

## Tuesday, July 13, 2021Location: Borough Assembly ChambersSpecial Assembly Meeting at 6:00 PM/Work Session (Immediately After Special Meeting)

## 1. CALL TO ORDER

- 2. ROLL CALL
- **3. PERSONS TO BE HEARD -** *Section WMC 3.05.040 (C)* states that: The chair may call to order any person who is breaching the peace or being disorderly by speaking without recognition, engaging in booing or catcalls, speaking vulgarities, name calling, personal attacks, or engaging in other conduct which is determined by the chair to be disruptive of the meeting. Any person so disrupting a meeting of the assembly may be removed and barred from further attendance at the meeting unless permission to return or remain is granted by a majority vote of the assembly.

## 4. CONFLICT OF INTEREST

## 5. SPECIAL ASSEMBLY MEETING ACTION ITEM(S)

a. Approval of Professional Services Agreement with Shannon & Wilson in the Amount of \$42,602 for Environmental Site Assessment

### 6. SPECIAL ASSEMBLY MEETING - ADJOURNMENT

## WORK SESSION (Immediately Following Special Assembly Meeting)

a. Discussion of the Proposed Update to the Preliminary Engineering Report (PER) for the Water Treatment Plant Improvements Project

## CITY & BOROUGH OF WRANGELL, ALASKA BOROUGH ASSEMBLY AGENDA STATEMENT

	DATE:	July 13, 2021
AGENDA ITEM TITLE:	<u>Agenda</u> Section	5

Approval of Professional Services Agreement with Shannon & Wilson in the amount of \$42,602 for Environmental Site Assessment

SUBMITTED BY:		FISCAL NOTE: Expenditure Required: \$42,602			
Amber Al-H Capital Faci	laddad ilities Director	FY 20: \$	FY 21:	FY22: \$42,602	
		Amount Budgeted:			
			\$102,000		
Reviews/Approvals/Recommendations		Account Number(s):			
		70300-000-7900-00-70006			
	Commission, Board or Committee	Account Name(s):			
Name(s)		Environmental Assessment for Utilities Campus			
Name(s)		Unencumbered Balance(s) (prior to			
	Attorney	expenditure):			
	Insurance	\$95,290			

<u>ATTACHMENTS:</u> 1. Shannon & Wilson June 25, 2021 Proposal for Environmental Site Assessment for Power Plant and Public Works Land Parcel (Utilities Campus)

## **RECOMMENDATION MOTION:**

Move to Approve a Professional Services Agreement with Shannon & Wilson in the amount of \$42,602 for an Environmental Site Assessment.

#### **SUMMARY STATEMENT:**

As the Assembly is aware the "old concrete" portion of the Generator Building at Wrangell Municipal Light and Power has been determined to be structurally unsound. The newer steel frame Generator Building is structurally integrated into the old concrete structure as the old building constitutes the fourth wall of the new building. A solution to the situation needs to be determined. In the meantime, the old portion of the structure is no longer being used, except for some storage of supplies and equipment. Access into the old building is controlled and done under specific circumstances. Borough Administration has taken the approach of reviewing the solution in terms of a Campus Master Plan for WML&P and Public Works to serve the long-term operational needs for these two departments with the first priority being the Diesel Generation Power Plant.

Part of developing a solution and Master Plan is understanding the environmental conditions at the property. At this time, the Borough is moving forward with the Environmental Site Assessment of the full area which includes 14 sampling sites as shown in the image below.



The environmental conditions of these sites must be known in order to understand if any significant environmental cleanup effort may be necessary. Both parcels have had several underground fuel storage tanks on site and there have been a few known buried fuel lines on site.

This environmental site assessment will provide for the site investigations, including the preparation of a DEC sampling and analysis plan identifying soil borings, groundwater well

installation and sampling, the in-field follow-on work identified in the plan, and testing and reporting.

This effort is in addition to, and should not be confused with, the work currently in progress by Shannon & Wilson to address the known contaminated site in the Public Works Yard following the 1999 removal of a 500-gallon underground waste oil tank. That separate location is in the southwest corner of the yard, adjacent to the intersection of Zimovia Highway and Case Avenue. That work will include delineating the vertical and horizontal extent of soil and groundwater contamination exceeding applicable ADEC cleanup levels and determine what, if any, further remediation work is required. The site characterization activities in this yard corner area have already been approved and do not require additional borings under this subsequent Environmental Site Assessment.

Wrangell Municipal Code Section 5.10.050 (E) does not require competitive bidding or quotations when contractual services are of a professional nature, such as engineering. A member of the Assembly has requested the Administration be more diligent about competitive solicitation for professional services. We are endeavoring to do that. In this instance, Shannon & Wilson (engineers) was selected to perform this work since they are under contract to perform the DEC-approved site characterization activities scheduled for three existing contaminated sites. Their environmental engineer has already traveled to Wrangell under a separate Task 1 for this project to perform a visual site assessment and gather information related to historical operations and land use to help determine the proposed below-surface investigation locations.

Shannon & Wilson's attached proposal, in the amount of \$42,602, presumes that the engineer and driller will mobilize to Wrangell to perform the work of both projects, to realize cost savings related to a second mobilization. \$102,000 was allocated for this project in FY21 and carries forward as part of the CIP Budget.

# GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

June 25, 2021

Ms. Amber Al-Haddad City and Borough of Wrangell PO Box 531 Wrangell, AK 99929

## RE: PROPOSAL FOR PHASE II ENVIRONMENTAL SITE ASSESSMENT, WRANGELL POWER PLANT, 1064 CASE AVENUE, WRANGELL, ALASKA

Dear Ms. Al-Haddad:

We are pleased to submit herein our proposal to conduct a Phase II Environmental Site Assessment (ESA) of the Wrangell Power Plant property located at 1064 Case Avenue in Wrangell, Alaska. It is our understanding that the City and Borough of Wrangell (CBW) intends to repair or replace the power plant. To assist with development of a Master Plan for the site, the CBW has requested an environmental assessment of the site.

## BACKGROUND

The property is a closed Alaska Department of Environmental Conservation (ADEC) contaminated site (ADEC File No. 1529.38.021). Although the property is a closed contaminated site, based on a discussion with Ms. Jamie Grant of the ADEC, a work plan is not required prior to conducting the Phase II ESA activities.

A representative of Shannon & Wilson visited the site on April 15, 2021 and conducted a visual assessment of potential environmental concerns. In addition, site history, proposed development plans, and potential concerns were discussed with representatives of CBW. Based on the results of our site visit, eleven proposed soil boring locations were selected and presented to CBW. Based on a review of our proposed boring locations, CBW suggested three additional locations. The proposed boring locations are shown on Figure 1. The rationale for the proposed boring/well locations follows:

- Borings B1 and B2: Abandoned fuel piping.
- Borings B3 and B12: Southern portion of generator building.
- Boring B4: Near old fuel meter, fuel supply lines, and active/former tanks.
- Boring B5: Former fuel tank.

Project No. 106315-P - Site Assessment Proposal.docx

- Boring B6: Drum, machinery, and vehicle storage.
- Boring B7: Downgradient of power substation.
- Borings B8 and B9: Within shed structure.
- Boring B10: Near active dual fuel (gasoline and diesel) aboveground storage tank (AST) with dispenser.
- Boring B11: Downgradient of fuel tank area on south side of generator building.
- Boring B13: Adjacent west of generator building.
- Boring B14: Downgradient of generator building.

## SCOPE OF WORK

The project will consist of advancing soil borings, installing temporary monitoring wells, collecting soil and groundwater samples, and reporting. Clear View, LLC (Clear View) of Wrangell, Alaska will provide the equipment and personnel to advance the borings and install the temporary wells. Soil and groundwater samples will be submitted to SGS North America Inc. (SGS) of Anchorage, Alaska for laboratory analysis.

## Task 1- Field Activities

At least three days prior to advancing the soil borings, the utility locate center will be contacted to mark buried utilities within the project area and identify potential conflicts such that the proposed boring locations can be adjusted, if necessary. It is understood that a watermain is located along the eastern portion of the property and it may be necessary to adjust the locations of Borings B1, B2, B4, and B5, shown on Figure 1.

### Soil Borings

Clear View will advance the borings using a GeoProbe® direct-push drilling rig. It is our understanding that concrete flooring is present in the locations Borings B3 and B12. It is assumed that the CBW will provide the equipment and personnel to core through the concrete in these locations. If the drill rig cannot access these locations, a hand auger will be used to collected subsurface samples.

The borings will be advanced until groundwater is encountered, which is assumed to be between 5 and 10 feet below ground surface (bgs). Soil samples will be recovered on a continuous basis using 4-foot sampling sleeves until groundwater is encountered. Two field screening samples will be collected from each sample interval, assuming at least 80 percent recovery within the sampling sleeves. Each soil sample will be visually described and "screened" for volatile compounds using a photoionization detector (PID) and ADECapproved headspace screening techniques. One analytical soil sample will be collected from each boring and submitted for analysis. The sample will be collected from the interval just above the soil/water interface or from the sample interval with the highest PID measurement. Following sampling, the boring not completed as temporary monitoring wells will be backfilled with the drill cuttings.

Each sample will be analyzed for gasoline range organics (GRO) by Alaska Method (AK) 101, diesel range organics (DRO) by AK 102, residual range organics (RRO) by AK 103, volatile organic compounds (VOCs) by Environmental Protection Agency (EPA) Method 8260D, polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270D SIM, and polychlorinated biphenyls (PCBs) by EPA Method 8082A. For quality control purposes, two duplicate samples and one trip blank will be submitted for analysis.

## Temporary Monitoring Wells

Five of the fourteen soil borings will be completed as temporary monitoring wells. The locations of the temporary wells will be selected based on PID readings and/or visual/olfactory evidence of contamination. The wells will be installed by advancing the borings approximately 3 to 5 feet past the observed soil/water interface. The temporary wells will consist of 2-inch inside diameter, polyvinyl chloride (PVC) pipe. The bottom section of each well will consist of a 5- to 10-foot section of 2-inch inside diameter, 0.010-inch slotted PVC pipe. The screen will extend approximately 2.5- to 5-feet below the soil/groundwater interface.

The temporary wells will be left undisturbed in the bottom of the soil borings for at least 1 hour to allow groundwater to accumulate. Prior to sampling, depth-to-water, with respect to the ground surface, will be measured with an electronic water level indicator. Grab groundwater samples will be collected with disposable polyethylene bailers from the temporary wells. The wells will not be purged or developed prior to sampling, therefore the groundwater samples collected from the temporary wells will be of screening level quality to assess the presence or absence of the tested analytes. Analytical samples will be collected by transferring water directly from the bailer into the laboratory supplied containers. The sample jars will be filled in decreasing order of volatility.

One analytical groundwater sample will be collected from each well and analyzed for GRO by AK 101, DRO by AK 102, RRO by AK 103, VOCs by EPA Method 8260D, PAHs by EPA

Method 8270D SIM, and PCBs by EPA Method 8082A. For quality control purposes, one duplicate sample and one trip blank will be submitted for analysis.

Following groundwater sampling, the temporary wells will be removed, and the void space will be backfilled with the soil cuttings.

## Task 2- Reporting

A summary report will be prepared which will include a description of field procedures, a scaled site plan, photographs taken during field activities, boring logs, tabulated field screening and laboratory analytical results, and ADEC Laboratory Data Review Checklists. The report will also include recommendations for additional assessment and/or cleanup activities, as appropriate.

## SCHEDULE

The site assessment field work will be conducted in three days and our final report will be submitted to you within four weeks following receipt of the analytical results.

## ESTIMATED COSTS AND CONDITIONS FOR SERVICES

We are prepared to conduct the project on a time and materials basis in accordance with the attached summary cost estimate. These costs include work through submittal of our summary report. It is noted that additional release investigation and/or cleanup activities may be warranted, based on the results of the release investigation efforts outlined in this proposal.

It is assumed that the project will be conducted concurrently with the previously authorized projects located at the Wrangell City Shop, Wilcox Automotive, and the Wrangell Medical Center. If a separate mobilization is required, it will be necessary to revise the cost estimate.

It is assumed that the project will be conducted under a mutually agreed contract. We are also including the document "Important Information About Your Geotechnical/Environmental Proposal" to help clarify the nature and extent of our service.

If you have any questions or comments, or with to revise the scope of our services, please contact the undersigned at (907) 433-3223.

Sincerely,

## SHANNON & WILSON

Dan P. McMahon

Digitally signed by Dan P. McMahon Date: 2021.06.25 14:06:40 -08'00'

Dan P. McMahon, PMP Senior Associate

Enc. Figure 1 Summary Cost Estimate Important Information about your Geotechnical/Environmental Proposal



SHANNON & WILSON, INC. Geotechnical and Environmental Consultants

FIG. 1

#### SHANNON & WILSON, INC.

## SUMMARY COST ESTIMATE

Site Assessment Activities							<b>COSTS</b>
Task 1 - Field Activities							\$37,902
Shannon & Wilson							
Senior Associate	4	hrs.	a	\$195	/hr. =	\$780	
Engineer/Geologist IV	46	hrs.	a)	\$115	/hr. =	\$5,290	
Project coordination/mobilization	4		0				
Utility Locates	4						
Soil Borings/Monitoring Well Install 3	0						
Sample Wells	8						
Per Diem	4	days	(a)	\$60	/day =	\$240	
Lodging	4	nights	(a)	\$200	/day =	\$800	
Vehicle	4	days	(a)	\$200	/day =	\$800	
Shipping		•	0	Lu	ump Sum =	\$500	
S&W Expenses (Sampling Equipment etc.)	4	days	a	\$150	/day =	\$600	
Clear View LLC		·	0		2		
Mobilization/Demobilization				L	ımn Sum =	\$2,000	
DT66 Geoprobe Drill and Driller	3	days	$\widehat{a}$	\$4 025	/day =	\$12,000	
1" Temporary Wells	5	wells		\$125	/well =	\$625	
Concrete Patch	2	Patches		\$50	/natch =	\$100	
	-	1 atomos	e	φ50	paten	ψ100	
SGS North America Inc.							
Soil Samples (14 samples and 2 duplicates)			~				
GRO - AK 101	16	samples	(a)	\$75	ea. =	\$1,200	
DRO/RRO - AK 102/103	16	samples	(a)	\$87	ea. =	\$1,392	
VOCs - EPA 8260D	16	samples	(a)	\$184	ea. =	\$2,944	
PAHs - EPA 8270D SIM	16	samples	(a)	\$184	ea. =	\$2,944	
PCBs - EPA 8082A	16	samples	(a)	\$87	ea. =	\$1,392	
Trip Blank - GRO/VOCs	1	sample	(a)	\$259	ea. =	\$259	
Groundwater Samples (5 samples and 1 duplicate	e)						
GRO - AK 101	6	samples	a	\$75	ea. =	\$450	
DRO/RRO - AK 102/103	6	samples	a	\$87	ea. =	\$522	
VOCs - EPA 8260D	6	samples	ā	\$184	ea. =	\$1,104	
PAHs - EPA 8270D SIM	6	samples	a)	\$184	ea. =	\$1,104	
PCBs - EPA 8082A	6	samples	ă	\$87	ea. =	\$522	
Trip Blank - GRO/VOCs	1	sample	a	\$259	ea. =	\$259	
Task 3 - Reporting		_	-				\$4 700
Shannon & Wilson							\$ 1,700
Vice President	2	hrs.	a).	\$235	/hr. =	\$470	
Senior Associate	4	hrs.	a	\$195	/hr. =	\$780	
Engineer/Geologist IV	30	hrs.	a,	\$115	/hr. =	\$3,450	
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					LOIMATE	J IUIAL:	\$42,602

11 June 2021 SHANNON & WILSON, INC. Geotechnical and Environmental Consultants

Date: June 2021

To: City and Borough of Wrangell

## IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL PROPOSAL

More construction problems are caused by site subsurface conditions than any other factor. The following suggestions and observations are offered to help you manage your risks.

#### HAVE REALISTIC EXPECTATIONS.

If you have never before dealt with geotechnical or environmental issues, you should recognize that site exploration identifies actual subsurface conditions at those points where samples are taken, at the time they are taken. The data derived are extrapolated by the consultant, who then applies judgment to render an opinion about overall subsurface conditions; their reaction to construction activity; appropriate design of foundations, slopes, impoundments, and recovery wells; and other construction and/or remediation elements. Even under optimal circumstances, actual conditions may differ from those inferred to exist, because no consultant, no matter how qualified, and no subsurface program, no matter how comprehensive, can reveal what is hidden by earth, rock, and time.

#### DEVELOP THE SUBSURFACE EXPLORATION PLAN WITH CARE.

The nature of subsurface explorations—the types, quantities, and locations of procedures used—in large measure determines the effectiveness of the geotechnical/environmental report and the design based upon it. The more comprehensive a subsurface exploration and testing program, the more information it provides to the consultant, helping to reduce the risk of unanticipated conditions and the attendant risk of costly delays and disputes. Even the cost of subsurface construction may be lowered.

Developing a proper subsurface exploration plan is a basic element of geotechnical/environmental design, which should be accomplished jointly by the consultant and the client (or designated professional representatives). This helps the parties involved recognize mutual concerns and makes the client aware of the technical options available. Clients who develop a subsurface exploration plan without the involvement and concurrence of a consultant may be required to assume responsibility and liability for the plan's adequacy.

#### **READ GENERAL CONDITIONS CAREFULLY.**

Most consultants include standard general contract conditions in their proposals. One of the general conditions most commonly employed is to limit the consulting firm's liability. Known as a "risk allocation" or "limitation of liability," this approach helps prevent problems at the beginning and establishes a fair and reasonable framework for handling them, should they arise.

Various other elements of general conditions delineate your consultant's responsibilities. These are used to help eliminate confusion and misunderstandings, thereby helping all parties recognize who is responsible for different tasks. In all cases, read your consultant's general conditions carefully and ask any questions you may have.

#### HAVE YOUR CONSULTANT WORK WITH OTHER DESIGN PROFESSIONALS.

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a consultant's report. To help avoid misinterpretations, retain your consultant to work with other project design professionals who are affected by the geotechnical/environmental report. This allows a consultant to explain report implications to design professionals affected by them, and to review their plans and specifications so that issues can be dealt with adequately. Although some other design professionals may be familiar with geotechnical/environmental concerns, none knows as much about them as a competent consultant.

#### **OBTAIN CONSTRUCTION MONITORING SERVICES.**

Most experienced clients also retain their consultant to serve during the construction phase of their projects. Involvement during the construction phase is particularly important because this permits the consultant to be on hand quickly to evaluate unanticipated conditions, to conduct additional tests if required, and when necessary, to recommend alternative solutions to problems. The consultant can also monitor the geotechnical/environmental work performed by contractors. It is essential to recognize that the construction recommendations included in a report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site.

Because actual subsurface conditions can be discerned only during earthwork and/or drilling, design consultants need to observe those conditions in order to provide their recommendations. Only the consultant who prepares the report is fully familiar with the background information needed to determine whether or not the report's recommendations are valid. The consultant submitting the report cannot assume responsibility or liability for the adequacy of preliminary recommendations if another party is retained to observe construction.

#### REALIZE THAT ENVIRONMENTAL ISSUES MAY NOT HAVE BEEN ADDRESSED.

If you have requested only a geotechnical engineering proposal, it will not include services needed to evaluate the likelihood of contamination by hazardous materials or other pollutants. Given the liabilities involved, it is prudent practice to always have a site reviewed from an environmental viewpoint. A consultant cannot be responsible for failing to detect contaminants when the services needed to perform that function are not being provided.

## ONE OF THE OBLIGATIONS OF YOUR CONSULTANT IS TO PROTECT THE SAFETY, PROPERTY, AND WELFARE OF THE PUBLIC.

A geotechnical/environmental investigation will sometimes disclose the existence of conditions that may endanger the safety, health, property, or welfare of the public. Your consultant may be obligated under rules of professional conduct, or statutory or common law, to notify you and others of these conditions.

#### RELY ON YOUR CONSULTANT FOR ADDITIONAL ASSISTANCE.

Your consulting firm is familiar with several techniques and approaches that can be used to help reduce risk exposure for all parties to a construction project, from design through construction. Ask your consultant, not only about geotechnical and environmental issues, but others as well, to learn about approaches that may be of genuine benefit.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland

## CITY & BOROUGH OF WRANGELL, ALASKA WORK SESSION - AGENDA STATEMENT

	DATE:	July 13, 2021
<u>AGENDA ITEM TITLE:</u>	<u>Agenda</u> <u>Section</u>	6

Discussion of the Proposed Update to the Preliminary Engineering Report Update for the Water Treatment Plant Improvements Project

**FISCAL NOTE: SUBMITTED BY:** Expenditure Required: None at this time FY 20: \$ FY 21: \$ FY22: \$ Amber Al-Haddad, Capital Facilities Director **Amount Budgeted:** Account Number(s): **Reviews/Approvals/Recommendations** Account Name(s): Commission, Board or Committee Name(s) Name(s) **Unencumbered Balance(s) (prior to** expenditure): Attorney Insurance

ATTACHMENTS: None

## **RECOMMENDATION MOTION:**

None. Discussion only.

## **SUMMARY STATEMENT:**

### Status of the Dissolved Air Flotation (DAF) Treatment Process as the Water Treatment Plant Improvements Project

- The engineering fee proposal received from DOWL was at a cost much higher than the existing funding in the project budget, and much higher than what the funding agencies will cover. For this reason, the funding agencies recommended that we reevaluate the 2017-developed cost estimate to ensure project funding is sufficient to meet today's projected market costs.
- The Water Treatment Plant Improvements project is funded, nearly in whole, by federal funds which cannot be used to reimburse engineering design expenses if a construction contract is not awarded, possibly due to a lack of funding.
- Before requesting additional funds, an updated Preliminary Engineering Report (PER), is required to justify the additional funding request. Both USDA and EDA, project funders, have recommended the CBW pursue value engineering services from CRW Engineering Group to update the PER's cost estimate for the DAF project.
- Both USDA and EDA indicated that if the CBW wishes to reevaluate another alternative in an update to the PER, and not simply pursue an update to the cost estimate for the DAF alternative, they would require that we reevaluate all alternatives in the 2017 PER, including the do nothing alternative, to ensure all alternatives are reconsidered as to which one is our best option in 2021.
- If an updated PER justifies a preferred alternative other than the DAF, an amendment to the project scope of work and details will be required by both USDA and EDA.
- If an updated PER justifies the need for additional project funding, EDA will consider granting additional funding regardless of which water treatment alternative is designed for construction.
- If an updated PER justifies the need for additional project funding, USDA will not commit to additional loan or grant funds until after construction bids are received, regardless of which water treatment alternative is designed for construction.
- The CBW must decide if we wish to reevaluate all alternatives in an updated PER or maintain pursuit only of an updated construction cost estimate for the DAF project.
  - In mid-April, CRW Engineering Group provided a fee proposal, in the amount of \$24,560, to perform an updated engineers cost estimate for the DAF project.

- If requested to reevaluate all alternatives in an updated PER, CRW Engineering Group will require one to two weeks to develop a fee proposal for a full PER update after receiving a scope of work from us.
- Considering CRW Engineering Group's current workload and staffing levels, they indicated they could commit to completing either level of a Draft PER update by early September, with a final by the end of September, depending on the draft review time by the CBW, USDA and EDA.
- The CBW may submit to USDA a written request that costs to perform the PER update (value engineering) be paid from the Borough's local contribution of \$119,000 to the project. If USDA disapproves using these dedicated project funds, a budget amendment in the Water Fund would be necessary to pay for the engineering services for the PER update.

### Why was DAF the Preferred Alternative in the Preliminary Engineering Report (PER)?

• In 2016, a desktop study was performed by CRW Engineering Group, who was selected through a qualifications-based competitive solicitation process, to identify and evaluate a limited number of treatment options that appeared to be reasonably promising for Wrangell. While this is not an exhaustive list of water treatment processes, these selected technologies have been successfully used to meet drinking water standards in similarly-sized communities that treat raw water with similar characteristics. The following water treatment alternatives were evaluated under the PER:

Alternative 1 – Improve Existing Water Treatment Process Alternative 2 – MIEX Process with Multimedia (Conventional) Filtration Alternative 3 – Ozonation with MIEX and Biological Filtration Alternative 4 – Dissolved Air Flotation (DAF) with Multimedia Filtration Alternative 5 – Nanofiltration with Multimedia (Two-Stage) Filtration Alternative 6 – No Action Alternative

Each alternative was evaluated relative to various criteria, including: capital costs, operation and maintenance (O&M) costs, life-cycle costs, treatment performance and capacity, complexity, reliability, sustainability, operator certification, and operator safety.

- In early 2016 staff met with the Borough Assembly to review the evaluation methods for improving the treatment process. The Assembly provided concurrence with the recommended testing/piloting alternative, the Dissolved Air Flotation (DAF) system, based on the following considerations:
  - The DAF's potential ability to produce high quality water using a space-efficient package treatment plant that would facilitate future expansion.
  - The conceptual capital costs between the DAF and the Membrane Filtration alternatives. While capital costs were extremely comparable, the ongoing O&M costs for the Membrane Filtration alternative was projected to be 64% higher (whereas in

the final PER this was calculated to be 44% higher) than the DAF under the desktop study.

- The DAF alternative was calculated to offer the lowest life cycle costs of the alternatives considered in the pilot study desktop assessment effort.
- The DAF was judged to be well within the technical capacity of CBW's operators.

Below is an excerpt table reflecting a capital cost and O&M cost comparison between all alternatives from the PER:

Cont	Alt 1 –	Alt 2 -	Alt 3 - MIEX	Alt 4 - DAF	Alt 5 - Nano
Cost	Improve Existing	MIEX + CF	(+ CF + Ozone + BF + F		+ TS Filtration
Capital Cost	\$12,543,000	\$12,216,000	\$13,712,000 \$8,191,000		\$8,185,000
Annual O&M Cost	\$260,646	\$351,711	\$403,007 \$289,614		\$417,079
NPV	\$17,153,130	\$18,436,813	\$ \$20,840,101 \$13,313,496		\$15,561,998

#### Table 15 – Comparison of Costs

Key: CF - Conventional Filtration

**BF** - Biological Filtration

TS - "Two-Stage" Filtration

It is also important to note the amount of treated water that each alternative uses in its treatment process. Below is an excerpt table reflecting the cost of the water wasting (listed as non-salable water) between all alternatives from the PER:

#### Table 16 - Comparison of O&M Costs Including Water Wasting

Cost	Alt 1 – Improve Existing	Alt 2 – MIEX + CF <sup>1</sup>	Alt 3 – MIEX + Ozone + BF <sup>2</sup>	Alt 4 – DAF + Filtration	Alt 5 – Nano + TS <sup>3</sup> Filtration
0&M	\$260,646	\$351,711	\$403,007	\$289,614	\$417,079
Non-salable Water	\$40,438	\$35,740	\$45,584	\$26,989	\$101,573
Total	\$301,084	\$387,450	\$448,591	\$316,603	\$518,652

Key: Non-salable Water includes process waste and non-potable water.

**CF** - Conventional Filtration

**BF** - Biological Filtration

TS - "Two-Stage" Filtration

- Primary goals of the pilot study were to confirm the ability of the DAF process to meet drinking water standards and to evaluate various coagulants for best overall removal of turbidity, color, organics, and effects on pH. In late 2016, the pilot testing was complete, and the results confirmed that DAF followed by multimedia filtration was demonstrated to meet the desired water quality goals.
- The CBW decided to aggressively pursue recommendations from the pilot testing project, and thereby broadened the scope of work for CRW Engineering Group, by adding the development of a Preliminary Engineering Report, which is a document required by the

USDA and EDA for eligibility to apply to their funding programs for project funding. The same five water treatment alternatives were evaluated under the PER.

- Our application was submitted to USDA as the PER was under development. USDA funding received in August 2017.
- The Assembly approved applying to EDA in February 2018. Our application was submitted in March 2018, and EDA funding was received in September 2019.

## Why Now Consider Other Alternatives in an Updated Preliminary Engineering Report (PER)?

• In late-April, we hired a third-party engineering firm to provide us with a ROM (rough order of magnitude) cost and square foot area required for the alternative Membrane Filtration Treatment to meet the projected need for 1.8 mgd capacity (the same design flow as identified for the DAF project). Through this effort it was confirmed that the membrane equipment would require a similar building expansion and/or new building similar to that required by the DAF option. There was not sufficient cost information to ascertain that the membrane technology would have a significant and lessor capital cost compared to the DAF, and administration believes it is in the best interest to explore an updated evaluation and cost estimate for the membrane, along with the DAF's updated cost estimate.

As mentioned earlier, both USDA and EDA indicated that if the CBW wishes to reevaluate another alternative in an update to the PER, they will require that we reevaluate all alternatives in the 2017 PER. Other considerations for a full PER update are:

- Perform a subsequent review of our existing system to ensure it is not a responsible alternative to the other alternatives.
- Revisit the backwash water and solids waste disposal method, which greatly affects our system classification and level of operator certification required by ADEC.
- Revisit *all* treatment process aspects as they affect our system classification and level of operator certification required by ADEC.
- Revisit the existing roughing filter building renovations, required for a variety of the alternatives, including DAF, to ensure that constructing a new building wouldn't be a more cost-effective option. Other considerations for this review:
  - A new building will eliminate the need for a temporary water treatment for a period of 9-12 months while the roughing filters are being renovated/expanded. This would allow the roughing filter to remain for future use, i.e. chemical storage, area to house a standby generator, etc.
  - A new building will eliminate the need to reroute the water transmission lines between the water plant and the storage tanks, which was an oversight in the original PER and must be considered if expanding the roughing filter building.
- In April 2021, the Water Department hired a water quality specialist to review existing treatment processes to determine if interim measures could be implemented, before the new water treatment process is installed, for the purpose of improving water quality. The

consultant reviewed our DAF project and suggested two concerns we should ensure are reviewed by the designing engineer:

- Potential trouble during periods of good water quality when there may be lower particulates in the water for the coagulant to attach to for flocculation. A phone call to Port Hardy, B.C. to review their 20+ years of DAF experience with this concern indicated achieving the necessary floc is not a problem for them. They said good quality water does not pose a problem for them because the DAF only needs to establish a fine pin-size floc.
- They said the seasonal colder water temperatures during the colder winter months can be of concern with the soda ash, but they found an easy solution with \$100 worth of plumbing parts and an on-demand hot water system into soda ash water stream for warm water through the injection quills to keep them from plugging.
- Potential adverse effect on Disinfection By-Products (DBP) during seasonally low floc formation and the need to increase chlorine. Port Hardy again suggests this is not a problem for them. They make the same quality of water in the summer and winter months, including their levels of DBPs because as with any treatment system, you must accommodate the change in seasons with adjustments within your system.

## Existing Plant Needs While Considering Alternatives for a Water Treatment Plant Improvements Project

The two ozone generators, installed three years ago, have been problematic with multiple replacement parts over this time and with problems being far worse on generator 2. The manufacturer's representatives were on site last month to inspect the generators and have recommended a variety of improvements they believe will help with the ozone production, which include:

- Generator 2 replace the skeleton plus 16 MiniSEPTS or spares
- Return old skeleton to Primozone for evaluation of manufacturing or operations defects. Cost of replacement skeleton unit to use while under evaluation. \$58,000
- Return ten failed miniSEPTS with serial # >7000 to Primozone for evaluation. \$11,000
- Add uninterruptable power supplies to the generator cabinets (to protect the PLCs)
- Change to a closed loop cooling system \$76,000
- Upgrade oxygen prep system for additional oxygen production capacity \$150,000
- Include oxygen sensor
- Add humidity monitors into generator cabinets

Until a new plant is in operation, it is imperative to our water treatment process that the ozone generators are maintained and in good working condition. Some, if not all, of the above recommendations are being considered by the Water Department for continued operation of our existing plant.

It is important to note that there is not 100% certainty that the ozone generators would not be needed in a future treatment process, hence further importance to ensure this equipment is maintained for long term operations.

#### **Grant Award Timelines**

- The question was asked by the Mayor at the last Assembly meeting whether other project funding options, including bonding, were viable. Administration does not advise letting go of the over \$9,000,000 in federal funding (grants and a loan) that we have secured to date, as it will be difficult and time consuming to find new grant funds. And, the cost to the community for bonding a project of this size would result in significantly more water rate increases than we anticipate with the current \$3.8 Million loan in place.
- USDA Loan (\$3,821,000) and Grant (\$3,161,000) Funding. Our application was submitted to USDA as the PER was under development. USDA funding received in August 2017, with a five-year project completion date of September 2022. A one-year extension has been granted to date until September 2023.
- EDA Grant (\$2,996,953) Funding. The Assembly approved applying to EDA in February 2018. Our application was submitted in March 2018, and EDA funding was received in September 2019, with a five-year project completion date of September 2023.