

Scott Boettcher

From: Scott Boettcher
Sent: Wednesday, July 1, 2020 2:38 PM
To: Brian Shay
Subject: RE: Chehalis Flood Authority Grant - Final--City of Hoquiam Queen Ave Pump Station Project

Thank you Brian. Your application has been received.
Scott

Scott Boettcher, Staff
Chehalis River Basin Flood Authority
360/480-6600
scottb@sbgh-partners.com

From: Brian Shay <BShay@cityofhoquiam.com>
Sent: Wednesday, July 1, 2020 2:36 PM
To: Scott Boettcher <scottb@sbgh-partners.com>
Subject: FW: Chehalis Flood Authority Grant - Final--City of Hoquiam Queen Ave Pump Station Project

Hello Scott,
Please find our grant application. We plan to submit a second application next week.
-Brian

Brian Shay
City Administrator
City of Hoquiam
360-538-3983
bshay@cityofhoquiam.com

City Mission Statement: The City of Hoquiam is committed to improving the quality of life for our citizens by diversifying the industrial base, increasing business, housing and recreation opportunities, while providing safe neighborhoods for all.



Part I

2021-23 Local Projects Recruitment Process, Schedule **FORM**

Instructions:

1. Please submit project requests (via this recruitment form) to scottb@sbgh-partners.com no later than 5:00 p.m., 7/08/2020.
2. Please submit one recruitment form for each project proposed, even past projects previously or partially funded.
3. Note: Sections III and IV [marked by "(**)"] will be scored for review/evaluation. Sections I, II, and V will not be scored.
4. Note: Section V is necessary to help the Chehalis River Basin Flood Authority, Office of Chehalis Basin and Chehalis Basin Board understand the scope and scale of Local Projects into the future.
5. See https://www.ezview.wa.gov/site/alias_1492/37642/2021-23-local-projects-recruitment-process.aspx for more information.

| Section I General | |
|--|---|
| 1. Date: | June 24, 2020 |
| 2. Project Name and Project Phase/Stage: | City of Hoquiam, Queen Street PS |
| 3. Project Location -- Please provide location of project and latitude, longitude coordinates (e.g., 46.712222, -122.977811). | The Queen Avenue PS is located at the eastern end of Queen Avenue near the intersection with Lincoln Street. |
| 4. Project Manager/Contact -- Please identify who will be responsible for overseeing, implementing the project on a day-to-day basis (i.e., name, organization, contact information). | Brian Shay, City Administrator 360-583-3983 bshay@cityofhoquiam.com Latitude: 46d 59' 39" N Longitude: 127d 53' 08" W |
| 5. Project Sponsor and Key Partners -- Please identify project sponsor and key partners who will assist in project delivery, implementation. | City of Hoquiam is the lead agency and will manage the overall project. An engineering consultant will be retained by the City to complete plans, specifications, and Estimate (PSE) bid ready documents along with completing required permitting applications for construction at the site. |

| Section II Description, Timing and Cost | |
|---|---|
| 6. Project Description -- Please describe the project, what is intended to be accomplished, flood hazard reduction benefits to be accrued to whom and when. Please identify what phase/stage of the project funding is sought (e.g., study phase/stage, planning phase/stage, design/engineering/permitting phase/stage, construction/implementation phase/stage). Please identify any local or state funding previously secured for this project. | A new stormwater pump station will be constructed to discharge flood waters through the Queen Pump Station outfall into the Hoquiam River. The replacement is in accordance with the most current version of the City's Comprehensive Surface Water Management Plan. The project will correct flooding issues in the area and is required to discharge flows from the basin as part of the West Segment of the North Shore Levee Project. The City is currently under contract with a consultant to perform planning level evaluations for the Queen Street pump station. No funding has been secured for this project. |
| 7. Project Timeline -- Please describe the timeline and phases/stages for completing the overall project and the timeline for completing the phase/stage to be funded by 2021-23 funding. | Design and permitting will be completed within 1 year of funding, followed by construction. Construction is estimated to be completed within five months after the project is awarded and the contractor mobilizes to the site. Design will be completed in 2021 with advertisement in early 2022. The pump station will be constructed and in service the summer of 2022. |

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| 8. Project Cost and Funding -- What is the cost of the overall project (or anticipated cost)? What is the cost of the phase/stage to be funded by 2021-23 funding? What are the on-going maintenance and operation requirements and costs? Who will cover on-going maintenance and operation requirements and costs? | The project is estimated to be \$1,800,000 for design and construction to upgrade the stormwater pump station. Annual maintenance cost is anticipated to be \$20,000 per year which will be absorbed by the City of Hoquiam's storm utility department. |
| 9. Other Funding -- Please describe other funding sources and partners that have already contributed (or could contribute in the future) to this project and for what phase/stage. | The City of Hoquiam will cover any additional project costs above the funding amount that is awarded for this project. |

| Section III (**) Completion, Doability, Alternatives, and Impacts | |
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| 10. Project Completion -- Does the funding requested complete, substantially complete, or continue a project already started? If so, please explain. | The funding requested will complete the project. |
| 11. Project Doable -- Can this project or the phase/stage for which funding is sought be completed by June 30, 2023? Please describe any circumstances with potential to impact the project's doability or timeline (e.g., permitting or regulatory unknowns, lack of availability of other funding resources, etc.). Please describe any advance coordination or vetting with agencies, tribes, other entities, etc. and the outcomes of that effort. | Nothing is expected to delay the project. |
| 12. Project Alternatives -- Please describe alternatives to the project that were considered (including doing nothing), and the rationale for selecting the project described, proposed here. | After the West Segment of the North Shore Levee is constructed the Queen Street Pump station is required to bypass the 25-year, 24-hour storm event. The do nothing approach will increase flooding within the basin and raise flood insurance rates to surrounding neighbors and/or businesses. The ability to pump at a lower flow rate and bypass the 25-year, 24-hour flow rate in conjunction with pumping by gravity will reduce project costs by over ½ million dollars. The project is vital to reduce the flooding in the Queen Street basin. |
| 13. Project Impacts Avoided, Mitigated -- Please identify how project impacts will be avoided and | There are no project impacts or mitigation that is necessary. |

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| mitigated, and if that mitigation will be accomplished by June 30, 2023? | |
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| Section IV (**) Benefits Stated and Quantified | |
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| 14. Emergency Response Benefits -- Please describe (and quantify) how this project enhances emergency response in a flood emergency (e.g., does it keep critical access roads and transportation facilities open/functional, does it enable easy movement of cattle, equipment and farm chemicals out of harm's way, is it part of a larger hazard mitigation plan, etc.). | The project will address chronic flooding with standing water on the roadways of north Hoquiam which are often a foot deep due to tidal influence from the Hoquiam River. With a new pump station the basin is no longer tidally influenced and pumping will keep the roadways clear for emergency response. Per City staff during the heavy rain events this is the first station to backup due to high flows in the river. |
| 15. Essential Infrastructure Protection Benefits -- Please describe (and quantify) how this project protects essential infrastructure and the risks or consequences of not acting this funding cycle. | The basin boundary is adjacent to Lincoln Elementary School which serves grade school children. The school will see a benefit from the reduction of flooding on an annual basis. |
| 16. Public Health, Safety and Welfare Benefits -- Please describe (and quantify) how this project protects public health, safety and welfare. | Over 150 homes and properties and roadways sustain flood waters into their homes on an annual basis due to tidal influence from the Hoquiam River. |
| 17. Residential, Commercial and/or Agricultural Protection Benefits -- Please describe (and quantify) how this project protects residential communities, commercial and/or agricultural interests and benefits of acting (or consequences of not acting) this funding cycle. Consider factors like number of structures and people at risk, historic frequency of flood damage, magnitude of benefit for the cost, etc. | Over 150 homes are located within the Queen Street Basin. This includes multiple businesses including the Little Hoquiam Ship Yard, Timberland Bank's Administration Office, restaurants, service stations, the Coastal Harvest Foodbank Regional Distribution Center and Immanuel Baptist Church.. During larger storm events the flooding occurs putting a significant number of residents and dwellings at risk. |
| 18. Habitat Benefits -- Please describe (and quantify) how this project benefits or improves existing or future habitat conditions. | Improvements to water quality by separating stormwater and wastewater facility. This will be an improvement for aquatic habitat. |
| 19. Costs, Benefits, Impacts -- Please describe (quantify) anticipated: (a) <u>Costs</u> of this phase/stage of the project if funded, and if not funded? This would include any costs (beyond direct cost of the project) that might be incurred or avoided as | <p>a) Design – approx.. 250-300K, This includes design, permitting, and construction services. Construction is estimated at 1.5 million.</p> <p>b) Design – City will have a bid ready project to go to Ad. Construction – The City will have a new stormwater pump station in place in conjunction with the North Shore Levee West</p> |

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| <p>a result of the project being funded (or not funded) and when.</p> <p>(b) <u>Benefits</u> of this phase/stage of the project if funded and when those benefits would be realized?</p> <p>(c) <u>Impacts</u> of this phase/stage of the project if funded, if not funded, and when those impacts would occur.</p> | <p>Project that will minimize flooding and lower flood insurance rates of local residents. Benefits would be realized after construction has finished during heavy rain events, similar to the Ramer Street Pump Station. The City is also standardizing their lift stations which is a greater benefit to operations and maintenance staff for annual maintenance.</p> <p>c) Design and Construction of the new stormwater pump station would minimize risks for flooding, remove any tidal influencing, and lower insurance rates in this basin. Without the funding the City would put residents at higher risk of flooding once the levee is constructed and the potential for additional flooding on the non riverside portion of the levee.</p> |
| <p>20. Other Project Benefits -- Please describe (and quantify) any other project benefits not already discussed. This could include how this project compliments, leverages, or implements another project or planning process already underway.</p> | <p>The City of Hoquiam and Aberdeen had partnered on the Timberworks, a Flood Resiliency Project for the two Cities. This project compliments the flood reduction projects as well as the West Segment of the North Shore Levee project that is currently in the initial design phase.</p> |
| <p>21. Anything Else -- Please offer any additional information (e.g., links, photos, maps, video, drawings, drone, etc.) that would help to better understand the scope, timing, and benefits of this project.</p> | <p>The Queen Street Pump station was identified as a required improvement as part of the Cities Comprehensive Surface Water Management Plan prepared in July 2000. The City has not performed any major upgrades to the facility due to lack of funding. The pumps are nearing the end of their useful life. The station does not have adequate capacity to pass the 25-year, 24-hour storm event. The new pump station would remove the potential for backwater flooding into the system from the River. All runoff within the basin, pending adequate pipe networking capacity, can discharge during heavy rainfall events.</p> |

| Section V Local Projects Beyond 2021-23 | |
|--|--|
| <p>22. Project Name and Project Phases/Stage:</p> | <p>New K Street Pump Station</p> |
| <p>23. Project Location -- Please provide location of project and latitude, longitude coordinates (e.g., 46.712222, -122.977811).</p> | <p>The exact location is yet to be determined. The new station may be located adjacent to the existing station or within a couple of blocks of the existing station.</p> |
| <p>24. Project Sponsor and Key Partners -- Please identify who is sponsoring the project and key</p> | <p>City of Hoquiam is the lead agency and will manage the overall project. An engineering consultant will</p> |

| | |
|---|---|
| partners who will assist with project delivery, implementation. | be retained by the City to complete plans, specifications, and Estimate (PSE) bid ready documents along with completing required permitting applications for construction at the site. |
| 25. Project Description -- Please describe the project, what is intended to be accomplished, the flood hazard reduction benefits to be accrued and to who and when. Please identify what phase/stage of the project funding is sought (e.g., study, planning, design/engineering/permitting, construction/implementation). | A new stormwater pump station will be constructed to discharge flood waters through the K Street Pump Station outfall into the Hoquiam River. The replacement is in accordance with the most current version of the City's Comprehensive Surface Water Management Plan. The project will correct flooding issues in the area and is required to discharge flows from the basin as part of the West Segment of the North Shore Levee Project |
| 26. Costs -- Please describe (quantify) anticipated project costs. | \$2.5 million |
| 27. Benefits -- Please describe (quantify) anticipated project benefits. | This large pump station handles flood waters for a large portion of the downtown businesses, Hoquiam City Hall, the Fire Department and homes in west Hoquiam. |
| 28. Impacts -- Please describe (quantify) anticipated project impacts. | A minimum of 500 property are protected by this pump station. |

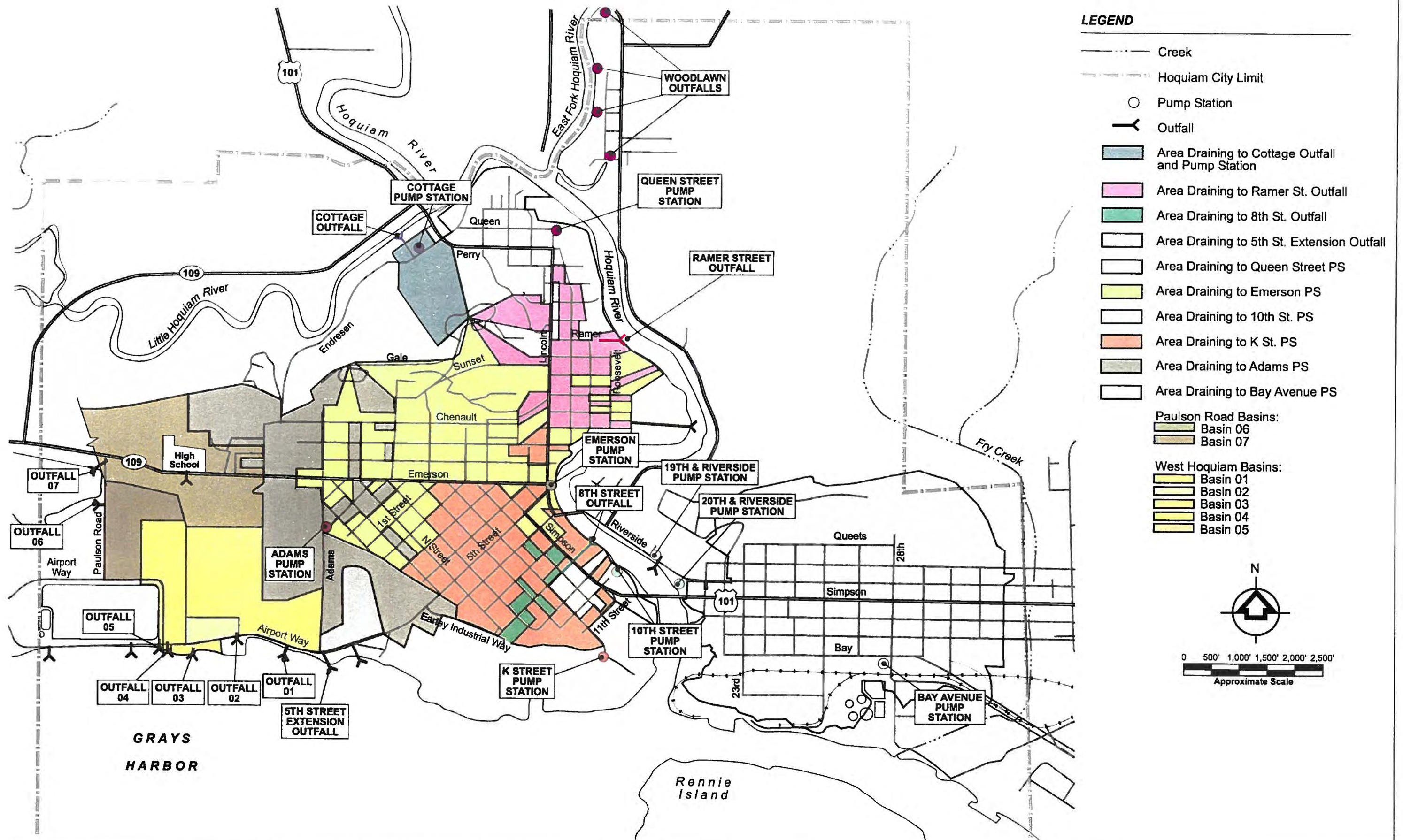


TABLE 4-10.
CITY OF HOQUIAM
COST ESTIMATES
STORMWATER PUMP STATIONS

| Pump Station Name | Design Flow Basis, gpm | Unit Cost (\$/gpm) | Constr. Cost Estimate, \$ | Constr. Conting. 20% | Allied Costs 30% | Total Project Cost |
|---------------------|------------------------------|--------------------------|---------------------------------|----------------------------|------------------------|--------------------------|
| 10th Street Station | 6,000 | \$64 | \$384,000 | \$77,000 | \$138,000 | \$599,000 |
| K Street Station | 14,000 | \$57 | \$798,000 | \$160,000 | \$287,000 | \$1,245,000 |
| Ramer Street | 3,500 | \$65 | \$228,000 | \$46,000 | \$82,000 | \$356,000 |
| Emerson | 87,500 | \$20 | \$1,750,000 | \$350,000 | \$630,000 | \$2,730,000 |
| Queen Street | 17,500 | \$54 | \$945,000 | \$189,000 | \$340,000 | \$1,474,000 |
| Bay Avenue | 163,000 | \$20 | \$3,260,000 | \$652,000 | \$1,174,000 | \$5,086,000 |

K Street, 8th Street, and 10th Street Improvements

The 8th Street Outfall has no backflow preventer to keep Hoquiam River water from flowing back through the levee during high tides and winds, flooding portions of the City. This problem can be addressed by rerouting flow from the 8th Street Outfall to the 10th Street Pump Station and eliminating the 8th Street Outfall (see Figure 4-1).

The connection would require approximately 800 feet of 36-inch pipe (\$144,000), and the 2,000-gpm pump in the 10th Street Pump Station should be upgraded to a 6,000-gpm capacity (\$600,000). This would require the construction of a new station adjacent to the existing station. The section of 8th Street Outfall system upstream of K Street would be diverted to the K Street Basin at the corner of 8th Street and K Street (\$10,000), and the K Street Pump Station would be upgraded to 14,000 gpm (\$1,245,000). This would allow the continued redevelopment of this area. It may be possible to move the two 3,500 gpm pumps from the K Street station to the 10th Street station and reduce the total cost. The estimated cost for these improvements is \$2,000,000. The cost includes upgrading the outfall culvert to increase its capacity to handle the additional flow.

New Ramer Street Pump Station

The Ramer Street Outfall also has no tide gate to keep Hoquiam River floodwater out. This deficiency can be addressed by building a new pump station to discharge the flows to the river. With the pipe improvements identified for this basin, flows to the Ramer Street Outfall would be 80 cfs for the 10-year storm and 100 cfs for the 100-year storm. A new 3,500 gpm pump station is proposed to help convey stormwater to the Hoquiam River during a high tide. A new pump station connecting to the existing outfall would be constructed. The estimated cost for a new station is \$360,000.

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Pump Station Evaluation Technical Memorandum

City of Hoquiam

Hoquiam, Washington
July 1, 2020

4 Queen Avenue Pump Station

4.1 Facility Overview

The Queen Avenue Pump Station is located at the eastern end of Queen Avenue near the intersection with Lincoln Street. The facility includes both a sewer lift station as well as stormwater pumps. An underground, circular concrete structure (approximately 23 ft deep with an internal diameter of 20.5 ft) with internal walls is utilized for both stormwater and sewer with each flow stream taking up one half of the structure. The stormwater half consists of a manual bar screen area followed by the stormwater wet well with the pumps located above ground. The sewer half consists of a manual bar screen area followed by a sewer wet well and then sewer pumps located in a dry pit adjacent to the wet well.

The influent sewer comes from a gravity main conveying flows from both the Queen and Cottage Basins (see Appendix A for contributing basin). Flow from the Queen Avenue sewer pump station is conveyed to the Emerson Avenue Pump Station.

The stormwater pump station collects stormwater from an area bounded approximately by Lincoln Street and the Hoquiam River (see Appendix A for contributing basin) and discharges to the Hoquiam River.

4.1.1 Sewer

Pumps

There are two identical pumps with the following characteristics:

- Manufacturer: Gormon-Rupp
- Model: T6A3 B Centrifugal Pump
- Impeller Diameter: 12 3/16 inch
- Power: 460 V, 20 HP
- Capacity:
 - Flow = 500 gpm (per General Sewer Plan)
 - Head = 119 ft (estimated based off of flow, rated HP, and assumed 75 percent efficiency)

Controls

A variable frequency drive (VFD) controls the speed of the pumps based on the water level in the wet well as measured by an ultrasonic level sensor with float switches providing level alarms. A human machine interface (HMI) is provided for viewing status and to manually operate the pumps.

Wet Well Condition

The wet well itself is in satisfactory condition. No observations of concerning corrosion or leaking were observed while visiting the site.

The manual bar screen is cleaned once a week.

Access

Access to the dry pit where the pumps are located is through a series of ladders. If equipment needs to be removed from the dry pit, portions of the floor grating can be removed to provide larger access openings. A hoist is located above the dry pit to remove equipment

Access to the wet well is via a ladder passing through a 30"x36" grating access hatch. An additional 36"x36" access hatch is located directly above the bar screen. No overhead hoists or anchor points exist over the wet well that can be utilized for emergency egress of personnel.

Emergency Power

A generator provides emergency power for both the sewer pumps and the storm pumps and is located inside the building.

Security

The pump station building and yard (which included the wet well structure) is entirely within a security fence. The building and site lack cameras and entry alarms.

4.1.2 Stormwater

Pumps

There are two identical propeller pumps for the stormwater pump station (see Figure 4-1). An equipment tag could not be located on the pump so the capacity of the installed pump is not known.

Staff have not observed the need for both pumps to operate at the same time.

The pumps pull stormwater out of the wet well and discharge it into a concrete box adjacent to the pumps. Stormwater then flows by gravity to the Hoquiam River. An overflow pipe is located in the stormwater wet well allowing stormwater to flow through a flap gate in the discharge box prior to the wet well overtopping.

Figure 4-1. Queen Avenue Stormwater Pumps



Controls

A VFD controls the speed of the pumps based on the water level in the wet well as measured by an ultrasonic level sensor with float switches providing level alarms. A HMI is provided for viewing status and to manually operate the pumps.

Wet Well Condition

The wet well itself is in satisfactory condition. No observations of concerning corrosion or leaking were observed while visiting the site.

The manual bar screen (shown on Figure 4-2) must be cleaned a couple times a day during large storm events.

The pump station has been prone to see oil from stormwater influent that entering the wet well. To mitigate this issue, an oil sock was placed in front of the bar screen.

Figure 4-2. Queen Avenue Stormwater Wet Well



Access

Access to the wet well is via a permanently installed ladder. No overhead hoists or anchor points exist over the wet well that can be utilized for emergency egress of personnel. The top of the pumps and motor can be readily accessed at ground surface.

Emergency Power

The same emergency generator used for the sewer pumps are used for the stormwater pumps (see sewer section for additional details).

Security

See sewer section for description.

Outfall

A 30-inch pipe takes stormwater from the discharge box to the Hoquiam River. Although a small overflow pipe exists (approx. 12-inch) connecting the wet well to the discharge box (bypassing the pumps) it would have a small capacity compared to the capacity of the pumps. The design the stormwater pump station depends on all flows to be pumped to the discharge box.

No tide check is located in the outfall pipe.

4.2 Summary of Issues

The following provides a summary of issues observed during the visit to the pump station as well as noted by City staff:

- The configuration of the sewer pumps on multiple levels directly above/below each other makes it difficult to remove valves and pumps for service as shown in Figure 4-3 and Figure 4-4.

Figure 4-3. Stacking of Queen Avenue Sewer Pumps

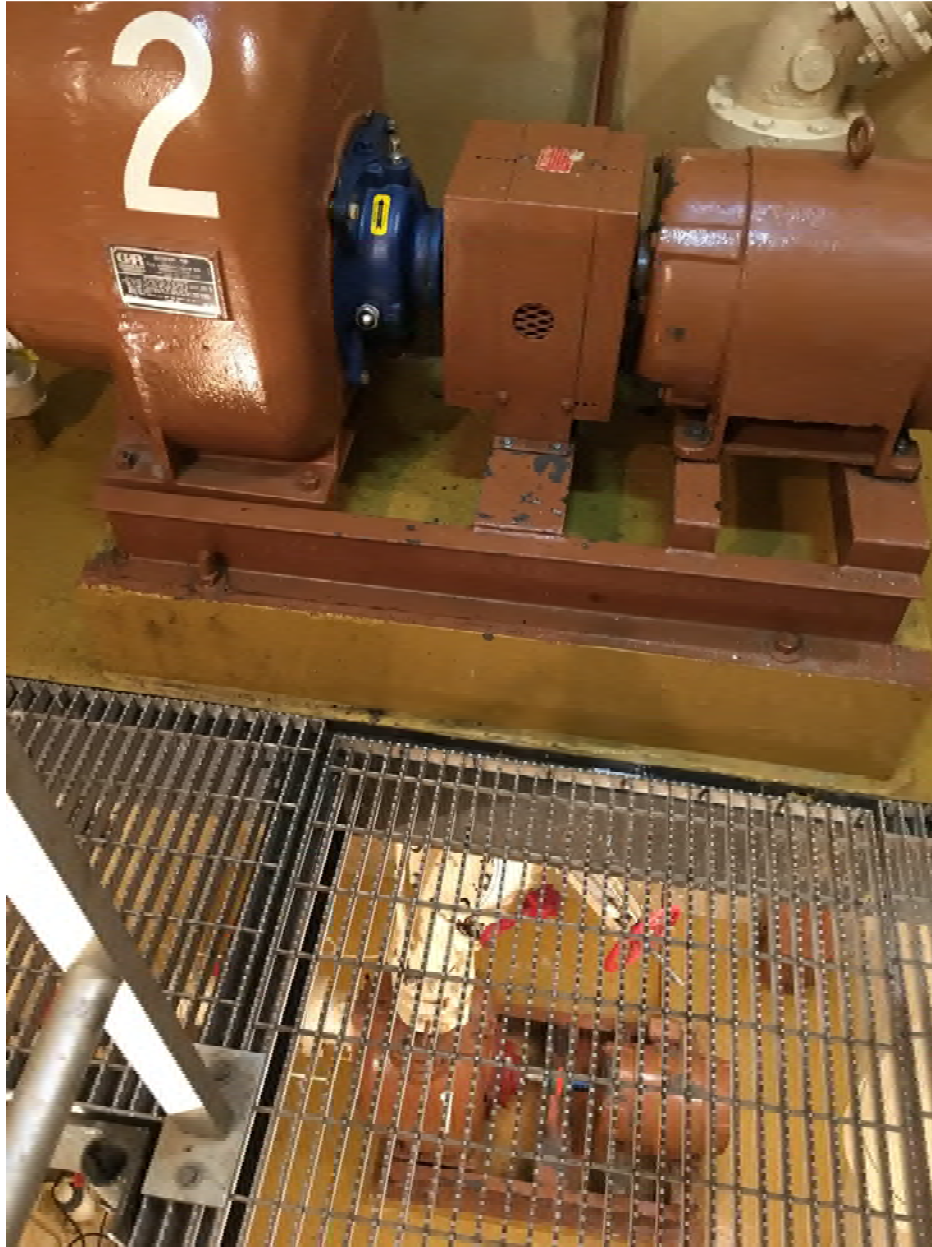
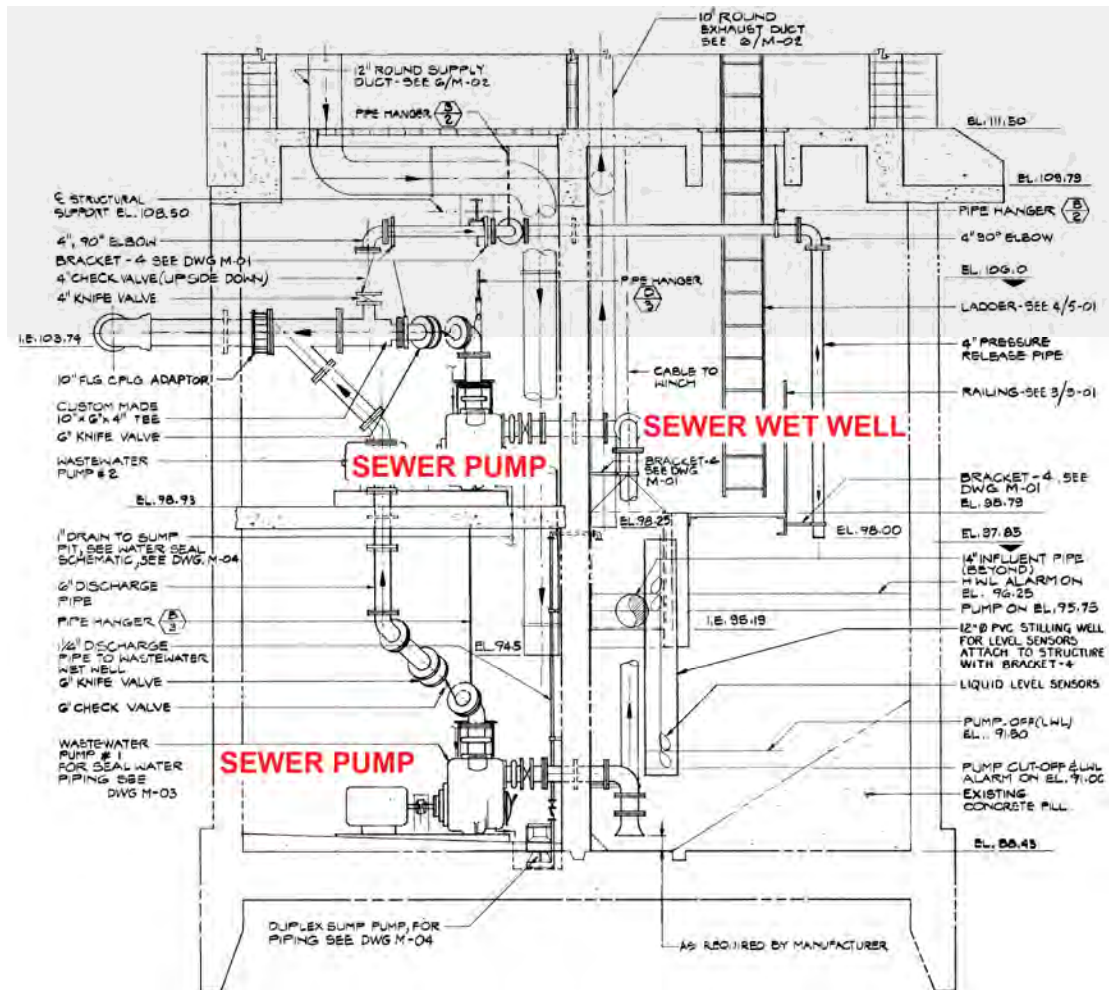


Figure 4-4. Cross Section of Queen Avenue Sewer Pump Station



- Bar screens at all sewer pump stations require nearly a full day of work by a two-person crew every week to maintain. The maintenance time could be reduced by removing the bar screen and replacing the sewer pumps with a non-clog, chopper style pump.
- The sewer wet well is prone to accumulating oil from the storm system which requires additional maintenance time to remove.
- Emergency egress of personnel from the sewer and stormwater wet wells is difficult.
- Bad lighting in the sewer wet well.
- No active security at the site (such as a door alarm).
- Flat roof of pump station is prone to requiring frequent maintenance to protect and prevent leaks from developing.

4.3 Proposed Improvements