City of Camas
Wastewater Treatment Facility

Scope of Services
Headworks, Primary Clarifier Improvements and Blower Pre-Design

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Table of Contents

Abbreviations

°F	degree(s) Fahrenheit
3D	three-dimensional
AACE	Association for the Advancement of Cost Engineering
ALTA	American Land Title Association
ASCII	American Standard Code for Information Interchange
BIM	Building Information Modeling
CADD	computer-aided design and drafting
CAPE	Critical Areas Protection Easement
CAR	Critical Areas Report
CFD	Computational Fluid Dynamics
Consultant	HDR Engineering, Inc. (Consultant)
City	City of Camas
DTM	digital terrain model
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
EQ	equalization
GDR	Geotechnical Data Report
GIS	geographic information system
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HVAC	heating, ventilation, and air conditioning
LAG	WSDOT Local Agency Guidelines
MG	million gallons
NAVD88	North American Vertical Datum of 1988
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
NTP	Notice to Proceed
NWRI	National Water Research Institute
OHWM	ordinary high water mark
O&M	operations and maintenance
OPCC	Opinion of Probable Construction Cost
PDF	Portable Document Format
PDS	(Snohomish County) Planning and Development Services
PFAS	per- and polyfluoroalkyl substances
P&ID	process and instrumentation diagram
P/IU	Public/Institutional Use
PMP	Project Management Plan
QA	quality assurance
QC	quality control
RAS	return activated sludge
RE	real estate
ROE	right-of-entry
ROW	right-of-way
RTK	Real Time Kinematic
scfm	standard cubic foot/feet per minute
SEPA	State Environmental Policy Act
SHB	Solids Handling Building
SPT	Standard Penetration Test
SWPPP	Stormwater Pollution Prevention Plan
UV	ultraviolet
WAS	waste activated sludge

EXHIBIT A

SCOPE OF SERVICES

Background

The City of Camas (City) owns and operates the City of Camas Wastewater Treatment Plant (WWTP). This treatment facility produces secondary effluent for discharge to the Columbia River and Class A biosolids. The City desires to engage HDR to lead implementation of improvements to the headworks concrete surfaces affected by H2S deterioration and recoating of corroded steel within both primary clarifiers. The City also wants to replace up to 2 blowers in the Equipment Building to provide greater energy efficiency and control of the low pressure air system for the WWTP. The following Scope of Services describes the proposed approach to meet these objectives.

Headworks Improvements

The headworks facility was investigated at the request of the City by John Koch from HDR Engineering, Inc. on 10/04/2022. The investigation revealed the loss of approximately 1.5” of concrete in locations accessible within arm reach of the top of the headworks channel. The 1.5” of concrete was easily removed with a simple hand tool (wire brush/chisel). See Attachment 1 for the investigation results.

HDR will provide design documents for:

1. the basis for a contractor-designed headworks bypass plan,
2. the repair of concrete surfaces within the headworks,
3. the replacement of level instrumentation within the headworks,
4. the installation of slide gates to isolate areas of the headworks during construction.

Primary Clarifier Improvements

This Scope of Services includes design of the recoating for the primary clarifiers at the WWTP. The steel items to be recoated for corrosion protection include the baffles, sweep arm, center column, beach and scum piping. The scum piping may require complete replacement. The steel is deteriorating. According to the site investigation performed by HDR on 10/04/2022 the edges of the steel within the primary clarifier has lost approximately 20% of its mass due to corrosion. Recoating was recommended immediately to preserve the remaining steel until time of replacement.

HDR will provide design documents for:

1. the recoating of both the primary clarifier sweep arms, center column, baffles, beach and scum pipe.

Blower Replacement Pre-Design

HDR will provide services to establish the design criteria for the replacement of up to 2 blowers in the existing equipment building, selection of a preferred blower system, and establish the level of effort needed for complete design of the replacement. The TM will describe the work to take place and establish the size, type and facility modifications needed to accommodate the new blowers.

Project Assumptions

The following assumptions are made as part of the development of this Scope of Services:

1. Permitting, geotechnical investigation, and surveying are not provided as part of this proposal. These services may be added at the City's discretion.
2. Walls within the headworks are structurally sound enough to support the new slide gate installations.
3. Delivery of projects is assumed to be provided through the design-bid-build method.

Design Approach

Design drawings will be developed with Autodesk 2D AutoCAD software. Existing facility drawings will be used as backgrounds for the recoating information to be written over the top. The existing drawings will be shown as grayscale to indicate they are not new facilities.

The design engineering approach and submittals, from conceptual design to construction bidding, will track the following sequence of Tasks with the Detailed Scope of Services to follow:

Task 100 - Preliminary Design

1. **30 Percent Submittal:** Develop schematic drawings to show the areas to be recoated. Conduct a review session with the City to view the coating areas and receive feedback. Deliverables will be limited to general diagrams and a design technical memorandum up to 3 pages in length summarizing the basic design criteria that will be further developed as design progresses. TM will also include criteria for a contractor to develop a bypass plan for the Headworks Improvements. A site visit to determine viability of bypass options with staff input is also included.
2. **60 Percent Submittal**—deliverables at this stage are:
   a. 60-percent design drawings
   b. 60-percent design specifications
3. **Blower System Pre-Design TM:** Develop and provide blower pre-design and selection TM. TM will establish pre-design criteria needed for completing the design and coordinating with the PUD for rebate purposes. A draft and final version of this TM will be provided for City review.
4. **Hydraulic Modeling:** Develop and calibrate a hydraulic model of the WWTP from the plant effluent

Task 200 - Final Design

1. **90 Percent Submittal**—deliverables at this stage are:
   a. 90-percent design drawings
   b. 90-percent design specifications
2. **Bid Documents, 100 Percent Submittal**—deliverables at this stage are:
   a. 100-percent design drawings
   b. 100-percent design specifications

Task 300 – Bid Services

1. **Bid Services** —HDR will provide assistance during the bid phase of the project. The services provided will be to answer questions from Bidders, assemble background information for City published addenda and provide a recommendation for bid award.

Task 400 – Project Management

1. **Project Management Services** — HDR will manage and coordinate project technical resources to a level of service and responsiveness consistent with the project schedule and budget.

Task 500 – Management Reserve

1. **Management Reserve Services** —HDR will provide additional services if requested by the City. The scope and level of effort for these services will be determined at the time of the City's request.

Deliverables

Unless otherwise noted, deliverables will be submitted in electronic format. Documents will be transferred by Newforma to the City. Up to two full size (22"x34" plans, 11"x8.5" specifications) paper copies of deliverables will be provided if requested by the City.

Schedule

Key milestone dates referenced from the Notice to Proceed (NTP), are shown in Table 1.

Milestone	Weeks from NTP	Date
NTP with Engineering Services	0	2/1/2023
Site Visit	0	2/2/2023
Submit TM (30% documents)	3	2/23/2023
Submit 60% documents	5	3/8/2023
Submit 90% documents	9	4/5/2023
Submit Bid documents	11	4/19/2023

Detailed Scope of Services

A detailed scope of services for each component is outlined below. The project work will be executed as described in the list below.

Headworks Improvements

Objective: The WWTP headworks consists of three force mains converging at a common elevated influent point. From there flow passes through a Parshall flume and into the screens and splitter box. The concrete surface is deteriorating up to 1.5" deep inside the headworks channels where HDR was able to access from the top level. The goal of this design is to provide a contractor with information and criteria to recoat and repair the concrete surface of the headworks channels and install replacement instrumentation where needed.

Approach: HDR will establish a diurnal curve for the headworks, provide guidance for a contractor to design a flow bypass system for the Headworks, and provide design information for the repair work of the concrete surfaces and improvements within the Headworks channels.

Consultant Services:

1. **Establish Diurnal Curve for Plant Influent and Bypass Design Criteria:** Receive flow data from City staff that will allow for the creation of a diurnal curve generally representative of the plant influent on a daily basis. The curve will be for dry weather flows. Perform site visit for half day from up to three (3) HDR staff members. Develop preliminary flow bypass plans to be used for bidding purposes.
2. **Design of New Slide Gate and Two Bulkhead Gates:** A new slide gate must be designed to separate flows within the headworks on the downstream side of screens 1 and 2. A new bulkhead gate must be constructed within the splitter box between the line flowing to Primary Clarifier 2 and the line for future Primary Clarifier 3. The second bulkhead gate should be constructed between the lines flowing to Primary Clarifier 1 and 2. This will allow for greater control and flexibility of directing plant flow within the headworks.
3. **Instrument Replacement:** Prepare contract specifications and drawings for the replacement of the Parshall flume level instrumentation and associated conduits located on the top of the headworks platform.
4. **Concrete Repair:** Prepare contract specifications and drawings for the repair of deteriorating concrete within the headworks channels.
5. **Technical Memorandum:** Provide a technical memorandum including the developed headworks diurnal curve, concrete and instrumentation repairs approach and materials selected.

Assumptions:

1. The Contract Documents will include up to 15 drawings. Basis of estimate assumes that existing Phase 2 WWTP drawings will be imported and used as background for new design information.
2. Instrumentation and electrical drawings will show replacement of conduit on the top of the Headworks platform.
3. Bidding and award support services are dependent on external factors, which cannot be completely defined at this time. The level of effort is estimated (limited) to 14 staff hours.
4. Three review meetings are scheduled as part of the work: (1) TM, (2) 60% Design Review, (3) 90% Design Review. Meetings will be conducted virtually, and up to 3 HDR staff will participate. Assumed duration of each review meeting is 2 hours. Staff time of 1 additional hour per meeting is included for preparation and distribution of meeting notes.

City Responsibilities:

1. Participate in review meetings
2. Provide reference documents and data required for HDR to perform design tasks
3. Provide City staff to meet with HDR for flow bypass planning discussions
4. Provide comments on draft and final technical memorandum
5. Provide comments on 60-percent and 90-percent drawings and specifications

Deliverables:

1. Review meeting notes, including decisions or actions from meeting, in Microsoft Word format
2. Technical memorandum describing bypass constraints, diurnal curve pattern, instrument replacement, and new slide gates in PDF format
3. 60-percent design documents, in PDF format
4. 90-percent design documents, in PDF format
5. One set of bid-ready construction documents (specifications and drawings), in PDF format
6. Up to two sets of printed bid-ready construction documents, with half-size drawings, shipped via express mail (if requested)

Primary Clarifier Improvements

Objective: The WWTP primary clarifier consists of two below-ground clarifiers that are corroded on the steel components within each unit. The goal is to provide design documents describing the cleaning and recoating requirements of the corroded steel within both clarifiers.

Approach: HDR will provide design drawings and specifications for the cleaning and recoating of the deteriorating ferrous steel within the primary clarifiers.

Consultant Services:

1. **Primary Clarifier Review Meeting:** This meeting will be held within the same time as the Headworks Review Meeting. HDR and City staff to meet for review of approaches and select an approach for implementation.
2. **Primary Clarifier Contract Documents:** Prepare contract specifications and drawings for Primary Clarifier Improvements.
3. **Primary Clarifier Bidding and Award Support:** Provide technical support during bid and contract award.

Assumptions: Assumptions are as follows:

1. The Contract package will consist of two (2) drawings and basis of estimate (level of effort) assumes this is cleaning and recoating work with no equipment replacement or structural improvements.
2. Bidding and award support services are dependent on external factors, which cannot be completely defined at this time. Hours for this task are included in Task 300.
3. Three review meetings are scheduled as part of the work: (1) TM, (2) 60% Design Review, (3) 90% Design Review. Meetings will be conducted virtually, and up to three (3) HDR staff will participate. Assumed duration of each meeting is 2-hours. Staff time of 1 additional hour per meeting is included for preparation and distribution of meeting notes.

City Responsibilities: City responsibilities are as follows:

1. Participate in review meetings
2. Provide reference documents or data required for HDR to perform design tasks
3. Provide comments on draft and final technical memorandum
4. Provide comments on 60-percent review documents
5. Provide comments on 90-percent review documents

Deliverables: Deliverables are as follows:

1. Review meeting notes, including decisions or actions from meeting, in PDF format
2. Technical memorandum describing front gate issues and proposed correction approaches, in PDF format
3. 60-percent design documents, in PDF format
4. 90 percent design documents, in PDF format
5. Bid-ready construction documents (specifications and drawings), in PDF format

Up to two sets of printed bid-ready construction documents, with half-size drawings, shipped via express mail

Blower System Pre-Design TM

Objective: The WWTP equipment building contains 4 blowers. The City desires at this time to replace up to 2 blowers with new, more efficient blowers. This will allow for potential energy savings for the WWTP and better control of air flow to plant processes.

Approach: HDR will establish/document HVAC, electrical and process design criteria for the recommended blower system and provide equipment cost information for both blowers and a TM documenting blower design criteria.

Consultant Services:

1. **Establish Blower Selection and Design Criteria:** Establish blower selection and recommendation of up to 2 manufacturers and technology types. Document HVAC, electrical, process needs for the recommended blower system. Electrical power demand requirements will be evaluated based on information provided by the City. This will be used for coordination with the PUD for rebate purposes.
2. **Technical Memorandum:** Provide a technical memorandum documenting the blower selection, design criteria and cost information for the blower rebate effort.

Assumptions:

1. The City will provide HDR with blower flow design criteria. Modeling is not assumed to be part of this effort.
2. Two separate blower manufacturers will be evaluated as part of this effort.
3. Coordination and calculations for the rebate effort with the PUD has been estimated at 24 staff hours.
4. The blower recommendation TM is up to 8 pages in length.

City Responsibilities:

1. Participate in review meetings
2. Provide reference documents and data required for HDR to perform design tasks
3. Provide comments on draft and final technical memorandum

Deliverables:

1. Review meeting notes, including decisions or actions from meeting, in Microsoft Word format
2. Technical memorandum for blower evaluation and selection in PDF format

Hydraulic Modeling

Objective: The WWTP does not have a hydraulic model representing the various pieces of equipment in the plant. The intent is to model the WWTP hydraulic functions from the beginning of the headworks to the plant effluent discharge point.

Approach: HDR will create a hydraulic model of the WWTP using Visual Hydraulics software, Phase 1 and 2 as-builts and equipment shop drawing information as available. The model will be calibrated using measurements from field observation and plant instrumentation as available.

Consultant Services:

1. **Treatment Plant Hydraulic Capacity Model:** Evaluate the hydraulic capacity of the treatment plant by developing a hydraulic profile model of the treatment plant (Visual Hydraulics software). Consultant will prepare hydraulic calculations for average and peak flow, at both the existing and future conditions, to determine if the plant can process the anticipated quantities. Prepare a hydraulic profile drawing.
2. **Technical Memorandum:** Provide a technical memorandum documenting the modeling efforts, extents of model representations, calibration process and hydraulic issues discovered through the modeling process.

Assumptions:

1. Phase 1 and 2 drawings are accurate representations of the physical features of the WWTP. HDR will not independently verify the physical aspects of the WWTP.
2. Two discharge head conditions will be evaluated. Two plant flow conditions will be evaluated, peak flow and average flow. These flow values will be supplied by the City.
3. One site visit by one HDR staff member will be required. It is estimated the site visit will take 8 staff hours inclusive of travel.
4. Incoming flow to the headworks will be represented as a single flow coming into the headworks.
5. Model is intended for general hydraulic representation and planning purposes. Detailed hydraulic modeling required for design of plant improvements is beyond the scope of this work.
6. The Hydraulic Modeling TM is up to 6 pages in length.
7. Two review meetings with 3 HDR staff members are anticipated. The meeting duration is estimated at 2 hours.

City Responsibilities:

1. Participate in review meetings

2. Supply HDR with hydraulic boundary conditions at the headworks and effluent discharge and the flow rates to model through the WWTP
3. Provide reference documents and data required for HDR to perform modeling tasks
4. Provide comments on draft and final technical memorandum
5. Provide HDR with hydraulic data and measurements as needed for calibrating the model

Deliverables:

1. Review meeting notes, including decisions or actions from meeting, in Microsoft Word format
2. Hydraulic profile
3. Technical memorandum for Hydraulic Model in PDF format
4. Electronic Version of Visual Hydraulics model in native format.

Bidding Services

Objective: Provide bidding services prior to, during and following bidding for the WWTP improvements.

Approach: HDR will provide project description, answer questions during bidding, attend the pre-bid conference, assist with bid evaluation, and provide a bid award recommendation.

Consultant Services:

1. Provide project description for the advertisements and notices announcing or soliciting bids for the projects.
2. Up to two HDR staff will addend pre-bid conference remotely via web based/teleconference to answer question as appropriate. Some of the responses to questions and requests for additional information may require addenda.
3. As necessary and as approved by the City, prepare and issue up to three (3) Addenda to address bidder questions to the Bidding Documents.
4. Assist the City to evaluate bids received and determine contractor responsiveness and responsibility.
5. Provide a recommendation for award.

Assumptions: Assumptions are as follows:

1. One (1) 1-hour pre-bid conference will occur at a conference room provided by the City.
2. Electronic copies of the pre-bid conference agenda will be furnished to the City for printing and distribution at the conference.
3. Up to two (2) HDR staff will attend the pre-bid meeting via teleconference
4. One additional staff hour is required for preparation, attendance and summary preparation for pre-bid meeting for each attending staff.

5. 12-staff hours are required for preparation of addenda required to address bidding questions. HDR will send addenda response for publication/distribution by the City. Bidders will address questions to the City. HDR will only respond to questions as requested by the City.
6. 8 staff hours is required for evaluating bids received.
7. City to advertise and distribute Bid and Contract Documents including addenda to interested bidders.

City Responsibilities: City responsibilities are as follows:

1. Advertise project for bid.
2. Arrange and conduct pre-bid conference and site tour. Record meeting notes or make other provision for documenting the pre-bid conference, record all questions and requests for additional information, and issue copies of the meeting notes or other conference documentation to the conference attendees.
3. Distribute Bid and Contract Documents including addenda to interested bidders.
4. Attend pre-bid conference.
5. Coordinate City's legal representative with HDR regarding recommendations of award that may involve waiver of formalities or irregularities in the bid.

Deliverables: Deliverables are as follows:

1. Project description for advertisement (PDF format).
2. Suggested items for pre-bid conference agenda transmitted to City (PDF format).
3. Up to three (3) Addenda addressing bidding questions (PDF format).
4. Engineer's recommendation of award (PDF format).

Project Management

Objective: The purpose of this task is to manage and coordinate project technical resources to a level of service and responsiveness consistent with the project schedule and budget.

Approach: HDR shall organize, manage, and coordinate the disciplines required to accomplish the services required for this project. HDR shall coordinate with City staff, and encourage City staff involvement to a level desired by the City. The Consultant shall provide project management services to implement project goals, budgets, and schedules.

Consultant Services: The designated HDR project manager (PM) will prepare, monitor, and update the project work plan throughout the project. The PM will participate in monthly conference calls with the City and provide a brief cost and schedule status report for each task. The status report will include a description of progress to date, actual costs for each task, and potential cost variances.

The PM will coordinate team activities with the City in relation to scheduling site visits and meetings with City staff. The PM will also supervise the engineering team and review monthly invoices and project budget.

HDR will conduct specific activities including the following subtasks:

1. **Project Management Plan:** Prepare a Project Management Plan (PMP) following the NTP. The PMP shall identify the project scope, individual work elements, budget for each element, and responsible individuals for each work element, staffing plan, and schedule. The PMP will include a quality management plan and Job Hazard Assessment forms, including COVID specific requirements.
2. **Project Initiation Management Review:** Conduct a brief business review with senior management at project commencement to confirm/QC initial job set up (contracts, subcontracts, PMP, QMP), and discuss/cover job management approach to scope and budget.
3. **Data Requests Log:** Develop a log of data requests to the City.
4. **Project Schedule:** Develop a project schedule. Identify deliverables as milestones. Identify City input activities.
5. **Project Schedule Update:** Update the schedule monthly to define the status of each activity.
6. **Project Management Meetings:** The Consultant shall schedule one project meeting every month via conference call or virtual meeting. Participants in the project meetings will include the City project manager and the Consultant project manager. The purpose of the meeting is to track time and budget, work elements accomplished, work items planned for the next period, staffing needs, and scope issues.
7. **Decision and Action Items Logs:** Develop and maintain during the project separate logs tracking decisions and required actions.
8. **Invoices and Status Reports:** Prepare monthly project status reports that compare work accomplished with scheduled activities, provide support documentation for the invoices, compare expenditures with task budgets, and describe changes to the scope that have occurred. Reports shall be submitted to the City with the monthly invoices.
9. **Engineering Team Management:** Supervise the design team over the course of the project, and review technical content of work products. The project manager will monitor the team's work in terms of product, quality, schedule, and budget.
10. **Contract Closeout:** Close out the project.

Assumptions: Assumptions are as follows:

1. A single monthly invoice including labor costs and expenses for each task will be sent to the City for review and payment.

2. The contract duration is 12-months.

City Responsibilities: City responsibilities are as follows:

1. Facilitate and participate in monthly project management conference calls
2. Provide comments on meeting agenda and meeting notes
3. Review and approve monthly invoices and authorize payment

Deliverables: Deliverables are as follows:

1. Monthly project status report, in PDF format
2. Monthly invoices, in PDF format
3. Meeting notes, data request log, project schedules, and decision and action logs, in PDF format

Management Reserve

Objective: A management reserve is required so that the City has a discretionary task budget to cover additional professional services not currently included in this Scope of Services.

Approach: Services authorized under this task will be at the City's discretion. The Consultant shall provide additional on-call services for tasks not included in the project Scope of Services or for tasks not adequately budgeted. The Consultant shall provide additional services under this task only when written authorization is provided by the City.

Consultant Services: The Consultant will conduct specific activities including the following subtask:

1. **Additional Subtask:** Provide professional services at the request of the City as mutually agreed upon and defined.

Assumptions: Assumptions are as follows:

1. Agreement for the services to be performed under the contingency task and budget will be documented and agreed upon by the City and Consultant before proceeding.

City Responsibilities: City responsibilities are as follows:

1. Identify and request professional services deemed necessary that are not expressly included in this Scope of Services.

Deliverables: Deliverables are as follows:

1. To be determined and agreed upon by the City and Consultant

Fee Estimate for Professional Services

The estimated fee for the professional services identified in this Scope of Services is offered on a time-and-materials basis not to exceed $169,900.00.

Professional services rendered in connection with this Scope of Services will be billed on a time-and-materials basis for actual hours rendered by Consultant employees up to the estimated

total contract amount in accordance with the terms and conditions outlined in the signed Agreement.