Job Description

Please note this job description is not designed to cover or contain a comprehensive listing of activities, duties, or responsibilities that are required of the employee for this job.

Job title	SCADA Systems Analyst

GENERAL PURPOSE

Under direction, performs a variety of complex technical and professional duties in the administration and maintenance of the District's Supervisory Control and Data Acquisition (SCADA) system, communications and automated control systems; designs, specifies, programs, operates, modifies, installs, troubleshoots, repairs, and maintains all District SCADA system assets, to insure 24/7 reliability and functionality, which include domestic and recycled water pump stations, domestic water production wells, membrane plants, water reclamation facilities, lift stations, and reservoirs; and performs related duties as assigned.

DISTINGUISHING CHARACTERISTICS

This fully qualified journey-level classification is responsible for performing the full range of SCADA professional system support duties, working independently, and exercising judgment and initiative. Positions at this level receive only occasional instruction or assistance as new or unusual situations arise and are fully aware of the operating procedures and policies of the work unit.

SUPERVISION RECEIVED AND EXERCISED

Receives direction from assigned supervisory or management personnel. Exercises no direct supervision over staff.

TYPICAL DUTIES AND RESPONSIBILITIES

The duties listed below are intended only as illustrations of the various types of work that may be performed. The omission of specific statements of duties does not exclude them from the position if the work is similar, related or a logical assignment to this position.

- Designs, creates, and modifies graphical user interface displays, utility programs, menus, and toolbars; codes displays using multiple programming languages to integrate and automate SCADA data in accordance with user requirements, new and changing technologies, industry standards, and regulatory compliance.

- Performs database administration functions; using multiple programming languages queries data, modifies, or updates data tables; generates reports and data runs; develops scripts to automate repetitive tasks, for data warehousing transaction processes, and backup strategies; ensures database capacity; performs database upgrades and software version management; creates, implements, and maintains database directories; creates and modifies file systems.
- Works with District staff in the design, development and testing of the RF communication network; the integration, development and testing of new facilities in the SCADA development environment; and the safety and optimized performance of all systems.
- Designs, installs, configures, and troubleshoots data communications equipment for critical SCADA, RF and plant PLC networks; assists in installing multi-platform interfaces; configures, tests, tunes and maintains network integrity and security to achieve optimal system performance; documents network configuration and standards.
- Designs, programs, maintains, and upgrades process controls from PLC ladder logic to field equipment for water/wastewater treatment and critical power distribution systems; installs, calibrates, and troubleshoots control system components and related instrumentation.
- Upgrades, maintains, and ensures consistent, reliable operation of critical power (up to 12kV) distribution and generation control systems including PLCs, power quality monitors (PQM), protective relays, HMIs, and RTUs.
- Inspects, oversees equipment installation work performed by contractors and District personnel.
- Performs system administration functions for server, storage, network, and workstation platforms; configures and installs software and hardware; monitors and evaluates disk space utilization and system performance; creates and maintains local, remote, and VPN user accounts, roles and access privileges.
- Designs, develops, and administers SCADA system database, network and communication programming standards.
- Programs and updates site network configurations and ensures data security for system devices; verifies communication integrity with the field Remote Terminal Units (RTU's); retrieves and exchanges plant alarms and critical site data; monitors for network infringement on dedicated radio frequencies; creates interfaces with field devices using a variety of communication protocols.
- Provides technical direction for telecommunications services; plans activities associated with the installation, service, and preventive maintenance of District remote communications facilities and telecommunications systems including, two-way radio, spread spectrum, microwave wireless, voice, data and SCADA systems.

- Maintains compliance with the District's Federal Communications Commission's (FCC) licenses; ensures security and reliability of remote communications systems; configures and installs software upgrades, firmware upgrades, and installs communications drivers necessary to interface with field devices for data exchange; develops or refines (RTU) data network-communications device specifications.
- Performs communication site engineering including the design of battery plants, antennas, towers, generators, and cabling; researches, engineers, designs, develops, and supports supervisory control systems, plant control systems, radio modem, ethernet, and serial-based telecommunication systems.
- Schedules and coordinates activities with other sections and divisions.
- Observes and complies with all District and mandated safety rules, regulations, and protocols.
- Performs related duties as assigned.

REQUIRED QUALIFICATIONS

Knowledge of:

- Principles, methods, and techniques in the design and operation of SCADA system controllers and devices.
- A diverse range of programming languages used by the District and the SCADA industry.
- Theory, concepts, principles and practices of process control technology.
- Principles and practices of configuring, troubleshooting diagnosing and maintaining PLC plant control sub-systems, telemetry central FIU, RTU systems, and RF systems.
- Operational characteristics of water and wastewater treatment and distribution systems.
- Critical power distribution and backup generation systems up to 12kV.
- Methods and techniques of troubleshooting systems and devices.
- Methods and techniques of installing, configuring, administering, and monitoring a diverse range of physical and virtual systems.
- Electrical power distribution and motor/pump control system design.
- A diverse range of programming languages used in SCADA systems.
- Methods and techniques of evaluating system effectiveness and responding accordingly.
- Security and monitoring devices, and procedures necessary to maintain the integrity and security of data in networked systems.
- Principles and practices of systems analysis and design for the development and management of SCADA systems.
- Change management principles and practices.
- Principles, practices, and methods of network design, and administration, including connectivity, protocols, interfaces, and security measures.

- Methods of managing and administering server-based operating systems.
- Principles and practices of database design, administration, and functionality.
- Principles, methods, protocols, and techniques in the design, installation, and operation of data, voice, and video communications systems, networks, equipment, devices, and cabling.
- Methods and techniques of PLC ladder logic programming, designing interfaces, and SCADA system device configuration.
- Federal, state, and local laws, codes, and regulations in assigned areas of responsibility.
- District and mandated safety rules, regulations, and protocols; safe work practices for industrial electrical environments, water/wastewater treatment facilities, and construction sites.
- Techniques for providing a high level of customer service by effectively dealing with the public, vendors, contractors, and District staff.
- The structure and content of the English language, including the meaning and spelling of words, rules of composition, and grammar.
- Modern equipment and communication tools used for business functions and program, project, and task coordination, including computers and software programs relevant to work performed.

Ability to:

- Provide professional level support to the District's SCADA systems and devices.
- Troubleshoot a diverse range of systems hardware and software and make or recommend modifications.
- Install, configure, maintain, and administer networked systems hardware and software including servers.
- Identify nominal voltage and other electrical hazards and make risk assessments while working at water/wastewater facilities and remote industrial sites.
- Design, program, troubleshoot, process controls from the Human Machine Interface (HMI) to field device.
- Monitor systems performance and recommend and implement changes to optimize system reliability and availability.
- Performs database management and administration tasks including tuning, storage, and backup and recovery measures.
- Develop and implement security measures in assigned technology area.
- Configure, maintain, and manage data and voice communication networks and infrastructure to achieve optimal technical performance and user support.
- Conduct comprehensive research in a diverse range of technology topics.
- Apply critical thinking techniques for a broad range of situations.
- Conduct training on best practices and the operation of process equipment, instrumentation, SCADA systems, and a variety of control devices common to large water/wastewater facilities.

- Prepare clear, concise, and accurate documentation, user guides, reports of work performed, and other written materials.
- Use modern, state-of-the-art precision and diagnostic instruments, computers, and specialized software to test, calibrate, and diagnose complex telecommunication systems, devices, and equipment.
- Independently organize work, set priorities, meet critical deadlines, and follow-up on assignments.
- Use tact, initiative, prudence, and independent judgment within general policy, procedural, and legal guidelines.
- Effectively use computer systems, software applications relevant to work performed, and modern business equipment to perform a variety of work tasks.
- Communicate clearly and concisely, both orally and in writing, using appropriate English grammar and syntax.
- Establish, maintain, and foster positive and effective working relationships with those contacted in the course of work.

Experience:

Any combination of experience and education that provides the required knowledge and abilities is qualifying, along with the specific licenses/certifications as outlined below:

- Four (4) years of progressively responsible experience providing technical support to a SCADA, DCS or industrial control system.

Education:

- Equivalent to a bachelor's degree from an accredited college or university with major coursework in information technology, automation and control technology or a closely related field.

Licenses/Certifications:

- A valid California driver's license and the ability to maintain insurability under the District's Vehicle Insurance Policy.
- ISA – Automation Professional Certifications desirable
- FCC General Radio Telephone License is desirable in certain assigned areas.

PHYSICAL DEMANDS

The physical demands described here are representative of those that must be met by employees to successfully perform the essential functions of this class. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

Must possess mobility to work in a standard office setting and use standard office equipment, including a computer; to operate a vehicle to visit various District sites;

vision to read printed materials and a computer screen; and hearing and speech to communicate in person and over the telephone. This is primarily a sedentary office classification although standing in work areas and walking between work areas may be required. Finger dexterity is needed to access, enter, and retrieve data using a computer keyboard or calculator and to operate standard office equipment. Positions in this classification occasionally bend, stoop, kneel, reach, push, and pull drawers open and closed to retrieve and file information. Employees must possess the ability to lift, carry, push, and pull materials and objects up to 40 pounds.

WORK ENVIRONMENT

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this class. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

Employees work both indoors and outdoors as assigned. and are exposed to loud noise levels, cold and hot temperatures, inclement weather conditions, vibration, confining workspace, chemicals, biological, mechanical and/or electrical hazards, exposure to insects, vermin, and parasites, and hazardous physical substances, odors, and fumes. Employees may interact with upset staff and/or public and private representatives in interpreting and enforcing departmental policies and procedures.

This job description has been reviewed and approved by all levels of management in cooperation with the union (if applicable):

Approved by:	*Board of Directors*
Date adopted:	*March 29, 2020*
Date modified:	*November 28, 2022*
FLSA determination:	*Exempt*

Job Description Acknowledgment

I have received, reviewed, and fully understand the job description for SCADA Systems Analyst. I further understand that I am responsible for the satisfactory execution of the essential functions described therein, under any and all conditions as described.

Employee Name (print): _____ *Date:* _____

Employee Number: _____

Employee Signature: _____