

Utilities Memorandum

Date: September 5, 2013
To: Rich Shipanski, EA Engineering, Science
and Technology, Inc.
From: Brian K. Hansen, PE
Re: Port Gamble Redevelopment Plan
Triad Job No.: 08-058
Copies To: File



The purpose of this memorandum is to describe the existing and proposed conditions, impacts, and mitigation measures related to water resources, stormwater, and other utilities for the Port Gamble Redevelopment Plan. Much of this description is provided in several reports (see discussion below), however, this memorandum addresses topics not specifically outlined in existing reports.

Affected Environment

Water Resources/Stormwater

Existing water features are described in the *Port Gamble Redevelopment Plan - Wetland and Stream Delineation Report* prepared by GeoEngineers, dated January 8, 2013 and the *Port Gamble Redevelopment Plan - Preliminary Plat Drainage Report* prepared by Triad Associates, dated January 17, 2013.

The existing stormwater conveyance systems and outfalls are described in the *Port Gamble Redevelopment Plan - Preliminary Plat Drainage Report* prepared by Triad Associates, dated January 17, 2013.

Existing water quality treatment facilities on the Port Gamble Site are limited. The only facilities observed on site that may provide water quality treatment are the grass lined swales along SR 169. These swales are used to convey runoff from the highway and may provide limited treatment of runoff before discharge to Machias Creek/the existing stormwater conveyance system tributary to Hood Canal/Port Gamble Bay.

Existing floodplains onsite include the majority of the mill site and a small area around the mouth of Machias Creek. Per the Federal Emergency Management Agency Flood Insurance Rate Map number 53035C0105E, the floodplain elevation for Puget Sound/Hood Canal/Port Gamble Bay is elevation 13. The area around Machias Creek that is within the floodplain is within the proposed buffers and will not be impacted by development of the Port Gamble site. The area of the mill site below elevation 13 consists of approximately 9 acres.

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Existing water and sewer systems and capacities are described in *Port Gamble Redevelopment Plan - Preliminary Water and Sewer Report* prepared by Triad Associates, dated January 17, 2013.

There is no existing natural gas service in Port Gamble. Several of the existing buildings utilize propane tanks. Puget Sound Energy (PSE) currently provides electrical service to the town from the Port Gamble Substation located near Salisbury point. The substation historically provided electrical service when the mill was under full operation.

Impacts of the Alternatives

Water Resources/Stormwater

Redevelopment of Port Gamble will cause an increase in the amount of impervious surface and therefore quantity of stormwater runoff generated by the project. The increase in runoff quantity will be nearly identical for Alternative 1 and 2, with Alternative 1 generating slightly more flow increase due to the additional development area within the mill site. Alternative 3 may cause a slight increase in runoff compared to Alternatives 1 and 2 due to the increase in roof tops occupying what was landscape or open space areas, and longer driveways in the RW zoned area.

The proposed stormwater systems and outfalls are described in the *Port Gamble Redevelopment Plan - Preliminary Plat Drainage Report* prepared by Triad Associates, dated January 17, 2013. The 100-year peak stormwater flow for each of the outfalls, in

each alternative, has been provided in the *Port Gamble Redevelopment Plan - Preliminary Plat Drainage Report* as well, at the end of Section 7. The assumptions on developed impervious coverage provided in that report were based on information relating to proposed land use and similar land use from past projects design by Triad Associates.

As discussed in the drainage report, energy dissipaters constructed using gabion baskets will be utilized at each proposed outfall. The proposed outfalls are located coincident with three of the existing outfalls, of which five were observed in the field. Two of the existing outfalls are within the rubble along Hood Canal. Two more outfalls direct flow onto the beach along Hood Canal with no energy dissipation. The remaining outfall directs runoff to Port Gamble Bay, discharging to a small concrete pad directly on the sandy beach. Historical documents show additional outfalls but only five were observed. The outfalls are believed to serve the mill site and much of the town site.

As the mill site is situated directly adjacent to Hood Canal (Puget Sound), there is no property to be affected downstream of the proposed fill. Additionally, the majority of the Port Gamble project is many feet above the elevation of the mill site and floodplain. As such, the impact of the loss of 100-year floodplain due to the proposed fill within the mill site area is negligible due to the comparative size between the floodplain area fill and Puget Sound.

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Redevelopment of Port Gamble to the level anticipated with Alternatives 1, 2, and 3 would likely increase the demand on water supply to a level greater than the supply provided by both the existing infrastructure and potential supply. The potential supply would be realized if additional infrastructure, in the form of a rehabilitated/new pump and pump house at Well 1, treatment facilities at Well 1, and an additional storage for fire flow at Well 2, was constructed to maximize supply from the existing water rights of Well 1 and Well 2. Even with the additional infrastructure constructed at Well 1 and Well 2, domestic and flow requirements of the redevelopment could not likely be met

without additional storage of surface water with pumping and treatment facilities for use during peak daily demands.

The existing water system consists of separate domestic and fire flow systems. The domestic system currently serves approximately 51 ERUs via water from Well 2 which operates to refill storage in a 46,000 gallon reservoir. The fire flow system consists of an approximately 400,000 gallon open reservoir that conveys water to an approximately 500,000 gallon fire pond. Due to leaks in the system, the majority of the fire flow system has been closed.

Development of the project proposes to combine the domestic and fire flow systems and expand storage to 410,000 gallons near Well 2 to meet both domestic and fire flow requirements.

Water demand for the proposed project is expected to be lower than standard assumptions due to a conscious effort to conserve water. Methods such as higher densities, common irrigation areas, efficient plumbing and fixtures, etc will be used in an attempt to keep water usage in the range of 150 to 200 gallons per day per ERU. Monitoring will be performed to confirm that actual flows fall within the 100,000 gallon per day limit of the LOSS as described in the *Port Gamble Redevelopment Plan - Preliminary Water and Sewer Report* prepared by Triad Associates, dated January 17, 2013. Building permits will be conditioned to require confirmation of capacity prior to issuance.

Assuming 180 gallons per day per ERU, the water demands for all uses in Alternative 1 and 2 are anticipated to be 65,000-90,000 gallons per day and 55,000-75,000 gallons per day, respectively.

A hydraulic analysis has not yet been performed for this project, however, one will be performed as engineering work proceeds.

Water improvements are proposed to be phased along with development to provide both domestic and fire flow as the project builds out. Phasing of the improvements is

expected to minimize interruptions in service, which will likely only be temporary to make new connections to existing mains and services.

The existing sewer treatment plant was constructed in the early 1970s and was designed to treat 25,000 gallons per day. The capacity of the existing sewer treatment plant and outfall is additionally limited due to existing high infiltration and inflow issues. The redevelopment planned in all three alternatives could not be served by the existing treatment plant facility.

Proposed water and sewer systems and capacities are described in *Port Gamble Redevelopment Plan - Preliminary Water and Sewer Report* prepared by Triad Associates, dated January 17, 2013. Water and sewer systems will be upgraded in all three alternatives to provide adequate service to the proposed uses. A new regional water main providing additional capacity and a new reservoir will be constructed to serve the site. A Large Onsite Septic System (LOSS) will be constructed in the uplands to provide sewer service to the proposed uses in all three alternatives. Construction of portions of the LOSS may require temporary re-routing of existing sewer conveyance systems to maintain service during construction. Once the LOSS is completed, existing sewer systems will be re-routed to the LOSS to maintain service to existing buildings. It is anticipated that any interruption of service will be temporary for connecting or re-routing sewer conveyance lines.

Based on historical uses and population in the town, available electrical supply will be adequate to support future uses (personal communication of Ryan Kohlmann with PSE representative Tom Brobst). A high electric consumption use could locate in the mill site under Alternative 3, such as a manufacturing facility with heavy machinery. Should that happen, the existing on site electrical services may not be adequate to serve the use.

Natural gas is not intended to be extended to the Port Gamble site.

Mitigation Measures**Water Resources/Stormwater**

The potential for surface water quality and quantity impacts from operation of the proposed redevelopment has been addressed by providing stormwater facilities per the requirements within the 2010 Kitsap County Stormwater Design Manual. Where possible, rain gardens have been proposed as a low impact development measure for providing water quality treatment of stormwater.

Potential impacts to water quality and quantity impacts during construction will be addressed by providing temporary erosion and sedimentation control Best Management Practices (BMPs) throughout construction consistent with the current Washington State Department of Ecology stormwater manual and the Construction Stormwater General Permit. These temporary facilities will potentially include silt fence, interceptor swales, sediment traps/ponds other BMPs to manage stormwater runoff during construction.

There is no mitigation proposed for the floodplain fill due to the negligible impact to the overall floodplain.

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Electrical service to serve the redeveloped town will continue to be provided by PSE with new/replaced services being installed in joint dry utility trenches throughout the project. Upgrading specific facilities on site (e.g. transformers) may be necessary to serve specific uses. Additional off site improvements, such as additional overhead lines or possibly an improved transformer at the Port Gamble Substation, could be required when specific uses demand a higher level of electricity. Future building permits will include calculation of electrical loads for review by PSE, the service provider, as they are ultimately responsible for ensuring adequate service.

Significant Unavoidable Adverse Impacts

Based on the above project impacts and corresponding mitigation measures that will be implemented, no unavoidable adverse impacts are anticipated related to water resources and utilities.

References

Port Gamble Redevelopment Plan - Preliminary Plat Drainage Report prepared by Triad Associates, dated January 17, 2013

Port Gamble Redevelopment Plan - Preliminary Water and Sewer Report prepared by Triad Associates, dated January 17, 2013

Port Gamble Redevelopment Plan - Wetland and Stream Delineation Report prepared by GeoEngineers, dated January 8, 2013