



*Washington County  
Water District*

## WASHINGTON COUNTY WATER DISTRICT



### INTRODUCTION

Washington is an unincorporated community located in Nevada County, approximately 13 miles east of Nevada City, on the South Fork of the Yuba River. The community is small and isolated, with few opportunities for expansion due to wild and rugged watershed lands and additionally surrounded entirely by Tahoe National Forest property.

The Washington County Water District (WCWD) is the only water agency serving the community. The district provides water through 122 hook-ups that serve approximately 140 residents and businesses, including a campground and a bar/hotel. Washington is also a popular recreation destination, which results in considerable spikes in summertime water use.

Washington was initially settled as an active gold mining community in the 1850s. The basic water collection and delivery system designed during that era served as the basis

for the subsequent infrastructure design. The Washington water treatment and distribution system are very basic, utilizing gravity flow and a sand-filter/chlorination treatment to provide treated water.

The current system collects water from Canyon Creek via a small impoundment created by a diversion dam located near the creek's convergence with the South Fork of the Yuba River. Water is piped through a 4"-diameter PVC line to the slow-sand filter and chlorination system housed on Maybert Road. Treated water is then piped three miles to a storage tank. The three-mile section of pipe running from the treatment plant to the storage tank serves 17 residences. This system operates entirely via gravity flow. Water is distributed from the storage tank, both to the town of Washington and residences on Relief Hill Road. This is the only storage tank in the entire system. The lack of sufficient local/on-site water storage is especially problematic during peak water use. The storage tank currently spills considerable amounts of water during high-demand summer months, due to outdated technology. The main and lateral connections in the town of Washington are currently poorly mapped and the loss through undetected leaks is likely to be considerable, though currently undocumented.

Washington is a Disadvantaged Community (DAC) with an annual median income of \$21,667 (according to 2000 Census data). The infrastructure that serves the district is aging and was installed prior to development of modern conservation standards. As a disadvantaged community, Washington has not had the resources to map its infrastructure system, conduct systematic leak detection and repair activities on its aging pipelines, upgrade water storage and distribution systems, engage in community level water conservation, or meter any portion of its system. The district has almost no capacity to adapt to low-flow scenarios. Additionally, residents are not financially able to retrofit aging plumbing.

The district currently lacks a method for monitoring actual water use, as opposed to the amount of water treated, so WCWD has no way to locate or repair either small scale or large scale system leaks. There is no effective program in place for the detection of leaks, nor the ability to conduct residential water audits. In addition, the absence of a high headwater storage facility and/or pump-supported water distribution system has resulted in below-standard water pressure across the higher elevation portions of the system. During the summer months, tourist traffic and activities in the community greatly increase water demands, as do the landscaping irrigation practices in the community. Irrigation efficiency strategies and hardware have not been provided to the community, leaving local residents unable to improve the peak summer water demands.

## STATEMENT OF PURPOSE

The community of Washington is both rural and isolated. The capacity of the water district to integrate long-term infrastructure planning with systematic water conservation and efficiency is extremely limited. The district does not have a formal capital improvement



plan, nor does it have conservation policies, infrastructure, or programs. Because of its location and disadvantaged status, the community will not add significant new residential development. Therefore, the 122 hook-ups/customers served in Washington will need to fund any system improvements, repairs, or planning activities.

The WCWD needs to prepare a comprehensive conservation and long-term operational maintenance plan in order to effectively prioritize conservation activities, as well as system upgrades and improvements. Due to the limited and fixed number of Washington residents, as well as the community's Disadvantaged status, the financial resources available to the district are extremely limited. WCWD has no options other than seeking grant money to fund the development of a conservation plan.

This project package would result in the preparation of a comprehensive water conservation and infrastructure improvement plan, installation of meters along the mainline system (as well as at selected residential laterals), implementation of a leak detection and repair program, and creation of a GIS/GPS-based system map.

The purpose of this project package is to enable the WCWD to more efficiently manage its water resources and assume a proactive relationship to long-term infrastructure management and improvement. A key component of this package will be preparation of a GIS/GPS-supported mapping of the entire Washington infrastructure and water distribution system. Improvements to the Relief Hill Road water-pressure, the

construction of a back-up tank, implementation of a leak detection and repair program, and installation of water conserving plumbing fixtures will reduce overall water use and increase system efficiency. The installation of water meters and the preparation of a water conservation and efficiency plan will enable the district and its customers to plan for future infrastructure improvements and efficiencies, as well as educate consumers on irrigation and residential water conservation. The creation of an integrated water conservation plan will enable the district to implement a systematic and prioritized upgrade of system infrastructure with an emphasis on durable water conservation technologies and methodologies.

The WCWD project package includes six projects. They are listed below in the same order they can be found in the following pages.

**WCWD WORK PLANS:**

- ◆ Maybert Road Transfer and Distribution Line Replacement
- ◆ Relief Hill Road Flow Control Pressure System Improvements
- ◆ Level-Control Altitude Valve Improvements
- ◆ System-Wide Installation of Water Meters
- ◆ Downtown Leak Detection and Repair (Needs Assessment and Feasibility Study with Repair of Critical Leaks)
- ◆ Integrated Water Shortage Contingency, Drought Preparedness, and Comprehensive Water Conservation Planning Program



## TECHNICAL SUMMARY

### *Existing Components*

Washington County Water District (WCWD) serves 122 customers. The water system currently serving Washington collects water from Canyon Creek via a small impoundment created by a diversion dam, pipes water to a slow-sand filter and chlorination system, pipes the treated water three miles to a storage tank, distributes water from the storage tank, both to the town of Washington and residences on Relief Hill Road. The three-mile section of pipe running from the treatment plant to the storage tank serves 17 residences. The system operates entirely via gravity flow.

Canyon Creek has its headwaters above the Bowman Lake Reservoir. Creek flows are a result of seasonal snow melt storage, and are controlled by NID and PG&E to meet flood control requirements and the minimum flow requirements set by FERC and Fish and Game. During critical low-flow years, Washington has installed an emergency inlet pipe higher up the streambed in Canyon Creek to obtain water when levels drop below the diversion dam sand filter transfer pipe intake.

The dam on canyon creek is a concrete and wood structure. The facility was constructed using steel reinforced concrete piers that were installed by drilling into bedrock, installing epoxied steel anchors reinforced by rebar and poured concrete. The piers are set on seven foot centers with metal guiderails. Four by eight inch Douglas Fir stop logs were then inserted into the metal guiderails to form the impoundment. Water levels

behind the impoundment range from four to six feet. The impoundment foundations are at elevation 2852' and the water level typically at elevation 2856'. A twelve-inch PVC pipe takes water from the impoundment to the treatment plant using gravity feed.

The treatment plant has a design capacity of 288,000 gallons per day at a 100 percent capacity. Currently, the system produces approximately 200 gallons per minute in the summer and 90 to 120 gpm in the winter. The treatment plant utilizes a slow-sand filter methodology with a chlorine injection process. The slow sand filters are comprised of two concrete boxes (44 feet long, 25 feet wide, 5 feet deep, with two feet of sand and three feet of free board). There are two of these tanks in the treatment plant building. The treatment plant building is approximately 52 feet wide and 47 feet long with a chlorination chamber that is roughly 20 feet by 30 feet. Water entering the facility from the canyon creek impoundment moves through a 12-inch diameter pipe through a 12" diameter Y to 2-12" diameter pipes into the inlet end of the 2 parallel slow sand filter chambers.

The slow sand filter outlet is through two six-inch diameter pipes. There are flow meters on each line that include a butterfly control valve for volume control and a simple gate valve for on/off control. In addition, after a T fitting joining the 2 6" diameter pipes into 1 8" diameter pipe there is a main shut-off valve and a main flow meter/totalizer and a chlorinator control flow meter prior to the chlorine injection point on the discharge transfer line to the system.

Water moving from the tanks into the chlorinator passes through an electronic chlorination flow meter that provides a signal to the chlorine pump to dispense chlorine into the water. Once the chlorine is injected, the treated water exits the building via an 8-inch pipeline. The elevation of the base of the sand filter is 2849 feet and the maximum inlet water level in the sand filter is 2856', while the elevation of the base of the Relief Hill Storage Tank is 2,811 feet and the maximum storage tank water level is 2834'. This gradient allows for a gravity feed of the Relief Hill Road Tank. This pipeline runs for three miles to the Relief Hill Road Storage Tank. Between the treatment plant and the holding tank at Relief Hill Road, there are 17 individual laterals.

The pipeline follows the alignment of the old Condon Ditch that originally provided water to Washington via a wooden flume prior to the installation of the existing system. 70 % of the line is above ground. The storage tank currently spills considerable water during high demand summer months, due to outdated technology. These individual laterals were all installed utilizing the same hardware. Each individual connection has a corporate stop and a "saddle tap" (a yoke in the pipeline with a 3/4" pipe thread that is

inserted into the 8-inch pipeline to provide for lateral connection). All lateral lines are 3/4" lines that vary in length from 30 feet to 400 feet and are buried anywhere from one to 12 inches deep depending on individual site conditions.

The Relief Hill Road Storage Tank holds 200,000 gallons of treated water. The 24-foot tall, 38 foot wide tank is of steel construction and sits on a concrete pad. The 8" pipeline from the treatment plant enters the tank from the east and a distribution line exits the tank to the west. The storage tank provides a buffer if the plant experiences operational problems (e.g., summer demand exceeding treatment capacity). It also equalizes flow, provides fire control storage, and provides peak demand. Currently, water in the system is not considered fully treated until it reaches the storage tank. Therefore, the 17 connections between the treatment facility and the storage tank are currently under a boil order due to insufficient contact time. A project is currently under construction that will provide adequate contact time for these 17 residents. The project under construction to resolve the Chlorine contact time shortfall for the 17 upriver customers consists of installation of a lift station below the Relief Hill Road storage tank and installation of a 4" diameter pvc pipe back up towards the treatment plant parallel to the 8" pipeline from the treatment plant to supply fully treated water to the 17 above referenced connections. This project is currently 75-80% complete.

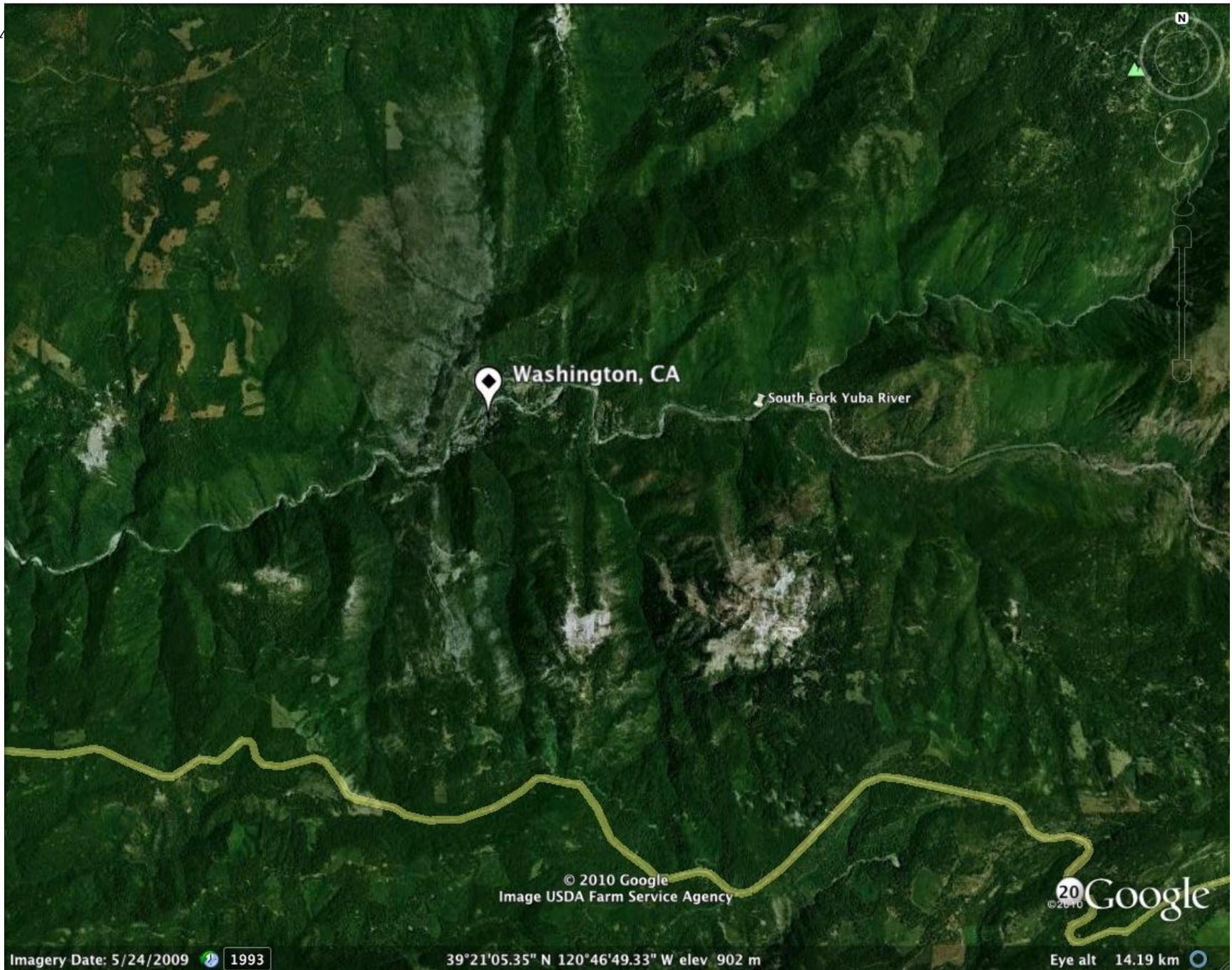
The Relief Hill Road Storage Tank currently experiences substantial seasonal overflow. As part of the original design, an altitude valves to control flow into the tank was installed. The altitude valve was to open when tank water levels dropped and close when the tank was full. This operation was based on the assumption that the sand filters would be operated intermittently rather than continuously. However, operational experience has shown that the differential head to open or close the altitude valve is inadequate until the storage tank is approximately ½ empty. The differential head is inadequate because the plant and the tank are too close in elevation. Therefore, there is not sufficient pilot pressure to open the altitude valve until the storage tank is dangerously low. During summer periods of high demand the maximum system capacity of 200 gal per minute may not be able to replenish the level in the storage tank during the overnight periods of lowered demand and therefore a low storage capacity may exist for extended periods of time. The tank, therefore, has a slow recovery time and is frequently unable to respond to peak flow demands. As a temporary solution to this problem the altitude valve has been bypassed and flow control to the storage tank is based on operator manual adjustment of the 8" inlet gate valve adjusted to maintain a constant 24 hr/ day inlet flow to the storage tank and maintain a slight overflow from the

*Attachment 3 – Work Plan*

storage tank during low demand periods. Installation of a more advanced and more accurate inlet flow control could eliminate the overflow.

Water exiting the tank moves into two lines: an 8-inch line that serves the town of Washington (currently 80 hook-ups) by gravity feed. A second 4-inch line serves Relief Hill Road for 30 hook-ups. Both the town of Washington and Relief Hill Road utilize the same corporate stop, saddle tap, ¾" line as the customers on Maybert Road. The lateral lines serving Relief Hill Road are very close to the elevation of the water in the storage tank. Minimum pressures to prevent backflow are difficult to achieve during peak use occurrences.





**WASHINGTON COUNTY WATER DISTRICT  
MAYBERT ROAD TRANSFER AND  
DISTRIBUTION LINE REPLACEMENT**  
**Infrastructure Reliability, Conservation, and Efficiency Program**

**Overview**

The Washington distribution system relies on a single, six-inch PVC pipe which takes water from the treatment plant down Maybert Road to a storage tank which serves as the distribution hub for both the Relief Hill Road residences and the town of Washington. Seventeen lateral service lines draw water from this main distribution line before its connection to the storage tank. There is currently a new line being installed to increase chlorine contact time for the system.



The current distribution line was installed using a route that was originally laid out during the mining era of the 1850's. The line was originally a wooden flume that distributed water to both mining operations and domestic encampments along the route. The flume was replaced with a PVC line in 1980. The replacement PVC line was installed at grade and is largely above ground (roughly 70 percent of the line is above ground). In some segments, the line was placed above grade due to underlying granite outcroppings; in other cases, the line was left above grade because it was the least expensive construction strategy. PVC deteriorates when exposed to sunlight; therefore, much of the line has become brittle and fragile resulting in both small-scale and occasional catastrophic line breaks. Additionally, the prepared bed on which the line was installed has experienced differential settling and erosion or slumpage. Finally, the pipe joints have deteriorated over time and it is not uncommon for the joints to separate causing both small- and large-scale leaks.

In conclusion, the main distribution system for Washington relies totally on a single, rapidly deteriorating, eight-inch distribution line. Replacement of this line has been a high priority for the district; however, there are insufficient funds to install and replace the distribution line, or to repair and upgrade the alignment where it has experienced erosion and slumpage.



## WORK PLAN TASKS

### *Budget Category (a): Direct Project Administration*

#### **Task 1: Administration and Management**

The objective of this task is to keep the project on time and within budget, keep all participants informed of project progress and status of deliverables, establish and maintain reliable and accurate billing and recordkeeping, ensure that all requirements of the agreement with the DWR are met, and generally ensure smooth project implementation. The tasks for this budget category will comprise all non-construction project administration activities performed by Nevada City and CABY staff throughout the duration of the project and will include: development and completion of contractual paperwork, maintenance and reporting of expense documentation, oversight of project scheduling and contract/agreement compliance, preparation of monthly invoices, and completion of the final invoice.

##### Deliverables:

- ◆ Preparation of invoices and other deliverables as required.
- ◆ Accurate and accessible records

#### **Task 2: Labor Compliance Program**

The City will enter into a contract with North Valley Labor Compliance Services (Identification #2005.00466) to provide labor compliance consulting services for all Proposal project sponsors and relevant projects. The provided services are itemized in detail in the Introduction to the CABY Program.

##### Deliverables:

- ◆ Adherence to requirements of Labor Code Compliance Program including, but not limited to: review of certified payroll records, site monitoring, receipt of claims/complaints by workers, investigation of irregularities or claims, post-compliant audits (if necessary), reporting to DWR via the CABY monthly status reports, and any required withholding of contract payments.

#### **Task 3: Reporting**

The tasks for this budget category will include all activities necessary to support quarterly reporting, monthly invoicing and associated status reports, quarterly status reporting to the Nevada City Council (as project applicant) and the CABY IRWMP-RWVG, and submittal of the final report. These activities will include: tracking of the specific status of each project task, documentation of task status in an easy-to-understand and track format, creation of quarterly financial reports for the project (including percent complete of project activities), and preparation of all necessary reports (including the final report) per the format stipulated in the DWR Grant Agreement.

##### Deliverables:

- ◆ Submission of quarterly, annual, and final reports as specified in the Grant Agreement.
- ◆ Submission of quarterly reports to Nevada City and to the CABY-RWVG to enable their tracking of project status.

### ***Budget Category (b): Land Purchase/Easement***

A 400-foot portion of the existing distribution line runs through what was formally a raw water distribution ditch which conveyed water to a flume system which served the entire Washington area for both mining and domestic use. This location was originally used for the 1980 PVC line which replaced the wooden flume simply because it was the most direct route from the treatment plant and had previously been used to convey raw water from the Canyon Creek catchment reservoir. The current easement/alignment is subject to seasonal flooding and is difficult to access. To remove the line and reroute it will accomplish several outcomes:

- 1) Realignment of the section of pipeline on the Joseph Curtis property;
- 2) Improvement of ground bedding and above-ground support structures to sustain upgraded pipeline;
- 3) Erosion control; and
- 4) Improved access to pipeline through easement and clearing of pipe route.

#### **Task 4: Obtain Easement for Diverted Section of Maybert Road Distribution Line**

The preliminary easement and alignment topography is currently being mapped using AutoCad software. This is a collaborative effort between the property owner and the WCWD General Manager. The negotiations have reached a point at which a series of technical and legal services are required before the easement can be finalized and filed. These additional services include: land surveying and description of the easement alignment (Note: This survey will be prepared as part of Task 5 – Field Assessment and Evaluation, below), preparation of language describing the easement from a legal perspective, and creation and filing of the final legal agreement.

County Council will collaborate to create a formal legal agreement to clarify details of the easement agreement and write a final agreement and time sequence for construction on the Curtis property.

#### Deliverables:

- ◆ Executed easement with affected private property owner (Joseph Curtis).

### ***Budget Category (c): Planning/Design/Engineering/Environmental Documentation***

#### **Task 5: Field Assessment and Evaluation (Planning)**

The goal of this task is to perform a systematic evaluation of the distribution line and current conditions along the easement, from the treatment plant to the holding tank. This evaluation will include geological and soil conditions as necessary to inform project design. The final product of this task will be a Replacement Plan - Construction Phasing and Strategy.

The evaluation of the entire distribution line from the treatment plant to the holding tank will require small-scale, localized brush removal to allow for land surveying. Using appropriate surveying equipment, all segments of the line will be evaluated and mapped (via a land survey). Identification of the actual elevation of each line segment (i.e., horizontal and vertical control) will be as undertaken, as well as a demarcation and flagging of existing service connections/laterals. The evaluation will indicate which portions of the pipe should be installed above/below ground, a general evaluation of surface and subsurface geological conditions, and identification and field evaluation of the new easement segment (needed to complete Task 4, above). The results of this evaluation will be presented both in tabular and mapped formats.

A report presenting the results of the field evaluation will be prepared. This report will present a recommended construction phasing and strategy for replacing the line. A companion map of the Maybert Road alignment, with existing service connections and laterals marked, will also be prepared. As part of this effort, a map to support the final legal description of the Maybert Road distribution line realignment (Task 4, above) will be prepared. The report will also include sufficient detail to serve as a basis for the Request for Proposals (RFP) for a general contractor (see Task 9, below).

The project engineer has determined that selecting a general contractor to coordinate and install/complete all of the WCWD projects will be the desired approach. The WCWD and project engineer will work with the selected contractor to ensure that final plans accommodate the unique characteristics of the Maybert Road area.

Deliverables:

- ◆ Field Evaluation Report.
- ◆ Survey and description of easement alignment for diverted section of Maybert Road distribution line (see Task 4 – Obtain Easement for Diverted Section of Maybert Road Distribution Line, above).
- ◆ GPS/GIS map of the existing alignment and service connections/laterals.
- ◆ Replacement Plan – Construction Phasing and Strategy.

**Task 6: Final Design and Engineering for Maybert Road PVC Replacement**

The goal of this task is to create final engineering drawings to support replacement construction activities. The project engineer will create plans and specifications for the replacement project. These specifications will include: a standard set of plans with specifications and engineer’s estimate of costs, and a complete set of bid documents (e.g., plans, legal parameters, specifications, time line, cost parameters, etc.).

Deliverables:

- ◆ Completion of project plans and specifications at the 100 percent and final level.

**Task 7: Environmental Documentation**

With the support of the project engineer and CABY staff, both of whom have completed extensive CEQA evaluations ranging from Categorical Exemptions to Environmental Impacts Reports for projects and jurisdictions across California, the WCWD will act as Lead Agency for the project. Extensive conversations with the Nevada County Department of Environmental Health (a Responsible Agency), because of their jurisdiction over the WCWD water system, indicate that staff from the NCDEH will be available to WCWD for early consultation on the project to apprise them of applicable rules and regulations, and provide guidance on applicable analysis methodologies or other water system-related issues. Preliminary evaluation indications are that this project will be assessed using a Negative Declaration process. As stated, with close coordination between WCWD Board and General Manager, the WCWD consulting team and the NCDEH will ensure an adequate and legally compliant environmental review.

Deliverables:

- ◆ Approved and filed CEQA documentation (Negative Declaration prepared by WCWD as the Lead Agency with support of the Responsible Agency, NCDEH).

### **Task 8: Permitting**

Under current California State Water Board regulations, any project that creates a site disturbance of one acre or greater (including, in this case, staging areas, easement/survey brush removal activities, actual construction zone disturbance, etc.) will require a Storm Water Quality Management Plan and associated permit (Storm Water Pollution Prevention Plan--SWPPP). The project engineer will prepare and submit the necessary permit materials through the approved online SMARTS filing system. The Storm Water Program regulates storm water discharges from locations such as industrial facilities, construction sites, and small linear projects. The Storm Water Program is also responsible for processing, reviewing, updating, terminating Notices of Intent (NOIs), annual reports, and maintaining the billing status of each discharger.

### ***Budget Category (d): Construction/Implementation***

#### **Task 9: Pre-Construction Contracting – Request for Proposal through Notice to Proceed**

The project engineer, in conjunction with the WCWD General Manager, have determined that selecting a general contractor to coordinate and install/complete all of the WCWD projects will be the desired approach. Rather than advertise for and select a different general contractor for each project of the Washington program, WCWD has established procedures and protocols for advertising, opening, and evaluating bids for construction services, as well as for awarding and developing contracts with construction companies. These policies and procedures will be used to identify the construction company that will install the Maybert Road line replacement.

Pre-construction activities include, but are not limited to: developing technical specifications to support publication of the bid materials, a pre-bid meeting to respond to contractor questions (as required), review of submitted materials for completeness and qualifications/ experience, and award of the contract in accordance with the applicable Public Contract Codes.

#### Deliverables:

- ◆ Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract, and final negotiated contract.

#### **Task 10: Mobilization and Site Preparation**

Mobilization and site preparation will include: establishment of a staging area for materials and equipment, brush clearing along the entire easement, removal and/or chipping of excavated brush, identification and flagging of access paths/routes to the existing easement, and establishment of traffic control strategies along Maybert Road.

There will likely be two staging areas for the project as there is no flat, empty lot or parking area located within the relatively steep-sided valley in which Washington is located that is of sufficient size to accommodate the volume of pipe and supplies required to support the construction activities. The first, and primary, staging area will be at A to Z Plumbing in Grass Valley. This supplier has agreed to use their storage lot as a staging area for the project. Materials and supplies will be trucked down to the secondary

staging area in Washington located at the intersection of Relief Hill Road and Gaston Grade. Materials and supplies will be distributed from this secondary staging area.

Construction activities will occur during the spring and summer months, which are the high-volume tourist and recreation seasons for the area. Maybert Road is a narrow, two-lane road with several relatively sharp and blind curves. It will be necessary to accommodate both recreational and residential traffic, while providing access to construction vehicles and equipment.

Deliverables:

- ◆ Establishment of primary and local staging areas.
- ◆ Brush clearing along easement with removal or chipping of excavated brush.
- ◆ Identification of access paths and routes to the easement.
- ◆ Establishment of traffic control strategies.
- ◆ All necessary site preparation and equipment/contractor mobilization activities complete.

**Task 11: Project Construction**

It is anticipated that the construction process can be accomplished over a single construction season (April through October). Because the Maybert Road line is the only distribution line for the system, a specific strategy for providing uninterrupted water service during construction will need to be employed. The proposed construction sequence will be identified during the final design and engineering of the project. Basically, the existing line will be removed, the easement bed will be improved, new line will be installed, and the system will be pressurized and sterilized.

Deliverables:

- ◆ Removal of degraded pipe segments and transport for recycling.
- ◆ Constructed infrastructure improvements (pipeline, above-ground structures (i.e., retaining walls and trestles).
- ◆ Sterilization and connection of new line.
- ◆ Placement of new line in service.
- ◆ "As-built" construction drawings, specifications, and documentation.
- ◆ Updated GIS system database.

**Task 12: Performance Testing and Demobilization**

The goal of this task is to ensure that the installed infrastructure performs in accordance with the design and manufacturer's specifications. This task will include an initial system test (both to determine system function and to confirm water quality), site cleanup and removal of waste materials, as well as coordination with area residents to assure that the installed improvements can be accommodated by individual residents' service connections and laterals.

Deliverables:

- ◆ Post-project Demobilization Inspection Report (prior to final contractor payment).

**Budget Category (e): Environmental Compliance/Mitigation/Enhancement**

N/A

**Budget Category (f): Construction Administration**

**Task 13: Direct Construction Administration**

Senior City staff will serve as construction managers for the process, as they have for similar projects successfully completed by the City. Supervision activities will include: on-site observations and inspections, inspection of materials prior to installation, conducting construction progress meetings as required, review of project status (percent complete versus percent spent), in-field problem solving during construction in response to unexpected field or system conditions, etc.

Deliverables:

- ◆ Project site cleared of all construction materials, equipment, and debris.

**Budget Category (g): Other**

**Task 14: Develop and Maintain CABY Project-specific Webpage**

The goal of this task is to ensure that all CABY members and members of the public have access to updated and thorough information about the implementation and characteristics of the project. Every CABY project that is implemented will be integrated into the CABY website through the creation of a project-specific webpage. Project plans, specifications, progress photographs, reports, status updates, and other similar materials will be posted or linked to this webpage. The webpages will be designed and brought online (activated within the first month after contract agreement). The page will be updated monthly.

Deliverables:

- ◆ Development, activation, and maintenance of project-specific webpage within the CABY website as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69–72 (developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).

**Task 15: Data Management**

The goal of this task is to ensure that all data gathered and developed as a result of the project is made available to state databases as well as CABY members and the interested public using data management and monitoring deliverables that are consistent with the IRWM Plan Standards and Guidance (as stipulated in the August 2010 IRWM Guidelines, page 20). In this case, the appropriate approach is identified in the CABY Planning Grant submittal which will direct the IRWMP data collection efforts, regardless of whether the planning grant is funded or not. Data will be made available to all CABY members and the general public through the existing CABY SWIM Database. Material will be uploaded as it becomes available, however most of the data will be posted upon completion of the primary project activities. The CABY technical committee will evaluate project-related data to determine its appropriateness for upload to relevant state databases.

Deliverables:

- ◆ Development, activation, and maintenance of project-specific webpage within the CABY website (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69–72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).

- ♦ Post-project information through the existing CABY SWIM Database (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).
- ♦ Submittal of project-specific data to the CABY Technical Advisory Committee tasked with screening project-specific data for submittal to and inclusion in state databases (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).

***Budget Category (h): Construction /Implementation Contingency***

WCWD uses a 15% contingency factor for all construction projects. This formula will be applied to this contract and it will be the responsibility of the construction manager to identify situations in which the contingency funds may be accessed.

**WASHINGTON COUNTY WATER DISTRICT  
MAYBERT ROAD TRANSFER AND  
DISTRIBUTION LINE REPLACEMENT  
Infrastructure Reliability, Conservation, and Efficiency Program**

**EXHIBITS**

1. Preliminary identification of materials required to implement all Washington projects



**ATOZ SUPPLY**  
 A GRASS VALLEY INVESTMENT GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
 (530) 273-6608



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

ORDR # 154181  
 DATE : 12/08/10  
 CLERK: DM  
 TERM # 553

TIME : 4:22  
 \*\*\*\*\*  
 \* ORDER \*  
 \*\*\*\*\*

QUANTITY	UNIT	ITEM	DESCRIPTION	LOC	PRICE / PER	EXTENSION
5000	EA	4C900CL150	PIPE, 4" PVC C-900 PIPE CL. 150	1000	2.44 / EA	12,200.00*
120	EA	SR11	WATER METER, 5/8X3/4 SENSUS CF		161.11 / EA	19,333.20* ①
123	EA	MXU	WATER METER, REMOTE READER ADD-N		216.66 / EA	26,649.18* ②
240	EA	34SMT	3/4" X 1-1/2" SHORT METER TAIL		10.83 / EA	2,599.20
120	EA	34CS	3/4" BRASS CURB STOP STRAIGH	SO	57.55 / EA	6,906.00*
120	EA	34GV	3/4" BRASS GATE VALVE	05R02	7.12 / EA	854.40*
3	EA	SR11112	1-1/2" WATER METER W/TAIL SENSUS		657.35 / EA	1,972.05*

①-②  
 District prefers to use meters w/ remote reader - improve frequency & ease of reading also record keeping - greatly reduce operation expense

\*\*ORDER\*ORDER\*ORDER\*ORDER\*\*  
 DEPOSIT AMT .00  
 BALANCE DUE 180644.41  
 ACE REWARDS ID # 1973135770 )  
 (JOHN STARK )

TAXABLE	166357.01
NON-TAXABLE	355.00
SUB-TOTAL	166712.01
TAX AMOUNT	13932.40
TOTAL ORDER	180644.41

Dec 08 10 04:20p A To Z Supply 5302730892

X  
 Accepted by \_\_\_\_\_

Accounts are due and payable by the 10th of the month following purchase. A FINANCE CHARGE of 1.5% per month (18% per annum) will be charged on past due accounts. Minimum finance charge of \$1.00. No charges allowed on paid due accounts. Terms of merchandise subject to rescheduling charges. No return allowed unless made within 30 days - when receipt of goods.



**ATO Z SUPPLY**  
 A GRASS VALLEY INVESTMENT GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
 (530) 273-6608



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

CUST # 9115  
 TERMS: NET 10TH

ORDR # 164761  
 DATE : 12/08/10  
 CLERK: DM  
 TERM # 553

TIME : 4:30  
 \*\*\*\*\*  
 \* ORDER \*  
 \*\*\*\*\*

5302730892

A To Z Supply

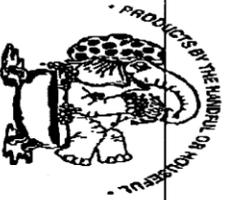
Dec 08 10 04:20p

QUANTITY	UM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION	
11000	EA	8DICT50	8 DUCTILE IRON CL150 TYTON 350	1000	14.17 /EA	155,870.00* x.73	
5000	EA	4DIS2	4" DUCTILE IRON PIPE 350 TYTON	1010	12.95 /EA	64,750.00* x.73	
			4" 2900				
**ORDER*ORDER*ORDER*ORDER**						TAXABLE	220620.00
DEPOSIT AMT						NON-TAXABLE	0.00
BALANCE DUE						SUB-TOTAL	220620.00
						TAX AMOUNT	18476.93
						TOTAL ORDER	239096.93

ACE REWARDS ID # 1973135770 }  
 (JOHN STARK )

X  
 Received By \_\_\_\_\_

Accounts are due and payable by the 10th of the month following purchase. A FINANCE CHARGE of 1 1/2% per month (18% per annum) will be charged on past due accounts. Information change of 1 1/2%. No charges assessed on past due accounts. Returned merchandise is subject to a resending charge. No claims allowed unless made within 3 days after receipt of goods.



**A TO Z SUPPLY**  
 AGRASS VALLEY INVESTMENT GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
 (530) 273-6608



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

CUST # 9115  
 TERMS: NET 10TH

ORDER # 154181  
 DATE : 12/08/10  
 CLERK: DM  
 TERM # 553

TIME : 4:22  
 \*\*\*\*\*  
 \* ORDER \*  
 \*\*\*\*\*

QUANTITY	UOM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION
1	EA	HSC20	GOLIDS 2 HP MULTI STAGE JET PUMP	SO	884.00 /EA	884.00*
1	EA	B1MPS	PUMP 5 HP 1PH/230V TEFC MOTOR	SO	1627.40 /EA	1,627.40*
1	EA	FREIGHT	FREIGHT	XXX	115.00 /EA	115.00*N
2	EA	5B111	40AMP CONTRACTOR DP	05R10	51.12 /EA	102.24*
4	EA	5X829	TIME DELAY RELAY 40A 240 V	SO	168.71 /EA	674.84*
2	EA	GHG-2	PRESSURE SWITCH 80-100PSI	SO	67.29 /EA	134.58*
1	EA	241610	24 X 16 10 W/P 3R ENCLOSURE	SO	341.10 /EA	341.10*
400	EA	AD152	4" DUCTILE IRON PIPE SE 52	1010	15.86 /EA	6,344.00*
2	EA	HP366	PRESSURE TANK 119GAL	XXX	559.99 /EA	1,119.98*
1	EA	4FCF	4" FLG X FLG R. S. GATE VALVE	1010	467.25 /EA	467.25*
2	EA	4FCF	CAMPANION FLANGE, 4"	SO	29.55 /EA	59.10*
2	EA	4ANBG	NUT/BOLT/GASKET SET 4"	1010	11.85 /EA	23.70*
315	EA	2GC	2 GALV PIPE	1000	3.92 /FT	1,234.80*
15	EA	2GC	2 GALV CPUG	05L05	5.69 /EA	85.35*
4	EA	3E22	3" FLG. 22	SO	69.10 /EA	276.40*
4	EA	3E11	3" FLG. 11 BEND	1010	69.10 /EA	276.40*
16	EA	3CF	CAMPANION FLANGE, 3"	1010	22.85 /EA	365.60*
16	EA	3NBGS	NUT/BOLT/GASKET SET 3"	1010	12.89 /EA	206.24*
1	EA	FREIGHT	FREIGHT	XXX	240.00 /EA	240.00*N
11000	EA	RC900CT150	8 PVC C-900 PIPE CL 150	1000	7.42 /EA	81,620.00*

**WAINWRIGHT ROAD**  
**REVERE HILL ROAD**

CONT'D

X  
 Received By \_\_\_\_\_

Accounts are due and payable by the 10th of the month following purchase. A FINANCE CHARGE of 1 1/2% per month (18% per annum) will be charged on past due accounts. Minimum finance charge of \$10.00. Merchandise returned to seller's subject to a restocking charge. No claims allowed unless made within 3 days after receipt of goods.



**A TO Z SUPPLY**  
 A GRASS VALLEY INVESTMENT GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
**(530) 273-6608**



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

CUST # 9115  
 TERMS: NET 10TH

ORDER # 141716  
 DATE : 12/20/10  
 CLERK: DM  
 TERM # 553

TIME : 12:22  
 \*\*\*\*\*  
 \* ORDER \*  
 \*\*\*\*\*

QUANTITY	UOM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION
480	EA	8D1GP	86" DI CL 53 GLASS LINED/EPOXY	1010	51.17 /EA	24,561.60*
5	EA	8D1GP90	8" MJ 90 ELL GLASS/EPOXY COATED	1010	316.70 /EA	1,583.50*
6	EA	8D1GP45	8" MJ 45 ELL GLASS/EPOXY COATED	1010	266.85 /EA	1,601.10*
1	EA	8D1GP22	8" MJ 22 ELL GLASS/EPOXY COATED	1010	266.85 /EA	266.85*
3	EA	8D1GP11	8" MJ 11 ELL GLASS/EPOXY COATED	1010	255.30 /EA	765.90*
30	EA	8MJAKGP	MJ ACCESSORY KIT 8" GLASS AND CO	1010	35.88 /EA	1,076.40*
**ORDER*ORDER*ORDER*ORDER**						TAXABLE 29855.35
DEPOSIT AMT						NON-TAXABLE 0.00
BALANCE DUE 32355.74						SUB-TOTAL 29855.35
						TAX AMOUNT 2500.39
						TOTAL ORDER 32355.74
ACE REWARDS ID # 1973135770 ) (JOHN STARK )						

**X**  
 Received By \_\_\_\_\_

Accounts are due and payable by the 15th of the month following purchase. A FINANCE CHARGE of 1.1% per month (1.3% per annum) will be charged on past due accounts. Minimum finance charge of \$1.00. No charges allowed on past due accounts. Payment merchandise is subject to a resending charge. No orders allowed unless made within 3 days after receipt of goods.

**WASHINGTON COUNTY WATER DISTRICT**  
**RELIEF HILL ROAD**  
**FLOW CONTROL PRESSURE SYSTEM IMPROVEMENTS**  
**Infrastructure Reliability, Conservation, and Efficiency Program**

**Overview**

The state currently has standards for pressurized water systems. The existing standard is 40 pounds per square inch (PSI). These state standards were developed to ensure that groundwater and contaminated water intrusion does not affect an entire distribution system. Intrusion of contaminated water into the pipe system would be a particular problem for Washington because of the extensive length of many of the



residential lateral service lines and the expense involved in decontaminating the system. Because of the design of the system, contamination as a result of intrusion on either Maybert Road or Relief Hill Road would contaminate the entire water distribution system.

There are two areas in the WCWD service area currently experiencing significant low-pressure issues: Maybert Road and Relief Hill Road. There are currently 17 residential customers on Maybert Road and 15 on Relief Hill Road. The community of Washington has 100 customers. The Maybert Road service pressure ranges from zero to 30 PSI. The Maybert Road zero pressure events occur during the summer when peak demand and the inability of the system to repressurize result in from three to ten days of zero water pressure (i.e., no available water) to three residents at the "end of the line." Relief Hill averages 20 to 25 PSI.

The proposed project will balance pressure between the Maybert Road, Washington, and Relief Hill system components and will increase overall pressure throughout the system. The proposed improvements will result in an increase in water pressure sufficient to meet the current state pressure mandate.

While state requirements are clearly a factor in this project component, the primary goals of the component are ensuring the reliability, integrity, and security of the WCWD water delivery system by reducing the likelihood of system contamination from groundwater intrusion, providing the capacity for the district to install water meters to allow for leak detection and drought water management, and to improve the standard of water delivery throughout the community.

The district has already begun to remedy the low-pressure situation through the installation of a booster pump to serve the Maybert Road area. The installation of the pump will largely correct water pressure problems for the residents along Maybert Road. However, this improvement will have no effect on the existing pressure deficiencies within the Relief Hill Road portion of the system.

The Relief Hill Road pressure improvements would utilize a similar system by providing enhanced pumping and storage to augment pressure to the existing gravity-fed lines. The basic components of the low-pressure improvement are likely to include an additional small storage tank component, sufficient pipe to upgrade the connection between the tank and the distribution lines, a booster pump, and ancillary equipment to ensure system performance.

Rather than replace or duplicate the existing tank which serves Relief Hill Road, a system which duplicates the Maybert Road infrastructure will be designed and installed. The new system would include a pump installed at the same pump station that supplies Maybert Road. This would connect to a four-inch parallel line from a location below the storage tank to Relief Hill Road. A parallel line would tie into the existing line that runs down Relief Hill Road to Crowley Estates (at the end of the upper portion of the Relief Hill Road water line). From Crowley Estates, a line would extend down Apple Lane and would also serve residences along Relief Hill Road. To ensure adequate pressure, additional pressure tanks (most likely two 50-gallon pressure tanks -- 2.5 feet in diameter and 10 feet tall) would be installed to reduce the surge out of the newly installed pump. The tanks would be installed within the existing Relief Hill Road easement; therefore, no additional easement would be required.

The water line that ends at the end of Relief Hill Road continues downhill and serves several homes on each side of the Yuba River. Homes on the north side of the river are served via a line which passes over the river using a suspension bridge to carry/support the line. The portion of the line which crosses the river is currently out of service because of a failure in the PVC pipeline. This segment of line was originally meant to serve as a circulation loop but became stagnant. The PVC which carried the water over the river suffered from distortion as a result of summer heat (when the line would sag and buckle) and winter cold (when the line would shrink and crack). Without this portion of line, there is no redundancy in the system, so if there is a system failure on Relief Hill Road, there is no circulation loop to provide service during repairs. The 300-foot replacement pipe would be galvanized steel which is much more resistant to temperature extremes and would use the existing suspension bridge.

When Relief Hill Road is pressurized, the PSI will increase from 100 to 160 PSI. In order to equalize pressure within the system, a pilot-operated valve would need to be installed at the end of Relief Hill Road. This pilot-operated valve would not be used unless there is a significant pressure drop within the system which would need to be equalized.

## WORK PLAN TASKS

### *Budget Category (a): Direct Project Administration*

#### **Task 1: Administration and Management**

The objective of this task is to keep the project on time and within budget, keep all participants informed of project progress and status of deliverables, establish and maintain reliable and accurate billing and record keeping, ensure that all requirements of the agreement with the DWR are met, and generally ensure smooth project implementation. The tasks for this budget category will comprise all non-construction project administration activities performed by WCWD and CABY staff throughout the duration of the project and will include: development and completion of contractual paperwork, maintenance and reporting of expense documentation, oversight of project scheduling and contract/agreement compliance, preparation of monthly invoices, and completion of the final invoice.

##### Deliverables:

- ◆ Preparation of invoices and other deliverables as required.
- ◆ Accurate and accessible records

#### **Task 2: Labor Compliance Program**

WCWD will enter into a contract with North Valley Labor Compliance Services (Identification #2005.00466) to provide labor compliance consulting services for all Proposal project sponsors and relevant projects. The provided services are itemized in detail in the Introduction to the CABY Program.

##### Deliverables:

- ◆ Adherence to requirements of Labor Code Compliance Program including, but not limited to: review of certified payroll records, site monitoring, receipt of claims/complaints by workers, investigation of irregularities or claims, post-compliant audits (if necessary), reporting to DWR via the CABY monthly status reports, and any required withholding of contract payments.

#### **Task 3: Reporting**

The tasks for this budget category will include all activities necessary to support quarterly reporting, monthly invoicing and associated status reports, quarterly status reporting to the Nevada City Council (as project applicant) and the CABY IRWMP-RWVG, and submittal of the final report. These activities will include: tracking of the specific status of each project task, documentation of task status in an easy-to-understand and track format, creation of quarterly financial reports for the project (including percent complete of project activities), and preparation of all necessary reports (including the final report) per the format stipulated in the DWR Grant Agreement.

##### Deliverables:

- ◆ Submission of quarterly, annual, and final reports as specified in the Grant Agreement.
- ◆ Submission of quarterly reports to Nevada City and to the CABY-RWVG to enable their tracking of project status.

## ***Budget Category (b): Land Purchase/Easement***

The service lines which currently serve the Relief Hill Road storage and distribution tank are located on U.S. Forest Service (USFS) lands. WCWD has an existing Limited Use Agreement. This agreement is currently being updated to accommodate the proposed Relief Hill Road improvements. According to the USFS, the agreement will be completed and executed in May of 2011.

### **Task 4: Finalize Limited Use Agreement with U.S. Forest Service**

WCWD has an existing land-use agreement with the USFS. Initial discussions to augment the existing agreement to include proposed project components have already begun. USFS staff has indicated that the revised agreement should be complete prior to the June 1, 2011 project start date. The USFS is fully aware of the importance of this agreement to the sustainability of the water system and historically has been cooperative and supportive to updates to the land use agreement.

#### Deliverables:

- ◆ Executed USFS Limited Use Agreement for the Relief Hill Road site.

## ***Budget Category (c): Planning/Design/Engineering/Environmental Documentation***

### **Task 5: Field Assessment and Evaluation (Planning)**

The goal of this task is to perform a systematic evaluation of the existing pump house, the projected water line route and the booster tank site to support final engineering and design. The project engineer will perform a systematic evaluation of the Relief Hill Road shared facilities (i.e., the Maybert Road pump house), as well as the alignment for installation of the four-inch line, the locations of the two storage tanks, the suspension bridge system, and likely locations for the pilot-operated check valves.

Using a field GPS device, all components of the new system will be located and mapped. Identification of the actual elevation of each component will be as undertaken, as well as a demarcation and GPS location of existing service connections/laterals. The evaluation will identify the location of the new facilities and identify any field conditions which will affect system design and engineering.

A report presenting the results of the field evaluation will be prepared. This report will characterize each project component, indicate the exact location and elevation of each facility/improvement and will also include a GIS map of the proposed infrastructure improvements. The report will also include sufficient detail to serve as a basis for the Request for Proposals (RFP) for system installation.

#### Deliverables:

- ◆ Field Evaluation Report.
- ◆ GPS/GIS map of all system component locations and elevations.

### **Task 6: Final Design and Engineering for Relief Hill Road PVC Replacement**

The goal of this task is to create final engineering drawings to support replacement construction activities. The project engineer will create plans and specifications for the infrastructure project. The specifications will be determined during this design process because the District has not been able to develop any substantive description of the necessary system components that would actually support final design for the project.

#### Deliverables:

- ◆ Completion of project plans and specifications at the 90 percent and final level.

### **Task 7: Environmental Documentation**

As discussed in the Maybert Road Water Distribution Line Improvement work plan, the project engineer, supported by CABY and Nevada County Department of Environmental Health staff, will prepare the necessary environmental documentation.

#### Deliverables:

- ◆ Approved and filed CEQA documentation (expected Categorical Exemption).

### **Permitting**

Under current California State Water Board regulations, any project that creates a site disturbance of one acre or greater (including, in this case, staging areas, easement/survey brush removal activities, actual construction zone disturbance, etc.) will require a Storm Water Quality Management Plan and associated permit (Storm Water Pollution Prevention Plan--SWPPP). The project engineer will prepare and submit the necessary permit materials through the approved online SMARTS filing system. The Storm Water Program regulates storm water discharges from locations such as industrial facilities, construction sites, and small linear projects. The Storm Water Program is also responsible for processing, reviewing, updating, terminating Notices of Intent (NOIs), annual reports, and maintaining the billing status of each discharger.

### ***Budget Category (d): Construction/Implementation***

#### **Task 8: Pre-Construction Estimates and Contracting**

WCWD has established procedures and protocols for advertising, opening, and evaluating bids for construction services, as well as for awarding and developing contracts with construction companies. These policies and procedures will be used to identify the construction company.

Pre-construction activities include, but are not limited to: developing technical specifications to support publication of the bid materials, a pre-bid meeting to respond to contractor questions (as required), review of submitted materials for completeness and qualifications/experience, and award of the contract in accordance with the applicable Public Contract Codes.

Deliverables:

- ◆ Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract, and final negotiated contract.

**Task 9: Mobilization and Site Preparation**

Mobilization and site preparation will include: establishment of a staging area for materials and equipment, brush clearing within areas proposed for construction, removal and/or chipping of excavated brush, identification and flagging of access paths/routes to the existing and proposed facilities.

There will likely be a single staging area for the project located at the intersection of Relief Hill Road and the Gaston Grade. This area has been used for construction staging in the past and remains the most suitable in the area in terms of size and ease of access. Materials and supplies will be distributed from this staging area.

Deliverables:

- ◆ Establishment of local staging area.
- ◆ Brush clearing within construction areas with removal or chipping of excavated brush.
- ◆ Identification of access paths and routes to the existing facilities and proposed construction sites.
- ◆ All necessary site preparation and equipment/contractor mobilization activities complete.

**Task 10: Project Construction**

It is anticipated that the construction process can be accomplished over a single construction season (April through October). Construction activities will include:

Deliverables:

- ◆ Removal of waste material and transport for recycling or disposal.
- ◆ Constructed infrastructure improvements (pump/lift station, installation of roughly 400 feet of ductile iron pipe, tie-in to existing valve cluster, installation of second lift station/pump at Crowley Estates, replacement of the cross-river line within the existing suspension bridge, installation of pilot-operated check valves, system sterilization, service line connection tests).
- ◆ “As-built” construction drawings, specifications and documentation
- ◆ Updated GIS system database.
- ◆ Operational system.

**Task 11: Performance Testing and Demobilization**

The goal of this task is to ensure that the installed infrastructure performs in accordance with the design and manufacturer’s specifications. This task will include an initial system test, site cleanup and removal of waste materials, as well as coordination with area residents to assure that the installed improvements can be accommodated by individual residents’ service connections and laterals.

Deliverables:

- ◆ Post-project Demobilization Inspection Report (prior to final contractor payment).

***Budget Category (e): Environmental Compliance/Mitigation/Enhancement***

N/A

***Budget Category (f): Construction Administration***

**Task 12: Direct Construction Administration**

The project engineer in conjunction with the WCWD General Manager will serve as construction managers for the process, as they have for similar projects successfully completed by the WCWD. Supervision activities will include: on-site observations and inspections, inspection of materials prior to installation, conducting construction progress meetings as required, review of project status (percent complete versus percent spent), in-field problem solving during construction in response to unexpected field or system conditions, etc.

Deliverables:

- ◆ Administration and supervision of the construction activities.

***Budget Category (g): Other***

**Task 13: Develop and Maintain CABY Project-specific Webpage**

The goal of this task is to ensure that all CABY members and members of the public have access to updated and thorough information about the implementation and characteristics of the project. Every CABY project implemented will be integrated into the CABY website through the creation of a project-specific webpage. Project plans, specifications, progress photographs, reports, status updates, and other similar materials will be posted or linked to this webpage. The webpages will be designed and brought online (activated within the first month after contract agreement). The page will be updated monthly.

Deliverables:

- ◆ Development, activation, and maintenance of project-specific webpage within the CABY website as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69–72 (developed in response to the IRWM Program Data Management Guidelines/August 2010, pages 22 and 56-57).

**Task 14: Data Management**

The goal of this task is to ensure that all data gathered and developed as a result of the project is made available to state databases as well as CABY members and the interested public using data management and monitoring deliverables that are consistent with the IRWM Plan Standards and Guidance (as stipulated in the August 2010 IRWM Guidelines, page 20). In this case, the appropriate approach is identified in the CABY Planning Grant submittal which will direct the IRWMP data collection efforts, regardless of whether the planning grant is funded or not. Data will be made available to all CABY members and the general public through the existing CABY SWIM Database. Material will be uploaded as it

becomes available, however most of the data will be posted upon completion of the primary project activities. The CABY technical committee will evaluate project-related data to determine its appropriateness for upload to relevant state databases.

Deliverables:

- ◆ Development, activation, and maintenance of project-specific webpage within the CABY website (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69–72, developed in response to the IRWM Program Data Management Guidelines/August 2010, pages 22 and 56-57).
- ◆ Post-project information through the existing CABY SWIM Database (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Data Management Guidelines/August 2010, pages 22 and 56-57).
- ◆ Submittal of project-specific data to the CABY Technical Advisory Committee tasked with screening project-specific data for submittal to and inclusion in state databases (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Data Management Guidelines/August 2010, pages 22 and 56-57).

***Budget Category (h): Construction /Implementation Contingency***

WCWD uses a 15% contingency factor for all construction projects. This formula will be applied to this contract and it will be the responsibility of the construction manager to identify situations in which the contingency funds may be accessed.

**WASHINGTON COUNTY WATER DISTRICT  
RELIEF HILL ROAD  
FLOW CONTROL PRESSURE SYSTEM IMPROVEMENTS  
Infrastructure Reliability, Conservation, and Efficiency Program**

**EXHIBITS**

1. Preliminary identification of materials required to implement all Washington projects



**A TO Z SUPPLY**  
 A GRASS VALLEY INVESTMENT GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
 (530) 273-6608



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

ORDR # 154181  
 DATE : 12/08/10  
 CLERK: DM  
 TERM # 553

CUST # 9115  
 TERMS: NET 10TH  
 TIME : 4:22  
 \*\*\*\*\*  
 \* ORDER \*  
 \*\*\*\*\*

Dec 08 10 04:20P F To Z Supply 5302730892

QUANTITY	UM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION
5000	EA	AC900C150	PIPE, 4' PVC C-900 PIPE CJ 150	1000	2.44 /EA	12,200.00*
120	EA	SR11	WATER METER, 5/8X3/4 SENSUS CF		161.11 /EA	19,333.20* ①
123	EA	MXU	WATER METER, REMOTE READER ADD-N		216.66 /EA	26,649.18* ②
240	EA	34SMT	3/4" X 1-1/2" SHORT METER TAIL		10.83 /EA	2,599.20
120	EA	B4CS	3/4" BRASS CURB STOP STRAIGH		57.55 /EA	6,906.00*
120	EA	B4GV	3/4" BRASS GATE VALVE		7.12 /EA	854.40*
3	EA	SR11112	1-1/2" WATER METER W/TAI SENSUS	05R02	657.35 /EA	1,972.05*

①:②  
 District prefers to use meters w/ remote reader - improve frequency & ease of reading also record keeping - greatly reduce operation expense

\*\*ORDER\*ORDER\*ORDER\*ORDER\*\*  
 DEPOSIT AMT .00  
 BALANCE DUE 180644.41  
 ACE REMARDS ID # 1973135770 )  
 (JOHN STARK )

TAXABLE 166357.01  
 NON-TAXABLE 355.00  
 SUB-TOTAL 166712.01  
 TAX AMOUNT 13932.40  
 TOTAL ORDER 180644.41

X  
 Resigned By \_\_\_\_\_  
 Accounts are due and payable by the 10th of the month following purchase. A FINANCE CHARGE of 1.5% per month (18% per annum) will be charged on past due accounts. Minimum finance charge of \$1.00. No charges allowed on past due accounts. Renewed merchandise is subject to resending charge. No items allowed unless made within 3 days. All receipt of goods.



**A TO Z SUPPLY**  
 A BRASS VALLEY INVESTMENT GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
 (530) 273-6608



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

CUST # 9115  
 TERMS: NET 10TH

ORDR # 164761  
 DATE : 12/08/10  
 CLERK: DM  
 TERM # 553

TIME : 4:30  
 \*\*\*\*\*  
 \* ORDER \*  
 \*\*\*\*\*

QUANTITY	UM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION	
11000	EA	8DICTL50	8 DUCTILE IRON CL150 TYTON 350	1000	14.17 /EA	155,870.00*	
5000	EA	4DI52	4" DUCTILE IRON PIPE 350 TYTON	1010	12.95 /EA	64,750.00*	
			<b>4" (900)</b>			<b>X.78</b>	
**ORDER*ORDER*ORDER*ORDER**						TAXABLE	220620.00
DEPOSIT AMT						NON-TAXABLE	0.00
BALANCE DUE						SUB-TOTAL	220620.00
						TAX AMOUNT	18476.93
						TOTAL ORDER	239096.93

ACE REWARDS ID # 1973135770 )  
 (JOHN STARR )

**X**

Received By

Account are due and payable by the full of the month following purchase. A FINANCE CHARGE of 1.99% per month (1.99% per annum) will be charged on past due accounts. High finance charge of 1.99%. No charges shown on past due accounts. Return merchandise is subject to a restocking charge. All items shown unless marked with 3 are "as is" resold as is.



**A TO Z SUPPLY**  
 A GRASS VALLEY INVESTMENT GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
**(530) 273-6608**



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

ORDR # 141716  
 DATE : 12/20/10  
 CLERK: DW  
 TERM # 553

CUST # 9115  
 TERMS: NET 10TH  
 TIME :12:22  
 \*\*\*\*\*  
 \* ORDER \*  
 \*\*\*\*\*

QUANTITY	UM	ITEM	DESCRIPTION	LOC	PRICE /PER	EXTENSION
480	EA	8DIGP	8" DI GL 53 GLASS LINED/EPOXY	1010	51.17 /EA	24,561.60*
5	EA	8DIGP90	8" MJ 90 ELL GLASS/EPOXY COATED	1010	316.70 /EA	1,583.50*
6	EA	8DIGP45	8" MJ 45 ELL GLASS/EPOXY COATED	1010	266.85 /EA	1,601.10*
1	EA	8DIGP22	8" MJ 22 ELL GLASS/EPOXY COATED	1010	266.85 /EA	266.85*
3	EA	8DIGP11	8" MJ 11 ELL GLASS/EPOXY COATED	1010	255.30 /EA	765.90*
30	EA	8MJAKGP	MJ ACCESSORY KIT 8" GLASS AND CO	1010	35.88 /EA	1,076.40*
**ORDER**ORDER**ORDER**ORDER**						TAXABLE 29855.35
DEPOSIT AMT						NON-TAXABLE 0.00
BALANCE DUE 32355.74						SUB-TOTAL 29855.35
ACE REWARDS ID # 1973135770 )						TAX AMOUNT 2500.39
(JOHN STARK )						TOTAL ORDER 32355.74

Received By \_\_\_\_\_

Accounts are due and payable by the 10th of the month following purchase. A FINANCE CHARGE of 1% per month (18% per annum) will be charged on past due accounts. Minimum finance charge of \$1.00. No charges allowed on past due accounts. Returned merchandise is subject to a restocking charge. No returns allowed unless made within 3 days after receipt of goods.



**A TO Z SUPPLY**  
 A GRASS VALLEY INDUSTRIAL GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
 (530) 273-6608



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

CUST # 9115  
 TERMS: NET 10TH

ORDR # 154181  
 DATE : 12/08/10  
 CLERK: DM  
 TERM # 553

TIME : 4:22  
 ORDER \*\*\*\*\*  
 ORDER \*\*\*\*\*

QUANTITY	UM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION
1	EA	HSC20	BOULDS 2 HP MULTI STAGE JET PUMP	SO	884.00 /EA	884.00*
1	EA	B1MPS	PUMP 5 HP 1PH/230V TREC MOTOR	SO	1627.40 /EA	1,627.40*
1	EA	FREIGHT	FREIGHT	XXX	115.00 /EA	115.00*N
2	EA	SB111	40AMP CONTRACTOR DP	05R10	51.12 /EA	102.24*
4	EA	5X829	TIME DELAY RELAY 40A 240 V	SO	168.71 /EA	674.84*
2	EA	GHC-2	PRESSURE SWITCH 80-100PSI	SO	67.29 /EA	134.58*
1	EA	241610	24 X 16 10 W/P 3R ENCLOSURE	1010	341.10 /EA	341.10*
2	EA	4DI52	4" DICHTILE IRON PIPE SE 52	1010	15.86 /EA	6,344.00*
1	EA	HP366	PRESSURE TANK 119GAL	XXX	559.99 /EA	1,119.98*
2	EA	4PEV	4" FLG X FLG R.S. GATE VALVE	1010	467.25 /EA	934.50*
1	EA	4CF	CAMPANION FLANGE, 4"	SO	29.55 /EA	59.10*
2	EA	4NBGS	NUT/BOLT/GASKET SET 4"	1010	11.85 /EA	23.70*
315	FT	2GP	2 GALV PIPE	1000	3.92 /FT	1,234.80*
15	EA	2GC	3" FLG. 22	05105	5.69 /EA	85.35
4	EA	3EF22	3" FLG. 11 BEND	1010	69.10 /EA	276.40*
4	EA	3F11	CAMPANION FLANGE, 3"	1010	69.10 /EA	276.40*
16	EA	3CF	NUT/BOLT/GASKET SET 3"	1010	22.85 /EA	365.60*
16	EA	3NBGS	FREIGHT	XXX	12.89 /EA	206.24*
1	EA	FREIGHT	B PVC C-900 PIPE CR 150	1000	240.00 /EA	240.00*N
11000	EA	RC900CL150	FREIGHT	1000	7.42 /EA	81,620.00*

**WATERSHED ROAD**  
**RELIABLE HILL ROAD**

X  
 Mailed by \_\_\_\_\_

Accounts are due and payable by the 10th of the month following purchase. A FINANCE CHARGE of 1 1/4% per month (18% per annum) will be charged on past due accounts. Within three days of bill, discounts allowed on past due accounts. Returned merchandise is subject to a restocking charge. No returns allowed unless made within 90 days after receipt of goods.

CONT'D

**WASHINGTON COUNTY WATER DISTRICT**  
**LEVEL-CONTROL ALTITUDE VALVE IMPROVEMENTS**  
**Infrastructure Reliability, Conservation, and Efficiency Program**

**Overview**

The 200,000-gallon Relief Hill Road Storage Tank (the only major storage component in the WCWD system for treated water,) currently experiences substantial seasonal overflow. As part of the original design, an altitude valve to control flow into the tank was installed. The altitude valve was to open when tank water levels dropped and close when the tank was full.



This operation was based on the assumption that the sand filters would be operated intermittently rather than continuously. However, operational experience has shown that the differential head to open or close the altitude valve is inadequate until the storage tank is approximately half empty. The differential head is inadequate because the plant and the tank are too close in elevation. Therefore, there is not sufficient pilot pressure to open the altitude valve until the storage tank is dangerously low. During summer periods of high demand, the maximum system capacity of 200 gallons per minute may not be able to replenish the level in the storage tank during the overnight periods of lowered demand and therefore a low storage capacity may exist for extended periods of time. The tank, therefore, has a slow recovery time and is frequently unable to respond to peak flow demands. As a temporary solution to this problem the altitude valve has been bypassed and flow control to the storage tank is based on operator manual adjustment of the eight-inch inlet gate valve adjusted to maintain a constant 24 hours/day inlet flow to the storage tank and maintain a slight overflow from the storage tank during low demand periods. Installation of a more advanced and more accurate inlet flow control could eliminate the overflow, estimated at 10,472,000 gallons per year.

As currently configured, the Relief Hill Road tank is fed by an eight-inch line with an eight-foot gate valve. A preliminary engineering evaluation has concluded that the operation and maintenance of a complex modulating style valve (which opens the tanks in increments to alleviate overflow) would represent a level of operational sophistication that is inconsistent with the resources of the district and with the actual performance parameters of the system. Therefore, a needs assessment will be performed which clarifies the operational characteristics

of the system and identifies a reasonable and cost-effective design and operational solution for the system. Based on this assessment, a final design will be identified and the appropriate system installed.



## WORK PLAN TASKS

### *Budget Category (a): Direct Project Administration*

#### **Task 1: Administration and Management**

The objective of this task is to keep the project on time and within budget, keep all participants informed of project progress and status of deliverables, establish and maintain reliable and accurate billing and recordkeeping, ensure that all requirements of the agreement with the DWR are met, and generally ensure smooth project implementation. The tasks for this budget category will comprise all non-construction project administration activities performed by Nevada City and CABY staff throughout the duration of the project and will include: development and completion of contractual paperwork, maintenance and reporting of expense documentation, oversight of project scheduling and contract/agreement compliance, preparation of monthly invoices, and completion of the final invoice.

#### Deliverables:

- ◆ Preparation of invoices and other deliverables as required.
- ◆ Accurate and accessible records

#### **Task 2: Labor Compliance Program**

The City will enter into a contract with North Valley Labor Compliance Services (Identification #2005.00466) to provide labor compliance consulting services for all Proposal project sponsors and relevant projects. The provided services are itemized in detail in the Introduction to the CABY Program.

#### Deliverables:

- ◆ Adherence to requirements of Labor Code Compliance Program including, but not limited to: review of certified payroll records, site monitoring, receipt of claims/complaints by workers, investigation of irregularities or claims, post-compliant audits (if necessary), reporting to DWR via the CABY monthly status reports, and any required withholding of contract payments.

#### **Task 3: Reporting**

The tasks for this budget category will include all activities necessary to support quarterly reporting, monthly invoicing and associated status reports, quarterly status reporting to the Nevada City Council (as project applicant) and the CABY IRWMP-RWVG, and submittal of the final report. These activities will include: tracking of the specific status of each project task, documentation of task status in an easy-to-understand and track format, creation of quarterly financial reports for the project (including percent complete of project activities), and preparation of all necessary reports (including the final report) per the format stipulated in the DWR Grant Agreement.

#### Deliverables:

- ◆ Submission of quarterly, annual, and final reports as specified in the Grant Agreement.
- ◆ Submission of quarterly reports to Nevada City and to the CABY-RWVG to enable their tracking of project status.

### *Budget Category (b): Land Purchase/Easement*

No land purchase or easement confirmation is needed for this project as the improvements will occur within an existing tank system.

## ***Budget Category (c): Planning/Design/Engineering/Environmental Documentation***

### **Task 4: Field Assessment and Evaluation (Planning-Needs Assessment)**

The goal of this task is to evaluate the existing tank design characteristics and performance parameters to support final engineering and design of the level control altitude valves installation, as well as installation of a power source to support valve operation (both solar and conventional power sources will be considered).

The project engineer will perform a systematic evaluation of the existing tank to determine its current operational and performance characteristics, characterize the optimal valve performance parameters, and determine the options for altitude valve systems that the current tank and system would support and which are within the O&M resources of the WCWD. The WCWD General Manager (a certified solar systems engineer) will, at the same time, evaluate options for providing power to the valve installation site, including use of conventional power (with installation of power lines to the site) as well as assessing the most favorable location on the tank for installation of the solar/battery system which could support the valve power needs.

#### Deliverables:

- ◆ Field evaluation by engineer and WCWD General Manager.

### **Task 5: Final Design and Engineering for Level Control Altitude Valve Improvements**

The goal of this task is to create final engineering drawings to support replacement construction activities. The project engineer will create plans and specifications for the infrastructure project, which will address all of the characteristics identified in the Task 4, Field Assessment Evaluation.

#### Deliverables:

- ◆ Completion of project plans and specifications at the 90 percent and final level.

### **Environmental Documentation**

No environmental documentation is required as the valve and power system installation does not meet the definition of a “project” under CEQA because it will not result in the “direct or reasonably foreseeable indirect physical change in the environment” (per CEQA Guidelines, sections 15060(c) and 15378). Examples of categorically exempt projects include minor alterations to existing facilities and minor alterations to land.

Additionally, the installation qualifies as categorically exempt as a minor change to existing facilities (per CEQA section 15301), which specifically exempts minor changes to interior plumbing or fixtures. The project has no components within the jurisdiction of federal environmental laws; therefore, NEPA requirements do not apply to the project.

### **Permitting**

Under current California State Water Board regulations, any project that creates a site disturbance of one acre or greater (including, in this case, staging areas, easement/survey brush removal activities, actual construction zone disturbance, etc.) will require a Storm Water Quality Management Plan and associated permit (Storm Water Pollution Prevention Plan--SWPPP). The project engineer will prepare and submit

the necessary permit materials through the approved online SMARTS filing system. The Storm Water Program regulates storm water discharges from locations such as industrial facilities, construction sites, and small linear projects. The Storm Water Program is also responsible for processing, reviewing, updating, terminating Notices of Intent (NOIs), annual reports, and maintaining the billing status of each discharger.

### ***Budget Category (d): Construction/Implementation***

#### **Task 6: Pre-Construction Estimates and Contracting**

Pre-construction activities include, but are not limited to: developing technical specifications to support publication of the bid materials, a pre-bid meeting to respond to contractor questions (as required), review of submitted materials for completeness and qualifications/ experience, and award of the contract in accordance with the applicable Public Contract Codes.

The project engineer, in conjunction with the WCWD General Manager, have determined that selecting a general contractor to coordinate and install/complete all of the WCWD projects will be the desired approach. Rather than advertise for and select a different general contractor for each project of the Washington program, WCWD has established procedures and protocols for advertising, opening, and evaluating bids for construction services, as well as for awarding and developing contracts with construction companies. These policies and procedures will be used to select the general contractor for the proposal (i.e., all five of the Washington projects will be the primary responsibility of the general contractor).

#### Deliverables:

- ◆ Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract, and final negotiated contract.

#### **Task 7: Mobilization and Site Preparation**

Mobilization and site preparation will include: establishment of a staging area for materials and equipment, brush clearing and grubbing as required to accommodate the valve power source, and other necessary site preparation activities.

There will likely be a single staging area for the project, located at the intersection of Relief Hill Road and Gaston Grade. Materials and supplies will be distributed from this staging area.

#### Deliverables:

- ◆ Establishment of local staging area.
- ◆ All necessary site preparation and equipment/contractor mobilization activities complete.

#### **Task 8: Project Construction**

It is anticipated that the construction process can be accomplished over a single construction season (April through October.). The proposed construction sequence will be identified during the final design and engineering of the project, and will depend on the specific design selected to enhance water management of the tank.

#### Deliverables:

- ◆ “As-built” construction drawings, specifications, and documentation.

- ◆ Updated GIS system database.
- ◆ Operational system.

**Task 9: Performance Testing and Demobilization**

The goal of this task is to ensure that the installed infrastructure performs in accordance with the design and manufacturer’s specifications. This task will include an initial system test, as well as finalization of the monitoring processes to ensure proper valve functioning.

Deliverables:

- ◆ Post-project Demobilization Inspection Report (prior to final contractor payment).

***Budget Category (e): Environmental Compliance/Mitigation/Enhancement***

N/A

***Budget Category (f): Construction Administration***

**Task 10: Direct Construction Administration**

Senior City staff will serve as construction managers for the process, as they have for similar projects successfully completed by the City. Supervision activities will include: on-site observations and inspections, inspection of materials prior to installation, conducting construction progress meetings as required, review of project status (percent complete versus percent spent), in-field problem solving during construction in response to unexpected field or system conditions, etc.

Deliverables:

- ◆ Project site cleared of all construction materials, equipment, and debris.

***Budget Category (g): Other***

**Task 11: Develop and Maintain CABY Project-specific Webpage**

The goal of this task is to ensure that all CABY members and members of the public have access to updated and thorough information about the implementation and characteristics of the project. Every CABY project that is implemented will be integrated into the CABY website through the creation of a project-specific webpage. Project plans, specifications, progress photographs, reports, status updates, and other similar materials will be posted or linked to this webpage. The webpages will be designed and brought online (activated within the first month after contract agreement). The page will be updated monthly.

Deliverable(s):

- ◆ Development, activation, and maintenance of project-specific webpage within the CABY website as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69–72 (developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).

**Task 12: Data Management**

The goal of this task is to ensure that all data gathered and developed as a result of the project is made available to state databases as well as CABY members and the interested public using data management and monitoring deliverables that are consistent with the IRWM Plan Standards and Guidance (as stipulated in the August 2010 IRWM Guidelines, page 20). In this case, the appropriate approach is

identified in the CABY Planning Grant submittal which will direct the IRWMP data collection efforts, regardless of whether the planning grant is funded or not. Data will be made available to all CABY members and the general public through the existing CABY SWIM Database. Material will be uploaded as it becomes available, however most of the data will be posted upon completion of the primary project activities. The CABY technical committee will evaluate project-related data to determine its appropriateness for upload to relevant state databases.

Deliverables:

- ◆ Development, activation, and maintenance of project-specific webpage within the CABY website (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69–72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).
- ◆ Post-project information through the existing CABY SWIM Database (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).
- ◆ Submittal of project-specific data to the CABY Technical Advisory Committee tasked with screening project-specific data for submittal to and inclusion in state databases (as stipulated by the CABY Planning Grant Application. submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).

***Budget Category (h): Construction/Implementation Contingency***

WCWD uses a 15% contingency factor for all construction projects. This formula will be applied to this contract and it will be the responsibility of the construction manager to identify situations in which the contingency funds may be accessed.

**WASHINGTON COUNTY WATER DISTRICT  
LEVEL-CONTROL ALTITUDE VALVE IMPROVEMENTS  
Infrastructure Reliability, Conservation, and Efficiency Program**

**EXHIBITS**

1. Preliminary identification of materials required to implement all Washington projects



**ATO Z SUPPLY**  
 A GRASS VALLEY INVESTMENT GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
 (530) 273-6608



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

ORDR # 154181  
 DATE : 12/08/10  
 CLERK: DM  
 TERM # 553  
 TIME : 4:22  
 \*\*\*\*\*  
 \* ORDER \*  
 \*\*\*\*\*

QUANTITY	UM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION
5000	EA	4C900C1150	PIPE, 4" PVC C-900 PIPE CJ 150	1000	2.44 /EA	12,200.00*
120	EA	SR11	WATER METER, 5/8X3/4 SENSUS CF		161.11 /EA	19,333.20* ①
123	EA	MXU	WATER METER, REMOTE READER ADD-N		216.66 /EA	26,649.18* ②
240	EA	34SMT	3/4" X 1-1/2" SHORT METER TAIL		10.83 /EA	2,599.20
120	EA	BACS	3/4" BRASS CURB STOP STRAIGH		57.55 /EA	6,906.00*
120	EA	B4GV	3/4" BRASS GATE VALVE		7.12 /EA	854.40*
3	EA	SR11112	1-1/2" WATER METER W/TAI SENSUS	05R02	657.35 /EA	1,972.05*

①:②  
 District prefers to use meters w/ remote reader - improve frequency & ease of reading also record keeping - greatly reduce operation expense

\*\*ORDER\*ORDER\*ORDER\*ORDER\*\*  
 DEPOSIT AMT .00  
 BALANCE DUE 180644.41  
 ACE REMARDS ID # 1973135770 )  
 (JOHN STARK )

TAXABLE 166357.01  
 NON-TAXABLE 355.00  
 SUB-TOTAL 166712.01  
 TAX AMOUNT 13932.40  
 TOTAL ORDER 180644.41

Dec 08 10 04:20P A To Z Supply 5302730692

X  
 Requested by \_\_\_\_\_  
 Account due date set payable by the (date of the month following purchase). A FINANCE CHARGE of 1.5% per month (1.5% per annum) will be charged on past due accounts. Minimum finance charge of \$1.00. No charges allowed on past due accounts. Payment procedures is subject to resending charges. No items allowed unless made within 3 days - the receipt of goods.



**A TO Z SUPPLY**  
 A BRASS VALVE INVESTMENT GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
 (530) 273-6608



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

CUST # 9115  
 TERMS: NET 10TH

ORDR # 164761  
 DATE : 12/08/10  
 CLERK: DM  
 TERM # 553

TIME : 4:30  
 \*\*\*\*\*  
 \* ORDER \*  
 \*\*\*\*\*

QUANTITY	UM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION	
11000	EA	8DICTL50	8 DUCTILE IRON CL150 TYTON 350	1000	14.17 /EA	155,870.00*	
5000	EA	4DI52	4" DUCTILE IRON PIPE 350 TYTON	1010	12.95 /EA	64,750.00*	
			<i>4" (900)</i>			<i>X.78</i>	
**ORDER*ORDER*ORDER*ORDER**						TAXABLE	220620.00
DEPOSIT AMT						NON-TAXABLE	0.00
BALANCE DUE						SUB-TOTAL	220620.00
						TAX AMOUNT	18476.93
						TOTAL ORDER	239096.93

ACE REWARDS ID # 1973135770 )  
 (JOHN STARR )

Dec 08 10 04:20P A To Z Supply 5302730892

X

Received By

Account see date and payable by the bill of five months following purchase. A FINANCE CHARGE of 1.5% per month (18% per annum) will be charged on past due accounts. High finance charge of 1.5% No charges shown on past due accounts. Return of merchandise is subject to a restocking charge. No returns allowed unless made within 30 days after receipt of goods.



**A TO Z SUPPLY**

A GRASS VALLEY INVESTMENT GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
**(530) 273-6608**



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

CUST # 9115  
 TERMS: NET 10TH

ORDER # 141716  
 DATE : 12/20/10  
 CLERK: DM  
 TERM # 553

TIME : 12:22  
 \*\*\*\*\*  
 \* ORDER \*  
 \*\*\*\*\*

QUANTITY	UM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION
480	EA	8DIGP	86" DI CT 53 GLASS LINED/EPOXY	1010	51.17 /EA	24,561.60*
5	EA	8DIGP90	8" MJ 90 ELL GLASS/EPOXY COATED	1010	316.70 /EA	1,583.50*
6	EA	8DIGP45	8" MJ 45 ELL GLASS/EPOXY COATED	1010	266.85 /EA	1,601.10*
1	EA	8DIGP22	8" MJ 22 ELL GLASS/EPOXY COATED	1010	266.85 /EA	266.85*
3	EA	8DIGP11	8" MJ 11 ELL GLASS/EPOXY COATED	1010	255.30 /EA	765.90*
30	EA	8MMAKGP	MJ ACCESSORY KIT 8" GLASS AND CO	1010	35.88 /EA	1,076.40*
**ORDER**ORDER**ORDER**				TAXABLE		29855.35
DEPOSIT AMT				NON-TAXABLE		0.00
BALANCE DUE 32355.74				SUB-TOTAL		29855.35
				TAX AMOUNT		2500.39
				TOTAL ORDER		32355.74
ACE REWARDS ID # 1973135770 ) ( JOHN STARK )						

**X** Received by \_\_\_\_\_

Accounts are due and payable by the 10th of the month following purchase. A FINANCE CHARGE of 1% per month (18% per annum) will be charged on past due accounts. Minimum finance charge of \$1.00. No charges allowed on past due accounts. Returned merchandise is subject to a resending charge. No claims allowed unless made within 3 days after receipt of goods.



**A TO Z SUPPLY**  
 A GRASS VALLEY DISTRIBUTOR GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
 (530) 273-6608



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 WASHINGTON 265-4720

ORDR # 154181  
 DATE : 12/08/10  
 CLERK: DM  
 TERM # 553

TIME : 4:22  
 ORDER \*\*\*\*\*  
 \*\*\*\*\*  
 \*\*\*\*\*

QUANTITY	UM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION
1	EA	HSC20	SOULDS 2 HP MULTI STAGE JET PUMP	SO	884.00 /EA	884.00*
1	EA	B1MPS	PUMP 5 HP 1PH/230V TEPC MOTOR	SO	1627.40 /EA	1,627.40*
1	EA	FREIGHT		XXX	115.00 /EA	115.00*N
2	EA	SB111	40AMP CONTACTOR DP	05R10	51.12 /EA	102.24*
4	EA	5X829	TIME DELAY RELAY 40A 240 V	SO	168.71 /EA	674.84*
2	EA	GHC-2	PRESSURE SWITCH 80-100PSI		67.29 /EA	134.58*
1	EA	241610	24 X 16 10 W/P 3R ENCLOSURE		341.10 /EA	341.10*
2	EA	4DI52	4" DUCTILE IRON PIPE SE 52	1010	15.86 /EA	6,344.00*
2	EA	HP366	PRESSURE TANK 119GAL	XXX	559.99 /EA	1,119.98*
1	EA	4FFGV	4" FLG X FLG R.S. GATE VALVE	1010	467.25 /EA	467.25*
2	EA	4CF	CAMPANION FLANGE, 4"	SO	29.55 /EA	59.10*
2	EA	4NBGS	NUT/BOLT/GASKET SET 4"	1010	11.85 /EA	23.70*
315	FT	ZGP	2 GALV PIPE	1000	3.92 /FT	1,234.80*
15	EA	ZGC	3" GALV CPUG	05L05	5.69 /EA	85.35
4	EA	3EF22	3" FLG. 22		69.10 /EA	276.40*
4	EA	3F11	3" FLG. 11 BEND		69.10 /EA	276.40*
16	EA	3CF	CAMPANION FLANGE, 3"	1010	22.85 /EA	365.60*
16	EA	3NBGS	NUT/BOLT/GASKET SET 3"	1010	12.89 /EA	206.24*
1	EA	FREIGHT		XXX	240.00 /EA	240.00*N
11000	EA	RC9000CL150	8 PVC C-900 PIPE CL 150	1000	7.42 /EA	81,620.00*

**WATERSHED ROAD**  
**RESERVE HILL ROAD**

CONT'D

**X**  
 Manufactured by \_\_\_\_\_  
 Accounts are due and payable by the 15th of the month following purchase. A FINANCE CHARGE of 1 1/4% per month (18% per annum) will be charged on past due accounts. Within 10 days of bill, discounts allowed on past due accounts. Returned merchandise is subject to a restocking charge. No returns allowed unless made within 3 days after receipt of goods.

08 10 04:19P A T O N S U P P L Y 5302730992 P-7

**WASHINGTON COUNTY WATER DISTRICT  
SYSTEM-WIDE INSTALLATION OF WATER METERS  
Infrastructure Reliability, Conservation, and Efficiency Program**

**OVERVIEW**

Currently, the only water meter installed on the Washington County Water District (WCWD) water supply and distribution system is located at the treatment plant. With the entire service area unmetered, the District does not have the capability to readily locate leaks, monitor flows, develop performance and use specific conservation measures, and work with individual users to develop more efficient water use profiles.



Specifically, in the absence of water

meters the Water District does not have the ability to:

- 1) Monitor actual water used as opposed to amount of water treated;
- 2) Detect leaks within the system based on actual measured flows and comparisons to historical flow readings;
- 3) Monitor water usage seasonally and in periods of critical low flow or extended drought;
- 4) Accurately measure water usage to enable implementation and oversight of conservation programs
- 5) Assist customers in understanding how their irrigation strategies and habits affect overall peak season water consumption and system operation and efficiency; and
- 6) Make every user a self-interested user of the guardian of the water supply.

**Leak Detection**

The use of meters to support ongoing leak detection is considered to be especially critical to the District’s ability to increase efficiency, reduce water loss and treatment costs, increase conservation practices and customer awareness, and reduce vulnerability to periods of critical low flow. Currently, all lost water is treated water.

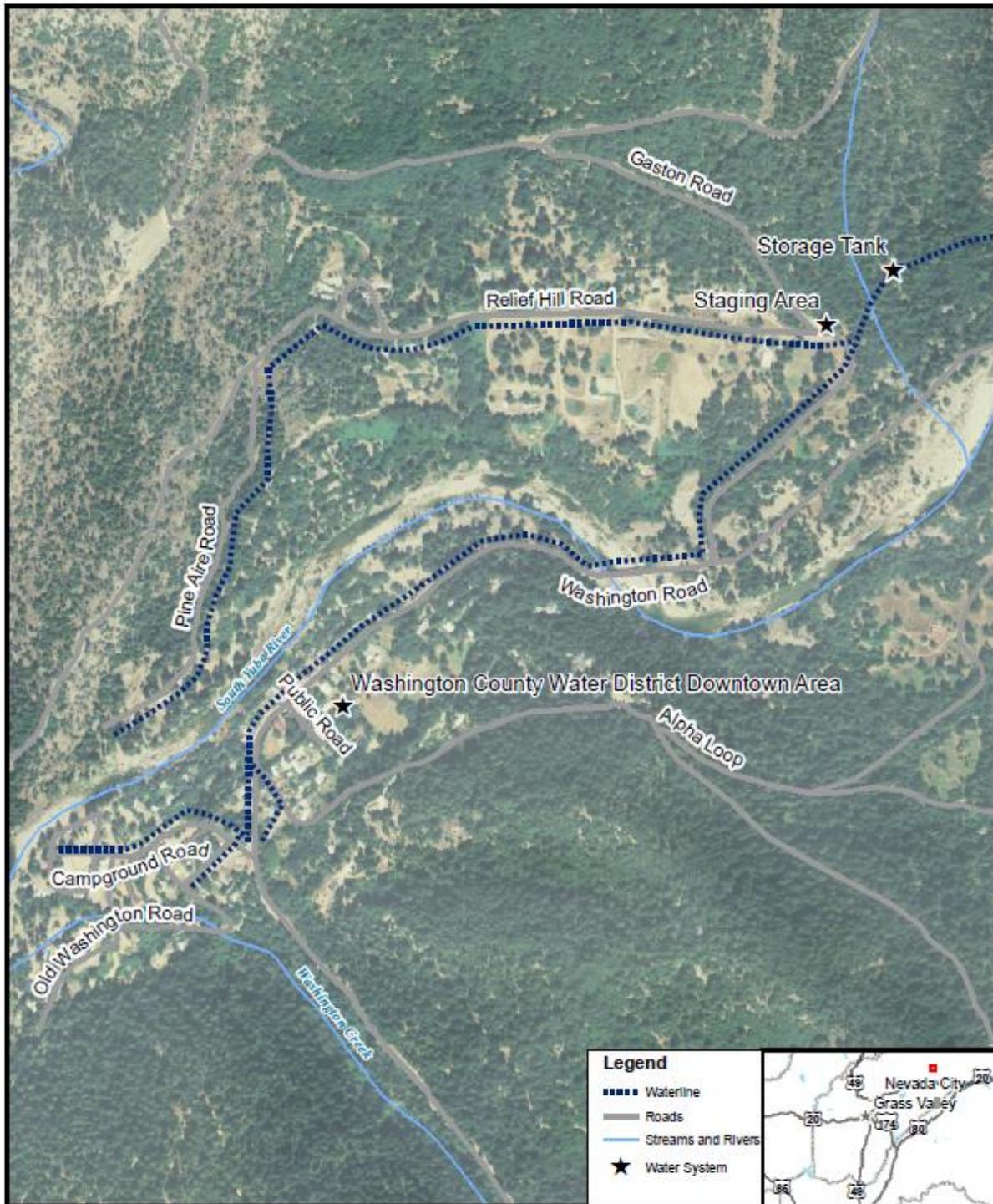
At present, the WCWD system managers do not know exactly how much of their treated water is lost to leaks and other inefficiencies, but estimate current losses at 15 percent minimum (based on leaks identified and repaired in recent years). Additionally, the District has no way to detect the location of suspected leaks beyond walking the entire water line, looking for surface indicators. In an area of highly fractured ground rock, where leaked water frequently makes its way to the river or disappears without ever surfacing, the “walk till you see it” method of leak detection is frustratingly inaccurate, costly, and frequently unproductive.

An evaluation of leaks detected over the previous 20 years indicates that the system experiences leaks of two distinct types: 1) small, chronic leaks that are difficult to detect or locate, and 2) leaks that become catastrophic with little or no warning. In the aggregate, the small leaks result in substantial water loss but are typically not of sufficient size to directly affect water pressure within the system (thus have no observable impact on water delivery, further reducing the detectability). Additionally, larger and even catastrophic leaks which directly affect water pressure must still be located by walking the line, because there is no way to determine where in the line the leak is actually occurring (barring obvious surface evidence). In the past, a percentage of these larger leaks have not been detected until substantial subsidence has occurred, resulting in the formation of sinkholes or surface ruptures (frequently of sufficient volume to create a “rooster tail” leak four to six feet in height). Finally, aside from direct observation, the District has no available method for determining if a leak is on the main line or along a customer service connection or lateral.

### **Phasing of Meter Installation**

Following consultation with District customers and the WCWD Board, it has been determined that installation of water meters will be accomplished in two phases. The first phase will result in water meters being placed along the main distribution line at regular intervals, as well as the placement of individual water meters on lateral service connections along Maybert and Relief Hill Roads, during placement and installation of related distribution and pressure system improvements (see Maybert Road and Relief Hill Road projects). This phase will enable the district to monitor for leaks within this portion of the system immediately and will support implementation of a pilot program for using individual lateral meters to identify and manage leaks between the main line and individual residences. This phase will also allow the District to refine implementation of the policies and procedures associated with metering (see tasks below). The second phase of water metering would result in the installation of water meters on both the main distribution system and residential service connections within the community of Washington, known as downtown. This task will precede the leak detection program in the downtown.





Washington County Water District Downtown Area



## WORK PLAN TASKS

### *Budget Category (a): Direct Project Administration*

#### **Task 1: Administration and Management**

The objective of this task is to keep the project on time and within budget, keep all participants informed of project progress and status of deliverables, establish and maintain reliable and accurate billing and recordkeeping, ensure that all requirements of the agreement with the DWR are met, and generally ensure smooth project implementation. The tasks for this budget category will comprise all non-construction project administration activities performed by Nevada City and CABY staff throughout the duration of the project and will include: development and completion of contractual paperwork, maintenance and reporting of expense documentation, oversight of project scheduling and contract/agreement compliance, preparation of monthly invoices, and completion of the final invoice.

##### Deliverables:

- ◆ Preparation of invoices and other deliverables as required.
- ◆ Accurate and accessible records

#### **Task 2: Labor Compliance Program**

The City will enter into a contract with North Valley Labor Compliance Services (Identification #2005.00466) to provide labor compliance consulting services for all Proposal project sponsors and relevant projects. The provided services are itemized in detail in the Introduction to the CABY Program.

##### Deliverables:

- ◆ Adherence to requirements of Labor Code Compliance Program including, but not limited to: review of certified payroll records, site monitoring, receipt of claims/complaints by workers, investigation of irregularities or claims, post-compliant audits (if necessary), reporting to DWR via the CABY monthly status reports, and any required withholding of contract payments.

#### **Task 3: Reporting**

The tasks for this budget category will include all activities necessary to support quarterly reporting, monthly invoicing and associated status reports, quarterly status reporting to the Nevada City Council (as project applicant) and the CABY IRWMP-RWVG, and submittal of the final report. These activities will include: tracking of the specific status of each project task, documentation of task status in an easy-to-understand and track format, creation of quarterly financial reports for the project (including percent complete of project activities), and preparation of all necessary reports (including the final report) per the format stipulated in the DWR Grant Agreement.

##### Deliverables:

- ◆ Submission of quarterly, annual, and final reports as specified in the Grant Agreement.
- ◆ Submission of quarterly reports to Nevada City and to the CABY-RWVG to enable their tracking of project status.

## ***Budget Category (b): Land Purchase/Easement***

No land purchase or easement confirmation is needed for this project as the improvements will be installed on existing lines and service connections/laterals.

## ***Budget Category (c): Planning/Design/Engineering/Environmental Documentation***

### **Task 4: Develop policies, administrative systems, and procedures to support ongoing metering activities**

#### **Develop WCWD Policies to Direct Use of Monitored Meter Information**

The WCWD has determined that information gathered as a result of the new meters will not be utilized to develop water system billings, except under drought conditions. Instead, the District seeks to use the data to identify system leaks, user volume profiles, evaluate system performance, and to assist in quantifying conservation-related water savings. The specific policies to support the District as it gathers and interprets data will need to be vetted by the community, as will the low-flow/drought pricing policies. CABY staff will work with the WCWD Board to develop preliminary policies, present the policies to area residents, receive feedback and suggestions, and produce final policies for board adoption and implementation.

#### **Develop and Implement Administrative Systems to Support Ongoing Monitoring of Metered Information**

The WCWD currently does not have sufficient office equipment to support the maintenance of long-term data management and collection. Nor does the District have personnel trained in the entry and maintenance of such data. As part of this project the District will purchase hardware and software to support the expanded data collection needs and will also train members of the board in data entry and database management.

#### **Develop Procedures for Illegal Hookups**

The Washington service area includes an unidentified number of illegal hookups. As a result of previous tasks, these illegal hookups will be systematically identified and mapped using GPS/GIS technology. This will be completed in conjunction with the mapping effort undertaken as part of the Leak Detection and Repair Project. The District will need to develop a specific set of policies to identify measures to respond to the presence of illegal hookups. The development of these policies will occur early enough in the process that the policies are actually in place prior to the identification of these illegal hookups.

#### **Develop Policies Regarding Replacement of Substandard Laterals and Connections**

Due to the rural nature of the community, lateral lines connecting individual residences to the main distribution system are frequently lengthy, cross roadways, change elevations, run down heavily used driveways, and/or are installed relatively close to the surface. Many of these lateral lines have not been serviced since their original installation, and some are still composed of their original metal, while others use a variety of types of plastic pipe. These collective attributes contribute to a variety of failures along residential laterals. In some

cases, these leaks have gone undetected for years due to the fractured ground rock in the area.

Due to the disadvantaged status of the community, many residents are unable to either upgrade or repair their lateral lines in any systematic way. The district will need to develop policies to address this situation early and frequent discussion of both the logistics and financing of residential lateral line leak detection and repair will be undertaken. The policies developed as a result of these community conversations will be formally adopted by the Board for implementation.

### **Develop Financing Component for Future Repairs**

Washington's disadvantaged status and the limited capacity of the District to assess special fees will necessitate careful planning for implementation of an ongoing leak repair program. Some detected leaks may be subject to repair during the detection process and will be among the first repairs accomplished under this program.

For more substantial leaks in difficult terrain where access is limited, or repairs are of a complicated nature, the repairs will be accomplished in the sequence identified above. It is likely that portions of this program will seek funding from outside sources (grants and loans).

Development of a financing plan will be necessary to fund repairs. Federal and state programs that support financing of rural water system improvements will be evaluated to determine if the leak repair program would be eligible for funding. CABY staff will assist the District in developing applications for suitable grant funding to implement the leak repair program as necessary. The District will work with the consulting engineer to identify components of the leak repair, which can be accommodated within their existing financial resources.

#### Deliverables:

- ◆ Policies, procedures, and administrative systems

### **Task 5: Final Design and Engineering for Meter Installation**

The goal of this task is to create final engineering drawings to support replacement construction activities. The project engineer will create plans and specifications for the infrastructure project.

#### Deliverables:

- ◆ Completion of project plans and specifications for meter specifications and placement strategy on main line distribution system.

### **Task 6: Meter Specifications, Evaluation, Pricing and Purchase (Planning)**

The goal of this task is to perform a systematic evaluation of the entire WCWD distribution system and determine the type and brand of meter most compatible with both the system and the District's capacities for monitoring. A preliminary evaluation undertaken by the WCWD General Manager and consulting engineer has determined that the installation of

meters that do not require manual reading will be preferable, as the potential labor costs involved in accessing each water meter individually from Maybert and Relief Hill Roads would be prohibitive.

Deliverables:

- ◆ Identification of appropriate meter specifications.
- ◆ Evaluation and pricing of meters with selection by General Manager and consulting engineer.
- ◆ Purchase of meters coordinated by consulting engineer and WCWD General Manager.

**Task 7: Develop Meter Installation Phasing Plan**

The specific phasing plan for meter installation will also be developed during this task. At present the meter installation strategy is based on the following assumptions:

- 1) Installation of meters on Maybert and Relief Hill Roads should occur after all of the infrastructure improvements in these areas are complete (i.e., Maybert Road Transfer and Distribution Line Placement –Relief Hill Road Flow Control Pressure Improvements, and the Relief Hill Road Level Control Altitude Valve Improvements. This timing will ensure that the meters are installed on a fully pressurized and updated system;
- 2) Installation of meters in the downtown area will occur after all system improvements for the outlying areas have been completed and the meters installed. This timing ensures that the downtown meters will be installed on a fully pressurized system; and
- 3) Phased installation and operation of meters will enable the District to implement policies in a systematic way, as the first phase of meter installation would result in approximately 122 meters being installed

Deliverables:

- ◆ Field evaluation by engineer and WCWD General Manager.

**Task 8: Environmental Documentation**

With the support of the project engineer and CABY staff, both of whom have completed extensive CEQA evaluations ranging from Categorical Exemptions to Environmental Impacts Reports for projects and jurisdictions across California, the WCWD will act as Lead Agency for the project. Extensive conversations with the Nevada County Department of Environmental Health (a Responsible Agency), because of their jurisdiction over the WCWD water system, indicate that staff from the NCDEH will be available to WCWD for early consultation on the project to apprise them of applicable rules and regulations, and provide guidance on applicable analysis methodologies or other water system-related issues. Preliminary evaluation indications are that this project will be assessed using a Negative Declaration process. As stated, with close coordination between WCWD Board and General Manager, the WCWD consulting team and the NCDEH will ensure an adequate and legally compliant environmental review.

Deliverables:

- ◆ Approved and filed CEQA documentation (Negative Declaration prepared by WCWD as the Lead Agency with support of the Responsible Agency, NCDEH).

**Task 9: Permitting**

Under current California State Water Board regulations, any project that creates a site disturbance of one acre or greater (including, in this case, staging areas, easement/survey brush removal activities, actual construction zone disturbance, etc.) will require a Storm Water Quality Management Plan and associated permit (Storm Water Pollution Prevention Plan--SWPPP). The project engineer will prepare and submit the necessary permit materials through the approved online SMARTS filing system. The Storm Water Program regulates storm water discharges from locations such as industrial facilities, construction sites, and small linear projects. The Storm Water Program is also responsible for processing, reviewing, updating, terminating Notices of Intent (NOIs), annual reports, and maintaining the billing status of each discharger.

***Budget Category (d): Construction/Implementation***

**Task 10: Pre-Construction Contracting – Request for Proposal through Notice to Proceed**

WCWD has established procedures and protocols for advertising, opening, and evaluating bids for construction services, as well as for awarding and developing contracts with construction companies. These policies and procedures will be used to identify the construction company which will install the meters during both project phases.

Pre-construction activities include, but are not limited to: developing technical specifications to support publication of the bid materials, a pre-bid meeting to respond to contractor questions (as required), review of submitted materials for completeness and qualifications/experience, and award of the contract in accordance with the applicable Public Contract Codes.

Deliverables:

- ◆ Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract, and final negotiated contract.

**Task 11: Mobilization and Site Preparation**

Mobilization and site preparation will include exposing the location of the residential or commercial lateral line, performing sufficient clearing and grubbing around the site to ensure access, and establishing a secure location for meter storage prior to installation.

There will likely be a single staging area for the project at the intersection of Relief Hill Road and Gaston Grade. Materials and supplies will be distributed from this staging area.

Deliverables:

- ◆ Establishment of local staging area.
- ◆ Brush clearing within construction areas with removal or chipping of excavated brush.

- ◆ Identification of access paths and routes to the existing facilities and proposed construction sites.
- ◆ All necessary site preparation and equipment/contractor mobilization activities complete.

**Task 12: Project Construction – Meter Installation**

The water meters for Maybert Road and Relief Hill Road will be installed first, then the meters will be installed in the downtown area. This sequencing will enable the District to implement the necessary training and data input with a relatively small number of meters prior to installing those meters in the downtown. A second reason for delaying the meter installation downtown is that the specific locations of many of the laterals are currently unknown, but will be detected during the proposed utility line location and GIS mapping tasks associated with the leak detection project.

Deliverables:

- ◆ Approximately 122 meters installed

**Task 13: Performance Testing and Demobilization**

The goal of this task is to ensure that the installed infrastructure performs in accordance with the design and manufacturers specifications. This task will include an initial system test, any necessary meter calibration, refining data collection systems as required, and returning each small disturbed area to pre-project conditions.

Deliverables:

- ◆ Post-project Demobilization Inspection Report (prior to final contractor payment)

***Budget Category (e): Environmental Compliance/Mitigation/Enhancement***  
N/A

***Budget Category (f): Construction Administration***

**Task 14: Direct Construction Administration**

Senior City staff will serve as construction managers for the process, as they have for similar projects successfully completed by the City. Supervision activities will include: on-site observations and inspections, inspection of materials prior to installation, conducting construction progress meetings as required, review of project status (percent complete versus percent spent), in-field problem solving during construction in response to unexpected field or system conditions, etc.

Deliverables:

- ◆ Project site cleared of all construction materials, equipment, and debris.

***Budget Category (g): Other***

**Task 15: Develop and Maintain CABY Project-specific Webpage**

The goal of this task is to ensure that all CABY members and members of the public have access to updated and thorough information about the implementation and characteristics of the project. Every CABY project that is implemented will be integrated into the CABY website through the creation of a project-specific webpage. Project plans, specifications, progress photographs, reports, status updates, and other similar materials will be posted or linked to this webpage. The webpages will be designed and brought online (activated within the first month after contract agreement). The page will be updated monthly.

Deliverables:

- ◆ Development, activation, and maintenance of project-specific webpage within the CABY website as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69–72 (developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).

**Task 16: Data Management**

The goal of this task is to ensure that all data gathered and developed as a result of the project is made available to state databases as well as CABY members and the interested public using data management and monitoring deliverables that are consistent with the IRWM Plan Standards and Guidance (as stipulated in the August 2010 IRWM Guidelines, page 20). In this case, the appropriate approach is identified in the CABY Planning Grant submittal which will direct the IRWMP data collection efforts, regardless of whether the planning grant is funded or not. Data will be made available to all CABY members and the general public through the existing CABY SWIM Database. Material will be uploaded as it becomes available, however most of the data will be posted upon completion of the primary project activities. The CABY technical committee will evaluate project-related data to determine its appropriateness for upload to relevant state databases.

Deliverables:

- ◆ Development, activation, and maintenance of project-specific webpage within the CABY website (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69–72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).
- ◆ Post-project information through the existing CABY SWIM Database (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).
- ◆ Submittal of project-specific data to the CABY Technical Advisory Committee tasked with screening project-specific data for submittal to and inclusion in state databases (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).

***Budget Category (h): Construction /Implementation Contingency***

WCWD uses a 15% contingency factor for all construction projects. This formula will be applied to this contract and it will be the responsibility of the construction manager to identify situations in which the contingency funds may be accessed.

**WASHINGTON COUNTY WATER DISTRICT  
SYSTEM-WIDE INSTALLATION OF WATER METERS  
Infrastructure Reliability, Conservation, and Efficiency Program**

**EXHIBITS**

1. Meter description and specifications
2. Preliminary identification of materials required to implement all Washington projects

## Exhibit 1

AMR-316-R3

# RadioRead® AMR

Meter Transceiver Unit (MXU)

### Model 520R Pit Set Unit

#### DESCRIPTION

**Application:** Sensus RadioRead Meter Transceiver Unit (MXU) model 520R is a pit set radio signal device which permits off site meter reading via radio signal in a pit set or vault environment. The unit allows for installation through the pit lid in order to maximize the best performance. This method of installation is highly recommended, but in cases where this is not an option the design allows for under the lid installations. The MXU interfaces with any compatible absolute encoder-equipped utility meter with a Sensus RadioRead interrogator device. The Sensus MXU eliminates a number of meter reading problems such as lockouts, curbside reading estimates, estimated bills and errors associated with manual meter reading methods.

The Sensus MXU is available in one and two port models. In addition to the two-port design, the MXU is compatible with the Sensus Multi-Read™ Module that permits two, four, or eight meter connections per MXU port. This feature provides enhanced cost effective AMR where multiple meter installations exist.

**TouchCoupler Design:** TouchCoupler utilizes the patented Sensus inductive coupling meter reading system (TouchRead) to communicate with its encoder. This allows for easy upgrade from Sensus TouchRead to RadioRead. And since the TouchRead system only requires two wires to communicate, the TouchCoupler unit enables customers who have only two-wire connections to their meters the ability to utilize that same wire instead of installing a three wire connection. The TC design provides the fastest, most efficient and most reliable connection available in the marketplace today. The TC design minimizes installation time, which results in a cost-effective solution.

**RadioRead Operation:** When used with a Sensus hand-held or vehicle interrogation unit, the Sensus RadioRead system provides two-way communications between the reading unit and system equipped utility meters. The MXU connected to the meter receives an activation wake up signal from the interrogation unit. The MXU then obtains and transmits all of the meter's absolute encoder information which includes the identification number and meter reading. Low battery indicator is also transmitted. After the interrogation unit receives valid data, it transmits an acknowledgment signal back to the MXU which returns it to the power down mode. This helps maintain battery life and also optimizes the efficiency of the system by eliminating unnecessary radio transmissions.

**RadioRead Integrity:** When interfaced with an absolute encoder, RadioRead system meter reading is virtually error free. The meter read is taken from the actual positions of the encoder's odometer wheels to ensure valid up-to-date readings. Any errors or nonreads are immediately indicated on the meter reading equipment. This information can also be generated on management reports when the data is downloaded at the end of the reading cycle. In addition, high/low reading parameters can also be verified during the meter reading process.

**RadioRead Features:** The RadioRead MXU can identify leaks / continuous consumption as well as offer a tool for



#### SPECIFICATIONS

<b>SERVICE</b>	Pit set installation interfacing utility meter to Sensus RadioRead System. Unit fits in 1-3/4" diameter hole in pit lid or under the lid installation. Can attach to meter pit lid thickness of 1-3/4"
<b>PHYSICAL CHARACTERISTICS</b>	4.43" W x 5.09" H x 4.6" D
<b>WEIGHT</b>	1 lb (0.4536 Kg.)
<b>COLOR</b>	Black
<b>POWER</b>	3.6 Volt Lithium Chloride battery with hybrid layer capacitor (HLC)
<b>RF TRANSMITTER</b>	Direct Sequence Spread Spectrum with synthesized channels, crystals controlled
<b>RF RECEIVER</b>	Amplifier - Sequenced Hybrid
<b>APPROVALS</b>	US: FCC Part 15 Canada: Industry Canada
<b>OPERATING TEMPERATURE</b>	-30° F to +165° F -34° C to +74° C
<b>OPTIONS</b>	Dual or single port availability; Touchcoupler only, wired only, TouchCoupler and wired combination options available, external battery connector option (TouchCoupler connection available only with Sensus meters)
<b>INSTALLATION ENVIRONMENT</b>	100% condensing, water submersible
<b>COMPATIBILITY</b>	TouchCoupler and Wired Version: Sensus ECR11 and ICE water registers Wired Version Only: Neptune ARB VI (ProRead); Badger ADE; Elster (Sensus Protocol); MultiRead modules for two, four or eight meters per port (Sensus only).
<b>WARRANTY</b>	20 years - Refer to Sensus G-500 for warranty.

examining hourly readings of encoders. The leak detection MXU monitors the encoder at regular intervals. If continuous usage occurs over a period of time, during the next interrogation of the MXU a message is sent identifying that a possible leak may exist. The MXU also allows for hourly readings to be taken and stored internally. This feature enables the MXU to store 45 days worth of hourly readings that can be extracted via the Sensus AutoGun and AR5000 handheld or "over the air" with RadioRead equipment.

**Programmability:** For special meter reading applications such as commercial routes and multi-utility installations, the MXU can be programmed to respond only to certain meters through the use of class and password codes.

Page 1 of 1

AUTHORIZED SENSUS DISTRIBUTOR



P.O. Box 487 | 450 North Gallatin Avenue  
Uniontown, PA 15401 USA  
T: 1-800-638-3748  
F: 1-800-888-2403  
www.sensus.com/water  
h2oInfo@sensus.com

# RadioRead®

## Specifications

### For Automatic Meter Reading System Meter Transceiver Unit (MXU)

#### GENERAL

The following specification describes the requirements for a radio based automatic meter reading system.

The specification will cover the meter transceiver unit (MXU). If meters and other supporting equipment are included in this proposal or bid, they will be covered under separate specifications.

#### RADIO SYSTEM DESCRIPTION

The radio AMR system will have the ability to read meters equipped with absolute encoder registers using either a hand-held interrogation unit or a mobile interrogation unit. The encoder registers will be connected to a MXU that will provide the radio link from the meter to the interrogation unit.

The radio AMR system must utilize a true two-way (interrogate and respond) communication protocol that enhances system integrity and reliability.

Upon completion of the meter reading route, the meter reading data is downloaded from the interrogation unit, using the radio AMR software. The radio AMR software will prepare and format the meter reading data for the printing of selected management reports and the transfer of the meter reading data to the billing software for customer invoicing.

#### FUNCTION

The MXU will be the interface between the encoded register and the radio interrogation unit. The MXU will power up when a valid alert signal is received from the reading interrogation unit. The interrogation unit will be either a hand-held or vehicle mounted device. The MXU and interrogation device will utilize a two-way communication protocol. Following the alert signal from the interrogation unit and transmission of meter reading data, the interrogation unit will signal to the MXU that valid reading parameters were met and will instruct the MXU to power down.

The MXU must have the capability of utilizing a reading cycle code which is an element of the transmission protocol. The reading cycle code is utility controlled and changes with each reading cycle. Once an MXU has been successfully interrogated and powered down using a specific reading cycle code, the MXU will not alert again until the cycle code is changed.

The MXU will have a fixed factory set non-programmable identification number to insure absolute identity of the MXU within the radio AMR system.

In addition, the MXU will have the capability of storing a utility defined programmable class code. The class code will be used to separate different classes of meters and differentiate the MXU in multi-utility installations.

The MXU must have the capability of offering leak detection / continuous consumption monitoring. The MXU must be able to indicate that there has been an occurrence of continuous flow for a field programmable period of time (minimum 24 of hours). Once communicated to the interrogation device, the leak detection indicator in the MXU must either reset if there is no leak / continuous flow currently or continue to stay set if a leak / continuous flow is still present.

The MXU must offer hourly readings stored internally for a rolling 45 days. This data must be able to be extracted via a TouchRead device and handheld or laptop as well as wirelessly. This wireless extraction can be done via a radio equipped handheld or vehiclebase system. The software that downloads the data from the interrogation device (handheld or vehicle-base) to must provide views and graphical presentations of the data that was extracted.

#### FCC REGULATIONS

All equipment must comply with current Federal Communications Commission (FCC) requirements which include proper labeling of the MXU. The bidder must have supporting documentation available upon request to verify compliance.

#### MODULATION

The radio frequency transmission from the MXU to the interrogation unit must utilize direct sequencing spread spectrum, operating in the non-licensed 902-928 MHz band. It shall be alerted utilizing a message broadcast on a licensed 956 or 952 MHz channel from the interrogation unit.

#### HARDWARE

The bidder must be able to supply separate units that accommodate pit and non-pit environments to complement the various installations within the utility. These various enclosures must house the complete single or two-port MXU units which include electronics, battery compartment, and wire connections. When necessary, the port inputs should support multi-meter attachments (port expanders). The MXU will also have an internal antenna as a standard.

The pit style units should have the radio and original battery encased in high density polyethylene (HDPE) to provide protection for the electronic components and be capable of being submersed in a water filled meter box without damage. The pit style unit must be able to be installed through a meter pit lid utilizing a 1-3/4" diameter hole or under the meter pit lid if necessary. When installing the radio through the meter pit lid, the radio must be secured to the meter pit lid by use of a threaded nut. Holes in the housing should be available to allow the utility the ability to secure seal wires to indicate tampering.

The non-pit style units should have the radio and battery potted in material to protect the components from corrosion due to high humidity environments. It must have a tamper-resistant locking screw so that the enclosure cannot be opened by non-utility personnel.

The internal parts of the MXU can only be accessed by utility personnel using a manufacturer supplied field tool. The field tool **must not** be commercially available. Seal wiring or a frangible head seal screw is not acceptable.

Both the pit and non-pit style units must be able to connect to Sensus Metering Systems' encoders utilizing the 2-wire inductive coupling TouchRead® system components (TouchPads or TouchRead® Pit Lid TP/ PL sensors) which eliminates the use of additional connectors such as gel caps. The MXU must be also supplied with the capability of connecting via a 3-wire connection to an encoder if needed.

The MXU must have a field attachable battery cartridge option available. The battery will be used in conjunction with a hybrid layer capacitor to insure longevity. The battery cartridge must be date stamped for ease of age identification for warranty purposes.

The MXU must contain wiring diagram labels within the unit to aid in and simplify installation. All wires must be color coded and easily identifiable.

All exposed plastic must be UV stable to prevent discoloration.

### INSTALLATION AND TRAINING

Complete installation and operating instructions must be included for all of the supplied hardware and software equipment. Proposal must include any additional costs for training and assistance to install and begin operation of the MXUs. The vendor will also inform the customer what pre-installation activities are to be completed and what support materials will be needed for the initial installation.

### PERFORMANCE WARRANTIES

In evaluating bid submittals, warranty coverage will be considered. The vendor shall be required to state its warranty and/or guarantee policy with respect to each item of proposed equipment. The procedure for submitting warranty claims must also be provided.

As a minimum, the electronics shall be warranted for twenty (20) years from date of shipment for defects in materials and workmanship. Battery warranty shall be twenty (20) years from date of factory shipment. For additional information on warranties refer to Sensus publication G-500.

### SYSTEM MAINTENANCE AND SUPPORT

In addition to warranty periods, vendors are required to supply information on required or optional maintenance programs beyond the warranty period for both hardware and software. Features of those programs shall also be included with any additional charges such as hourly rate for on-site and/or remote support. The location of and procedures for obtaining such support shall be stated.



Exhibit 2

Dec 08 10 04:20p R To Z Supply 5302730892



**ATO Z SUPPLY**  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
 (530) 273-6608



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

CUST # 9115  
 TERMS: NET 10TH

ORDER # 154181  
 DATE: 12/08/10  
 CLERK: DW  
 TERM # 553

TIME: 4:22  
 \*\*\*\*\*  
 ORDER \*\*\*\*\*

PAGE NO 2

QUANTITY	UM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION
5000	EA	4C900CCL150	PIPE, 4' PVC C-900 PIPE CL. 150	1000	2.44 /EA	12,200.00*
120	EA	SR11	WATER METER, 5/8X3/4 SENSUS CF		161.11 /EA	19,333.20*
123	EA	MXU	WATER METER, REMOTE READER ADD-N		216.66 /EA	26,649.18*
240	EA	34SMT	3/4" X 1-1/2" SHORT METER TAIL		10.83 /EA	2,599.20
120	EA	34CS	3/4" BRASS CURB STOP STRAIGH	SO	57.55 /EA	6,906.00*
120	EA	34GV	3/4" BRASS GATE VALVE	DSR02	7.12 /EA	854.40*
3	EA	SR11112	1-1/2" WATER METER W/ TAIL SENSUS		657.35 /EA	1,972.05*

*①-② District prefers to use meters w/ remote reader - improve frequency + ease of reading also record keeping - greatly reduce operation expense*

\*\*ORDER\*\*ORDER\*\*ORDER\*\*  
 DEPOSIT AMT .00  
 BALANCE DUE 180644.41

ACE REWARDS ID # 1973135770 )  
 (JOHN STARK )

TAXABLE 166357.01  
 NON-TAXABLE 355.00  
 SUB-TOTAL 166712.01  
 TAX AMOUNT 13932.40  
 TOTAL ORDER 180644.41

X Received By \_\_\_\_\_

Account are due and payable by the 10th of the month following purchase. A FINANCE CHARGE of 1.5% per month (18% per annum) will be charged on past due accounts. Minimum finance charge of \$1.00. No charges shown on past due accounts. Services of merchandise classified as a marketing charge. No claims allowed unless made within 30 days of receipt of goods.



**A TO Z SUPPLY**  
 A BRASS VALLEY INVESTMENT GROUP, LLC COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
 (530) 273-6608

**ACE**  
 Hardware

WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

CUST # 9115  
 TERMS: NET 10TH

ORDER # 164761  
 DATE : 12/08/10  
 CLERK: DM  
 TERM # 553

TIME : 4:30  
 \*\*\*\*\*  
 ORDER \*\*\*\*\*

QUANTITY	UM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION	
11000	EA	8DICT150	8 DUCTILE IRON CL150 TYTON 350	1000	14.17 /EA	155,870.00*	
5000	EA	4DIS2	4" DUCTILE IRON PIPE 350 TITON	1010	12.95 /EA	64,750.00*	
			4" <i>CAPO</i>				
**ORDER**ORDER**ORDER**ORDER**						TAXABLE	220620.00
DEPOSIT AMT						NON-TAXABLE	0.00
BALANCE DUE						SUB-TOTAL	220620.00
						TAX AMOUNT	18476.93
						TOTAL ORDER	239096.93

**X**  
 Registered by \_\_\_\_\_

Accounts are due and payable by the 15th of the month following purchase. A 5% LATE CHARGE of five per cent (5% per annum) will be charged on past due accounts. Payment in full is required. No charges allowed on past due accounts. Returned merchandise is subject to a non-refundable charge. No claims allowed unless made within 3 days after receipt of goods.

**WASHINGTON COUNTY WATER DISTRICT  
DOWNTOWN LEAK DETECTION AND REPAIR  
(Needs Assessment and Feasibility Study with Repair of Critical Leaks)  
Infrastructure Reliability, Conservation, and Efficiency Program**

**OVERVIEW**

An evaluation of leaks detected over the past 20 years indicates that the system experiences leaks of two distinct types: 1) small, chronic leaks that are difficult to detect or locate, and 2) leaks that become catastrophic with little or no warning. In the aggregate, the small leaks result in substantial water loss but are typically not of sufficient size to directly affect water pressure within the system (thus have no observable impact on water delivery, further reducing the detectability). Additionally, larger and even catastrophic leaks that directly affect water pressure must still be located by walking the line, because there no way to determine where in the line the leak is actually occurring (barring obvious surface evidence). In the past, a percentage of these larger leaks have not been detected until substantial subsidence has occurred, resulting in the formation of sink holes.



Along the Maybert Road distribution system in particular, surface ruptures can result in high-volume leaks that remain undetected for weeks at a time. Not infrequently, the leaks are of sufficient magnitude to create a “rooster tail” 4 to 8 feet in height. Finally, aside from direct observation, the District has no available method for determining if the leak is on a main line or along a customer service connection or lateral. Because of the fractured ground rock in the area, leaked water drains rapidly into the Yuba River. Therefore, the small pools of water that form as a result of a leak are a function of the volume of water that is leaking rather than the geologic conditions at the site. Water drains away from these temporary leak-fed pools almost immediately once the leak is repaired. Although the concentration of chlorine in the leaked water is not high, introduction of treated water into the Yuba River is deemed undesirable.

Although the WCWD water distribution system has been active along essentially the same alignment since the 1850s, no formal map of any of the system components currently exists. Knowledge of the system is largely anecdotal and experiential and is passed from general manager to general manager. The absence of any formal map greatly impedes the capacity of the District to engage in systematic capital improvement planning, organized leak detection and documentation of emergency and ongoing maintenance of the system.

## WORK PLAN TASKS

### ***Budget Category (a): Direct Project Administration Costs***

#### **Task 1: Administration and Management**

The objective of this task is to keep the project on time and within budget, keep all participants informed of project progress and status of deliverables, establish and maintain reliable and accurate billing and recordkeeping, ensure that all requirements of the agreement with the DWR are met, and generally ensure smooth project implementation. The tasks for this budget category will comprise all non-construction project administration activities performed by WCWD and CABY staff throughout the duration of the project and will include: development and completion of contractual paperwork, maintenance and reporting of expense documentation, oversight of project scheduling and contract/agreement compliance, preparation of monthly invoices, and completion of the final invoice.

##### Deliverables:

- ◆ Preparation of invoices and other deliverables as required.
- ◆ Accurate and accessible records

#### **Task 2: Labor Compliance Program**

WCWD will enter into a contract with North Valley Labor Compliance Services (Identification #2005.00466) to provide labor compliance consulting services for all Proposal project sponsors and relevant projects. The provided services are described in detail in the Introduction to the CABY Program.

##### Deliverables:

- ◆ Adherence to requirements of Labor Code Compliance Program including, but not limited to: review of certified payroll records, site monitoring, receipt of claims/complaints by workers, investigation of irregularities or claims, post-compliant audits (if necessary), reporting to DWR via the CABY monthly status reports, and any required withholding of contract payments.

#### **Task 3: Reporting**

The tasks for this budget category will include all activities necessary to support quarterly reporting, monthly invoicing and associated status reports, quarterly status reporting to the Nevada City Council (as project applicant) and the CABY IRWMP-RWVG, and submittal of the final report. These activities will include: tracking of the specific status of each project task, documentation of task status in an easy-to-understand and track format, creation of quarterly financial reports for the project (including percent complete of project activities), and preparation of all necessary reports (including the final report) per the format stipulated in the DWR Grant Agreement.

##### Deliverables:

- ◆ Submission of quarterly, annual, and final reports as specified in the Grant Agreement.
- ◆ Submission of quarterly reports to Nevada City and to the CABY-RWVG to enable their tracking of project status.

## ***Budget Category (b): Land Purchase/Easement***

No land purchase or easement confirmation is needed for this project as the improvements will occur within the existing easements and rights-of-way in the downtown area.

## ***Budget Category (c): Planning/Design/Engineering/Environmental Documentation***

### **Task 4: Field Assessment and Evaluation (Planning)**

The goal of this task is to perform a systematic evaluation of the existing downtown distribution system, with the intent of developing a phased strategy for leak detection and repair.

#### **Task 4.1 Prepare Leak Detection and Repair Needs Assessment**

As stated in the introduction to the WCWD project suite and also in detail in Mapping project component, the community currently has no formal map of the water treatment and distribution infrastructure. This lack is addressed by the preparation of a GIS-based map for the entire water system. The portion of the map developed for the downtown will be created in collaboration with a company that specializes in the location of pipes and subsurface utilities. This initial mapping will include the location of the main line distribution system, service junctions, service connections and lateral lines. This effort will also include precise mapped locations and flagging of the sites for the installation of water meters (described later in this work plan).

As part of this mapping effort, not only will the pipes and other infrastructure be located, but a preliminary detection of leaks in the main distribution system will also be accomplished. There are no detected surface seepages currently identified in the downtown area.

Once the downtown system has been mapped, it will be possible for the project engineer and the pipeline/utility location specialist to collaborate to develop a preliminary leak detection methodology, approach, and needs assessment. This approach will take into account the installation and activation of all the WCWD projects and the installation of water meters throughout the system (but particularly in the downtown, more densely-populated service area).

The needs assessment will catalog leaks detected during the mapping effort and use the map prepared as part of Task 4.1 to develop a zonal map of the downtown area, and detail the extent and magnitude of leaks (in both main line and service/connection laterals) detected throughout the downtown area in this preliminary assessment. The assessment will inform the feasibility study in Task 4.2, below.

#### Deliverables:

- ◆ Preliminary field evaluation by engineer and WCWD General Manager and pipeline/utility location specialist.
- ◆ List and mapped location of preliminarily detected leaks on the downtown mainline distribution system.
- ◆ Creation of a zonal map for the downtown area.
- ◆ Completion of needs assessment detailing the extent and magnitude of leaks within the downtown area.

#### **Task 4.2 Prepare Leak Repair Feasibility Study**

With a system the age of Washington's (many downtown distribution and lateral service connections dating for the mid to late 1800's), the likelihood of detecting leaks during the Task 4.1 activities is very high. The objective of the feasibility study will be to develop a systematic leak repair methodology and approach for the WCWD to implement. Based on the results of the needs assessment, the project engineer, WCWD General Manager, and the pipeline/utility location specialist will evaluate the feasibility of a downtown-wide leak repair program. This evaluation will include both proactive (repair replacement) and reactive (repair) components. The feasibility study will take into account the projected WCWD revenues and available funds (as determined in the WCWD Organizational Audit, described below), the magnitude and location of the detected leaks, the relative ease of access to leak sites, cost of water to WCWD, and mechanisms available to finance needed repairs. All of this information will feed into a cost/benefit analysis done for all detected leaks in the WCWD service area.

Finally, the engineer and pipeline/utility location and leak detection specialist will develop clear and specific criteria to use in ranking the detected leaks. Any leaks which are considered critical under the ranking system, likely including the cost of repair and the results of a cost/benefit analysis, will be repaired under this project agreement. In this way, the most critical (most wasteful) leaks will be repaired immediately, thereby saving more water and more money in this severely disadvantaged community. Lesser leaks will be the subject of the feasibility study.

##### Deliverables:

- ♦ Prioritization mechanism for order of repair of leaks found.
- ♦ Repair strategy for any identified critical leaks.
- ♦ Leak Repair Feasibility Study with ranking criteria, all identified leaks ranked and mapped, a construction repair/replacement strategy (both proactive and reactive), preliminary engineering estimates for needed repairs, preliminary specifications for typical repairs, and phasing and sequencing for repair/replacement activities.

#### **Task 5: Design and Engineering for Repairing Detected Critical Leaks**

The goal of this task is to create final engineering drawings, specifications and repair orders to support repair and/or replacement construction activities for leaks identified as critical during the Task 4 activities. The project engineer will create plans and specifications for the infrastructure project. These specifications will include the already-written specs of other water districts in the CABY region, including those of EID.

##### Deliverables:

- ♦ Completion of project plans and specifications at the 90 percent and final level.

#### **Environmental Documentation**

This project is anticipated to be categorically exempt, and therefore will not require associated environmental compliance or mitigation measures to be implemented. Because WCWD cannot

know for sure the leaks that will be discovered in the system, if any environmental compliance is found to be necessary for leak repair, it will be completed at that time.

#### **Task 6: Permitting**

Under current California State Water Board regulations, any project that creates a site disturbance of one acre or greater (including, in this case, staging areas, easement/survey brush removal activities, actual construction zone disturbance, etc.) will require a Storm Water Quality Management Plan and associated permit (Storm Water Pollution Prevention Plan--SWPPP). The project engineer will prepare and submit the necessary permit materials through the approved online SMARTS filing system. The Storm Water Program regulates storm water discharges from locations such as industrial facilities, construction sites, and small linear projects. The Storm Water Program is also responsible for processing, reviewing, updating, terminating Notices of Intent (NOIs), annual reports, and maintaining the billing status of each discharger.

### ***Budget Category (d): Construction/Implementation***

#### **Task 7: Pre-Construction Contracting - Request for Proposal through Notice to Proceed**

The general contractor selected for the project will coordinate with the underground utility location specialist to identify high-priority and/or high-volume leaks within the downtown area. If necessary, this will include development of bid materials for additional technical support.

##### Deliverables:

- ◆ Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract and final negotiated contract.

#### **Task 8: Mobilization and Site Preparation – Leak Repair**

The downtown area is characterized by a long, relatively straight stretch of paved road intersected by narrow, unpaved driveways and alleys. Therefore, unlike the Maybert Road project, which will require extensive brush clearing and grubbing, site preparation in the downtown area will focus on creating access to the detected leak while allowing residents free access to homes and businesses.

There will likely be a single staging area for the project. Materials and supplies will be distributed from this staging area.

##### Deliverables:

- ◆ Establishment of local staging area.
- ◆ Brush clearing within construction areas with removal or chipping of excavated brush.
- ◆ Identification of access paths and routes to the existing facilities and proposed construction sites.
- ◆ All necessary site preparation and equipment/contractor mobilization activities complete.

#### **Task 9: Project Construction**

Using the criteria developed in Task 4, the detected leaks will be prioritized strictly based on their existing or potential severity. The goal of this task is to undertake reactive repairs to documented leaks. Therefore, smaller or less significant detected leaks will be allowed to continue and will be prioritized in the context of

the feasibility study in Task 4. Because of the close confines in certain portions of the downtown, access to leak sites by heavy equipment may be constrained. WCWD has extensive experience in accessing and repairing leaks in this environment and will work closely with the contractor to ensure that leak repair does not compromise other existing utility or infrastructure components.

Deliverables:

- ◆ Prioritized leaks for immediate repair
- ◆ Repair of priority leaks (based on available funds)

**Task 10: Performance Testing and Demobilization**

Once leaks have been repaired, the site will be returned to its original condition. Particular attention will be paid to soil compaction and re-leveling the road surface. Any rubbish, unused construction materials, of excavated soils will be removed from the downtown area.

Deliverables:

- ◆ Post-project Demobilization Inspection Report (prior to final contractor payment).

***Budget Category (e): Environmental Compliance/Mitigation/Enhancement***

This project is anticipated to be categorically exempt, and therefore will not require associated environmental compliance or mitigation measures to be implemented. Because WCWD cannot know for sure the leaks that will be discovered in the system, if any environmental compliance is found to be necessary for leak repair, it will be completed at that time.

***Budget Category (f): Construction Administration***

**Task 11: Direct Construction Administration**

Senior City staff will serve as construction managers for the process, as they have for similar projects successfully completed by the City. Supervision activities will include: on-site observations and inspections, inspection of materials prior to installation, conducting construction progress meetings as required, review of project status (percent complete versus percent spent), and in-field problem solving during construction in response to unexpected field or system conditions.

Deliverables:

- ◆ Schedule of values, meeting minutes, inspection reports, 11- month warranty inspection report.

***Budget Category (g): Other***

**Task 12: Develop and Maintain CABY Project-specific Webpage**

The goal of this task is to ensure that all CABY members and members of the public have access to updated and thorough information about the implementation and characteristics of the project. Every CABY project implemented will be integrated into the CABY website through the creation of a project-specific webpage.

Project plans, specifications, progress photographs, reports, status update and other similar materials will be posted or linked to this webpage.

Deliverables:

- ◆ Project webpage hosted on CABY website, updated with all current project information.

**Task 13: Data Management**

The goal of this task is to ensure that all data gathered and developed as a result of the project is made available to state databases as well as CABY members and the interested public using data management and monitoring deliverables that are consistent with the IRWM Plan Standards and Guidance (as stipulated in the August 2010 IRWM Guidelines, page 20). In this case, the appropriate approach is identified in the CABY Planning Grant submittal which will direct the IRWMP data collection efforts, regardless of whether the planning grant is funded or not.

Deliverables:

- ◆ Development, activation, and maintenance of project-specific webpage within the CABY website (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69–72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).
- ◆ Post project information through the existing CABY SWIM Database (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69-72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).
- ◆ Submittal of project-specific data to the CABY Technical Advisory Committee tasked with screening project-specific data for submittal to and inclusion in state databases (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69 - 72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57).

**Task 14: Compile Electronic GIS Database of Water System Infrastructure**

The WCWD currently has no formal of the system. Knowledge of the various system components is essentially passed from general manager to general manager using a “walk of the system.” While individual components have design specifications and drawings, such as the treatment plant, the system as a whole is totally unmapped. There is currently no way for WCWD personnel to specifically identify the location of any single portion of the system in a precise way. This lack greatly compounds the response time to leaks and repairs, as water must be tracked to its source by a visual inspection, that location marked on the nearest road segment with a flag, and the leak itself marked with a similar flag. Additionally, the District’s capacity to plan for future system improvements is severely constrained by this lack of a system map.

A GIS specialist will prepare a map for the system in three phases. The first phase will consist of field surveying and measurement using a hand-help GPS device (see Exhibit 1). Measurements will be taken at appropriate intervals along the Maybert Road distribution line. Coordinates will be determined for the perimeter, as well as the actual location, of each major infrastructure component. These activities

will be coordinated with the underground utility location specialists to ensure that the distribution system within the downtown area is accurately mapped based on concrete data, rather than anecdotal information. During phase two the data collected in the field will be input using the ArcPad software to develop a preliminary system map, which will then be ground-truthed prior to finalization. During the third phase, all of the leak detection information generated as a result of the leak detection and repair effort characterized above will be input into the system to refine the available data. During this phase, the as-built locations of the rest of the Washington projects included in this proposal will be integrated into the database. Finally, a single hand-held GPS device will be provided to the District and a GIS specialist will instruct staff in its use and create a simple but detailed manual to guide future users.

The availability of the hand-held GPS device will enable District staff to more aggressively map zones within the downtown area that are particularly leak-prone, therefore supporting their “replace rather than repair” upgrade strategy.

Deliverables:

- ◆ Database containing all information gathered during field investigations
- ◆ Preparation of a series of maps illustrating all system infrastructure components
- ◆ Training of WCWD staff in updating of the database via the hand-held GPS device
- ◆ GIS technical consultant will provide updates to the maps and ongoing training to staff for the duration of the agreement.

***Budget Category (h): Construction /Implementation Contingency***

A 15 percent standard contingency is included in the budget and it is calculated based on industry norms.

**WASHINGTON COUNTY WATER DISTRICT  
DOWNTOWN LEAK DETECTION AND REPAIR  
(Needs Assessment and Feasibility Study with Repair of Critical Leaks)  
Infrastructure Reliability, Conservation, and Efficiency Program**

**EXHIBITS**

1. Hand-held GPS product description
2. ArcView Description
3. Leak Survey Equipment Example
4. Preliminary identification of materials required to implement all Washington projects

## Exhibit 1

# NAUTIZ X7

## Ahead of the curve

The Nautiz X7 exemplifies the evolution of handheld computers. Packed with innovative advancements in PDA technology, it surpasses everything else on the market with its mix of power, functionality and ruggedness. The Nautiz X7 can do everything you need to do – and some things you may not have even known you could do.

Performance begins with speed and power, and the Nautiz X7 offers a lively 806 MHz Xscale processor with 128 MB of onboard RAM and a generous 4 GB of Flash storage. And this field-ready workhorse will go all day and more with a 5600 mAh Li-ion battery that will operate up to 12 hours on a single charge. No other PDA provides more storage or longer standard battery life.

The Nautiz X7 also delivers an unprecedented package of capability. It starts with integrated SIRF Star III GPS, Bluetooth 2.0 and 802.11b/g WLAN functionality, plus a built-in 3-megapixel camera with autofocus and an LED flash. And the Nautiz X7 goes above and beyond with innovations such as 3G capability for GSM/UMTS phone and data transmission, an integrated compass and altimeter, and even a g-sensor/accelerometer that can measure speed, vibration and rotation, opening the door to countless application possibilities. The Windows Mobile 6.1 operating system, 3.5-inch VGA touchscreen display and numeric keypad make this handheld as easy to operate as it is groundbreaking.

Of course, a tool with all these features won't do much good if it isn't built tough enough to take virtually anywhere. With an IP67 rating that's unsurpassed among handheld computers, the rugged Nautiz X7 is impervious to both dust and water, and it can withstand repeated drops, vibration, and operating temperatures from -22 °F to 140 °F. It weighs in at just 17 ounces, and it's compact enough to operate in one hand.

With a combination of features and rugged performance you can't find in any other handheld, the Nautiz X7 is leading the way in mobile computing.

[www.nautiz.com](http://www.nautiz.com)

<b>Size</b>	7" (179 mm) x 3.8" (97 mm) x 1.5" (37 mm)
<b>Weight</b>	17 ounces (490 g) including rechargeable battery
<b>Environment</b>	
<b>Operating:</b>	-22 °F to 140 °F (-30 °C to 60 °C) MIL-STD 810G, Method 501.4, Procedure II, Method 502.4, Procedure I, II & III
<b>Storage Temp Shock Drop:</b>	-40 °F to 158 °F (-40 °C to 70 °C) MIL-STD-810G, Method 503.4, Procedure I (-40 °F/158 °F) 26 drops from 4 ft (1.22 m) 6 additional drops at -22°F (-30 °C), 6 additional drops at 140 °F (60 °C) MIL-STD-810G, Method 514.5 Procedure I
<b>Vibration Sand &amp; Dust:</b>	IP67, IEC-529 Dust: MIL-STD-810G, Method 516.5, Procedure IV
<b>Water:</b>	IP67, IEC 529 MIL-STD-810G, Method 512.4, Procedure I, Water Jet 12.5 mm dia. @ 2.5 – 3m, 100 Liter/min.
<b>Humidity:</b>	MIL-STD-810G, Method 507.4, 90% RH temp cycle 30–60 °C
<b>Altitude:</b>	15,000 ft (4572 m), MIL-STD-810G, Method 500.4, Procedures I, II & III
<b>Processor/memory</b>	Processor: Marvell PXA310 806 MHz Memory: 128 MB SDRAM
<b>Data Storage</b>	4 GB INAND Flash
<b>Operating System</b>	Microsoft Windows® Mobile 6.1 Classic (N07-B) Microsoft Windows® Mobile 6.1 Professional (N07-W)
<b>Screen</b>	480x640 pixel Anti-glare 3.5" VGA resolution, touchscreen, sunlight readable 262K colors (18 bit), TMR Technology with LED backlight
<b>Keypad</b>	Numeric keypad with backlighting, on-screen QWERTY keyboard
<b>Battery</b>	5600 mAh Li-ion battery pack
<b>Connections</b>	1 x USB host and client (Mini AB USB OTG, 1.2 host, 2.0 client) Power Jack 1 x SDIO slot 9-pin serial RS-232 connector
<b>Communication</b>	PAN: Bluetooth 2.0 + EDR WLAN: Integrated 802.11 b/g GSM/UMTS (HSDPA/EDGE) Integrated speaker & microphone with noise cancellation
<b>Navigation</b>	Integrated GPS SIRF Star III chipset with WAAS/EGNOS support Integrated E-Compass and G-Sensor Integrated Altimeter
<b>Camera</b>	Integrated 3 megapixel camera with autofocus and LED Flash
<b>Barcode Scanner</b>	Integrated laser 1D barcode scanner Optional 2D Imager
<b>Options</b>	• RFID • Barcode scanner • Kenaz DGPS

HHCS Handheld USA, Inc. (Handheld US) is a North American supplier of rugged PDAs and handheld computers. Handheld US and its partners deliver complete mobility solutions to businesses in industries such as logistics, forestry, public transportation, construction, military, and security. Handheld US is a subsidiary of Handheld Group AB in Sweden.

## handheld

HHCS Handheld USA, Inc. • 456 SW Monroe Ave.  
Suite 106, Corvallis, OR 97333  
Telephone: (541) 752-0313 • Fax: (541) 752-0338  
[info@handheld-us.com](mailto:info@handheld-us.com)  
[www.handheld-us.com](http://www.handheld-us.com)

## Exhibit 2

**ArcView** is geographic information system (GIS) software for visualizing, managing, creating, and analyzing geographic data. Using ArcView, you can understand the geographic context of your data, allowing you to see relationships and identify patterns in new ways.

### ***With ArcView, you can***

- **Author maps** and interact with your data by generating **reports** and **charts** and printing and embedding your maps in other documents and applications.
- **Save time** using map **templates** to create consistent style in your maps.
- Build process models, scripts, and workflows to **visualize** and **analyze** your data.
- Read, import, and manage more than **70 different data types** and formats including demographics, facilities, CAD drawings, imagery, Web services, multimedia, and metadata.
- **Communicate** more efficiently by printing, publishing, and **sharing** your GIS data and dynamic content with others.
- Use tools such as Find, Identify, Measure, and Hyperlink to **discover information** not available when working with static paper maps.
- Make better decisions and **solve problems** faster.

**ArcPad** is mobile field mapping and data collection software designed for GIS professionals. It includes advanced GIS and GPS capabilities for capturing, editing, and displaying geographic information quickly and efficiently. Critical data can be checked in and out of a multi-user or personal geodatabase and shared across your organization.

ArcPad is part of an enterprise GIS solution and integrates directly with ArcGIS Desktop and ArcGIS Server.

### ***With ArcPad, You Can***

- Perform reliable field data collection and inspection projects.
- Share enterprise data for rapid decision making.
- Integrate external GPS, range finders, and digital cameras.
- Increase the accuracy and validity of your GIS database.
- Improve the productivity of your field staff.

Exhibit 3

# LD-15 PROFESSIONAL'S LEAK SURVEY INSTRUMENT



### Standard Items

- ① Amplifier with Meter Display and Filter Controls
- ② Padded Case and Standard Belt (40 inches)
- ③ High Sensitivity Sensor and Cable
- ④ Base Plate for Listening on Street Surfaces
- ⑤ Aviation-Grade Stereo Headphones
- ⑥ Heavy-Duty ABS Plastic Carrying Case

### Optional Accessories

- ⑦ 40 inches Long Contact Rod (not shown)
- ⑧ 60 inches Long Contact Rod (not shown)
- ⑨ Large Size Belt (50 inches)
- ⑩ Extra Large Size Belt (60 inches)

### Features

- High sensitivity sensor with Neodymium magnet (extra strong). Sensor and cable connection completely sealed and water-proof (submersible).
- Amplifier with superior audio quality (very low distortion and superior signal-to-noise ratio) and large meter display. Press the Mute Switch to hear sounds when you are ready.
- "Survey" for water leaks by listening at hydrants and valves with the sensor and magnet. Survey at water meters with a Long Contact Rod (optional).
- "Pinpoint" water leaks in pipes under asphalt or concrete with the base plate attached to the sensor and magnet.
- Use the High filter range for water leak surveying. Use the Low filter range for water leak pinpointing. High frequency leak sounds travel on the pipes, but only low frequencies pass through the soil.



### Specifications

#### Amplifier

- Amplification : 56 dB
- Filter Ranges : 1) High Range  
30 Hz to 5000 Hz  
2) Low Range  
30 Hz to 800 Hz  
3) Notch Filter  
150 Hz, 180 Hz
- Power : 4 C dry cell batteries
- Battery Life : 80 hours with alkaline batteries at 68 degrees F
- Weight : 31 ounces (including 4 C batteries)
- Size : 6.4" x 3.0" x 5.7"  
(163mm x 76mm x 144mm)

#### Sensor

- Sensitivity : 10 V/g
- Resonance Frequency : 950 Hz (±150 Hz)
- Weather Protection : IP68 or equivalent  
(3 ft under water for 3 hours)
- Cable Length : 9.75 ft

Manufactured by:



**SubSurface Leak  
Detection, Inc.®**

4040 Moorpark Avenue, Suite 104  
San Jose, CA 95117  
(408) 249-4873 (Phone), (408) 249-9653 (Fax)  
www.subsurfaceleak.com

Distributed by:



**ATOZ SUPPLY**  
 A GRASS VALLEY INVESTMENT GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
 (530) 273-6608



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

CUST # 9115  
 TERMS: NET 10TH

ORDER # 154181  
 DATE : 12/08/10  
 CLERK: DM  
 TERM # 553

TIME : 4:22  
 \*\*\*\*\*  
 \* ORDER \*  
 \*\*\*\*\*

Exhibit 4

QUANTITY	UNIT	ITEM	DESCRIPTION	LOC	PRICE / PER	EXTENSION
5000	EA	4C900C1150	PIPE, 4" PVC C-900 PIPE CL. 150	1000	2.44 / EA	12,200.00*
120	EA	SR11	WATER METER, 5/8X3/4 SENSUS CF		161.11 / EA	19,333.20* ①
123	EA	MXU	WATER METER, REMOTE READER ADD-N		216.66 / EA	26,649.18* ②
240	EA	34SVT	3/4" X 1-1/2" SHORT METER TAIL		10.83 / EA	2,599.20
120	EA	34CS	3/4" BRASS CURB STOP STRAIGH	SO	57.55 / EA	6,906.00*
120	EA	34GV	3/4" BRASS GATE VALVE	05R02	7.12 / EA	854.40*
3	EA	SR11112	1-1/2" WATER METER W/TAIL SENSUS		657.35 / EA	1,972.05*

*①-② District prefers to use meters w/ remote reader - improve frequency & ease of reading also record keeping - greatly reduce operation expense*

\*\*ORDER\*ORDER\*ORDER\*ORDER\*\*  
 DEPOSIT AMT .00  
 BALANCE DUE 180644.41

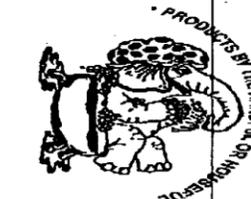
ACE REWARDS ID # 1973135770 )  
 (JOHN STARK )

TAXABLE 166357.01  
 NON-TAXABLE 355.00  
 SUB-TOTAL 166712.01  
 TAX AMOUNT 13932.40  
 TOTAL ORDER 180644.41

Dec 08 10 04:20p A To Z Supply 5302730892

X  
 Accepted by \_\_\_\_\_

Accounts are due and payable by the 10th of the month following purchase. A FINANCE CHARGE of 1.5% per month (18% per annum) will be charged on past due accounts. Minimum finance charge of \$1.00. No charges allowed on paid due accounts. Terms of merchandise subject to rescheduling charges. No return allowed unless made within 30 days - when receipt of goods.



**ATO Z SUPPLY**  
 A GRASS VALLEY INVESTMENT GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
 (530) 273-6608



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

CUST # 9115  
 TERMS: NET 10TH

ORDR # 164761  
 DATE : 12/08/10  
 CLERK: DM  
 TERM # 553

TIME : 4:30  
 \*\*\*\*\*  
 \* ORDER \*  
 \*\*\*\*\*

5302730892

A To Z Supply

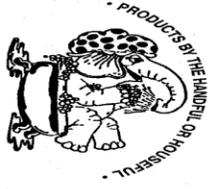
Dec 08 10 04:20p

QUANTITY	UM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION	
11000	EA	8DICT50	8 DUCTILE IRON CL150 TYTON 350	1000	14.17 /EA	155,870.00* x.73	
5000	EA	4DIS2	4" DUCTILE IRON PIPE 350 TYTON	1010	12.95 /EA	64,750.00* x.73	
			4" 2900				
**ORDER**ORDER**ORDER**						TAXABLE	220620.00
DEPOSIT AMT						NON-TAXABLE	0.00
BALANCE DUE						SUB-TOTAL	220620.00
						TAX AMOUNT	18476.93
						TOTAL ORDER	239096.93

ACE REWARDS ID # 1973135770 }  
 (JOHN STARK )

X  
 Received by \_\_\_\_\_

Accounts are due and payable by the 10th of the month following purchase. A FINANCE CHARGE of 1 1/2% per month (18% per annum) will be charged on past due accounts. Information change of 1 1/2% has no charges assessed on past due accounts. Returned merchandise is subject to a resending charge. No claims allowed unless made within 3 days after receipt of goods.



**A TO Z SUPPLY**  
 A GRASS VALLEY INVESTMENT GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
**(530) 273-6608**



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720

COST # 9115  
 TERMS: NET 10TH

ORDER # 141716  
 DATE: 12/20/10  
 CLERK: DM  
 TERM # 553

TIME: 12:22  
 \*\*\*\*\*  
 \* ORDER \*  
 \*\*\*\*\*

QUANTITY	UM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION
480	EA	8DIGP	86" DI CL 53 GLASS LINED/EPOXY	1010	51.17 /EA	24,561.60*
5	EA	8DIGP90	8" MJ 90 ELL GLASS/EPOXY COATED	1010	316.70 /EA	1,583.50*
6	EA	8DIGP45	8" MJ 45 ELL GLASS/EPOXY COATED	1010	266.85 /EA	1,601.10*
1	EA	8DIGP22	8" MJ 22 ELL GLASS/EPOXY COATED	1010	266.85 /EA	266.85*
3	EA	8DIGP11	8" MJ 11 ELL GLASS/EPOXY COATED	1010	255.30 /EA	765.90*
30	EA	8MTAKGP	MJ ACCESSORY KIT 8" GLASS AND CO	1010	35.88 /EA	1,076.40*
**ORDER*ORDER*ORDER*ORDER**				TAXABLE		29855.35
DEPOSIT AMT				NON-TAXABLE		0.00
BALANCE DUE				SUB-TOTAL		29855.35
				TAX AMOUNT		2500.39
				TOTAL ORDER		32355.74

ACE REWARDS ID # 1973135770 )  
 (JOHN STARK )

**X**

Received By \_\_\_\_\_

Accounts are due and payable by the 15th of the month following purchase. A FINANCE CHARGE of 1% per month (18% per annum) will be charged on past due accounts. Minimum finance charge of \$1.00. No charges allowed on past due accounts. Return merchandise is subject to a restocking charge. No claims allowed unless made within 3 days after receipt of goods.



**A TO Z SUPPLY**  
 AGRASS VALLEY INVESTMENT GROUP, INC. COMPANY  
 13396 RIDGE ROAD  
 GRASS VALLEY, CA 95945  
 (530) 273-6608



WASHINGTON WATER DISTRICT  
 P O BOX 34  
 WASHINGTON CA 95986-0034  
 (530) 265-4720  
 CUST # 9115  
 TERMS: NET 10TH

ORDER # 154181  
 DATE : 12/08/10  
 CLERK: DM  
 TERM # 553

TIME : 4:22  
 \*\*\*\*\*  
 \* ORDER \*  
 \*\*\*\*\*

QUANTITY	UOM	ITEM	DESCRIPTION	LOC	PRICE/PER	EXTENSION
1	EA	HSC20	GOLIDS 2 HP MULTI STAGE JET PUMP	SO	884.00 /EA	884.00*
1	EA	B1MPS	PUMP 5 HP 1PH/230V TEFC MOTOR	SO	1627.40 /EA	1,627.40*
1	EA	FREIGHT	FREIGHT	XXX	115.00 /EA	115.00*N
2	EA	5B111	40AMP CONTRACTOR DP	05R10	51.12 /EA	102.24*
2	EA	5X829	TIME DELAY RELAY 40A 240 V	SO	168.71 /EA	674.84*
2	EA	GHG-2	PRESSURE SWITCH 80-100PSI	SO	67.29 /EA	134.58*
1	EA	241610	24 X 16 10 W/P 3R ENCLOSURE	SO	341.10 /EA	341.10*
1	EA	AD152	4" DUCTILE IRON PIPE SE 52	1010	15.86 /EA	6,344.00*
2	EA	HP366	PRESSURE TANK 119GAL	XXX	559.99 /EA	1,119.98*
2	EA	HP366	4" FLG X FLG R. S. GATE VALVE	1010	467.25 /EA	467.25*
1	EA	4FCF	CAMPANION FLANGE, 4"	SO	29.55 /EA	59.10*
2	EA	4ANBG	NUT/BOLT/GASKET SET 4"	1010	11.85 /EA	23.70*
2	EA	4FCF	CAMPANION FLANGE, 4"	SO	3.92 /EA	1,234.80*
315	EA	FT 2GP	2 GALV PIPE	1000	5.69 /EA	85.35*
15	EA	2GC	2 GALV CPUG	05L05	69.10 /EA	276.40*
4	EA	3E22	3" FLG. 22	SO	69.10 /EA	276.40*
4	EA	3E11	3" FLG. 11 BEND	1010	22.85 /EA	365.60*
16	EA	3CF	CAMPANION FLANGE, 3"	1010	12.89 /EA	206.24*
16	EA	3BDS	NUT/BOLT/GASKET SET 3"	XXX	240.00 /EA	240.00*N
1	EA	FREIGHT	FREIGHT	1000	7.42 /EA	81,620.00*
11000	EA	RC900CT150	8 PVC C-900 PIPE CL 150	1000		81,620.00*

**WAINWRIGHT ROAD**  
**REVERE HILL ROAD**

CONT'D

R.H.  
 12/8/10

5302730992 A To Z Supply P. 7

X  
 Received By \_\_\_\_\_

Accounts are due and payable by the 10th of the month following purchase. A FINANCE CHARGE of 1 1/2% per month (18% per annum) will be charged on past due accounts. Minimum finance charge of \$10.00. Merchandise returned to our credit accounts. Returned merchandise is subject to a restocking charge. No claims allowed unless made within 3 days after receipt of goods.

# Washington County Water District

## Integrated Water Shortage Contingency, Drought Preparedness, and Comprehensive Water Conservation Planning Program

### OVERVIEW

As discussed in the introduction and sponsor description, Washington County Water District (WCWD) is a severely disadvantaged community in Nevada County with aging infrastructure which, in some cases, is functionally obsolete.

### Integrated Water Shortage Contingency and Conservation Planning

Residents of the Sierra Nevada generally depend on surface water from the watersheds of the mountain range for their



water supply. Typically, precipitation in the form of snow is the primary source of water, as the Sierra snowpack serves as natural storage for most of the region's annual precipitation. The Sierra watersheds experience wide variations in annual precipitation and therefore in annual water supply. The region has experienced significant droughts in the past and climate change predictions indicate a potential for wide variability in the future. Population growth in the region will serve to amplify the severity of drought impacts. Without careful planning, small, rural, and disadvantaged water purveyors will be unable to respond to future precipitation variability.

Strategic use of conservation can help extend the value and life of infrastructure assets used in water supply (and wastewater treatment), while also extending the beneficial investment of public and ratepayer funds. Small and disadvantaged water systems can benefit from efficiency and conservation as well as larger systems. In fact, the potential for eliminating, downsizing, or postponing capital improvement projects through strategic supply and demand management may be more important for smaller systems given their unique financial and capacity constraints. At the same time, small systems' ability to devote resources to conservation and efficiency planning may be limited. The demand management component of this project is essential for allowing WCWD the flexibility necessary to deal with the reality they face in being an isolated community with a single water source.

The Integrated Water Shortage Contingency and Conservation Plan components include:

- 1) preparation of water shortage action plans with prioritized actions and clear implementation strategies,
- 2) integrating water shortage preparedness with capital improvement planning,
- 3) enhancing customer conservation options and behavior, and, in the case of WCWD, providing technical support to expand the institutional capacity of the water purveyor.

It is the goal of the project management team that the planning activities will be nested, and seek to

provide the District the capacity to use adaptive management strategies for future water year scenarios. That is, the Customer Water Use Efficiency Plan, wherein customers work with water agency staff and the project management team to identify best practices to emphasize in the community into the future, will feed priorities into the Water Shortage Contingency Plan. The Water Shortage Contingency Plan, wherein District priorities for managing water scarcity from climate- or infrastructure-induced shortages are identified and described, will feed into the Capital Improvement Plan (CIP). The CIP is the document that will examine the multi-year, higher-cost projects for water supply management.

The integrated nature of these plans emphasize conservation, customer involvement, reducing vulnerability to climate change, and providing clear and prioritized steps to mitigate the impacts of drought. Successful conservation efforts can also curb peak system demand, deferring the need for construction of new treatment, storage, and conveyance facilities, as well as reducing energy costs and usage, wastewater infrastructure demands and infrastructure, allowing districts to focus on replacement or rehabilitation of older existing infrastructure.

The WCWD currently has a single schematic drawing which characterizes the system components in relationship to one another. As part of the Leak Detection project work plan, this map will be updated to a detailed GIS-based map. This map is a necessary precursor to integrating the Water Shortage Contingency Plan with the Capital Improvement Plan (see below).

### **Water Shortage Contingency Plan**

In 2007, El Dorado County Water Agency (EDCWA) facilitated the coordinated preparation of drought action plans for the several water agencies within their service area, including Grizzly Flats Community Services District (GFCSD). In Phase I, the drought action plans evaluated the needs and objectives of each agency, reviewed the drought history over the last hundred years, projected future climate change vulnerabilities, and assessed future water supply and demand scenarios. In Phase II, and using stakeholder input, a drought plan based on the Phase I activities was developed. The drought plan included drought indicators and trigger levels, drought response, drought impact avoidance measures, and specific activities associated with plan implementation. Because this action plan was prepared with a specific focus on a small, rural, and relatively low-income agency, the methodology, approach, and plan are relevant to similar jurisdictions across the CABY region. The 2006 Grizzly Flats Drought Action Plan will serve as a model and template for the preparation of a similar action plan for WCWD. In addition, PCWA has also prepared a drought response plan for its service area, of which Alta and Colfax are a part. The methodologies and approaches used by PCWA that would augment the breadth, depth, or quality of the WCWD Water Shortage Contingency Plan (Plan) will be integrated as appropriate.

The Plan is intended to address multiple objectives:

1. Defining a common understanding of drought susceptibility, monitoring, communication, response, and opportunities for drought avoidance;

2. Informing future drought planning through consideration of most recent water demand projections, water conservation efforts, diverse public outreach, and the potential impacts of climate change;
3. Defining drought indicators and trigger levels that declare droughts accurately and proactively;
4. Defining water demand curtailments that can reasonably be accomplished in drought conditions, are financially sustainable, administratively appropriate, and user-friendly, which will perform equitably for all customers and stakeholders; and
5. Providing a framework for drought plan implementation that focuses continuing efforts on activities that will monitor for the onset of drought, minimize drought impact on customers, and implement projects and other measures to reduce the need to declare drought.

During the preparation of the Grizzly Flats CSD Drought Action Plan, extensive interaction with El Dorado Irrigation District (EID), a larger water utility in the same area, served to ensure that future system needs and water supply availability was thoroughly examined. Similarly, NID provides water to both Nevada City and Washington County Water District through an extensive network of raw and treated water delivery systems. For this reason, NID will be an important participant in the development of the water shortage contingency plans. See Attachment A (pg. 14, below) for a sample table of contents and set of drought recommendations from the Grizzly Flat CSD Drought Action Plan.

### **Capital Improvement Plan**

WCWD currently has no Capital Improvement Plan (CIP). It has limited capability to develop and update a future CIP due to insufficient organizational capacity. One of the collateral benefits of the CABY outreach process was the development of WCWD's first capital improvement strategy. This resulted in the identification of all of the projects contained in the infrastructure efficiency component of the work plan (above) and identified the need for creating the District's first CIP, developed in the context of the Water Shortage Contingency Plan. Augmenting the traditional CIP strategy of addressing improvements as they relate to efficiency and system aging, with anticipation of future water shortage-related system impacts, will enable this district to proactively plan for dry water years. As a result of the Phase I needs assessment and evaluation, WCWD will develop its CIP to include specific elements aimed at creating maximum flexibility during periods of low water availability. This may result in the identification of conservation-related infrastructure or updating/upgrading existing infrastructure to accommodate periods of low flow.

Because the WCWD water system is comprised of only seven basic components, future planning will be focused on a limited number of system improvements. The project engineer has indicated that the CIP developed as part of this project will likely serve the District for 20 years. There will be no updates needed during this time because of the simple nature of this system. The infrastructure component of this work plan will replace roughly half of WCWD's system, thereby focusing the CIP evaluation on a limited number of future improvements.

## **Customer Water Use Efficiency Initiative**

WCWD has determined that meeting the 20%x2020 goals, as well as those articulated in AB 1420 (demand management measures corresponding with the Best Management Practices (BMPs) in the CUWCC) is a desirable and appropriate goal for the District within the fiscal constraints of the District. To achieve this goal, the District has determined that the preparation of a Water Use Efficiency Plan is a critical activity. The Customer Water Use Efficiency Initiative (Initiative) will include public outreach, education and workshop activities, distribution of retrofit kits, and preparation of an action plan to guide implementation of ongoing conservation activities.

### **Public Outreach**

The Capital Improvement Plans (above) will focus on creating a nexus between conservation, drought response, and infrastructure planning. The Conservation Plans will focus on demand management by reducing water consumption through education and outreach in the local communities. The CUWCC foundational Best Management Practices (BMPs), while designed for implementation by urban water providers, provide reasonable targets for smaller jurisdictions based on their individual context and resources. The goal of this program would be to reduce water consumption on a per capita basis through the provision of information shared with the public to encourage the conservation of the shared resource as a habit, as well as in response to identified drought stages (as defined in the drought action plan above). Effective conservation outreach efforts focus on bridging the gap between thought and action to induce adoption of new behaviors. The American Water Works Association has produced an excellent *Water Conservation Communications Guide* to help water agencies in communicating the conservation message with customers. It is available online: (<http://www.awwa.org/Resources/Waterwiser.cfm?ItemNumber=55474&navItemNumber=55644>), along with print resources for mailing information, news article writing, and examples of other successful programs around the nation (AWWA, 2010). See Exhibit 1.

This task will include, at a minimum, the dispersal of print materials in customer bills, available at grocery stores and other high-traffic community gathering places, and the production and dispersal of at least two news releases on the WCWD water conservation effort.

### **Education and Workshop Activities**

A series of workshops will be provided to the customers of WCWD. These workshops will include topics such as irrigation efficiency, options for water conservation in the home, and the proper maintenance and installation of distributed plumbing fixtures. Options such as turf removal, car and driveway washing disincentives, use of smart irrigation controllers, and general options for conservation will all be considered as part of the local outreach. The AWWA has developed an extensive set of materials in support of conservation. These materials, in the *Water Conservation Communication Guide* (AWWA, 2010), will be used in support of a concerted outreach campaign.

NID has delivered irrigation efficiency workshops throughout their service area since 2008. These materials will be refined to respond to the needs of the WCWD service area and customers. The goal of this consumer outreach is to measurably reduce summer irrigation water use and year-round residential water consumption through a series of at least three irrigation and indoor water use efficiency workshops, as well as the offering of lectures, customer-focused Board meetings, and the involvement of customers in planning water use efficiency activities. These will not begin until the fall/winter of 2012 in order to take advantage of meter installation and measurement of customers' use. This (meter installation) will be possible following the completion of system-wide upgrades and subsequent installation of water meters in early fall 2012.

### **Distribution of Retrofit Kits**

Within the WCWD service area, over 90 percent of the residences are more than 50 years old. In addition, the two trailer parks located in the service area host trailers over 30 years old. Given the severely disadvantaged status of the community, upgrades to original plumbing fixtures occur only upon actual failure as opposed to ongoing fixture malfunction (e.g., drips and leaks). There are current State and national standards for plumbing fixtures that result in increased water savings when compared to older fixtures, even when applied/installed in older homes. Water agencies throughout the state often have the dispersal of "retrofit kits" as a component of their water conservation education/outreach efforts. This is even a component of the California Urban Water Conservation Council's (CUWCC's) Best Management Practices (for more information, see the CUWCC website, programmatic BMP 3 [residential]: <http://www.cuwcc.org/mou/bmp3-residential.aspx>). WCWD has not done this type of outreach, and therefore has a large capacity for indoor residential water conservation. The table below shows what items will be included in a retrofit kit, and what savings are associated with those items.

Table 1: Retrofit Kit items and savings estimates.

<b>Conservation Measure</b>	<b>Savings Effect (gallons per day per household)</b>
Low-flow showerheads	5.8
Information regarding how to displace toilet reservoir water	4.2
Faucet aerators (2-3)	1.5
Toilet leak detection tablets	7.8

\* Information taken from Chesnutt, T.W. et al, 1996

A side benefit of these water conservation fixtures is that their installation and use also results in corresponding energy savings from decreased water treatment, conveyance, and heating (Osann and Young, 1998).

The management team for this project will work with WCWD to develop the specific methods for kit and information distribution. Best methods will be identified in collaboration with the community through the Public Outreach Program.

### **Water Use Efficiency Implementation Plan**

The goal of this plan is to provide demand-based strategies, methods, and options and District policies and practices for ongoing and durable conservation. The project team will be working with the District Board and the customer base to identify the desired water conservation strategies most appropriate for the District to implement over time.

The successes of the activities described above (i.e., public outreach, workshops and education efforts, and the distribution of retrofit kits), will be tracked as they are implemented. The observed and quantified outcomes of these efforts will be integrated with water conservation methods and strategies selected by the Board and customer base of the District for inclusion in the Water Use Efficiency Implementation Plan. The product of this work effort will be a concise, readily implementable description of appropriate policies and implementation actions. The implementation actions will be provided in a format that supports easy, low-cost, and reliable implementation.

### **Organizational Audit**

The WCWD has total fiscal and operational oversight of the water services to the town of Washington. The WCWD serves a Severely Disadvantaged Community, as defined in the California Public Resources Code, section 75005 (median income is 60% or less of statewide average income). WCWD has limited institutional capacity. The infrastructure improvements identified in the water system efficiency, reliability, and conservation infrastructure improvement initiative discussed above, will provide significant updates and improve the capacity of the District to deliver water. The organizational audit will serve to build capacity in the District, enhancing the ability of the District to continue to be sustainable and provide reliable services to the community. The WCWD Board is elected by customers of the District. While the bylaws call for a minimum of five Board members to be serving at any one time, the District frequently has only three or four active Board members serving, limiting the capacity of the Board. In addition, the high turnover on the District Board combined with the absence of a CIP and a long-range financial planning capacity results in a lack of clear policies, inconsistent application of identified policies, limited capacity to identify and obtain financing for future improvements, and inconsistent billing and financial management. The District has worked very closely with the Nevada County Department of Environmental Health (DEH) to improve both infrastructure system performance and organizational capacity. CABY staff has worked closely with both the Board and Nevada County staff to develop an organizational assessment framework which is consistent with industry standards and the California Department of Public Health (CDPH) guidelines for small community water systems. In addition, Nevada County DEH has recommended use of the USEPA Check-Up Program for Small Systems (CUPSS) release 1.3.5, February 2010, as an additional resource. Use of the CUPSS material will be coordinated with Nevada County DEH staff to ensure that the appropriate forms, templates, methods, and strategies identified in the EPA materials complement the materials already

developed by the state. EPA materials are available through their website:  
<http://water.epa.gov/type/drink/pws/smallsystems/basicinformation.cfm>.

The proposed work plan for the WCWD audit has been developed based on the CDPH Small Water Systems: Capacity Development Program (as updated September 3, 2010). The templates, user guides, questionnaires, system component inventories, five-year budget projection forms, and system evaluation criteria included in the detailed and comprehensive assistance forms will form the basis of the WCWD organizational audit. In other words, forms and processes already developed by the State for application to small water systems will be used for this analysis. Links to this information are available on the CDPH website:  
[www.cdph.ca.gov/certlic/drinkingwater/pages/tmf.aspx](http://www.cdph.ca.gov/certlic/drinkingwater/pages/tmf.aspx).

The Rural Community Assistance Corporation (RCAC) offers substantial water system technical assistance and has materials to support infrastructure assessment, organizational and financial capacity and needs, identification and evaluation of potential solutions, and measures meant to enhance implementation of preferred solutions. They also have a significant Water Board Basics program, which provides templates and documents to support efficient and effective water board decision making and performance. The RCAC information is available on their website: <http://www.rcac.org/doc.aspx?81>.

There are three aspects of capacity building, identified in the CDPH materials, which will be included in the WCWD organizational audit:

- ◆ Technical capacity – physical and operational ability of the district to ensure the adequacy of source, treatment, storage, and distribution, as well as the ability of the district to adequately operate and maintain the system;
- ◆ Managerial capacity – ability to sustain institutional and administrative capabilities; and
- ◆ Financial capacity – system’s ability to acquire and manage sufficient financial resources to achieve and maintain sustainability.

In addition to the completed organizational audit, the second product coming out of this effort will be a workbook integrating the best aspects of all of the materials available, with the specific intention of providing the workbook to IRWM groups across the state. Both hard copy and electronic copy will be available through the CABY website and/or direct request. Notice of the availability of this workbook will be made using the already established Round Table of Regions, an ad-hoc group formed in 2008, which represents all of the IRWMPs currently recognized in the state.

	<b>Drought Action Plan</b>	<b>Capital Improvement Plan</b>	<b>Customer Conservation</b>	<b>Organizational Audit</b>	<b>Comment</b>
Nevada City	X	X	X		Nevada City currently has no formal drought response policies or plan. Existing CIP addresses ongoing infrastructure improvement, but does not consider drought preparedness. No formal customer conservation, education, or fixture program currently exists.
WCWD	X	X	X	X	No drought action planning has been undertaken. The District does not currently have a CIP. No formal customer conservation, education, or fixture program currently exists. Evaluation of the sustainability and long-term viability of the District to provide adequate service to Washington residents is required. Evaluation will include possible rate structures, revised financial management policies, assessment of operational status of system infrastructure, evaluation of administrative and management systems, etc.
Grizzly Flats		X	X		The Grizzly Flats Drought Action Plan will serve as a model for Nevada City and WCWD. No additional planning is required. Existing CIP addresses ongoing infrastructure improvement, but does not consider drought preparedness. No formal customer conservation, education, or fixture program currently exists.
Alta and Colfax			X		PCWA has included Alta and Colfax in their long-term drought preparedness planning, so no additional planning is required. Likewise, PCWA has integrated CIP and drought response planning. However, no formal customer conservation and education programs currently exist.





Washington County Water District Conservation Plan  
Leak Detection and Meter Installation



Fig.

## Washington County Water District

# Integrated Drought and Conservation Planning Project

## WORK PLAN TASKS

### ***Budget Category (a): Direct Project Administration Costs***

#### **Task 1: Administration and Management**

The goal of this task is to keep the project on-time and on-budget, keep all staff members and project participants informed of the billing procedure and timeline, and generally ensure smooth project implementation. Administrative tasks will include monthly billings to DWR, gathering appropriate documentation and support materials as required by DWR invoicing procedures, monitoring percent spent versus percent complete for each project task, and ensuring compliance with other requirements identified in the grant agreement.

#### Deliverables:

- ◆ Preparation of invoices and other deliverables, as required

#### **Task 2: Labor Compliance Program**

Because there is no construction activity associated with this project, there is no requirement for a Labor Compliance Program.

#### **Task 3: Reporting**

In order to track the project's implementation and achievement of performance measures, reports will be prepared to provide DWR with details regarding the project's progress. The content and schedule for these reports will be identified and agreed upon with DWR through the grant agreement. The information compiled as part of the monthly invoice process will be consolidated and augmented as necessary during preparation of the quarterly reports. The final report for this project will be prepared based on the administrative record and the deliverables identified below. The final report will also include any components identified in the grant agreement.

#### Deliverables:

- ◆ Quarterly and final reports

### ***Budget Category (b): Land Purchase/Easement***

This category is not applicable to this project.

### ***Budget Category (c): Planning/Design/Engineering/Environmental Documentation***

Because of the nature of this project, tasks implementing this project are listed under Budget Category (g): Other Costs, to maintain the programmatic integrity of budget and timeline.

#### **Environmental Documentation**

No environmental documentation is required for this project.

#### **Permitting**

No permits are required to implement this project.

***Budget Category (d): Construction/Implementation***

***Budget Category (e): Environmental Compliance/Mitigation/Enhancement***

This category is not applicable to this project.

***Budget Category (f): Construction Administration***

Because the project will not result in construction activities, there is no need for construction administration.

***Budget Category (g): Other Costs***

A key component of the CABY strategy in outreach to rural and disadvantaged communities has been the provision of technical assistance and capacity building to each project sponsor. The goal of this assistance is to ensure that each of the project sponsors has a developed capacity to plan for chronic water shortages; to integrate water shortage contingency priorities into their long term infrastructure planning; to provide customer-based conservation, outreach, and education; all resulting in measurable conservation outcomes. The tasks have intentionally been developed to progressively identify and refine an integrated, long-term water conservation and water shortage contingency planning capacity.

**Task 4: Water Shortage Response Feasibility Study and Action Plan**

The goal of this task is to gather all necessary data, perform all necessary analysis, gather and integrate public input, and develop preliminary policy language to support preparation of a drought action plan. This task will include evaluation of drought history, calculation of future climate change scenarios, identification of water supply and demand, development of drought management policy, and preliminary identification of drought indicators, trigger levels, response, and impact-avoidance options. The tasks will also include public information and outreach and inter-agency drought coordination.

Deliverables:

- ◆ Drought history documented.
- ◆ Climate change scenarios.
- ◆ Future water supply and demand calculations.
- ◆ Identification of drought stages including indicators, trigger levels, and response actions.
- ◆ Drought impact-avoidance options identified.
- ◆ Public involvement.
- ◆ Inter-agency coordination.
- ◆ Preliminary policy development.
- ◆ Draft drought action plan.

**Task 5: Integrated Capital Improvement Plan**

The goal of this task is to integrate the outcomes of the drought action plan into short- and long-term infrastructure planning. The tasks involved in preparing this element include

refinement of the current CIP, identification of specific infrastructure and operational requirements resulting from the Water Shortage Contingency Plan including infrastructure components as described in the work plan introduction, identification of preliminary costs and phasing associated with each identified improvement.

Deliverables:

- ◆ Draft CIP

**Task 6: Integrated Customer Water Use Efficiency Initiative**

WCWD has determined that meeting the 20%x2020 goals, as well as those articulated in AB 1420 (demand management measures corresponding with the Best Management Practices (BMPs) in the CUWCC) is a desirable and appropriate goal for the District within the fiscal constraints of the District. To achieve this goal, the District has determined that the preparation of a Water Use Efficiency Plan is a critical activity. The Customer Water Use Efficiency Initiative (Initiative) will include public outreach, education and workshop activities, distribution of retrofit kits, and preparation of an action plan to guide implementation of ongoing conservation activities.

**Task 6.1: Public Outreach**

The goal of this task is to create a meaningful avenue of communication between WCWD customers, the Board, and project management team. This task will include the handout of printed educational materials, as well as providing a venue to receive public comments and questions. Because the Washington community is so small, it is possible to conduct “town hall” style meeting events with well over 50 percent of the population attending. The focus of these meetings will be to provide a conceptual understanding of the various project components, to gather opinions and insights from District customers, to form an advisory committee to assist in completing the various plans and recommendations, and to provide a venue for big-picture water conservation and system operation strategies.

Deliverables:

- ◆ Handouts and printed materials.
- ◆ Two community “town hall” style meetings.
- ◆ Memoranda summarizing public questions and input.

**Task 6.2: Education and Workshop Activities**

This task is aimed at developing the customer conservation program components, including the educational workshops and the water conserving fixture program. The goal of this task will be to deliver a series of workshops addressing irrigation efficiency and opportunities for residential water conservation.

Deliverables:

- ◆ Workshop agendas, materials, scheduling, logistics, and advertising materials.
- ◆ Post-workshop surveys.
- ◆ Three water conservation workshops.

W

### **Task 6.3: Distribution of Retrofit Kits**

The goal of this task is to distribute retrofit kits, which will include: low-flow showerheads, toilet leak tablets, two or three faucet aerators, and information on how to displace toilet reservoir water. The management team for this project will work with WCWD to develop the specific methods for kit and information distribution. Best methods will be identified in collaboration with the community through the Public Outreach Program.

#### Deliverables:

- ◆ 150 plumbing fixture retrofit kits purchased and distributed (one for each residence plus extra for larger homes).

### **Task 6.4: Comprehensive Drought Action Plan**

The goal of this plan is to provide demand-based strategies, methods, and options and District policies and practices for ongoing and durable conservation. The project team will be working with the District Board and the customer base to identify the desired water conservation strategies most appropriate for the District to implement over time.

#### Deliverables:

- ◆ Draft Water Use Efficiency Implementation Plan.
- ◆ Town hall meeting to discuss the Plan with notes summarizing meeting outcome.
- ◆ Final Water Use Efficiency Implementation Plan, including a specific process for implementing the Water Use Efficiency Implementation Plan.

### **Task 7: Organizational Audit**

The organizational audit will serve to build capacity in the District, enhancing the ability of the District to continue to be sustainable and provide reliable services to the community. There are three aspects of capacity building, identified in the CDPH materials, which will be included in the WCWD organizational audit:

1. Technical capacity – physical and operational ability of the district to ensure the adequacy of source, treatment, storage, and distribution, as well as the ability of the District to adequately operate and maintain the system;
2. Managerial capacity – ability to sustain institutional and administrative capabilities; and
3. Financial capacity – system’s ability to acquire and manage sufficient financial resources to achieve and maintain sustainability.

An additional product coming out of this effort will be a workbook integrating the best aspects of all of the materials available, with the specific intention of providing the workbook to IRWM groups across the state. Both hard copy and electronic copy will be available through the CABY website and/or direct request. Notice of the availability of this workbook will be made using the already established Round Table of Regions, an ad-hoc group formed in 2008, which represents all of the IRWMPs currently recognized in the state.

Deliverables:

- ◆ Completed organizational audit with detailed implementation recommendations.
- ◆ Templates and workbooks for distribution to rural and disadvantaged communities around the state.
- ◆ Coordination with Round Table of Regions to distribute templates and workbooks.

**Task 7: Develop and Maintain CABY Project-Specific Webpage**

The goal of this task is to ensure that all CABY members and members of the public have access to updated and thorough information about the implementation and characteristics of the project. Every CABY project implemented will be integrated into the CABY website through the creation of a project-specific webpage. Project plans, specifications, progress photographs, reports, status update and other similar materials will be posted or linked to this webpage.

Deliverables:

- ◆ Project webpage hosted on CABY website, updated with all current project information.

**Task 8: Data Management**

The goal of this task is to ensure that all data gathered and developed as a result of the project is made available to state data bases as well as CABY members and the interested public using Data Management and Monitoring Deliverables that are consistent with the IRWM Plan Standards and Guidance (as stipulated in the August 2010 IRWM Guidelines, page 20). IN this case the appropriate approach is identified in the CABY Planning Grant submittal which will direct the IRWMP data collection efforts, regardless of whether the planning grant is funded or not.

Deliverables:

- ◆ Development, activation and maintenance of project-specific web page within the CABY website (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69 – 72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57)
- ◆ Post project information through the existing CABY SWIM Database (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69 - 72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56-57)
- ◆ Submittal of project-specific data to the CABY Technical Advisory Committee tasked with screening project-specific data for submittal to and inclusion in state databases (as stipulated by the CABY Planning Grant Application submittal 9/28/10, pages 69 - 72, developed in response to the IRWM Program Guidelines/August 2010, pages 22 and 56 - 57)

***Budget Category (h): Construction /Implementation Contingency***

This budget category is not applicable to this project.

## **Attachment A**

Sample Drought Plan Implementation Actions and Table of Contents taken from Grizzly Flats CSD Drought Action Plan.

This will serve as the basis for the WCWD Water Shortage Contingency Plan.

### **Ongoing Drought Plan Implementation Actions**

Ongoing Drought Plan implementation actions will be completed both during periods of non-drought and drought periods. These activities can be characterized as proactive actions that prepare for drought through monitoring, public outreach, and resource management practices.

### **Policy and Regulation**

1. Review and update Drought Plan every five years or as needed based on new gauge data, new supply, operational changes, or change in expected water demand.
2. Continue water loss management procedures (leak identification).
3. Enforce Prohibition of Wasted Water (see Appendix F).
4. Continue conservation policies and water-efficient plumbing codes.
5. Review and refine rate stabilization policy relating to drought impacts every five years.
6. Understand and comply with legal and regulatory requirements for drought management.

### **Monitoring**

1. Monitor trigger plan quarterly to assess drought status:
  - ◆ Check GFCSD storage reservoir levels at the end of July;
  - ◆ If storage is less than 22 acre-feet, enter a Stage 1 drought;
  - ◆ If the reservoir levels are below 20 acre-feet, enter Stage 2 drought;
  - ◆ If the levels at the end of July or August are below 12 acre-feet, go directly into a Stage 3 drought;
  - ◆ For every subsequent month keep the August drought stage through November unless storage levels rise above 12 acre-feet; and
  - ◆ If the reservoir levels are above 12 acre-feet in August then reduce the drought stage by one stage each month until no drought is called.
2. Monitor system demands.
3. Install and monitor additional stream gauges (solicit USGS and DWR for support).

### **Public Outreach**

1. Develop and maintain drought awareness and public education materials, tools, and protocol.

### **Resource Management**

1. Pursue drought impact avoidance activities:
  - ◆ Existing well;
  - ◆ Reduce leakage in existing reservoir; and
  - ◆ Off-stream storage alternative

2. Pursue study of underground flows on Big Canyon diversion; investigate the feasibility of the installation of a drought curtain.
3. Maintain interagency coordination annually as shown in Figure 1. Figure 1 depicts the type and frequency of interagency coordination activities that will be pursued by the Drought Interagency Coordination Committee (DICCC).
4. Confirm and maintain commitment of Drought Advisory Committee (DAC) members as shown in Figure 2. Figure 2 depicts the suggested interagency organizational structure.
5. Consider establishing trucking contracts for water hauling (annually).
6. Pursue land trade for off-stream storage reservoir site.
7. Establish procedure by which residents within GFCSD on wells apply for emergency relief.

# **SAMPLE DROUGHT ACTION PLAN**

## **Table of Contents**

### Ongoing Drought Plan Implementation Actions

Drought Stage 1 Actions

Drought Stage 2 Actions

Drought Stage 3 Actions

### **1. INTRODUCTION**

1.1 Plan Need and Objectives

1.2 El Dorado County Drought Planning Overview

1.3 Drought History

1.4 Climate Change

1.5 GFCSD Water Supply and Demand

1.5.1 Water Supplies

1.5.2 Water Demands

1.6 GFCSD Drought Management Policy

1.6.1 Existing GFCSD Policy and Procedures

1.6.2 Regulatory Guidance

1.6.3 Water Supply Reliability Status

1.7 Stakeholder Involvement

1.8 Drought Plan Approach

1.9 Drought Plan Content

### **2. DROUGHT PLAN DEVELOPMENT**

2.1 Drought Stages

2.2 Drought Indicators and Trigger Levels

2.2.1 No Plan/Current Plan

2.2.2 Experimental Trigger Plan

2.2.3 Supply Remaining Index Trigger Plan

2.2.4 Trigger Plan Selection

2.3 Drought Response

2.3.1 Stage Zero - Normal Conditions and Ongoing Conservation

2.3.2 Stage 1 - Introductory

2.3.3 Stage 2 - Voluntary Reductions

2.3.4 Stage 3 - Mandatory Rationing

2.4 Drought Impact Avoidance

### **3. DROUGHT PLAN IMPLEMENTATION**

3.1 Public Information and Outreach

3.2 Interagency Drought Coordination

3.3 Reconciliation with Existing GFCSD Policy

3.4 Initial Actions

3.5 Ongoing Actions

3.6 Drought Stage 1 Actions

3.7 Drought Stage 2 Actions

3.8 Drought Stage 3 Actions

**Washington County Water District  
Integrated Water Shortage Contingency, Drought Preparedness, and  
Comprehensive Water Conservation Planning Program**

**Exhibits**

1. Examples of AWWA and EPA resources available to WCWD

### M36, Third Edition (2009)

#### Unlock the Secrets of Water Loss Control with AWWA's M36 Water Audits and Loss Control Programs, Third Edition

AWWA is proud to release the much anticipated Third Edition of its popular M36 guidance manual on conducting water audits and implementing proactive water loss control programs.

#### Water Loss Control Links

[WLC Basics](#)  
[WLC Terms Defined](#)  
[Apparent & Real Losses](#)  
[Water Audit Method](#)  
[Free Water Audit Software](#)

#### What does M36, Third Edition provide?

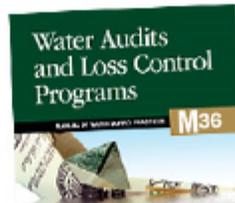
- Clear steps to compile the water audit according to the [new standard method](#) co-developed by the International Water Association (IWA) and the American Water Works Association (AWWA)
- [Rational terms, definitions](#) and performance indicators that give water utilities objective ways to assess their water loss standing and reliably plan loss control activities
- Worksheets, sample calculations and references to [AWWA's Free Water Audit Software](#)
- Techniques to capture more revenue by controlling [apparent losses](#) in customer metering and billing operations, as well as unauthorized consumption
- Innovative technologies to move from reactive, "break and fix" leakage response to proactive leakage management featuring component analysis, pressure management, leak noise logging and other advanced technologies: successful approaches to minimize unnecessary source water withdrawals and excessive water production costs
- Structured guidance on planning the loss control program
- Considerations for small water utilities
- Case study accounts from small, medium and large water utilities

#### Why do water utilities need M36, Third Edition?

- High quality source water supplies are dwindling while populations are expanding and shifting
- Every day in the United States over six billion

gallons of water withdrawn from rivers, lakes and wells never reaches a billed customer!

- Over 250,000 water main ruptures occur in the United States every year
- Worldwide the value of lost water and revenue is \$15 billion annually
- Water utilities continually need to find ways to supply safe, efficient water and manage costs
- The Third Edition of the M36 is the first publication in North America to provide detailed and comprehensive instructions on the IWA/AWWA Water Audit Method
- Regulatory agencies have begun to focus on water utility efficiency in addition to water conservation by consumers
- Customers deserve value for their money; high losses compromise service and indirectly inflate water rates

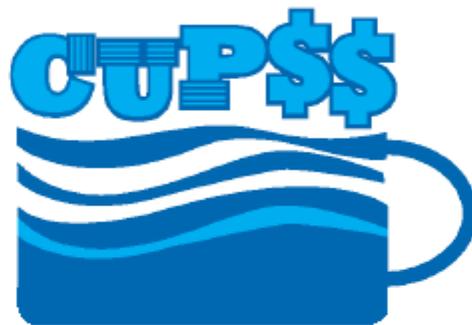


[Order your copy from the AWWA Bookstore](#)

#### Who wrote M36, Third Edition?

- AWWA's [Water Loss Control Committee](#) is responsible to maintain the M36 publication and rewrote the Third Edition
- The Committee has many active members who are involved in water auditing, leakage management and revenue protection programs for water utilities across the world

# User's Guide



## Check Up Program for Small Systems

Release 1.3.5

February 2010



EPA 816-R-010-003  
February 2010  
Office of Water (4606M)  
[epa.gov/safewater](http://epa.gov/safewater)



# Contents

---

1	Introduction	1
1.1	CUPSS and Asset Management	1
1.2	Benefits of Using CUPSS	1
1.3	About This Guide	2
1.4	How to Use This Guide	2
1.5	Structure	2
1.6	Points of Contact	2
2	Installation Instructions	3
2.1	Launch the CUPSS Installation Wizard	3
2.2	Uninstall CUPSS	6
3	Getting Started	8
3.1	CUPSS Startup	8
3.2	Utility Information	10
3.3	User Information	12
3.4	Operation and Maintenance	14
3.4.1	Daily Tasks	14
3.4.2	Weekly Tasks	17
3.4.3	Monthly Tasks	21
3.4.4	Annual Tasks	23
3.5	Assemble Your Team	27
3.5.1	Add Team Members	28
3.5.2	Edit and Delete Team Member Information	30
3.6	Review	30
4	Login and Navigation	34
4.1	Database Management	34
4.1.1	Creating a New Database	34
4.1.2	Removing a Database	35
4.1.3	Loading a Database	35
4.2	Login	36
4.2.1	Select Utility	37
4.3	Navigating CUPSS	38
4.4	Navigation Area	38
4.4.1	Administration menu	39
4.4.1.1	Set-up	39
4.4.1.2	Switch Utility	39
4.4.1.3	Create User	39
4.4.1.4	Help	39
4.4.1.5	Training	39
4.4.1.6	Exit	40
4.4.2	CUPSS Module Buttons	40
4.4.2.1	My Home	40
4.4.2.2	My Inventory	41
4.4.2.3	My O&M	41
4.4.2.4	My Finances	41
4.4.2.5	My Check Up	41
4.4.2.6	My CUPSS Plan	41
4.5	Activity Window	41
4.5.1	My Calendar	42
4.5.2	My Messages and Alerts	42
4.5.2.1	Popup Messages	43
4.5.2.2	Status Table	43

« [Back to front page](#)

**IN THIS EDITION:**

**HEADLINES**

- » [SRF reauthorization bill would solve many problems](#)
- » [Obama FY2010 budget water increases in, earmarks out](#)
- » [‘Buy American’ rule causing headaches for utilities?](#)
- » [Climate change bill needs water amendment](#)
- » [Stimulus funding slots \\$615.8 million for rural water](#)
- » [Water legislation roundup](#)
- » [Hot Topics — Small System Variances, TCR...](#)
- » [In the news](#)

**TECHNOLOGY & PRACTICE**

- » [Free AWWA software makes water audits quick and easy](#)
- » [Penn State boosts small system compliance](#)
- » [Utility Briefs — MDC, San Diego, San Antonio...](#)

**OUR COMMUNITY**

- » [Webcast offers pandemic flu answers](#)
- » [Tuesday at ACE is for operators, good laughs](#)
- » [AWWA dialing 011](#)
- » [Journal AWWA: Biological treatment for perchlorate](#)
- » [Bookshelf: Jar-test video](#)
- » [Revised C203 available](#)
- » [In memoriam: Peter Cook](#)

**AWWA streamlines™**

**TECHNOLOGY & PRACTICE**

**Free AWWA software makes water audits quick and easy**

The [AWWA Water Loss Control Committee's Water Audit Software v.4.0](#) is now [available for free download](#), boasting some big new features.

Although the software is not intended to provide a full and detailed water audit, it allows utilities to quickly compile a preliminary audit in the standardized and transparent manner advocated by AWWA, its creators say.

The software includes ten worksheets in Microsoft Excel spreadsheet file. Most of the data is entered on the second worksheet, which prompts the user to enter standard water supply information such as supplied water volume, customer consumption, distribution system attributes and loss quantities. Because many utilities don't typically tabulate all this data, the software allows the user to enter either known or estimated values, then calculates a variety of performance indicators useful for comparisons among utilities.

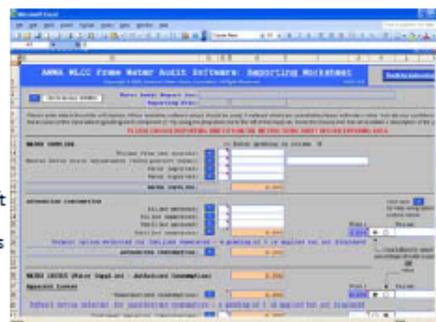
The biggest new feature of Version 4.0 is its "data grading" capability, which provides a basic validation of results. The user can assign a grading value, ranging from 1 to 10, to each piece of information he or she inputs. A 10 represents highly reliable, well validated data, while a grade of 1 reflects very crude data, such as rough estimates. Once all the grading cells have been filled in, a composite grading score is calculated and displayed at the bottom of the worksheet. The grading is based upon a scale of 100, and this score can be used as a basic validation for the audit.

The auditor can determine the status of the utility's data quality by reviewing the Loss Control Planning Worksheet, which provides planning guidance to the water utility. Utilities with a lower composite grading can focus program efforts on data collection and validation until their overall data quality becomes more reliable.

An additional new function is a priority listing of the most important three variables to target to improve the validity of the water audit data.

The AWWA Water Loss Control Committee's [Free Water Audit Software Version 4.0](#) is available for download from AWWA's new Water Loss Control Web pages on AWWA's [WaterWiser](#) site.

**Posted: 05/12/2009**



**Version 4.0 of AWWA's free Water Audit Software allows utilities to see which of their data collection efforts need improvement.**