

CITY OF COOS BAY CITY COUNCIL
Agenda Staff Report

MEETING DATE	AGENDA ITEM NUMBER
September 20, 2016	

TO: Mayor Shoji and City Councilors

FROM: Jim Hossley, Public Works Director 

THROUGH: Rodger Craddock, City Manager

ISSUE: Considerations of Advertising for an MBR using the Design Build Finance Operate Project Delivery Method

BACKGROUND:

As construction of WWTP2 is the biggest single capital project the City will undertake, significant planning and consideration is warranted prior to construction. To change course from a thoroughly vetted and DEQ approved plan and course of action should be made based on significant planning and consideration as well. There are numerous issues to consider when contemplating such a change in course. Health of the bay and cost to the rate payers are just two of the issues. However, they were the two major issues that led the Council selected subject matter experts to choose the SBR solution for WWTP2 and they are the two major issues that are motivating a majority of the Council to want the City to build a treatment plant using MBR technology.

The SBR technology will provide excellent effluent water quality. The effluent discharged into the bay will exceed the quality required by the WWTP2 NPDES permit for the 20-year planning period. The discharged effluent will typically be cleaner than the surrounding bay water. The MBR technology can also provide excellent effluent water quality. For removal efficiency of some constituents in wastewater, the MBR is superior to the SBR. The DEQ approved SBR plant originally proposed for construction is designed to be modified to accommodate MBR technology.

Per three evaluations performed by several subject matter experts from various wastewater engineering firms, the incremental improvement in effluent water quality provided by an MBR is offset by its increased construction and operational cost when compared to an SBR. The MBR vs SBR comparison project (see attached Sep 13, 2016 Council Report) that Council voted last week not to move forward with may have been able to confirm or deny the information regarding cost and performance provided in the previous evaluations.

Other issues to consider before changing course

1. Charleston Sanitary District (CSD), partner with 25% interest in WWTP2, was involved in every step of the planning and design phase for the new plant. CSD should be involved in the decision regarding the change to MBR technology. The CSD loan and significant grant (\$3.5 Million) may be jeopardized. CSD has stated in the past they won't pay cost for planning related to changing course or for construction cost beyond what they would

have paid for the SBR plant. This will result in Coos Bay's rate payers having to subsidize the potential increased costs.

2. The City successfully competed for and received a 1% interest rate loan from DEQ's State Revolving Fund (SRF) plus a \$500K grant to fund construction of the DEQ approved SBR treatment plant. The loan package also included just over \$2Million, at no cost to the City, to fund stormwater quality projects. Should the Council choose to pursue the Design Build Finance Operate (DBFO) project delivery method, there will be no need for the SRF loan. However, it is unlikely the finance package offered by the firm selected to perform the DBFO will be as advantageous to the City. Loan rates on the private market are more typically in the 3%-4% range.
3. Violation of deadlines in the City's WWTP2 Mutual Agreement and Order (MAO) with DEQ will occur if the City were to change course from the currently approved plan. DEQ could issue fines up to \$1600/day/violation for violation of the MAO. Should the City change course, it is possible that DEQ will remove/lift the MAO on WWTP2, leaving the City subject to fines up to \$10,000/day/violation for violating the terms of the National Pollutant Discharge Elimination System (NPDES) permit. Additionally, lifting of the MAO takes away the City's shield from third party lawsuits for violations of the federal Clean Water Act. These could cost the City \$37,500/day/violation. The City's insurance company, CIS, will not protect the City from these types of "Order to Compel" lawsuits.
4. Delays in start to construction will cost the rate payers. In today's economic climate, we will see continued construction cost escalation for each month of delay. The existing WWTP2 is obsolete and substandard, thus there will be the need to expend funds to make repairs to keep it operational. Delays and indecision on what direction to proceed with construction of the WWTP2 replacement creates uncertainty for potential bidders on the construction and/or DBFO projects. This uncertainty will likely translate into higher bid prices for constructing the WWTP2 replacement whether it uses the SBR or the MBR technology.
5. Per state law, the use of the design-build portion of the DBFO project delivery method by the City is not authorized without receiving an exemption from DEQ. Applicable portions of the state laws are attached. Should the City receive the exemption, the City would have to prepare a Facility Plan (perhaps Facility Plan Amendment only) and pre-design plans for DEQ review and approval prior to start of construction. Staff has submitted questions to DEQ staff regarding the scope of and timeframe for the exemption request process.
6. Should you move forward with the DBFO for WWTP2 using MBR technology there are details Council will need to consider. Some of those details include, qualifications of a legal firm to assist with preparation of the DBFO Request for Proposals (RFP), desired qualification of firms/consultants eligible to bid on the DBFO, performance standards of MBR treatment plant with regard to the effluent discharge water, sludge handling at the new WWTP2, sludge handling at the existing WWTP1, demolition of existing WWTP2, the potential of two different firms operating and maintaining the City's WWTP's, and contractual obligations to the City's existing contractor for the new WWTP2 and the current operator of the City's wastewater system.
7. Staff is preparing a flow chart to present what staff believes would be the path forward for implementing a DBFO contract. It will be presented during the Council meeting.

ADVANTAGES:

Changing course from the DEQ approved SBR plan to MBR technology using the DBFO contracting project delivery method could result in outcomes, potential costs, and issues that require the Council's awareness and consideration. Awareness and discussion of these items is important for the Council when considering the course of action for the new WWTP2.

DISADVANTAGES:

There are no disadvantages to awareness and discussion of these issues.

BUDGET IMPLICATIONS:

Budget implications will depend upon the course of action chosen. Based on information provided to the Council by subject matter experts, the construction and life cycle costs for an MBR plant capable of treating the loads and flows coming to WWTP2 are much higher than the same costs for an SBR plant. The terms of financing the construction WWTP2 project using a private source of capital will likely result in higher costs to the rate payer than the terms in the current SRF loan approved by Council.

ACTION REQUESTED:

Should the Council wish to continue consideration of the MBR, staff suggests awarding the SBR vs MBR Comparison report to Hemphill Water Engineering in an effort to obtain an unbiased third party opinion as to both the cost and effectiveness of the SBR vs MBR.

ATTACHMENTS:

September 13, 2016 Council Staff Report
Citations from Oregon Administrative Code and Oregon Revised Statutes

CITY OF COOS BAY CITY COUNCIL
Agenda Staff Report

MEETING DATE	AGENDA ITEM NUMBER
September 13, 2016	

TO: Mayor Shoji and City Councilors

FROM: Jennifer Wirsing, Wastewater Project Engineer

THROUGH: Rodger Craddock, City Manager
Jim Hossley, Public Works Director

ISSUE: Consideration of Award the Contract to Hemphill Water Engineering to Perform a Treatment Evaluation for Plant 2 Consistent with the RFP and the EPA Definition of Best Available Technology.

BACKGROUND:

On August 16, 2016, Council approved the hiring of a third party (unbiased) engineering consultant to conduct a treatment evaluation for the proposed Plant 2 project. As a result, staff prepared a Request for Proposals (RFP) and advertised the RFP the next week with the following scope of work:

The City is seeking an unbiased evaluation and comparison of Sequencing Batch Reactor (SBR) and Membrane Bioreactor (MBR) treatment. The evaluation should also provide a recommendation for the City to consider. The City will select a consultant (or team) to review the completed plans for the Coos Bay Wastewater Treatment Plant 2 SBR Design and compare construction and operation of that design to an MBR plant on the same site and operating under the same influent flows and loading and NPDES permit restrictions. The following services are anticipated:

1. *Comprise an Engineering Review Team with personnel that are proficient in wastewater design and management (particularly with Sequencing Batch Reactor and Membrane Bio-Reactor type treatment).*
2. *Review the existing CH2M design plans for an SBR and associated documentation, including the Environmental Assessment prepared by SHN, the Mutual Agreement and Order with DEQ, and the CMGC not-to-exceed budget for construction of the SBR option. Additional documentation will be provided upon request to the winning proposer.*
3. *Provide a final written report that presents the evaluation and rankings for each parameter, located in Attachment A, and a recommendation as to whether an SBR or MBR is the best for the community in terms of cost and water quality benefit and given that recommendation, whether Class A or Class B biosolids are the best fit for the community in terms of cost and water quality benefit. The report will also include a matrix table that includes the parameters in Attachment A located within this RFP. It is anticipated that there will be two matrix tables: one for the treatment comparison and one for the biosolids comparison. The table will summarize the successful proposer's evaluation and provide a valued ranking of each of the parameters. **Overall the Council wants to understand how the treated effluent (utilizing SBR or MBR technology) would affect the water quality of the bay and how much will the***

- technology cost the City's rate payers.**
4. *The report shall include cost estimates for each treatment option including capital and life cycle costs.*
 5. *Attend one kick off meeting and a City Council meeting to present the findings in the report and discuss the parameters with the Council.*

Attachment A of the RFP has been included with this Staff Report. Attachment A also utilized the Environmental Protection Agency's (EPA) definition of Best Available Technology (BAT) as one of the evaluation criteria.

Three proposals were received from the following firms: Kennedy Jenks, Keller and Associates, Hemphill Water Engineering. A work session was held on September 9, 2016 to discuss the three proposals including Mayor Shoji, Councilor Daily and Councilor Groth. The first thing that was discussed was whether or not the three proposals were responsive. Council felt that the proposal from Kennedy Jenks was non-responsive because they did not follow the format in the RFP and the firm appeared to be under the misunderstanding that the City wanted an evaluation to convert the proposed SBR plant to an MBR plant.

The two proposals that were evaluated were Keller and Associates and Hemphill Water Engineering. The council felt that both of these firms were qualified to do the job and had the appropriate staff and experience. They both accepted the aggressive timeline and submitted a proposal that was consistent with the RFP. However, Hemphill Water Engineering proposed analyzing and modeling the impact to water quality in the Bay and analyzing the impacts that the effluent has on the Bay with the model. Hemphill proposed utilizing existing studies and computer models. This firm was the only firm that emphasized the Council's concern for the Bay's water quality.

The proposal amounts are as follows:

Firm	Proposal Amount
Keller and Associates	\$46,200
Hemphill Water Engineering	\$46,419

Note, if Council awards a contract for this project, Staff has scheduled a Kick Off Meeting for September 19, 2016 at 10:00 am. Council is invited to attend.

ADVANTAGES:

Having an unbiased, third party analyze and compare an SBR and MBR and determine what type of treatment technology meets the EPA's definition of BAT will help Council determine what kind of wastewater treatment plant is best for the City of Coos Bay's rate payers and the environment. Additionally, the study will also analyze Class A and Class B biosolids and this information will also help the Councilors make decisions about solid waste.

DISADVANTAGES:

Staff sees none.

BUDGET IMPLICATIONS:

Funds for this project will come from the Wastewater Improvement Fund, Department 810,

Wastewater Emergency (29-810-530-3010). Hemphill's proposal is for a lump sum amount of \$46,419. If scope is expanded based on recommendations from Council, staff recommends including a 15% contingency to cover potential extra scoping items for a total amount of \$53,380.

ACTION REQUESTED:

If it pleases the Council, award the contract to Hemphill Water Engineering to perform a treatment evaluation for Plant 2 consistent with the RFP and the EPA definition of best available technology for a cost not to exceed \$53,380.

Attachments

Attachment A of RFP

Attachment A: Parameters to be Analyzed and Compared

TREATMENT PLANT:

For each parameter below provide an evaluation and a value ranking. Each parameter has criteria that expand on the parameter. At a minimum these criteria should be considered, however it is anticipated that the successful proposer may have additional criteria. The matrix table for the treatment evaluation shall also include each of these parameters.

Schedule

- Obtain all regulatory approvals
- Prepare planning and design/specifications
- Commence Construction
- Complete Construction
- Overall: Evaluate total time from initiation of project to substantial completion

Financial

- Life Cycle Costs for the following Items:
 - Cost for environmental permitting, predesign, value engineering and design
 - Construction Cost
 - Annual Operations Cost
 - Estimated total DEQ fine that would accrue between 11/23/16 and breaking ground given a Council decision to start the option by 10/4/2016 @ \$1,600 per day.
- Impact on rates assuming current 12,500 EDUs for calculation purposes
- Ability to obtain low interest financing or grants

Environmental and Water Quality

- Evaluate the effluent of the two treatment options with respect to:
 - Treatment effectiveness for BOD and TSS in mg/L and average annual pounds/day
 - Treatment effectiveness of Nitrogen levels
 - Treatment effectiveness of bacteria, virus and contaminant removal (Caffeine, medication, metals)
- Level of viruses, bacteria and contaminants in the sludge wasted from the plant
- Quantity of biosolids produced for a given influent loading
- Ability to meet BAT as defined by EPA

Operability

- Complexity of operation and required skill level of operators
- Ability to respond to changes in flows and incoming loads
- Longevity of major components
- Estimated required maintenance staffing level (man hours per year and minimum number of operators)
- Multiple source availability of parts
- Ability to upgrade to meet future needs

Community Impact

- Odors and Noise
- Footprint (ability to fit on current site) and profile (view obstruction)
- Traffic to and from the plant

Regulatory

- Ability to meet current permit requirements
- Ability to meet anticipated EPA effluent requirements over 20-year study period
- NPDES/MAO concerns

BIO-SOLIDS

For each parameter please provide a valued ranking for each option, SBR with Class A Biosolids, SBR with Class B Biosolids or MBR with Class A Biosolids or MBR with Class B Biosolids (Four options). Class B biosolids would be produced with the existing anaerobic digesters at WWTP 1. Class A biosolids would be analyzed based on a method selected by the review team as representative of a system suitable for a community of similar size and location. The matrix table for the biosolids evaluation shall also include each of these parameters.

Schedule

- Obtain all regulatory approvals
- Prepare planning and design/specifications
- Commence Construction
- Complete Construction
- Overall: Evaluate total time from initiation of project to substantial completion

Financial

- Life Cycle Costs for the following Items:
 - Cost for environmental permitting and design
 - Construction Cost
 - Annual Operations Cost
 - Estimated total DEQ fine that would accrue between 11/23/16 and breaking ground given a Council decision to start the option by 10/4/2016 @ \$1,600 per day.
- Impact on rates assuming current 12,500 EDUs for calculation purposes
- Ability to obtain low interest financing or grants

Environmental

- Level of viruses, bacteria and contaminants in the finished biosolids
- Ability to meet BAT as defined by EPA

Operability

- Complexity of operation and required skill level of operators
- Ability to respond to changes in loads
- Longevity of major components
- Estimated required maintenance staffing level (hours per week)
- Multiple source availability of parts
- Ability to upgrade to meet future needs
- Quantity of biosolids generated per unit of influent solids
- Ability of biosolids to be dewatered
- Ability to store and dispose of biosolids

Community Impact

- Odors and Noise
- Footprint
- Traffic to and from the plant and or disposal site
- Exposure to contaminants/viruses/bacteria at final disposal locations

Regulatory

- Ability to meet current permit requirements
- Ability to meet anticipated disposal requirements over 20-year study period

Citations from Oregon Administrative Code and Oregon Revised Statutes

The design/build/operate process combines the design, construction and operation process together in one contract. An engineering designer and a contractor team up to design and construct the project. This process allows construction to start prior to final plans being complete. Per State law (ORS 468B.055 and OAR 340-052-0045) the City of Coos Bay would get an exemption to use this procurement process. The assumption is that smaller communities do not have the staff or resources to review and approve plans in-house while the project is under construction.

ORS 468B.055 Plans and specifications for disposal, treatment and sewerage systems.

(1) The Department of Environmental Quality may require that plans and specifications for the construction, installation or modification of disposal systems, treatment works and sewerage systems be submitted to the department for its approval or rejection.

(2) If the department requires that plans and specifications be submitted under subsection (1) of this section, construction, installation or modification may not be commenced until the plans and specifications submitted to the department are approved. If the disposal or discharge is for a mining operation, as defined in ORS 517.952, departmental review and approval shall be included as part of the consolidated application process under ORS 517.952 to 517.989. Any construction, installation or modification must be in accordance with the plans and specifications approved by the department. [Formerly 468.742; 2005 c.523 §7; 2013 c.371 §28]

OAR 340-052-0045

Exemption from Plan Submittal to the Department

(3) The Department may exempt in writing projects for the treatment and disposal of domestic wastewater on an owner-by-owner basis for all municipalities **less** than 30,000 in population and classified by the Department as major domestic facilities, subject to provisions it may find necessary, including but not limited to, all of the following:

(a) The owner requests such an exemption in writing;

(b) The owner agrees to submit a written report for Department review and approval demonstrating technical and managerial expertise in planning and constructing wastewater treatment and disposal facilities. The report must include but is not limited to the following:

(A) Demonstration of adequate, professional staff experienced in the design and inspection of complex sanitary engineering projects, including a registered professional engineer with review authority binding upon the design engineer;

(B) History of compliance with permit conditions;

(C) Demonstration of project technical support capability.

(c) The owner agrees to submit all facilities plans and pre-design reports to the Department for review and approval in accordance with the Department's guidelines;

(d) The owner agrees to submit a copy of the as-built plans on completion of construction, and will ensure that the design and construction of facilities comply with rules of the Department, the approved facilities plan and applicable predesign reports and terms of their permit.

Stat. Auth.: ORS 468.020

Stats. Implemented.: ORS 468B.055

Hist.: DEQ 3-1981, f. & ef. 2-6-81; DEQ 21-1990, f. & cert. ef. 7-6-90; DEQ 3-1999, f. & cert. ef. 2-5-99