

3.2 WATER RESOURCES

This section describes existing water resources on the project site and in the site vicinity, and evaluates potential impacts under the Proposed Action and alternatives on these water resources. This section is based on the October 2005, Storm Drainage and Erosion Control Plan Report, prepared by PACLAND (see **Appendix D**) and the June 2005, letter on Groundwater Elevations and Gradient, prepared by Kleinfelder, Inc. (see **Appendix E**).

3.2.1 Affected Environment

Surface Water

There is little or no surface water flow onsite under existing conditions. No wetlands or streams are present onsite (Talasaea, 2005; see Affected Environment in **Section 3.3, Trees and Vegetation** and **Appendix F** for further information). The majority of the stormwater that falls onsite currently infiltrates into site soils. Historically, minor stormwater flows along the west site boundary may flow toward Littlerock Road and enter the existing stormwater control system that flows to Barnes Lake (see the description below). Minor quantities of stormwater, mainly in the eastern portion of the site, currently drain toward Tyee Drive SW. Stormwater in the site area between Kingswood Drive and Tyee Drive SW presently infiltrates into site soils and ultimately the groundwater (see the **Section 3.1, Earth** and **Appendix C** for details on site soils). The site is not located within a designated 100-year floodplain. No existing flooding or erosion problems are known to exist within ¼ mile downstream of the site in the existing stormwater system to the west of the site along Littlerock Road and ultimately north to Barnes Lake. The City has received several comments about existing flooding to the south of the site. The site currently does not contribute stormwater to this area. None of the site is currently covered with impervious surfaces, except for the bases of the BPA transmission towers located in the western portion of the site.

An existing stormwater control system is present along Littlerock Road, to the west of the site. This system drains to Barnes Lake, approximately ½ mile to the northwest of the site, and ultimately to the Deschutes River and Budd Inlet.

Groundwater

In February 2005, five shallow groundwater monitoring wells were installed onsite to assess background groundwater quality and to periodically assess shallow groundwater depths and gradient flow. These wells were installed to a depth of 25 feet in the shallow water table aquifer beneath the site. Groundwater elevation measurements obtained during March, April and June 2005, indicate that shallow groundwater at the site generally flows in a northeasterly direction. The groundwater gradient is relatively flat and varies from approximately 0.0035 to 0.0055 horizontal feet per vertical foot of slope. Based on the groundwater depth measurements, depth to groundwater ranges between a high of 13.5 feet to a low of 22.9 feet below the ground surface. The corresponding groundwater elevations at the site range between 160.74 feet to 164.76 feet above mean sea level (MSL). The water table is expected to fluctuate based on weather conditions (see **Appendix E** for details).

No known wells, septic tanks, or underground storage tanks are present onsite. There are a total of approximately 20 drinking water wells located within an approximate ½ mile radius of the

site. These wells include drinking water wells within the Glenwood residential subdivision to the southwest of the site. No City water supply wells are located within ½ mile of the site. One private well is located within ½ mile to the northeast of the site, in the general direction of shallow groundwater flow from the site.

The project site, as well as the entire City of Tumwater, is located in the City's Aquifer Protection (AQP) overlay zone district. The AQP overlay zone district is intended to conserve and protect the underground water and aquifers beneath the City. Any development which occurs within the City must be designed to prevent chemical and biological contaminants from entering underground water and aquifers which are now, or in the future, likely to be used as a potable water source (TMC 16.24.020 and TMC 18.39). Certain activities are restricted in the AQP overlay zone district unless they comply with best management practices (BMPs). The site is also located in the City's Wellhead Protection area. In this area the city intends to develop and implement a wellhead protection program to identify risks of contamination potentially impacting city wells, and to reduce or eliminate those risks (TMC 16.26). The City identifies four wellhead capture zones: six-month, one-year, five-year, and ten-year. A portion of the site is located within the 5-year wellhead capture zone (see **Appendix E** for a map of the wellhead capture zones in which the site is located). Various activities are prohibited within these zones, with the six-month zone being more prohibitive than the ten-year zone. New and expanding uses of hazardous materials within these zones must submit documentation showing that they will not harm the aquifer or wellhead protection areas.

3.2.2 Impacts

Proposed Action

Surface Water

Proposed construction activities would disturb onsite soils and increase the potential for soil erosion. Without mitigation, surface water runoff could transport eroded soils to nearby roads and the City's drainage system, and ultimately natural receiving waters. The use of heavy equipment during construction typically requires onsite fueling and often limited storage of products, such as lubricating oil and hydraulic fluid, which creates a risk for accidental spills. Unintended release of fuels, oil or hydraulic fluid could contaminate soils and, if untended or uncontrolled, migrate to groundwater or into surface water resources. Potential increases in turbidity and pollutants in receiving waters could impact the water quality in these waters.

During construction, temporary erosion and sediment control (TESC) best management practices (BMPs), as specified in the City of Tumwater's Drainage Design and Erosion Control Manual for Thurston County (1994), as amended, would be implemented. A Stormwater Pollution Prevention Plan (SWPPP) would also be prepared and implemented, as required by the National Pollution Discharge Elimination (NPDES) permit. NPDES permits are required for all construction activities on sites greater than five acres in the state when discharging stormwater into offsite surface waters. NPDES permits are issued by the Department of Ecology (DOE). A NPDES permit would not be required by the project, as stormwater would not discharge to surface water; however, the applicant has indicated that an NPDES would be applied for from DOE. The TESC, BMPs, and SWPPP would prevent or minimize uncontrolled sediment release to the offsite stormwater control system; the SWPPP would identify plans for control measures and spill response to prevent or control construction equipment leakage of fuel, oil, or hydraulic fluid.

Following development, approximately 85 percent of the site (or 18.4 acres) would be converted to impervious surfaces, such as building roofs, parking lots, driveways and sidewalks. Post-development stormwater runoff would contain pollutants associated with vehicles and commercial land use, such as: grease and oil, metals and nutrients. In addition, landscaped areas may be sources of herbicides and pesticides. Without mitigation, these pollutants could contribute to surface (and groundwater) quality degradation.

A permanent stormwater control system would be designed and constructed according to the City of Tumwater's Drainage Design and Erosion Control Manual for Thurston County (1994), as amended, and the North Thurston County Groundwater Management Plan (1991), as amended. Stormwater runoff would be collected by catch basins, and conveyed via underground pipes to underground stormwater quality treatment vaults. The stormwater quality treatment vaults would be sized to treat runoff from the post development 100-year, 24-hour storm. From the treatment vaults, stormwater would be directed to infiltration vaults. According to geotechnical investigations conducted on site (2004), onsite soils are suitable for infiltration (see the **Section 3.1, Earth** and **Appendix C** for details on onsite soils). The infiltration vaults would be designed to retain/infiltrate the 100-year, 24-hour storm event into the soil. Stormwater from roof drains would be routed directly to the infiltration vaults, bypassing the stormwater treatment vaults, as allowed by code. A separate onsite water quality treatment facility would be provided in the gas station canopy area, as required by the building code. The stormwater treatment vaults and infiltration vaults would be located under the parking area (see **Figure 3.1-1**). In the event of a storm greater than the 100-year, 24-hour storm, stormwater would overflow onto the onsite parking lot. No existing flooding or erosion problems are known to exist within ¼ mile downstream of the site that would be exacerbated by the overflow (see **Appendix D** for details on the proposed stormwater control system).

Groundwater

Proposed development of the site would not affect drinking wells located within a ½ mile radius of the site, because the shallow groundwater flow direction from the site is generally away from these wells. The one private well that is within a ½ mile of the site, and in the general path of groundwater flow from the site, would be protected by the project's adherence to applicable code requirements related to groundwater protection, which include those listed in TMC 16.24, TMC 16.26, and TMC 18.39. In particular, the proposed stormwater control system would be designed and constructed in accordance with the requirements of the City of Tumwater's Drainage Design and Erosion Control Manual for the Thurston Region (1994), as amended.

The proposed stormwater control infiltration vaults would be excavated to depth elevations ranging between 169.5 and 170.0 feet MSL. Therefore, the approximate separation distance between the shallow groundwater table beneath the site and the bottom of the proposed infiltration facilities would range between 4.7 and 9.3 feet. This separation would be adequate to protect the groundwater aquifer, per the standards in TMC 16.24, TMC 16.26, and TMC 18.39, and the City of Tumwater's Drainage Design and Erosion Control Manual for the Thurston Region (1994), as amended and the North Thurston County Groundwater Plan (1991), as amended (Kleinfelder, Inc., 2005).

The proposed retail use would include the onsite storage (for sale), handling, and sale of household and automotive goods, including potentially hazardous materials, such as gasoline and other petroleum products, propane, aerosols, oxidizers, pesticides, herbicides, and

fertilizers, including flammable, combustible and corrosive liquids. These potentially hazardous materials would be located within the proposed onsite gas station (located in the lease lot, see **Figure 2-3**), which would include bulk oil tanks typical of gas station use, and within the automotive, paint, household cleaning, and garden departments of the retail store. The proposed retail store and gas station are allowed uses in the aquifer protection overlay zone district and wellhead capture zones in which the site is located (see **Appendix E** for a map of the wellhead capture zones in which the site is located). No potentially hazardous materials are proposed to be stored outdoors. The storage, handling and sale of propane and gasoline would be in accordance with all applicable regulations (see **Section 3.4, Hazardous Materials and Explosion Risk** and **Appendix G** for further information).

Alternative 1

Grading activities under Alternative 1 would be similar to those called for under the Proposed Action (see **Chapter 2** and the **Section 3.1, Earth** for details on proposed grading). Therefore, potential for erosion and sedimentation impacts during construction would be similar as well. Temporary erosion and sediment control BMPs would be implemented to control these potential impacts.

Alternative 1 would generally feature the same amount of impervious surface areas as under the Proposed Action. As under the Proposed Action, the stormwater control system under Alternative 1 would include underground stormwater quality treatment vaults and underground infiltration vaults under the parking area; however, an open surface infiltration pond would also be provided in the northern portion of the site (see **Figure 3.1-2**). This portion of the project site would drain to the open pond prior to infiltration. As under the Proposed Action, stormwater from roof areas would bypass the water quality treatment facilities.

As under the Proposed Action, development of the site would not affect drinking water wells within a ½ mile radius of the site, because the shallow groundwater flow direction from the site is generally away from these wells. The one private well that is within ½ mile of the site, and in the general path of groundwater flow from the site, would be protected by adherence to applicable city code requirements in TMC 16.24, TMC 16.26, and TMC 18.39 relating to groundwater protection, which include design and construction of the stormwater control system in accordance with the requirements of the City of Tumwater's Drainage Design and Erosion Control Manual for the Thurston Region (1994), as amended, and the North Thurston County Groundwater Management Plan (1991), as amended. All applicable regulations related to the storage, handling and sale of potentially hazardous materials (such as gasoline and other petroleum products, propane, aerosols, oxidizers, pesticides, herbicides, and fertilizers, including flammable, combustible and corrosive liquids) would be followed (also see the mitigation measures related to hazardous materials control in **Section 3.4, Hazardous Materials and Explosion Risk**).

No Action Alternative

The No Action Alternative would not result in any changes to surface or groundwater conditions on or near the site. Any future development of the site would be required to adhere to the City's requirements for temporary erosion and sediment control facilities and a permanent stormwater control system.

3.2.3 Mitigation Measures

- Temporary erosion and sediment control (TESC) best management practices (BMPs), as specified in the City of Tumwater's Drainage Design and Erosion Control Manual for the Thurston Region (1994), as amended, would be implemented (also see the mitigation measures related to erosion control in **Section 3.1, Earth**).
- A Stormwater Pollution Prevention Plan (SWPPP) would be prepared and implemented as required by the National Pollution Discharge Elimination (NPDES) permit (it should be noted that the NPDES permit would not be required by the project; however, the applicant has indicated that an NPDES would be applied for from the Department of Ecology). The SWPPP would include TESC BMPs.
- The permanent stormwater control system would be designed and constructed in accordance with the requirements of the City of Tumwater's Drainage Design and Erosion Control Manual for the Thurston Region (1994), as amended, and the North Thurston County Groundwater Plan (1991), as amended.
- All applicable regulations related to the storage, handling and sale of potentially hazardous materials (such as gasoline and other petroleum products, propane, aerosols, oxidizers, pesticides, herbicides, and fertilizers, including flammable, combustible and corrosive liquids) would be followed (also see the mitigation measures related to hazardous materials control in **Section 3.4, Hazardous Materials and Explosion Risk**).
- No household hazardous materials would be stored outdoors.
- Any accidental spills of hazardous materials during operation of the project would be addressed by a Spill Prevention Control and Countermeasure (SPCC) Plan that would be developed as part of the SWPPP in accordance with the NPDES permit. The SPCC would comply with federal regulations under the Clean Water Act Section 311 (40 CFR part 112), and with WAC 173-303-350. SPCC plans include: 1) actions to be taken in the event of a spill; 2) descriptions of arrangements with local agencies, 3) the name of the owner's emergency coordinator, 4) a list of emergency equipment available, and 5) an evaluation of plan for business personnel. The SWPPP would identify plans for control measures and spill response to prevent or control construction equipment leakage of fuel, oil, or hydraulic fluid.
- A separate onsite water quality treatment facility would be provided in the gas station canopy area, as required by the building code.

3.2.4 Significant Unavoidable Adverse Impacts

With implementation of the proposed mitigation measures, no significant unavoidable adverse impacts to surface or groundwater resources would be expected.