technical memorandum related to integration of desalinated supplies, including hydraulic modeling of the District’s distribution system. (2011 – current)

**Encantamar 16-inch Line Abandonment, California.** Project manager and hydraulic modeler for the analyses of an existing 16-inch transmission main slated for abandonment by the Moulton Niguel Water District. The analyses included a baseline for comparison using peak hour and max day plus fire flow scenarios, plus an analysis of the same scenarios with the pipeline out of service. A letter report was prepared for the District. (2014)

**Lake Havasu City General Water Services, Lake Havasu City, AZ.** Project hydraulic modeler for assistance with upgrading the City’s aging water infrastructure, which includes nearly 500 miles of pipelines, 15 water pump stations and 26 storage tanks serving nearly 29,000 customer accounts. Tasks included a thorough review of the City’s H<sub>2</sub>OMAP hydraulic water model, a field calibration plan with nearly 20 hydrant flow tests, CIP review, phasing, and prioritization, future system expansion

**Education**

M.E., Environmental Engineering, Old Dominion University, 2002

B.S., Environmental Engineering, Old Dominion University, 2001

**Registrations/Licenses**

Professional Engineer  
California 69606, 2006

**Certifications**

Haestad Methods WaterCAD and WaterGEMS - Certified Expert Modeler 2003

California Department of Health Grade 2 Water Distribution Operator

**Small Business Certifications**

WOSB/WBE/SBE/VSBE/DBE/UDBE/SLBE

**Professional Affiliations**

American Society of Civil Engineers

**Modeling Software**

# Jennifer R. Mael, PE

*Project Manager & Hydraulic Modeler*

## **Proficiencies**

H<sub>2</sub>ONET  
H<sub>2</sub>OMAP  
InfoWATER  
InfoSEWER  
WaterGEMS  
WaterCAD  
SewerCAD

plans, facility siting studies, and model training. Each task included a detailed Technical Memorandum documenting the findings of the analysis and recommendations. (2009 – 2011)

**Laguna Niguel GateWay Specific Plan Area – Hydraulic Analyses, California.** Project manager and hydraulic modeler for the Moulton Niguel Water District tasked with the analysis of the existing water, recycled water, and sewer systems for a 315-ac redevelopment area of low-intensity office/commercial uses into a pedestrian-oriented mixed-use village core. The analysis included criteria development, demand development methodologies, and peak wet weather and fire flow simulations to size facilities and to determine impacts for potential improvements. This Project also included coordination with the City of Laguna Niguel and current development. A cost analysis was also provided for the necessary improvements. (2013)

**NAVFAC Plant 42 Fire System Analysis, California.** Project manager and hydraulic modeler for the analyses of the onsite fire system. The analyses included a variety of fire flow simulations at the facilities eight different sites to determine if any improvements to the existing system are necessary, and what size improvements would be required. (2013)

**Fountain Valley Water Master Plan – Field Testing Services, California.** Project manager for the preparation and execution of a water system field testing program to facilitate hydraulic model calibration. Fifteen (15) fire hydrant tests were performed with City Operations Staff over two days, capturing vital information on system performance, both in the field and through SCADA. (2012)

**City of Escondido Water Master Plan, California.** Project tasks included the update of the City's existing water model, including a thorough review of the City's Atlas maps, GIS, and operational changes made since the model was last updated. With the updated water model, a field testing plan was established to collect important information, such as field pressures and available flow at different locations, along with necessary tank levels and other SCADA information. (2011)

**City of Carlsbad Water Master Plan, California.** Project hydraulic modeler for the development of a new water master plan, demand calculations for the City's 27,000 customer accounts using existing meter data and future land use for future customers, updates to an existing H<sub>2</sub>OMAP hydraulic model, water system calibration using extensive field flow test data, system evaluation under specified conditions, CIP development and verification, and a comprehensive master plan document for the City. (2011)

**Otay Water District 2008 Water Resources Master Plan, California.** Project hydraulic modeler for demand calculations for the District's 42,000 customer accounts using existing meter data and future land use for future customers, new InfoWATER hydraulic model development using GIS data, water system calibration, system evaluation under specified conditions, CIP development and verification, a comprehensive master plan document and dynamic land use model for the District, and a model training workshop with District staff. (2007 – 2010)

**Otay Water District 2011 Urban Water Management Plan, California.** Project engineer for developing future water demands for the District, which included a workshop with the City of Chula Vista and land developers to determine projected buildout limits for individual projects. Project also included coordination with the City of San Diego on their Otay Mesa Community Plan Update, which encompasses a portion of the

District. (2010)

**South Coast Water District Infrastructure Master Plan, California.** Project engineer and hydraulic modeler tasked with demand calculations for the District's 12,300 customer accounts using existing meter data and future land use for future customers, InfoWATER hydraulic water and recycled water models and InfoSEWER hydraulic sewer model development using GIS data, water and sewer system calibration coordination, system evaluation under specified conditions, CIP development, a comprehensive master plan document for the District, and a model training workshop with District staff. (2007 – 2008)

**Civil On-Call Engineering, Padre Dam Municipal Water District, Santee, California** – Project hydraulic modeler in support of continued growth within the Padre Dam service area. Prepared water, sewer, and recycled water studies for new development projects. Studies included demand evaluation, onsite analyses to determine facility sizing, and offsite analyses to determine potential impacts. Projects included Sky Ranch, Lakeside Downs, Castlerock, and Edgemoor Business Park, to name a few. (2003 – 2004)

**East Otay Mesa Sewer Master Plan Update, San Diego County, California.** Project engineer and hydraulic modeler for the development of a new sewer backbone system to determine available capacity for new developments based on historical and surveyed unit generation rates. Recommendations were made for connection points to the City of San Diego collection system and pip sizes to accommodate new developments. A comprehensive Master Plan document was also prepared for the County. (2004 – 2006)

**Honolulu Board of Water Supply Hydraulic Model Development and Calibration, Honolulu, Hawaii.** Project manager and hydraulic modeler for discussions with Board of Water Supply staff regarding methodologies for determining accurate demands, minor losses, model development and set-up, calibration procedures, C-factor discussions, and extensive model calibration review and suggestions, to name a few. Such discussions have been accomplished through a combination of email, telephone conferences, and online web meetings. (2009 – present)

**Otay Mesa Community Plan Update, City of San Diego, San Diego, California.** Project engineer. The purpose of the study was to support land use changes in the Otay Mesa Community within the City of San Diego and to evaluate and compare multiple alternatives. The project included projected demands for multiple demand conditions for each alternative using modified methodology, population projections, impacts to the systems for each alternative, and coordination with multiple agencies. Recommendations were made to improve the performance of the potable and recycled water systems. (2004-2006)

**City of Poway As-Needed Hydraulic Modeling Services, California.** Hydraulic modeler for an As-Needed Hydraulic Modeling Services contract for the City of Poway. The City currently has an H<sub>2</sub>OMAP model for their potable water system and has retained a consultant to perform specific analyses of these systems on an as-needed basis. Such analyses include water studies for development, fire hydrant curves, and operational analyses, to name a few. (2011 – present)

**Otay Water District As-Needed Hydraulic Modeling Services, California.** Project manager and hydraulic modeler for an As-Needed Hydraulic Modeling Services contract for the Otay Water District. The District currently has InfoWATER models for their potable water and

recycled water systems and has retained a consultant to perform specific analyses of these systems on an as-needed basis. (2009 – 2011)

- Jamacha Avenue pipeline analysis
- 944 Pump Station pump replacement
- Modeling support for development projects in Otay Mesa
- Interim phasing for the 860 Recycled Water Reservoir
- 340 Pressure Zone and PRV analysis
- Operational analyses for the removal of pipelines
- Fire flow analyses and on-site fire flow training
- Rancho del Rey blending and implementation analysis
- North-South Intertie implementation analysis

**South Coast Water District As-Needed Hydraulic Modeling Services, California.** Project manager and hydraulic modeler for water and recycled water as-needed modeling services. Tasks included the Aliso Creek Development and Dana Point Town Center Analysis (2008 – 2009)

**Pico Rivera Water System Master Plan, Pico Rivera Water Authority, California.** Project manager and hydraulic modeler for a water master plan. This study included demand calculations for the District's 9,400 customer accounts based on existing meter data and future land use for future customers, development of a new InfoWATER hydraulic model using GIS data, water system calibration using field flow test data and SCADA, system evaluation under specified conditions, CIP development, and a comprehensive master plan document for the Authority. (2008 – 2009)

**Vallecitos Water District Water and Wastewater Master Plan, Vallecitos Water District, California.** Project included demand calculations for the District's 19,141 customer accounts using existing meter data and future land use for future customers, water and sewer hydraulic model calibration, system evaluation under specified conditions, CIP development and phasing, and a comprehensive master plan document for the District. (2008 – 2010)

**Water Transmission Master Plan, Florida Keys Aqueduct Authority, Florida.** Project included the analysis of the Authority's 130-mile transmission system consisting of 18-inch to 36-inch piping, eight booster pump stations (five existing, three future), and three reverse osmosis treatment facilities. This study included calibration of an existing InfoWATER hydraulic model using manually recorded field data and system evaluation for existing and future conditions to determine the timing required for CIP projects. A technical memorandum was also prepared, and onsite model training was provided for Authority staff. (2007 – 2009)

**Key West Water Model and North Roosevelt Boulevard Transmission and Distribution Analysis, Florida Keys Aqueduct Authority, Florida.** Project included the analysis of the Authority's Key West transmission and distribution system consisting of 4-inch to 18-inch piping and three existing VFD pump stations, calibration of an existing model using field flow test data and SCADA, and system evaluation for existing conditions to determine the appropriate replacement size for the North Roosevelt Boulevard transmission main. A technical memorandum was prepared for the Authority. (2009 – 2010)

#### Planning Studies

**East Mesa Detention Facility Water and Sewer Analyses, County of San Diego, CA.** Project included analyses for on and offsite water, recycled water, and sewer system for a 400-bed expansion of the existing East Mesa Detention Facility. The analysis included demand developments for each system using historical demand data and local water conservation measures,

and fire flow and peak wet flow simulations to verify pipe sizes. The Project also included extensive coordination with the City of San Diego and Otay Water District. (2011 – 2012)

**Miscellaneous Planning Studies, Otay Water District, California.** Project prepared water and sewer technical studies to support multiple planning areas. These studies included demand calculations, pipeline sizing and layout, meter and backflow sizing, detailed onsite analyses, fire flow conditions, connection points, regional water and sewer system evaluations, and coordination with multiple agencies and neighboring property owners. Such planning projects included Village Walk, Mater Dei High School, Windstar Point, Otay Ranch Town Center, Rolling Hills Ranch, Sunroad Unit 2, Lonestar Ridge, Village 6, Village 7, Otay Crossings Commerce Park, and Corrections Corporation of America Private Prison, to name a few. (2003 – present)

**Miramar College Water System Analyses, San Diego Miramar College, CA.** Project included analyses of the on and offsite potable domestic, potable fire, and recycled water systems. Demands were developed using recent student population and metered water use, along with anticipated building additions, irrigation areas, and increase in student attendance. The analyses included fire flow and peak demand simulations to determine if any improvements to the existing system are necessary, including meter sizing and offsite deliveries. (2012)

**New Millenia, City of Chula Vista, California.** Project included the analysis of the on and offsite water and sewer systems for a new 3,000-unit multi-family development with 3.8 Msf mixed use village core. The analysis included demand development and peak wet weather and fire flow simulations to size facilities and to determine impacts for potential offsite improvements. This Project also included extensive coordination with neighboring developments and the City of Chula Vista to develop interim phasing options for the onsite sewer system. (2005 – present)

**Tract 936 Water Study, City of Escondido, California.** Project included the analysis of the on and offsite water systems for a new 22-lot residential subdivision. The analysis included demand development, and peak hour and fire flow simulations to size facilities and to determine impacts for potential offsite improvements. (2011)

**Campus Pointe II Water and Sewer Study, Vallecitos Water District California.** Project included the analysis of the on and offsite water and sewer systems for a new 108-unit multi-family development with a commercial shopping center. The analysis included demand development and comparison with previous planning studies, peak wet weather and fire flow simulations to size facilities and to determine impacts for potential offsite improvements. The analysis also included a cost analysis for determining a fair share of necessary offsite improvements based on District unit cost methodology. (2011)

**Black Mountain Ranch Water Studies, City of San Diego, California.** Project included the analysis of the on and offsite water systems for a new large master planned community. The analysis included demand development, and peak hour and fire flow simulations to size facilities and phasing and to determine impacts for potential offsite improvements. (2003 – 2010)

**Pacific Highlands Ranch Water Studies, City of San Diego, California.** Project included the analysis of the on and offsite water systems for a new

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large master planned community. The analysis included demand development, and peak hour and fire flow simulations to size facilities and phasing and to determine impacts for potential offsite improvements. (2003 – 2010)

## **Presentations**

*The Key to Calibration in the Keys* - MWHSoft International Geo-Engineering Conference, Denver, Colorado, August 2007

## **Professional Development**

Haestad Methods WaterCAD and WaterGEMS – Certified Expert Modeler  
2003