CITY OF WHEATLAND
ENGINEERING DEPARTMENT
REQUEST FOR PROPOSAL

Engineering / System Integration Services
For
Replacement of Water Resources Supervisory Control
and Data Acquisition (SCADA) Network Upgrade Project

November 17, 2014

PROPOSAL DUE December 19, 2014
CITY OF WHEATLAND
REQUEST FOR PROPOSAL
ENGINEERING / SYSTEM INTEGRATION SERVICES
FOR
WATER RESOURCES SUPERVISORY CONTROL AND DATA ACQUISITION
(SCADA) NETWORK SOFTWARE UPGRADE PROJECT

PROJECT DESCRIPTION

The City of Wheatland is seeking proposals from qualified engineering consulting/system integration firms to provide support to the Public Works Department with regards to software upgrades to the current Supervisory Control and Data Acquisition (SCADA) system.

SCOPE OF SERVICES

The scope of engineering consulting/system integration services to be provided is more accurately described in the attached Exhibit “A”, Scope of Services, as well as other elements or modifications which may be suggested by consultants presenting proposals to better meet the needs of the City. All services shall be provided in accordance with the City’s standard Professional Services Agreement and general provisions, attached as Exhibit “B” to this Request for Proposal.

INSURANCE REQUIREMENTS

The insurance requirements are set forth in the City’s Professional Services Agreement and general provisions as attached on Exhibit “B”.

PRE-PROPOSAL CONFERENCE

A mandatory site visit / pre-proposal conference will be held at the City’s Corporate Yard, 208 Fourth Street, Wheatland, CA 95692 on Tuesday December 9, 2014 at 10:00 a.m. The pre-proposal conference will also include visit to the City’s well sites.

PROPOSAL REQUIREMENTS

Written proposals shall include, at a minimum, the following items:

I. Cover Letter

The cover letter, which should be signed by an official authorized to bind the consultant, shall include the following:
• Identification of consultant and any subconsultants;
• Brief overview of qualifications of consultant; and
• Contact information (address, phone and e-mail)

II. Project Understanding and Approach

Describe your understanding of the project goals and your approach to meeting the task objectives outlined in this RFP. Include a narrative of potential challenges and what special services or expertise your firm has to meet the City’s needs for this Project.

III. Project Team

Provide an organization chart and identify all personnel who will be assigned to work on this project and include a description of their abilities, qualifications and experience. Identify any subconsultants and provide a description of their qualifications and experience.

IV. Project Work Plan

Explain in detail your proposed work plan, including all anticipated tasks along with any supplemental tasks (those not specifically identified in this RFP) you deem necessary for successful completion of this project. A table shall be provided that identifies the number of labor hours for each phase of the project, by staff level.

V. Fee Proposal

In a separate sealed envelope entitled “Fee Proposal”, the consultant shall provide a breakdown of tasks, hours, personnel and totals based on an hourly rate schedule with a “not to exceed” maximum cost for all work identified in the Scope of Services. Include a copy of your firm’s current itemized hourly rate fee schedule. Indicate if travel time and mileage will be charged. Include any sub-consultant cost and markup. Provide a breakdown of the proposed fee by task in accordance with the tasks defined in the consultants proposed Work Plan. Direct costs should be identified separately.

VI. References

Provide a list of similar projects completed by the consultant under which services similar to those required by this RFP were performed. Include a brief description of the services, dates the services were provided, and name and telephone number of references familiar with the services provided.
VII. **Schedule**

Provide a schedule for completion of the project. The schedule should include the various submittals, equipment/hardware and software purchasing, testing of the updated SCADA system, and training.

VIII. **Exceptions**

Identify any exceptions you are proposing with respect to the attached Professional Services Agreement that the City will be using for this project.

**PROPOSAL SUBMISSION DEADLINES.**

Five (5) paper copies and one (1) electronic version in PDF Format of the proposal must be submitted to the Wheatland City Hall at 311 C Street, Wheatland, CA 95693 by **4 p.m. on December 19, 2014.**

SUBMIT PROPOSALS TO:

Dane Schilling  
City Engineer  
City of Wheatland  
111 C Street  
Wheatland, California 95692  
Telephone: (530) 633-2761  
Fax: (530) 633-9102  
Email (Questions Only): Schilling@coastlandcivil.com

Any questions regarding this Request for Proposal may be directed to the City Engineer at the City of Wheatland.

**RIGHT OF REFUSAL**

The City reserves the right to reject any and all proposals with or without cause. Proposals will be considered only in their entirety. The City reserves the right to negotiate the specific requirements and costs using the selective proposals as a basis.

**SELECTION PROCEDURES**

Written proposals submitted by the deadline will be evaluated based upon the following criteria:

- Demonstrated understanding of the work to be done
- Experience with similar projects
• Qualifications and experience of key personnel
• Quality and thoroughness of proposed Work Plan
• Schedule for completion of the project
• Proposed level of effort

These items are not listed in order of importance. Based on evaluation of submitted proposals, a list of the top-qualified consultants will be established. Selected consultants may be requested to participate in an oral interview, although this is not anticipated. The City reserves the right to select the top-ranked consultant based solely on the written proposal.

The City will open and review the fee proposal of the top ranked consultant only. If for any reason an acceptable contract cannot be negotiated with the top-ranked consultant, negotiations will commence with the next-ranked firm.
EXHIBIT “A”
SCOPE OF SERVICES

CITY OF WHEATLAND

ENGINEERING / SYSTEM INTEGRATION SERVICES
FOR
WATER RESOURCES SUPERVISORY CONTROL AND DATA ACQUISITION
(SCADA) NETWORK SOFTWARE UPGRADE PROJECT
SECTION 1 – GENERAL SCOPE OF WORK

PART 1 – GENERAL

The SCADA system at the City of Wheatland monitors and controls the Water Distribution system, six (6) well sites, two water storage tanks, booster and fire pump station, and the corporate yard. The City currently utilizes InTouch version 7.7 by Wonderware/Invensys Inc., for SCADA system operations.

Communication between sites is established by unlicensed spread spectrum radios. The Input/output list by Site (Appendix A) provides an overview of the entire control and data acquisition system used by the City.

The current workstations and laptops in use are currently out-of-date using Windows NT as the operating system and running currently unsupported Wonderware Factory Suite 2000 software. All computer/workstations computers and software are to be replaced, and all historical data is to be transferred to the new workstation by the consultant per the specifications provided in Section 3.

This section specifies the requirements for elements of the City of Wheatland SCADA Upgrade Project. While it outlines the general requirements, goals, and procedures, it is not a complete description of the project. The Consultant will be responsible for understanding the goals of the City and working with the City to complete the design, programming, and implementation of the project.

Ultimately, the consultant is tasked with providing and integrating the newly designed SCADA software system. This section addresses general hardware, software, and services necessary to provide the monitoring, control, data acquisition, data storage, and data presentation of functions specified. More detailed requirements of specific functions and components are presented in subsequent sections and will be developed further by the consultant. The scope associated with the SCADA upgrade project consists of furnishing all labor, services, materials, tools, equipment, hardware, software, and appurtenances necessary to make an operational, updated uniform SCADA system.

1. Perform field investigations of each location associated with the project and obtain site-specific information required for SCADA software programming.

These sites are include but are not limited to:
- Corporate Yard: 208 4th Street
- Well Site 3: 208 4th Street
- Well Site 4: 409 2nd Street
- Well Site 5: 511 Evergreen Drive
- Well Site 6: 1010 Wheatland Road
- Well Site 7: 103 McCurry Street
- Well Site 8: 701 Carpenter Way
Additional information for each field investigation site can be found in Appendix A.

2. Provide various specified components of the system including, but not limited to: computers, servers, monitors, radios, networking equipment, and other associated equipment required to support reliable high performance functionality of the new SCADA software.

3. Provide and program all software components necessary for the SCADA system.

4. Perform all system configuration tasks required in order for the SCADA system to meet performance requirements specified in Section 4 – SCADA Software Project Requirements. Examples of such work include but not limited to: operating system configuration, reconfiguration of operating system security model, configuring network communication, securing network traffic between SCADA hardware devices.

5. Conduct system tests.

6. Provide training and system documentation.

7. Make the entire SCADA system fully operational.

8. Perform cleanup and closeout activities.

9. Provide maintenance and warranty services

10. Provide spare parts and materials list.

11. Provide post-project programming support.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)
SECTION 2 – GENERAL SYSTEM REQUIREMENTS

PART 1 – GENERAL

1.01 Summary of Requirements

A. Scope of Work

1. The work performed under this contract includes the furnishing of all labor, materials, tools, professional services, and equipment for improvements to the City of Wheatland current SCADA software system.

2. Work is to be performed on operational treatment facilities which must remain in operation at all times. Consultant shall coordinate sequencing and shutdowns with the City of Wheatland.

B. Project Overview

This Project will focus on upgrading the existing SCADA software with the latest version of Inductive Automation Ignition and programming and configuring two (2) new networked computers.

Corporate Yard – Water Treatment and Distribution

1. The consultant shall upgrade the existing Wonderware InTouch system used at the Corporate Yard with the latest version of Inductive Automation Ignition software. The new system shall incorporate data from all system locations. Data and screens shall be visible from all workstations in the system.

2. The consultant shall configure/integrate one (1) workstation and one (1) laptop. All workstations and laptops shall be installed with software as detailed in Sections 4.

3. The consultant shall purchase Ignition SCADA software and two (2) licenses. Software licenses will be installed and integrated by the consultant.

4. The consultant shall develop, and obtain City approval, of a SCADA System Design Guide as defined in Section 4. The Design Guide shall define the standards for databases, control programming, graphics development, security, alarm management, and historical data collection, access, and reporting.

5. The consultant shall recreate all existing SCADA HMI tags in the new system. New tags shall be represented in the new system in accordance with the tag naming system defined in the SCADA System Design Guide.
6. The consultant shall transfer all data currently stored under the Wonderware Historian to the new workstation. Consultant shall be responsible for verifying the historical data can be retrieved and viewed in the new SCADA software.

7. The consultant shall conduct a SCADA System Design workshop as defined in Section 4, subsection 3.01.

8. The consultant shall create new SCADA graphics screens for all City facilities. Existing graphics screens have been provided as Appendix B, and shall be used as the basis for creating new graphics. The new graphic screens shall provide enhanced functionality compared to the existing SCADA screens with respect to screen navigation, trending, alarm summaries, and other SCADA standards.

9. The consultant shall configure the existing alarm dialer system to annunciate designated alarms from the new *Ignition* application.

10. The consultant shall configure the *Ignition* software to collect historical data for every analog point in the system and selected alarms, discrete points, and setpoints. Refer to Section 4 for historical database requirements.

11. The consultant shall conduct workshop(s) with the City to define graphic screen and content, alarm configurations, network security protocols, and define report design and content.

12. The consultant shall modify the existing PLC program to conform to the SCADA System Design Guide and integrate the new *Ignition* software application.

13. The consultants shall provide up to forty (40) hours of additional programming for the City-requested changes during the twelve (12) month warranty period.

1.02 Product Submittals

A. Product Information – Hardware

1. Format

Hardware product information shall include, but no limited to: catalog cut sheets, data sheets, performance surveys, test reports, equipment lists, material lists, diagrams, pictures, and descriptive material. The product information shall cover all items including mechanical devices, mounting components, wiring, terminal strips, connectors, accessories, and spare parts. The submittal information shall show the standard and optional product features, as well as all performance data and specifications.

2. Requirement

Prior to the commencement of manufacture (or shipment for stock items), the consultant submit for review product information for all equipment and
material specified or required to support the equipment or systems specified in Sections 3. Specific requirements for the form and content or product information submittals are included in the individual section that defines the equipment requirements. Manufacture (or shipment for stock items) shall not begin until the product information submittal has been approved by the City, in writing.

B. Product Information – Software

1. Format

The software documentation shall provide a comprehensive description of all standard, off the shelf software, necessary for the operation and maintenance of the system. A software document shall be furnished for each major software program in the system. Warranty information shall be supplied for each software subsystem or program in the System. Software License information shall be submitted for each program in the system.

2. Requirement

Prior to the commencement of manufacture (or shipment for stock items), the consultant submit for review product information for all equipment and material specified or required to support the equipment or systems specified in Sections 3. Specific requirements for the form and content or product information submittals are included in the individual section that defines the equipment requirements. Manufacture (or shipment for stock items) shall not begin until the product information submittal has been approved by the City, in writing.

1.03 Warranties and Support Services

The system warranty shall consist of a full scope, in place warrant, consistent with the provisions of the Terms and Conditions of the RFP. The warranty duration shall be twelve (12) month beyond Final Acceptance. All software and hardware components, supplied by the consultant, that are part of the system shall be covered by the warranty. The consultant shall coordinate any warranties provided by third party suppliers.

PART 2 – PRODUCTS

2.01 General Requirements

A. Materials
Material shall be new, free from defects, and of the quality specified. All instruments with the same specification shall be from the same manufacturer.

B. System Operational Checks

The consultants proposed system shall continually check the operation of all devices in the system, and report any problem to the user. Upon detecting a malfunction, the failed operation shall be attempted a number of time (programmable) in order to determine whether the malfunction is temporary or permanent. Permanent malfunctions shall be alarmed and logged. Temporary malfunctions shall not be alarmed but shall be logged for maintenance purposes.

PART 3 – EXECUTION

1.01 Construction Sequence

A. Construction Schedule Summary

1. The consultant shall submit and maintain for the duration of the project a detailed schedule and System Integration Plan. The initial plan shall be prepared in coordination with City and shall be submitted at least 25 days prior to the commencement of the SCADA Simulation Software Test.

2. The schedule shall follow the System Integration Plan. The schedule and System Integration Plan shall fully describe the implementation of the project in several logical phases in accordance with the following:

   a. General Work items to be performed;
   b. Step by Step integration from the existing system to the new system.
   c. Any systems or equipment that need to be isolated or shutdown and duration of the shutdown.
   d. City work or staff required to support the plan.

B. Construction Constraints and Outage Limitations

A minimum level of services is required at the Corporate Yard facilities at all times. Minimum services level requirements vary seasonally depending on water demands. In order for the Corporate Yard to meet services requirements, existing facilities must be kept in operation. Periodic shutdowns can be allowed upon City approval. Requests for shutdowns must be requested at minimum, one (1) week in advance of the shutdown. Typical maximum allowable shutdown duration includes the time required to dewater pipelines, and provide for filling storage reservoirs, and to perform the planned work.
1.02 Project Phasing

A. Phase 1 - Mobilization & SCADA Software Programming

1. The consultant shall schedule and conduct a Project Kickoff Meeting & Software Development Workshops, to assist in development of the HMI software.

2. The consultant shall prepare hardware and software submittals in accordance with these specifications prior to programming.

B. Phase 2 – System Integration

1. Establish the new Ignition SCADA Master Station by developing the consolidation I/O database, HMI screens, alarm system configurations, security, and historical databases for all City facilities.

2. The consultant shall work closely with staff for all HMI development.

3. In parallel to screen development, the consultant shall configure the SCADA system including all databases.

4. The consultant shall prepare a System Integration Plan to include scheduling of all tests as required below.

5. The consultant shall configure the existing SCADA alarm software.

1.03 Testing Requirements

A. System Functional Tests

The test shall exercise and demonstrate the successful operation of every specified system function and shall include, but not limited to, the following:

- Rigorous exercising of all devices both individually and collectively.
- Verification of proper scanning and data acquisition of all status and data points.
- Demonstration of analog input, pulse input, and analog output accuracy.
- Testing of all user interface functions.
- Verification of all control operations to ensure that they result in the correct sequence of operation.
- All specified display types, reports, and operator/user procedures must be shown to be implemented and verified for accuracy.
- Create and process devise failure conditions. Special attention shall be given to creating failures in the middle of operator sequences and control action such as:
  - Communication failure after a command is issued but before the result is recorded in the database.
  - Computer failure after a command is issued but before the result is recorded in the database.
- Demonstration of all redundant functions and components.
- Demonstration of all required alarm processing functionality, including audible annunciation.
- Demonstration of all required historical capture, storage, and retrieval functions.
- Demonstration of all required data logging functions.
- Demonstration of all required device control functions.
- Demonstration of all required database management functionality.
- Demonstration of all required software support utilities.
- Demonstration of all system diagnostics.
- Demonstration of system operation in a simulated power outage.

B. Support Software Tests

The test for the support software shall include the following, as a minimum:

- Demonstration of restoration of system using backup media.
- Demonstration of system editing capabilities, including the addition and deletion of points in a PLC; the addition, deletion or modification of displays, the addition, deletion and modification of report formats, the addition, deletion and modification of control strategies, and the modification of the database and all database parameters. City stall will assist in the support software testing.
- Demonstration of the editing of system parameters including timers, intervals, etc.
- Demonstration of remote access.

1.04 Training

A. Training Overview

A comprehensive training program shall be provided by the Consultant covering the operation and maintenance of SCADA system functionality. Several specific requirements for the training program are listed below:
1. All instructors shall be highly qualified for technical training with demonstrated expertise in not only the SCADA system functionality but also professional training techniques. Trainers should have no other duties that interrupt training. Training shall not be combined with other activities such as system configuration or startup. Vendor provided training shall be conducted by factory authorized and certified trainers. Resumes and evidence of Qualifications of Instructors shall be provided as part of the Test Plan.

2. Complete, professional, training material shall be provided for all training including course outline, schedule, training manuals, and review/testing materials. Training materials shall be designed not only to assist the comprehension of the course material but also serves as reference documents after the completion of the training. The training session shall be recorded on video by the consultant for future training needs by the City.

3. Training courses shall be a combination of classroom and hands-on training.

B. Training Plan

The training plan shall include complete descriptions of all training modules, schedule, a list of all proposed instructors along with resumes, and examples of proposed training manuals.

The City will review the training plan for assurance that the training planned by the consultant will meet the training needs. Special emphasis will be placed on review of the qualifications of the proposed instructor. If the City determines that the proposed instructors are not sufficiently qualified to conduct specific training course, the consultant shall identify additional qualified instructors.

C. Software Maintenance Training

1. Systems Operator – Training courses shall be presented that instruct the system operator in the efficient operation of all aspects of the SCADA system. The course material shall include not only the general operations of the SCADA system but also the operation of the specific features incorporated in the SCADA system. In particular, the operator training shall include instruction of the use of all operation functionality including, but not limited to alarm logging, trending, and the process displays, databases, reports, and system software.

2. Programming Training – Training courses shall be presented that will enable City programmers to develop and maintain all aspects of the system software. In particular the training shall include, but not limited to:
- Process data development and modification
- Historical and replicated database development and modification.
- Process display development and modification.
- Report development and modification.
- General software maintenance, including systems backup, restoration and archiving.
- Calculation additions, alarm and event logging additions, graphic display, report and trend conditions.
- Network training for adding additional equipment (printers, workstations, etc) or additional PLCs and I/O from the SCADA Network.
- Adding, editing, transporting and testing of data sent to historical database systems.

The course shall address the procedures from the standard SCADA system software, plus material explaining specific conventions and procedures used by the consultant in developing the City SCADA application. The courses shall provide instruction in techniques for developing and maintaining current and comprehensive documentation for all applications.
SECTION 3 – HARDWARE PROJECT REQUIREMENTS

PART 1 – GENERAL

1.01 General Requirements

A. System - The Workstation Computers shall include an operating system supported by the SCADA software. The City’s standard desktop operating system is Windows 8. The workstations shall also include Microsoft Office 2010, or a version compatible with the SCADA software. All software shall be the latest compatible and most up-to-date versions with all compatible patches and service packs.

PART 2 – PRODUCTS

2.01 Computers and Peripheral Devices

The consultant will be required to purchase and supply new one (1) workstation, one (1) laptop, and one (1) workstation printer. Refurbished computers and or hardware will not be acceptable.

A. Workstation Computer– Quantity (1)

1. Hardware: The work station shall be at minimum
   i. Workstation computer
   ii. Workstation monitor
   iii. Wireless Keyboard
   iv. Wireless Mouse
   v. Portable stereo speaker

2. Specifications
   i. Dual core Intel processor with clock speed of no less than 2.3 GHz.
   ii. Windows 8 Professional 64-bit operating system.
   iii. Microsoft Office 2010 Professional or later version compatible with SCADA software.
   iv. Antivirus Software – Windows Defender
   v. No less than 6 GB of operating memory.
   vi. No less than 500GB of hard disc drive storage.
   vii. No less than two (2) gigabit Ethernet ports.
   viii. Ability to support video resolution of 1920x1200 pixels with 32-bit color depth at no less than 60Hz, and one DVI, Display Port (DP), or HDMI video signal port.
   ix. Wireless keyboard and wireless mouse.
x. Color monitor with diagonal size of 24” or larger, with a resolution of 1920x1200 pixels at 60 Hz or better, one DVI, Display Port (DP), or HDMI video port.

B. Laptop Computer – Quantity (1)

1. Hardware: The work station shall be at minimum
   i. Laptop Computer
   ii. Wireless Mouse

2. Specifications
   i. Dual core Intel processor with clock speed of no less than 2.3 GHz.
   ii. Windows 8 Professional 64-bit operating system.
   iii. Microsoft Office 2010 Professional or later version compatible with SCADA software.
   iv. Antivirus Software – Windows Defender
   v. No less than 6 GB of operating memory.
   vi. No less than 125GB of hard disc drive storage.
   vii. No less than two (2) gigabit Ethernet ports.
   viii. No less than a 15” size built in display with an aspect ratio of 15:9.
   ix. Support video resolution of no less than 1920x1200 pixels at 60 Hz or better.
   x. Wireless mouse.
   xi. Built in microphone.
   xii. Built in video camera of 2.0 megapixels or higher.

C. SCADA System Printer – Quantity (1)

1. Hardware: The work station shall be at minimum
   i. Desktop Printer

2. Specifications
   i. Print resolution speed: 1200x1200 dpi
   ii. Duplex printing: Manual
   iii. Printer memory: 512 MB
   iv. Processor: 800 MHz Intel LE80578
   v. Paper size support: Letter, Legal, 8.5 x 13, Statement, Executive, Postcard, Envelope
   vi. Duty cycle: Up to 100,000
   vii. Networking: Standard Enterprise
   viii. Communication ports: 1 x USB2, 1 x 1000 mbps, 1 x EIO
   x. Hardware installation option: Office Desk Mount
PART 3 – EXECUTION

3.01 General

A. Packaging and Shipping - Once computerized equipment has been purchased, it shall be used by the consultant for the SCADA software development inside the premises of the consultant. Upon completion of the development and prior City witnessed testing, computerized equipment shall be delivered to the City’s Corporate Yard. Before shipping to the City test location, the consultant shall package the components in a manner that ensures that they are not damaged during shipping. All packaged components shall be in the original boxes and shall be supported by adequate packing material for protection from damages that may occur during transportation.

B. System Installation – The consultant is responsible for developing and following a “System Integration Plan” for installing SCADA Hardware. Hardware installation shall not commence until the Plan has been favorably reviewed. The consultant shall notify the City Engineer and Director of Public Works ten (10) working days prior to the commencement of the SCADA hardware installation.
PART 1 – GENERAL

1.01 Summary

A. All HMI software required on the SCADA computers shall be purchased by the Consultant. The consultant shall be responsible for installation and configuration of the software. The consultant shall ensure the installation, configuration, deployment, and testing of the HMI system will not conflict with the existing SCADA system.

PART 2 – PRODUCTS

2.01 Products

A. The consultant shall provide latest edition of Ignition SCADA Software by Inductive Automation.

PART 3 – EXECUTION

3.01 Software Development Process

A. DATABASE, GRAPHIC DESIGN AND REPORT WORKSHOP

The consultant shall coordinate a database and graphic design workshop and shall ensure that all consultant system configurations personnel that will be developing the system attend this workshop. At minimum the following items shall be addressed during the workshops.

1. Database: Consultant shall review the existing database standards.
   a. Tag naming convention.
   b. Setpoints, calculated points, alarms, historical Points.
   c. Conventions for showing alarm conditions, devise status, and process variable values.
   d. Conventions for alarm descriptions.

2. Graphic Design: The consultant shall review the existing graphic design standards.
   a. Review of existing graphic standards and proposed path for expansion for:
      i. Symbols library to be used on the graphics.
      ii. Conventions for color usage and animation style.
iii. Conventions for showing alarm conditions, devices status, and process variable values.
iv. Conventions for naming and identifying devices.
v. General guideline for layout of the Title Bar, overall System Overview Screen, Individual Process Area screen, Individual Site overview screen, individual Device Popup screen. This guideline shall establish the typical content and information density of the graphics.

3. Reporting: Consultants shall review the existing reporting standards.

   a. Data query requirements.
   b. Calculation formulas.
   c. Report presentation conventions.
   d. Frequency of generation.
   e. Requirements for automatic distribution of reports.

The objective of the workshop is to obtain City input and approval of the databases, graphics, and reporting requirements of the proposed software prior to moving forward with the necessary programming.

The consultant shall provide a backup of the program once final testing of the SCADA system has been accepted by the City.
SECTION 5 – PROCESS GRAPHIC REQUIREMENT

PART 1 – GENERAL

1.01 Summary

A. This section describes the scope of defining and implementing the SCADA graphics and describes the requirement for developing the graphics. The consultant shall develop the SCADA graphics using the information provided by the City in a collaborative effort with the City.

B. The consultant shall use the existing screens, and the City’s input as the basis for design of the new graphics.

C. The graphics defined in this specification are generally associated with the display of field conditions. However, network communication status, system internal status, troubleshooting, diagnostic and other system information graphics required to meet the functional requirements as defined in Section 2 shall also be provided. These include, but are not limited to, alarms, events, historical data recall and display, network status, trend setup, and other system management functions.

1.02 Graphic Types

A. System Overview Screen: The system overview graphical screen shall be densely populated with collection of most important parameters for operation from all sites part of the entire SCADA system. This includes all production well sites, booster pump station, fire pump station, and reservoirs. The purpose of this screen is to present a single look on all sites with their most important process status information.

B. Corporate Yard Overview Screen: A collection of screens shall be developed to deliver the most important information for the Corporate Yard. The screen will provide an overview to operators responsible for this system and the overall status of system or corporate yard.

C. Process or Site Overview Screens: The process or site overview graphical screens shall be a graphical representation of the most important devices, process variables, system states within a single site. The graphic shall contain dynamic fields that depict analog and discrete values and alarm conditions that affect the process area or site.

D. Unit Process Screen: These shall be graphical screens with detailed graphics showing the status of all equipment connected to, and all control provided by, the control system for a single process unit. Using these
graphics, the operator shall be able to control equipment and show the resulting change in status (i.e. open or close valves, stop or start pumps, change a set point, initiate a sequence, etc). These graphics shall also show devised such as hand valves that are not monitored by the control system but are necessary for clearly depicting the operation or status of process equipment or systems. Whenever the Site Overview screen accommodates status and control information for all devices from that site, unit process screen shall not be developed.

E. Top Menu Bar: The Top Menu Bar shall be configured to be visible at all times and provide quick access to all major screens. The top menu graphical screen shall include process symbols that are active links to allow navigation to various existing Corporate Yard Overview, Unit Process graphical screens, alarm detailed tabular status, trends, system information, and field communication status screens. It shall consist of a series of navigation user interface component providing shortcuts to all over screens as well as providing functionality for moving forward and back through recently accessed screens. In addition to the functional buttons, the menu bar shall include the current user name, the process screen description, the current date and time.

F. Pop-Up Graphics: Each individual final control element (typically valve, pump, and generator) or primary element (flow monitor, pressure monitor, and similar sensing devices) shall have a status and control screen associated with its overview graphic. The status and control of the screen shall appear over and above the screen from which it was called, this is a pop-up screen. The pop-up screen shall be smaller than the size of the desktop area and shall offer to the HMI user all status and control functionalities associated with this device only. All pop-ups shall be developed as instances of unified set of graphical templates.

1.03 Alarm System Graphic

A. The Alarm subsystem shall show a list of the active alarms in the system. As new alarms are detected, entries shall be displayed on the alarm summary graphic. As the alarm conditions clear, the entries shall be removed automatically from the list and recorded in the historian.

B. The alarm subsystem shall be able to display all suppressed/disabled alarms on a single graphical screen.

C. An operator shall be able to acknowledge alarms from the alarm summary display either individually or for all alarms in the queue.
D. Unacknowledged alarms shall be distinguished from acknowledged alarms by flashing or color. The method of distinctions shall be discussed and agreed with the City.

E. The alarm summary graphic must provide sorting and filtering capabilities. The user shall be able to filter on time, tag name, node name, alarm area(s), alarm status and alarm priority. The user must be able to sort on time, tag, alarm area(s), alarm priority, and alarm status. The user must be able to display alarm block information in a column format and apply complex filtering.

F. Comprehensive alarm graphics details shall be defined in the workshop by the consultant with the City.

1.04 Trends

A. Trends shall be configured for all measured and calculated analog inputs including pressure, levels, flows, analyzed properties.

B. All trends shall be initially configured for historical 12-hour display duration, unless otherwise noted. Trends should be configured for capable to switch seamlessly between real time and historical data.

C. More Trend graphic details shall be defined in the workshop by the consultant with the City.

1.05 Color Conventions

A. Colors shall be used in a consistent manner to denote process and equipment conditions. Specific color conventions for piping, symbol animation, and data display shall be based on the City’s existing graphic standards. Existing color conventions used by the City shall be reviewed with respect to efficiency and sensitivity for effectively conveying process data. Operator feedback shall be collected and analyzed. Improvements to the existing color conventions shall only be proposed by the City.

B. Modifications to the established color conventions shall not be allowed without prior approval from the City.

PART 2 – PRODUCTS

(NOT USED)
PART 3 – EXECUTION

3.01 Summary

For inventory of existing HMI screens refer to Appendix B. Appendix B is only a sampling of screens and does not depict all the screens in the existing HMI applications. It is the responsibility of the consultant to review all screens of the existing SCADA system for additional information needed to develop their proposal.
SECTION 6 – REPORTING REQUIREMENT

PART 1 – GENERAL

1.01 Summary

A. This section describes the scope of defining and developing the SCADA reports. The consultant shall develop the SCADA reports using the information provided by the City on a collaborative effort with the City.

B. The consultant shall use the tag naming conventions and the City’s input as the basis for developing the new reports.

1.02 Reports

A. This Historian shall be configured to support a variety of reporting needs. The reports shall be able to be scheduled and common ad-hoc reports generated by the current SCADA system. These reports shall be replicated on the new system.

B. Reports must be run automatically at the end of each period and placed in an appropriate directory. The resulting files shall be read-only so that data cannot be inadvertently altered. Cumulative monthly reports should maintain a monthly data sheet and add sheets for successive months so that past queries don’t have to be re-run. Reports must also be able to be generated manually in the event a re-run is necessary.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)
EXHIBIT “B”

CITY OF WHEATLAND
PROFESSIONAL SERVICES AGREEMENT

[INSERT STANDARD PSA]
CITY OF WHEATLAND
CONSULTANT SERVICES AGREEMENT

THIS AGREEMENT is entered into this _________, 20__, by and between the City of Wheatland, a general law city (“City”) and ____________________________________________ (“Consultant”), who agree as follows:

1. Scope of Work. Consultant shall perform the work and render the services described in Exhibit __, attached hereto and incorporated herein, or described as follows:

[leave blank if exhibit attached] (the “Work”). Consultant shall provide all labor, services, equipment, material and supplies required or necessary to properly, competently and completely perform the Work. Consultant shall determine the method, details and means of doing the Work.

2. Payment.

a. In exchange for the Work, City shall pay to Consultant a fee based on [select one]:

Consultant’s actual time and expenses necessarily and actually expended on the Work in accordance with Consultant’s fee schedule, attached hereto as Exhibit __ and incorporated herein.

The fee and billing arrangement described on Exhibit __ attached hereto and incorporated herein.

b. The total fee for the Work shall not exceed $______ ____. There shall be no compensation for extra or additional work or services by Consultant unless approved in advance in writing by City. Consultant’s fee shall include all of Consultant’s costs and expenses related to the Work.

c. At the end of each month, Consultant shall submit to City an invoice for the Work performed during the preceding month. The invoice shall include a brief description of the Work performed, the dates of Work, number of hours worked and by whom (if payment is based on time), and an itemization of any reimbursable expenditures. If the Work is satisfactorily completed and the invoice is accurately computed, City shall pay the invoice within 30 days of its receipt.

3. Term.

a. This Agreement shall take effect on the above date and shall continue in effect until completion of the Work, unless sooner terminated as provided in subsection (b). Time is of the essence in this Agreement. Select one:

Consultant shall complete the Work no later than __________, 20__. This deadline may be extended by City for good cause shown by Consultant.

Consultant shall perform the Work diligently and as expeditiously as possible, consistent with the professional skill and care appropriate for the orderly progress of the Work.

b. This Agreement may be terminated at any time by City upon 10 days advance written notice to Consultant. In the event of such termination, Consultant shall be fairly compensated for all work performed to the date of termination as calculated by City based on the above payment provisions.
Compensation under this subsection shall not include any cancellation or demobilization charges or lost profit associated with the expected completion of the Work or other such similar payments relating to Consultant’s claimed benefit of the bargain.

4. Professional Ability of Consultant. Consultant represents that it is specially trained and experienced, and possesses the skill, ability, knowledge and certification, to competently perform the Work provided by this Agreement. City has relied upon Consultant’s training, experience, skill, ability, knowledge and certification as a material inducement to enter into this Agreement. All Work performed by Consultant shall be in accordance with applicable legal requirements and meet the standard of care and quality ordinarily to be expected of competent professionals in Consultant’s field.

5. Conflict of Interest. Consultant (including principals, associates and professional employees) represents and acknowledges that (a) it does not now and shall not acquire any direct or indirect investment, interest in real property or source of income in the area covered by this Agreement or that would be affected in any manner or degree by the performance of Consultant’s services under this agreement, and (b) no person having any such interest shall perform any portion of the Work. The parties agree and acknowledge that Consultant is not a designated employee within the meaning of the Political Reform Act and City’s conflict of interest code because Consultant will perform the Work independent of the control and direction of the City or of any City official, other than normal contract monitoring, and Consultant possesses no authority with respect to any City decision beyond the rendition of information, advice, recommendation or counsel.

6. Consultant Records. Consultant shall keep and maintain all ledgers, books of account, invoices, vouchers, canceled checks, and other records and documents evidencing or relating to charges for services, expenditures and disbursements charged to City for a minimum period of three years (or for any longer period required by law) from the date of final payment to Consultant under this Agreement. City may inspect and audit such books and records, including source documents, to verify all charges, payments and reimbursable costs under this Agreement.

7. Ownership of Documents. Every report, study, spreadsheet, worksheet, plan, blueprint, specification, drawing, map, photograph, computer model, computer disk, magnetic tape, CAD data file, computer software and any other document or thing prepared by Consultant under this Agreement and provided to City (“Work Product”) shall be the property of City, and City shall have the right to use, reuse, reproduce, publish, display, broadcast and distribute the Work Product and to prepare derivative and additional documents or works based on the Work Product without further compensation to Consultant or any other party. Consultant may retain a copy of any Work Product and use, reproduce, publish, display, broadcast and distribute any Work Product and prepare derivative and additional documents or works based on any Work Product; provided, however, that Consultant shall not provide any Work Product to any third party without City’s prior written approval, unless compelled to do so by legal process. If any Work Product is copyrightable, Consultant may copyright the same, except that, as to any Work Product that is copyrighted by Consultant, City reserves a royalty-free, nonexclusive and irrevocable license to use, reuse, reproduce, publish, display, broadcast and distribute the Work Product and to prepare derivative and additional documents or works based on the Work Product. If City reuses or modifies any Work Product for a use or purpose other than that intended by the scope of work under this Agreement, then City shall hold Consultant harmless against all claims, damages, losses and expenses arising from such reuse or modification.

8. Compliance with Laws. Consultant shall perform the Work in compliance with all applicable federal, state and local laws and regulations. Consultant also shall possess, maintain and comply with all federal, state and local permits, licenses and certificates that may be required for it to perform the Work.
9. **Indemnification.** Consultant shall indemnify, defend, protect, and hold harmless City, and its officers, employees, volunteers and agents from and against any and all liability, losses, claims, damages, expenses, demands, and costs (including, but not limited to, attorney, expert witness and consultant fees, and litigation costs) of every nature arising out of Consultant’s performance of the Work and caused by any negligent act or omission, willful misconduct or violation of law of or by Consultant or its employees, agents and subcontractors, except where caused by the active negligence, sole negligence or willful misconduct of City or as otherwise provided or limited by law. Consultant’s obligations under this indemnification provision shall survive the termination of, or completion of Work under, this Agreement.

10. **Insurance.**

   a. Types & Limits. Consultant at its sole cost and expense shall procure and maintain for the duration of this Agreement the following types and limits of insurance:

<table>
<thead>
<tr>
<th>Type</th>
<th>Limits</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial general liability</td>
<td>$1,000,000 per occurrence &amp; $2,000,000 aggregate</td>
<td>at least as broad as ISO CG 0001</td>
</tr>
<tr>
<td>Automobile liability</td>
<td>$1,000,000 per accident</td>
<td>at least as broad as ISO CA 0001, code 1 (any auto)</td>
</tr>
<tr>
<td>Workers’ compensation</td>
<td>statutory limits</td>
<td></td>
</tr>
<tr>
<td>Employers’ liability</td>
<td>$1,000,000 per accident</td>
<td></td>
</tr>
</tbody>
</table>

   b. Other Requirements. The general and automobile liability policy(ies) shall be endorsed to name City, its officers, employees, volunteers and agents as additional insureds regarding liability arising out of the Work. Consultant’s coverage shall be primary and apply separately to each insurer against whom claim is made or suit is brought, except with respect to the limits of the insurer’s liability. City’s insurance or self-insurance, if any, shall be excess and shall not contribute with Consultant’s insurance. Each insurance policy shall be endorsed to state that coverage shall not be canceled, except after 30 days’ prior written notice to City. Insurance is to be placed with insurers with a current A.M. Best’s rating of A-:VII or better unless otherwise acceptable to City.

   c. Proof of Insurance. Upon request, Consultant shall provide to City the following proof of insurance: (a) certificate(s) of insurance evidencing this insurance; and (b) endorsement(s) on ISO Form CG 2010 (or insurer’s equivalent), signed by a person authorized to bind coverage on behalf the insurer(s), and certifying the additional insured coverage.

11. **State Audit Contingency.** This section applies if payments under this Agreement will exceed $10,000. In accordance with California Government Code section 8546.7, the parties acknowledge that this Agreement, and performance and payments under it, are subject to examination and audit by the State Auditor General for three years following final payment pursuant to this Agreement.

12. **Entire Agreement.** This writing represents the sole, final, complete, exclusive and integrated expression and statement of the terms of this contract between the parties concerning the Work, and supersedes all prior oral and/or written negotiations, representations or contracts. This Agreement may be amended only by a subsequent written contract approved and executed by both parties.

13. **Independent Contractor.** Consultant’s relationship to City is that of an independent contractor. All persons hired by Consultant and performing the Work shall be Consultant’s employees or agents. City shall not be responsible in any way for any payment or liability arising out of workers’ compensation, unemployment, or employee wages or benefits to or for Consultant’s employees or agents.
14. **Successors and Assignment.** This Agreement shall bind and inure to the benefit of the heirs, successors and assigns of the parties; however, Consultant shall not subcontract, assign or transfer this Agreement or any part of it without the prior written consent of City.

15. **No Waiver of Rights.** Any waiver at any time by either party of its rights as to a breach or default of this Agreement shall not be deemed to be a waiver as to any other breach or default. No payment by City to Consultant shall be considered or construed to be an approval or acceptance of any Work or a waiver of any breach or default.

16. **Severability.** If any part of this Agreement is held to be void, invalid, illegal or unenforceable, then the remaining parts will continue in full force and effect and be fully binding, provided that each party still receives the benefits of this Agreement.

17. **Governing Law and Venue.** This Agreement will be governed by and construed in accordance with the laws of the State of California. The county and federal district court where City’s office is located shall be venue for any state and federal court litigation concerning the enforcement or construction of this Agreement.

18. **Attorney’s Fees.** In the event any legal action is brought to enforce or construe this Agreement, the prevailing party shall be entitled to an award of reasonable attorney’s fees, expert witness and consulting fees, and litigation costs.

19. **Notice.** Any notice, invoice or other communication that is required or permitted to be given under this Agreement shall be in writing and either served personally or sent by prepaid, first class U.S. mail addressed as follows:

<table>
<thead>
<tr>
<th>City:</th>
<th>Consultant:</th>
</tr>
</thead>
</table>
| City Manager  
City of Wheatland  
111 C Street  
Wheatland, CA 95692 | 
|

Any party may change its address by notifying the other party of the change in the manner provided above.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CITY</td>
<td>CONSULTANT</td>
</tr>
<tr>
<td>By:</td>
<td>By:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>_________________________________</td>
<td>_________________________________</td>
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<tr>
<td>_________________________________</td>
<td>_________________________________</td>
</tr>
<tr>
<td>_________________________________</td>
<td>_________________________________</td>
</tr>
<tr>
<td><em><strong>[name]</strong></em></td>
<td><em><strong>[title]</strong></em></td>
</tr>
</tbody>
</table>
Appendix “A”

INPUT / OUTPUT LIST BY SITE
# City of Wheatland

## Field Process Control Systems

### Location: Corporation Yard

<table>
<thead>
<tr>
<th>Facility Name:</th>
<th>Corporation Yard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Address:</td>
<td>208 4th Street</td>
</tr>
<tr>
<td>GPS Coordinates:</td>
<td>39.012897, -121.420958</td>
</tr>
</tbody>
</table>

### Process Description:

Ground reservoir accepts water from wells and distribution. Booster Pumps into elevated reservoir. Boosters & elevated reservoir are used to control and maintain system pressure.

<table>
<thead>
<tr>
<th>Control Equip.</th>
<th>Qty.</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio</td>
<td></td>
<td>MDS Spread Spectrum, RadioLinx</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control Equip.</th>
<th>Qty.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reservoir</td>
<td>2</td>
<td>1- Ground, 1- Elevated Tower</td>
</tr>
<tr>
<td>Booster Pumps</td>
<td>4</td>
<td>3- Booster 1- Fire Booster</td>
</tr>
<tr>
<td>Well</td>
<td>1</td>
<td>Well #3</td>
</tr>
<tr>
<td>Lift Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve</td>
<td>1</td>
<td>Singer</td>
</tr>
<tr>
<td>Chlorine</td>
<td>1</td>
<td>Hach CL17</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

...
City of Wheatland
Field Process Control Systems

Location: Well #3

<table>
<thead>
<tr>
<th>Facility Name:</th>
<th>Corporation Yard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Address:</td>
<td>208 4th Street</td>
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<tr>
<td>GPS Coordinates:</td>
<td>39.012897</td>
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<tr>
<td></td>
<td>-121.420958</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control Equip.</th>
<th>Qty</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC</td>
<td>1</td>
<td>AB Micrologix 1000</td>
</tr>
<tr>
<td>Relay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio</td>
<td></td>
<td>MDS Spread Spectrum towards elevated reservoir.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control Equip.</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reservoir</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Booster Pumps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lift Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorine</td>
<td>1</td>
<td>ProMinent Dulcometer</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
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Notes:
Well #3 communicates directly with SCADA
City of Wheatland

Field Process Control Systems

Location: Well #4

<table>
<thead>
<tr>
<th>Facility Name:</th>
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<tbody>
<tr>
<td>Physical Address:</td>
<td>409 2nd Street</td>
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<tr>
<td>GPS Coordinates:</td>
<td>39.011981, -121.425035</td>
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**Control Equip.**

<table>
<thead>
<tr>
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<th>Qty.</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC</td>
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<td>AB Micrologix 1000</td>
</tr>
<tr>
<td>Relay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio</td>
<td></td>
<td>MDS Spread Spectrum towards elevated reservoir.</td>
</tr>
</tbody>
</table>

**Process Description:**

- Feeds directly to distribution system.

**Notes:**

- Other equipment:
  - Chlorine: 1, Hach CL17
  - Other:

---

MDS Spread Spectrum towards elevated reservoir.
## City of Wheatland

### Field Process Control Systems

**Location:** Well #5

<table>
<thead>
<tr>
<th>Facility Name:</th>
<th>Well #5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Address:</strong></td>
<td>511 Evergreen Drive</td>
</tr>
<tr>
<td><strong>GPS Coordinates:</strong></td>
<td>39.016436, -121.435768</td>
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### Control Equipment

<table>
<thead>
<tr>
<th>Control Equip.</th>
<th>Qty.</th>
<th>Type</th>
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<tbody>
<tr>
<td>PLC</td>
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<td>AB Micrologix 1000</td>
</tr>
<tr>
<td>Relay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio</td>
<td></td>
<td>MDS Spread Spectrum towards elevated reservoir.</td>
</tr>
</tbody>
</table>

### Process Description:

Feeds directly to distribution system.

### Notes:

<table>
<thead>
<tr>
<th>Control Equip.</th>
<th>Qty.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reservoir</td>
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<td></td>
</tr>
<tr>
<td>Booster Pumps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lift Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorine</td>
<td>1</td>
<td>Hach CL17</td>
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<tr>
<td>Other</td>
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</table>
### Field Process Control Systems

**Location:** Well #6

<table>
<thead>
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<th>Facility Name:</th>
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<tbody>
<tr>
<td>Physical Address:</td>
<td>1010 Wheatland Road</td>
</tr>
<tr>
<td>GPS Coordinates:</td>
<td>39.007199, -121.430609</td>
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**Control Equipment:***

<table>
<thead>
<tr>
<th>Control Equip.</th>
<th>Qty.</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC</td>
<td>1</td>
<td>AB Micrologix 1000</td>
</tr>
<tr>
<td>Relay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio</td>
<td></td>
<td>MDS Spread Spectrum towards elevated reservoir.</td>
</tr>
</tbody>
</table>

**Process Description:**

- Feeds directly to distribution system.

**Notes:**

- Chlorine 1 Hach CL17
- Other
<table>
<thead>
<tr>
<th>Facility Name:</th>
<th>Well #7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Address:</td>
<td>103 McCurry Street</td>
</tr>
<tr>
<td>GPS Coordinates:</td>
<td>39.017807, -121.413804</td>
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</tbody>
</table>

### Process Description:

- Feeds directly to distribution system.

### Control Equipment

<table>
<thead>
<tr>
<th>Control Equip.</th>
<th>Qty.</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC</td>
<td>1</td>
<td>Ab Micrologix 1000</td>
</tr>
<tr>
<td>Relay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDS Radio</td>
<td></td>
<td>MDS Spread Spectrum towards elevated reservoir.</td>
</tr>
</tbody>
</table>

### Control Equipment Description

<table>
<thead>
<tr>
<th>Control Equip.</th>
<th>Qty.</th>
<th>Description</th>
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<tbody>
<tr>
<td>Reservoir</td>
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<td></td>
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<tr>
<td>Booster Pumps</td>
<td></td>
<td></td>
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<tr>
<td>Well</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lift Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorine</td>
<td>1</td>
<td>ProMinent Dulcometer</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>Generator</td>
</tr>
</tbody>
</table>
City of Wheatland
Field Process Control Systems

Location: Well #8

<table>
<thead>
<tr>
<th>Facility Name:</th>
<th>Well #8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Address:</td>
<td>701 Carpenter Way</td>
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<tr>
<td>GPS Coordinates:</td>
<td>39.014812, -121.437342</td>
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<table>
<thead>
<tr>
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<th>Type</th>
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<tbody>
<tr>
<td>PLC</td>
<td>1</td>
<td>AB Micrologix 1000</td>
</tr>
<tr>
<td>Relay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio</td>
<td></td>
<td>MDS Spread Spectrum towards elevated reservoir.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control Equip.</th>
<th>Qty.</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Reservoir</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Booster Pumps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lift Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorine</td>
<td>1</td>
<td>Hach CL17</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>Generator</td>
</tr>
</tbody>
</table>

Notes:

Emergency Generator
Appendix “B”

EXISTING HMI SCREENS
WELL 6

PRESSURE
FLOW
R. RUNTIME
R LEVEL

CL.2 RES.

ACKNOWLEDGE ALL
ALARM RESET
RESET PUMP FAIL TO START
& HI PRESSURE LOCKOUT

WATER LEVEL
165.4 ft.

RUN AUTO
CALLED

60.5 psi

0.80 ppm

665 gpm

Storage Tank

Password Delay
6,000 sec

3,380 sec

Timer

PC Anywhere
Active

SCADAAlarm
Active
<table>
<thead>
<tr>
<th>Rack</th>
<th>Rack</th>
<th>Rack</th>
<th>Rack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park Place</td>
<td>Ranch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WELL 8</td>
<td>WELL 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MICRO</td>
<td>MICRO</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- HIGH SCHOOL
- EVERGREEN
- EVERGREEN
- 5th St.

- WELL 6
- WELL 5
- WELL 4

- CORP
- CORP
- CORP
- CORP

- 0100
- 8:22
- 10/22/14
- 09:25:01
<table>
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<th>WELL 2</th>
<th>WELL 3</th>
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<tbody>
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<td>127.3 ft</td>
<td>125.9 ft</td>
<td>126.5 ft</td>
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<td>74.3 %</td>
<td>77.8 %</td>
<td>79.0 %</td>
<td>80.9 %</td>
<td>82.0 %</td>
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<tr>
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<th>AUTO</th>
<th>PUMP 2</th>
<th>AUTO</th>
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<th>AUTO</th>
<th>PUMP 4</th>
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<td>9.5</td>
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<td>Outer 24 H</td>
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</thead>
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<td>2</td>
<td>OFF</td>
<td>3</td>
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<tr>
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<td>3</td>
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<th>PC Anywhere SCADA</th>
<th>Active</th>
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