

# **Fair Oaks Water District**

## **Request for Proposal**

**To replace and upgrade Fair Oaks Water District SCADA system.**



**Prepared by:  
FOWD Staff  
10326 Fair Oaks Boulevard  
Fair Oaks, CA 95628**

**October 2016**

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Attachment "A" - Functional Specifications, dated 09/06/2016 (by Wonderware Norcal)  
Attachment "B" - Sample of Professional Services Agreement

**1.0 Release Date**

1.1 October 31, 2016

**2.0 Closing Date**

2.1 Proposals must be received by November 23, 2016 at 3:00 PM at the Fair Oaks Water District office located at:  
10326 Fair Oaks Boulevard  
Fair Oaks, CA 95628

**3.0 Contact Person**

Inquiries about this request for proposal shall be submitted in writing and directed to:

Michael Nisenboym, P.E.  
Operations Manager  
Phone: (916) 967-5723 Fax: (916) 967-0153  
E-Mail: [mnisenboym@fowd.com](mailto:mnisenboym@fowd.com)

Fair Oaks Water District  
10326 Fairs Oaks Boulevard  
Fair Oaks, CA 95628

**4.0 Minimum Consultant Qualifications**

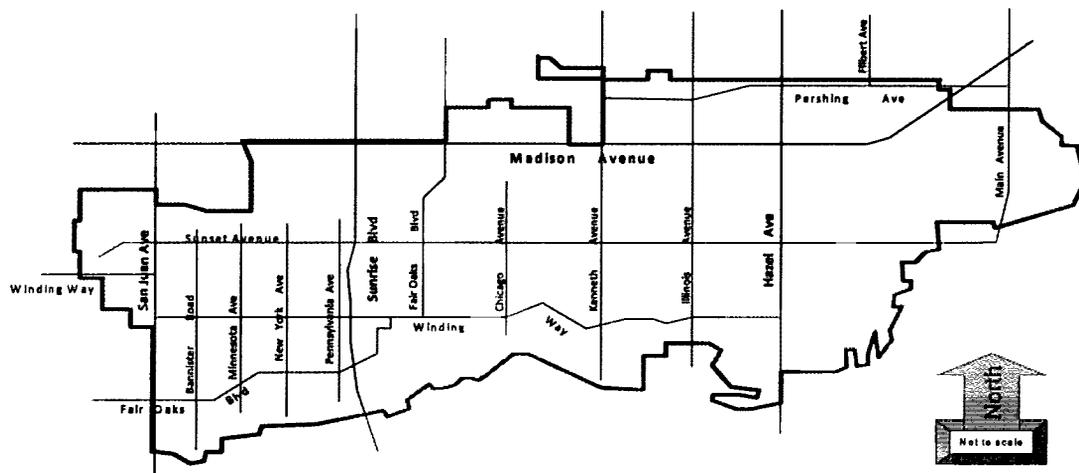
The intent of this Request for Proposal is to develop a master plan with recommendations and technical specifications for upgrades and improvements for the District SCADA system.

Minimum qualifications are listed below:

- 4.1 The Consultant must be engaged in the business and be experienced in planning, design, and implementation of SCADA systems in water industry.
- 4.2 The Consultant must employ only competent workforce for the execution of the work and all work must be performed under the direct supervision of the Project Manager.
- 4.3 Contractor must not have a conflict of interest as defined by State law and/or District policy. Contractor agrees to make a disclosure in compliance with the law and/or District policy if, at any time after the execution of an agreement to perform professional services, a conflict of interest may occur.

## 5.0 About the District

- 5.1 The District was organized on March 26, 1917 as the Fair Oaks Irrigation District under the provisions of Division 11 of the California Water Code. The District's original water supply was untreated surface water purchased from the North Fork Ditch Company. After completion of Folsom Dam on the American River in 1954, the North Fork Ditch Company's water rights were transferred to the newly created San Juan Suburban Water District. In 1979 the District formally changed its name to Fair Oaks Water District, even though it is legally still an irrigation District.
- The District currently purchases surface water from the San Juan Water District as treated water and delivers this water to approximately 14,000 residential and non-residential service connections through 180 miles of pipe. The balance of the District's water is supplied by six wells and one three-million gallon storage tank. The District serves a population of approximately 37,000 on 6,000 acres in the northeastern section of Sacramento County. The following figure displays the District service area:
  - A publicly elected five member Board of Directors serves four-year staggered terms and governs the District. Each Director represents a



specific geographic division within the District boundaries but is elected at large. Currently, the District has 30 regular full-time employees.

- Today, Fair Oaks Water District stands as a committed and involved member of the community. The District is led by five board members, including Misha Sarkovich, Michael McRae, Randy Marx and David Underwood (one position is vacant).

## **6.0 Existing SCADA system**

- 6.1 The Fair Oaks Water District SCADA system is located in the District's main office building, located at 10326 Fair Oaks Blvd. It consist of a single workstation computer running Siemens FactoryLink application software configured to poll thirteen Tesco Liquitronic (L-2000) remote terminal units located (RTU's) located throughout District's distribution system. The RTU's are communicating continuously with the SCADA server utilizing leased AT&T telephone lines.

FactoryLink Client Builder Graphics can be viewed on the server monitor or on the Operator Laptops. The graphic information depicts pressure, flow and status of district facilities in the real time mode.

The Wonderware SCADAAlarm software is configured to call operators via dedicated voice phone line (or annunciate locally) to alarm in case the system parameters are not normal as compare with the pre-set alarm points. The SCADA system logs historic data for trending and reporting purposes locally to a MS SQL server database. Trends are configured within the ClientBuilder graphic application. Reports are configured using MS Excel and WorkSmart Automation ReportBuilder™.

The existing SCADA is over 20 years old and has been updated only to add minor functions to the existing well sites.

The table 1 below presents a list of a current water supply and monitoring facilities and corresponding RTU number.

**Table 1**

	Facility Name	Address (all Fair Oaks, CA 95630)	RTU #	Existing control and data
1	Skyway tank and Booster station	5005 Skyway Drive	RTU-51	On/off control for pumps, inlet valves, flow , pressure and chlorine monitoring
2	PRV station	7711 Winding Way	RTU-12	Up/down pressure monitoring
3	Town Well	7995 Park Drive	RTU-1	On/off control, pressure, flow and chlorine residual monitoring
4	Pressure monitoring station	3900 Riva Ridge Drive	RTU-31	Pressure monitoring
5	New York Well	4301 New York Ave	RTU-6	On/off control, pressure, flow and chlorine residual monitoring
6	Park Well	5301 Temple Park Drive	RTU-8	On/off control, pressure, flow and chlorine residual monitoring
7	PRV station	7745 Lemon St.	RTU-13	Up/down pressure monitoring
8	Wholesale meter site	5515 Main Ave	RTU-22	Pressure and flow Monitoring
9	Casabella Well	4736 Johnson Dr	RTU-7	On/off control, pressure, flow and chlorine residual monitoring
10	Northridge Well	Kaula Drive	RTU-9	On/off control, pressure, flow and chlorine residual monitoring
11	Heather Well	7601 Heather Rd	RTU-5	On/off control, pressure, flow and chlorine residual monitoring
12	Wholesale meter site	5744 Filbert Avenue	RTU-21	Pressure and flow Monitoring
13	Madison well site ( future)	Gum Ranch ( Madison and Kenneth)	No RTU # assigned	On/off control, pressure, flow and chlorine residual monitoring
14	Administrative building & Maintenance building	10326 FOB -Adm. Building and 10317 FOB -Maintenance Building	FL Server, windows Server 2003, SQL 2000	Full control of all sites, historical data

## 7.0 District's Objectives and Expectations

7.1 The District's main objectives are:

- To upgrade District SCADA system software and hardware to current industry standards;
- To improve reliability of communication and reduce the ongoing cost by switching to radio communications;
- Upgrade remote site's PLCs;

- Provide enhanced alarm options;
- Improve historical data handling and provide operators with better trending and reporting capabilities;
- Integrate SCADA system with other business applications.

The consultant shall provide software, hardware, installation and integration with associated programming, startup, testing and training of the new SCADA system. The District staff have worked with Wonderware Norcal staff and developed a functional specification for the design and implementation of a new SCADA system based on the Wonderware software package. The functional specification document is included in this proposal as attachment "A".

## **8.0 Site visit**

Prospective consultants are encouraged to visit and inspect District water production facilities (Skyway tank, groundwater well and District office) to familiarize with existing system prior to submittal of proposal.

Contact M. Nisenboym, Operations Manager (916 844-3513) or J. Gospodnetich, Water supply Operator (916 257- 4977) for an appointment no later than November 15, 2016.

## **9.0 Scope of Work**

The following scope of work is a minimum that the District is expecting to be completed by the consultant:

1. Installation
  - a. 10326 Fair Oaks Blvd. and 10317 Fair Oaks Blvd –Master stations – servers
  - b. 14 remote sites- PLC upgrade
2. Integration
3. Radio communications between District Office (10326 FOB)station and remote sites
4. Start up and testing
5. Training

### **9.1 Installation**

a. Consultant shall install all new equipment, including but not limited to servers, switches and all associated software including operating systems and applications. Connect all equipment and verify connectivity.

b. The new servers shall be installed in the server room at 10326 Fair Oaks Blvd. and 10317 Fair Oaks Blvd.

c. All software and hardware shall be in accordance with the Functional Specifications (attachment A).

d. Consultant shall install radio antennae at the 10326 Fair Oaks Blvd. to provide uninterrupted communication between master site and remote sites. The District completed radio survey in 2013 to confirm if the radio communication is a viable option. Since the recommendations of the radio survey were not implemented, the Consultant shall verify heights and type of antennas.

The 2013 radio survey will be available for review upon request.

e. All cable management, connectors, termination, testing methods and labeling shall be meet TIA/EIA -568 standards.

## **9.2 Integration**

Consultant will be required to perform the following configuration

- a. Rebuild tag database to conform with a new SCADA software.
- b. Rebuild and re-develop screens in collaboration with the District staff.
- c. Setup historical data collection for trending and reporting.
- d. Prioritize alarm and annunciation.
- e. Set up and test remote terminals.
- f. Integrate new PLC at the remote sites.

## **9.3 Radio communication between master station and remote sites**

Consultant will be required to perform the following at the remote sites:

- a. Replace old PLC with Tesco L3000.
- b. Install radio antennae of sufficient height to provide communication link between remote sites.
- c. Provide grounding as necessary.

## **9.4 Start up and testing**

- a. Consultant shall test all SCADA functions, including but not limited to alarms, trends, communications, set points.

## **9.5 Training**

- a. Consultant shall provide two 4-hours training sessions for District operation staff.

**10.0 Warrantee and Technical support**

- a. All hardware provided by Consultant shall be covered by a 12-months warranty.
- b. Consultant shall provide warranty for 12-months for all issues related to software integration, developed by Consultant.

**11.0 Submittals**

Consultant must submit two (2) copies of the response.

**12.0 Project Costs**

The consultant shall submit the total cost of the proposed work, including purchasing all required software, licenses, hardware and other required equipment, installation, integration, testing, warranty and training necessary to deliver the fully functional SCADA system.

The cost per site below shall include all components ( hardware, software, installation, integration and testing). The cost shall include all incidentals. FOWD reserves the right to exclude some of the sites.

Project Element/Location	Cost, \$
Town Well	
Heather Well	
Northridge Well	
Casabella Well	
New York Well	
Park Well	
Madison well site ( future)	
Wholesale meter site ( Filbert)	
Wholesale meter site (Main)	
PRV station (Lemon)	
PRV station (Winding Way)	
Pressure monitoring station (Riva Ridge)	
Skyway tank and Booster station	
Administrative building & Maintenance building	
<b>Total Cost</b>	

Consultant shall provide project cost in a separate sealed envelope, titled:

"Fair Oaks Water District SCADA system –project cost"

### **13.0 Schedule**

13.1 The Request for Proposal schedule is as follow:

- Issuance of RFP: October 31, 2016
- Written Response due back to FOWD: by Wednesday, November 23, 2016 at 3:00 PM at 10326 Fair Oaks Blvd., Fair Oaks CA 95628 by mail.
- Issuance of professional agreement: by December 14, 2016\*

13.2 The District anticipates completion of a Master Plan by  
June 30, 2017\*

\*Dates subject to change and negotiation

### **14.0 Evaluation process**

The FOWD will evaluate consultant's proposals based on qualifications, references, experience and cost to determine consultant that best fits the needs of the District.

### **15.0 General Terms and Conditions**

This Request for Proposal (RFP) does not commit the District to award a contract or to pay any cost incurred in the preparation of a Consultant response.

The FOWD reserves the right to reject any or all proposals if in opinion of the District, none of the consultants are qualified to complete design in accordance with the needs of the District.

The District's General Terms and Conditions are attached for your information and must be signed prior to commencement of any work for the District.



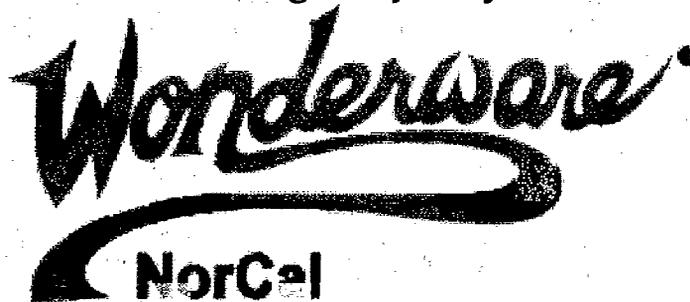
# FAIR OAKS WATER DISTRICT

The mission of Fair Oaks Water District is to provide our community with an adequate and reliable supply of water, exceeding all drinking water standards, at the lowest reasonable cost.

# Factorylink Replacement Project

# Functional Specification

Brought to you by



Wonderware NorCal

55 Francisco Street  
Suite 310  
San Francisco, CA 94133

Main 866.MyEandM  
Fax 707.473.3190

[www.norcal.wonderware.com](http://www.norcal.wonderware.com)

**Revision 1.0.3**

**Publish Date: 9/06/2016**



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## 2 Scope

This document should be used for the design and procurement of the City of Fair Oaks Water District (FOWD) Wonderware Control System hardware and software and provide the scope of work to be performed by contractor.

## 3 Virtual Machine Host configuration

### 3.1 VM Host Hardware

See the section 'Server Hardware Specifications' for the specifics of the HP Server Hardware specifications.

#### 3.1.1 Host Systems

There will be two Host systems. The hosts will be installed in separate racks in separate buildings. Each host will be a HP rack mount system with ESXi v6.0 installed. The hardware for each host will be comprised of the following components:

- HP DL360 Rack mount server with dual Intel Xeon 10C/20T Processors, 128GB of RAM, 7x600GB 10K RAID 6, 1x600GB 10K Spare, ESXi v6 on Internal Dual Redundant 8Gb SD Cards, 10x1GB NIC ports, Dual Hot-plug Redundant Power Supplies, iLo Advanced.

\*\* Per City of Fair Oaks Water District IT department request, the City of Fair Oaks Water District is to provide three Windows Server 2012 R2 Standard Operating System Open License Keys for each Host. These licenses are needed for each of the guest VMs on each Host.

Contractor will be responsible for cabling and connecting the Hosts to the rack and network and provide a Network Cabling Diagram.

#### 3.1.2 Host Network Connection

The HP host systems will have a total of 10 x 1GB Ethernet NIC ports (2x1GB On-board, 4x1GB On-Board, 4x1GB PCI). A Combination of On-Board and PCI NIC ports will be used on the R630 Host systems to provide a dual path to the networks and provide network redundancy in case of a link failure. NIC ports from On-Board and PCI NICs will be configured in a NIC TEAM and connected to the SCADA/PLC network, Two NIC ports dedicated for ESXI Host Management network, and two NIC ports dedicated to Future Use or for Access to DMZ network for Secure Access Anywhere Gateway Server.

Virtual Switches will be used on the Hosts to provide access to the networks required by the VMs.

Contractor will be responsible for cabling and connecting the Hosts to the Specified Networks and or VLANs and will provide a Network Cabling Diagram.

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### 3.1.3 Racking Equipment

The racking for the servers will be provided by City of Fair Oaks Water District. The customer will be providing two racking locations for the servers. Each racking location will support a server depth of 30" and have a minimum of 4 NEMA 5-15R receptacles to connect 100VAC Power per rack.

Additional Equipment supplied by contractor per Rack.

- HP LCD8500 1U US Rackmount Console Kit
- 1U Monitor/Utility Shelf

Contractor will be responsible for:

- Cabling Diagram.
- Racking and cabling all equipment into the rack.
- The Electrical connections for the equipment.

## 4 Virtualization Environment Redundancy

The HP system virtualization environment should have optimized performance and provide Wonderware redundancy in the event of host failure.

- **VM Redundancy**

In the event of an InTouch Remote Desktop or InTouch Tag Server VM failure, there will be a second VM performing the same functionality running on a separate host and will provide redundancy until the failed VM can be started. The VMs will be used to Collect and Present IO data.

- **Host NIC Cable Failure**

The Host systems will have multiple NIC ports that should connect to two separate redundant switches. In the event of a cable or NIC failure, all of the traffic to the network will be routed through the surviving host NIC.

FOWD will work with The Contractor for procuring, configuring and managing the redundant switches.

- **Switch Failure**

The Host systems will have redundant connections to switches providing access to the needed networks. Each Host will have at minimum 1 port on each quad port NIC dedicated to the specific network's traffic. In the event of a switch failure, all of the traffic to the network will be routed through the surviving switch.

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FOWD will work with The Contractor for procuring, configuring and managing the redundant switches.

## 5 VM requirements

Two HP ESXi v6.0 hosts will be responsible for running Wonderware virtual servers and other supporting virtual servers.

### 5.1 Wonderware Servers

These VMs will include:

#### Reporting

- WDDW-DR01 - Primary Dream Reports
- WDDW-DR02 - Secondary Dream Reports

#### Remote Desktop Services & IO

- WDDW-ITTS01 - InTouch Tag Server/Win911 Server #1
- WDDW-ITTS02 - InTouch Tag Server/Win911 Server #2
- WDDW-RDS01 - Remote Desktop Server #1 with InTouch Access Anywhere
- WDDW-RDS02 - Remote Desktop Server #2 with InTouch Access Anywhere

#### DMZ Secure Gateway

- WDDW-ITAASG01 - InTouch Access Anywhere Secure Gateway

### 5.2 Supporting Servers

These VMs will include:

#### ESXi Host Administration

- WDDW-VCS01 - vCenter Server

## 6 Virtual Machine Configurations

Contractor and Customer will work together to define the Naming and IP Information of Systems and Servers prior to configuration. After configuration coordination, the Document "Wonderware System - Machine Configuration" will include the initial configuration of the VMs and which Host they will be installed on.

This document will include the information needed to create each of the VMs to be run on the Hosts. This information will include but is not limited to Drive sizes, RAM, number of Processors, IP Address, software installed and Roles and Features that will be Enabled.

Wonderware Software to be installed will be version 2014 R2 SP1.

SQL Server Software to be installed will be Microsoft SQL Server 2012 Standard x64 SP2 OEM.

All Servers will need to be added as member servers to an existing Active Directory Domain. This will be the responsibility of FOWD.



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The Contractor will be responsible for configuring all software that is installed in the VMs. This includes but is not limited to all Wonderware, SQL Server, Reporting, MS Office, security configuration.

All user, groups and roles is the responsibility of FOWD.

All server security hardening is the responsibility of FOWD.

## 6.1 WDWW-VCS01 - vCenter Server

vCenter Server will be used to manage and maintain the ESXi Hosts and the ESXi Datacenter.

### 6.1.1 Software installed

vCenter Server and vCenter Client.

### 6.1.2 Initial Configuration

vCenter Server will be installed and all hosts added in a cluster to the vCenter Server. VM Templates added, Wonderware VMs added.

Refer to Document "Wonderware System - Machine Configuration" for the initial configuration of the virtual machine.

Adding VM to existing Active Directory Domain is the responsibility of FOWD.

Further configuration of the vCenter Server software is the responsibility of FOWD.

## 6.2 WDWW-BaseOSVM - Blank Windows 2012 R2 Server OS VM Template

Base Server OS Template VM – This VM will be used as a Template to create other VM Images.

### 6.2.1 Software installed

Windows Server 2012 R2, All Software updates. Base OS image will be Sysprep for OOB Experience.

### 6.2.2 Initial Configuration

Refer to Document "Wonderware System - Machine Configuration" for the initial configuration of the virtual machine.

Configuration of the software is the responsibility of The Contractor.

## 6.3 WDWW-DR01 - Dream Reports Server #1

Dream Reports Server – This server will be the primary Dream Reports server used to log data from InTouch Tag Server.



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### 6.3.1 Software installed

SQL Server 2012, Dream Reports, Microsoft Office 2013 x86 and their required software prerequisites will be installed on the VM

### 6.3.2 Initial Configuration

Refer to Document "Wonderware System - Machine Configuration" for the initial configuration of the virtual machine.

Adding VM to existing Active Directory Domain is the responsibility of FOWD.

Configuration of the software is the responsibility of The Contractor.

### 6.3.3 License Requirements

The Contractor is responsible for purchasing the following licenses from Wonderware NorCal:

- (1) Dream Report for Wonderware, 250 Tags, v4.7 DRW-250-47
- Customer First for Dream Report for Wonderware, v4.5 CF-DR

## 6.4 WDW-DR02 - Dream Reports Server #2

Dream Reports Server – This server will be the secondary Dream Reports server used to log data from InTouch Tag Server. The Data will be available via a web interface.

### 6.4.1 Software installed

SQL Server 2012, Dream Reports, Microsoft Office 2013 x86 and their required software prerequisites will be installed on the VM

### 6.4.2 Initial Configuration

Refer to Document "Wonderware System - Machine Configuration" for the initial configuration of the virtual machine.

Adding VM to existing Active Directory Domain is the responsibility of FOWD.

Configuration of the software is the responsibility of The Contractor.

### 6.4.3 License Requirements

The Contractor is responsible for purchasing the following licenses from Wonderware NorCal:

- (1) Dream Report, Redundant License, 4.7 DR-RED-47
- Customer First for Dream Report for Wonderware, v4.5 CF-DR

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## 6.5 WDWW- ITTS01 - InTouch Tag/Win911 Server #1

This Wonderware InTouch Tag/Win911 server will be the primary server used to get data from field devices and send email notifications via Win911 Software.

### 6.5.1 Software installed

Wonderware InTouch, DA/OI Servers, and Win911 Software and their required software prerequisites will be installed on the VM.

### 6.5.2 Initial Configuration

Refer to Document "Wonderware System - Machine Configuration" for the initial configuration of the virtual machine.

Win911 will be for email notification only, no modem will be connected to the server.

Configuration of the software is the responsibility of The Contractor.

Adding VM to existing Active Directory Domain is the responsibility of FOWD.

### 6.5.3 License Requirements

The Contractor is responsible for purchasing the following licenses from Wonderware NorCal:

(1) InTouch 2014R2 Runtime 1K Tag with I/O RDS	01-3459T
Customer FIRST - Standard Level	10-7001
WIN-911/Basic	

## 6.6 WDWW- ITTS02 - InTouch Tag/Win911 Server #2

This Wonderware InTouch Tag/Win911 server will be the secondary server used to get data from field devices and send email notifications via Win911 Software.

### 6.6.1 Software installed

Wonderware InTouch, DA/OI Servers, and Win911 Software and their required software prerequisites will be installed on the VM.

### 6.6.2 Initial Configuration

Refer to Document "Wonderware System - Machine Configuration" for the initial configuration of the virtual machine.

Win911 will be for email notification only, no modem will be connected to the server.

Configuration of the software is the responsibility of The Contractor.



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Adding VM to existing Active Directory Domain is the responsibility of FOWD.

### 6.6.3 License Requirements

The Contractor is responsible for purchasing the following licenses from Wonderware NorCal:

- (1) InTouch 2014R2 Runtime 1K Tag with I/O RDS, FLB 01-3459TF
- Customer FIRST - Standard Level 10-7001
- WIN-911/Basic

### 6.7 WDW-RRDS01 - InTouch Remote Desktop Server #1

Remote Desktop Server with InTouch HMI – This is the primary server for HMI Access

#### 6.7.1 Software installed

InTouch, Intouch Access Anywhere, and their required software prerequisites will be installed on the VM.

Virtual Machine needs to be added to an existing Active Directory Domain prior to Remote Desktop Services can be installed and configured. This is the responsibility of The Contractor

#### 6.7.2 Initial Configuration

Refer to Document “Wonderware System - Machine Configuration” for the initial configuration of the virtual machine.

Adding VM to existing Active Directory Domain is the responsibility of FOWD.

Adding Remote Desktop Services Role and Configuring Remote Desktop Services is the responsibility of FOWD.

#### 6.7.3 License Requirements

The Contractor is responsible for purchasing the following licenses from Wonderware NorCal:

- (1) InTouch 2014R2 Runtime 1K Tag without I/O RDS Conc 01-3510T
- (1) InTouch 2014R2 Runtime 1K Tag without I/O RDS Conc 01-3510TP
- (1) InTouch 2014R2 Runtime 1K Tag without I/O RDS 01-3460TP
- Customer FIRST - Standard Level 10-7001

### 6.8 WDW-RRDS02 - InTouch Remote Desktop Server #2

Remote Desktop Server with InTouch HMI – This is the secondary server for HMI Access



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## 6.8.1 Software installed

InTouch, Intouch Access Anywhere, and their required software prerequisites will be installed on the VM.

Virtual Machine needs to be added to an existing Active Directory Domain prior to Remote Desktop Services can be installed and configured. This is the responsibility of The Contractor

## 6.8.2 Initial Configuration

Refer to Document "Wonderware System - Machine Configuration" for the initial configuration of the virtual machine.

Adding VM to existing Active Directory Domain is the responsibility of FOWD.

Adding Remote Desktop Services Role and Configuring Remote Desktop Services is the responsibility of FOWD.

## 6.8.3 License Requirements

The Contractor is responsible for purchasing the following licenses from Wonderware NorCal:

- (1) InTouch 2014R2 Runtime 1K Tag without I/O RDS Conc, FLB 01-3510TF
- (1) InTouch 2014R2 Runtime 1K Tag without I/O RDS Conc, FLB 01-3510TPF
- (1) InTouch 2014R2 Runtime 1K Tag without I/O RDS, FLB 01-3460TPF
- Customer FIRST - Standard Level 10-7001

## 6.9 WDW-ITAASG01 - InTouch Access Anywhere Secure Gateway #1

InTouch Access Anywhere Secure Gateway will be used to provide secure access to the Remote Desktop Services HMI Servers.

### 6.9.1 Software installed

InTouch Access Anywhere Secure Gateway Software and its required software prerequisites will be installed on the VM

### 6.9.2 Initial Configuration

The Secure Gateway software will be configured to access the InTouch Remote Desktop Server.

Refer to Document "Wonderware System - Machine Configuration" for the initial configuration of the virtual machine.

InTouch AccessAnywhere Secure Gateway should be installed and configured by The Contractor to integrate with the City's existing network environment



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Further Configuration of the InTouch Access Anywhere Secure Gateway software to suite the security needs of the customer is the responsibility of FOWD.

## 7 Workstations

### 7.1 Specifications

There will be one ESXi management Workstation. The workstation will be an HP ProDesk 600 G2 with Windows 10 Pro and a 24" Display. The PC will come with a mounting kit to mount the PC to the back of the display.

See Section: "Equipment Specifications" for more details on Workstation Specifications.

### 7.2 Management Workstation – WDW-ESXiMgmt01

vCenter Management workstation

#### 7.2.1 Software installed on Operator Workstation

Windows 10 Pro, Windows Updates, vSphere Client

All installed software will be licensed, see document "Wonderware System - Machine Configuration" for license assignment.

#### 7.2.2 Initial Configuration

Refer to Document "Wonderware System - Machine Configuration" for the initial configuration of the workstations.

Setup and Connections of the Monitors and network are the responsibility of Contractor.

## 8 Site Networking Specifications

Provisions will need to be made to connect networks to each of the ESXi Host systems.

- Network VLANs may Include, but not Limited to:
  - VLAN 100 – SCADA/PLC Network (10.21.10.0/24)
  - VLAN 101 – ESXi Management Network (10.21.11.0/24)
  - VLAN 102 – Future/DMZ (10.21.12.0/24)

\*NOTE: IP Subnets for each VLAN will be coordinated with FOWD and Contractor and determined by the time of installation.

### 8.1 Virtual Switches

Each Host will have 2x1GB On-board, 4x1GB On-Board, 4x1GB PCI for a Total of 10 NIC ports per host. The ports will be named vnic0 though vnic9.



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NIC1 and NIC2's individual 1-4 ports will be connected to the same vSwitch within each host.

Equipment	Interface Name	vmNIC	vSwitch	Network Name
DL360	NIC 1, OnBoard Port 1	vmnic0	vSwitch0	ESXi
DL360	NIC 2, Slot 3 Port 1	vmnic1	vSwitch1	Control
DL360	NIC 2, Slot 3 Port 2	vmnic2	vSwitch1	Control
DL360	NIC 2, Slot 3 Port 3	vmnic3	vSwitch2	Future/DMZ
DL360	NIC 2, Slot 3 Port 4	vmnic4	vSwitch2	Future/DMZ
DL360	NIC 2, Slot 3 Port 5	vmnic5	vSwitch1	Control
DL360	NIC 2, Slot 3 Port 6	vmnic6	vSwitch0	ESXi
DL360	NIC 2, Slot 3 Port 7	vmnic7	vSwitch1	Control
DL360	NIC 2, Slot 3 Port 8	vmnic8	vSwitch1	Control
DL360	NIC 2, Slot 3 Port 9	vmnic9	vSwitch3	Future/DMZ

vmnic to vswitch mapping

### 8.1.1 vswitch0 – ESXi Management network

This will be the main network for Managing the ESXi Hosts.

vswitch0 will have the following vnic's mapped to it: vnic0, vnic6

### 8.1.2 vswitch1 - Control/SCADA/PLC network

This will be the main network for communicating to/from the Virtual Machines and the field devices.

vswitch1 will have the following vnic's mapped to it: vnic1, vnic2, vnic4, vnic5, vnic7, vnic8

### 8.1.3 vswitch2 – Future/DMZ network

If it is decided that the RCWW-ITAASG01 - InTouch Access Anywhere Secure Gateway VM will reside in the DMZ network, the DMZ network will need to be mapped to the ESXi Hosts to be available to the InTouch Access Anywhere Secure Gateway VM. If the InTouch Access Anywhere Secure Gateway VM will be on the same network as the Remote Desktop server, this vswitch will be reserved for future use.

vswitch2 will have the following vnic's mapped to it: vnic3, vnic9

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## 9 Delivery requirements

### 9.1 Documentation

#### 9.1.1 Base System Documentation

Base Documentation provides the basic needs to installing and commissioning the system. This documentation will allow the FOWD to determine the proper cabling for the system and system startup.

- System Startup Procedures for a Typical Host
- System Cabling Diagram for Hosts
- Quality Assurance Documentation

#### 9.1.2 System Installation Documentation(Optional)

System Documentation details the Specifics of the configuration that was done to your specific hardware. It would allow you to recreate any of the Host systems or Cisco Switches.

- Configuration of Typical ESXi Host
- Configuration of vCenter Server
- Installation and Configuration of a ESXi Host into vCenter
- Installation and Configuration of a VM on vCenter Host

### 9.2 Computer Systems

#### 9.2.1 Hosts Systems

Two HP DL360 host systems. Each of the HP DL360 host systems will be configured with VMWare ESXi v6 U2. The hosts will be configured and be added to the vCenter Server. Each host will have its basic settings configured (Name, IP Address and base software – See “Wonderware System - Machine Configuration” for Additional Details).

Host server security is the responsibility of The Contractor.

#### 9.2.2 Virtual Servers

The VMs will be configured and installed in ESXi v6.0 on the Host systems. Each VM will have its basic Settings Configured (Name, IP Address and base software – See “Wonderware System - Machine Configuration” for Additional Details) Each VM will have its corresponding Wonderware base software and licenses installed.

All VMs will be updated with the latest Windows Updates.

Wonderware Software configuration and server security is the responsibility of The Contractor.

### 9.2.3 Workstation – WDWW-ESXiMgmt01

The Operating system, base machine configuration and VMWare vCenter Client software will be installed on the workstation. The workstation will be updated with the latest Windows Updates.

Wonderware Software configuration is the responsibility of The Contractor.

## 10 Equipment Specifications

The SCADA system is composed of server and rack components, a workstation and software licenses.

All items should come with a manufacturer’s three year warranty and support.

### 10.1 Server Components

#### 10.1.1 Server Hosts – HP DL360

Host hardware will be Identical. (2) HP ProLiant DL360, Dual Intel Xeon E5 E5-2640V4 2.4 GHz, 176GB RAM, two Quad Port 1GB NIC, (8)x600GB 10K RAID6, (2)x600GB 10K Hot Spare, Redundant Power Supplies, Internal Dual MicroSD Module with ESXi Embedded, iLo Advanced.

#	Item	Description	Quantity
7	629135-B22	HP ProLiant DL360 Workstation	2
8	720478-B21	HP 500W Flex Slot Platinum Hot Plug Power Supply Kit	2
		HP ProLiant DL360 Advanced 1 Server with 3 year 24x7 Technical Support and Updates E-LTU	2

#### 10.1.2 Racking Equipment

HP Server Console LCD8500 1U Rack Mount Console Kit with 18.5-inch WXGA TFT LCD bright view display.

A 1U Fixed Shelf - Vented, four point mounting with rear slide mounts adjusting from 24" - 30" deep to fit rack, a 275 lb capacity, Black steel.

#	Item	Description	Quantity
1	AF630A	HP LCD8500 1U US Rackmount Console Kit	2
2	ESV1924-30	1U 24-30" Adjustable 4 Post Vented Rackmount Shelf	2



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## 10.2 Workstation

### 10.2.1 ESXi Management Workstation - HP ProDesk 600 G2

Workstation hardware will be Identical. (1) HP ProDesk 600 G2 - Intel® Core i5 6500T 2.5 GHz Processor Quad Core, 8Gb RAM, 256GB Solid State Drive, Windows 10 Pro, 24" Display and Desktop to monitor mounting kit.

#	Item	Description	Quantity
1	W5X47JT#ABA	HP ProDesk 600 G2 - Core i5 6500T 2.5 GHz - 8 GB - 256 GB	1
2	K5A38AA#ABA	HP 24in 24" LED-backlit LCD - Black	1
3	G1K22AT	HP SB Desktop Mini Security/Dual VESA Sleeve	1
4	P1N78AT	HP Desktop Mini LockBox - PC enclosure system	1

## 10.3 Software Licensing

### 10.3.1 Microsoft Licensing

Windows Server 2012 Remote Desktop Services Device Clients for up to 7 Devices.

Host Servers will require (3) Windows Server 2012 R2 Standard License, which will support six VMs per host.

\*\* Per City of Fair Oaks request, the City of Fair Oaks is to provide all Windows Server 2012 R2 Standard Operating Systems Open License Keys for each Host. These licenses are needed for each of the guest VMs on each Host.

\*\* Per City of Fair Oaks request, the City of Fair Oaks is to provide all MS Office 2013 Standard 32bit Open License Keys.

#	Item	Description	Quantity
		Microsoft Windows Server 2012 Remote Desktop Service License 1 Device	7

### 10.3.2 VMWare ESXi Licensing

Hosts will have ESXi 6 Essentials Plus Licensing. This includes vCenter Server License and Support for 3 Years.

#	Item	Description	Quantity
1	V56-ESP-KIT-C	VMware vSphere Essentials Plus Kit License Version (6) 3 Hosts	1
2	V56-ESP-KIT-3P-SSS-C	VMware Support and Subscription Production - technical support - for VMware	1

EXHIBIT "B"

Model Agreement-Professional Services  
(With General & Auto Liability Exposures With Additional Insured Endorsement)  
Fair Oaks Water District

Some of the important terms of this agreement are printed on Page 2 & 3. For your protection, make sure that you read and understand all provisions before signing. The terms on Page 2 & 3 are incorporated in this document and will constitute a part of the agreement between the parties when signed.

TO: \_\_\_\_\_ DATE: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Agreement No. \_\_\_\_\_

The undersigned Consultant offers to furnish the following:

Contract price \$ \_\_\_\_\_

Completion date \_\_\_\_\_

Instructions: Sign and return original. Upon acceptance by Fair Oaks Water District, a copy will be signed by its authorized representative and promptly returned to you. Insert below, the names of your authorized representative(s).

Accepted: Fair Oaks Water District

Consultant:

\_\_\_\_\_  
(Business Name)

By \_\_\_\_\_

By \_\_\_\_\_

Title \_\_\_\_\_

Title \_\_\_\_\_

Other authorized representative(s):  
\_\_\_\_\_

Other authorized representative(s):  
\_\_\_\_\_

Consultant agrees with Fair Oaks Water District that:

- a. When the law establishes a professional standard of care for the Consultant's services, to the fullest extent permitted by law, Consultant will immediately defend, indemnify and hold harmless Fair Oaks Water District, its directors, officers, employees, and authorized volunteers from all claims and demands of all persons that arise out of, pertain to, or relate to the Consultant's negligence, recklessness, or willful misconduct in the performance (or actual or alleged non-performance) of the work under this agreement. Consultant shall defend itself against any and all liabilities, claims, losses, damages, and costs arising out of or alleged to arise out of Consultant's performance or non-performance of the work hereunder, and shall not tender such claims to Fair Oaks Water District nor to its directors, officers, employees, or authorized volunteers, for defense or indemnity.
- b. Other than in the performance of professional services, to the fullest extent permitted by law, Consultant will immediately defend, indemnify and hold harmless Fair Oaks Water District, its directors, officers, employees and authorized volunteers from all claims and demands of all persons arising out the performance of the work or furnishing of materials; including but not limited to, claims by the Consultant or Consultant's employees for damages to persons or property except for the sole negligence or willful misconduct or active negligence of Fair Oaks Water District, its directors, officers, employees, or authorized volunteers.
- c. **Workers' Compensation:** By his/her signature hereunder, Consultant certifies that he/she is aware of the provisions of Section 3700 of the California Labor Code which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and that Consultant will comply with such provisions before commencing the performance of the professional services under this agreement. Consultant and sub-consultants will keep workers' compensation insurance for their employees in effect during all work covered by this agreement.
- d. **Professional Liability:** Consultant will file with Fair Oaks Water District, before beginning professional services, a certificate of insurance satisfactory to Fair Oaks Water District evidencing professional liability coverage of not less than \$1,000,000 per claim and \$2,000,000 annual aggregate, that coverage shall not be cancelled except with notice to Fair Oaks Water District. Coverage is to be placed with a carrier with an A.M. Best rating of no less than A-VII, or equivalent, or as otherwise approved by Fair Oaks Water District. The retroactive date (if any) is to be no later than the effective date of this agreement. Consultant shall maintain such coverage continuously for a period of at least five (5) years after the completion of the contract work. Consultant shall purchase a five-year extended reporting period i) if the retroactive date is advanced past the effective date of this Agreement; ii) if the policy is canceled or not renewed; or iii) if the policy is replaced by another claims-made policy with a retroactive date subsequent to the effective date of this Agreement. In the event that the Consultant employs other consultants (sub-consultants) as part of the work covered by this agreement, it shall be the Consultant's responsibility to require and confirm that each sub-consultant meets the minimum insurance requirements specified above.
- e. Consultant will file with Fair Oaks Water District, before beginning professional services, certificates of insurance (Acord Form 25 or equivalent) satisfactory to Fair Oaks Water District evidencing

Coverage - Coverage for commercial general liability and automobile liability insurance shall be at least as broad as the following:

1. Insurance Services Office (ISO) Commercial General Liability Coverage (Occurrence Form CG 0001)
2. Insurance Services Office (ISO) Business Auto Coverage (Form CA 0001), covering Symbol 1 (any auto)

Limit - The consultant shall maintain limits no less than the following

1. General liability - coverage of not less than two million (\$2,000,000) per occurrence or the full per occurrence limits of the policies available, whichever is greater for bodily injury, personal injury and property damage; (\$4,000,000 general and products-completed operations aggregate (if used)).
2. Auto liability - One million dollars \$1,000,000 for bodily injury and property damage each accident limit;
3. Workers' compensation (statutory limits) and employer's liability (\$1,000,000) (if applicable);

## Required Provisions –

- The general liability coverage shall give Fair Oaks Water District, its directors, officers, employees (collectively the District), and authorized volunteers insured status (via ISO endorsement at least as broad as CG 2010 1185 or **both** CG 20 10 plus CG 20 37 if a later editions is used) specifically naming the Fair Oaks Water District, its directors, officers, employees, or authorized volunteers; or using the language that states "as required by written contract."
  - The general liability coverage is to state or be endorsed (with as broad as ISO endorsement CG 20 01 04 13) to state "such insurance shall be primary and any insurance, self-insurance or other coverage maintained by Fair Oaks Water District, its directors, officers, employees, or authorized volunteers shall not contribute to it".
  - Coverage is to be placed with a carrier with an A.M. Best rating of no less than A-:VII, or equivalent, or as otherwise approved by Fair Oaks Water District.
  - The coverage shall contain no special limitations on the scope of protection afforded to Fair Oaks Water District, its directors, officers, employees, or authorized volunteers.
  - In the event that the Consultant employs other consultants (sub-consultants) as part of the work covered by this agreement, it shall be the Consultant's responsibility to require and confirm that each sub-consultant meets the minimum insurance requirements specified above.
  - **Evidences of Insurance** - Prior to execution of the agreement, the Consultant shall file with Fair Oaks Water District a certificate of insurance (Acord Form 25 or equivalent) signed by the insurer's representative evidencing the coverage required by this agreement. Such evidence shall include (1) attached additional insured endorsements with primary & non-contributory wording, (2) Workers' Compensation waiver of subrogation, and (3) a copy of the CGL declarations or endorsement page listing all policy endorsements, and confirmation that coverage includes or has been modified to include Required Provisions above. The District reserves the right to obtain complete, certified copies of all required insurance policies, at any time. Consultant shall maintain the Insurance required by this agreement for a period of not less than 5 years following the termination or completion of this agreement. Consultant further waives all rights of subrogation under this agreement. Failure to continually satisfy the Insurance requirements is a material breach of contract.
- f. If any of the required coverages expire during the term of this agreement, the Consultant shall deliver the renewal certificate(s) including the general liability additional insured endorsement to Fair Oaks Water District at least ten (10) days prior to the expiration date.
- g. Consultant shall not accept direction or orders from any person other than the General Manager or the person(s) whose name(s) is (are) inserted on Page 1 as "other authorized representative(s)."
- h. Payment, unless otherwise specified on Page 1, is to be \_\_\_\_\_ days after acceptance by Fair Oaks Water District.
- i. Permits required by governmental authorities will be obtained at Consultant's expense, and Consultant will comply with applicable local, state, and federal regulations and statutes including Cal/OSHA requirements.
- j. Any change in the scope of the professional services to be done, method of performance, nature of materials or price thereof, or to any other matter materially affecting the performance or nature of the professional services will not be paid for or accepted unless such change, addition or deletion is approved in advance, in writing by a supplemental agreement executed by Fair Oaks Water District. Consultant's "authorized representative(s)" has (have) the authority to execute such written change for Consultant.