


TO: BOARD OF DIRECTORS  
FROM: BRUCE BUEL   
DATE: FEBRUARY 6, 2009

**AGENDA ITEM  
E-6  
FEBRUARY 11, 2009**

HYDRANT FLUSHING AND VALVE EXERCISING

**ITEM**

Award quote for hydrant flushing and valve exercising. [AUTHORIZE CONTRACT EXECUTION]

**BACKGROUND**

The Water and Sewer Master Plan Update recognizes the need for a Water System Preventative Maintenance Plan. Included in this plan is a schedule outlining hydrant and valve inspection and maintenance. The Board included funding in the FY08-09 Budget for a contractor to perform this work.

NCSD requested proposals from three service providers to develop, plan, and execute a program to locate, inspect, clean out, assess, exercise, flush, flow test, operationally test, mark, perform minor repairs, record mapping grade GPS data, document, create a deliverable GIS database and create work orders for water distribution system valves and hydrants to address approximately 35% of the valves and hydrants in the NCSD distribution system. The proposed program area is Town Division Water Service east of US 101.

Two responses were received. The proposal submitted by Wachs Utility Services addresses the District's scope of services as detailed in the RFP, including scheduling and timeline for execution, the details of the proposed maintenance program including field activities and list of equipment used. Wachs quote for these services is \$38,000. The other proposal, submitted by i Water was very limited in scope, and did not respond to the District's needs as specified in the RFP. I-Water's quote for a subset of the requested services is \$25,200.

**FISCAL IMPACT**

Funds for this project are budgeted in Fund #120- Town Water, Operations and Maintenance

**RECOMMENDATION**

Staff recommends that the Board award the quote for hydrant flushing and valve exercising to WACHS Utility Services for the amount of \$38,000.00

**ATTACHMENTS**

- Quotes from i Water and WACHS Utility Services

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# Nipomo Community Services District

## Water Valve and Hydrant Services Program



Presented By:  
Wachs Utility Services





Bruce Buel  
General Manager  
Nipomo Community Services District  
148 South Wilson Street  
Nipomo, CA 93444

January 26, 2009

**RE: Water Valve and Hydrant Services Proposal**

Dear Mr. Buel:

Wachs Utility Services is excited about the opportunity to significantly improve the operability and reliability of the Nipomo Community Services District distribution system through a Water Valve and Hydrant Services Program. Wachs Utility Services is the national expert at water valve and fire hydrant evaluation, improvement and information management and has conducted similar programs in Baltimore, Washington DC, Charlotte, Clarksville, Wilmington, Raleigh and many other communities across the nation. We understand the pressures the NCS D is under to provide clean, safe and reliable water for your customers at a reasonable price. We also understand, intimately, how important operable valves, fire hydrants and precise and meaningful information are to providing these services.

Through our extensive experience in hundreds of water systems across the country we understand how to most efficiently and effectively assess, improve, repair, document and analyze water distribution system components in order to provide a more reliable, cost effective and customer service focused system. Wachs Utility Services works solely on distribution system efficiency programs and through our years of experience we have developed best practices that have resulted in detailed operating procedures and field and information management processes. We will use state of the art equipment and technology in conjunction with our management processes to deliver for the Nipomo Community Services District a successful Water Valve and Hydrant Services Program.

Our reputation is unsurpassed in the industry and we are proud of our capabilities, dedication and the results we provide to our customers. Our proposal and pricing (valid for 90 days from submittal date) is attached. If you have questions or comments on any part of our proposal, or need more detail, please do not hesitate to let me know. We look forward to the opportunity of serving the Nipomo Community Services District.

Sincerely,

Glen Lewis  
Sales Account Manager  
Cell: (925) 200-4098

Cliff Wilson  
President

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## Experience Summary

We are excited about the opportunity to dramatically restore the operability and reliability of the Nipomo Water System through a Water Valve and Hydrant Services Program. Wachs has put together an experienced and focused team, the only team that can provide the Nipomo Community Services District (NCSD) with the most value with world class service and results.

Our team has worked in hundreds of water systems across the country. Our personnel are professional and knowledgeable, our equipment is modern, clean and technologically advanced and our processes are proven and dependable. Our attention to detail, procedure and process increases efficiency, reduces risks and reduces the cost of asset replacements. We have physically located, inventoried, assessed, operated, documented, captured GPS data and repaired hundreds of thousands of valves and hydrants for our customers across the nation. We have developed best practices that have resulted in detailed operating procedures and field information management processes that are documented in our training programs. We will dedicate talented people, state of the art equipment, technology and management processes to deliver an excellent program for the NCSD.

## NCSD Program Description

### Program Objectives

The NCSD desires Wachs Utility Services to develop, plan a program to execute Water Valve and Hydrant Services. As a result of the program all field collected data will be delivered in GIS ready file formats that will integrate seamlessly into the NCSD's data infrastructure. Wachs Utility Services will analyze the results of the program and deliver a summary to the NCSD. The results of this program will be used to evaluate the value of a system wide program.

We have established baseline objective for this program which are to:

- Assess the operability of valves and hydrants
- Improve the operability of valves and hydrants through maintenance and minor repairs
- GPS map valves and hydrants
- Create an accurate valve and hydrant database that is accessible and integrates seamlessly into the NCSD's GIS data platform
- Provide detailed work orders for valve and hydrant repairs and replacements
- Provide a summary report on the program findings and recommendations

### Scheduling

Scheduling and timeframe will be addressed and agreed with the NCSD. In our view, it is best to drive the program scheduling on a planned basis by always looking forward and being prepared for contingencies. The program criteria will include a process plan that will assist in the successful execution of all field and information collection activities.

On a pre-determined basis the team will review the program plan and detail the next period's activities. We will pull maps in advance, research records, pull valve cards and review other construction and maintenance activities in the planned area. Additionally, we will establish critical valves (those valves whose failure could significantly impact the utility, such as valves near hospitals, large businesses, dialysis centers, etc.). We will execute the service activities in the planned areas. Before field activities commence in any area, the maps will be reviewed by the program manager. The Wachs Pre-Planned Map Review (a pre-established set of analysis to be conducted on the assessment area BEFORE field work commences) will be completed and all critical valves and isolation traces for catastrophic isolation plans will be discussed.

## Schedule of Completion

Task	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Kick-off meeting									
Valve & Hydrant Assessments									
Deliverables									
Final Report									

## Execution of Work

Executing the work in a pre-planned coordinated manner while following written procedures will;

- Reduce the amount of traffic disruption
- Reduce the disturbance of the water system
- Standardize the maintenance activities to ensure:
  - Each valve activity is performed in the approved, safe manner
  - Consistent data is collected on all valves
- Reduce the crew work area set-up and take down time
- Reduce the amount of crew transit time

Prior to the daily execution of valve and hydrant assessment activities all of the pre-work and planning will have been completed. On a daily basis the sequence of work will include all of the following activities (The Program Manager will oversee all activities):

- Safety meeting
- Provide appropriate traffic control and safety measures
- Physically locate the valve and hydrant
- Physically locate the bypass valve (if in place)
- Remove the lid
- Evacuate debris from the valve box
- Pump water from the valve vault
- Inspect condition of valve box and valve
- Inspect the valve and hydrant for corrosion and repair needs
- Clear and lubricate the valve and hydrant, if necessary
- Attach specific exercising equipment
- Perform valve-exercising process and hydrant operations using the agreed procedure and record data
- Perform repair activities as agreed with the NCSD
- Record data and discrepancies
- Record the GPS position
- Return the work area to its original state

## Wachs Approach to Valve Asset Inspections

The Wachs approach is to make no assumptions about the size of the valve, the type of valve and about which direction it operates. Our certified operators understand the most common reason for valve failure is uncertain turn counts that result in excessive torque being applied to the operator - a situation our operators avoid. Wachs is the sole proprietor of the "No assumptions" valve asset exercising methodology with is the basis for virtually every documented valve asset exercising, assessment and rehabilitation approach worldwide. It is to that end which we can say with confidence that Wachs Utility Services is the industry leader - a claim which can be made by no other.

Service providers who consider equipment capabilities to limit and control torque a reducing factor to breakage are prone to breakage as a general rule due to the misconception that torque limit is a controlling factor in limiting or preventing breakage. The controlling factor which prevents breakage *is establishing the right torque limit in the first place*. Afterward, the equipment's capacity to limit torque becomes a factor. Even still, a service provider must have accountability at every level of production - from field work to quality control - whereby indisputable proof is available to demonstrate field crews worked inside the established limits. Torque limits must be established on the basis of: valve usage, valve type, valve orientation, valve box structure, valve operator type, valve age, valve gearing (if it exists), environmental factors and manufacturer

For example, a 50 year old un-g geared US Pipe double disk 6 inch valve in a vault full of acidic soil that has not been operated in decades DOES HAVE A TORQUE LIMIT. The question the NCSD must answer when evaluating responses to this RFP is whether Wachs Utility Services database containing hundreds of thousands of valve operation characteristics is of value in establishing torque limits and whether that has a direct impact on the utility's bottom line. Our position is simply that IT DOES.

Our attention to detail, procedure and process minimizes the disruption to the water system and reduces the cost of replacements. In many cases we can bring valves back to operability that other operators would replace. In addition to the effectiveness of our field programs, our data and information management expertise provides quality data and information to the utility which is understandable and actionable for engineering and operations.

### **Specific Field Activities for Valves and Hydrants**

Our specific operational guidelines for valve exercising are noted below.

#### *Operational Testing*

Wachs Utility Services will exercise each valve a minimum of two full cycles. (Exercise is defined as a full cycle from open to shut to open again). All valves will be exercised slowly with the minimum torque required so as to minimize the possibility of damaging the valve or creating water hammer. Specific valve exercising guidelines are noted below:

- All 4" and smaller valves will be exercised manually (one person on a hand key).
- All cone, plug and butterfly valves will be exercised manually (one person on a hand key).
- 6" to 12" valves will be exercised manually or with an electric or hydraulic valve exerciser with torque control and an automated turns counter.
- Valves equal to or larger than 16" will be exercised with a hydraulic operated, microprocessor controlled, torque controlled truck mounted valve exerciser, using maximum torque capacity up to 2,500 ft-lbs or as required for valve exercising. If needed, we will use a valve exerciser with the capacity to download operating information, torque and turns data on the individual valve.
- Wachs Utility Services will immediately notify the NCSD of any valves found closed or if any unsafe conditions are observed.
- Wachs Utility Services will provide detailed, specific written valve exercising criteria that will be used by its operating crews that will include torque limits for every valve type and size anticipated in the scope of this program.
- If the valve fails to cycle at the torque limit, the exercise process will stop immediately. Additional torque may be applied to the valve, as directed by the NCSD (with input from Wachs Utility Services) until the valve turns or the operation is suspended again at a higher torque.
- The bypass valve will be exercised first (if present). If the bypass valve does not operate, the main valve will be exercised to a ¾ shut position in order to ensure it does not become hydraulically locked in the closed position.

## Information Activities for Valves and Hydrants

### *GPS Mapping*

All the hydrants and valves encountered in this program are to be GPS mapped with sub-meter accuracy and the data delivered in a database compatible with NCS D GIS and CMMS. The coordinate data shall be field collected with autonomous GPS readings and subsequently differentially corrected via post processing. Wachs Utility Services shall further refine positions through filtering and inspection to eliminate noise, problematic satellite geometry and multi-path degradation. Point valve features shall be collected at an epoch of 1 second with a minimum occupation of 20 in feature points in State Plane Coordinates. Specific parameters include;

- Elevation mask: greater than 15 degrees
- Coordinate system: as agreed with the NCS D
- Satellites:  $\geq 4$
- Positional Dilution of Precision (PDOP):  $< 6$
- Minimum number of raw positions collected: 20
- In the event of obstructions - where a clear GPS position cannot be captured - a GPS offset will be executed from a nearby location

### *Documentation*

Data to be documented on each fire hydrant and valve will be agreed with the NCS D in advance of startup. Wachs Utility Services will push field collected data directly into NCS D GIS to populate both asset and work order records. Wachs Utility Services has a proven methodology to seamlessly integrate asset information into GIS.

### *Deliverable Database*

Wachs Utility Services will provide pertinent fire hydrant and valve data in a spatially accurate geodatabase format compatible with the NCS D's existing data structure. Metadata, including a detailed citation describing field data collection practices, equipment settings, post processing procedures, base stations used for differential correction and expected accuracy, are to be submitted with final and interim data deliveries. In addition to the coordinate data collected the database shall contain attribute information agreed with by NCS D and recommended by Wachs Utility Services.

Before field operations commence a meeting will be attended by Wachs Utility Services and the NCS D to reach alignment on the specific data schemas to be employed. It is at this juncture that Wachs Utility Services and NCS D will reach agreement on which specific features will be collected, the format this feature data will conform to, and the final resting place for all collected and calculated information within NCS D's data infrastructure so that it can be appropriately mapped and accessed by the NCS D's staff. In addition, proposals shall offer a detailed solution to seamlessly integrate field collected GIS data into the NCS D's enterprise data infrastructure.

Reviewing the schedule on a regular basis allows for quick identification of potential problems and the formulation of action plans to guarantee that work package schedules are met. Wachs Utility Services is uniquely qualified to complete the Nipomo Community Services District Program on time. Our references will show that we have a proven record of meeting schedules on projects of a similar size and scope.

## Information Management Processes

### **Summary**

Wachs Utility Services has deep experience in collecting, validating and managing hydrant and valve program data. Information validation, management and delivery are absolutely critical to the success of the NCS D program. Wachs Utility Services' Information Management Team will manage the validation, formatting and accuracy of all field collected data PRIOR to delivery to the NCS D. Our Team is a business partner with ESRI (the world leader in GIS software).



## Create and Manage Inspection and Work Order Tables

Our database format allows us to start programs quickly and effectively. The database has pre-programmed queries which sort and manage information which is of interest to our customers. While a valve and hydrant database may appear simple, we have found through our experience that there are many potential pitfalls and challenges which must be overcome in order for the program data to be turned into usable, actionable information. We have learned these lessons and have incorporated our learnings into our database structure.

## Database Design

Before field operations commence a meeting will be hosted by the Wachs Utility Services and the NCSO to reach alignment on the specific data schemas to be employed by in the database design.

We will discuss at a minimum, the following:

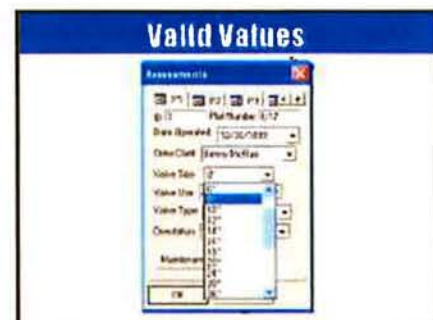
- The GIS Data Schema - Wachs Utility Services will discuss, recommend and record the data structure and domain for each field of data collected during asset inspection tasks including domain values.
- Source Data - Wachs Utility Services expects that the NCSO has existing map data and possibly in several formats. We will identify sources such as Orthophotography, land base and cadastral to determine its suitability for the methodology we plan to implement.
- Data Acceptance - We understand the need for the NCSO to review and test data to be incorporated into their systems. We further understand there is a logical sequence for doing so and it is this sequence which will be the main focus of our discussion. We will establish the acceptance criteria for data that is delivered in each phase of the program.

## QA/QC Plan

Our ability to provide "right the first time" valve and hydrant data rests squarely on our ability to manage the quality assurance process. From creation through integration, analysis and provisioning our team has deployed a systematic quality program encompassing automation, manual inspection and random sampling. Wachs Utility Services has a triple validation process on all data we collect in our programs. The field crew reviews all data collected at the end of each day, a data analyst reviews the collected data as it is integrated into the valve database and finally the project manager reviews all lines of data for the third validation before information is appended into the main table.

Our approach begins in the field where we deploy technology in an interactive environment. Our field operators are trained to use mapping grade survey instruments and a series of GIS software systems that range from GPS Analyst to TerraSync and ArcPad. This approach improves quality, improves consistency and reduces the delivery cycle significantly by eradicating uncertainty in numerous instances such as "paved-over" and "cannot locate" assessments.

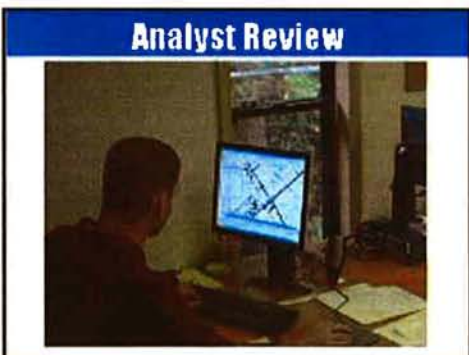
Our quality control process has been developed and refined over the years. It is a critical first step in the creation of the valve database attributes and the development of valid values for each entry. These valid values drive consistency and accuracy at the front end of the process.





Our field crews are trained in data collection procedures and the use of our information management equipment.

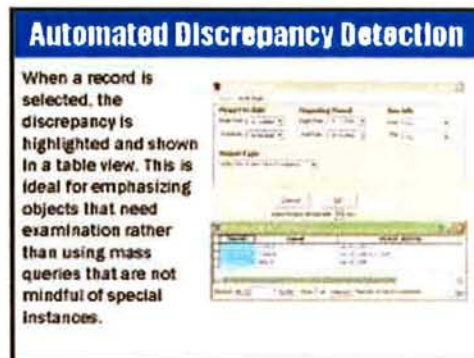
**First Data Validation:** At the end of each work day the field crew reviews the collected data for accuracy



**Second Data Validation:** As the data is integrated into the valve database our information analyst reviews the information again for accuracy.

Our information analyst will also run our automated discrepancy routines on the data and valve database in order to provide an automated level of quality assurance. The data is then given to the project manager who performs the **Third Data Validation** by reviewing all lines of data before information is appended into the main table

Our information analysts are highly trained GIS professionals with experience working in other water systems - a tremendous benefit in the cost-to-quality curve. They utilize an array of interactive GIS technologies to build geometric networks, three dimensional hydrant analyses and perform conflation tasks such as matching field generated GIS data to existing GIS data.



## Additional Program Activities

### *Work Orders*

Wachs Utility Services has recommendations for data to be collected in the field in order for the NCSD to further increase the efficiency of maintenance programs. For example we strongly recommend collecting field information on specific discrepancy categories and documenting the recommended repair. Without this needed information the repair team will need to make an investigative visit to the valve or hydrant in order to determine the specific parts and materials needed for a repair and then return, at a later date, to complete the repair. Multiple trips to an asset for repairs are not an effective use of time or money. It is much more efficient to detail the

discrepancy so the repair contractor can make the repair on the first trip to the hydrant. Further consider the synergy established by simply measuring the distance from hydrant to isolation valve to help establish whether customers will be taken out of water during the hydrant's replacement. Wachs Utility Services will create work orders for all required repairs that are needed in order to bring the fire hydrants and valves in the system up to 100% operability.

#### *Crew Safety*

Wachs Utility Services will abide by all OSHA safety regulations in the fulfillment of this scope of services. Wachs Utility Services shall provide all traffic control services necessary to ensure a safe working environment for the fulfillment of the contract. As a requirement to perform this scope of work safely each truck crew will have a minimum of two workers and all work vehicles will have amber warning lights, strobe lights, directional arrow board lights, and communications equipment and clearly identify Wachs Utility Services.

#### *Professionalism*

Wachs Utility Services will ensure that all activities are conducted in a professional manner. At a minimum, Wachs Utility Services will ensure all personnel are in an approved uniform, all field equipment is maintained clean and neat, all trucks are clearly identified with the Wachs Utility Services name and contact phone number and written procedures for field operations and information management processes are contained within the vehicle in an operations manual.

### **Equipment and Software**

The team will position a full service hydrant and valve operations and repair vehicle as well as associated repair equipment for exclusive project use. We own and operate highly specialized equipment for the inspection, exercising and documentation of water distribution hydrants and valves. Examples of specialized equipment that would be used in support of the project are: the Wachs TM-7DT truck mounted microprocessor controlled valve exerciser with data transfer capability and a torque limit capacity of 2500 ft lb. (2005 model or later). Vitals 2.1.10 is used when creating torque charts is necessary.



#### *Equipment (selected items)*

#### **Hydrant Flow Test Equipment**

The project team will provide all necessary equipment to perform flow tests for the NCSD Program.



#### **Cap Mounted Static and Residual Pressure Gage**

The project team will use the cap mounted static and residual pressure gage with vent for hydrant flow testing activities.



### **Wachs Electric Valve Exerciser**

Wachs Utility Services maintains this proprietary piece of equipment to exercise all gate valves larger than 4". This exercising machine has a digital counter and torque control limiting capability.



### **Wachs Industrial Vacuum**

The project team will use the Wachs industrial vacuum to vacuum debris and water from valve boxes to ensure that there is a clear view of the operating mechanism and also ensure that debris does not prevent the operation of the valve. The Wachs Tav-L-Vac has a capacity of 90 gallons at 300cfm.



### **Trimble GeoExplorer XH GPS/Data Recorder ('05 to '08)**

The project team will use Trimble Geo Explorer XH GPS devices for GPS and data collection activities. Pre-programmed data collection, GPS limits and documentation will be integrated with this equipment.



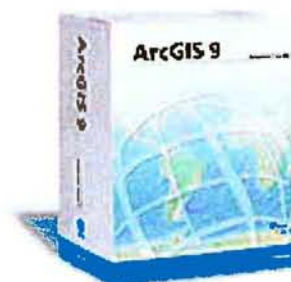
### **Pumps for Dewatering Vaults**

The project team will use dewatering pumps to pump out vaults so that the valve will be fully exposed for inspection and evaluation. This process allows the team to fully evaluate each valve and detect discrepancies that can be hidden in water.



### **ESRI ArcGIS Software (version 9.2)**

The project team will use ESRI ArcGIS software for all spatial data analysis and validation pertaining to water distribution assets.



### **Trimble TerraSync Software & Trimble Pathfinder Office**

Wachs Utility Services uses Trimble TerraSync software as our data collection and GPS software platform. We incorporate pre-determined data dictionaries: drop down menus and GPS restrictions in order to maximize the accuracy of all program data. Wachs Utility Services uses Trimble Pathfinder Office software to post-process GPS positions, manage field data functions and export the valve and hydrant data into our Program database. We have extensive experience in the use of this software and understand its full capabilities. The Pathfinder Office software enables us to pre-plan field sessions for more productive field work.



## **Project Personnel**

### **Project Organization**

Wachs Utility Services will have professionally trained personnel execute the NCSD program. We have an Oversight Manager, Program Manager, Crew Chief, Operator and Information Manager assigned to each efficiency program we conduct for our customers. Our team will coordinate with the NCSD's operations, engineering, information management and mapping personnel to ensure that you receive maximum value from this program. The program manager, crew chief and information manager will have communications equipment so that they can be in constant communication and their activities can be coordinated together and with the NCSD. All the proposed staff members are experienced professionals who have worked on dozens of complex jobs with identical scopes to this program. Their qualifications are based on two tiers of knowledge: that which is disseminated through professional certification and that which is gained through experience. Below is the team that will fulfill the NCSD Water Valve and Hydrant Services Program.

#### ***Ron Karczewski, Oversight Manager (resume attached)***

Ron will have overall responsibility for the safe, efficient, accurate and timely completion of the NCSD Water Valve and Hydrant Services Program. Ron's linkages with multiple utilities, companies and business partners bring a wealth of knowledge to the NCSD program.

#### ***Peter Olson, Jr., Program Leader (resume attached)***

Peter Olson will manage the startup and execution of the NCSD program. Peter will write the program plan, conduct pre-program discussions and refine operating processes and procedures. Peter will coordinate the execution of the program activities (personnel supervision, field work, data management, quality assurance) in order to achieve the objectives of the NCSD. Peter's tenure and training with Wachs Utility Services makes him an industry expert on performing condition assessments.

#### ***Mark Olson, Crew Chief (resume attached)***

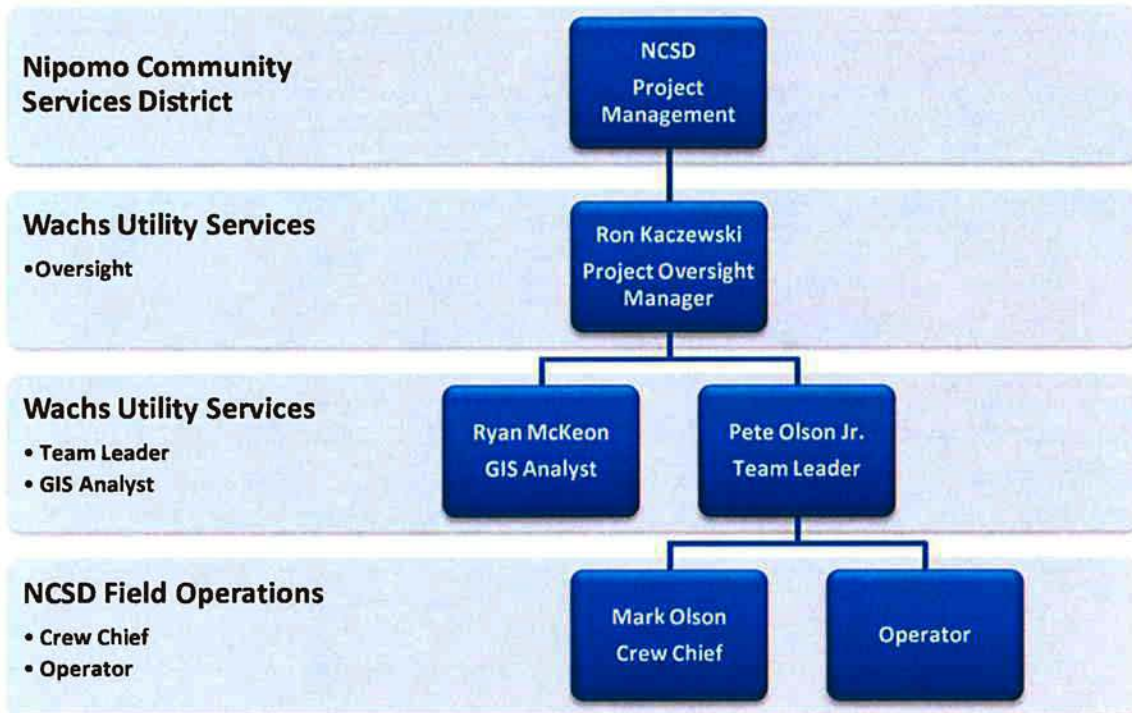
Mark Olson is experienced with the successful delivery of our valve and hydrant programs to utilities nationwide. For the NCSD program Mark will be responsible for the safe operation of the crew as it accomplishes the work according to established procedures. Mark will be accountable for the safety, processes, procedures and information collected on the NCSD program.

#### ***Operator***

We will assign a current, trained Wachs Utility Services operator to the NCSD Program.

#### ***Ryan McKeon, Information Manager (resume attached)***

Wachs will execute data acquisition and data entry and integration on all of the valves and hydrants in the NCSD program into their GIS and CMMS. Ryan will oversee the progress of the NCSD Program and ensure that the resulting information is accurate, precise, useable and in the correct formats.



### Key Wachs Utility Services Personnel

Wachs Utility Services maintains a team of highly qualified and experienced personnel in many different parts of the country. Personnel will be made available to support the NCSD Program as needed. A list of some of our key personnel is listed below.

#### *Edward H. Wachs*, Chairman and CEO

- Over forty years of experience in the water utility industry.
- Extensive program management and manufacturing experience.
- Expert in valve operating equipment development and application

#### *Cliff Wilson*, President

- Graduate US Naval Academy
- Amoco Oil Company, Wachs Companies. Extensive business and maintenance experience with the Navy (nuclear engineer), Amoco and Wachs Companies.
- Expert at all water distribution system maintenance and repair activities.
- Member of the AWWA Distribution Committee
- Member of the AWWA Water Loss Committee
- Published author for Water World, AWWA Journal, ESRI Water Writes and UIM

#### *Charles Wachs*, Director

- Over forty years of experience in the water utility industry
- Extensive consulting and program management experience for large water utilities
- Special expertise in the integration of field and information activities to improve utility efficiency, performance and customer service.
- Member of the AWWA Distribution Committee

- Member of the AWWA Water Loss Control Committee

*Pete Olson, Sr., Vice President*

- Over twenty five years of experience in the development, manufacture and application of valve operating equipment
- Extensive mechanical experience including machine shop management, retro-fit engineering, applications development and valve operating systems management
- Expert at valve and fire hydrant operations procedures, equipment capabilities, repair procedures and data transfer capabilities
- Holder of multiple engineering patents

*Wayne Pratt, Vice President of Operations*

- Twenty five experience in utility maintenance and construction
- MBA, Keller Graduate School of Management, Oakbrook, IL
- Member of Rotary International / Paul Harris Fellow
- Expert in business process development
- Seasoned corporate trainer

*Ron Karczewski, Operations Director*

- Over twenty years of municipal water experience
- Start-up and Training manager
- Program Manager for numerous valve and hydrant rehabilitation projects.
- Certified in Confined Space Entries, 10 Hour OSHA Training and CPR
- Advanced Roadway Extrication and Safety Certification
- ISFM Certified Firefighter II

*Peter K. Olson Jr., Project Manager*

- Twelve years of water industry experience
- Extensive valve and hydrant rehabilitation experience.
- Expert at operating and repair procedures
- Field Operations Certified Trainer
- Program Manager for numerous valve and hydrant rehabilitation projects
- Certified in Confined Space Entries, 10 Hour OSHA Training and CPR

*Ryan McKeon, Information Manager*

- Expert in Microsoft Access, Trimble software, ESRI GIS
- BS Degree in geography from Towson University
- Member of ESRI Water/Wastewater Database Development Team
- Member of the Urban and Regional Information Systems Association (URISA)
- Specialist in field data management processes
- QA/QC data manager

*Shannon Geegan, Information Analyst*

- Expert in Microsoft Access, Trimble software, ESRI GIS
- BS Degree in Atmospheric Science from University of Illinois
- MS in Geography specializing in GIS from University of Illinois
- Member of the American Geophysical Union
- Member of the American Association of Geographers

## Experience and References

### Wachs Utility Services History

The Wachs family of companies has been a world leader in equipment manufacturing, product engineering and service delivery for 125 years. As the premier manufacturer of water utility equipment that is used to turn valves, cycle fire hydrants, cut water pipe and vacuum debris from water utility fixtures, we have developed business relationships with water utilities worldwide. The Wachs name has become synonymous with excellent products and service as the company that always delivers on its promises.



During the fourth quarter of 1999, Wachs Utility Services was formed from the E.H. Wachs Company to meet certain needs of water utilities. The formation of Wachs Utility Services is the answer to a gradual and noticeable increase in the number of requests for assistance to support maintenance work being done by water utilities. We found that the primary use of our valve turning equipment was strictly reactionary to support emergencies in water distribution systems. Utilities did not have enough manpower or trained personnel available to use it for important everyday preventative system maintenance and information management activities. Wachs Utility Services was started to fill this niche and respond to those needs by providing professionals who are trained to use our equipment.

Today, Wachs Utility Services is the leading provider of water distribution system services that dramatically improve the efficiency and operability of water systems. Our crews work around the country on distribution system projects both large and small, allowing us to mobilize efficiently and in force almost anywhere. Our services address all the "moving parts" of the distribution system: valves, hydrants, meters, leaks and information. We provide the expertise, equipment and personnel to locate, assess, operate and document any water asset. Our specialized approach combines condition assessment and rehabilitation services with the capture and integration of critical system information. While our corporate headquarters are in Lincolnshire, IL, we have the capability to deliver results for utilities both large and small anywhere in the nation.

### Qualifications

Wachs Utility Services has the necessary experience and qualifications needed to make the NCS D Water Valve and Hydrant Services Program a resounding success. To ensure program success, Wachs provides the necessary program management and expertise at all levels: Account Manager, Program Manager, Crew Chief, Operators, Information Managers and Data Analysts. We have managed programs with over 100,000 valves and hydrants, and over 3,000 miles of main for leak detection. The EH Wachs Company has researched, engineered, developed and marketed high technology, such as valve exercising, pipe cutting and vacuum equipment for over 100 years. Wachs Utility Services applies this accumulated product knowledge with our deep service knowledge and experience to provide programs which significantly increase the operability and reliability of water distribution systems. Our operation and maintenance credentials are:

### Credentials

- Participating member of the American Water Works Association since 1949 and holder of fifty-year award.
- Active member of the national AWWA Distribution Committee.
- Active member of the national AWWA Water Loss Control Committee
- Currently executing the largest known valve and hydrant assessment, exercising, flow testing, repair and GPS information management program in the U.S.



- Currently executing one of the largest known leak detection surveys and pinpointing programs as part of a full system water audit.
- Business partner of ESRI, the world's leading provider of GIS software systems
- Business partner of Trimble, the world's leading provider of GPS systems and equipment
- Author of numerous published articles, including AWWA Journal, Water World, ESRI Water Writes and Underground Infrastructure Management (UIM).
- Manufacturer of the #1 selling microprocessor controlled valve-turning and maintenance equipment in the world (since 1959).
- Inventor of the "No Assumption Valve Turning Method". Integrator of this method into a microprocessor controlled valve-turning system that is being utilized by hundreds of water utilities worldwide.
- Developer of Vitals, a robust valve database management tool that is used by hundreds of water utilities.
- Author of the "Valve Exercising Procedure" as implemented by the American Water Works Association.
- Detailed training program which ensures proper procedures and processes are used in all operations.
- Provides classroom and field valve operations training to municipalities, most recently Dallas, Texas and Baltimore, Maryland
- Nationally recognized expert in the field of distribution system improvement programs. Present papers and seminars to national, state and local water organizations across the country.

## References

Wachs Utility Services has the knowledge, resources, know-how and drive to apply our expertise both in valve and hydrant assessments and integration into the NCSO program. We have physically located, inventoried, geo-located, inspected, operated, documented, mapped and repaired over 500,000 valves and hydrants for a number of customers. Below is a short summary of some of our programs.

### Eastern Municipal Water District

*Client: Eastern Municipal Water District*

*Contact: Khos Ghaderi, Director of Water Operations, (951) 928-3777 ext. 6240*

*Address: 2270 Trumble Road, Perris, CA 92572-8300*

Wachs Utility Services planned, organized and executed a comprehensive valve evaluation, repair and information pilot program for the Eastern Municipal Water District. In this pilot program Wachs located, cleaned out, evaluated and tested valves, repaired, collected and integrated field information (including GPS) and analyzed this information for trends and learning's for Eastern Municipal Water District.

### Baltimore, Maryland

*Client: City and County of Baltimore, Maryland, 2004 - Present*

*Number of Assets: 21,000 fire hydrants, 67,000 valves*

*Contact: Augie Severn, Superintendent, Bureau of Water & Wastewater*

*Phone: (410) 396-0275*

*Address: 600 Abel Wolman, Municipal Building, Baltimore, MD 21202*

Wachs Utility Services is completing a five year contract with the City and County of Baltimore one of the oldest and largest water distribution systems in the United States. This program includes all valves from 4" to 108". In addition to assessment and repair activities Wachs plans and executes all pre-planned shutdowns for capital projects in the system, performs leak detection investigations, repairs large (up to 60") and small valves, repairs fire hydrants, provides troubleshooting support and continues to assist Baltimore in the development of their water distribution GIS capabilities. To date we have completed 47,000 valve assessments,



20,000 hydrant assessments and 20,000 hydrant isolation valve assessments and shot and post processed 100,000 GPS positions for the City of Baltimore.

Wachs Utility Services was recently awarded another contract to continue with another phase of Baltimore's system assessment program to be completed in March of 2010. To date we have completed 67,000 asset assessments for the City of Baltimore.

#### **Washington, District of Columbia**

*Client: Washington, DC (DC Water and Sewer Authority), 2006 - Present*

*Number of Assets: 10,500 fire hydrants, 36,000 valves*

*Contact: Curtis Cochrane DCWASA Special Program Manager, (202) 612-3523*

*Address: 301 Bryant Street, NW, Washington, DC 20001*

Wachs Utility Services is currently operating fifteen crews in the DCWASA water system in order to plan, evaluate, test and execute water system shutdowns in support of the DCWASA capital improvement construction program, and conducts unidirectional flushing of the DCWASA system in order to improve water quality and system operability. Wachs coordinates all customer communications and notifications to ensure the DCWASA customers are properly informed of upcoming construction enhancements and coordinates all field activities with DCWASA inspectors and construction contractors to ensure that the water system is prepared for construction work. Additionally, two crews and support personnel execute a pre-planned unidirectional flushing program for DCWASA which increases water quality, customer service and evaluates the overall system.

#### **Henrico County, Virginia**

*Client: The County of Henrico Virginia, 2006 - Present*

*Number of Assets: 30,000 valves and 12,000 fire hydrants*

*Contact: Mr. Jim Gibson, Water Distribution Engineer (804) 261-8712*

*Address: 10401 Woodman Road, Glen Allen, VA 23060*

Wachs Utility Services is completing a comprehensive Valve and Fire Hydrant Assessment and Repair Program in Henrico County. In this program, Wachs is assessing, evaluating, testing and documenting both large and small valves. In addition to valve work, Wachs is evaluating, testing, preserving and painting fire hydrants. All of the information from this program is linked to Henrico County's GIS and to their Hansen work order management system.

#### **Ft. Lauderdale, Florida**

*Client: The City of Ft. Lauderdale, 2007 - Present*

*Number of Assets: 16000 valves and 5150 fire hydrants*

*Contact: Mr. Mark Darmanin, Distribution & Collections Manager (954) 828-7809*

*Address: 949 N.W. 38th Street, Fort Lauderdale, FL 33309*

Wachs Utility Services is completing a comprehensive Valve and Fire Hydrant Evaluation, Improvement and Information Program in the City of Fort Lauderdale. In this program, Wachs is assessing, evaluating, testing and documenting both large and small valves. In addition to valve work, Wachs is evaluating, testing, repairing, preserving and painting fire hydrants. All of the collected field data for both valves and hydrants has successfully been integrated into both GIS and Hansen by following standard Wachs Utility Services best practices.

#### **Houston, Texas**

*Client: City of Houston*

*Number of Assets: 50,000 fire hydrants, 150,000 valves*

*Contact: Mr. Sandeep Aggarwal, P.E., Supervising Engineer, (713) 837-0609*

*Address: 611 Walker St. 21<sup>st</sup> Floor, Houston, TX 77002*

In early 2008 Wachs Utility Services began a 3 year program that will locate, assess, operate, document, and perform repairs on all large valves from 16" to 96" in the City of Houston water distribution system. Houston has one of the largest and oldest distribution systems in the United States and the full program will address 5,000 - 6,000 valves. This program has been underway for one year, the results of this program have been outstanding and the customer is excited about the value being created in their system.

**Additional references for available on request**

### **Wachs Training Program**

As an example of our professionalism and that of our team members we have included a summary of our training program. Wachs maintains a written, validated and detailed training program which all employees must complete before operating in the field. Our training program is comprehensive; it has been used and delivered to water operators in cities like Dallas, TX and serves as our own method of certifying personnel. We are proud of our training capabilities and the results they provide to our employees and customers. While our training manual, operations manual and certification tests are proprietary, we are happy to share their contents with NCSD personnel.

The objective of the Wachs Utility Services training plan is to ensure our employees are safe, competent and capable of executing the high quality service work that we perform. In order to cover a significant amount of material, relate our corporate experience and help trainees become proficient in the execution of water utility services; our training plan has four phases.

- Field
- Classroom
- Shop
- Certification
  - Field
  - Classroom

#### *Field*

Participants initially work in the field, under the guidance of a Wachs Utility Services qualified field trainer. During this time the participant will observe and participate (under the guidance of the qualified expert) in the full extent of the services that Wachs Utility Services provides. We find that this field exposure is beneficial in order to better understand the details presented in the following components of the training program. There are specific check-off sheets that must be completed to ensure that the trainee has conducted the required number of pre-planned evolutions under the guidance of a qualified instructor. The objective of this initial field exposure is to familiarize the participant with the processes, equipment, safety precautions and procedures that Wachs Utility Services uses to perform our services.

#### *Classroom*

The classroom phase is designed to introduce the trainee to the theory and components of water systems and to familiarize the trainee with the reference materials available. In this phase there will be specific classes and discussions on different subjects and time will be made available for the trainee to read each reference document. At the completion of this phase the trainee will have a good knowledge of the fundamentals of water systems, how they work and the components that make up the system. The trainee will have a detailed knowledge of valve and fire hydrants, how they are constructed, how they work, how to operate them and how to maintain them. Additionally, the trainee will be familiar with the reference materials available and what is included in each reference.

At the completion of the classroom phase the trainers will interview and evaluate the performance of each trainee and determine their capability to achieve the standards of Wachs Utility Services.

### *Shop*

The shop phase of training concentrates on the specific systems, components, equipment and processes we use in our service operations. During this phase of our training, we use actual valves, fire hydrants, GPS devices, data recording devices and operating devices to ensure a hands-on training environment. Individual training sessions will be conducted in the following areas;

- Equipment
- Information technology
- Water systems
- Valves
- Hydrants
- Leak Detection
- Boxes and vaults
- Procedures

At the completion of the shop phase the trainers will interview and evaluate the performance of each trainee and determine their capability to achieve the standards of Wachs Utility Services.

### Certification

The final phase is to quantify and certify the expertise of the trainee and determine the individual's fitness to acquire a 200 foot pound torque limit. This process involves achieving a 90% or higher grade on the written and field examinations. The written examination is a comprehensive test that covers every aspect of the classroom training. The test consists of multiple choice, fill in the blank and short answer essay questions. This exam can take up to four (4) hours to complete. The field examination is no less difficult involving the inspection of 50 valve and hydrants, recording about 50 observations at each one including a GPS coordinate. The field trainer will observe and verify observations noting any that are omitted, collected incorrectly or otherwise ambiguous. He will then upload the data and hand it over to GIS for logic testing. To become certified the trainee must submit data that passes the logic test entirely without omissions of any kind.

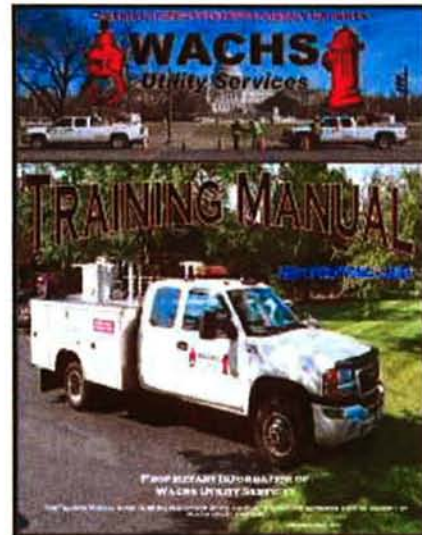
## **Operations Manual**

In addition to our specialized equipment and information management processes, Wachs Utility Services maintains written detailed operating procedures for both field and information management activities in our Wachs Utility Services Operations Manual. Our Operations Manual contains operational guidelines as well as specific written and field proven step by step procedures for exercising valves of different sizes and types as well as procedures to test and operate fire hydrants. The range of operational activities is very broad; from inspecting to exercising and including: M17 pipe capacity, C-factor testing, hydrant capacity, asset repairs and numerous field activities.

.It also contains specific procedures for data collection and information management. Wachs crews are trained on the procedures contained in our Operating Manual and follow procedure while accomplishing the desired work. These procedures ensure that our crews safely, and properly, perform the work in a detailed, pre-planned manner. Each procedure is written in a step by step format. The operating manual contains;

- Wachs Utility Services Training Plan
- Equipment
- Valves
  - Valve Types
  - General Valve Exercising Procedures
  - Specific Valve Exercising Procedures for Different Valves
  - Specific Valve Exercising Equipment
  - Valve Position Testing Procedures
- Hydrants
  - Hydrant Flushing
  - Hydrant Inspection

- Hydrant Lubrication
- Hydrant Capacity Testing Procedure
- Main Capacity Testing Procedure
- Gauge Calibration
- C-Factor Testing
- Unidirectional Flushing
- Valve Position Testing Procedure
- Leak Detection
- IT and GPS/GIS
  - Overview of the I.T. Process
  - Overview of the Data Collection Process
  - Trimble Instructions
  - Geo Trimble XH & Settings Checklist
- Work Orders
  - Can Not Locate
  - Misaligned Roadway Box
  - Packing Leaks
  - Raise to Grade
  - Frozen Valves
  - Paved Over
  - Stuck Lids
  - Op Nut Repair
- Shutdown Planning
- Emergency Situations
- Confined Space Entry
- Traffic Control
- Crew Chief Training

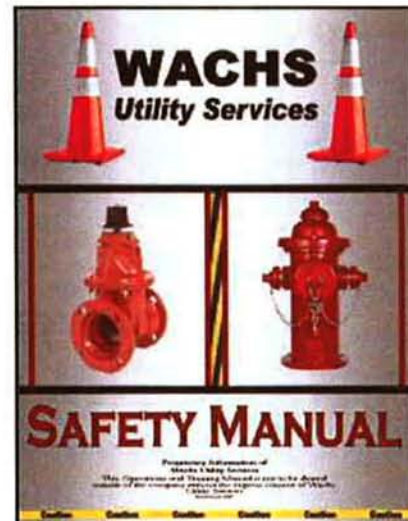


The guidelines and procedures in our Operations Manual have been developed through years of operations and thousands of valve exercise cycles. While this Manual is proprietary, we would be happy to share our processes and procedures with NCSO personnel.

## Safety

At Wachs Utility Services, our most valued resources are our employees, our customers and the communities we serve. We are dedicated to providing a safe and healthful environment for employees, customers and the public. Wachs Utility Services' excellent safety record can be attributed to our Safety and Health Program. Wachs Utility Services maintains written detailed Safety Manual for all Wachs employees with detailed company policies and procedures which are presented to and practiced by all Wachs Utility Services employees. The safety manual contains;

- Wachs Utility Services Safety Policy
- Safety and Health Requirements
- Safety Hazard Citation
- Accident and Incident Reporting
- First Aid and Medical Treatment
- Workers Compensation
- Your Safety Rights
- Your Safety Responsibilities
- Employee Safety Rules
- General Safety Rules
- Fire Safety
- Hand Tool Safety
- Protective Equipment
- Material Handling Safety Rules
- Housekeeping
- PPE (Personal Protective Equipment)
- Hazard Prevention and Control
- Property Maintenance
- Liability Report Form
- Emergency Action Plan
- OSHA Inspection



## Summary

### Summary Statement

Through our field assessment operations on over a half million hydrants and valves; our information management operations including GPS, GIS integration and analysis; our operational experience including troubleshooting and our focused teamwork approach we are intimately familiar with water systems. Additionally, we understand the policies, procedures, personnel, capabilities, operations and expectations of the NCSD. We understand we represent the NCSD when we are in the streets and act professionally.

### Strong Team Approach

We foster a team approach with our employees, business partners, and City and County Agencies. The Wachs teams have been trained, are highly qualified and have a commitment to the community and delivering for the NCSD.

*Wachs Utility Services has the experience, knowledge, technology, leadership, resources, flexibility, and drive necessary to ensure this program is a success and delivers real results.*

## Program Personnel Resumes

### **Ron Karczewski** **OPERATIONS DIRECTOR**

#### **Executive Summary:**

Ron is the Operations Director for Wachs Utility Services with over twenty years of professional experience in the water industry. Ron is exceptionally skilled in the construction, operations, maintenance and repair in all components of water systems. His organizational and leadership skills are excellent and he brings a wealth of experience and innovation to our programs.

**Experience:** Over twenty years of direct water utility experience in the operations, maintenance and repair of water systems. Ron is an expert in the coordination of information, field activities, maintenance and repair of valves and fire hydrants. He has extensive experience in the start-up, planning and execution of valve and fire hydrant exercising programs.

#### **Project List:**

Ron's has direct project oversight responsibilities for numerous valve and fire hydrant assessment programs, valve and fire hydrant repair programs and leak detection programs with a wide set of utilities across the country such as:

Henrico County - Valve and Hydrant Assessment and Repair Program  
Houston, TX - Large Valve Assessment Project  
San Antonio, TX - Valve Assessment Pilot Program  
Austin, TX - Leak Detection Program  
Knoxville, TN - Valve Assessment Program, Hydrant Assessment and Repair Program  
Clarksville, TN - Valve Assessment Program  
Winston Salem, NC - Valve Assessment Program  
Baltimore Maryland - Valve and Hydrant Assessment Program  
Wilmington, DE - Valve and Hydrant Assessment Program  
Gillette, WY - Valve Assessment Program  
Batavia, IL - Valve Assessment Program  
Glenview, IL - Valve Assessment Program  
Illinois American Water - Valve Assessment Program

Through Ron's extensive operational experience he is able to capture industry best practices and apply this knowledge to all of the projects he oversees.

#### **Experience:**

##### **Management Experience**

Ron is the Operations Director for all Midwest, South and Western operations for Wachs Utility Services. He has extensive and in-depth communications and coordination with large and small utilities to service their specific needs. Ron is able to contribute the learning's and experiences from these operations to further increase the efficiency and effectiveness of the Oxnard project.

##### **Valve and Hydrant Assessment Experience**

Ron has inspected, audited and exercised thousands of valves from 1" ball valves to large gate, butterfly and cone valves. He is an expert at valve operating equipment, valve operators, torque limits on specific valves and the operating characteristics of all valve types. Ron has specific expertise in operating large and high torque valves.

##### **Valve and Hydrant Repair Experience**

Ron has extensive experience in the repair of different types of valves. Has repaired cone valve operators, butterfly shear pins, butterfly operators, external geared gate valves, replaced packing,

straightening misaligned roadway boxes, replacing frames and covers on vaults, raising paved over valves, troubleshooting valve repair activities and replacement of valves. Ron has also performed maintenance on many different manufacturers' hydrants from minor repairs to raises, major rebuilds and replacements.

#### **Training and Leadership Skills**

Ron was instrumental in the creation of the Wachs Utility Services Training Program using his water distribution system familiarization and in-depth valve and fire hydrant assessment, operations and repair experience which provided valuable input. Ron delivers training programs, both classroom and on-site, to Wachs personnel. In addition to training Wachs personnel he presented training to utility water operators in Irving TX, Knoxville TN, Charlotte NC, Winston Salem NC and Wilson NC.

#### **Training & Certification**

Illinois State Certified Public Water Supply Operator Class "C"

ISFM Certified Firefighter II

Advanced Roadway Extrication and Safety Certification

10 Hour OSHA Training Certification

Over Ten Years of Active Fire Fighting Service

Field Operations Classroom Trained and Certified Trainer

Wachs Qualified Operator and Crew Chief

First Aid/CPR Certification

Database Operations Trained

Confined Space Entry Trained

Hydrant Flushing/Flow Test Trained



**PETER OLSEN, JR.**  
**PROJECT MANAGER**

**Executive Summary:**

Peter is a Project Manager for Wachs Utility Services with twelve years of professional experience in the water industry. Peter has extensive experience in the start-up, planning and execution of valve and hydrant maintenance programs and has been the project manager on several programs for Wachs Utility Services

**Experience:** Twelve years of professional experience in the water industry. Pete is a highly trained and experienced Project Manager for Wachs Utility Services. Pete is without equal in his experience and knowledge of water system valves and hydrants. Pete is an expert in troubleshooting and repair of valves and hydrants.

**Project List:**

**Programs Managed**

Wilmington, DE - Valve and Hydrant Assessment Program  
Glenview, IL - Valve Assessment, Evaluation and Information Management Program  
Wilmette, IL - Valve Rehabilitation Program  
Evanston IL - Valve Rehabilitation Program  
Emerald Coast Utilities Authority (ECUA) - Valve Assessment Program  
Henrico County, VA - Valve and Hydrant Assessment and Repair Program  
Charlotte Mecklenburg Utilities, NC - Valve Assessment Program  
Raleigh, NC - Valve Assessment and Rehabilitation Program  
Wilson, NC - Valve Rehabilitation Projects

**Program Participation**

Baltimore Maryland - Valve and Hydrant Assessment Program  
Washington, DC (DCWASA) - Valve and Hydrant Program  
Houston, TX - Large Valve Rehabilitation Program

**Experience:**

**Project Management Experience**

Peter has extensive experience in the start-up, planning and execution of valve and fire hydrant maintenance programs and has been the Project Manager for numerous valve and fire hydrant repair and highly technical large valve repair programs. Peter is an expert in the use and maintenance of valve and fire hydrant operating equipment and valve operating procedures and processes.

**Valve and Hydrant Assessment Experience**

Pete has inspected, audited and exercised thousands of valves from 1" ball valves to large gate, butterfly and cone valves. He is an expert at the use and application of valve operators, torque limits on specific valves and operating characteristics of different types of valves. Peter has specific expertise in the operation of large and high torque valves.

**Equipment and Mobilization**

Pete is an expert at fitting out rolling stock with the right equipment to do the specific job. Has experience in building multiple valve and fire hydrant exercising trucks in order to service utilities.

**Repair and Mechanical Experience**

Peter has extensive experience in valve repairs that includes small gate valves, large geared gate valves, cone valves, valve structure repairs (roadway boxes and vaults) and fittings.

## Training & Certifications

Wachs Certified Project Manager  
Field Operations Classroom Trained and Certified Trainer  
Wachs Certified Operator and Crew Chief  
Truck Safety, Equipment and Inspection Training  
Trimble Operation and Data Management Training  
Confined Space Entry Trained  
First Aid/CPR Certification  
Hydrant Flushing / Flow Trained  
10 Hour OSHA Training Certification

## **Mark Olson**

### **CREW CHIEF**

#### **Executive Summary:**

Mark Olson has more than six years of professional experience in the water industry. Mark has extensive experience in the execution of valve and hydrant maintenance programs on older, large water systems and has been Crew Chief supervising field personnel on several programs for Wachs Utility Services.

**Experience:** Six years of professional experience in the water industry. Mark has served as a Crew Chief for a variety of program types including valve exercising and fire hydrant testing.

#### **Project List:**

Henrico County, VA - Valve Assessment Pilot  
Batavia, IL - Valve Assessment and Rehabilitation Program  
Lombard, IL - Valve Assessment Program  
Downers Grove, IL - Leak Detection Program  
Grafton, WI - Valve Assessment, Rehabilitation and Information Management Program  
Illinois American Water - Valve Assessment Program  
Victoria, TX - Valve and Hydrant Assessment and Rehabilitation Program  
American Flow Control - Hydrant Repair Program  
DCWASA - Valve and Hydrant Assessment Program  
Geneva, IL - Valve Assessment Program  
Knoxville Utilities Board - Valve and Hydrant Assessment Program  
Raleigh, NC - Valve Assessment Program  
Melbourne, FL - Valve & Hydrant Assessment and Unidirectional Flushing Program  
Winfield, IL - Valve Assessment Program  
Houston, TX - Large Valve Assessment Program  
Watertown, CT - Valve Assessment Program  
West Springfield, MA - Unidirectional Flushing Program

#### **Experience:**

##### **Supervisory Experience**

Mark has extensive experience in the execution of valve and fire hydrant maintenance programs and has been a Crew Chief for numerous valve and fire hydrant repair and highly technical large valve repair programs working with multiple crews. Mark is an expert in the use and maintenance of valve and fire hydrant operating equipment and valve operating procedures and processes.

##### **Valve and Hydrant Assessment Experience**

Mark has inspected, audited and exercised thousands of valves from 1" ball valves to large gate, butterfly and cone valves. He has operated, flow tested and collected data on thousands of fire hydrants. He is an expert at the use and application of valve operators, torque limits on specific valves and operating characteristics of different types of valves.

##### **Repair and Mechanical Experience**

Mark has extensive experience in valve repairs that includes small gate valves, large geared gate valves, cone valves, valve structure repairs (roadway boxes and vaults) and fittings.

#### **Training & Certifications**

Wachs Certified Crew Chief  
Field Operations Classroom Trained  
Wachs Certified Operator  
Truck Safety, Equipment and Inspection Training  
Trimble Operation and Data Management Training

## **Ryan McKeon**

### **IT/GIS MANAGER**

#### **Executive Summary:**

Ryan McKeon is the Information Manager for Wachs Utility Services. Ryan has over eight years of practical experience with GIS and five years of specific experience in integrating field collected data into enterprise Municipal GIS and CMMS systems such as Hansen, Maximo, and Cartegraph. His unique understanding of water distribution systems and spatial data systems has allowed him to develop operations based GIS systems that manage core business functions such as valve assessments, emergency shutdowns, and strategic leak audits. Ryan is actively involved with ESRI's water/wastewater database design group and has presented at numerous conferences across the country promoting the need for the GIS professionals to build and maintain systems to support the largest group of any water distribution system: the mobile workforce.

**Experience:** Ryan has managed our Information Services group for the past five years and is responsible for the overall successful delivery of high quality data to all customers.

**Education:** BS, Geography and Environmental Planning, Towson University 2003

#### **Project List:**

##### **Baltimore Maryland - Valve and Hydrant Assessment Program**

Ryan has been the Information Manager on Baltimore's Valve and Hydrant Assessment program since its inception. This program includes valve and hydrant assessments, operational testing, repairs, leak detection and GPS mapping of 65,000 valves and 21,000 hydrants in the Baltimore system. Wachs has completed contracts totaling \$18,000,000 and has recently started a new contract to continue another phase of the program through 2009. The total value of our new contract is \$12,000,000.

##### **Houston Texas - Large Valve Assessment Program**

Ryan is the Information Manager for our Large Valve Assessment Program in Houston, TX where we are locating, assessing, operating, documenting and repairing all valves 16" and larger. Ryan is a key contributor to the data management of this project. Start up has been seamless and our customer is excited about the value that has been created in their system so far.

##### **Wilmington Delaware - Valve and Hydrant Assessment Program**

Ryan was the Information Manager on the Wilmington project that located, assessed, tested and GPS mapped 12,000 assets. In addition to valve and hydrant assessments, Wachs performed repairs, leak detection and performed shutdowns as needed in support of Wilmington capital improvement projects.

##### **Henrico County Virginia - Valve and Hydrant Assessment Program**

Ryan is the Information Manager for the Henrico County program where Wachs is providing assessment and repair services throughout the county. Ryan has successfully managed the integration of Wachs collected field data and GPS information into Henrico County's Hansen CMMS.

#### **Experience:**

##### **GIS Experience**

Ryan has a proven track record of applying GIS technologies to increase operational effectiveness, validate data, and validate GPS positions in order to improve valve and hydrant data available to distribution operations and engineers in numerous municipal utilities. Ryan created industry first evaluation and analysis techniques to tease out actionable information from asset evaluation data. Ryan has extensive training in key geographic information systems. Ryan continually networks with geography professors and is an active member of ESRI Database Development Team. He continually networks with systems professionals to keep up to date on

new system developments and applications. Ryan participates and has delivered papers in ESRI's annual worldwide user's conference and has attended significant GIS training through ESRI, URISA as well as specific GPS training through Earth Vector.

#### **Asset Management Experience**

Ryan evaluates and assembles best practices for data and information management solutions from utilities across the country including; Fort Lauderdale, FL, Henrico County, VA, Charlotte, NC, Raleigh, NC, Atlanta, GA, Macon, GA, Melbourne, FL, Winston Salem, NC, Washington, DC, Houston, TX and others and applies them to new projects. Though broad exposure to a wide variety of water distribution system information management approaches, Ryan is adept at capturing and creating innovative approaches and applying them to projects across the country.

#### **Systems Integration Experience and Process Development**

Ryan has extensive experience in utilizing the Microsoft Office Suite to effectively compile, store, analyze, and distribute information. Ryan creates linkages of systems and system components to enhance productivity and effectiveness. Ryan is an expert at developing and maintaining data and information management processes and procedures. Adept at multi-tasking and maintaining the big picture while also ensuring that the details are executed professionally.

#### **GPS Experience**

Ryan has in-depth knowledge of GPS technologies utilized to collect and store utility asset data with the highest confidence. He is an expert in industry available GPS technologies and how these new technologies can be used to increase efficiencies and effectiveness. Ryan is an expert at validating GPS positions using GIS to ensure accuracy.

#### **Water Distribution Systems Experience**

Importantly, and in addition to driving the information management aspects of the Baltimore valve and hydrant exercising program, Ryan also has extensive field experience in evaluating shutdowns, troubleshooting system discrepancies, operating valves and fire hydrants and continually assists all field personnel with access to accurate, current system data.

#### **Training & Certifications**

Managing a Versioned Geodatabase  
ArcSDE Administration for SQL Server  
Programming ArcObjects  
GPS - Earth Vector Systems  
Wachs Utility Services Water Operations Training Program

# NIPOMO COMMUNITY



# SERVICES DISTRICT

## BOARD MEMBERS

JIM HARRISON, PRESIDENT  
LARRY VIERHEILIG, VICE PRESIDENT  
MICHAEL WINN, DIRECTOR  
CLIFFORD TROTTER, DIRECTOR  
ED EBY, DIRECTOR

## STAFF

BRUCE BUEL, GENERAL MANAGER  
LISA BOGNUDA, ASSISTANT ADMINISTRATOR  
JON SEITZ, GENERAL COUNSEL  
PETER SEVCIK, DISTRICT ENGINEER

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148 SOUTH WILSON STREET POST OFFICE BOX 326 NIPOMO, CA 93444 - 0326  
(805) 929-1133 FAX (805) 929-1932 Website address: NCSD.CA.GOV

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January 8, 2009

Glen Lewis  
WACHS Utility Services  
308 Alamo Square Drive  
Alamo, CA 94507

## **SUBJECT: REQUEST FOR PROPOSAL FOR WATER VALVE AND HYDRANT SERVICES**

Dear Mr. Lewis:

The NCSD desires a service provider to develop, plan and execute a program to locate, inspect, clean out, assess, exercise, flush, flow test, operationally test, mark, perform minor repairs, record mapping grade GPS data, document, create a deliverable GIS database and create work orders for water distribution system valves and hydrants. This program will address approximately 35% of the valves and hydrants in the NCSD distribution system and precede NCSD's valve replacement program. The service provider will analyze the results of the program and deliver a summary and final asset report to the NCSD.

## **SERVICES REQUESTED**

See the attached Scope of Services for NCSD Water Valve and Hydrant Services Program.

## **QUOTE REQUIREMENTS**

Ten copies of the proposal must be received by DISTRICT in a sealed envelope by **2 p.m. on January 28, 2009**, to be considered. The exterior of the envelope must identify the quote as "Water Valve and Hydrant Services". Faxes, E-Mails, proposals not enclosed in a sealed/labeled envelope, and proposals received after 2 p.m. on January 28, 2009, will not be considered and will be returned to the submitter.

The Proposal shall include, as a minimum, the following:

1. Cover Letter/Introduction
  - Present your understanding of the project and the services requested.
  - The Cover Letter shall be signed by an official authorized to bind the firm and shall contain a statement that the proposal is valid for ninety (90) Days.

2. Scope of Services

- Detail your proposed approach to the assignment.
- Describe any proposed scope amendments; exceptions to the attached Scope of Work or exceptions to the terms of the attached Service Agreement.
- Provide schedule to complete program
- Proposals shall include a detailed QA / QC plan identifying quality checkpoints throughout the program lifecycle. At a minimum, proposals shall describe methods for developing mapping grade horizontal accuracy and accurate attribute data.

3. Personnel

- Identify the Team Leader and provide résumé.
- Identify any additional team members and provide résumés.
- Include an Organization chart depicting the name and position of each participant
- Describe the role of each team member

4. Experience & References

- Describe your experience in providing similar services to local government entities in California
- Provide references for projects of similar scope and nature performed over the last four years.

5. Cost Estimate

- Complete and submit the attached Quote Sheet that has been signed by a principal authorized to represent the firm.
- Submit a listing of fees and charges.

### **SELECTION PROCESS**

NCSD will screen proposals from January 29, 2009 to February 5, 2009. The Board is tentatively scheduled to select a firm at its February 11, 2009 meeting. NCSD may conduct interviews during the screening process.

### **PROPOSAL EVALUATION**

Proposals will be evaluated on the following:

- Responsiveness to Request for Quote
- Scope Amendments and Exceptions to Scope of Work and/or Agreement
- Experience of the team to perform the requested services
- Qualifications of the personnel proposed for the project
- Cost

**Notes:**

This is a time-sensitive project.

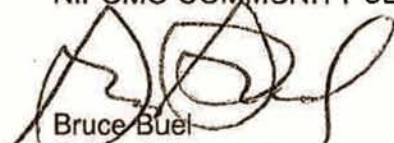
The selected SERVICE PROVIDER will be expected to execute a standard SERVICE PROVIDER agreement (attached).

NCSD reserves the right to reject any and all submittals and/or solicit new submittals at its discretion. NCSD reserves the right to negotiate with lesser ranked firms, if the negotiation with the top ranked firm is unsuccessful. The submitter retains no interest in the proposal once received by NCSD. Proposers are responsible for all costs associated with the proposal.

For more information on the project or this RFP, contact NCSD Utility Superintendent Tina Grietens at 805-929-1133 or [tgrietens@ncsd.ca.gov](mailto:tgrietens@ncsd.ca.gov).

Sincerely,

NIPOMO COMMUNITY SERVICES DISTRICT



Bruce Buel  
General Manager

CC: Tina Grietens, Utility Superintendent  
Peter Sevcik, District Engineer

Enclosures

- Quote Sheet
- Scope of Work
- Standard SERVICE PROVIDER Agreement



**NCSD WATER VALVE AND HYDRANT SERVICES QUOTE SHEET**

Date: 1-26-09

NAME OF FIRM: Wachs Valve and Hydrant Services  
DBA Wachs Utility Services

NAME OF PRINCIPAL: Cliff Wilson

NAME OF TEAM LEADER: Pete Olson Jr.


ADDRESS: 600 Knightsbridge Parkway

PHONE: (847) 484-2670 FAX: (847) 484-2671

E-MAIL: Acct. Manager: Glen Lewis glewis@wachsus.com c: 925-200-4098

Service	Price per Asset	# of Units	Extended Cost
Valve Testing and Exercising	\$ 65	400	26,000
Hydrant Testing	\$ 100	120	12,000

**TOTAL COST:** \$ 38,000

  
 Signature of Principal Authorized to Sign for Firm and Date

*This quote shall be valid for 90 Days from the date of signature*

## Scope of Services

### NCSD Water Valve and Hydrant Services Program

#### 1.0 GENERAL

The NCSD desires the service provider to develop, plan and execute a program to locate, inspect, clean out, exercise, flush, flow test, operationally test, mark, record mapping grade GPS data, document, create a deliverable GIS database and create work orders for water distribution system valves and hydrants. This program will address approximately 35% of the valves and hydrants in the NCSD distribution system and precede NCSD's valve replacement program. The service provider will analyze the results of the program and deliver a summary and final asset report to the NCSD.

#### 2.0 SPECIFIC FUNCTIONS OF THE SERVICE PROVIDER

##### 2.1 Locate Valves and Hydrants

The NCSD will provide the successful service provider with a minimum of two copies of the most current water distribution maps for the project area. The service provider will locate all water distribution assets (mainline valves, fire hydrant isolation valves and fire hydrants) using the following guidelines:

- The service provider will search for all assets visually using the maps provided.
- The service provider will search for water assets shown, but not identified by visual inspection, using a magnetic locator, probing rods and other tools.
- If the asset cannot be located after searching for fifteen minutes, it will be identified in the database as "CANNOT LOCATE", documented as a work order, creating a GIS grade GPS position at the location where searched and otherwise treated as a standard assessment.

##### 2.2 Identify Assets

Each water distribution asset record will be identified by its corresponding NCSD identification number. In cases where Asset ID's are not available, the service provider will create a temporary asset identification number using a combination of the map document number and a sequential integer as agreed to prior to starting the job during the project startup meeting.

##### 2.3 Accessing Valves

The valve cover shall be removed by the service provider in order to access the valve. If, after attempting to remove the valve cover it is clear that the cover is

"stuck" the cover will be broken, the valve accessed and the cover replaced. Replacement covers will be provided by the NCSD.

### 2.3.1 Accessing Hydrants

The service provider is expected to clear obstructing plant growth (weeds, grass) from an area two feet surrounding the base of the fire hydrant prior to operating.

### 2.4 Clean Out Valve Box/Vault

The service provider will vacuum out debris or pump out water from the box/vault in order to allow access to the valve operating nut and bonnet bolts where possible. In every case the operating nut must be exposed and clearly visible (not under water or debris) when the valve is exercised. In order to provide this service the service provider must provide a vacuum and water pump with every work crew.

### 2.5 Inspection

The service provider will execute a visual inspection of the asset. This inspection will be conducted from street level and is intended to discover discrepancies that are readily visible from above ground. *See Section 2.10 Documentation for more detail.* As part of this proposal, the service provider shall submit a detailed list of observations (i.e. attribute data) to be made and collected at valve and hydrant assets during this program.

### 2.6 Operational Testing

The service provider will be required to operate all assets – valves and hydrants – fully exercising them and performing minor work order repairs while making numerous observations about the condition, operability and functionality of each asset. Observations are to be meticulously documented electronically while linking them directly to earth coordinates via GPS. The service provider will operate under the guidelines set forth in this agreement. Due to the potential condition or deterioration of assets that may or may not have been maintained, the service provider will not be held liable for any assets that fail or break, or the consequences of such failures during the operating procedures due to pre-existing conditions. Any assets that fail or break during operation will be repaired or replaced by the utility.

#### 2.6.1 Fire Hydrant Testing and Exercising

The service provider will mechanically test; pressure test and flow test each fire hydrant. The mechanical inspection includes removing, greasing and replacing all caps, slowly opening and bleeding the air out of the fire hydrant pressurizing the barrel at full system pressure and noting discrepancies.

The pressure test will be conducted with the fire hydrant charged at full system pressure and any leakage will be documented and the static pressure recorded. The flow test will be conducted by opening the cap, affixing a diffuser, slowly opening the fire hydrant to the full open position observing velocity pressure (pitot pressure) and residual pressure on the same hydrant.

At the completion of the hydrant flow test, the fire hydrant will continue to be flowed until the water becomes clear. At this time the fire hydrant will be slowly closed, drainage of the fire hydrant will be observed, caps will be replaced and the area will be fully restored. The specific operational testing information to be documented is noted in the documentation section.

### 2.6.2 Valve Exercising

The service provider will exercise each valve a minimum of two full cycles and operations and exercising will continue until operating torque stabilizes without measurable decreases and valve turn count stabilized without measurable increases. (Exercise is defined as a full cycle, from open to shut to open again). All valves will be exercised at the lowest operational torque. More explicitly, torque will be reduced immediately following initial movement of the valve to the lowest foot-pound required to continue moving the valve. The service provider will submit, as part of their proposal, operating guidelines for the following:

- 4" and smaller gate valves
- butterfly valves of various sizes
- 6" to 12" gate valves
- 16" and larger gate valves that are not geared
- 16" and larger geared valves
- Controlling torque using hydraulic valve turning devices
- Valves found in the wrong position
- Torque limits for each of the above valves
- Procedures for valves that do not cycle at the proposed torque limit

### 2.7 Valve Marking

Valve lid covers will be marked, as the inspection and exercising process is completed, with blue marking paint. (Paint to be provided by NCSD)

### 2.8 Equipment and Software

The service provider agrees to furnish to the NCSD all necessary materials, equipment, labor (unless otherwise noted in the RFP) to complete the Valve and Hydrant Testing Program in accordance with the provisions, instructions and specifications for the NCSD. The service provider will list proposed software and hardware systems below in response to this solicitation:

## GPS

Plainly identify the proposed mapping grade or better GPS survey instruments proposed – including manufacture, model and year - for collecting coordinate and observational data for this program. Identify software systems for data collection, post processing, filtering and editing positional data - including version.

## Valve Exercising

List the make, model, year and operating system version for proposed hydraulic valve turning equipment. Identify software system used for creating torque charts – including version.

## Mapping Software

Identify the software system proposed by the service provider to create supporting map documents listed under *Section 2.12 Reports*.

## 2.9 GPS Data

All the water assets encountered in this program are to be GPS located using mapping grade devices. Attribute data will be delivered in a geodatabase feature class compatible with the NCSD's existing data schema. Coordinate data shall be field collected with autonomous GPS readings and subsequently differentially corrected via post-processing. The contractor shall further refine positions through filtering and inspection to eliminate noise, problematic satellite geometry and multi-path degradation. Point features shall be collected at an epoch of 1 second with a minimum occupation of 20 seconds.

At a minimum, and in addition to database attribute requirements, the following coordinate data items shall be generated as a result of this process.

- PDOP value
- HDOP value
- Correction Status
- Date Recorded
- Time Recorded
- Total Positions
- Filtered Positions
- Horizontal Precision
- Vertical Precision
- Standard Deviation
- .cor File Name
- X-coordinate
- Y-coordinate

## 2.10 Documentation

Data will be documented at each asset and will be format will be approved/confirmed in advance of work startup with the NCSD.

### Hydrant Assets

Documentation will include, at a minimum;

- Physical data
  - Asset ID number, map number, fire hydrant size, manufacturer, year, fire hydrant discrepancies (such as missing caps, misaligned nozzles, rounded operating nuts, paint condition and additional physical information as necessary ).
- Location data
  - GPS position and coordinate data items as noted above.
- Operational data
  - Turns to fully open, open direction, observed leakage (categories and details), flow observation (categories and details), specific operational discrepancies (categories and details), additional operational comments as necessary.
- Discrepancies
  - Detail on discrepancies so that a work order (as described below) can be concisely created.

### Valve Assets

Documentation will include, at a minimum:

- Physical data
  - Asset ID number, map number, valve size, type of valve, use of valve, valve structure, depth of valve, if clean out was necessary, valve discrepancies (categories and details), box/vault discrepancies (categories and details), and additional physical information as necessary.
- Location data
  - GPS position and coordinate data items as noted above.
- Operational data
  - Turns to fully close, torque, close direction, torque chart for every 12" and larger valve, specific operational discrepancies (categories and details), additional operational comments as necessary.
- Discrepancies
  - Detail on discrepancies so that a work order (as described below) can be concisely created.

## 2.11 Metadata

The service provider will provide metadata, including a detailed citation describing field data collection practices, equipment settings, post processing

### 3.2 Safety

The service provider will abide by all OSHA safety regulations in the fulfillment of this scope of services. The service provider shall provide all traffic control services necessary to insure a safe working environment for the fulfillment of the contract. At a minimum, all work vehicles will have amber warning lights, strobe lights, directional arrow board lights, communications equipment and will clearly identify the service provider. If necessary, the service provider will switch to night time operations if traffic control and safety become a factor in the completion of services.

### 3.3 Professionalism

The service provider will insure that all activities are conducted in a professional manner. At a minimum the service provider will insure all personnel are in an approved uniform; all field equipment is maintained clean and neat; all trucks are clearly identified with the service provider's name and contact phone number and written procedures for field operations and information management processes are contained within the vehicle in a operations manual.

**NCSD WATER VALVE AND HYDRANT SERVICES PROGRAM PROPOSAL**

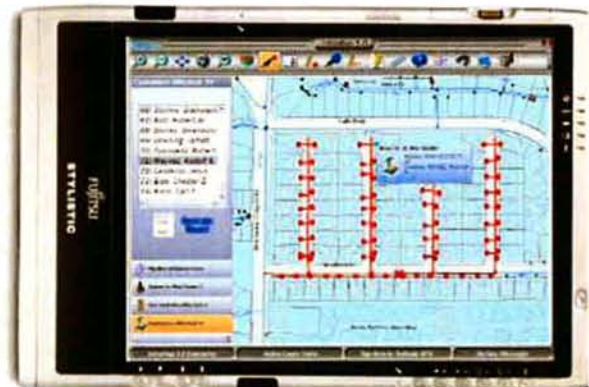


**NIPOMO COMMUNITY SERVICES DISTRICT, CALIFORNIA**

**REQUEST FOR PROPOSAL**

By Don Rhodes – iWater, Inc.

CA LICENSE # 783766





## TABLE OF CONTENTS

- COVER LETTER
- SCOPE OF SERVICES.
- PERSONNEL.
- EXPERIENCE & REFERENCES.
- COST ESTIMATE.



January 23, 2009

Mr. Bruce Buel  
General Manager  
Nipomo Community Services District  
148 South Wilson Street  
Nipomo, CA 93444-0326

Dear Mr. Buel:

iWater is pleased to submit this proposal to NCSD for Valve Turning Services, Hydrant testing, GPS location acquisition, and GIS data transfer.

We are a local California licensed engineering contractor, #783766, in good standing who provides a complete project solution including locating covered assets, GPS documentation of asset with inspection details, valve and hydrant operation and maintenance, and GIS data entry and transfer. Each process is completed by full-time employed, trained and CA DHS certified personnel. To accomplish all projects, we have put together a framework of industry best practices that allow us to provide our customers with exceptional solutions at minimal cost.

iWater's nine plus years of experience successfully completing technology projects, combined with the field knowledge of our DHS certified distribution system operators, positions us well for this project. We have chartered a team of experienced field technicians combined with local project management to ensure the success of this project. Our team will gather accurate information, and work seamlessly with your staff to collect the necessary data to support this project and complete it in a short time frame.

We believe that this is a wonderful opportunity for NCSD to see the difference that iWater can make and we thank you for the opportunity to propose.

Sincerely,

A handwritten signature in blue ink that reads 'Don Rhodes'.

Don Rhodes  
President  
iWater, Inc.  
18 Goodyear, Suite 100  
Irvine, CA 92618  
TEL: 949-768-4549  
FAX: 949-768-4155

## 2. iWater, Inc History and Experience:

After years of working with private and municipal water departments in both the United States and Canada, Don Rhodes founded iWater, Inc. in 2000. That year, the company achieved the following:

- A California Contractor A Engineering License #783766.
- Business Partner status with ESRI™ in the Water/Wastewater/Stormwater Group, Including Western Regional Partner Council.
- Close working relationship with Trimble™ Navigation, current Business Partner.

iWater, Inc. has since added these accomplishments:

- Exclusive distributor for Stanley® Hydraulic Tools in Southern California.
- Equipped field crews with capabilities to operate, test, data-log and GPS system assets.
- Department of Health Water Distribution Grade 2 certification or higher for all crew leads.
- Updated over 500,000 facilities in Southern California.
- Developed infraMAP 6.0 Field GIS Software.
- infraMAP mobile software is used by Water and Sewer Departments and Federal Military Bases from Florida to California.
- Signed business partnerships with Trimble Navigation, Pacific Tek, Wachs Co., Nobel Systems, MWH Soft, Azteca (City Works), Dig Smart ( Underground Ticket Management)
- Subcontractor for CH2M Hill, Chevron Energy Services, Badger and Master Meter Cos.
- iWater, Inc produces GIS mobile software for linking to Nobel Systems GeoViewer customers, Maximo and Cityworks asset management software.

iWater, Inc. provides services, accurate data, reports, maps, attributes, and problem identification to Cities, Municipalities and private utility companies. This valuable information assists in making better informed decisions in emergency situations, facilitates long term planning and reduces operational costs. We have a 100% rate of completing projects on time and within budget. This is due to our field expertise, latest mapping and GPS technologies and efficient operational procedures.

iWater, Inc. has provided information to over 100 cities covering almost 2000 square miles of infrastructure. This has included:

- Creating and updating maps of water, sewer, stormwater, and fire systems.
- Operating and repairing valves and hydrants.
- Replacing, repairing, and reading service meters.
- Fire flow testing and unidirectional flushing.
- Converting paper and outdated system maps to GIS-based technology.

This information has been used to meet GASB34 requirements, Homeland Security guidelines, Department of Health Standards, Fire Department reporting requirements and National Pollution Discharge Elimination System permit compliance and has improving internal efficiencies and overall cost containment.

As iWater, Inc. continues to grow in the areas of fire service testing, leak detection, hydraulic modeling and software/hardware development; each employee will have the opportunity to take educational courses to further enhance knowledge and skills. Technology developments will be made to improve the time and cost of making decisions for all levels within iWater, Inc. and with our customers. We are dedicated to providing our clients with quality products by maintaining high quality standards, efficient operations and state of the art technologies.

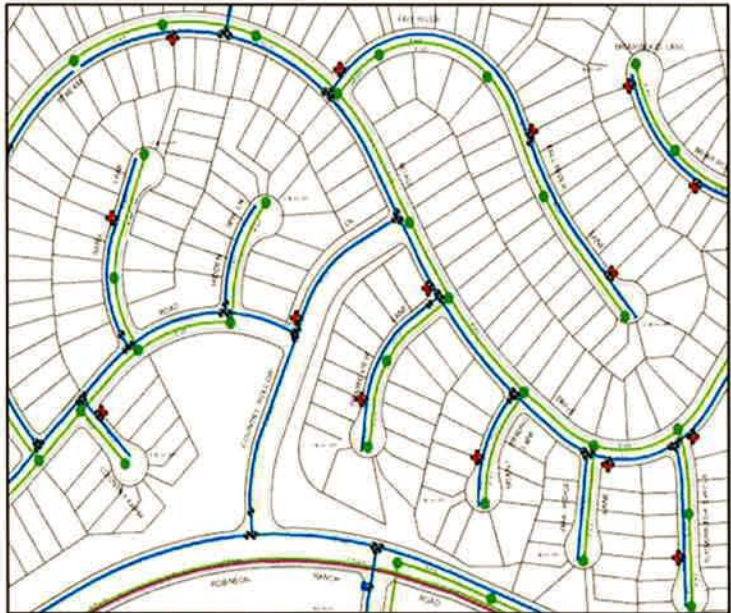
**Projects currently under contract:**

- ♦ City of Glendale: Contract for 9,000 GPS, exercising valves and GIS data for the city. Software, infraMap, will also be used in their vehicles for future updates.
- ♦ City of Santa Ana: GPS locating all 60,000 valves, hydrants and meters and providing in GIS required format. The city also purchased the infraMap GIS program for internal use within the city water and sewer vehicles.
- ♦ City of Anaheim: Chose iWater for mobile GIS software and currently being installed in water distribution vehicles.
- ♦ Golden State Water Company: Locate, exercise, and document 6,000 valves & hydrants in six districts. Also, replacing 9,000 meters in three districts.
- ♦ City of Ramona: Locate, GPS, exercise and document 1,500 valves with in the city. An additional 1,500 valves will follow with new budget.
- ♦ Irvine Ranch Water District: GPS mapping acquired water system and providing complete connected GIS network including 9,500 valves, hydrants and water meters with corresponding asset information.
- ♦ City of Orange: Selected iWater mobile GIS software for water distribution vehicles.
- ♦ City of Newport Beach: Completed setup of geo-data base for field use within city vehicles and training for infraMap software.
- ♦ Badger Meter Company: Completing second phase of 25,000 AMR meter installations.

### Project Understanding:

The NCS D would like to establish a maintenance service project with a contractor that will provide a complete turnkey solution for water distribution valve exercise maintenance, documentation of valve and hydrant operation and condition, confirmation of sub-meter GPS location including additional and abandoned or removed valves, and the ability to locate buried and raise to grade covered valve lids. All documentation will be provided in digital and printed form for all reports and maps requested. The digital information will include details in the GIS format used by NCS D. Repair work orders will be created for any valves that do not meet full operational status by problem or discrepancy.

By leveraging the capabilities of Global Positioning Systems (GPS), iWater can help the City achieve these results. We will be able to take a physical inventory of all of the City's water appurtenances, verify their condition, and document their exact location. All collected data will be loaded into infraMap information management software. This will allow reports and GIS data to be provided on-demand by anyone within the City.



infraMAP software will allow our field crews to perform advanced functions specific to the City's needs while maintaining a simple interface. The software was designed by field crews and can be effectively used by anyone regardless of their level of computer literacy.

### GPS Locate All Above-Ground Facilities:

iWater will utilize Trimble GPS equipment to achieve sub-meter accuracy on all designated assets. QA/QC is built directly into the data collection software. This will ensure the unfailing collection of:

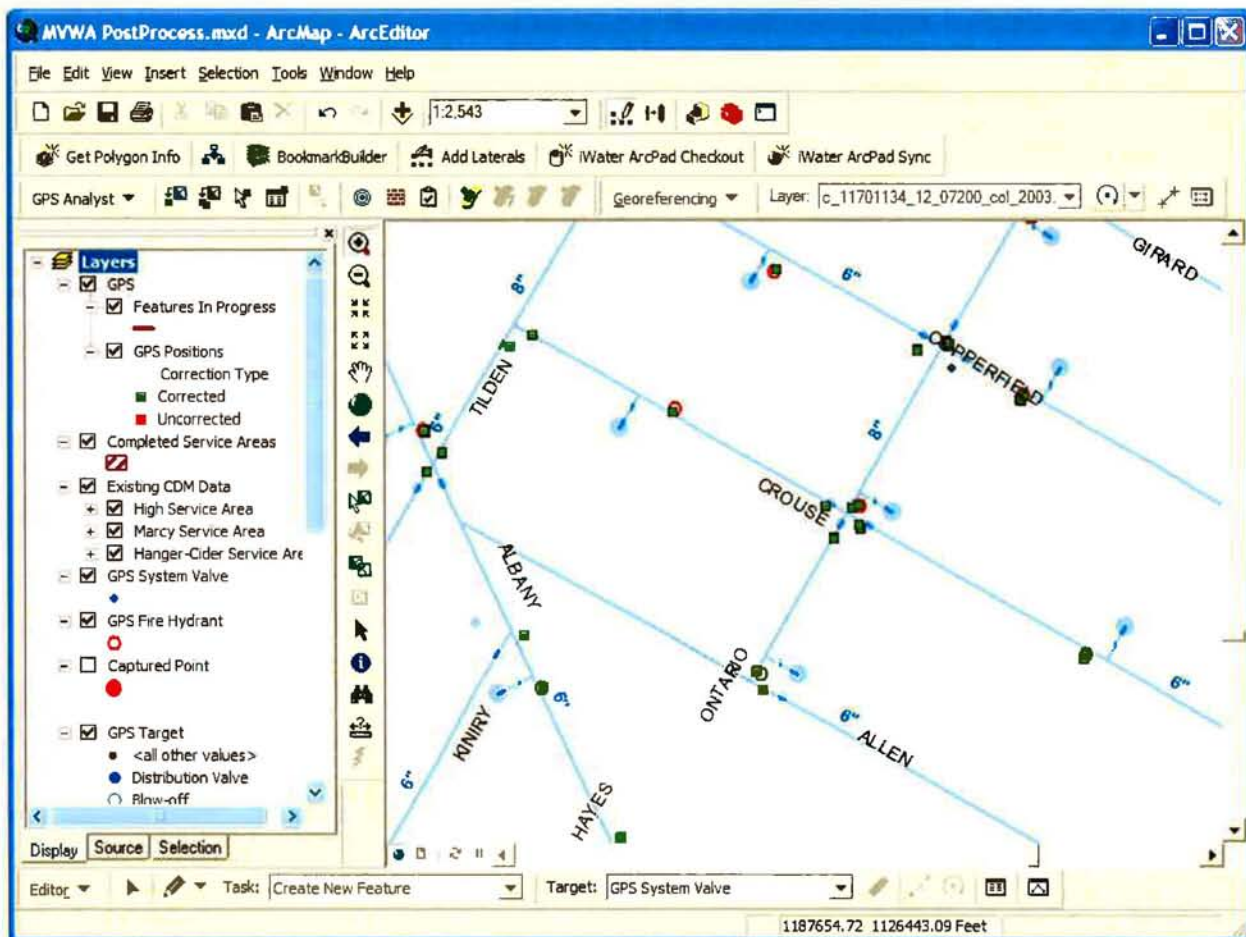
1. True real-world coordinates (northing, easting and elevation).
2. Address and street information
3. Operational status (buried, leaking, removed, no access, etc.)
4. Field specific attributes (lid condition, hydrant port count, etc.).
5. List and update any discrepancies found.



### GPS Post-Processing

An additional step of quality control will be implemented once the field GPS data is brought back to the office. This will further increase the exactness of the GIS by:

1. Storing GPS quality attributes (horizontal accuracy, number of satellites, Dilution of Precision, etc. directly into the GIS
2. Overlaying existing GIS or CAD data to verify locations and attributes.
3. Utilizing custom scripts which ensure proper connectivity and topology of the GIS layers.



Overlaying GPS data onto the existing GIS or CAD data will provide immediate confirmation of any discrepancies that arise. This will allow for the rectification of any assets from the drawing to their real-world counterparts.

### Clean, Exercise, and Document System Valves

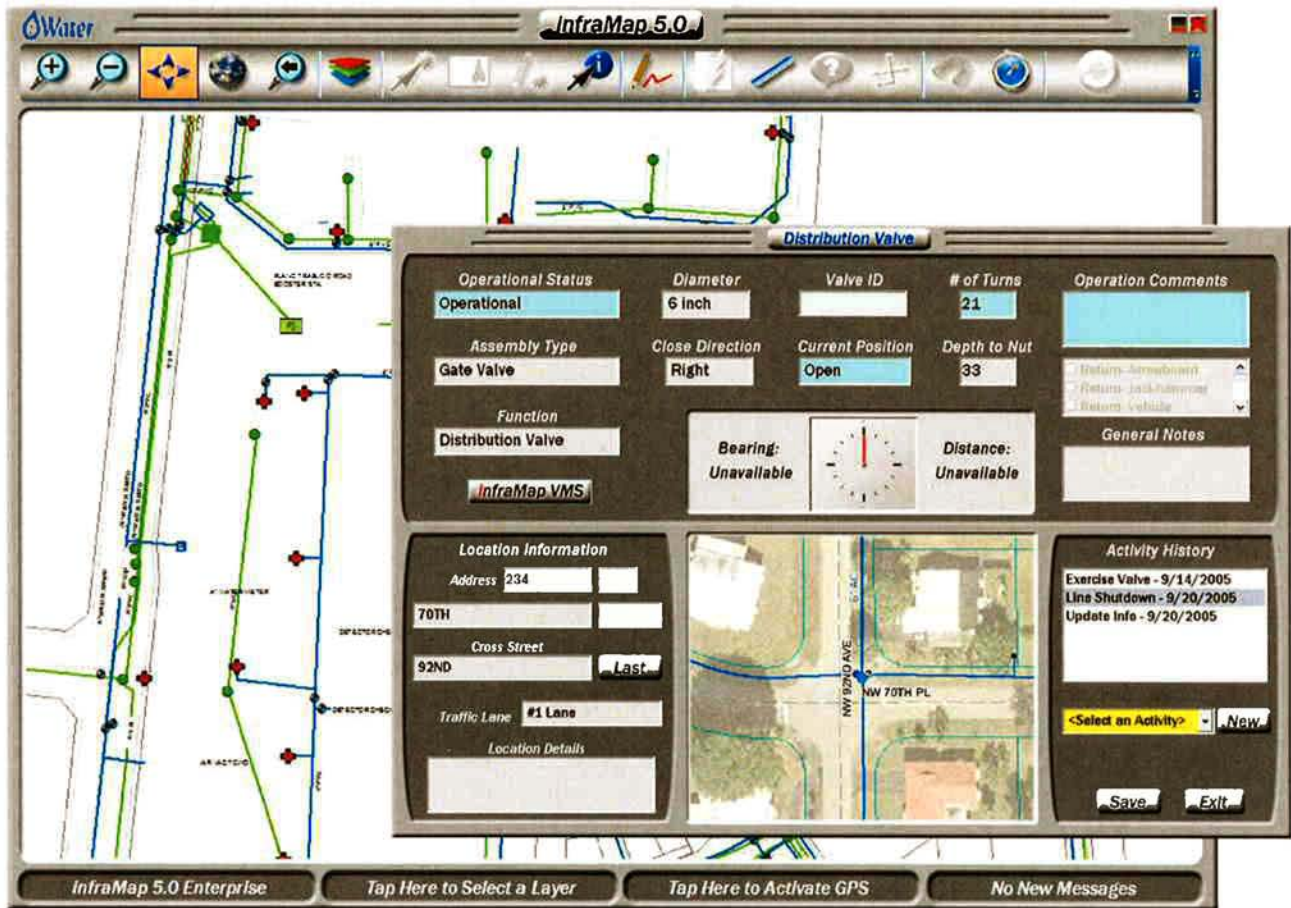
All iWater field crews are equipped with state-of-the-art technology. Trucks are fully outfitted with advanced Pacific Tek vacuum systems to clear any obstructions that may be present in the valve cans. All valve exercising follows AWWA procedures with the lowest amount of torque applied and a maximum of 350 ft/lbs of torque will be applied. Additional torque will attempted after notification is made to the water department and a schedule will be defined for the operation. If a valve cannot be turned by hand, an on-board hydraulic system which powers a PT-8 or Wachs Power drive valve machine allows multiple valves to be safely operated in one setup. If the valve requires additional torque, both extended reach arm valve machine or a full 2500 ft/lb. truck mounted valve machine can be used after lower torque setting are applied. In addition, Stanley hydraulic jackhammers, dewatering pumps, and chipping hammers are also available to field personnel and are powered by each valve and hydrant vehicle. All vehicles have arrow boards and warning lights as well as delineation and signage for each project. Proper traffic delineation as outlined in the WATCH handbook is followed at all times. All valves and hydrants are documented using the on-board infraMap computer system which can generate real-time torque charts and operational information.





**Utilize infraMap Field Software to Verify Locations and Collect Attributes:**

infraMap is a software product designed by iWater to bring the power of GIS to the field. The primary goal was to create a **user-friendly** interface that could harness the power of GIS in a mobile platform.



infraMAP will be used by iWater field crews during the valve exercising and assessment phase.

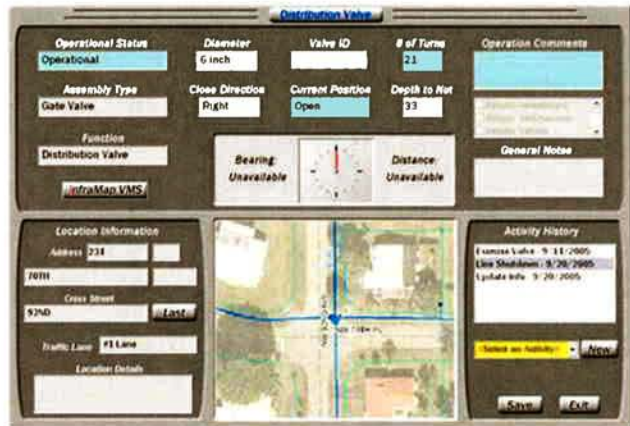
Before anything is submitted to the City, all facilities will be verified using this software.

infraMAP assists this process by:

1. Utilizing an on-board sub-meter GPS navigation system.
2. Intuitive interface for collecting attributes.
3. Built-in quality control to guarantee accurate data.
4. Automatically generating reports of suspected anomalies.
5. Wirelessly transmitting reports and GIS data to the office.

### Data Quality and Reporting

All exercise details will be entered in the truck mounted tablet computer and be provided via e-mail at the end of the day. infraMAP software will be used to enter accurate field data aided by built-in QA/QC and GPS navigation. The infraMap software application is built upon the ESRI ARC Engine 9.3 product which guarantees that the data will transfer to the city's GIS database format. If any questions arise during this process, the NCS D field contact will be called while the crew is at the location to inform NCS D of findings or to confirm the required process.



Each day, an e-mail with a map-view of the planned area of work for the following day and the area that was worked will be sent to NCS D contacts for documentation and records. Any closed, broken or other descriptions that NCS D wants to be made of aware daily will also be e-mailed in both a map-view and database format.

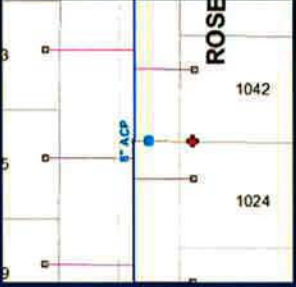
Various infraMap Screen Shots for In Vehicle Data Entry

System Valve

**<Select an Activity>**

Date	Description
3/5/2008	Exercise Valve

Save Exit




Valve ID	Operational Status	
F10-166	Size/Turns Conflict	
Valve Function	Turns	Depth
HydrantValve	7.8	12
Assembly Type	Operation Comments	
Gate		
Diameter	Address	
6 Inch	1024	
Valve Open	Right Hand	ROSEWOOD
Yes	Yes	
PT-25 Machine		
Update GPS		
Location Details		

Fire Hydrant

**<Select an Activity>**

Date	Description
12/4/2007	Fire Flow Test
12/6/2007	Fire Flow Test
12/7/2007	Unidirectional Flush
1/31/2008	Fire Flow Test
3/26/2008	Unidirectional Flush
8/28/2008	Inspection
8/28/2008	Fire Flow Test

Save Exit



Hydrant ID	Flow GPM	Flow @ 20
111-283	791	1311
Operational Status	Static PSI	Resid. PSI
OK	48	37
Barrel Type	Pitot	Outlet Size
Wet Barrel	22	2.5"
Manufacturer	Flow Mins.	Gals. Used
MUELLER # A-24010	15	11865
Barrel Size	Iso. Valve	Operation Comments
6 Inch	Yes	Low Flow - Check for closed valve in the area
Model	Location Details	
	3' E of PL & 20 S of CL	
Model Year	# of Ports	
0	0	

**Doug Velez**

Field Operation Manager

Years Experience

16

Certifications

Water Distribution Operator  
Grade 2, California Department  
of Health Services

Backhoe Operator

Cla-Val Test and Repair

Federal OSHA Excavation  
Inspector

Confined Space Entrant

Trench and Shore Person

Pacific Safety Council Field  
Safety Procedures

Traffic Control Certification

Lockout Tag-out Certified

Federal OSHA Excavation,  
Safety Shore  
Water Sampling Techniques  
and Technology Clinical Lab  
Certified

Hot Mix Asphalt Cal Trans  
Section 39 Certified

Professional Affiliations

California-Nevada American  
Water Works Association  
(AWWA)

Pacific Safety Council

Mr. Velez is responsible for daily field crew and project management. This includes on site customer interaction and staffing to meet project schedules.

**PROJECT EXPERIENCE**

- Over 15 years of construction experience for the largest (58,000 consumers) and busiest district at Golden State Water Company.
- 7 years experience of installing and repairing water mains, fire hydrants, water services, etc.
- Over 8 years of Construction Inspection experience.
- Educated in OSHA regulations.
- Performed field check on all preliminary plans, supervision of contract inspectors, application for permits and construction projects. Verifies construction work is completed in accordance with approved plans and specifications.
- Negotiated all extras with contractors to get fair and reasonable price.
- Implements all safety standards with customer and company standards and specifications. This includes local Public Authorities.
- Reviews all as-builts, permits, invoices and other paperwork.
- Supervised and responsible for repair of customer services, large meters, valves, fire hydrants, main leaks and emergency repairs.
- Skilled in the operation of all heavy equipment including backhoes, dump trucks, compressors.
- Prepared as-builts, permits and all paperwork having to do with new installations and emergency repairs per standards and policy.
- Trained and supervised others on company policy, specification and OSHA regulations.
- Completed daily CO2 reports for West basin salt water intrusion barrier.
- Experience in pigging, scraping and concrete lining of existing water mains.
- Completed pipeline bursting projects.

**Kevin M. Koshko**

Implementation Lead

Years Experience

8

Education

B.S., Information Technology  
University of Phoenix

Certifications

Water Distribution Operator  
Grade 2, California Department  
of Health Services

Building and Managing a  
Geodatabase, ESRI

Administering SDE using SQL  
Server, ESRI

Developing Applications Using  
ArcGIS Engine, ESRI

Professional Affiliations

ESRI Team Water/Wastewater  
California Partner Council

ESRI Authorized Beta Tester

Orange County ArcGIS User  
Group

California-Nevada American  
Water Works Association  
(AWWA)

Los Angeles GIS Advisory Body  
(GISAB)

Mr. Koshko is the information Services Manager for iWater, Inc. He is responsible for overseeing all GIS related activities throughout the organization. This includes GIS development and conversion, GPS data collection and training, application development, and cross-division coordination. His technical skills excel in the areas of systems design, integration with water/wastewater/stormwater utilities, custom application development, and system administration. Mr. Koshko is also a licensed water distribution operator. Software expertise includes: ArcGIS 8x & 9x, ArcIMS 4x & 9x, ArcPad 6x & 7x, ArcSDE, ArcGIS Engine, ArcObjects, Spatial Analyst, GPS Analyst, Pathfinder Office, Pathfinder Tools SDK, AutoCAD, Microstation, Microsoft Access, Visual Basic, XML, .NET, ASP, and HTML.

**PROJECT EXPERIENCE**

- **Golden State Water Company CAD to GIS Conversion.** GIS coordinator for converting existing CAD data to GPS-accurate GIS data. The project incorporated the conversion of over **twenty** (20) individual water systems encompassing over sixty (60) cities. Managed all stages of the implementation from database design, to GPS data collection, QA/QC and pipeline reconciliation.
- **Field GIS Software Development: InfraMap™.** Lead developer for ArcGIS Engine-based mobile GIS software. Coordinated product vision and planning, design and functionality, .NET programming, and debugging/benchmarking. Currently manages product sales and marketing as well as training and support teams.
- **City of San Juan Capistrano GPS Data Collection.** Administered GPS technicians to update existing GIS data. Duties included ArcPad custom form development, GPS routing and DOP planning, QA/QC, and pipeline reconciliation. The updated GIS allowed water department personnel to accurately locate valve and fire hydrants during everything from daily operation to emergency situations.
- **Lake Hemet Municipal Water District Sewer GIS Development.** Aided the District in CMOM compliance and GIS development. Took the District from a completely paper-based system to a completely field-verified digital geodatabase. Provided technical support for district personnel as well as on-demand cartographic output.
- **City of Huntington Park GIS Conversion and Flushing Program.** Developed a unidirectional flushing program for the city performed by iWater field crews. Using existing CAD drawings, valve and hydrant data was field verified using GPS and integrated QA/QC. Pipelines were then connected to create a robust geometric network. Responsible for coordinating and designing flushing areas as well as fire flow data collection interfaces.
- **City of Cerritos Mapping and GIS Coordination.** Works with the City of Cerritos on custom map development, application development, and GIS maintenance. Projects include custom atlas development for unidirectional flushing, meter reading routes, distribution, and blow offs. Also aids the city in underground pipeline locates, GPS data collection for new construction, and overall GIS management.

**Joshua P. Aardema**

Years Experience

GIS Field Crew Operator and Trainer

8

Education

Water Utility Science  
Professional Certificate:  
Rancho Santiago College

Mr. Aardema serves as the lead data collection analyst and infraMap trainer for iWater, Inc. His over eight years of field experience complemented by a DHS grade 2 certification, solidifies his ability to capture infrastructure asset data and make critical decisions out in the field. He is responsible for planning GPS operations, developing QA/QC parameters, and GPS training/support. Josh is also iWater's lead safety officer. His hardware/software proficiency includes: Trimble ProXRS GPS equipment, ArcGIS 8x & 9x, ArcPad 6x & 7x, GPS Analyst, Pathfinder Office, and infraMap 5x.

Certifications

Water Distribution Operator  
Grade 2, California Department  
of Health Services

Introduction to ArcGIS 9

Pacific Safety Council Field  
Safety Procedures

Traffic Control Certification

Subsurface Locator and Leak  
Detection

**PROJECT EXPERIENCE**

- **Golden State Water Company Valve and Hydrant Analysis.** Lead GPS analyst for converting existing CAD data to GPS-accurate GIS data. The project incorporated the data collection and preventative maintenance of over **twenty (20)** individual water systems encompassing over sixty (60) cities.
- **Field GIS Software Testing: infraMap™.** Lead beta tester for ArcGIS Engine-based mobile GIS software. Aided in product vision and planning, design and functionality, and debugging/benchmarking. Currently conduct software training and support.
- **City of San Juan Capistrano GPS Data Collection.** Lead data collection technician to update existing GIS data. Duties included ArcPad data collection, GPS routing and DOP planning, QA/QC, and aiding pipeline reconciliation. The updated GIS allowed water department personnel to accurately locate valve and fire hydrants during everything from daily operation to emergency situations.
- **Lake Hemet Municipal Water District Sewer GPS Data Collection.** Aided the District in CMOM compliance by capturing GPS locations of over 2200 manholes. Helped take the District from a completely paper-based system to a completely field-verified digital geodatabase.
- **City of Huntington Park GIS Conversion and Flushing Program.** Oversaw field crews for the unidirectional flushing program. Collected valve and hydrant data using GPS and integrated QA/QC. Aided in coordinating and designing flushing areas as well as performing fire flow tests.
- **Mohawk Valley Water Authority GPS Data Collection.** Primary GPS technician aiding in data collection of over 7,000 assets in five weeks. Overcame strict schedule demands and heavy weather restrictions to guarantee successful completion of the project. Consulted with CH2M Hill's GIS team to reconcile pipeline locations.

Professional Affiliations

ESRI Authorized Beta Tester

Orange County ArcGIS User  
Group

California-Nevada American  
Water Works Association  
(AWWA)

Pacific Safety Council

**Trevor Hawkes**

GIS /Technical Support Lead

Years Experience

3

Education

B.A., Geography  
Humboldt State University  
Minor: Geographic Information  
Technology

Certifications

Creating and Managing  
Geodatabases in ArcGIS 9

Professional Affiliations

ESRI Authorized Beta Tester

Orange County ArcGIS User  
Group

HSU Geographical Society

Mr. Hawkes serves as the GIS and technical support lead for iWater, Inc. He has proven himself as invaluable resource for all current infraMap mobile GIS implementations. His in-depth knowledge of the infraMap application combined with his previous municipal GIS experience provides for an excellent combination of product knowledge, GIS integration expertise, and effective end-user support.

His hardware/software proficiency includes: Trimble ProXRS and GeoXT GPS equipment, ArcGIS 8x & 9x, ArcPad 6x & 7x, GPS Analyst, Pathfinder Office, and infraMap 5x.

**PROJECT EXPERIENCE**

- **City of Santa Ana InfraMap™ Implementation.** Assistant Project coordinator for the City's mobile GIS software installation. Duties include facilitating software implementation, observing product functionality in the field, creation of water infrastructure feature classes, database management support, training as well as technical support.
- **City of Newport Beach InfraMap™ Implementation.** Assistant Project coordinator for the City's mobile GIS software installation. Duties include facilitating software implementation, generating product feedback from in the field, and training as well as technical support.
- **Sweetwater Authority InfraMap™ Implementation.** Assistant Project coordinator for the City's mobile GIS software installation. Duties include facilitating software implementation, database management support, and training as well as technical support.
- **City of Carlsbad GIS Internship.** Duties included creation of cartographic presentations and displays for city agencies (Planning, Engineering, and Community Development), multi-user versioned editing in the geometric network environment, tracking of parcel map records, heads-up digitizing of geographic features, and overlay analysis.
- **City of Encinitas GIS Internship.** Tasks involved metadata input/maintenance, CAD to Geodatabase conversions, GPS data collection, data interpretation and extraction from cartographic sources, creation of presentation-grade maps for other departments, assisting with software updates and installations, and providing training support for city departments on GIS procedures.

**Project Qualifications Customers as Prime Contractor**

**Valve, Hydrant, M& O and CAD to GIS Conversion with GPS**

**Project Time Line:** 2000 – 2008  
**Utility Name:** Golden State Water Company  
**Location:** Region 2 and 3  
**Contact:** Eric Pivaroff  
**Telephone:** 909- 937-0111 ext. 334  
**E-Mail:** [ericp@qswater.com](mailto:ericp@qswater.com)  
**Valves Exercised:** 35,030 Includes GPS and GIS updates  
**Hydrants Tested:** 11,707 Includes GPS and GIS updates  
**GIS Conversion:** 12,044 miles of pipe drafted

**Valve, Hydrant, GPS and Operation**

**Project Time Line:** 2007 – 2008  
**Utility Name:** City of Glendale  
**Location:** City of Glendale, CA  
**Contact:** Pat Hayes  
**Telephone:** (818) 548-2065  
**E-Mail:** [phayes@ci.glendale.ca.us](mailto:phayes@ci.glendale.ca.us)  
**Valves Exercised:** 9,000 Includes GPS and GIS updates  
**Hydrants Tested:** 3,500 Includes GPS and GIS updates

**Valve and Hydrant Operation, GPS and Documentation**

**Project Time Line:** 2008  
**Utility Name:** City of San Juan Capistrano  
**Location:** City of San Juan Capistrano, CA  
**Contact:** Tom Johnson  
**Telephone:** (949) 493-1846  
**E-Mail:** [tjohnson@sanjuancapistrano.org](mailto:tjohnson@sanjuancapistrano.org)  
**Valves Exercised:** 8,750 Includes GPS and GIS updates  
**Hydrants Tested:** 4,000 Includes GPS and GIS updates



**Valve and Hydrant Operation, GPS Documentation**

**Project Time Line:** 2005-2008  
**Utility Name:** City of Cerritos  
**Location:** City of Cerritos, CA  
**Contact:** Dan Fison  
**Telephone:** (562) 407-2669  
**E-Mail:** dan\_fison@ci.cerritos.ca.us  
**Valves Exercised:** 2,500 Includes GPS and GIS updates  
**Hydrants Tested:** 900 Includes GPS and GIS updates

**Valve and Hydrant Operation, GPS and Documentation**


**Project Time Line:** 2007-2008  
**Utility Name:** City of Ramona  
**Location:** City of Ramona, CA  
**Contact:** Ralph McIntosh  
**Telephone:** (760) 789-1330  
**E-Mail:** ralphmcintosh@rmwd.org  
**Valves Exercised:** 3,500 Includes GPS and GIS updates  
**Hydrants Tested:** 1,500 Includes GPS and GIS updates

**GPS Location and Documentation**

**Project Time Line:** 2008  
**Utility Name:** City of Garden Grove, Nobel Systems  
**Location:** City of Garden Grove, CA  
**Contact:** Michael Samuel  
**Telephone:** (909) 890-5611  
**E-Mail:** msamuel@nobel-systems.com  
**Valves Located:** 12,500 Includes GPS and GIS updates  
**Hydrants Located:** 4,500 Includes GPS and GIS updates

**InfraMap Valve Monitoring System**

**Pressure Diagnostics**



Torque (ft/lbs)      Pressure (PSI)

**Valve Rotation**

Currently Rotating: ●

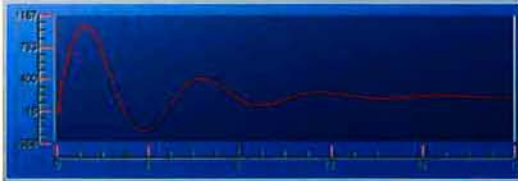
Clockwise: ▶

Counter Clockwise: ◀

Current Turn: 19.4

Max. Turns: 19.4

Maximum Torque: 550 ft/lbs      Max Torque Setting: 600 ft/lbs



Save

Cancel

infraMap 5.3 Enterprise

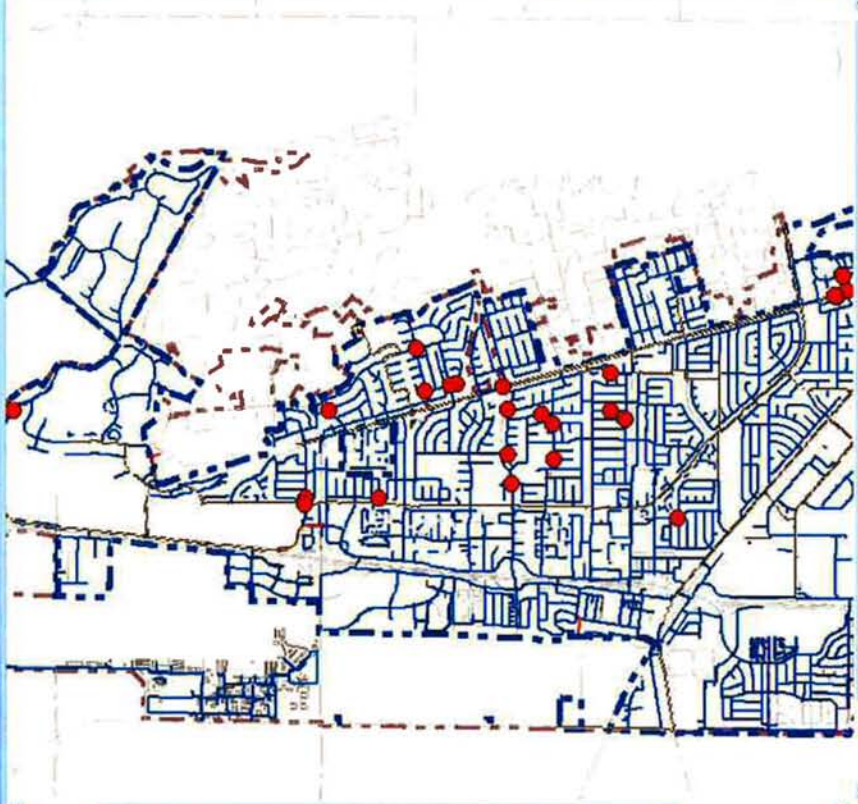
**Answers and Reports**

Show Current View Counts

**Create Report**

- ➔ (5,423) Total Valves
- ➔ (1,773) Total Fire Hydra...
- ➔ (12,594) Total Meters
- ➔ Valves Done Within a Da...
- ➔ Hydrants Done Within a...
- ➔ Meters Done Within a D...
- ➔ (13) Broken Valves
- ➔ (5,410) Operational Valv...
- ➔ (27) Closed Valves
- ➔ Configure Answer
- ➔ Add to Route
- ➔ Create Work Order
- ➔ (1,000,800) ft of Water...
- ➔ (908,011) ft of Sewer M...
- ➔ () Valves Done Today
- ➔ () Hydrants Done Today

System Valve



**Client:** Rainbow Municipal Water District

**Project:** Mobile GIS Implementation



**Specifics:**

- Enterprise SDE Integration (SQL Server)
- Water Distribution and Sewer Collection
- Mobile User Interface (infraMap 5.2)

**Description:**

Rainbow Municipal Water District is located in San Diego County, California, and has the following attributes:

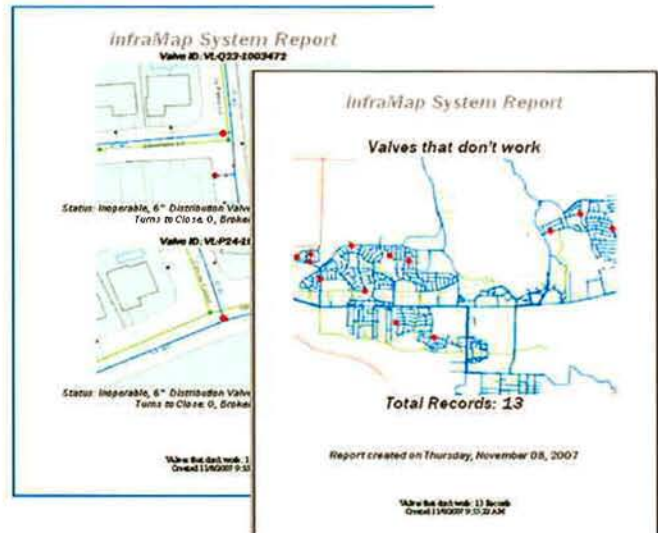
- 49,800 acres of service area.
- 7,200 service connections.
- Approximately 308 miles of water distribution pipeline.

iWater used the District's existing GIS data to load into the infraMap software. All utility layers such as water, wastewater, streets, and overhead photos were loaded up and displayed on the vehicle mounted computer.



Rainbow Municipal Water District was also able to maximize field crew efficiency with infraMap's vast array of functionality. Redline tools allowed for easy communication with GIS staff to identify issues. And location and routing tools provided simple navigation to any address or asset within the District.

In addition, Answer Panel queries gave field personnel one-click answers to typical questions such as the locations of broken/closed valves, or number of air valves replaced within a time frame.



Originally, the District used a great deal of paperwork to document their asset maintenance. Now they use infraMap to automatically generate any report they need directly into Microsoft Word and Excel. This saves a huge amount of man-hours that can now be redirected to fieldwork.

**Reference: Brian Rose**  
(760) 728-1178  
[brose@rainbowmwd.com](mailto:brose@rainbowmwd.com)

**Implementation Date:**  
July 2005

11 Marconi, Suite A ♦ Irvine, CA 92618 ♦ Phone: 949-768-4549 ♦ Fax: 949-768-4155

**Client:** Irvine Ranch Water District

**Project:** Geographic Information Systems Integration and GPS Data Collection



**Specifics:**

- Sub-Meter GPS Data Collection
- Pipeline Digitization and Network Topology
- Enterprise GIS Database Integration

**Description:**

iWater provided IRWD with a complete GIS system for their Santiago County Water District acquisition using sub-meter GPS and custom application development. IRWD is located in Orange County, California, and has the following attributes:

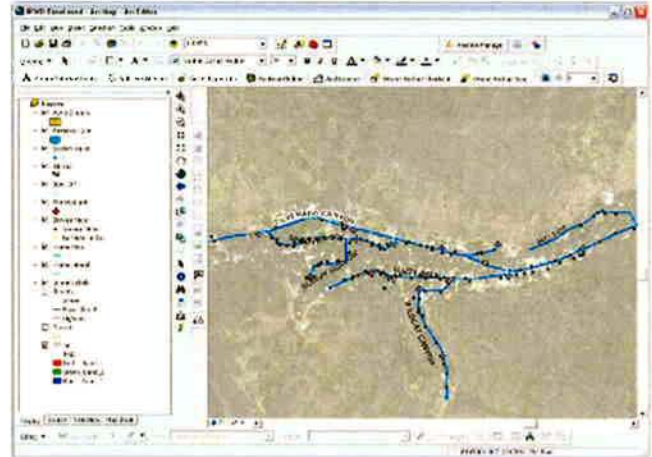
- 133+ square miles of service area.
- Serves a population of 316,287 and growing.
- 92,235+ service connections.
- 82,307+ Acre Feet of water delivered

iWater used existing paper maps to assess valve, hydrant, air vac, meter, and other appurtenance locations throughout the Santiago County service area.

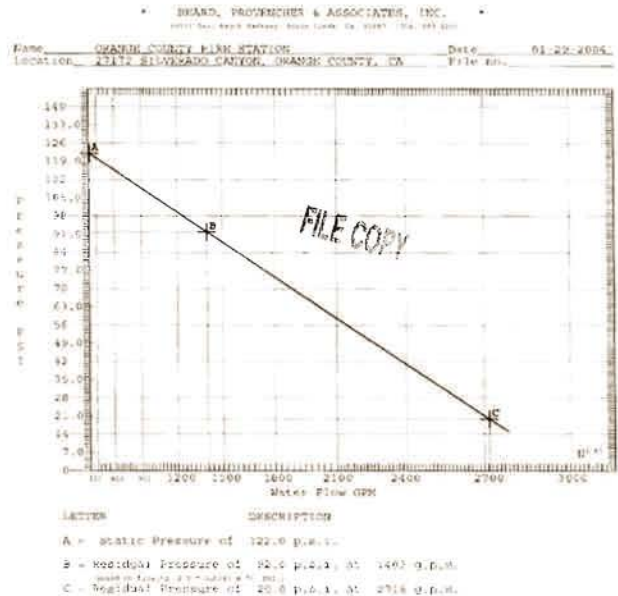


Once the GPS locations of over 400 valves, 165 hydrants, and 765 service meters were captured, iWater was able to digitize the water mains using existing paper maps and as-builts. This enabled iWater to create a seamless geometric network of system valves, fire hydrants, service meters, water mains, and service laterals.

IRWD was able to take full advantage of the new datasets by integrating with their enterprise GIS.



In addition, iWater was able to link historic fire flow records to their locations in the GIS database. This gave the District the ability to click on a hydrant on the map, and display the fire flow documents.



**Reference: Scott Williams**  
(949) 453-5584  
[williams@irwd.com](mailto:williams@irwd.com)

**Completion Date:**  
August 2007

**Client:** City of Newport Beach

**Project:** Mobile GIS Implementation



**Specifics:**

- Enterprise SDE Integration (Oracle 9i)
- Water, Sewer, and Electrical Divisions
- Mobile User Interface (infraMap 5.2)

**Description:**

The City of Newport Beach is located in Orange County, California, and has the following attributes:

- 55 square miles of service area.
- Approximately 277 miles of sewer collection pipeline.
- Approximately 350 miles of water distribution pipeline.

iWater used the City's existing GIS data to load into the infraMap software. All utility layers such as water, wastewater, streets, and electric were loaded up and displayed on vehicle mounted computers.



The City uses infraMap for Underground Service Alerts (USA), water distribution maintenance, sewer main jetting and maintenance, and streetlight inspection/repair. Each department uses Getac V100 ruggedized tablet PCs with daylight visible screens and built-in GPS.

The City's Oracle SDE database houses the enterprise geodatabase. Newport Beach GIS staff can make updates to the maps while field crews are collecting maintenance data. Synchronization is performed by field crews on demand with the click of a button.

In addition, Answer Panel queries give field personnel one-click answers to typical questions such as the locations of broken/closed valves, miles of sewer main jetted within a time frame, or streetlights needing repair.



Customer outages are no longer a concern thanks to infraMap pipeline tracing. In a matter of seconds, field crews can identify critical valves to shut, hydrants out of service, and customers affected. Reports for customer notification are generated automatically.

**Reference: Rod Murphy**  
(949) 644-3186  
[rmurphy@city.newport-beach.ca.us](mailto:rmurphy@city.newport-beach.ca.us)

**Implementation Date:**  
July 2007

11 Marconi, Suite A ♦ Irvine, CA 92618 ♦ Phone: 949-768-4549 ♦ Fax: 949-768-4155

**Client:** Las Vegas Valley Water District

**Project:** Mobile GIS Implementation

**Specifics:**

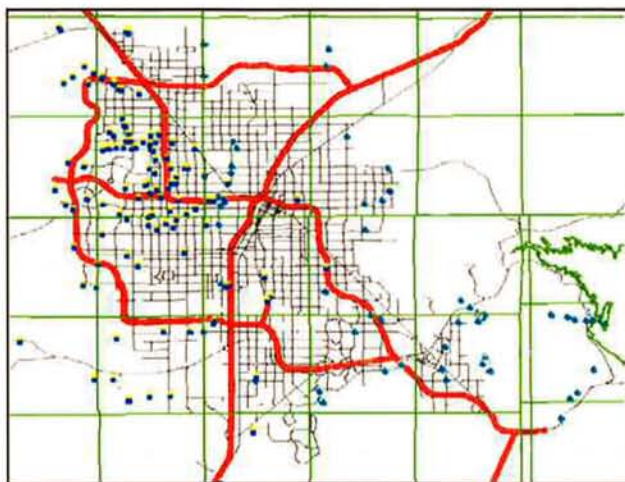
- Enterprise SDE Integration (Oracle)
- Hydraulic Valve Machine Interface (TM-7)
- Custom Toolset Development
- Mobile User Interface (infraMap 5.2)



**Description:**

Las Vegas Valley Water District is located in Clark County, Nevada, and has the following attributes:

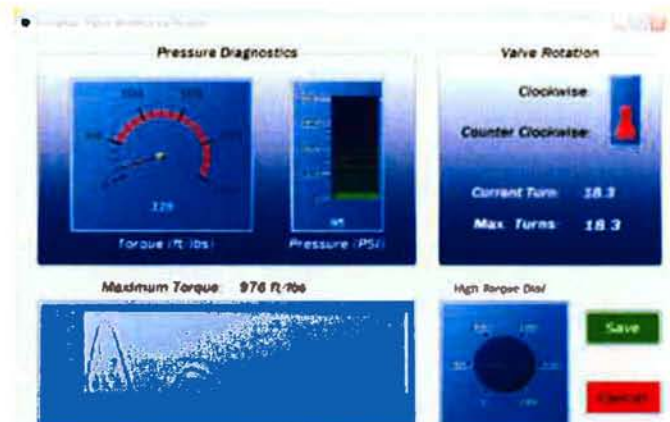
- Over 1 million customers.
- Over 100,000 system valves
- Over 30,000 fire hydrants
- Over 4,500 miles of water distribution pipeline.



Previously, LVVWD was using a server-based GIS system for their field force. The system was dependent on cellular communication to access the maps which proved to be slow and unreliable. The system was also cumbersome and difficult to use.

iWater used the District's existing GIS data to load into the infraMap software. Map symbology and extents were easily ported over to maintain a consistent look and feel of the original system. All utility datasets were loaded up and displayed on vehicle mounted computers.

The Valve Monitoring System allowed the District to connect their Wachs TM-7 hydraulic valve machine directly to infraMap software. Details such as turns, direction, position, and torque could now be recorded and stored directly into the geodatabase.



Data is synchronized to the District's Oracle ArcSDE database. With the click of a button, field crews can send their inspection and torque data to the main GIS server and download everyone else's changes back to their mobile computers.

The Las Vegas Valley Water District is also able to maximize field crew efficiency with infraMap's vast array of functionality. New redline tools allow for easy communication with GIS staff to identify issues. Location and routing tools provide simple navigation to any address or asset within the District. And pipeline tracing can also be performed to identify critical valves for more efficient shutdowns.

**Reference: Jeffrey Ferdinand**  
**(702) 870-2011 x7017**  
[Jeffrey.Ferdinand@lvvwd.com](mailto:Jeffrey.Ferdinand@lvvwd.com)

**Implementation Date:**  
January 2006

11 Marconi, Suite A ♦ Irvine, CA 92618 ♦ Phone: 949-768-4549 ♦ Fax: 949-768-4155

**Client:** Golden State Water Company  
Region II (Southwest District)



**Project:** Geographic Information Systems, GPS Data Collection, and Infrastructure O & M

**Specifics:**

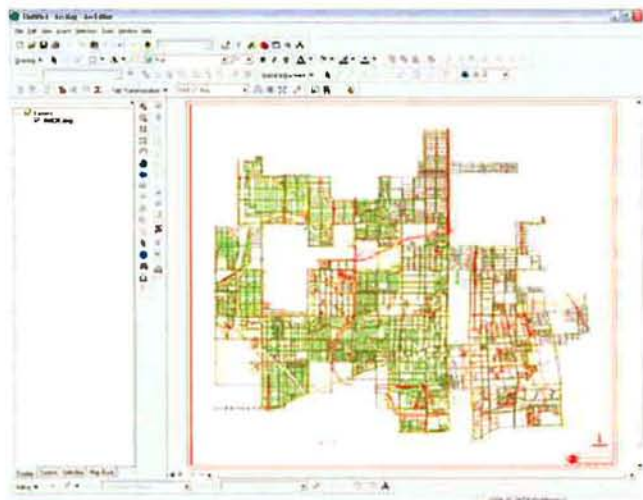
- Development of Geodatabase Model
- CAD Data Conversion and Linkage
- Sub-Meter GPS Data Collection
- Valve & Hydrant Operation & Maintenance

**Description:**

iWater provided GSWC with a complete GIS system using CAD conversion, sub-meter GPS, and valve & hydrant maintenance. The Southwest district is comprised of the following:

- 12 cities within southwest Los Angeles
- Approximately 50,000 service connections
- Approximately 11,600 distribution system valves
- Approximately 4,000 fire hydrants
- Approximately 500 miles of pipeline

iWater used existing CAD drawings to assess valve and fire hydrant locations throughout the 20 + square miles



of service area. After the system was analyzed, the iWater data model was used for the geodatabase design and data collection began.

Once the GPS locations of over 15,000 valves and fire hydrants were captured, iWater was able to overlay the existing CAD drawing and As-builts. This enabled iWater to create a seamless geometric network of System Valves, Fire Hydrants, Water Mains, and Service Laterals.

With the GIS in place, iWater's Department of Health certified field crews were able to verify the status and



condition of each valve and fire hydrant in the system. By exercising valves and flushing hydrants, operations-specific details such as condition, ease/difficulty of operation, physical diameter, and operation comments were collected and validated. This type of data is critical for any water utility and is usually overlooked by GIS and engineering departments.

Now having a complete, operations-based GIS, GSWC retained iWater as a full service mapping and GIS provider. This gave the district the ability to request maps and reports on demand, identify asset maintenance history, and view the operational status of the entire Southwest District.

**Reference: Al Yanez**

(805) 498-1266

[alfred.yanez@amwater.com](mailto:alfred.yanez@amwater.com)

**Completion Dates:**

2000 – 2007 (Asset Maintenance)

2003 (Data Conversion)

**Client:** Golden State Water Company  
Region II (Central District)



**Project:** Geographic Information Systems, GPS Data Collection, and Infrastructure O & M

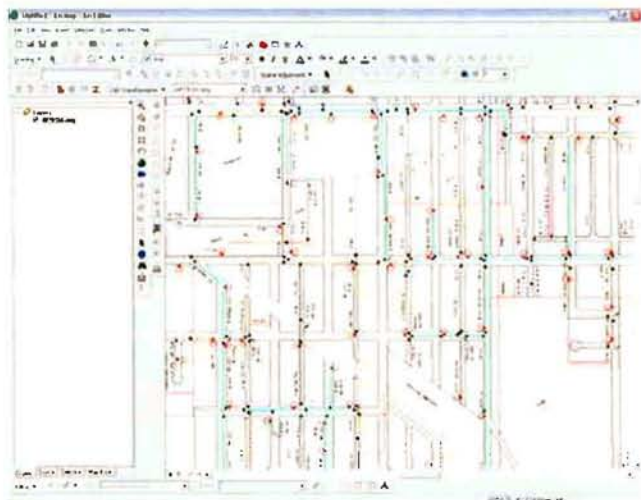
**Specifics:**

- Development of Geodatabase Model
- CAD Data Conversion and Linkage
- Sub-Meter GPS Data Collection
- Valve & Hydrant Operation & Maintenance
- Data Interface Development (infraMap 5.0)

**Description:**

iWater provided GSWC with a complete GIS system using CAD conversion, sub-meter GPS, and application development. The Central district encompasses seven (7) individual water systems including:

- Artesia System (City of Artesia, Cerritos, Hawaiian Gardens and Lakewood)
- Bell Gardens System (City of Bell and Bell Gardens)
- Norwalk System (City of Norwalk, Santa Fe Springs, and South Whittier)
- Florence-Graham System (City of Los Angeles)
- Culver City System (City of Culver City, City of Los Angeles)
- Hollydale System (City of Paramount, South Gate)
- Willowbrook System (City of Compton, Lynwood)



iWater used existing CAD drawings to assess valve and fire hydrant locations throughout each of the seven (7) systems. Each service area varied in size ranging from 150 to 1,000 fire hydrants. After each system was analyzed, the iWater data model was used for the geodatabase design and data collection began.

Once the GPS locations of over 16,000 valves and fire hydrants were captured, iWater was able to overlay the existing CAD drawing and As-builts. This enabled iWater to create a seamless geometric network of System Valves, Fire Hydrants, Water Mains, and Service Laterals.



With the GIS in place, iWater's Department of Heath certified field crews were able to verify the status and condition of each valve and fire hydrant in the system. By exercising valves and flushing hydrants, operations-specific details such as condition, ease/difficulty of operation, physical diameter, and operation comments were collected and validated. This type of data is critical for any water utility and is usually overlooked by GIS and engineering departments.

Now having a complete, operations-based GIS, GSWC was able to take full advantage by using infraMap 5.0 software. This gave



the district the ability to create maps and reports on demand, identify asset maintenance history, and view the operational status of the entire Central District.

**Reference: Toby Moore**

(562) 907-9200

[tobymoore@gswater.com](mailto:tobymoore@gswater.com)

**Cost: Approx. \$210,000 Annually**

**Completion Dates:**

- 2002-2003 (Data Conversion)
- 2001-2007 (Asset Maintenance)
- 2006 (Software)



**Additional References**

Al Yanez – California American Water. (805) 498-1266 x22

Pat Hayes – City of Glendale (818) 548-2065

Ralph McIntosh – City of Ramona (760) 789-1330

Cesar Barrera – City of Santa Ana. (714) 647-3387

Michael Samuels– Nobel Systems (909) 890-5611

Tom Smith – City of Camarillo (805)

Clint Baze – Rincon del Diablo MWD (760) 745-5522

Joe Holdren – City of Cerritos. (562) 916-1223

Tom Johnson – City of San Juan Capistrano. (949) 487-4310

Eric Pivaroff – Golden State Water Company. (909) 937-0111 x334

Scott Williams – Irvine Ranch Water District. (949) 453-5584

Jim Williams – City of Huntington Park. (323) 587-5969

Chuck Sneed – Rainbow Municipal Water District. (760) 728-1178

Ramona Thompson – Suburban Water Systems. (626) 543-2640

Mike Cobb- Badger Meter Company (414) 371-5817

Rick Gingras – Eastern Municipal Water District (951) 301-6906

Jeff Ferdinand – Las Vegas Valley Water District (702) 875-7017



### Summary

IWater, Inc combines the best of everything that NCSO is requesting for this project. As a company, we follow State and Federal Laws as NCSO requested by currently holding a required State of California contractors license, employ State of California DHS certified distribution water professionals which provides us with the ability to be a prime service provider. To complete previous projects of similar scope, our company drives the most complete vehicles which are set-up with valve operators, vacuums, hydraulic tool circuits for pumps, hammers, saws, on board water pressure systems for clean-up and In cab computers with the most complete mobile GIS software application. We provide all data in GIS formats that have been used to complete existing GIS asset details or start new water and waste-water data designs. This data has been used to create work orders at Hansen, Maximo, City Works, and InFor asset management customers.

During the past nine years, IWater has developed processes by having a consistent team of employees that have been with IWater for many years and have added experienced employees in all areas. All employees have the opportunity to complete accredited courses to extend their knowledge in water distribution and GIS technology. We have developed business partnerships with equipment manufactures, GPS providers, GIS consultants and have combined these areas of expertise to provide a complete start to finish product.

This project is exactly what our company does every day. We have and will plan, execute and complete your project on schedule and within budget as we have done on all projects to date. Since we are a local company, we have the resources available and ready to start the project without delay. No exceptions to the scope of work are required and all services will be completed by full time employees of IWater, Inc.

I look forward to presenting our company and the improvement we can make to your water distribution system, GIS data and asset information.

Sincerely,

A handwritten signature in blue ink that reads "Don Rhodes".

**Don Rhodes**  
President

**NCSD WATER VALVE AND HYDRANT SERVICES QUOTE SHEET**

Date: JAN 23, 2009

NAME OF FIRM: iWater, Inc.

NAME OF PRINCIPAL: DON RHODES

NAME OF TEAM LEADER: DOUG VELEZ

ADDRESS: 18 GOODYEAR SUITE 100, IRVINE, CA 92618

PHONE: 949-768-4549 FAX: 949-768-4155

E-MAIL: drhodes@iWater.org

Service	Price per Asset	# of Units	Extended Cost
Valve Testing and Exercising	\$ 45.00	400	18,000.00
Hydrant Testing	\$ 60.00	120	7,200.00

**TOTAL COST:** \$25,200.00

Donald W Rhodes 1-23-2009  
 Signature of Principal Authorized to Sign for Firm and Date

*This quote shall be valid for 90 Days from the date of signature*



# Estimate

DATE	ESTIMATE #
1/23/09	207309

CA Contractor License #: A 783766

Prepared For

**Nipomo CSD**  
**148 South Wilson Street**  
**Nipomo, CA 93444-0326**

Service Area

**Nipomo CSD**  
**148 South Wilson Street**  
**Nipomo, CA 93444-0326**

ITEM	DESCRIPTION	REP	TERMS	Project
		DR	Net 15	Valve&Hydrant
		QTY	COST	TOTAL:
Valve Service & Map	Valves will be cleaned, operated, and GPS located. Valve status will be documented and added to database.	400	45.00	18,000.00
Hydrant Service	Operate hydrant ports and isolation valve. Test for shut down, leaks, and static pressure. Flow test will include pitot and residual pressures. All information will be provided in database and map format at completion of project. Daily reports will be e-mailed for project status and out of service notification.	120	60.00	7,200.00
	All information will be provided in ESRI format with asset information and test data. CA Sales Tax		7.75%	0.00
<b>APPROVAL:DATE:</b>		<b>TOTAL:</b>		<b>\$25,200.00</b>
NOTE: A separate charge will be invoiced for each request for Additional Insured and Waiver of Subrogation.				

**PLEASE VISIT OUR WEB SITE AT: [www.iWater.org](http://www.iWater.org)**

Copy of document found at: [www.NoVoterMipEx.com](http://www.NoVoterMipEx.com)