RESOLUTION NO. 1266

A RESOLUTION OF THE CITY OF WILSONVILLE EXEMPTING THE CITY FROM COMPETITIVE BIDDING REQUIREMENTS AND AUTHORIZING THE CITY ENGINEER TO SIGN TASK ORDER #4 WITH CH2M HILL, INC. TO PROVIDE PROFESSIONAL SERVICES FOR THE WASTE WATER TREATMENT PLANT EXPANSION (PROJECT #520 49130 5000 214)

WHEREAS, On October 28, 1993, February 11 and May 20, 1994, the Department of Environmental Quality (DEQ) issued Notices of Noncompliance (NON) notifying the City of specific violations of the Discharge Permit (Permit) for the operation of the City's Waste Water Treatment Plant (Facilities). The NON instructed the City to comply with the previously approved parameters of the Permit. Because of the recurring violations, the City was informed that the matter was being referred to the Department's Enforcement Section for issuance of a Notice of Permit Violation (NPV); and

WHEREAS, on June 8, 1994, the DEQ issued a NPV requiring the submission by the City, to DEQ, a written plan with a conservative schedule to bring the Facilities into compliance with the schedules, terms and conditions of the Permit; and

WHEREAS, on June 13, 1994, City replied to the NPV and met with the DEQ to discuss the reply: and

WHEREAS, by letter dated April 6, 1994, the City notified the DEQ that it could not consistently and reliably achieve the Permit limits. City stated that the Facilities were approaching their design capacity were unable to adequately meet the Permit limits; and

WHEREAS, the City believes that it can meet interim waste discharge limitations until upgraded Facilities can be constructed and placed into operation; and

WHEREAS, the City and DEQ recognize that the Permit limit excursions shall be resolved as soon as practicable. City and DEQ also agree that upgraded facilities can be planned, designed and constructed, and

WHEREAS, by mutual agreement between the DEQ and the City a Stipulated Final Order (SFO) was developed wherein the City will complete and provide a Facility Plan, submit engineering plans/specifications and complete the construction of Facilities to assure that the City can continuously and consistently comply with the Permit within twenty seven (27) months after written approval by DEQ of the engineering plans and specifications; and

WHEREAS, the City of Wilsonville adopted a motion at its regular meeting in June 1995, authorizing budget appropriations for the 1995-96 fiscal year; and

WHEREAS, the approved Capital Projects Fund contains $3,244,500 to cover the 1995-96 costs for the construction of the Facilities; and

WHEREAS, the City now wishes to proceed with the construction of the Facilities and seeks the services of a private consulting engineering firm to provide selected Professional (Engineering) Services; and

WHEREAS, the City Engineer wishes to utilize the experience and expertise of CH2M Hill, Inc. in the completion of the Facility Plan (Task Order #1), Facility Design (Task Order #2) and Bidding Services (Task Order #3); and

WHEREAS, these Oregon Revised Statutes 279.011 (5) and Section 2.310 (1) (a) of the Wilsonville code define public contracts as being other than agreements for personal service. The contract to be awarded for Professional Services is for personal services; and

WHEREAS, Section 2.312 of the City code states that "The Council is hereby designated as a Local Contract Review Board and relative to contract concerns for the City, shall have all the powers granted to the State Contract Review Board"; and

WHEREAS, Section 2.314 (1) states that "All contracts shall be based upon competitive bid with certain exceptions," which the City interprets to mean public contracts, but in the event it is construed to apply to any contract, the City recites and finds as set forth below; and

WHEREAS, additionally, Section 2.314 (2) states that "The Board, may, by Resolution, exempt other contracts from competitive bidding if it finds (a) the lack of bids will not result in favoritism or substantially diminish competition in awarding the contract; and (b) the exemption will result in substantial cost savings. In making such a finding, the Board may consider the type, cost amount of the contract, number of persons available to bid and such other factors as the Board may deem appropriate"; and

WHEREAS, Oregon Revised Statues 279.015 Competitive Bidding Exemptions also allows exemptions as stated in the City Code; and

WHEREAS, after reviewing the fees associated with providing the requested bidding services, Staff has determined that the fees for the Professional Services as proposed by CH2M Hill, Inc. have found to be fair and reasonable; and

WHEREAS, if CH2M Hill Inc. provides the Professional Services for the above referenced project, the City will realize additional cost savings by utilization of the work completed previously by CH2M Hill Inc. in Task Orders #1, #2 And #3 and completion of the Facilities in compliance with the SFO; and

WHEREAS, these fees are calculated to be $695,200.

NOW, THEREFORE, THE CITY OF WILSONVILLE RESOLVES AS FOLLOWS:

1. That the City Council, serving in its role as Local Contract Review Board does hereby exempt the award of contract for Engineering services for the planned Waste Water Treatment Plant Expansion from competitive bidding and further concludes this award will not diminish competition and will result in substantial costs savings.
2. The City Council, serving as a Local Contract Review Board, does hereby approve and authorize the City Engineer to sign a Task Order #4 Agreement between the City of Wilsonville and CH2M Hill, Inc., a copy of which is marked Exhibit "A", attached hereto and incorporated herein, to provide the Professional Services recited above for the referenced project.
3. Authorize the expenditures for this contract not to exceed budget amount from:

Account	Budget Amount
520 49130 5000 214	$3,244,500

ADOPTED by the City Council of the City of Wilsonville at a regular meeting thereof this 15th day of April, 1996, and filed with the Wilsonville City Recorder this date.

GERALD A KRUMMEL, Mayor

ATTEST:

SANDRA C. KING, City Recorder

SUMMARY of Votes:

Mayor Krummel	Yes
Councilor Lehan	Yes
Councilor Leahy	Yes
Councilor Hawkins	Yes
Councilor Leo	Yes

Task Order No. WWTP4

City of Wilsonville

Wastewater Treatment Plant

Construction Management Services

(3/18/96)

Subject: ORIGINAL CONTRACT to furnish engineering services to the City of Wilsonville, Oregon, for implementation of the Wilsonville Wastewater Treatment Plant project, dated January 18, 1994.

Upon execution of this Task Order by City of Wilsonville (CITY) and CH2M HILL (CONSULTANT) in the space provided below, this task order will serve as the authorization for the CONSULTANT to carry out and complete the services as set forth below in accordance with the referenced AGREEMENT between the CITY and CONSULTANT.

1. Purpose

The purpose of this task order is to provide construction management and engineering services for the wastewater treatment plant project as outlined in the following tasks:

A. Resident construction management services, including inspection and construction site coordination

B. Services during construction

C. Short circuit/coordination study

D. Develop software configuration

E. Provide on-site and office-based start-up activities. This task is exclusive of construction/contractor/warranty related issues which are included in task A and B.

F. Provide training activities to the CITY's operations and maintenance personnel. This training is exclusive of training provided by software configuration (task D) and equipment suppliers as specified in the Contract Documents.

G. Provide Operation and Maintenance Manual services to develop a bound and printed Operation and Maintenance Manual.

H. Warranty Period Services Allowance

2. Scope of Engineer Services

A. Resident Construction Management Services

The specific services to be provided include the following construction management services during the construction period.

1. Assist with, and participate in, development of partnering charter and relationship, if pursued by CITY and Contractor Conduct a pre-construction conference for the construction contract with representatives of the CITY, contractor, utilities, and other involved parties.

2. Provide on-site engineering, inspection, and other field staff to observe and administer the Contractor's work as the CITY's authorized representative.

    - Review Contractor's work for conformance with the intent and requirements of the design plans and specifications.
    - Establish and maintain a project library on-site for records of work associated with the project, including correspondence, meeting notes, permits, general memorandums, telephone conversation records, daily observation records, submittals, clarifications, conformed specifications, and conformed drawings.
    - Coordinate and communicate with Contractor regarding the quality, progress, scheduling changes, and related aspects of the construction work.
    - Review and document daily contract activities for conformance with the intent and requirements of the contract documents.
    - Photograph the project on a routine basis and maintain a photo album to show progress of construction.
    - Maintain daily inspection reports noting observed defects, deficiencies, or problem areas in the work of the Contractor.
    - Receive and/or review monthly Contractor's record drawings for contract compliance.
    - Maintain conformed contract documents on-site reflecting approved changes and clarifications.

3. Conduct and document weekly site coordination meetings with the CITY, CONSULTANT, and Contractor. The meetings will be used to coordinate performance of all parts of the work, review progress, review Contractor's two week schedule, coordinate with CITY operations, and to generally coordinate the construction process to minimize delays.

4. Confirm Contractor performance of special testing requirements and assist Contractor with coordination of local building official visits. Arrange for, conduct, or witness field,

laboratory, or shop tests of construction materials, as prescribed in the construction contract documents.

5. Receive, review, approve and submit to the CITY recommendations for payment of the monthly progress and final payment requests of the Contractor, showing appropriate quantities and payment amounts for the submitted construction period.

6. Evaluate Contractor claims for extra compensation and time extension, provide a summary report outlining the reasons, justification, causes, and recommendations to the CITY.

7. Conduct a final inspection of the completed facilities with the CITY. Prepare a final deficiency list from the inspection for completion by the Contractor. Prepare a final report, including recommendations from the CONSULTANT, for acceptance of the work, that the amount for final payment is appropriate, and the contract is ready for close-out.

B. Services During Construction

The specific services to be provided include the following design office engineering support services during the construction period.

1. Receive, review and respond to Contractor requests for clarifications of the drawings, specifications, and contract requirements not affecting the cost or time of completion of the contract.

2. Review and respond to shop drawings, diagrams, illustrations, catalog data, schedules and samples, results of tests and inspections, and other data which the Contractor is required to submit for conformance with the design concept of the project and compliance with the information given in the contract documents.

3. Review, prepare, and recommend change orders for work arising from unforeseen conditions or for changes requested by the CITY, CONSULTANT, or Contractor affecting the cost or time of completion of the project. Negotiate the scope and cost of any necessary contract change orders with the Contractor. Documentation regarding the scope, cost, and justification for each change order item shall be submitted to the CITY for approval prior to initiating the subject change order item. In cases of emergency, the CONSULTANT shall act as the situation may warrant without prior approval of the CITY.

4. Prepare record drawings of the completed contract drawings. Record drawings will be provided on 11x17 paper format and electronic disk format (Microstation 5).

5. Provide periodic site visits of appropriate design engineering staff for design clarification support and general observation assistance.

C. Short Circuit/Coordination Study

1. Data Collection

Collect existing electrical equipment data with the assistance of the plant staff. This information will include conductor types, sizes, and lengths; circuit breaker sizes , manufacturer and model numbers and interrupting ratings; and bus sizes and bracing ratings for all existing switch gear, motor control centers and panelboards to be reused.

Collect new electrical equipment data from the contractor. This information will be similar to that listed above for existing equipment.

2. Short Circuit Study

Create one-line diagrams with all switch gear, motor control center and panelboard buses assigned a bus number.

Calculate short circuit interrupting duties at each switch gear, motor control center and panelboard bus for the following assumed bolted faults at each bus: three-phase fault, line-to-ground fault, and line-to-line fault with the Utility as a source and again with the standby generators as a source.

Verify all electrical equipment are applied within their ratings.

3. Protective Device Coordination Study

Perform protective device coordination study by plotting the time-current characteristic curves for each protective device down to the largest branch circuit and feeder circuit breaker in each motor control center.

Tabulate recommended protective device settings for all adjustable trip circuit breakers.

D. Software Configuration

1. Software Predesign

The scope of this activity is to develop the complete functional requirements specification for the software. Major categories and sample work products in each category are listed below.

a) Develop Detailed Software Functional Description: standard control strategies, and control strategies for each process

b) Input/output Database: define the I/O signals between the process and the PLC, define the data base points required by the computer workstations, and define the mapping between the PLC registers and the computer workstation software

c) System Security: standards for controlling access to the system

d) Graphics and Graphic Standards: preliminary layout for each display, display hierarchy, display retrieval, equipment symbols, custom graphic display areas, graphic symbols (color, density, etc.), standard library

e) Programming Standards: analog input filtering, engineering units conversion, sample rates, delta values, fail safe output status, naming conventions, and typical common ladder logic functions.

f) Alarm Standards: common alarm groups, priorities, sources and inhibit functions, display and acknowledgment, summary displays, message formats, analog deadband limits

g) Historian: types of data to be saved, sampling interval, length of time data is saved.

h) Trends (historical and real-time): display format

i) Others: controller configuration, sequence control interface, sequence messages and options, report formats and trend standards, hard disk usage

j) Meet with plant operations staff to discuss key system configuration and develop operator interface to the control system

k) Develop Software Predesign Report and deliver to CITY.

2. Purchase Computers and Standard Software

The scope of this activity is to purchase the personal computer workstation hardware and standard software. Major efforts include:

- Prepare a detailed list of the equipment and software to be purchased and Submit to CITY.
- Obtain price quotations
- Review the equipment list and price quotations with the CITY
- Issue purchase orders. The cost of hardware and software is not included in this contract.
- Receive the equipment and verify that it is operational

3. Programming Equipment Setup and Training

The scope of this activity consists of the initial equipment set up and training. The three personal computer workstations and two PLCs will be installed at the CH2M HILL Corvallis office. Key software development team members will be trained on the system hardware and software. Major efforts include:

- Coordinate delivery with Contractor
- Install operating systems

- Test system hardware and software when delivered and installed in offices
- Attend training on standard system software

4. Database Configuration

The scope of this activity is to prepare a database that can be used by the control system software.

5. Display Configuration

The purpose of this activity is to provide operator interface graphics and displays that are highly functional and efficient for the plant staff for each process.

6. Control Function Configuration

The purpose of this activity is to configure the control system software to execute the functions as defined by the Software Predesign for each process.

7. Report and Trend Configuration

The purpose of this activity is to develop operator interface tools that indicate plant status and performance, providing both real time and historical information.

8. System Management

The purpose of this activity is to operate and maintain the programming system during software development and during system integration and testing.

9. Test Plans and Testing

The purpose of this activity is to test the configuration of the control system software in both informal, in-house testing, and a formal simulation of the system configuration witnessed by the CITY. This testing will take place at CH2M HILL's Corvallis, Oregon office. This effort will verify the software meets the requirements defined in the Software Predesign.

10. Start Up

The purpose of this activity is to start up the control system software in the field, fully integrating the software with the field equipment.

11. Documentation

This activity consists of the development and delivery of a control system software O&M manual and other system documentation as defined in the assumptions.

12. Train City Staff

The purpose of this activity is to train plant operations, engineering, and management staff to use the control system software in day-to-day operations. Plant operations staff who participate in software development will have formal and on-the-job training. Operations training for other plant staff will be performed primarily by plant staff who participated in software development. System maintenance and programming training will be supplied to plant staff the system vendor. CH2M HILL training will focus on the management and engineering use. This effort includes:

a) Preparation of training materials

b) A 1-day training session for appropriate plant staff on use of the system for data acquisition and trouble analysis

c) A 1/2-day seminar for plant management staff on normal and emergency use of the system

General training on Allen Bradley PLCs, how to program PLCs, and on the standard software packages for the personal computer will be provided under the construction contract.

ASSUMPTIONS

The scope and costs of this task have been developed based on CH2M HILL's experience with similar projects. The important assumptions that have been made in determining the effort are as follows:

1. The equipment to be configured will consist of Allen-Bradley programmable controllers (PLCs) and IBM compatible personal computer workstations. The personal computer workstations will use a software package equivalent to those provided by Wonderware or Intellution. These software packages allow plant staff to monitor the status of equipment that is connected to individual programmable controllers.

2. The cost of all personal computer hardware, their standard software packages, and their applications software is not provided under this scope of services. CH2M HILL will assist the CITY in purchasing this hardware and software.

3. The CITY will review software configuration work at formal review points and provide written acceptance of work or notification for correction. The CITY will witness Performance Acceptance Tests and will provide notice of substantial completion when tests meet the requirements of the Software Predesign. No other formal tests are expected.

4. Software configuration will be done at CH2M HILL's office in Corvallis, Oregon.

E. Start-Up Activities

The start-up activities will provide the following services to the CITY:

1. Review contractor's Draft Start-up Plan, meet with CITY and Contractor to discuss review comments and start-up schedule, and prepare the Final Start-up Plan by incorporating decisions and scheduling information from the meeting. The start-up plan shall include:

   a) Dates for completion of contractor testing, receipt of manufacturer certificates, vendor training, process and process controls training, purchase of chemicals, utilities and disposables;

   b) Startup sequence

   c) CITY's, CONSULTANT's and Contractor's startup staffing plans and the individual work schedules for participating personnel.

2. Provide full-time, on-site services of one process engineer, familiar with the design, for startup support and coordination, technical consultation, and general assistance during the startup of each group of facilities.

3. Provide part-time, on-site services of design team specialists, familiar with design, for technical consultation and general assistance during startup. The specialist shall represent each of the following technical disciplines: Process/Mechanical, Instrumentation and Controls, Electrical, and Heating Ventilation and Air Conditioning (HVAC).

4. Provide part-time, office-based services of design team specialists in CH2M HILL's Corvallis and Portland offices for technical consultation and general assistance during startup.

F. Operator Training

The services provided under this task are as follows:

1. Meet with the CITY and develop the final training program and schedule based on a preliminary training program. Incorporate the CITY's comments and finalize the training program and schedule.

2. Prepare training instruction materials for training on the following proposed training sessions:

   Session A: Preliminary and Primary Treatment

   Session B: Secondary Treatment

Session C: Filtration, Disinfection, and Plant Utilities

Session D: Thickening, Polymer Systems, and Aerobic Digestion

Session E: Controls System

Utilize O&M manual materials, design documents and other resources for the development of visual aid materials for training sessions with overhead projection being the primary visual aid medium used in the training sessions.

3. Conduct the training sessions as described in Activity 2 with the morning segment consisting of class room training and the afternoon segment covering a field inspection of facilities and a discussion period.

G. Operations and Maintenance Manual Services

General

The intent of this subtask is to provide an Operations Manual for the Wilsonville Wastewater Treatment Plant. The scope herein is for a Microsoft Windows based manual. The manual will include text and graphic files for all processes and facilities and will be developed in accordance with a style guide jointly developed by CH2M HILL and plant operations staff, and will reference plant standard operating procedures where applicable.

1. Style Guide Development

   a) Prepare outline of Style Guide

   b) One Workshop with CITY to review and finalize text and graphics

2. Prepare Text Files and Drawings

   a) Text preparation and file editing

   b) Internal reviews by CH2M HILL Operations Specialist

   c) Provide CITY with text files for each main topic, including:

      i) Each major unit process
      ii) Support Systems
      iii) Control System
      iv) Safety–overview of safety procedures as they apply to the plant facilities and referenced to plant's Safety Manual
      v) Laboratory–overview of laboratory procedures as they apply to the CITY and referenced to plant Laboratory Procedures Manual

4. Develop Manual

- Develop manual in CH2M HILL's Corvallis office
- Provide CITY with 5 copies of hard bound manuals and one copy on electronic disk.

H. Warranty Period Services

Engineer shall provide the OWNER with assistance during the warranty period as requested. The budget is based on an estimate of the total effort anticipated.

3. Scope of CITY Services

The CITY will provide the following services to support this Task Order in addition to general services defined in the original contract and as subsequently amended:

1. Advise CONSULTANT of changes or additions to the scope of services required to satisfy program objectives.
2. Coordinate communications with other CITY departments and involved parties.
3. Assist with the coordination of CITY and other review/approval agencies.
4. Provide limited compaction testing services on-site if requested by CONSULTANT to confirm Contractor's compaction quality control testing.
5. Acquire all right-of-way agreements and land required to complete the project.
6. Provide payment for construction related permits obtained by CONSULTANT
7. Include in all construction contracts the following provisions of the Master Agreement: Article 4.D, CONSULTANT's Personnel at Construction Site; and Article 5.G, providing Contractor Indemnification of CITY and CONSULTANT for contractor's negligence.

4. Time of Performance

The CONSULTANT and CITY have discussed the Task Order No. WWTP4 Scope of Services and agree the following milestones, reflecting a 24 month construction period for the treatment facility, represent a reasonable time frame over which these services are to be

performed. CONSULTANT will commence work immediately upon notice to proceed by the CITY.

Task	*Time (Months)*	*Comments*
A. Resident Construction Mgmt.	24	from Contractor NTP
B. Design Office Support	24	from Contractor NTP
C. Short Circuit Study	2	complete before substantial completion
D. Software Configuration	12	complete before substantial completion
E. Start-up	3	complete before substantial completion
F. Training	3	complete before substantial completion
G. O & M Manual	12	complete before startup and training
H. Warranty Services	12	begin upon project completion

5. Compensation

The compensation for services as set forth in this Task Order No. WWTP4 will be based on Cost Reimbursables Multiplier, as described in Article 2 of the MASTER AGREEMENT. The estimated budget range for each work task in this Task Order No. WWTP4 is presented in the table below. The CITY and CONSULTANT acknowledge that the individual work task budgets may be revised and reallocated within the total Task Order No. WWTP4 budget, with the approval of the CITY's project manager. The total task order budget will not be exceeded without approval from the CITY and an amendment to this Task Order No. WWTP4.

Task Order WWTP4 Budget Summary		
Work Task	Description	Cost ($)
A.	Resident Construction Management	389,200
B.	Services During Construction	190,000
C.	Short Circuit Study	6,600
D.	Software Configuration	61,900
E.	Start-up Assistance	5,500
F.	Training	11,500
G.	O & M Manual	25,300
H.	Warranty Period Services	5,200
Total		**$695,200**

6. Other Conditions/Requirements

CONSULTANTS special testing, reference 2.A.4 above, shall not relieve the Contractor of responsibility to conduct independent testing to determine compliance with the construction specifications.

CONSULTANTS review of shop drawings, reference 2.B.2 above, shall not relieve the Contractor of Contractor's responsibilities under the terms of the contract documents for shop drawing submittals

Reference original contract, as amended, and previous task orders.

City of Wilsonville, Oregon	CH2M HILL, Inc.
By: _____	By: Mike Bracken
Title: _____	Title: VICE PRESIDENT
Date: _____	Date: March 18, 1996

Task Order No. WWTP4

City of Wilsonville

Wastewater Treatment Plant

Construction Management Services

(3/18/96)

Subject: ORIGINAL CONTRACT to furnish engineering services to the City of Wilsonville, Oregon, for implementation of the Wilsonville Wastewater Treatment Plant project, dated January 18, 1994.

Upon execution of this Task Order by City of Wilsonville (CITY) and CH2M HILL (CONSULTANT) in the space provided below, this task order will serve as the authorization for the CONSULTANT to carry out and complete the services as set forth below in accordance with the referenced AGREEMENT between the CITY and CONSULTANT.

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B. Services during construction

C. Short circuit/coordination study

D. Develop software configuration

E. Provide on-site and office-based start-up activities. This task is exclusive of construction/contractor/warranty related issues which are included in task A and B.

F. Provide training activities to the CITY's operations and maintenance personnel. This training is exclusive of training provided by software configuration (task D) and equipment suppliers as specified in the Contract Documents.

G. Provide Operation and Maintenance Manual services to develop a bound and printed Operation and Maintenance Manual.

H. Warranty Period Services Allowance

2. Scope of Engineer Services

A. Resident Construction Management Services

The specific services to be provided include the following construction management services during the construction period.

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    - Review Contractor's work for conformance with the intent and requirements of the design plans and specifications.
    - Establish and maintain a project library on-site for records of work associated with the project, including correspondence, meeting notes, permits, general memorandums, telephone conversation records, daily observation records, submittals, clarifications, conformed specifications, and conformed drawings.
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laboratory, or shop tests of construction materials, as prescribed in the construction contract documents.

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4. Prepare record drawings of the completed contract drawings. Record drawings will be provided on 11x17 paper format and electronic disk format (Microstation 5).

5. Provide periodic site visits of appropriate design engineering staff for design clarification support and general observation assistance.

C. Short Circuit/Coordination Study

1. Data Collection

Collect existing electrical equipment data with the assistance of the plant staff. This information will include conductor types, sizes, and lengths; circuit breaker sizes , manufacturer and model numbers and interrupting ratings; and bus sizes and bracing ratings for all existing switch gear, motor control centers and panelboards to be reused.

Collect new electrical equipment data from the contractor. This information will be similar to that listed above for existing equipment.

2. Short Circuit Study

Create one-line diagrams with all switch gear, motor control center and panelboard buses assigned a bus number.

Calculate short circuit interrupting duties at each switch gear, motor control center and panelboard bus for the following assumed bolted faults at each bus: three-phase fault, line-to-ground fault, and line-to-line fault with the Utility as a source and again with the standby generators as a source.

Verify all electrical equipment are applied within their ratings.

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Perform protective device coordination study by plotting the time-current characteristic curves for each protective device down to the largest branch circuit and feeder circuit breaker in each motor control center.

Tabulate recommended protective device settings for all adjustable trip circuit breakers.

D. Software Configuration

1. Software Predesign

The scope of this activity is to develop the complete functional requirements specification for the software. Major categories and sample work products in each category are listed below.

a) Develop Detailed Software Functional Description: standard control strategies, and control strategies for each process

b) Input/output Database: define the I/O signals between the process and the PLC, define the data base points required by the computer workstations, and define the mapping between the PLC registers and the computer workstation software

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- Test system hardware and software when delivered and installed in offices
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4. Database Configuration

The scope of this activity is to prepare a database that can be used by the control system software.

5. Display Configuration

The purpose of this activity is to provide operator interface graphics and displays that are highly functional and efficient for the plant staff for each process.

6. Control Function Configuration

The purpose of this activity is to configure the control system software to execute the functions as defined by the Software Predesign for each process.

7. Report and Trend Configuration

The purpose of this activity is to develop operator interface tools that indicate plant status and performance, providing both real time and historical information.

8. System Management

The purpose of this activity is to operate and maintain the programming system during software development and during system integration and testing.

9. Test Plans and Testing

The purpose of this activity is to test the configuration of the control system software in both informal, in-house testing, and a formal simulation of the system configuration witnessed by the CITY. This testing will take place at CH2M HILL's Corvallis, Oregon office. This effort will verify the software meets the requirements defined in the Software Predesign.

10. Start Up

The purpose of this activity is to start up the control system software in the field, fully integrating the software with the field equipment.

11. Documentation

This activity consists of the development and delivery of a control system software O&M manual and other system documentation as defined in the assumptions.

12. Train City Staff

The purpose of this activity is to train plant operations, engineering, and management staff to use the control system software in day-to-day operations. Plant operations staff who participate in software development will have formal and on-the-job training. Operations training for other plant staff will be performed primarily by plant staff who participated in software development. System maintenance and programming training will be supplied to plant staff the system vendor. CH2M HILL training will focus on the management and engineering use. This effort includes:

a) Preparation of training materials

b) A 1-day training session for appropriate plant staff on use of the system for data acquisition and trouble analysis

c) A 1/2-day seminar for plant management staff on normal and emergency use of the system

General training on Allen Bradley PLCs, how to program PLCs, and on the standard software packages for the personal computer will be provided under the construction contract.

ASSUMPTIONS

The scope and costs of this task have been developed based on CH2M HILL's experience with similar projects. The important assumptions that have been made in determining the effort are as follows:

1. The equipment to be configured will consist of Allen-Bradley programmable controllers (PLCs) and IBM compatible personal computer workstations. The personal computer workstations will use a software package equivalent to those provided by Wonderware or Intellution. These software packages allow plant staff to monitor the status of equipment that is connected to individual programmable controllers.

2. The cost of all personal computer hardware, their standard software packages, and their applications software is not provided under this scope of services. CH2M HILL will assist the CITY in purchasing this hardware and software.

3. The CITY will review software configuration work at formal review points and provide written acceptance of work or notification for correction. The CITY will witness Performance Acceptance Tests and will provide notice of substantial completion when tests meet the requirements of the Software Predesign. No other formal tests are expected.

4. Software configuration will be done at CH2M HILL's office in Corvallis, Oregon.

E. Start-Up Activities

The start-up activities will provide the following services to the CITY:

1. Review contractor's Draft Start-up Plan, meet with CITY and Contractor to discuss review comments and start-up schedule, and prepare the Final Start-up Plan by incorporating decisions and scheduling information from the meeting. The start-up plan shall include:

   a) Dates for completion of contractor testing, receipt of manufacturer certificates, vendor training, process and process controls training, purchase of chemicals, utilities and disposables;

   b) Startup sequence

   c) CITY's, CONSULTANT's and Contractor's startup staffing plans and the individual work schedules for participating personnel.

2. Provide full-time, on-site services of one process engineer, familiar with the design, for startup support and coordination, technical consultation, and general assistance during the startup of each group of facilities.

3. Provide part-time, on-site services of design team specialists, familiar with design, for technical consultation and general assistance during startup. The specialist shall represent each of the following technical disciplines: Process/Mechanical, Instrumentation and Controls, Electrical, and Heating Ventilation and Air Conditioning (HVAC).

4. Provide part-time, office-based services of design team specialists in CH2M HILL's Corvallis and Portland offices for technical consultation and general assistance during startup.

F. Operator Training

The services provided under this task are as follows:

1. Meet with the CITY and develop the final training program and schedule based on a preliminary training program. Incorporate the CITY's comments and finalize the training program and schedule.

2. Prepare training instruction materials for training on the following proposed training sessions:

   Session A: Preliminary and Primary Treatment

   Session B: Secondary Treatment

Session C: Filtration, Disinfection, and Plant Utilities

Session D: Thickening, Polymer Systems, and Aerobic Digestion

Session E: Controls System

Utilize O&M manual materials, design documents and other resources for the development of visual aid materials for training sessions with overhead projection being the primary visual aid medium used in the training sessions.

3. Conduct the training sessions as described in Activity 2 with the morning segment consisting of class room training and the afternoon segment covering a field inspection of facilities and a discussion period.

G. Operations and Maintenance Manual Services

General

The intent of this subtask is to provide an Operations Manual for the Wilsonville Wastewater Treatment Plant. The scope herein is for a Microsoft Windows based manual. The manual will include text and graphic files for all processes and facilities and will be developed in accordance with a style guide jointly developed by CH2M HILL and plant operations staff, and will reference plant standard operating procedures where applicable.

1. Style Guide Development

   a) Prepare outline of Style Guide

   b) One Workshop with CITY to review and finalize text and graphics

2. Prepare Text Files and Drawings

   a) Text preparation and file editing

   b) Internal reviews by CH2M HILL Operations Specialist

   c) Provide CITY with text files for each main topic, including:

      i) Each major unit process
      ii) Support Systems
      iii) Control System
      iv) Safety–overview of safety procedures as they apply to the plant facilities and referenced to plant's Safety Manual
      v) Laboratory–overview of laboratory procedures as they apply to the CITY and referenced to plant Laboratory Procedures Manual

4. Develop Manual

- Develop manual in CH2M HILL's Corvallis office
- Provide CITY with 5 copies of hard bound manuals and one copy on electronic disk.

H. Warranty Period Services

Engineer shall provide the OWNER with assistance during the warranty period as requested. The budget is based on an estimate of the total effort anticipated.

3. Scope of CITY Services

The CITY will provide the following services to support this Task Order in addition to general services defined in the original contract and as subsequently amended:

1. Advise CONSULTANT of changes or additions to the scope of services required to satisfy program objectives.
2. Coordinate communications with other CITY departments and involved parties.
3. Assist with the coordination of CITY and other review/approval agencies.
4. Provide limited compaction testing services on-site if requested by CONSULTANT to confirm Contractor's compaction quality control testing.
5. Acquire all right-of-way agreements and land required to complete the project.
6. Provide payment for construction related permits obtained by CONSULTANT
7. Include in all construction contracts the following provisions of the Master Agreement: Article 4.D, CONSULTANT's Personnel at Construction Site; and Article 5.G, providing Contractor Indemnification of CITY and CONSULTANT for contractor's negligence.

4. Time of Performance

The CONSULTANT and CITY have discussed the Task Order No. WWTP4 Scope of Services and agree the following milestones, reflecting a 24 month construction period for the treatment facility, represent a reasonable time frame over which these services are to be

performed. CONSULTANT will commence work immediately upon notice to proceed by the CITY.

Task	*Time (Months)*	*Comments*
A. Resident Construction Mgmt.	24	from Contractor NTP
B. Design Office Support	24	from Contractor NTP
C. Short Circuit Study	2	complete before substantial completion
D. Software Configuration	12	complete before substantial completion
E. Start-up	3	complete before substantial completion
F. Training	3	complete before substantial completion
G. O & M Manual	12	complete before startup and training
H. Warranty Services	12	begin upon project completion

5. Compensation

The compensation for services as set forth in this Task Order No. WWTP4 will be based on Cost Reimbursables Multiplier, as described in Article 2 of the MASTER AGREEMENT. The estimated budget range for each work task in this Task Order No. WWTP4 is presented in the table below. The CITY and CONSULTANT acknowledge that the individual work task budgets may be revised and reallocated within the total Task Order No. WWTP4 budget, with the approval of the CITY's project manager. The total task order budget will not be exceeded without approval from the CITY and an amendment to this Task Order No. WWTP4.

Task Order WWTP4 Budget Summary		
Work Task	Description	Cost ($)
A.	Resident Construction Management	389,200
B.	Services During Construction	190,000
C.	Short Circuit Study	6,600
D.	Software Configuration	61,900
E.	Start-up Assistance	5,500
F.	Training	11,500
G.	O & M Manual	25,300
H.	Warranty Period Services	5,200
Total		**$695,200**

6. Other Conditions/Requirements

CONSULTANTS special testing, reference 2.A.4 above, shall not relieve the Contractor of responsibility to conduct independent testing to determine compliance with the construction specifications.

CONSULTANTS review of shop drawings, reference 2.B.2 above, shall not relieve the Contractor of Contractor's responsibilities under the terms of the contract documents for shop drawing submittals

Reference original contract, as amended, and previous task orders.

City of Wilsonville, Oregon	CH2M HILL, Inc.
By: _____	By: Mike Bracken
Title: _____	Title: VICE PRESIDENT
Date: _____	Date: March 18, 1996