TO: MICHAEL S. LEBRUN
GENERAL MANAGER

FROM: PETER V. SEVCIK, P.E.
DIRECTOR OF ENGINEERING AND OPERATIONS

DATE: SEPTEMBER 4, 2014

AGENDA ITEM
E-2
SEPTEMBER 10, 2014

AUTHORIZE TASK ORDER WITH MICHAEL K. NUNLEY & ASSOCIATES FOR SUPPLEMENTAL WATER PROJECT PHASE 1 CHLORAMINATION OPERATIONS AND PERMITTING SUPPORT

ITEM

Authorize Task Order for Supplemental Water Project Phase 1 Chloramination Operations and Permitting Support with Michael K. Nunley & Associates in the amount of $57,460 and authorize contingency in the amount of $11,000 [RECOMMEND BY MOTION AND ROLL CALL VOTE AUTHORIZE TASK ORDER WITH MICHAEL K. NUNLEY & ASSOCIATES IN THE AMOUNT OF $57,460, AUTHORIZE STAFF TO EXECUTE TASK ORDER, AND AUTHORIZE CHANGE ORDER CONTINGENCY IN THE AMOUNT OF $11,000].

BACKGROUND

The Nipomo Supplemental Water Project Phase 1 (Project) will interconnect the District water distribution system with the City of Santa Maria water distribution system. The Project consists of approximately 7,500 lineal feet of 24-inch diameter ductile iron pipe (DIP) waterline, 2,600 lineal feet of 24-inch nominal inside diameter high-density polyethylene (HDPE) pipe under the Santa Maria River, a flow meter and flow control station, a 400 gallon per minute (gpm) pump station with two (2) pumps, a chloramination system, and related power, back-up power, controls and instrumentation systems, a pressure reducing station, and chloramination systems at four (4) existing District production wells.

The Project will deliver 645 acre-feet per year (AFY) of supplemental water purchased by the District from the City of Santa Maria and will allow the District to reduce pumping from existing wells to slow the depletion of groundwater and reduce the potential for seawater intrusion on the Nipomo Mesa. The Project will also increase the reliability of the District's water supply by providing an additional source other than groundwater. The Project is consistent with the settlement agreement and the judgment related to the groundwater adjudication of the Santa Maria Groundwater Basin.

With construction currently underway and scheduled to be completed by June 2015, the District needs to develop a plan to integrate the new water source into the existing District's water system. The project includes a chloramination facility at the pump station to increase the disinfectant in the water from the City of Santa Maria and construction of chloramination facilities at four of the District's wells. The conversion of the District's disinfection system to chloramines is required to match the disinfectant used by the City. The District needs to apply for a Water Supply Permit Amendment to address changes in operations resulting from implementation of the Supplemental Water Project. Staff anticipates that a Chloramination Operations/Nitrification Monitoring and Control Plan will be required by California State Water Resources Control Board Division of Drinking Water to obtain the permit amendment.

Staff requested that Michael K. Nunley & Associates (MKN) provide a proposal for development of the chloramination operations plan and permitting support for amending the District's Water Supply Permit. MKN staff has been involved in the development of the District's Supplemental

Water Project as well as modeling of the District's water system for several years and is uniquely qualified to provide the requested services based on this past experience. A copy of MKN's proposal is attached.

FISCAL IMPACT

Funding for the project is available in the FY 2014-2015 budget. The cost for the chloramination operations plan development and permitting support is within the funding plan amount originally approved for Phase1 of the Supplemental Water Project.

STRATEGIC PLAN

Goal 1 – WATER SUPPLY – Actively plan to provide reliable water supply of sufficient quality and quantity to serve both current customers and those in the long-term future.

RECOMMENDATION

Staff recommends that the Board, by motion and roll call vote:

1. Authorize Task Order for Supplemental Water Project Phase 1 Chloramination Operations and Permitting Services with Michael K. Nunley & Associates, in the amount of $57,460 and authorize General Manager to execute Task Order.
2. Authorize the General Manager to issue Change Orders to the Task Order with an aggregate total amount not to exceed $11,000.

ATTACHMENTS

A. Michael K. Nunley & Associates proposal dated September 4, 2014

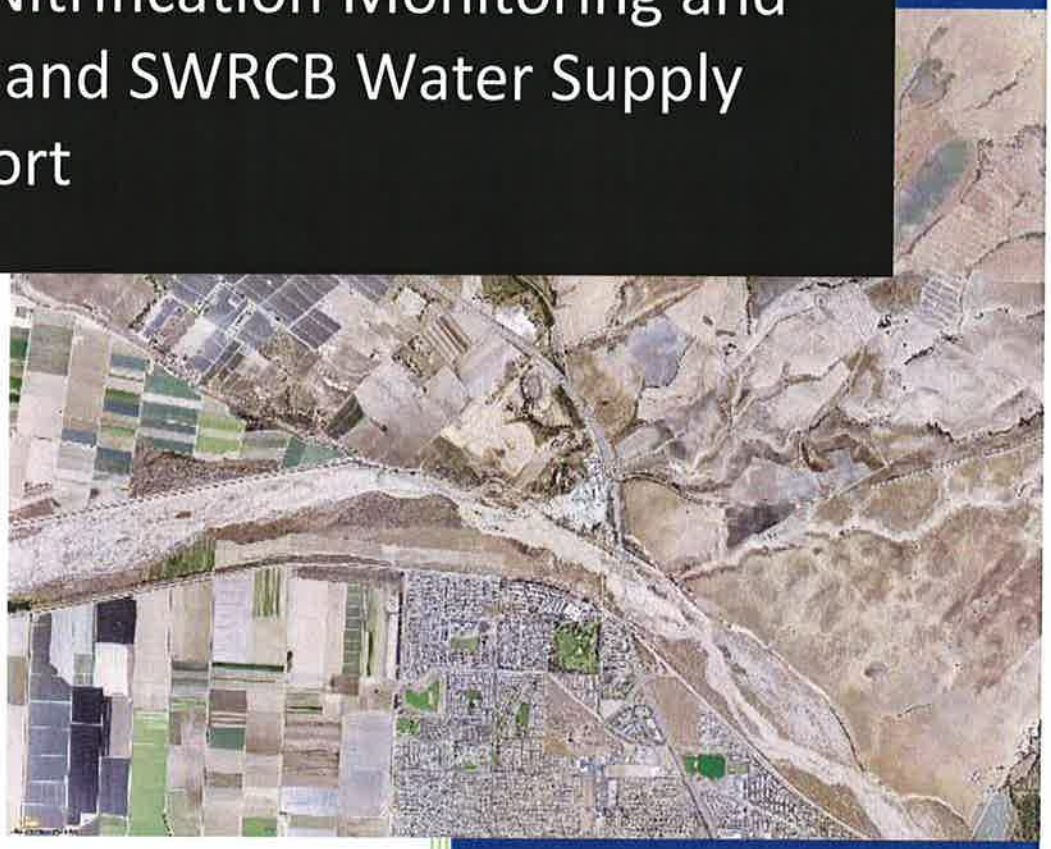
September 10, 2014

ITEM E-2

ATTACHMENT A

Nipomo Community Services District

Proposal for Chloramination Operations/Nitrification Monitoring and Control Plan and SWRCB Water Supply Permit Support



September 2014

MICHAEL K NUNLEY & ASSOCIATES
WATER • WASTEWATER • WATER REUSE
P O Box 1604
Arroyo Grande CA 93421

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WATER • WASTEWATER • WATER REUSE

P.O. Box 1604
Arroyo Grande CA 93421
805 904-6530 tel
www.mknassociates.us

September 4, 2014

Mr. Peter Sevcik, PE
District Engineer
Nipomo Community Services District
148 S. Wilson
Nipomo, CA 93444

Dear Mr. Sevcik,

Subject: Proposal Chloramination Operations / Nitrification Monitoring and Control Plan and SWRCB Water Supply Permit Support

Michael K Nunley and Associates, Inc. (MKN) is pleased to provide the following proposal to assist the District with preparation of a Chloramination Operations / Nitrification Monitoring and Control Plan (Plan) and to provide support for amending the District's Water Supply Permit. The Plan will address operations of the disinfection systems and nitrification monitoring and control for the District's water distribution system with inclusion of the Phase 1 Supplemental Water Project. MKN's water quality experience and involvement with the Supplemental Water Project puts our firm in a unique position to effectively execute this work. Some of the benefits of MKN's team to the District include:

- Experienced team members, familiar with the District's water system
- Intimate knowledge of the Supplemental Water Project, chloramination systems, and the District's latest hydraulic model
- Staff expertise in integration of groundwater and surface water supplies
- Responsive, flexible, local team

We propose the following project team for this work. Mike Nunley will serve as the Project Manager, direct work and be the primary client contact for the duration of the project; Eileen Shields will be the Project Engineer, coordinate the District's permit amendment and develop the draft Plan; and Jon Hanlon will provide technical support for water quality and chloramination system operations.

The following pages include the project understanding, scope of work, summary of related project experience, the proposed budget and schedule, and MKN resumes. Please feel free to contact us if you have any questions or comments. We would be happy to discuss the project in detail.

Sincerely,

Eileen Shields, PE
Senior Engineer

Michael K. Nunley, PE
Project Manager

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01 PROJECT UNDERSTANDING

This proposal consists of engineering services to prepare a *Chloramination Operations/Nitrification Monitoring and Control Plan* (Plan) and assist with the Water Supply Permit Amendment for the District's water system to address changes in operations resulting from implementation of the Phase 1 Supplemental Water Project ("Project"). The Project will allow NCSD to transport supplemental water from the City of Santa Maria (City) and deliver it to the Nipomo Mesa. The Project includes a chloramination booster facility at the pump station to "boost" disinfectant in the water from Santa Maria and conversion of NCSD's disinfection system to chloramines to match the disinfectant used by the City. Chloramination facilities will be constructed at four of the District's existing groundwater wells. This Plan will be required for amending the District's Water Supply Permit with California State Water Resources Control Board (SWRCB) Division of Drinking Water (formerly California Department of Public Health Drinking Water Program). It will also provide the District with standard procedures for operations and monitoring of a chloraminated water system.

Michael K. Nunley & Associates (MKN) acquired an in-depth understanding of the project and its impact on District systems through our staff's involvement in the Supplemental Water Project and our recent update of the water distribution system model. Our team will focus on developing the Chloramination Operations Plans without a "learning curve" related to the District's water system and Supplemental Water Project elements.

Beyond our experience with the NCSD system, MKN staff has expertise in planning and designing systems that blend surface water and groundwater. Recent example projects performed by our key staff include the City of Guadalupe's Water Master Plan, Paso Robles Nacimiento Water Treatment and Blending Facility Design, Goleta Water District Anita Well Blending and Treatment Feasibility Study, and the Templeton CSD Nacimiento Treatment and Blending Facility.

02 QUALIFICATIONS AND EXPERIENCE

The projects listed below are representative samples of the project team members' related water quality and disinfection experience. Client contact information is available upon request.

Preliminary Engineering Memorandum, Supplemental Water Project, Nipomo CSD

Relevance to NCSD:

- Detailed knowledge of the NCSD Water System and the Supplemental Water Project
- Thorough understanding of Supplemental Water Project project development, preliminary design including the hydraulics, water quality, disinfection, and project phasing.

Project Summary: These services were provided by MKN staff while with a previous employer. After studying multiple potential sources of supplemental water, the Nipomo CSD signed a Memorandum of understanding (MOU) with the City of Santa Maria to pursue an Intertie Project to connect the two water systems and purchase water from the City for delivery to the Nipomo Mesa. The Preliminary Engineering Report involved a hydraulic review of the two systems, a detailed examination of water quality and disinfection alternatives, an evaluation of pipeline alignments, pumping and storage options, identification of a preferred alternative, and an opinion of construction cost. The City of Santa Maria utilizes a chloramination disinfection system, while the Nipomo CSD has been using chlorination. The Preliminary Engineering Memorandum included an evaluation of the disinfection alternatives, summary of regulatory requirements, a water quality review, a cost evaluation, and recommended the conversion to chloramination to match disinfection systems.

Water Master Plan Update, City of Guadalupe

Relevance to NCSD:

- Water quality review and blending analysis
- Blending of surface water and groundwater sources

Project Summary: The Water Master Plan update provides an assessment of the City's water system capacity, requirements for meeting the City's existing and future water needs, and a capital improvements plan with prioritized projects in order to meet these needs. The City receives State Water from the CCWA pipeline and blends it with groundwater drawn from City wells. MKN reviewed water quality concerns, performed a blending analysis, assessed reservoir and pump station capacity and fire flow ability, performed a condition assessment of the water system facilities, and developed a GIS-based Water System Atlas for the City's use.

02 QUALIFICATIONS AND EXPERIENCE

Design and Bid Phase Services, Supplemental Water Project, Nipomo CSD

Relevance to NCSD:

- MKN's project knowledge will allow the project team to develop an operations plan that effectively integrates the District's existing water system with the proposed SWP.
- MKN project team members served as project managers and design engineers from concept through final construction documents for the Phase 1 Project.
    - Mike Nunley: Project Manager and Principal-in-Charge
    - Jon Hanlon: Design Engineer, wellhead improvements and chloramination systems
    - Eileen Shields: Assistant Engineer, hydraulic modeling, plans and specifications; Project Manager for the latter portion of the project; Developed the revised phasing strategy.

Project Summary: These services were provided by MKN staff while with a previous employer. The original purpose of the project was to supply 2500 acre-feet per year (AFY) of supplemental water to the District and other water purveyors within the Nipomo Mesa Management Area. The Supplemental Water Project design built on the work performed in the Preliminary Engineering Memorandum. Plans, specifications, and construction cost opinions were developed for four separate bid packages, including over 4 miles of pipeline, pressure reducing valve stations, a 2,800 linear-foot horizontal directional drill river crossing, a 0.5 MG partially buried reservoir, 2,000 gpm booster pump station, chloramination systems at the booster pump station and at four of the District's existing wells, and associated electrical and instrumentation systems.

Anita Well Treatment Feasibility Study, Goleta Water District

Relevance to NCSD:

- Coordination with CDPH to meet regulatory requirements
- Requirement for disinfection byproduct control
- Blending of a variety of supply sources including surface water and groundwater

Project Summary:

The District had three critical objectives for this project:

1. To evaluate the quickest means of introducing additional groundwater supply into the District distribution system;
2. To identify the most cost effective means of introducing additional groundwater supply into the District distribution system – Options included treating a well high in iron, manganese and trihalomethane onsite, piping the water to an alternate site for treatment, or blending the water with a second source;
3. Verify that the existing treatment process at another site can be effective at treating the water with or without additional facilities. Process also needed to be compatible with direct injection of distribution system water for aquifer recharge.

MKN evaluated several treatment options capable of meeting the water quality goals. The recommended approach was to reduce the concentration of contaminates through blending with another source. Recommendations for disinfection byproduct control included chloroform removal through enhanced aeration. Provisions to allow filtration through the existing manganese dioxide filtration plant were recommended.

Surface Water Treatment Plant, City of Paso Robles

Relevance to NCSD:

- Disinfection byproduct control
- Taste and order control
- Blending of surface water and groundwater sources
- CDPH coordination and review of regulations

Project Summary: These services were provided by MKN staff while working for a previous employer. The City of Paso Robles retained design services for a new surface water treatment plant to augment the existing groundwater supply that currently serves the City. The microfiltration membrane treatment plant will be located on an 18-acre City-owned parcel within the City limits. Treatment processes include Dissolved Air Flotation (DAF) pretreatment, membrane filtration, Granular Activated Carbon for taste and odor and disinfection byproduct control, and facilities for future addition of ozone as a primary disinfectant. The plant is to provide a daily treatment capacity of approximately 2.0-2.5 MDG of potable water and meet all state drinking water standards.

Water to the City's treatment plant project is provided via a turnout from the Lake Nacimiento Water Supply Pipeline Project. The Nacimiento Pipeline Project (including the turn-out to the future treatment plant) was designed and built under the direction of the San Luis Obispo County Flood Control District.

Water Age Analysis, Atascadero Mutual Water Company

Relevance to NCSD:

- Performed water age analysis utilizing Bentley WaterCAD

Project Summary: This work was performed by MKN staff while working for a previous employer. Extended period hydraulic modeling of the distribution system was performed to predict the water age at each of six (6) water storage tanks for compliance with the Department of Public Health Stage 2 Disinfection Byproducts Rule System Specific Study. Extended period simulations were run using Bentley WaterCAD. Results were summarized and provided to AWMC in a letter report.

Task Group 100 – Data Collection and Assessment

Task 101. Kickoff meeting – MKN will coordinate and attend a meeting with District staff to initiate this work. MKN will prepare and provide a draft agenda at least two (2) business days before the meeting. Topics covered will include scope of work, a preliminary list of data needs, project schedule, and project deliverables and reviews.

Task 102. Data Collection and Review – MKN will prepare a list of data needs for the kickoff meeting. The project team will utilize the District's latest water model to identify potential existing and future dead ends or areas of long water age. Available existing operating procedures, water quality information, and system configuration for the City of Santa Maria's water system will be reviewed for identification of potential water quality impacts and development of notification procedures. Relevant water quality regulations and existing available CDPH (now SWRCB) comments on the Project's EIR and design documents will also be reviewed.

Task 103. Coordination with SWRCB Division of Drinking Water – The Plan will be required as part of the District's Water Supply Permit Amendment application to State Water Resources Control Board Division of Drinking Water (formerly California Department of Public Health Drinking Water Program). After initial data collection and review, MKN will plan and attend a meeting with SWRCB Division of Drinking Water staff and NCSD staff to discuss the Supplemental Water Project and changes to the District's water system. MKN will present the proposed contents of the Plan and collect any input from SWRCB staff. (Our budget assumes the meeting is in Carpentaria at SWRCB's office). MKN will also coordinate with SWRCB staff during development of the Plan in an effort to meet SWRCB's requirements. The budget assumes informal correspondence during development of the draft Plan (emails and phone calls), submission of the draft Plan to SWRCB, and a letter response to SWRCB comments on the draft Plan (as required).

Task 104. Operator Interviews – As part of the data collection, MKN will coordinate and perform two separate interviews of NCSD water system operators to gather information on the water system and current operations, and areas of concern (dead ends and other areas of long water age) for identification of potential nitrification problem areas.

Task Group 2 – Chloramination Operations / Nitrification Monitoring and Control Plan

Tasks 201 through 205. With organization and assessment of the information gathered in Task Group 1 and MKN's previous experience, MKN will develop an Administrative Draft Plan and provide the District with four (4) hard copies for staff review and comment. A preliminary outline of the Plan is attached. MKN will coordinate and attend a meeting with District staff to review and discuss District staff comments after the administrative draft submittal. Comments will be incorporated and the Plan will be revised to provide the District with four (4) hard copies of the Draft Plan. A copy will also be sent to SWRCB Division of Drinking Water for preliminary review and comment. Once comments are received from SWRCB and the District, MKN will coordinate and attend a meeting with District staff to discuss District and SWRCB staff comments. After incorporation of comments, MKN will prepare the Final Draft Plan and provide the District with ten (10) copies. The Final Draft Plan will be provided in three-ring binders, since this is intended to be a "working document". Sampling locations, frequencies, and monitoring practices will be likely need to be adjusted according to water quality results throughout the system.

Task Group 300 – Training on Chloramination Operations and Nitrification Monitoring & Control Plan

MKN will provide two 3-hour training sessions on the Plan in Nipomo for water system operators and associated district staff at the Nipomo Community Services District office. The training will be held in two identical consecutive sessions: 9am – 12pm and 1pm – 4 pm. The District may wish to invite operators and staff from the Santa Maria Water Division.

Additional Services

Chloramines are potentially hazardous to individuals with kidney disease who undergo dialysis treatment. They area also toxic to fish. General public notification and specific notification to dialysis care facilities regarding the change in disinfection from chlorine to chloramines is required by the State. SWRCB Division of Drinking Water requires that the water supplier provide notification and obtain confirmation that all dialysis care facilities are prepared to detect and treat water to remove chloramines. Confirmation is required before the State will permit conversion to chloramines. Technical assistance with this notification and confirmation process is described below and can be provided on a time and materials basis for $1,760.

- Confirm State Department of Drinking Water requirements and guidelines for notification.
- Collect list of dialysis facilities in NCSD water service area from Division of Drinking Water and develop an Excel spreadsheet for tracking notifications. MKN will also contact the End Stage Renal Dialysis (ESRD) Network Coordinating Council and San Luis Obispo County Health Department for a list of known dialysis facilities. It is assumed that after development by MKN, the spreadsheet will be managed by NCSD staff. The spreadsheet will include contact information for facilities provided by the State and columns for tracking communications, including notification and confirmation of notification.
- Provide notification letter for the general public and for dialysis facilities in Word format for NCSD staff to format and distribute.
- It is anticipated that confirmation of notification and installation of chloramine detection and treatment equipment will occur by collecting signatures from the dialysis facilities in the NCSD water service area. MKN will provide a letter in Word format for confirmation of notification and installation of detection and treatment facilities. It is assumed NCSD staff will format and distribute the letters, either by mail or in person to collect signatures from each facility.

04 BUDGET AND SCHEDULE

Budget

MKN proposes to perform this work for a budget not to exceed $55,700 for the base scope of work, or a total of $57,460 including the additional services described. Payment requests will be submitted monthly on a time-and-materials basis. A breakdown of anticipated labor effort is provided in the attachment.

Schedule

The proposed schedule is summarized in the following table.

	Time from Notice to Proceed
Kickoff Meeting	1 week
Meeting with SWRCB & NCSD Staff	4 weeks
Administrative Draft Plan	7 weeks
Review Period	2 weeks after submittal of Administrative Draft Plan
Meet with District staff	9 weeks
Draft Plan	12 weeks
Review Period	3 weeks after submittal of Draft Plan
Meet with District staff	15 weeks
Final Draft Plan	18 weeks

Proposal - 2014 Nipomo Community Services District - Chloramination Operations / Nitrification Monitoring & Control Plan and SWRCB Water Supply Permit Support

	Project Manager	Senior Engineer	Project Engineer	Drafter	Administrative Assistant	Total Hours	ODCs	Quality Contorl Review	Total Labor	Total Cost
Task Group 100 - Data Collection and Assessment										
Task 101 - Kickoff Meeting	2		3			5	$ 10		$ 710	**$ 720**
Task 102 - Data Collection & Review	2	8	32		2	44	$ -		$ 5,760	**$ 5,760**
Task 103 - Coordination with SWRCB Division of Drinking Water	3	2	10		2	17	$ 100		$ 2,160	**$ 2,260**
Task 104 - Operator Interviews (assume 2)		8	12		1	21	$ 20		$ 2,800	**$ 2,820**
Quality Control						0	$ -	$ 400	$ -	**$ 400**
Subtotal	**7**	**18**	**57**	**0**	**5**	**87**	**$ 130**	**$ 400**	**$ 11,430**	**$ 11,960**
Task Group 200 - Prepare Chloramination Operations and Nitrification Montoring and Control Plan										
Task 201 - Administrative Draft Plan	12	24	80	28	8	152	$ 50		$ 18,340	**$ 18,390**
Task 202 - Progress Meeting (review & discuss District comments)	2	2	4			8	$ 10		$ 1,140	**$ 1,150**
Task 203 - Draft Plan	6	12	35	8	2	63	$ 50		$ 7,990	**$ 8,040**
Task 204 - Progress Meeting (review & discuss District & SWRCB comments)	2	2	4			8	$ 10		$ 1,140	**$ 1,150**
Task 205 - Final Draft Plan	2	6	20	4	2	34	$ 160		$ 4,200	**$ 4,360**
Quality Control						0	$ -	$ 3,200	$ -	**$ 3,200**
Subtotal	**24**	**46**	**143**	**40**	**12**	**265**	**$ 280**	**$ 3,200**	**$ 32,810**	**$ 36,290**
Task Group 300 - Training on the Final Draft Plan										
Preparation	2	12	16		4	34	$ -		$ 4,360	**$ 4,360**
Training in Nipomo (6 hours total)		8	8			16	$ 50		$ 2,240	**$ 2,290**
Quality Control						0	$ -	$ 800	$ -	**$ 800**
Subtotal	**2**	**20**	**24**	**0**	**4**	**50**	**$ 50**	**$ 800**	**$ 6,600**	**$ 7,450**
TOTAL BASE BUDGET	**33**	**84**	**224**	**40**	**21**	**402**	**$ 460**	**$ 4,400**	**$ 50,840**	**$ 55,700**
Additional Services										
Technical assistance with notification and confirmation	1	2	10			13	$ -		$ 1,760	**$ 1,760**
Subtotal	**1**	**2**	**10**	**0**	**0**	**13**	**$ -**	**$ -**	**$ 1,760**	**$ 1,760**
TOTAL BASE + ADDITIONAL SERVICES BUDGET	**34**	**86**	**234**	**40**	**21**	**415**	**$ 460**	**$ 4,400**	**$ 52,600**	**$ 57,460**

Billing Rates	**$/hr**
Project Manager	160
Senior Engineer	150
Project Engineer	130
Drafter	75
Administrative Assistant	40

Mileage to be reimbursed at IRS rate

05 PRELIMINARY OUTLINE

Nipomo Community Services District
Chloramination Operations/Nitrification Monitoring and Control Plan

Section 1. Introduction and Background

- 1.1 Introduction
- 1.2 Water System Description
- 1.3 Purpose of Disinfection Treatment
- 1.4 Disinfection Treatment Process and Description of Facilities
- 1.5 Overall Water Quality Goals
- 1.6 Specific Water Quality Goals
- 1.7 Potential Water Quality Issues

Section 2. Chloramination Facilities

- 2.1 General
- 2.2 Well Systems
- 2.3 Booster Pump Station System

Section 3. Nitrification Monitoring and Control Plan

- 3.1 Chloramine Chemistry Background
- 3.2 Nitrification Background
- 3.3 Monitoring at Chloramination Facilities
- 3.4 Storage Reservoir Operation
- 3.5 Distribution System Operation
- 3.6 Water Quality Complaints Records and Response
- 3.7 Nitrification Action Plan
- 3.8 Records and Reporting
  - 3.8.1 Records and trending analysis
  - 3.8.2 Reporting to SWRCB
  - 3.8.3 Reporting to Consecutive Systems
- 3.9 Other Water Quality Control Measures
- 3.10 Other Water Quality Monitoring
  - 3.10.1 Bacteriological Monitoring
  - 3.10.2 Disinfectant Residual Monitoring
  - 3.10.3 Disinfection Byproduct Monitoring

05 PRELIMINARY OUTLINE

Section 4 Conversion to Chloramines

- 4.1 Consumer Notification
- 4.2 Disinfection of New Equipment
- 4.3 Chemical Metering Pump Initial Settings
- 4.4 Flushing and Monitoring Strategy
- 4.5 Conversion Procedure

Section 5 Reverting to Free Chlorine

- 5.1 SWRCB Notification
- 5.2 Consumer Notification
- 5.3 Disinfection Byproduct Formation
- 5.4 Conversion Procedure
  - 5.4.1 Prescheduled Conversion
  - 5.4.2 Emergency Conversion

Section 6 Routine Operations

- 6.1 Well Specific Operations
- 6.2 Booster Pump Station Specific Operations
- 6.3 Grab Sampling
- 6.4 Adjusting Chemical Feed Rates
- 6.5 Residual Analyzer Calibration
- 6.6 Testing of Alarms
- 6.7 Metering Pump Calibration
- 6.8 Distribution System Flushing
- 6.9 Storage Reservoir Cleaning

Section 7 Maintenance

- 7.1 Operator's Log
- 7.2 Maintenance Scheduling

05 PRELIMINARY OUTLINE

Section 8 Contingency Procedures

- 8.1 Contingency Plan for Chloramination Equipment Failures
  - 8.1.1 Sodium Hypochlorite Pump Failure
  - 8.1.2 Ammonium Sulfate Pump Failure
  - 8.1.3 Residual Analyzer Failure
- 8.2 Records and Reporting
  - 8.2.1 Monitoring Records
  - 8.2.2 SWRCB Reporting

Section 9 Spare Parts and Equipment

Section 10 Chemicals

- 10.1 Sodium Hypochlorite 12.5%
- 10.2 Ammonium Sulfate
- 10.3 Chemical Deliveries

Section 11 Safety

A Resumes

Michael K. Nunley, PE
Principal

Education
MS Civil and Environmental Engineering, University of California at Berkeley, 2002

BS Civil Engineering, Virginia Polytechnic Institute & State University, 1995

Years of Experience
With MKN 1 year
With others 17 years

Registration
Professional Civil Engineer, California (No. 61801)

Affiliations
California Water Environment Association

Water Environment Federation
American Consulting Engineers Council

Environment and Water Resources Institute

American Society of Civil Engineers

American Public Works Association

MKN MICHAEL K NUNLEY & ASSOCIATES
WATER • WASTEWATER • WATER REUSE

EXPERIENCE

After over 18 years of serving as project engineer, project manager, branch manager, and ultimately as a senior operations manager and Vice President for a Fortune 500 consulting engineering firm, Michael Nunley started this firm specializing in water, wastewater, and water reuse engineering for public agencies. His expertise includes management, planning, and design of water, wastewater, recycled water, and drainage facilities in California, Hawaii, Guam, Washington, North Carolina, Virginia, South Carolina, Tennessee, and Georgia.

WATER SUPPLY, STORAGE, PUMPING AND DISTRIBUTION

Patriot Park Irrigation Well, City of Greenfield, California. Project manager for design services to provide a new irrigation well for Patriot Park and adjacent soccer fields. Project includes preliminary design and development of plans and specifications for public bid for a 470 gpm, 350-foot deep water well.

Water Master Plan Update, City of Guadalupe, California. Served as project engineer for an update of the City's water master plan, including update of the existing water distribution system model and GIS, evaluation of requirements to meet demands from new development, review of water quality issues, and development of a CIP.

2012 General Engineering Services, Atascadero Mutual Water Company, Atascadero, California. Performing water distribution model updates.

Chairman of Supplemental Water Alternatives Evaluation Committee, Nipomo Community Services District, Nipomo, California. As consultant to the District, managed the evaluation of various supplemental water alternatives by a committee of volunteers from various technical backgrounds and from community at large. Coordinated and facilitated meetings, guided evaluation process, and managed schedule for completion of the evaluation by the volunteers. Alternatives include water from the City of Santa Maria, State Water, seawater, surface water, local groundwater, and recycled wastewater from municipal and industrial users. Provided technical support for cost opinion development, hydraulic analysis, and other components as needed.

2012 Water Distribution Model Update, Nipomo California Community Services District. Performed an update to incorporate system changes since 2007 Master Plan Update; incorporated GIS-based water demand analysis to link individual water meter billing records to nodes; and performed various modeling runs in WaterCAD v8i.

Water Master Plan and Adaptive Integrated Water Resources Plan, Paso Robles, California. Served as program manager for the development of comprehensive list of capital improvement projects to manage the city's water, wastewater, and reclaimed water through 2026. Program components included a recycled water study update, water master plan, sewer master plan, pretreatment program report, and water source evaluation. Work included evaluation of treatment alternatives to treat Nacimiento water and city groundwater for potable use. Water treatment technologies evaluated included desalination, conventional treatment, and microfiltration. Evaluated opportunities for groundwater recharge, reclamation for irrigation usage, and continuance of current discharge practices

Nacimiento Water Supply Project, Preliminary Engineering Phase, San Luis Obispo County, California. Served as project engineer to provide engineering support to the County Flood Control and Water Conservation District during development of the environmental impact report, cost opinions, delivery contracts, and formation of the Nacimiento Water Project Commission. The project delivers over 9800 acre-feet per year of water from Nacimiento Reservoir to agencies through San Luis Obispo County, along a 50-mile transmission corridor. Project includes three pumping facilities, three reservoir sites, a multiport lake intake, and pipeline ranging from 12" to 36" in diameter.

Nipomo Community Services District Supplemental Water Project, Nipomo Community Services District, California. Served as project manager for the preliminary, concept, and final design of a $20M waterline connection from the Nipomo CSD distribution system to the City of Santa Maria's system. Components included 2800 lf HDD under the Santa Maria River, 3,000 acre feet per year (AFY) pump station, 0.5 MG reservoir, conversion of four wellhead chlorination systems to chloramination, and over 4 miles of 12" waterlines including pressure reducing valve stations and appurtenances.

Evaluation of Supplemental Water Alternatives, Nipomo Community Services District, California. Served as project manager for the investigation of a number of potential supplemental water supplies including State Water, Oso Flaco Lake, Nacimiento Water Supply Project, seawater/brackish water desalination, and others; evaluated each with respect to quantity, quality, reliability, environmental impacts, regulatory constraints, and relative cost.

Hydraulic Modeling, Craig County Public Service Authority, Virginia. Served as project engineer for the development of a distribution system model for the town of New Castle, Virginia.

Cambria Community Services District, Cambria, California. Served as project manager for the design of two 0.46-million-gallon welded steel storage tanks following the December 22, 2003, San Simeon Earthquake. Performed hydraulic analysis of various water system improvements to enhance fire protection and provided construction-phase engineering support.

Water Master Plan, Los Osos Community Services District, California. Served as project engineer to perform analysis of pending draft and future regulations that would affect the district's water system, and provided recommendations for meeting those requirements.

Atascadero Mutual Water Company Hydraulic Model Update, Atascadero, California. Served as project manager to perform an update of the water distribution system model including development of demand data from GIS land use information and unit factors.

Storage Improvements PER, Town of Bluefield, Virginia. Served as project engineer to develop and use a hydraulic model for evaluating fire flow protection throughout the existing water distribution system in the town. Recommended repainting and repair of two existing tanks (one has lead-based paint) and construction of a 500,000 gallon tank.

Alrita Pump Station, City of San Luis Obispo, California. Served as project manager to design the replacement for an existing pumping facility. Project included two (2) 30 gpm pumps, one 1000 gpm fire pump, pump control valve, 5,000-gallon hydropneumatic tank, new building, and controls.

Rosemont Pump Station, City of San Luis Obispo, California. Served as technical advisor/QC for design the replacement for an existing pumping facility. Project included two (2) 150 gpm pumps, a new reservoir connection, new building, and controls.

Golden Hills Seismic Repairs, City Paso Robles, California. Served as project engineer for the design of piping and site improvements to repair two 4-million-gallon steel storage tanks damaged during the December 22, 2003 San Simeon Earthquake.

Price Canyon Constraints Analysis (sub to Firma Consultants), City of Pismo Beach, California. Served as project manager to perform a water, wastewater, and drainage constraints analysis for a planned annexation of 1,700 acres including golf courses, vineyards, hotels, and residential developments.

General Plan Update (sub to Rincon Consultants), City of Lompoc, California. Served as project manager to perform water, wastewater, and drainage utility analysis for the 2009 general plan update.

Santa Ynez Valley Community Plan Environmental Impact Report (sub to Rincon Consultants), County of Santa Barbara, California. Served as project manager to perform water and wastewater analysis components of the EIR for the Community Plan, which included the unincorporated areas in the Santa Ynez Valley of the County.

Technical-Managerial-Financial Capacity Assessment, Spanish Lakes Mutual Water Company, Paso Robles, California. Served as project engineer to perform an assessment of the Spanish Lakes Mutual Water Company's community water system, evaluating technical capacity (including water storage, fire protection, and well production) and managerial-financial capabilities.

Water System Improvements, Iredell Water Corporation, Iredell County, North Carolina. Served as project engineer for design, permitting, and development of a Cybernet water distribution system model for 231,500 linear feet of 6-inch water main and one pressure relief valve station.

Department of Corporations Engineering Report, Atascadero Mutual Water Company, Atascadero, California. Served as project manager to perform a hydraulic analysis of the water distribution system capacity to meet fire flows and domestic demands.

Water Supply and Wastewater Collection Facilities to Serve Meadow School, Johnston County Department of Utilities, North Carolina. Served as project engineer for the design of 34,500 linear feet of 12-inch water main, 34,500 linear feet of 6-inch force main, a 180-gpm pump station, 350 linear feet of 8-inch gravity sewer, one 6-inch prepackaged water master meter vault, and one 4-inch prepackaged wastewater master meter vault.

Proposed Water Main to Serve West Tyvola and Old Steele Creek roads, Charlotte-Mecklenburg Utility District, Charlotte, North Carolina. Served as project engineer for the design of 7,800 linear feet of 8-inch water main with one bridge crossing along West Tyvola and Old Steele Creek roads in downtown Charlotte.

Water Usage Analysis, City of Morro Bay, California. Served as project manager to perform update of city's water equivalency unit table, evaluated historic water demand information by land use category, and projected future demands.

Service Area Study, Town of Blacksburg, Virginia. Served as project engineer for the evaluation of the water distribution system within an area of 40 homes served by a booster station. Used hydraulic model to evaluate alternatives to using this booster station.

WATER TREATMENT AND WATER QUALITY

2012 City Water Treatment Plant Improvements, City of Morro Bay, California. Performed project management, design, and currently performing construction administration of calcium carbonate buffering system, clean-in-place system expansion, new motor control center and transformer, new electrical distribution, and product water pump upgrades to increase instantaneous plant capacity from 900 gpm to 1350 gpm. This will allow the City to ultimately treat both seawater and brackish groundwater at the same facility.

Desalination Feasibility Study: Process Analysis and Treatment Plant Evaluation (sub to Wallace Group), Cities of Arroyo Grande, Grover Beach, and Pismo Beach, California. Served as project manager; performed treatment process analysis and developed cost opinions for a 1,600 to 2,300 acre-feet per year seawater desalination facility for clients including the city of Arroyo Grande, city of Grover Beach, and Oceano Community Services District.

Desalination Work Plan, Nipomo Community Services District, California. Served as project manager for development of a work plan and cost opinions for beach wells, a seawater or brackish water desalination plant, brine discharge, and system connections to deliver 3,000 to 6,300 acre-feet per year of water to the Nipomo Community Services District.

Capistrano Desalter (sub to ECO Resources), Capistrano Valley Water District, California Served as project engineer for design of backwash pumping system, backwash tanks, and site civil work for the 5.0-MGD brackish water treatment system.

Iron Prefiltration System, City of Morro Bay, California. Served as project engineer to provide construction administration and engineering services during construction (ESDC) for installation of iron filtration system at the City's seawater desalination plant.

Water Treatment Plant Solids Handling Improvements, Town of Bluefield, Virginia. Served as project engineer for the design of a vacuum-type sludge removal system for the existing sedimentation basins. Managed construction of two new overflows in the basin, 330 linear feet of drain lines, valves, manholes, and operations shed adjacent to the building.

Water Treatment Plant Residue Handling Improvements, Town of Gretna, Virginia. Served as project engineer to author the sludge management plan and concept engineering report for the town's water treatment plant. Recommended construction of an additional sludge pond and operational improvements to reduce total residual chlorine in the plant's wastewater.

Water Treatment Improvements, Town of Gretna, Virginia. Served as project engineer and authored the operations and maintenance manual for the upgraded water treatment plant.

Water Treatment Plant, Bedford County Public Service Authority, Virginia. Served as project engineer for the design of a 60,000-gpd water treatment facility for the Highpoint Community. The plant utilizes membrane filtration for the treatment of surface water from Smith Mountain Lake. Developed full-scale demonstration testing and the pilot testing protocol for this facility.

Water Treatment Improvements, Bland Correctional Center, Bland County, Virginia. Served as project engineer and authored a PER discussing water source, treatment, and storage alternatives to improve the existing facilities.

Intake Improvements PER, Town of Bluefield, Virginia. Served as project engineer to evaluate several intake alternatives for the town's water treatment plant. Recommended construction of a flume intake in the Bluestone River upstream of the existing reservoir and intake. Recommended renovation of an existing concrete intake structure built in the 1900s in Dills Spring. The spring would be used as a supplemental water source.

Water System Improvements and Extensions, Montgomery County Public Service Authority, Virginia. Served as project engineer to author a PER addressing alternatives for improving the existing Prices Fork community water system and providing water service to the Longshop/McCoy areas. A hydraulic analysis was necessary for sizing the proposed distribution system.

Water System Improvements and Extensions, Montgomery County Public Service Authority, Virginia. Served as project engineer to perform construction administration for the installation of 28,000 linear feet of waterline and a 100,000 gallon water storage tank in the Alleghany Springs community.

Rechlorination Improvements, Blacksburg-Christiansburg-Virginia Polytechnic Institute Water Authority, Virginia. Served as project engineer for the design of a tablet chlorination system for a booster pump station.

Jon Hanlon, PE
Principal Engineer

Education
BS Mechanical Engineering
California Polytechnic State University, San Luis Obispo, 1991

Years of Experience
Joined MKN 2013
With others 23 years

Registration
Professional Mechanical Engineer, California (M33232)

Affiliations
American Water Works Association

American Society of Mechanical Engineers

American Public Works Association

EXPERIENCE

Mr. Hanlon has over 21 years of industry experience including design, analysis, and management of municipal projects, ultimately serving as the San Luis Obispo Operations Manager for a Fortune 500 engineering company. Mr. Hanlon's responsibilities have included management and resource allocation for complex multi-disciplined projects throughout San Luis Obispo County. Project experience includes water and wastewater treatment facilities, pump stations, production wells, piping and valves, hydraulic analysis, master planning, and environmental permitting.

DISTRICT ENGINEERING

Cayucos Sanitary District, District Engineer.

San Simeon Community Services District, District Engineer.

WATER TREATMENT

Nacimiento Surface Water Treatment Plant Design, City of Paso Robles, California. Project Manager. Responsible for design of a new 2.4 MGD membrane surface water treatment plant, pumping station, and water storage facility. Responsibilities included preparation of plans and specifications for the new treatment plant.

Surface Water Treatment Plant Feasibility Study, Templeton Community Services District, California. Project Manager. Responsible for predesign feasibility study for a new 250 AFY surface water treatment plant. Responsibilities included evaluation of source water quality, alternative treatment processes, and development of preliminary site layouts, process descriptions, and cost opinions.

2.0 MGD Water Treatment Plant Feasibility Study, City of Paso Robles, California. Project Manager. Responsible for predesign feasibility study for a new 2 MGD membrane surface water treatment plant, pumping station, and water storage facility. Responsibilities included evaluation of source water quality, alternative treatment processes, and development of preliminary site layouts, process descriptions, and cost opinions.

Well 22 Rehabilitation, City of Solvang, California. Project Manager. Project to evaluate treatment alternatives to meet sulfide, iron, and manganese water quality goals at a city production well.

Evaluation of Nitrate Removal, Los Osos CSD, California. Project Manager. Project provided an evaluation of nitrate removal options for the Los Osos Groundwater Basin. The evaluation presented planning-level recommendations describing treated water quality, waste production volumes and quality, capital costs, and operating and maintenance costs.

Wellhead Chloramination Conversion, Nipomo Community Services District. Project Engineer. Designed facilities to allow conversion from sodium hypochlorite to monochloramines for disinfection at four District wells.

Sherwood Well Arsenic Treatment Plant, City of Paso Robles, California. Project Engineer. Project to design and construct arsenic removal facilities at two 1.4 MGD City groundwater wells. Treatment plant utilized regenerable iron-based adsorbent media. Activated carbon was utilized for chlorine and sulfide removal and taste and odor control.

Seawater Desalination Plant Review, Southern California Edison, Catalina Island, California. Project Engineer. Performed detailed engineering study of existing seawater desalination facility to improve plant operations.

Copper Source Identification and Reduction Study, Heritage Ranch CSD, California. Project Engineer. Performed analysis to determine the source of and reduce copper levels in District wastewater treatment plant effluent.

Denner Winery Sulfide Removal, Paso Robles, California. Project Engineer. Provided process evaluation and recommendations for treatment system to reduce sulfides and salts in winery process water. The final system utilized aeration, ozone, greensand, activated carbon, reverse osmosis, and orthophosphate injection for corrosion control.

Methane Recovery/Fuel Cell Feasibility Analysis, Irvine Ranch Water District, California. Project Engineer. Performed a feasibility analysis of extracting entrained gasses from deep aquifer wells and utilizing a fuel cell to provide supplemental power to membrane filtration facility.

Agricultural Water Reclamation Pilot Study, U.S. Bureau of Reclamation, California. Project Engineer. Commissioned and operated reverse osmosis pilot system to evaluate reclamation of agricultural runoff.

Meadow Creek Wells Treatment Project, City of Pismo Beach, California. Project Engineer. Evaluated water quality and treatment goals and recommended treatment process for supplemental groundwater sources. Water quality issues included iron/manganese, high TDS, sulfides, color, odor and turbidity.

WATER FACILITIES

Golden Hill/Merryhill Storage Tank Rehabilitation, City of Paso Robles, California. Project Manager. Project involved rehabilitation and seismic improvements to two City water storage tanks. Improvements to Goldenhill Tank (4 MG) included repair and replacement of roof structural members, and associated recoating. Improvements to Merryhill reservoir included new inlet/outlet piping, design of new perimeter ringwall foundation and seismic anchors, repair and replacement of tank shell penetrations, and recoating of all internal and external tank surfaces.

Waterline Intertie Project, Nipomo Community Services District, California. Principal in Charge. Project included hydraulic analysis, disinfection/water quality study, cost opinions and construction plans and specifications for 1 booster station, 4 production wells, 1 storage tank, and approximately 6 miles of 18-inch and 24-inch water main, including approximately 2500 feet of horizontal directional drill under the Santa Maria River.

Wellfield Evaluation and Rehabilitation, San Simeon CSD, California. Project Manager. Produced construction plans and specifications for two new wellhead facilities including pumps, process piping, electrical, and SCADA.

Avery Well Project, City of Paso Robles, California. Project Engineer. Designed municipal well to supplement the City's potable water supply.

Golden Hill Seismic Repair, City of Paso Robles, California. Project Engineer. Project to design structural repairs to existing 3 MG steel reservoir. Coating assessment and specifications to be provided for recoating two City reservoirs.

21st Street Reservoir Replacement Project, City of Paso Robles. Project Engineer. Project involved the replacement of 4MG earthen reservoir with two partially buried 3MG pre-stressed concrete reservoirs.

PUMP STATIONS

Westside Parkway Stormwater Pump Station, City of Bakersfield, California. Project Engineer. Project to design two 50 cfs stormwater pump stations in the California Central Valley. Project requires CalTrans Standards for plans and specifications.

Rosemont Booster Pump Station Replacement, City of San Luis Obispo, California. Project Manager. Project involved abandonment of an outdated reservoir and design and replacement of a potable water booster pump station to improve fire protection, reliability, and efficiency.

Alrita Booster Pump Station, City of San Luis Obispo, California. Project Engineer. Project tasks included design and replacement of an outdated potable water booster pump station to improve fire protection, and increase reliability and efficiency.

PLANNING, PERMITTING, AND MODELING

Water Master Plan, City of Guadalupe, California. Project Manager. Project consists of a condition assessment and capacity evaluation of the City of Guadalupe water distribution system. Specific responsibilities included evaluation of existing water production, storage, and distribution facilities; creation of a GIS-based hydraulic water model, preparation of GIS-based system atlas, review of water quality requirements and goals; development of potential future requirements and evaluation of equipment alternatives; identification of deficiencies under existing and future conditions; development of Capital Improvements Program (CIP) and cost opinions for existing and future improvements.

Water Master Plan and Sewer Rate Study, San Simeon CSD California. Project Manager. Responsibilities included development of comprehensive Water and Sewer Master Plans. Recommendations were made for the capital improvements program and appropriate rate structures.

Water Demand Estimate, Coastal School, California. Project manager. As sub to Fugro, an analysis was performed to estimate the water demand for the proposed Coastal School to assist Fugro West, Inc. in their study to evaluate the impacts of the school's usage of the on-site well and its relationship to the local aquifer. The analysis evaluated constructed in phases over a ten year period. Water demands were considered for school facilities and landscaping.

Hydraulic Model Update and Calibration, Cambria CSD, California. Project Engineer. Project to develop and calibrate a District-wide hydraulic model to assist the District in identifying deficiencies in the water distribution system. Deficiencies in delivery and fire protection were identified through the modeling, allowing the District to develop and prioritize capital improvement projects (CIPs).

Distribution System Hydraulic Modeling, Atascadero Mutual Water Company, California. Project Engineer. Performed distribution system hydraulic modeling and corrosion reduction study.

21st Street Reservoir Replacement Project, City of Paso Robles, California. Project Engineer. Project involved the

replacement of 4MG earthen reservoir with two partially buried 3MG pre-stressed concrete reservoirs.

Bridge Seismic Retrofit Project, Santa Barbara County, California. Project Manager. County Public Works contracted AECOM to produce plans, specifications, and cost estimates on two bridge seismic retrofit projects located in Santa Barbara County.

Risk Management Program Development, Atascadero Mutual Water Company, California Project Engineer. Developed RMP for 23 facilities to comply with EPA Risk Management Program, OSHA Process Safety Management guidelines, and California Accidental Release Program requirements.

Risk Management Program Development, Courtside Cellars Wineries, California. Project Engineer. Developed RMP for 2 facilities to comply with EPA Risk Management Program, OSHA Process Safety Management guidelines, and California Accidental Release Program requirements.

Eileen Shields, PE
Senior Project Engineer

Education
MS Civil and Environmental Engineering, California Polytechnic State University, SLO, 2006

BS Environmental Engineering, California Polytechnic State University, SLO, 2006

Years of Experience
Joined MKN 2013
With others 7 years

Registration
Professional Civil Engineer, California (No. 74757)

Affiliations
American Society of Civil Engineers
Engineers Without Borders, USA

Additional Training
Water Distribution Design and Modeling, featuring Water CAD/GEMS, Bentley, 2008

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EXPERIENCE

Ms. Shields is experienced in a wide range of water, wastewater, and recycled water projects. From utility review for CEQA compliance and master planning, to design of conveyance and treatment facilities and construction phase services, Ms. Shield's experience allows her to effectively develop projects from concept to construction. Ms. Shields' various water and wastewater projects include preliminary and detailed design, permitting, hydraulic modeling, site civil design, and cost estimation; conceptual design of water distribution facilities; pipeline design; bid and construction assistance, including development and administration of prequalification of contractors; planning and design of water supply and conveyance alternatives; wastewater treatment and collection system conceptual planning, process evaluating and wastewater treatment plant design. Ms. Shields has also participated in a number of field projects involving construction observation, and construction administration.

WATER SUPPLY, STORAGE, PUMPING AND DISTRIBUTION

Patriot Park Irrigation Well, City of Greenfield, California. Project Engineer. Project design engineer for a new irrigation well to provide water for Patriot Park and adjacent soccer fields. Project includes preliminary design and development of plans and specifications for public bid for a 470 gpm, 350-foot deep water well.

Water Master Plan, City of Guadalupe, California. Project Engineer. Project consists of a condition assessment and capacity evaluation of the City of Guadalupe water distribution system. Specific responsibilities included evaluation of existing water production, storage, and distribution facilities; creation of a GIS-based hydraulic water model, preparation of GIS-based system atlas, review of water quality requirements and goals; development of potential future requirements and evaluation of equipment alternatives; identification of deficiencies under existing and future conditions; development of Capital Improvements Program (CIP) and cost opinions for existing and future improvements.

Supplemental Water Project (Waterline Intertie Project), Design and Bid Phase, Nipomo Community Services District, California. Project Engineer & Project Manager. Ms. Shields assisted with the design of transmission facilities to deliver supplemental water from the City of Santa Maria water system to the Nipomo CSD water system. The design consists of over 5 miles of waterline, chloramination facilities, PRV stations, a 3,000 linear foot horizontal directional drill river crossing, several jack-and-bore crossings, a 0.5 million gallon reservoir, and a 2,000 gpm pump station. Responsibilities included compilation of technical reports summarizing design considerations, hydraulic modeling, analysis, and recommendations for design, compilation of relevant technical specifications and assistance with pipeline and vault layouts. Responsibilities transitioned to development of plans and specifications for public bid; development of prequalification package and assessment of contractor's prequalification submittals; and project management for completion of design and bid documents. Additional analyses included value engineering and recommendations for a phased project.

Water Age Analysis. Atascadero Mutual Water Company, California. Assistant Engineer. Performed Extended Period Hydraulic Modeling of distribution system to predict water age at each of 6 tanks for compliance with Department of Public Health Stage 2 Disinfection Byproducts Rule System Specific Study.

Utility Review, Environmental Impact Report, General Plan Update, City of Lompoc, California. Assistant Engineer. Reviewed capacity of City's water, wastewater, and stormwater systems and assessed potential impacts from various land use scenarios.

Atascadero Mutual Water Company Hydraulic Modeling, California. Assistant Engineer. Performed Hydraulic Modeling of distribution system to predict water system impacts of increased flow rates.

Hydraulic Modeling, City of Paso Robles, California. Project Engineer. Performed hydraulic modeling analyses to assess water system impacts related to various increased demands and system improvements, including evaluation of fire flow availability and impacts to system pressures, provided summary of results, recommendations for improvements, and opinion of construction costs.

Waterline Intertie Preliminary Engineering Memorandum, Water Distribution System, Nipomo Community Services District, California. Assistant Engineer. Performed Hydraulic Modeling to predict impact of increased flows, developed alternatives for system improvements, and evaluated phasing of improvements to increase capacity of the system. Prepared technical memorandum to summarize analyses and results, presented conclusions and provided recommendations and opinion of construction costs.

Pine Knolls Reservoir Replacement, Construction Phase Services, Cambria Community Services District California. Assistant Engineer. Reviewed construction submittals for approval.

Utility Review. Environmental Impact Report, Shandon Community Plan Update, California. Project Engineer. Reviewed capacity of existing water, wastewater, and stormwater facilities and ability to meet existing and proposed future needs. Evaluated proposed facilities, analyzed potential impacts of future development and provided recommendations for mitigation to reduce or eliminate impacts.

Thailand Drinking Water Project (Cal Poly, Engineers without Borders). Project Manager. Performed drinking water assessment in hill tribe village northwest of Chiang Mai, Thailand. Led student team through design phase at Cal Poly. Managed implementation of slow sand filtration system in Thailand.

Joseph J. Reichmuth, PE
Project Engineer

Education
BS Civil Engineering, California Polytechnic State University, San Luis Obispo, 1999

Years of Experience
Joined MKN & Associates 2014
With others 13 years

Registration
Professional Civil Engineer, CA
(#63124)

Affiliations
American Society of Civil Engineers

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EXPERIENCE

Mr. Reichmuth is a Project Engineer with several years of design experience as a project engineer specializing in wastewater treatment facilities, lift stations, pipelines, and water facilities. Mr. Reichmuth also has nearly a decade of experience working in the geotechnical engineering discipline specializing in field engineering and construction observation.

WATER SUPPLY, STORAGE, PUMPING AND DISTRIBUTION

Water Demand Estimate – Coastal School (Fugro). Project Engineer. An analysis was performed to estimate the water demand for the proposed Coastal Christian School to assist Fugro West, Inc. in their study to evaluate the impacts of the school's usage of the on-site well and its relationship to the local aquifer. The analysis evaluated constructed in phases over a ten year period. Water demands were considered for school facilities and landscaping.

Heights Waterline Upgrade, City of Pismo Beach. Project Engineer. Responsible for design of main water lines to consolidate pressure zones in the area. Design included the preparation of plans, details, specifications, and opinions of cost for the construction of over 3000-lf of 12-inch PVC and 650-lf of 8-inch PVC distribution main. Project also involved connection to a new booster station, replacing a pressure reducing station, reconnecting laterals, fire hydrants, and new meters.

Golden Hill No. 1 and Merryhill Tanks, City of El Paso de Robles, CA. Project Engineer. Prepared Civil plans and details, specifications, and estimates for repairs to two (2) welded steel potable water reservoirs. Project involved repairing dollar plate and rafters, installation of reinforced concrete footing, seismic upgrades, reconfiguration of piping, and recoating of interior and exterior surfaces. Plans, detail, specifications, for the structural repair work were prepared by an AECOM Structural Engineer.

Observation Services, Nipomo Community Services District, CA. Performed observation services for NCSD. Field checked water system improvements for conformance to the District's specifications and approved development plans. Provided the District with recommendations regarding compliance of completed work with approved development plans and/or District standards. Prepared daily field reports and other documentation.

Sulfur Spring Pipeline Construction Phase Services, City of El Paso de Robles, CA. Project Engineer/Construction Observer. Project to capture spring water that erupted in the City Hall parking lot as a result of the San Simeon Earthquake. Provide construction management and construction observation for collection system, pipeline, and leach field to transport thermal spring water to the Salinas River.

San Simeon Wellfield Evaluation and Rehabilitation, San Simeon Community Services District, CA. Project Engineer. Provide construction management and construction observation for two new wellhead facilities including pumps, process piping, electrical, and SCADA.

Hollister Avenue Waterline Replacement, City of Pismo Beach, CA. Project Engineer. Responsibilities included the preparation of plans, details, specifications, and opinions of cost for the construction of 350-lf of 8-inch PVC distribution main. Project also involved reconnecting laterals, fire hydrants, and new meters.

Nipomo Waterline Intertie Project, Nipomo Community Services District, CA. Project Engineer. Responsible for coordination and management of subconsultants (HDD, Environmental/Permits, Geotechnical, and property acquisition). Responsibilities also included the preparation of plans, details, specifications, and opinions of cost for construction.

Robert Lepore, GISP
Senior GIS Specialist

Education
BS Environmental Engineering
Wentworth Institute of Technology
Boston, MA 2001

Years of Experience
Joined MKN 2013
With others 14 years

Registration
Certified Geographic Information System Professional (GISP)

State of California Water Treatment Operator Grade T2

State of California Water Distribution Operator Grade D2

Affiliations
San Luis Obispo Regional GIS Collaborative (SLORGC)

GIS Certification Institute (GISCI) Applicant Review Committee

Central Californian Urban & Regional Information System Association (URISA)

San Luis Obispo GIS Users Group

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EXPERIENCE

Robert is a Geographic Information System Professional (GISP) certified by the GIS Certification Institute (GISCI) with a focus on Water Resources. He has worked for a public utility, GIS consulting firm and multiple engineering firms during his career. He has experience with the design, implementation and application of GIS technology for public & private sector clients with a focus on water, wastewater and stormwater infrastructure planning & hydraulic model development. He is involved in every aspect of a GIS project, from initial project concept & project management, database design & development, field investigations & final project delivery. He has extensive experience with hydraulic model development, data migration & integration, map cartography & onsite GIS software installation & training. Rob is proficient in the use of ESRI ArcGIS 10, Autodesk Civil 3D & Map, Innovyze InfoSWMM & Bentley WaterCAD 8. Rob also has several years of engineering design experience on various public agency and private projects.

GEOGRAPHIC INFORMATION SYSTEMS

GIS Facility Mapping & Atlas, Port San Luis Harbor District, Avila Beach, California. Development of a comprehensive sewer and water geodatabase to replace the existing hard copy atlas maps. Services for this project included development of an ESRI geodatabase design and data development, review of existing atlas maps, cartographic atlas map production and onsite installation and training of project database for District staff.

GIS Implementation Services FY09-10, FY10-11, FY11-12, FY12-13, Nipomo Community Services District, California. Providing on-going GIS implementation assistance for updating and maintaining the District's parcel base map, water distribution and wastewater collection geodatabases. Services include assisting in the update and calibration of the District's water and wastewater hydraulic models, integration of scanned as-built plans, integration of operation and maintenance information, and onsite installation and training for District staff.

2009 Water and Sewer Atlas Update, Nipomo Community Services District, California. Served as Project Manager/GIS Specialist to produce updated cartographic atlas for the water distribution and sewer collection systems.

2012 Water and Sewer Atlas Update, Nipomo Community Services District, California. Served as Project Manager/GIS Specialist to produce updated cartographic atlas for the water distribution and sewer collection systems.

GIS Lateral Database Development, Seaside County Sanitation District, California. Developed a comprehensions sewer lateral location database based on historical operational records from SCSD staff. Lateral database identifies GIS manhole identification, street address, direction from manhole and distance along sewer pipe.

Lopez Pipeline GIS Mapping & Atlas, County of San Luis Obispo, California. Served as project manager/GIS specialist in the design and development of a comprehensive water transmission pipeline GIS for the County of San Luis Obispo's Department of Public Works. The pipeline conveys treated drinking water through 24 miles of pipeline from Lopez Dam. Services for this project included RTK GPS field survey of pipeline appurtenances such as air release valves, blow-offs, meter stations, turnouts, cathodic protection test stations, and main line valves. System development incorporated 312 collected survey points, digital photography of the surveyed pipeline appurtenances, review of over 150 record plans, and acquisitioned high-resolution orthometric imagery. Provided Geodatabase design and data development, cartographic utility atlas mapping, onsite installation and training County staff on use of ESRI's ArcGIS software.

GIS Sewer System Mapping & Atlas, Sunnyslope County Water District, Hollister, California. The SSCWD wanted to update and replace their current hard copy sewer atlas maps with a GIS database and mapping. The sewer GIS includes 5 lift stations, 308 manholes, 27 cleanouts and 13 miles of sewer pipe. Services for this project included RTK GPS field survey of the entire collection system totaling 336 survey points, digital photography of the surveyed sewer manholes, ESRI geodatabase design and data development, review of existing atlasmaps, cartographic atlas map production and onsite installation and training of project database for SCWD staff

GIS Water, Sewer, and Parcel Mapping, Avila Beach Community Services District, California. Developed a centralized GIS for the District parcels, street lighting, water distribution system, and wastewater collection system. Services included RTK field survey for 571 water system features, 72 wastewater system features, digital photography of District facilities, cartographic atlas maps, and onsite installation/training of the GIS data and software. Waster distribution system consist of 750 water distribution appurtenances and 3.4 miles of water mains and the collection system consists of 400 wastewater appurtenances and 2.2 miles of sewer pipe.

NPDES Phase II Storm Water Management Program, County of San Luis Obispo, California. Designed and developed a comprehensive storm water GIS for the unincorporated areas of the County including: Santa Margarita, Garden Farms, Nipomo, Oceano, Templeton and SLO City Fringe. Services for these projects included RTK GPS field survey of County owned culverts and storm water drainage facilities such as SDMHs, inlets, roadside ditches. System development included 1,500 survey points, digital photography of surveyed drainage features, review of over 400 record plans, acquisition of high-resolution orthometric imagery, Geodatabase design and data development, cartographic utility atlas mapping, onsite installation and training County staff on the use of ESRI's ArcGIS software to manage the information. Mapping statistics: 2,546 storm drain features including 15 miles of storm drain pipes.

Parcel and Aerial Mapping, Independence Ranch Community Services District, San Miguel, California. Designed and developed a digital mapping system, including a parcel base map with County assessor information and aerial photography, to allow staff to track development and construction changes within the District's jurisdiction.

Parcel and Road Centerline Mapping, City of Paso Robles, California. Development of a City wide parcel GIS consisting of the data development of 12,500 parcels and modification of existing street centerline data to overlay on current City aerial photography base map. Services included reviewing and mapping 500 assessor parcel maps and providing survey ground control for parcel data.

GIS Stormwater Drainage Mapping & Atlas, City of Paso Robles, California. Designed and developed a GIS geodatabase for the City's storm water drainage system. Services included scanning over 200 existing storm water record plans, field mapping storm drain features, attributing a GIS geodatabase with storm drain information, and providing on-site installation and training of ESRI's ArcGIS software for City staff.

GIS Trunk Sewer Mapping & Atlas, South San Luis Obispo County Sanitation District, San Luis Obispo County, California. Designed and developed a comprehensive trunk sewer GIS for the Sanitation District to centralize and streamline historical and present day information for over nine miles of pipeline. Services for this project included RTK GPS field survey of trunk sewer manholes totaling 140 survey points, digital photography of the surveyed sewer manholes, review of record plans, acquisition of high-resolution orthometric imagery, geodatabase design and data development, integration of digital sewer inspection videos, cartographic utility atlas mapping, and onsite installation and training of ESRI's ArcGIS software to be used by Sanitation District staff.

Water Distribution GIS Mapping & Atlas, Los Osos Community Services District, California. Designed and developed a GIS for the Los Osos - Baywood area water distribution system for the District's Water Department. Integrated existing water system documentation, such as GPS water valve locations, WaterCAD water model, and field documentation, with new digital photography of water system facilities. Also provided onsite installation and training of ESRI's ArcGIS software for District staff.

2012 Water Utility Mapping & Atlas Update, Los Osos Community Services District, California. Served as Project Manager/GIS Specialist to produce updated cartographic atlas for the water distribution and sewer collection systems.

Weed Abatement GIS Mapping & Atlas, Cambria Community Services District, California. Served as the project manager for the creation of C-Size and D-Size atlas mapping showing vacant parcels required to comply with weed abatement ordinances within the CCSD. Used by fire department staff to identify properties that have not complied with weed abatement ordinances.

Fire Engine Atlas Book & Engine Bay Wall Map, Cambria Community Services District, California. Served as project manager/GIS specialist for the creation of a 4-foot by 8-foot emergency response wall map located in the Community Services District fire department engine bay and an accompanying letter size map-run books located in each fire engine. The purpose of the oversized wall map is to allow Fire Captains to conduct emergency response planning operations from the fire station and coordinate with the Fire Engineers in the field. The wall map has an overview sheet grid and street index that was reduced down to a letter sized map-run book.

Land Conservation Wall Map, Cambria Community Services District, California. Development of 4-foot by 8-foot wall map showing parcel ownership, vacant properties and conservation properties owned by CCSD.

On-Call GIS Mapping Services, Templeton Community Services District, California. Providing on-call GIS services to TCSD staff for water and wastewater systems

GIS Parcel Basemap and Road Centerline, Paso Robles, California. Development of a City wide parcel GIS consisting of the data development of 12,500 parcels and modification of existing street centerline data to overlay on current City aerial photography base map. Services included reviewing and mapping 500 assessor parcel maps and providing survey ground control for parcel data.

GIS Parcel Mapping, Santa Rita Hills Community Services District, Lompoc, California. Designed and developed a digital mapping system, including a parcel base map with Santa Barbara County assessor information and aerial photography, to allow staff to plan future road construction and land development within this newly formed road maintenance district. Mapping statistics: 36 parcel features.

GIS Services for Plains Exploration and Production, Orcutt, California. Provided GIS database and mapping support for major oil and natural gas transmission mains operated by Plains Exploration and Production (PXP) in Southern California. Prepared GIS datasets for submittal to the National Pipeline Mapping System (NPMS) and other state agencies. Mapping statistics: 65 miles of oil pipelines.

San Benito Cattle Company, San Benito, Santa Clara, Merced Counties, California. Designed and developed a comprehensive ranch management GIS that covers approximately 127,000 acres of ranch land in San Benito, Santa Clara and Merced Counties. Survey Division services included researching legal parcel configurations and submitting applications for certificate of compliance to the respective county jurisdictions. GIS services mapped all the ranch land in one central geodatabase and produced digital and hardcopy cartographic ranch maps for tracking parcel's legal status.

Vineyard GIS, Vineyard Professional Services, Templeton, California. Designed and developed over thirty GIS geodatabases for existing and potential vineyard locations in the North County areas of San Luis Obispo County. Services included developing and mapping vineyard specific information such as wine grape varietal block boundaries, soil types, available water holding capacities, and vine rooting depth from hard copy and field collected resources. Also created 3D data and imagery simulations for visual analysis and presentation of future vineyard sites.

New England Communities Stormwater GIS Mapping. Served as project manager for the development of stormwater drainage GIS mapping projects for the following communities: City of Middletown, Connecticut, City of Quincy, City of Waltham, Town of Auburn, Town of Needham, Town of Northborough, Town of Norwood, and Town of Southbridge, Massachusetts.

New England Communities Wastewater GIS Mapping. Served as project manager for the development of wastewater GIS mapping projects for the following communities: City of Waltham, City of Weymouth, Town of Auburn, Town of Falmouth, Town of Northborough, and Town of Southbridge, Massachusetts.

New England Communities Water Distribution GIS Mapping. Served as project manager for the development of wastewater GIS mapping projects for the following communities: City of Waltham, Mashpee Water District, Town of Auburn, Town of Falmouth, Town of Ipswich, Town of Northborough, Town of Norwood, Town of Southbridge, Wannacomet Water Company, and Nantucket, Massachusetts.

WATER SUPPLY, STORAGE, PUMPING AND DISTRIBUTION

Water Master Plan, City of Guadalupe, California. Project consists of a condition assessment and capacity evaluation of the City of Guadalupe water distribution system. Specific responsibilities included evaluation of existing water production, storage, and distribution facilities; creation of a GIS-based hydraulic water model, preparation of GIS-based system atlas, review of water quality requirements and goals; development of potential future requirements and evaluation of equipment alternatives; identification of deficiencies under existing and future conditions; development of Capital Improvements Program (CIP) and cost opinions for existing and future improvements.

Atascadero Mutual Water Company, Atascadero, California. Assisted in the water modeling and development of the water distribution system master plan update. Utilized AMWC's GIS information to update water model and create master plan figures.

Assessment District No. 2012-1 Supplemental Water Project, Nipomo Community Services District, Nipomo, California. Corrected and modified the NCSD's current GIS parcel base map, utilized as the central database for the water system inter-tie assessment engineering project. Also, created and updated assessment parcel base mapping for the Woodlands Mutual Water Company, Rural Water Company, and Golden State Water Company to be included in the potential assessment district. Over 9,000 parcels were analyzed for water-use and development potential through the use of this GIS assessment database along with aerial photography and ArcGIS software technology.

Waterline Design 12-inch, Vina Robles Winery, Paso Robles, California. Served as project designer for the preparation of construction documents for a 5,500 linear foot of potable water main comprised of 12-inch PVC Class 150 pipe. Project responsibilities also included design and Caltrans permitting for 300 lf of 12-inch pipe via Bore and Jack under Highway 46 East; design and Army Corps permitting for 100 lf of 12-inch pipe under a seasonal creek; and project coordination with multiple agencies.

16-inch Ductile Iron Transmission Main for Rice Ranch, Golden State Water Company, Orcutt, California. Served as project designer for the preparation of construction documents for a 2,000 linear feet of potable water main comprised of 16-inch diameter CML&C DI pipe for the early phases of the new Rice Ranch community planned for 725 homes. Also provided support for the detailed design of the waterline secured to the underside of the new pedestrian and vehicular steel bridge for the creek crossing in the community park.

El Camino Real Waterline Upgrade, Atascadero Mutual Water Company, Atascadero, California. Served as project designer

for the preparation of construction documents for 2,600 linear feet of 12-inch Class 150 C900 PVC waterline. Design responsibilities included field verification of existing underground utilities, abandonment of existing 6" and 8" CIP waterlines, and replacement of existing water service and fire hydrant connections.

LOVR 16-inch Ductile Iron Transmission Main Upgrade, Los Osos Community Services District, California. Served as project designer for the preparation of construction documents for a 1,350 linear feet of potable water main upgrade comprised of 16-inch diameter CML&C Ductile Iron pipe.

Water Main Relocation Project, Green River Mutual Water Company, Whitley Gardens, California. Served as project designer for the preparation of construction documents for 1,350 linear feet of 8-inch Class 350 DIP water mainline with 750 lf of pipe installed via Bore and Jack under State Highway 46 East in the Whitley Gardens area. This project was initiated based on Caltrans future realignment and expansion of State Highway 46 East from Paso Robles to the Central Valley. Direct coordination with Caltrans was required to efficiently complete the design documents to minimize future conflicts with other public utilities. Design responsibilities included field verification of existing underground utilities, abandonment of existing 6" and 8" CIP waterlines, and replacement of existing water service and fire hydrant connections.

Water Meter and Service Installation, S&T Mutual Water Company, Los Osos, California. Served as project designer for the preparation of construction documents for meter and service lateral replacement project.

Welded Steel Raw Water Bypass Pipeline, City of San Luis Obispo, California. Served as project designer for the preparation of construction documents for 1,160 linear feet of 24-inch CML&C welded steel pipeline (WSP) for a new raw water bypass pipeline. Design responsibilities included abandonment of the existing 24-inch pipeline; design of the new raw water bypass pipeline; re-configuration of piping in the existing pipe vault to accommodate the new bypass connection; and detailed design for ground penetration to connect to existing above ground raw water pipeline.

State Water System Permit for Wineries, San Luis Obispo County, California. Prepared a Technical, Managerial, and Financial (TMF) analysis for a non-transient, non-community water system and received approval for a water system permit from the County of San Luis Obispo Health Department. Specific services included report development, engineering calculations, system schematics, and client coordination. The following is a list of clients that a TMF was prepared for. Aron-Hill Vineyards, Daou Vineyards and Winery, Kukkula Winery, Salisbury Vineyards, The Vines RV Resort.