SCOPE OF WORK AND PROJECT UNDERSTANDING
September 28, 2022

PROJECT UNDERSTANDING

This Scope of Work (SOW) outlines the project understanding and the tasks that will be performed by Anderson Perry & Associates, Inc. (Engineer) for the Phase 2 - Regional Water System Improvements - 2023-2024 project for the City of Hermiston, Oregon (Owner). The Owner intends to construct the project in two phases.

Phase 1 consisted of upgrading three of the pumps at the water treatment plant and associated piping, electrical, and controls; constructing an approximately 6,350-foot-long, 16-inch polyvinyl chloride (PVC) water line along Feedville Road; constructing an approximately 2,700-foot-long, 12-inch ductile iron water line along S.E. Kelli Boulevard; constructing an approximately 800-foot long, 8-inch PVC line along S.E. Kelli Boulevard; and constructing a valve and meter vault for a new Vadata campus located near the corner of S.E. Kelli Boulevard and Feedville Road.

Phase 2 will consist of upgrading the Columbia River Intake Pump Station, including two pumps, motors, variable frequency drives (VFDs), piping, and electrical and controls; upgrading Non-potable Pump Station No. 2, including a new building enclosure, two pumps, motors, VFDs, electrical, controls, and piping; constructing an approximately 13,400-foot-long, 24-inch water line along Feedville Road; and constructing a new valve and meter vault for a new Vadata campus located adjacent to Feedville Road.

Phase 1 is intended to be constructed by September 2023 and Phase 2 by August 2024. Figures 1 through 3 attached to this SOW show the locations of the anticipated improvements.

The following assumptions were made during the development of this SOW:

ASSUMPTIONS

- The improvements described in this SOW do not include ultrafiltration of water for the Vadata campuses and do not include any on-site improvements. These improvements will be handled by Vadata.
- No geotechnical report will be needed for the State Highway 207 crossing.
- The Owner will handle all negotiations with individual property owners for required easements and any land needing to be acquired for the project.
- The Owner will handle all negotiations regarding water right transfers and associated agreements.
- Easement and right-of-way acquisition is not included in this SOW.
- Unrestricted access to the area of potential effect (APE) is available to complete the work.

TASK 1 - DESIGN ENGINEERING SERVICES

Upon approval by the Owner for the Engineer to proceed, the Engineer shall provide design services for the project, including the following tasks:

Project Management and Coordination

The Engineer shall provide project management and coordination of all tasks included in this SOW.

1. Prepare for and hold a pre-design coordination meeting with the Owner and Vadata to review the project and discuss critical design issues, objectives, needs, schedule, etc.

2. Prepare an initial project schedule and updates as needed.

3. Provide monthly invoices and progress reports.

4. Provide quality assurance and quality control review of all documents.

Design Engineering

1. Complete a topographic survey of the work area. The topographic survey will include existing utilities, fire hydrants, water meters, valves, manholes, etc. A utility locate will also be completed.

2. Prepare a 60 percent draft Advertisement for Bids, Instructions to Bidders, and Bidder's Packet (hereinafter referred to as Bidding Documents), and a draft Agreement, Contract Forms, Conditions of the Contract, Technical Specifications, and Drawings (hereinafter referred to as Contract Documents) for the proposed improvements. The Bidding and Contract Documents will be in accordance with the Engineers Joint Contract Documents Committee - 2013 standard documents. A draft cost estimate will also be prepared as part of the draft Bidding and Contract Documents preparation.

3. Prepare 90 percent draft Bidding and Contract Documents for the proposed improvements for review and approval by the Owner, its legal counsel and other advisors as appropriate, and appropriate agencies, if any.

4. Attend design review meetings with the Owner and appropriate agencies at the 60 percent and 90 percent draft stages.

5. Make adjustments as needed for the opinion of probable construction cost and probable total project cost based on the final Bidding and Contract Documents.

6. Prepare and furnish final stamped Bidding and Contract Documents to the Owner and appropriate agencies, if any.

The Engineer's services under Design Engineering shall be considered complete when the final Bidding and Contract Documents are approved by the Owner and other governmental authorities having jurisdiction.

TASK 2 - CONSTRUCTION ENGINEERING SERVICES

After acceptance of the Bidding and Contract Documents by the Owner and appropriate agencies and upon authorization by the Owner to proceed, the Engineer shall perform the following tasks:

Construction Engineering

1. Assist the Owner in advertising and obtaining bids for the work and maintain a record of prospective bidders to whom Bidding and Contract Documents have been issued. The Engineer will attend a pre-bid conference, if held, and answer questions from prospective bidders and suppliers.

2. Issue addenda as appropriate to clarify, correct, or change the Bidding Documents and/or Contract Documents.

3. Consult with the Owner as to the acceptability of the subcontractors, vendors, suppliers, and other persons and entities proposed by Contractors for the portions of the work where acceptability is required by the Bidding and Contract Documents.

4. Attend the bid opening, prepare bid tabulation sheets, assist the Owner in evaluating bids, and assist in assembling and awarding the Contract for the work.

5. After award of the construction Contract by the Owner, meet with the Contractor and the Owner in a pre-construction conference to discuss project schedules, procedures, etc.

6. Review and take other appropriate action with respect to Shop Drawings, samples, and other data the Contractor is required to submit. Such action is only to determine conformance with the information given in the Contract Documents and compatibility with the design concept of the completed project as a functioning whole as indicated in the Contract Documents. Such review or other action will not extend to means, methods, techniques, sequences, procedures of construction, or safety precautions and programs incident thereto.

7. Receive and review schedules, guarantees, bonds, certificates, other evidence of insurance required by the Contract Documents, certificates of inspection, tests and approvals, Shop Drawings, samples, and other data to be assembled by the Contractor in accordance with the Bidding and Contract Documents.

8. Provide a general engineering review of the work of the Contractor as construction progresses. The Engineer will provide full-time and/or part-time on-site observation as appropriate to review the work, and as approved by the Owner. The Engineer will keep the Owner informed as to any known deviations from the general intent of the Contract Documents or agreements made at the pre-construction conference. Copies of regular Project Observation Reports will be sent to the Owner and the Contractor. The Engineer's undertaking hereunder will not relieve the Contractor of the obligation to perform the work in conformity with the Contract Documents and in a workmanlike manner. The Engineer will not, as a result of such observations of the Contractor's work in progress, supervise, direct, or have control over the Contractor's work, nor will the Engineer have authority over or responsibility for the means, methods, techniques, sequences, or procedures of construction selected by the Contractor, for safety precautions and programs incident to the work of the Contractor, or for any failure of the Contractor to comply with laws, rules, regulations, ordinances,

codes, or orders applicable to the Contractor's furnishing and performing the work. Accordingly, the Engineer neither guarantees the performance of any Contractor nor assumes responsibility for any Contractor's failure to furnish and perform their work in accordance with the Contract Documents.

9. Keep the Owner informed concerning progress of the work and attend meetings held by the Owner, outside agencies, and the Contractor as they relate to the project.

10. Issue necessary clarifications and interpretations of the Contract Documents as appropriate for the orderly completion of the work. Such clarifications and interpretations will be consistent with the intent of and reasonably inferable from the Contract Documents. The Engineer may issue Field Orders authorizing minor variations from the requirements of the Contract Documents.

11. Prepare Change Orders for the Owner's approval necessary for the proper completion of the work by the Contractor.

12. Review the Contractor's requests for progress payments and, based on on-site observations by the Engineer and the Owner, recommend the amounts the Contractor should be paid. Such recommendations of payment will constitute the Engineer's representation to the Owner, based on such observations and review that, to the best of the Engineer's knowledge, information, and belief, the work has progressed to the point indicated. In the case of unit price work, the Engineer's recommendations of payment will include determinations of quantities and classifications of such work (subject to any subsequent adjustments allowed by the Contract Documents).

13. Prepare and furnish to the Owner one set of reproducible project Record Drawings showing appropriate record information based on project documentation received from the Contractor, the Engineer's site observations, and the Owner's observations. These Drawings may contain some discrepancies and omissions and will not necessarily represent "exact" field conditions.

14. Following notice from the Contractor that the entire work is ready for its intended use, conduct, along with the Owner, appropriate outside agencies, and the Contractor, a review to determine if the work is substantially complete. If, after considering any objections of the Owner, the Engineer considers the work substantially complete, the Engineer will deliver a Certificate of Substantial Completion to the Owner and the Contractor.

15. In company with the Owner's representatives and appropriate outside agencies, conduct a final inspection to determine if the completed work of the Contractor is acceptable so the Engineer may recommend, in writing, final payment to the Contractor.

The Construction Engineering Services shall be considered complete when the project is accepted by the Owner, and when operation and maintenance materials and Record Drawings have been provided to the Owner.

TASK NO. 3 - ENVIRONMENTAL REVIEW

This task includes preparing a cursory environmental review. The review will include a desktop review of the project area and potentially affected resources such as wetlands, waterbodies, floodplains, farmland, threatened and endangered species, cultural and historic resources, hazardous materials, recreational areas, land use and zoning, and permitting requirements. A site visit is not included in this work; all reviews will be completed using publicly available databases.

ADDITIONAL SERVICES

In addition to the foregoing being performed, the following services may be provided by the Engineer when requested by the Owner in writing, as required. If additional services are requested, the scope and fees will be added by amendment to this SOW or under a separate Work Order.

1. If requested by the Owner, the Engineer may assist the Owner with obtaining any additional permits, applications, outside utility services, etc., as necessary for the work. The Owner shall pay all fees associated with any permits and applications, if such fees are required. The Engineer shall not be responsible for such fees.

2. Redesign work when requested to do so by the Owner. Such work shall include changes in the design that are beyond the control of the Engineer and/or changes in the Contract Documents after such Contract Documents have been accepted by the Owner.

3. Provide additional or extended services during construction made necessary by (1) emergencies or acts of God endangering the work, (2) a significant amount of defective, neglected, or delayed work by the Contractor, (3) acceleration of the progress schedule involving services beyond normal working hours, (4) longer construction time than anticipated, or (5) default by the Contractor.

4. Perform special tests, specialized studies, or tests other than previously outlined herein that may be required on the project.

FEE ESTIMATE

1. The estimated fee for “Design Engineering Services” outlined herein is $570,000, on a lump sum basis.
2. The estimated fee for “Construction Engineering Services” outlined herein is $600,000, on an hourly fee basis, plus direct reimbursable expenses. This amount shall not be exceeded without notification to and approval from the Owner. The estimated fee for “Construction Engineering Services” is included here for budgeting purposes only and is based on an assumed construction time of approximately 360 calendar days.
3. The estimated fee for “Environmental Review” outlined herein is $6,000, on an hourly fee basis, plus direct reimbursable expenses. This amount shall not be exceeded without notification to and approval of the Owner.

CITY OF HERMISTON, OREGON
PRELIMINARY COST ESTIMATE
REGIONAL WATER SYSTEM IMPROVEMENTS
PHASE 2 - PDX146 & PDX245 CAMPUSES (August 2024)
August 5, 2022

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	$ 330,000	All Req'd	$ 330,000
River Intake Pump Station					
2	River IPS Demolition (motor, pump, controls, instrumentation, etc.)	LS	15,000	All Req'd	15,000
3	River IPS Pump and Motor Upsize (furnish and install) (650 HP)	EA	300,000	3	900,000
4	River IPS Pump Pad and Pedestal Modifications	EA	7,000	3	21,000
5	River IPS Pump VFD	EA	250,000	3	750,000
6	River IPS Piping/Fittings	EA	25,000	3	75,000
7	River IPS Valves	EA	25,000	3	75,000
8	River IPS Electrical	LS	60,000	All Req'd	60,000
9	River IPS Controls and Instrumentation	LS	60,000	All Req'd	60,000
Non-potable Pump Station No. 2					
10	NPPS No. 2 New Pump Enclosure	SF	350	400	140,000
11	NPPS No. 2 Pump and Motor Upsize (furnish and install) (350 HP)	EA	150,000	2	300,000
12	NPPS No. 2 Pump Pad and Pedestal	EA	5,000	2	10,000
13	NPPS No. 2 New Wetwell Penetration	EA	50,000	1	50,000
14	NPPS No. 2 Portable Pump Crane	EA	15,000	1	15,000
15	NPPS No. 2 Pump VFD	EA	120,000	2	240,000
16	NPPS No. 2 Piping/Fittings	LS	150,000	All Req'd	150,000
17	NPPS No. 2 New Power Supply (1250KVA Transformer)	EA	80,000	1	80,000
18	NPPS No. 2 Electrical	LS	80,000	All Req'd	80,000
19	NPPS No. 2 Controls and Instrumentation	LS	60,000	All Req'd	60,000
Feedville Transmission Line					
20	24-inch PVC Water Line	LF	220	13,400	2,948,000
21	Railroad Jack and Bore	EA	180,000	2	360,000
22	Valve and Meter Vault to New Campus	EA	150,000	2	300,000
23	Surface Restoration	LS	50,000	All Req'd	50,000
				Total Estimated Construction Cost	**$ 7,069,000**
				Construction Contingencies (35%)	2,475,000
				Design and Construction Engineering (20%)	1,414,000
				Permitting, Environmental, Cultural Resources	50,000
				TOTAL ESTIMATED PROJECT COST (2022)	**$ 11,008,000**
				Inflation to the time of construction (assumed construction 2024)	1,129,000
				TOTAL ESTIMATED PROJECT COST (2024)	**$ 12,137,000**

Assumptions:

IPS Improvements

Pump and motor upsizes including removal and replacement of 3 pumps. New capacity would be 6,500 gpm each at approx. 290' TDH.

VFD installation would be necessary for each motor.

Discharge piping would be modified.

Electrical system could handle the new motor sizes without upgrading transformers.

Improvements to the existing fish screens would not be needed.

Pump shaft column piping size is adequate for upgrade.

NPPS No. 2 Improvements

Pump and motor upsizes including removal and replacement of 2 pumps. Capacity would be 4,800 gpm each at approx. 215' TDH.

VFD installation would be necessary for each motor.

New discharge piping would be needed.

Electrical system installed in Phase 1 would handle the new motor sizes and would no need upsized.

Feedville Transmission Line

24-inch diameter piping would be needed.

40-inch steel casings would be installed at each railroad crossing.

Stantec

Memo

To:	Jay Marlow/Chas Hutchins City of Hermiston	From:	Nickolas Smith Boise ID Office
File:	2002006270	Date:	January 31, 2023

Reference: 2021 CIP Improvements, TO2 – Backup Power Generation

The Regional Water System (RWS) is owned and operated by the Port of Umatilla and the City of Hermiston. The RWS draws raw water from the Columbia River just upstream of McNary Dam and conveys this water to numerous RWS water users whose reliance on this water has become an increasingly important issue. One of the major risks identified as an obstacle to its reliable conveyance is regional power outages. The RWS and its users are considering an option to mitigate this risk through backup power sources. Per the request of RWS, Stantec was tasked with evaluating the addition of on-site backup power generation equipment at two locations, the River Intake Pump Station (IPS) and the Water Treatment Plant (WTP), see Figure 1 for Regional Water System Layout. In case of extended power outages, these generator systems would power essential equipment and systems at the IPS, WTP, Non-Potable Pump Station No.1 (NPPS1), and Non-Potable Pump Station No. 2 (NPPS2). This evaluation considered essential power requirements, air quality compliance, preliminary site layouts costs and other considerations as potential improvements. In addition, Stantec was tasked with considering whether connection to an alternate electrical provider was feasible. The following report addresses these items along with the recommendations for RWS consideration.

TASK 1 – BACKGROUND AND GOALS

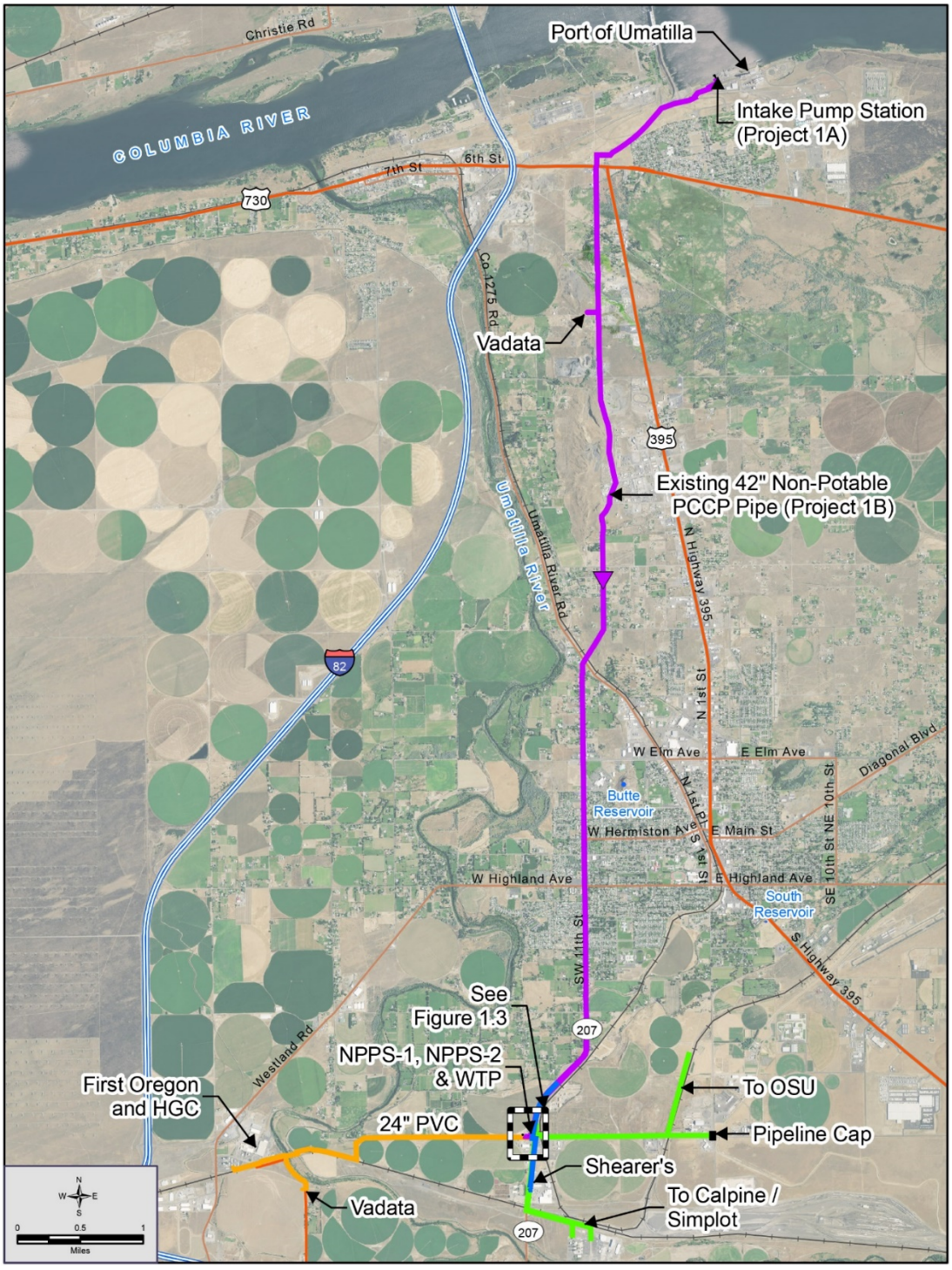
The RWS provides raw (non-potable) water to cool data centers and power generating plants. This water is also used for agricultural/irrigation uses and to feed a water treatment plant for both the City of Hermiston backup supply and for a local food processor. The non-potable reservoir at the WTP would likely be emptied in less than an hour if there was a power outage at the IPS during peak demand. Several of the users require a constant delivery flow of non-potable water as a source for their cooling operations, particularly during hot summer peak demands. Each of the facilities maintains a buffering reservoir of non-potable water at their respective sites, however, extended outages of the RWS can quickly draw down these individual reservoirs requiring costly shutdowns or system adjustments. These reservoirs are inadequately sized to sustain their operational requirements for more than a couple of hours once the City's non-potable water supply stops.

The goals of this evaluation are to provide the RWS and its users with adequate information to make a decision on whether or not to install backup generator systems to reduce the risk of extended utility power outages. This information includes:

- Essential power demands
- Cost estimating
- Site layouts
- Alternative power connections
- Permitting
- Other identified concerns

Reference: **2021 CIP Improvements, TO2 – Backup Power Generation**

Figure 1 - Overall Regional Water System Layout



Reference: **2021 CIP Improvements, TO2 – Backup Power Generation**

TASK 2 - EVALUATION

Subtask 2.1 – Power Requirements

Stantec performed an initial evaluation and follow-up collaboration with RWS management staff to determine what equipment would be needed to provide water for the existing users during a power outage, which allowed the power demand to be estimated. Additional information on demand calculations is provided in the following **Attachment**.

The IPS estimated generator demand is 1,537kW/1,935kVA and a starting load of 2,584kW/2,929kVA. This would power three of the four 650HP pumps plus 83kVA of the 150kVA 120/208VAC transformer plus essential equipment at the site.

The Water Treatment Plant site power demand for sizing the generator included:

- All the demand from the WTP (NPPS1, WTP, potable pump station and the facility). The estimated demand is 736kW/1,007kVA and a starting load of 931kW/1,778kVA.
- All the demand from NPPS2. The estimated demand is 371kW/476kVA with a starting load of 371kW/476kVA.
- The combined load from the WTP and NPPS2. The estimated demand is 1,107kW/1,829kVA and a starting load of 1,302kW/2,750kVA.

Providing gensets capable of meeting these demands would keep the potable and non-potable systems operational. Assumptions include:

- Demand was estimated assuming powering essential pumps only and redundant pumps and equipment would not be available.
- Genset power generation at the WTP site would split and feed the WTP and the NPPS2 independently.

Subtask 2.2 – Air Quality Compliance

Stantec reviewed the potential permitting requirements for two backup diesel generators, one at the IPS and one at the Water Treatment Plant. Additionally, modeling, and toxic pollutant evaluation requirements were also investigated. The following lays out the two potential permits for the City as well as cost estimates and specific analyses required for each option.

Simple Permit Option

The Oregon Department of Environmental Quality (ODEQ) provides a series of different Air Contaminant Discharge Permits (ACDP). A Simple ACDP has a permit limit of 5 years with initial permitting fees of $9,000. Additionally, the annual fees range from $4,000-$8,000 depending on the permitting year. The fees are based on Oregon Rules and the permitting year. It is also required that the total emissions be less than the significant emission rate (SER). This is discussed in more detail below. The permit application includes administrative forms, equipment forms and emissions forms. Each new Simple ACDP must also submit a toxic air containment emissions inventory to determine if the engines are subject to the Cleaner Air Oregon (CAO) program as determined by ODEQ.

Reference: **2021 CIP Improvements, TO2 – Backup Power Generation**

General Option

ODEQ provides a multitude of General Permits; one of which the RWS has the option to entertain. A General ACDP lasts 10 years with initial permitting fees of $1,800. Additionally, the annual fees will range from $1,950-$2,650 depending on the permitting year. Note that this is based on an Electric Power Generation General Permit, Class Two. Similar to the Simple Permit, emissions less than SER are required. The General ACDP requires an application form under GP-100 and GP-118. It should be noted that along with the application, a general attachment document is also required ($180). ODEQ will notify the City if the generators are applicable to CAO. If so, there is an additional fee of $245. However, it appears that GP-18 is not currently applicable to CAO. The estimated worst case initial fee, assuming CAO is required would be $2,600. Lastly, it appears that a Land Use Compatibility Statement will be required. This needs to be signed by a local planning jurisdiction.

Emission Estimates

Stantec has reviewed two potential engine manufacturers: Cummins (DQKAN and DQGAS) and Caterpillar (3512E and 3516C). Cummins has proposed 1,500 kW and 2,500 kW for the water treatment plant and intake, respectively. Similarly, Caterpillar proposed 1x 2,500 kW or 2x 1,250 kW parallel units for the water treatment plant, and 3x 1,000 kW parallel units for the intake. These applications are classified as “emergency stationary RICE (reciprocating internal combustion engine)“ and “compression ignited (CI) non-road engine” in the CFR and EPA regulations. Each engine is at least EPA Tier 2 certified. The estimates for the Cummins or Caterpillar units are estimated to be below the Oregon Dept. of Environmental Quality Chapter 340 Division 200 SER (Significant Emission Rate) (not more than 3,000 horsepower) threshold. It is highly likely that either the Simple or General permits can be used, and that New Source Review ambient dispersion modeling will not be required. Note that the evaluation assumed EPA certified Tier 3 engines, however Tier 4 engines are also an option.

Other Requirements

ODEQ highly recommends a pre-application meeting prior to an application submittal. The engines will also be required to comply with federal requirements that include 40 CFR Part 60, Subpart IIII and 40 CFR Part 63, Subpart ZZZZ. Compliance with Subpart IIII will automatically comply with Subpart ZZZZ by default. There will also be monitoring and recordkeeping requirements regardless of which permit type is selected. All engines must also utilize ultra-low sulfur diesel fuel.

Recommendation

Given the ease of a General Permit, it appears to be quickest and least expensive option. However, confirmation with ODEQ during the pre-application meeting is necessary to ensure that to be the case.

Subtask 2.3 – Alternative Electrical Provider

There are two main power utilities serving the nearby area, Umatilla Electrical Cooperative (UEC) and PacifiCorp. IPS and the WTP are both powered by PacifiCorp. Stantec was tasked to identify whether having a backup connection to an alternative utility would be feasible and if so, would it mitigate power outage risk. However, UEC stated they cannot provide electrical service within the PacifiCorp service area; therefore, an alternative utility connection was not evaluated further.

Stantec contacted PacifiCorp about the possibility of providing a second electrical feed to each site, IPS and WTP, and whether it would be impacted by the same outage as the existing service. The most typical option

Reference: 2021 CIP Improvements, TO2 – Backup Power Generation

is to re-circuit the existing 12.47kV distribution lines around each site so the pole that feeds the utility transformer has a lockable manual transfer switch and can be fed from either direction (East/West, North/South, etc.). In that case if the East line is out, a line crew could be called to the site to manually transfer power to the West line assuming the west line has power. The site would be offline for as long as it takes for a line crew to get to the site. In 2022 PacifiCorp further proposed a manually switched feed from the West side of I-82 for the WTP site only but could not guarantee capacity beyond 2024.

The PacifiCorp representative noted that during the prolonged August 2020 outage some of the areas were intentionally de-energized as precautionary outages, and not due to physical damage from the brush fires. Installing a second electrical feed to the site would not guarantee power if the substation were shutdown. Stantec does not recommend pursuing a second electrical feed.

Subtask 2.4 – Conceptual Electrical and Civil Design

A total of two generators would be needed to provide the required backup power to maintain flow and pressure of non-potable water during a power outage. One generator will serve IPS and a second generator will serve WTP, NP1, and NP2. Each generator will be installed within a modular enclosure mounted on skids atop a concrete pad. The enclosure includes a double walled diesel tank sized for a minimum 24 hour run time. Electrical lines will be routed to intercept existing power supply lines and an automatic transfer switched (ATS) installed. The IPS, WTP, and NPPS2 each have their own electrical service and transformer and will require an ATS at each building. The site layouts of each generator system are shown on **Figures 2 and 3** in the **Attachment**.

IPS Generator - The Port of Umatilla confirmed that siting a generator on-site for the IPS was acceptable. Figure 2 was sent to the RWS showing the tank on a concrete pad and surrounded by bollards; it is confirmed that the fuel storage tank would be double walled, and a spill plan will be provided.

WTP Generator - The generator at the WTP is shown just North of the treatment building in Figure 3. This was to avoid impacting future treatment expansion areas further to the north. The generator conceptual location can be revised during future design development. The WTP and NPPS2 buildings each have their own electrical service and transformer that must be connected to the generator by individual automatic transfer switches.

Each site will require a Spill Prevention, Control, and Countermeasure (SPCC) plan as the fuel tanks for the generators are likely to exceed 1,320 gallons. Plans are required to be prepared and renewed every 5 years by a professional engineer. Utility personnel document and follow plan procedures for any spill event. Additional spill protection (containment curbing, equipment, etc.) may be requested due to the proximity to the Columbia River.

During installation, each site will require one or more outages for the new ATS to be connected into the existing electrical service. The ATS will be downstream of the existing PacifiCorp metering current transformers (CT's). Ideally the connection point would be downstream of the main circuit breaker (MCB) which serves at the electrical service disconnect. If it is not possible to connect the ATS cables between the MCB and panelboard buss, then the ATS will need to be connected upstream of the MCB. In that case either a new MCB will need to be installed, or possibly move the existing MCB so that it is possible connect the ATS cables between it and the buss.

Scheduling of the total outage time at each site will be coordinated with the RWS and its users, however, the total is determined by the work and Contractor. That total time can be broken up into multiple shorter times by

Reference: **2021 CIP Improvements, TO2 – Backup Power Generation**

doing the trenching and conduit work separate from the wire pulling and even the wire termination work. The final work to interrupt the existing system and terminate the ATS cables must be done in one outage. The amount of time for either the WTP or the IPS to be offline is estimated to be less than 24 hours, however, more accurate estimates would be needed for final design information and confirmation.

TASK 3 – ENGINEER'S RECOMENDATIONS

Stantec recommends installing a 2,500 kW Generator at the IPS and a 1,500 kW Generator at the WTP. Generators would be connected into the existing electrical service feeds with an automatic transfer switch and would automatically start and power essential pumps and equipment for maintaining potable and non-potable water flow from the RWS to the existing users during utility outage. The generators currently have a procurement lead time of about 78 months.

Below is a conceptual Class 5 Opinion of Probable Construction Costs (OPCC) for installing generators within the next year. Costs are in 2022 values and would incur additional price escalation as the project gets moved further into the future. The OPCC includes a contractor markup on the generator packages and ASTs. The City could opt to purchase generator packages and ASTs to reduce overall costs while incurring some risk for providing a contractor with the equipment to install. Preliminary Engineering is noted with no value as this effort is completed in the preparation of this memo.

Conceptual Level OPCC - Future Improvements Costs				
Item	**Units**	**Qty**	**Cost/Unit**	**Extended**
Intake Pump Station (IPS) Backup Generator				
2,500 KW Generator [1], Enclosure, and Fuel Tank	EA	1	$1,126,498	$1,126,498
Generator Shipping & Handling	LS	1	$40,000	$40,000
Exterior Mounted 3,500 Ampere 4-Pole ATS	EA	1	$74,600	$74,600
Buried Power Lines (6-1000 kCMIL)	LF	60	$720	$43,200
Electrical Labor	LS	1	$24,000	$24,000
Concrete Pad w/ Curb (37'x15'x12")	LS	1	$9,000	$9,000
6" Bollards	EA	11	$900	$9,900
Subtotal				**$1,327,198**
Contractor Markups, Engineering and Contingeny				
			Contractor OH&P (30%)	$398,159
			Construction Subtotal	**$1,725,357**
			Contingency (35%)	$603,875
			Preliminary Engineering (0%)	$0
			Design Engineering & CMS (20%)	$345,071
			Permitting (Air Quality & SPCC)	$10,000
			Change Orders (5%)	$133,715
			OPCC*	**$2,820,000**
*Rounded to nearest $10K				
[1] The price for three 1,000kW generators in parallel is slightly less but requires more space				

Reference: **2021 CIP Improvements, TO2 – Backup Power Generation**

Water Treatment Plant (WTP) Backup Generator				
1,500 KW Generator, Enclosure, and Fuel Tank	EA	1	$714,783	$714,783
Generator Shipping & Handling	LS	1	$40,000	$40,000
Exterior Mounted 1,600 Ampere 4-Pole ATS	EA	1	$32,400	$32,400
Exterior Mounted 1,000 Ampere 4-Pole ATS	EA	1	$22,000	$22,000
Buried Power Lines (4-500 kCMIL)	LF	280	$312	$87,360
Buried Power Lines (3-300 kCMIL)	LF	375	$162	$60,750
Electrical Labor	LS	1	$48,000	$48,000
Concrete Pad (27'x13'x12")	LS	1	$4,200	$4,200
Subtotal				**$1,009,493**
Contractor Markups, Engineering and Contingeny				
			Contractor OH&P (30%)	$302,848
			Construction Subtotal	**$1,312,341**
			Contingency (35%)	$459,319
			Preliminary Engineering (0%)	$0
			Design Engineering & CMS (20%)	$262,468
			Permitting (Air Quality & SPCC)	$10,000
			Change Orders (5%)	$101,706
			OPCC*	**$2,150,000**
*Rounded to nearest $10K				

Stantec Consulting Services Inc.

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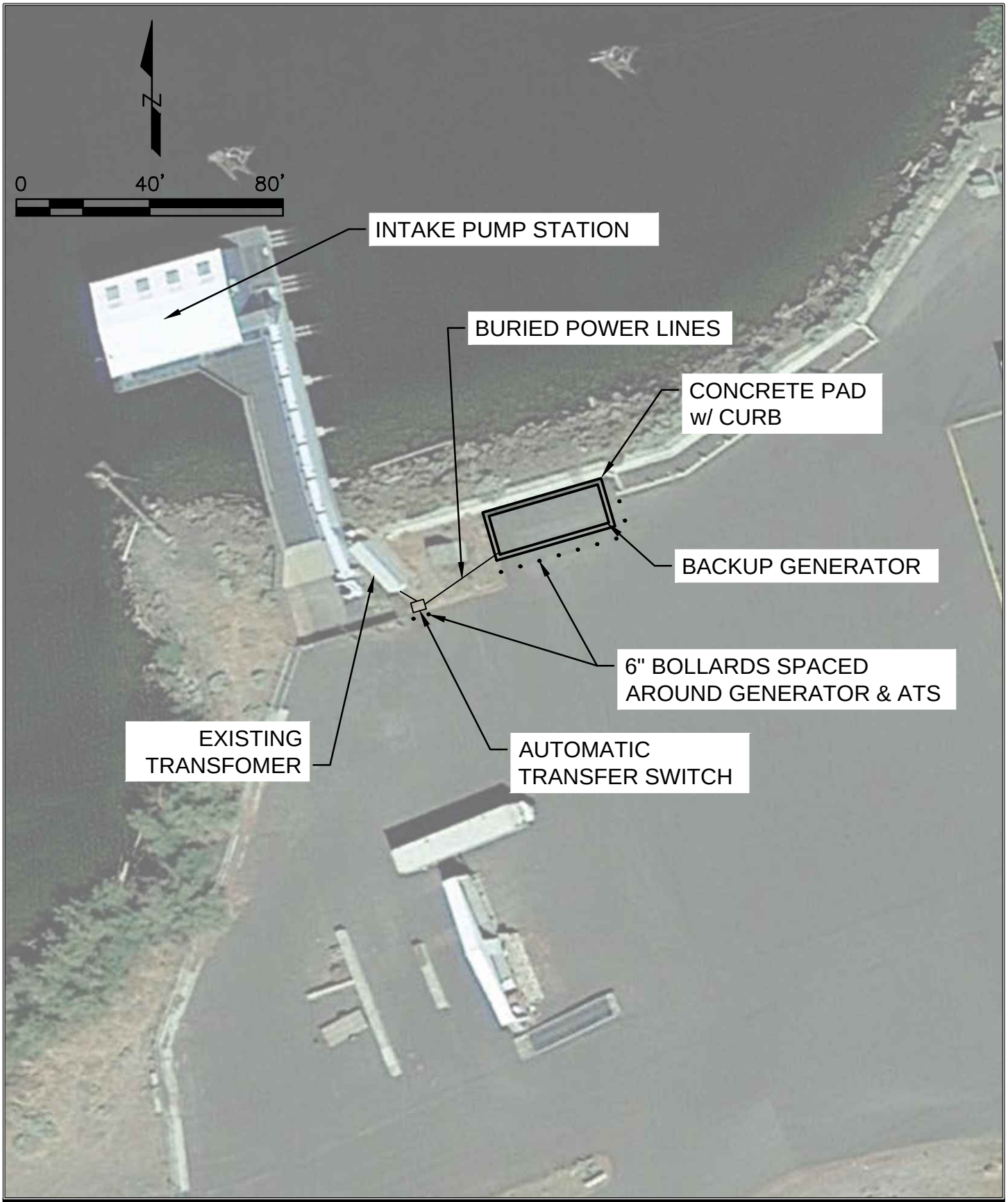
Attachment: Figure 2 & 3, Equipment Power Spreadsheet

c. C.C.



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Client/Project
City of Hermiston

Backup Power
Generation

Project No.

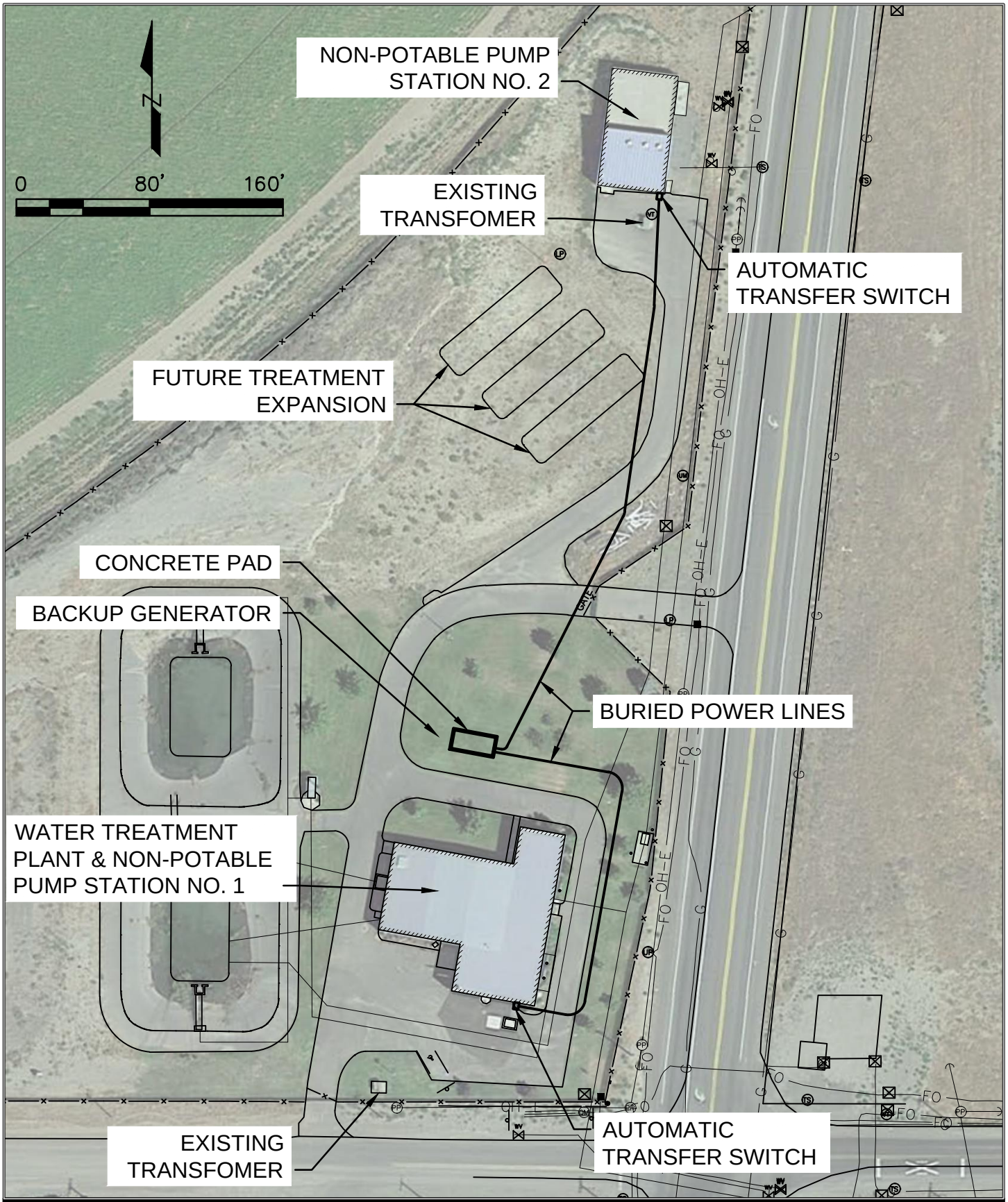
Title
BACKUP GENERATOR AT
INTAKE PUMP STATION

Revision
#

Date
2021.03.12

Reference Sheet

Figure No.
FIG-2



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Client/Project
City of Hermiston

Backup Power Generation

Project No.

Title
BACKUP GENERATOR AT WATER TREATMENT PLANT

Revision
#

Date
2021.03.12

Reference Sheet

Figure No.
FIG-3

Hermistion, OR Regional Water Supply

Electrical Load Estimate - 480VAC, 3 Phase - Intake Pump Station - Reduced load on genset

By: John C. Deerkop, P.E. | 1994 ACE Consultants, Inc. drawing E4 lists 3,500 amp bus for "MDP" Main Distribution Panel

Stantec

Revised: 12/09/2022

ROW No.	EQUIPMENT DESCRIPTION	EQUIPMENT TYPE	RATING	(HP) (kVA) (kW)	LOAD FACTOR	COULD BE RUNNING AT ONE TIME (Y)	RUNNING ON GENSET (Y)	**RUNNING GENSET LOAD (kW)**	RUNNING GENSET LOAD (kVA)	RUNNING GENSET AMPS (A)	LAST LOAD STARTED ON GENSET (Y)	**STARTING GENSET LOAD (kW)**	STARTING GENSET LOAD (kVA)	STARTING GENSET AMPS (A)
1														
2	Pump 1 (Phase 2 650Hp load, 700Hp motor)	~~500HP, 1185 RPM, 460V,574A, 60HZ, Frame: 3809~~	700	HP	93%	Y	Y	484.9	617.5	728.0	Y	1,531.3	1,611.9	1,938.8
3	Pump 2 (Phase 2 650Hp load, 700Hp motor)	~~500HP, 1185 RPM, 460V,574A, 60HZ, Frame: 3809~~	700	HP	93%	Y	Y	484.9	617.5	728.0		484.9	617.5	728.0
4	Pump 3 (Phase 2 650Hp load, 700Hp motor)	~~500HP, 1185 RPM, 460V,574A, 60HZ, Frame: 3809~~	700	HP	93%	Y	Y	484.9	617.5	728.0		484.9	617.5	728.0
5	Pump 4 (upgraded from 400HP)	~~400 HP, 460V, 433A, 60HZ, Frame: 449TPH~~	500	HP	100%	N								
6	Lighting Transformer & Panelboard	150kVA 3 phase 480:120/208V transformer & panell	150	kVA	55%	Y	Y	82.5	82.5	99.2		82.5	82.5	99.2
7	Air Compressor, Air Burst System	208VAC so included on the transformer, 15HP	0	kVA	100%									
8	Exhaust Fan 1	208VAC so included on the transformer, 7.5HP	0	kVA	100%									
9	Exhaust Fan 2	208VAC so included on the transformer, 7.5HP	0	kVA	100%									
10	Unit Heater 1	208VAC so included on the transformer, 15kW	0	kVA	100%									
11	Unit Heater 2	208VAC so included on the transformer, 15kW	0	kVA	100%									
12														
13			1350					1,537.2	1,935.0	**2,283.2**		**2,583.6**	2,929.4	**3,494.1**
14										**2,327.4**			3,229.5	**3,523.5**
15														
16								**RUNNING LOAD FOR**				**PEAK STARTING LOAD FOR**		
17								**GENSET**				2,583.6	Rough genset size	

Hermistion, OR Regional Water Supply

Electrical Load Estimate - 480VAC, 3 Phase - Water Treatment Plant - 1 Train not running on genset

By: John C. Deerkop, P.E.

Stantec

Revised: 12/2/2022

ROW No.	EQUIPMENT DESCRIPTION	EQUIPMENT TYPE	RATING	(HP) (kVA) (kW)	LOAD FACTOR	COULD BE RUNNING AT ONE TIME (Y)	RUNNING ON GENSET (Y)	**RUNNING GENSET LOAD (kW)**	RUNNING GENSET LOAD (kVA)	RUNNING GENSET AMPS (A)	LAST LOAD STARTED ON GENSET (Y)	**STARTING GENSET LOAD (kW)**	STARTING GENSET LOAD (kVA)	STARTING GENSET AMPS (A)
1														
2	**'MDP' Main Distribution Panel, 480v, 3ph, 3w, 1600 amp Bus, 1600 AT main circuit breaker. It includes a 600 amp 3 pole circuit breaker feeding the MCC so that load needs to be added.**													
3	Backwash Pump	Feeder CB 3P	125	HP	100%	Y	Y	93.3	124.3	156.0	Y	288.6	895.6	1,077.3
4	Potable Wet Well Pump 1	exist 75 HP, 3Ph, 1770 RPM, 60Hz	125	HP	100%	Y	Y	93.3	124.3	156.0		93.3	124.3	156.0
5	Potable Wet Well Pump 2	exist 75 HP, 3Ph, 1770 RPM, 60Hz	125	HP	100%	Y	Y	93.3	124.3	156.0		93.3	124.3	156.0
6	Potable Wet Well Pump 3	exist 75 HP, 3Ph, 1770 RPM, 60Hz	125	HP	100%	Y	Y	93.3	124.3	156.0		93.3	124.3	156.0
7	Potable Wet Well Pump 4 (Future)	(future)	125	HP	100%	N	Y							
8	Filter Feed Pump 1	Feeder CB 3P	40	HP	100%	Y	Y	29.9	41.5	52.0		29.9	41.5	52.0
9	Filter Feed Pump 2	Feeder CB 3P	40	HP	100%	Y	Y	29.9	41.5	52.0		29.9	41.5	52.0
10	Unit Heater	Feeder CB 3P	7	kW	100%	N	Y							
11	Unit Heater	Feeder CB 3P	30	kW	100%	N	Y							
12	Unit Heater	Feeder CB 3P	30	kW	100%	N	Y							
13	Unit Heater	Feeder CB 3P	3	kW	100%	N	Y							
14	Lighting Transformer & Panelboard	208/120vac 3 phase xfmr	75	kVA	35%	Y	Y	26.3	26.3	31.6		26.3	26.3	31.6
15	Non-potable Pump 1	75 HP, 3Ph, 1770 RPM, 60Hz	75	HP	100%	Y	Y	56.0	76.5	96.0		56.0	76.5	96.0
16	Non-potable Pump 2	75 HP, 3Ph, 1770 RPM, 60Hz	75	HP	100%	N	Y							
17	Non-potable Pump 3	75 HP, 3Ph, 1770 RPM, 60Hz	75	HP	100%	Y	Y	56.0	76.5	96.0		56.0	76.5	96.0
18	Non-potable Pump 4	75 HP, 3Ph, 1770 RPM, 60Hz	75	HP	100%	Y	Y	70.0	95.6	120.0		70.0	95.6	120.0
19														
20								**641.3**	855.1	1,071.6		**836.5**	1,626.4	1,992.8
21														
22	**'MCC' Motor Control Center, 480v, 3ph, 3w, 600 amp bus. Fed from MDP by a 600 amp circuit breaker.**													
23	Surface Wash Pump 1	Feeder CB 3P	15	HP	100%	Y	Y	11.2	16.8	21.0		11.2	16.8	21.0
24	Air Compressor 1	Feeder CB 3P	3	HP	100%	Y	Y	2.3	3.8	4.8		2.3	3.8	4.8
25	Blower No. 1	Feeder CB 3P	40	HP	100%	Y	Y	29.9	41.5	52.0		29.9	41.5	52.0
26	Blower No. 2	Feeder CB 3P	40	HP	100%	N	Y							
27	Potable Water Pump 1	Feeder CB 3P	7.5	HP	100%	Y	Y	5.6	8.8	11.0		5.6	8.8	11.0
28	Finished Water Sample Pump 1	Feeder CB 3P	3	HP	100%	Y	Y	2.3	3.8	4.8		2.3	3.8	4.8
29	Exhaust Fan No. 1	Feeder CB 3P	3	HP	100%	N	Y							
30	Exhaust Fan No. 2	Feeder CB 3P	3	HP	100%	N	Y							
31	Decant Pump No. 1	Feeder CB 3P	5	HP	100%	Y	Y	3.8	6.1	7.6		3.8	6.1	7.6
32	Decant Pump No. 2	Feeder CB 3P	5	HP	100%	N	Y							
33	Irrigation Pump 1	Feeder CB 3P	40	HP	100%	Y	Y	29.9	41.5	52.0		29.9	41.5	52.0
34	Lighting Transformer & Panelboard	240/120vac 1 phase xfmr [Note 1]	15	kVA	66%	Y	Y	9.9	29.7	7.9		9.9	29.7	7.9
35														
36								**94.9**	152.0	161.1		**94.9**	152.0	161.1
37														
38								736.2	1,007.1	1,232.6		931.4	1,778.4	2,153.9
39							**BOTH MDP + MCC**			1,211.3			1,164.3	2,139.0

Hermistion, OR Regional Water Supply

Electrical Load Estimate - 480VAC, 3 Phase - Non-Potable Pump Station #2

By: John C. Deerkop, P.E.

Stantec

Revised: 12/2/2022

ROW No.	EQUIPMENT DESCRIPTION	EQUIPMENT TYPE	RATING	(HP) (kVA) (kW)	LOAD FACTOR	COULD BE RUNNING AT ONE TIME (Y)	RUNNING ON GENSET (Y)	**RUNNING GENSET LOAD (kW)**	RUNNING GENSET LOAD (kVA)	RUNNING GENSET AMPS (A)	LAST LOAD STARTED ON GENSET (Y)	**STARTING GENSET LOAD (kW)**	STARTING GENSET LOAD (kVA)	STARTING GENSET AMPS (A)
1														
2	Non-potable Pump 1	40HP, 1775 RPM, 460V, 60Hz,	40	HP	100%	Y	Y	29.9	41.5	52.0		29.9	41.5	52.0
3	Non-potable Pump 2	40HP, 1775 RPM, 460V, 60Hz,	40	HP	100%	Y	Y	29.9	41.5	52.0		29.9	41.5	52.0
3	Non-potable Pump 3	40HP, 1775 RPM, 460V, 60Hz,	40	HP	100%	Y	Y	29.9	41.5	52.0		29.9	41.5	52.0
4	Non-potable Pump 4	40HP, 1775 RPM, 460V, 60Hz,	40	HP	100%	N	Y							
5	Non-potable Pump 5 (Phase 2)	Ex is 100 HP, 1775 RPM, 460V, 60Hz,	350	HP	100%	Y	Y	261.1	329.9	414.0		261.1	329.9	414.0
6	Non-potable Pump 6 (Phase 2)	Ex is 40HP, 1775 RPM, 460V, 60Hz,	350	HP	100%	N	Y							
7	Exhaust Fan 1		0.75	HP	100%	Y	Y	0.6	1.3	1.6		0.6	1.3	1.6
8	Exhaust Fan 2		0.75	HP	100%	Y	Y	0.6	1.3	1.6		0.6	1.3	1.6
9	Exhaust Fan 3		0.75	HP	100%	Y	Y	0.6	1.3	1.6		0.6	1.3	1.6
6	Lighting Transformer & Panelboard	208/120V 1ph xfmr	9	kVA	100%	Y	Y	9.0	9.0	10.8		9.0	9.0	10.8
7	Lighting Transformer & Panelboard	208/120V 1ph xfmr	9	kVA	100%	Y	Y	9.0	9.0	10.8		9.0	9.0	10.8
8														
9						**NPPS#2 LOADS**		370.5	476.2	596.5		370.5	476.2	596.5
10										572.8			463.1	572.8
11														
12						**WTP/NPPS#1 LOADS**		736.2	1,007.1	1,232.6		931.4	1,778.4	2,153.9
13										1,211.3			1,164.3	2,139.0
14														
15						**BOTH BUILDINGS**		**1,106.6**	**1,483.3**	**1,829.1**		**1,301.9**	**2,254.6**	**2,750.3**
16						**ON 1 GENSET**				1,784.1				2,711.8

	Dev. Supply (Firm)	Backup Power Flows (Firm)	%	$
City	2035	2035	0.133574	$663,862.82
Calpine	2900	2900	0.190351	$946,045.29
HGC	2600	2600	0.17066	$848,178.54
Simplot	2000			
Shearer's	500			
Vadata	2900	2900	0.190351	$946,045.29
Vadata (New)		4800	0.315064	$1,565,868.07
AWS Total Share				**$2,511,913.36**
	12935	15235		$4,970,000.00