Chapter 3 The Built Environment – Effects on People and Community Resources

What is addressed in this chapter?

This chapter describes the community’s existing built environment and how the alternatives may impact that built environment. This chapter specifically addresses the following elements:

▪ Land Use
▪ Transportation
▪ Noise
▪ Public Utilities (water supply, wastewater, stormwater)
▪ Visual
▪ Historic and Cultural Resources
▪ Public Services (parks, schools, public safety)
▪ Fiscal Analysis
Public Utilities

Water Supply

1 What water sources and facilities are available to serve the study area?

- Lawson Hills is within the City of Black Diamond’s water service area. Five water sources are available to serve the City. Four of these water sources are within the City of Black Diamond Spring Field. These are:
  - Collection Area No. 1 – South Springs
  - Collection Area No. 2 – Middle Springs
  - Collection Area No. 3 – North Springs
  - Collection Area No. 4 – Palmer Spring Area

- Black Diamond currently uses two of these spring sources to meet daily water supply needs. Collection Area No. 2 is currently not in use because it has been designated as under the influence of surface water, which requires it to have more stringent treatment standards before its water can be used for domestic drinking water purposes. Collection Area No. 4 is under consideration as a potential future supply source.

For its fifth source, the City has a wholesale water agreement with the City of Tacoma to provide additional water supply. This source is not currently being used by the City of Black Diamond.

The City’s water distribution system operates in three pressure zones, with pressure heads of 965 feet, 850 feet, and 750 feet. Water from the spring sources is transmitted via a 12-inch main which travels through a section of the Main Property. Water from the spring sources is stored in a 4.3-million gallon (MG) reservoir located to the northwest of the intersection of Lawson Street and Botts Drive. The 4.3-MG reservoir is in the City’s 850 Pressure Zone. Spring water is treated at a facility near the 4.3-MG reservoir and is pumped via an 8-inch main to a 0.5-MG reservoir in the 965 Pressure Zone.
Portions of the Lawson Hills study area are located within various segments of the City’s three pressure zones. The North Triangle property is located within the 750 Zone, while the Lower Lawson site west of 5th Avenue is located in the 850 Zone. The lower third of the project site is within the 965 Zone and the upper two-thirds of the Main Property is located above the 965 Zone. Exhibit 3-15 shows existing water supply and service facilities for the study area.

### What are water rights?
State designation of the amount of water an entity, such as a city, may use on an annual basis.

### Exhibit 3-15
**Black Diamond Annual Water Supply**
*(2008 Water System Comprehensive Plan)*

<table>
<thead>
<tr>
<th>Source of Supply</th>
<th>Maximum Annual Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Diamond Spring Field</td>
<td>179.5 MG</td>
</tr>
<tr>
<td>City of Tacoma Intertie</td>
<td>807.3 MG</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>986.9 MG</strong></td>
</tr>
</tbody>
</table>

### 2 Is there adequate water supply to serve the alternatives?

The City has water rights to a maximum annual water supply of approximately 986.9 MG from the combined Black Diamond spring sources and the City of Tacoma intertie (see Exhibit 3-15). Portions of this supply are owned by the Applicant through a Water Supply and Facilities Funding Agreement (WSFFA) and would be used to serve water needs for the proposal.

In water system planning, the term Equivalent Residential Unit (ERU) is equal to the average amount of water used by a single-family residence in gallons over the period of one year. ERUs are useful to project water demand for a community when reasonable assumptions can be made regarding the anticipated land use. For residential single-family land uses it has been assumed that the number of residential dwelling units is equal to the number of ERUs. ERUs were calculated for non-residential land uses consistent with the 2008 City of Black Diamond Final Comprehensive Water System Plan; which assumed a value of 6 ERUs per acre for commercial,
industrial, and retail land uses. Exhibit 3-16 summarizes the projected demands at year 2025 for each of the alternatives. Alternative 4 is not included in this analysis, as its water demand impacts are similar to the ERUs generated by Alternative 2.

Exhibit 3-16
Lawson Hills Annual Water Demand

<table>
<thead>
<tr>
<th>Alternative</th>
<th>New ERUs</th>
<th>Total ERUs (^a)</th>
<th>Annual Demand (^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 1</td>
<td>1,330</td>
<td>2,460</td>
<td>206.5 MG</td>
</tr>
<tr>
<td>Alternative 2</td>
<td>1,528</td>
<td>2,650</td>
<td>222.5 MG</td>
</tr>
<tr>
<td>Alternative 3</td>
<td>1,148</td>
<td>2,278</td>
<td>191.2 MG</td>
</tr>
</tbody>
</table>

\(^a\) Total includes an existing ERU number of 1,130 per the City’s 2008 Water System Comprehensive Plan

\(^b\) Annual demand calculated based on average per capita use of 230 gpd per the 2008 Water System Comprehensive Plan

Given the various ERU estimates above, we can convert the ERUs to a water volume amount, making it possible to estimate future water demands. Currently, the City’s Water System Comprehensive Plan assigns a value of 191 gallons per day (gpd) per each ERU. For future uses, the City and the Applicant have agreed to use the value of 230 gpd which was allowed under the WSFFA. Exhibit 3-16 summarizes the approximate annual demand through the year 2025 associated with each of the alternatives using ERUs converted to millions of gallons.

3 What water supply facilities and services are proposed for the study area?

The Main Property is supplied by City-owned water mains located at Botts Drive, McKay Lane, Park Street/4th Avenue, and SR 169. To address the water supply needs of development in Lawson Hills, new water supply lines would be built in or along roadways, utility tracts, and easements and would connect to the City’s existing water system in at least two locations. The number of connections to the existing water system would be based on the need for adequate fire-flow and to minimize residence time to protect water quality. To supply

Multi-Family Units and Water Demand

The water demand analysis reported in Exhibit 3-17 assumed that residents of multi-family dwelling-units used the same amount of water as residents of single-family dwelling-units. As multi-family residents generally use less water, this analysis provides a conservative estimate.

East Annexation Area

The east annexation area is located on the easternmost edge of the Lawson Hills site. It is anticipated that this property would be annexed to the City with the MPD application.
portions of the Lawson Hills site that cannot be served by the existing pressure zones, a new reservoir is proposed to be constructed on the eastern edge of the east annexation area. The new reservoir would provide water via gravity flows to the upper portions of the project site. This reservoir would create a new 1175 Pressure Zone.

In addition, the existing capacity of the 965 Reservoir will be evaluated to determine if it meets the added demands from development at the project site. Upgrades to the 965 Reservoir will be made as needed. The City’s 2008 Comprehensive Water Plan identified the need for a new 2.5-MG reservoir adjacent to the 965 Reservoir. The potential addition of the new reservoir at the east annexation area could negate the need for the proposed 2.5-MG reservoir. A pump station is anticipated to be constructed adjacent to the 965 Reservoir to pump water from the 965 Reservoir to the proposed east annexation area reservoir. Exhibit 3-18 shows proposed water supply and service facilities for the study area alternatives, as well as the pressure zones.

4 How will the alternatives affect water supply?

For the purposes of this EIS, it is assumed that the proposed water system plan and pressure zones shown in Exhibit 3-18 will be similar for all alternatives at build-out.

All extensions and upgrades performed on the existing water system will comply with the standards described in Chapter 4 of the City’s 2008 Comprehensive Water System Plan. These standards ensure that development under any of the alternatives will be in compliance with pertinent drinking water regulations and requirements. Under Alternative 2, the Applicant proposes to implement Low Impact Development (LID) practices in the treatment of stormwater, practices which will help protect the groundwater supply.

With regard to the North Triangle Property, the Comprehensive Water Plan shows water service in the area to be a looped main. Additionally, upgrades to the 850 Reservoir and the existing water system line will be performed as necessary to ensure that fire-flow standards are met for the area.
Exhibit 3-17

Existing Water Supply and Service

Exhibits in this EIS are intended to provide a general graphical depiction of built and natural environment conditions and may not be accurate to the parcel level.
Exhibit 3-18
Proposed Water Supply and Service

Exhibits in this EIS are intended to provide a general graphical depiction of built and natural environment conditions and may not be accurate to the parcel level.
Wastewater

1 What wastewater facilities and services are currently provided in the study area?

Future development within the Lawson Hills study area would be served by the City of Black Diamond’s sanitary wastewater system. All of the City’s existing wastewater is directed to the existing King County Wastewater Treatment Division’s Black Diamond Pump Station via gravity flows or by pumping. Wastewater currently flows from The Main Property to the Black Diamond Pump Station via gravity flows (the North Triangle property has no existing wastewater facilities on-site). From the Black Diamond Pump Station, flow is pumped via force main and gravity flows to the Soos Creek Water & Sewer District (SCWSD) Lift Station No. 11. From the SCWSD Lift Station No. 11, sewage is pumped to SCWSD Lift Station 10B and then to King County’s interceptor sewer, and ultimately to King County’s wastewater treatment plant in Renton. These facilities are maintained by both SCWSD and King County, as detailed in each agency’s agreements.

The Main Property is currently served by an 8-inch gravity main located along Botts Drive. The main currently serves eight residences on the project site and four off-site residences along Botts Drive. An eastern spur of the City’s wastewater line also serves five residences adjacent to the eastern boundary of the site. Two parcels located in Lawson Hills utilize on-site septic systems. These septic systems, over time, will be decommissioned and removed as Lawson Hills fully develops.

As mentioned, the North Triangle property has no existing wastewater facilities on-site. The adjacent Diamond Glen development is the closest site with City wastewater. However, the Diamond Glen facilities do not have sufficient capacity to serve the North Triangle property, and off-site wastewater system improvements would be necessary to accommodate development.
The City and King County have been planning for future wastewater capacity needs in the area and several studies have been conducted. In 2005, King County analyzed storage options and concluded that construction of a 0.6-MG storage facility would be needed by 2010 to alleviate peak flows to the wastewater system. The following year, King County entered into an agreement to build and maintain a storage facility in Black Diamond. The storage capacity of the reservoir, when built, is now proposed to be 0.75 MG. This new storage reservoir is currently proposed to be constructed at the King County Jones Lake pump station site. The City is exploring the advantages and viability of locating the storage facility at alternate locations. This will be further assessed during development of the Sewer Comprehensive Plan update.

2 What standards have been established for wastewater?

Title 13 of the City of Black Diamond’s Municipal Code contains regulations with regard to its wastewater system. These regulations outline permitted and prohibited uses of the City’s wastewater system, City inspection and enforcement duties, and design standards. Chapter 13.20.150 of the City’s code requires that all “sewer extensions, side sewers, pump stations and other collection and transport facilities for the sewer system shall comply with the Criteria for Sewage Works Design...” by the Washington State Department of Ecology (Ecology). Per the City’s code, all wastewater extension work is required to be submitted to both the Department of Ecology and the City of Black Diamond for compliance prior to approval and construction.

3 What new wastewater facilities are needed to serve the alternatives?

Each of the alternatives would require the modification and expansion of the existing wastewater treatment conveyance and storage facilities in the Black Diamond area. These improvements include building additional storage facilities, repairing and replacing wastewater conveyance structures, and constructing new gravity sewer trunk lines to serve areas that currently lack wastewater facilities.
Exhibit 3-19
Existing Wastewater Facilities and Services

Exhibits in this EIS are intended to provide a general graphical depiction of built and natural environment conditions and may not be accurate to the parcel level.
The City’s current proposed wastewater facilities and services are shown in Exhibit 3-20. Although there will be differences in the final layout of the wastewater facilities dependent upon the alternative, conceptually, all of the alternatives will utilize a similar system.

**Alternative 1**
Alternative 1 will require the construction of additional peak flow capacity and conveyance structures. Because the parcels will be developed separately over time, it is not possible to accurately forecast what the final layout of the sewer system will look like under this alternative. Regardless, as parcels are developed under Alternative 1, those areas within the City’s urban growth area will be required to be connected to the City’s wastewater system. As with water supply, for wastewater, an assumption has been made that dwelling units and ERUs are equivalent.

**Alternative 2**
Alternative 2 will also require an expansion of the City’s current wastewater system to accommodate increased flows from the Lawson Hills study area. Sewage from the Main Property will be routed initially by gravity wastewater system, which will transition to force main near the western extent of the Main Property. This force main will convey flows to the new storage reservoir. Two new pump stations will be required to be constructed to facilitate wastewater conveyance. The City’s currently proposed wastewater conveyance improvements tie in Lawson Hills to City sewer in the vicinity of the Lake Sawyer Road and Roberts Drive intersection.

The applicant has proposed six alternate routes (A through F) for conveying wastewater from the Main Property to the City sewer. Routes A through E are not consistent with the City’s Comprehensive Plan, and will need to be further assessed to ensure the proposed improvements are functionally equivalent.
Exhibit 3-20
Proposed Wastewater Facilities and Service

Exhibits in this EIS are intended to provide a general graphical depiction of built and natural environment conditions and may not be accurate to the parcel level.
The City can accept deviations from projects as scoped in the City’s Comprehensive Plan as long as they are evaluated by the City and the developer and are mutually determined to be functionally equivalent. Additional mitigation may be required to meet the long term goals of the City for maintenance and operational efficiency.

Wastewater conveyance routes A, B, and F in the application all tie in to City sewer near the SR 169 and Roberts Road intersection. Routes C, D, and E tie in to City sewer at locations other than the SR 169 and Roberts Road intersection. These three routes are not likely to be viable for wastewater conveyance given that they don’t tie in at the City’s proposed location. The proposed conveyance routes for Alternative 2 are shown in Exhibit 3-22.

With regard to wastewater collection and conveyance from the North Triangle, wastewater will be collected by gravity, which would transition to force main at a new pump station constructed north of Roberts Drive near Rock Creek and subsequently be conveyed to the new storage reservoir. It is expected that the new storage reservoir will ultimately be conveyed to King County for operation and maintenance.

Current wastewater connections for the existing residences at the project site to the 8-inch main along Botts Drive will be abandoned in-place, as the structures are demolished. The Botts Drive main will be upgraded or replaced as necessary and flows redirected to the proposed new or upgraded wastewater main extension. Service to the off-site residences located to the east of the project site boundary will be maintained through the existing mains or via new mains. Existing mains that currently serve off-site residences and cross the project site may have to be rerouted or relocated to maintain service.

**Alternative 3**
Alternative 3 would require a very similar wastewater layout to Alternative 2.

**Alternative 4**
Alternative 4 would be similar in nature to Alternatives 2 and 3 and is not separately analyzed in this section.

---

**Exhibit 3-21**

<table>
<thead>
<tr>
<th>Alternative</th>
<th>New ERUs</th>
<th>Total ERUs*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 1</td>
<td>1,330</td>
<td>2,460</td>
</tr>
<tr>
<td>Alternative 2</td>
<td>1,528</td>
<td>2,650</td>
</tr>
<tr>
<td>Alternative 3</td>
<td>1,148</td>
<td>2,278</td>
</tr>
</tbody>
</table>

* Total includes an existing ERU number of 1,130 per the City’s 2008 Water System Comprehensive Plan
Exhibit 3-22
Proposed Wastewater Conveyance Routes for Alternative 2

Exhibits in this EIS are intended to provide a general graphical depiction of built and natural environment conditions and may not be accurate to the parcel level.
Stormwater

1 How is stormwater currently managed in the project site?

The project site is largely undeveloped, with the exception of a few houses located southeast of Lawson Street. Stormwater disposal for the existing houses is handled on-site while no stormwater facilities exist in the undeveloped area. As discussed in Chapter 4 and shown in Exhibit 3-23, the Main Property area is comprised of 5 drainage basins while the North Triangle property exists within a single drainage basin. Due to the underlying soil types in the Main Property area, stormwater flow largely occurs as surface runoff. Having different soil types, stormwater at the North Triangle site ultimately infiltrates to groundwater. Stormwater in the entire Lawson Hills study area ultimately drains to Lake Sawyer.

2 How is stormwater management governed within the study area?

The City of Black Diamond has adopted the 2005 Washington Department of Ecology’s Stormwater Management Manual (Stormwater Management Manual) and therefore regulates development and redevelopment activities that have the potential to create impacts on surface water from stormwater.

All stormwater-related infrastructure and best management practices (BMPs) will be designed, constructed, and enacted in accordance with the Stormwater Management Manual.

Additional Stormwater Information
Detailed information about stormwater, soil types, and site drainage is provided in Chapter 4.

Surface Runoff Versus Infiltration
Infiltration is the process by which stormwater flows through the soil and into the groundwater. Surface runoff occurs when soil types or steep slopes don’t allow for infiltration and water travels over ground towards the lowest point.

What are Stormwater Best Management Practices (BMPs)?
Stormwater BMPs are actions that reduce or prevent pollution from entering stormwater runoff.
Exhibit 3-23
Existing Drainage Basins

Exhibits in this EIS are intended to provide a general graphical depiction of built and natural environment conditions and may not be accurate to the parcel level.
3 What stormwater facilities are included in the alternatives?

Per the *Stormwater Management Manual*, phosphorous controls need to be implemented in areas that drain to phosphorous sensitive receiving waters. All stormwater in the study area ultimately drains to Lake Sawyer, a phosphorous sensitive lake, through other surface water bodies (primarily creeks and lakes). Stormwater from the study area enters these other surface water bodies either directly as surface runoff or from surface water recharge. In the Main Property, phosphorous control will need to be incorporated into stormwater treatment plans under each alternative.

Phosphorous control facilities described in the *Stormwater Management Manual* include large sand filters, amended sand filters, large wet ponds, media filters, and two-facility treatment trains. In the North Triangle area, where soils allow stormwater to infiltrate, phosphorous treatment is projected to be performed through natural infiltration for all alternatives.

As discussed in Appendix M, Alternative 2 will also seek to utilize Low Impact Development (LID) techniques where possible to maintain natural system hydrology, protect streams from increases in stormwater runoff, and protect wetland areas. In areas with soils amenable to infiltration (the North Triangle), Alternative 2 would maximize infiltration using techniques like biofilter and sand filter treatment in conjunction with discharge infiltration, direct infiltration of roofs and other non-pollution generating surfaces, and utilization of pervious pavement where possible. Additionally, LID practices would be utilized to reduce stormwater runoff by minimizing the area of impervious surfaces, such as streets, and clustering of residential and commercial land uses. Alternative 2 would also seek to retain water on-site that would otherwise be lost due to evaporation associated with impervious surface area increases and loss of vegetation. Some examples of techniques for on-site water retention include: street and urban tree plantings, clustering of buildings, and retention of vegetation and rain garden utilization in landscaped areas.
The *Stormwater Management Manual* also requires that when commercial and/or multi-family residential development contributes 50 percent or more of the total runoff, enhanced stormwater treatment is required prior to discharging to receiving waters. In Alternatives 2 and 3, multi-family residential developments will be located within Basins A through D and commercial development will occur in the North Triangle Basin. As Basins A through C under Alternative 2 would be comprised almost entirely of single-family residential development and would not meet the 50 percent threshold, the proposed treatment facilities for Alternative 2 only include enhanced treatment methods in Basin D and the North Triangle.

Enhanced treatment options include those used for phosphorous treatment plus treatment wetlands, compost-amended filters, bioretention, and ecology embankments.

For Alternative 2, stormwater treatment facilities are proposed for each basin. The location of these facilities is shown in Exhibit 3-24. In Basin A, two similarly-sized ponds are proposed for phosphorous removal and water quality treatment. These ponds are also planned to detain and treat stormwater from a portion of Basin C to prevent potential steep slope disturbance from the southeast side of the Main Property. One of the ponds will discharge to Lawson Creek to maintain flows while the other pond will bypass upper Lawson Creek and be piped to Jones Lake. The bypass to Jones Lake would discharge via a flow splitter equally into both lower Lawson Creek and into Jones Lake Creek, just to the east of Jones Lake.

In Basin B, a treatment pond is proposed to provide phosphorous removal and water quality treatment. The Basin B pond would discharge to Mud Lake. The southwest corner of Basin B might be routed to Basin D for discharge if it is found to be too low in elevation to discharge with the rest of Basin B.

In Basin C, the west and central sub-basins will be routed to stormwater treatment facilities in Basin A for discharge to minimize potential erosion on the steep slopes in those areas. The remainder of Basin C is proposed to be routed to a pond for phosphorous removal and water quality treatment. The pond would discharge water at a rate to match predeveloped conditions to provide flow to Jones Lake Creek and its associated wetlands.

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**What is surface water recharge?**

Surface water recharge is the natural process by which groundwater reenters surface water bodies.
Exhibit 3-24
Locations of Proposed Stormwater Facilities for Alternative 2

Exhibits in this EIS are intended to provide a general graphical depiction of built and natural environment conditions and may not be accurate to the parcel level.
With regard to Basin D, Alternative 2 is currently proposed to use a combination of detention ponds, detention vault, wetponds, wet vaults, and sand filters. The location of these facilities has not yet been determined. However, it is likely that Basin D treatment facilities will discharge to Ginder Creek.

For the North Triangle, water from non-pollution generating surfaces, such as roof tops, is proposed to be infiltrated directly. Runoff from other surfaces will require phosphorous and enhanced treatment prior to infiltration.

The requirements for treatment in each developed basin are summarized in Exhibit 3-25.

<table>
<thead>
<tr>
<th>Exhibit 3-25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drainage Information and Treatment Summary for Basins at Lawson Hills</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Basin</th>
<th>Size (Acres)</th>
<th>Receiving Water</th>
<th>Stormwater Treatment Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Property</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basin A</td>
<td>152</td>
<td>Lawson Creek</td>
<td>Phosphorous</td>
</tr>
<tr>
<td>Basin B</td>
<td>58.6</td>
<td>Mud Lake</td>
<td>Phosphorous</td>
</tr>
<tr>
<td>Basin C</td>
<td>74</td>
<td>Jones Lake</td>
<td>Phosphorous</td>
</tr>
<tr>
<td>Basin D</td>
<td>32</td>
<td>Ginder Creek</td>
<td>Phosphorous, Enhanced</td>
</tr>
<tr>
<td><strong>North Triangle</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Triangle Basin</td>
<td>54.2</td>
<td>Ravensdale Creek</td>
<td>Phosphorous, Enhanced</td>
</tr>
</tbody>
</table>

Alternative 3, because it is a mitigated version of Alternative 2, will likely require the same or very similar treatment facilities as Alternative 2. However, as presented in the next section, the amount of impervious surface is less than Alternative 2. Therefore, the size of treatment facilities needed may be less. This could especially be true in the case of commercial land use in the North Triangle where the impervious surface in Alternative 3 is less than 60 percent of the area of impervious surface created in Alternative 2. Alternative 3 also includes using low impact development (LID) techniques, such as those discussed above for Alternative 2.

Alternative 4 is not separately analyzed in this section.
4 How might stormwater management affect surface water quantity and quality?

Impacts to surface water quantity and quality could occur during construction of the alternatives. During the construction phase, potential stormwater impacts to surface water would likely be in the form of sediment runoff from the grading and development of properties inside the study area, especially in areas with steep slopes that are prone to erosion and runoff. Because of steep slopes, high runoff rates, and fine soils, construction will not be allowed in the winter months.

With each alternative, the post-construction condition of the study area includes an increase in impervious surface cover from existing conditions. This is summarized in Exhibit 3-26. The impervious acreages were calculated by multiplying the acres of each land use type within each alternative with an estimate of the percent of impervious cover typically found in each land use type.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Additional Impervious Cover (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 1</td>
<td>140</td>
</tr>
<tr>
<td>Alternative 2</td>
<td>130.8</td>
</tr>
<tr>
<td>Alternative 3</td>
<td>90.8</td>
</tr>
</tbody>
</table>

Note: Alternative 4 is not included in this analysis.

Impacts from increased amounts of impervious surface cover include less infiltration of stormwater to groundwater, higher rates of runoff resulting in scouring and erosion in receiving water bodies, and an increase in temperature in stormwater runoff resulting in increased receiving water temperatures. Additionally, new development within the study area could increase the amount of contaminants in stormwater as a result of residential and commercial over-application of fertilizer, improper disposal of household chemicals and pet waste, and petroleum contaminants from automobiles.

Potential impacts to surface water from stormwater are covered in greater detail in Chapter 4.
5 What measures could reduce stormwater impacts?

To mitigate for stormwater impacts, development within the study area will be done in accordance with the 2005 *Stormwater Management Manual for Western Washington*. The recommended stormwater treatment facilities and BMPs will be used to address stormwater impacts during all phases of development. Additionally, LID techniques would be used to reduce impacts. These include using reduced street widths, use of native vegetation, and porous pavements.

Alternative 2 proposes to use several large storm ponds for stormwater detention and treatment. Some potential impacts can be associated with large pond construction. The storm ponds should be sited in areas of relatively shallow slopes. Large pond breaches on steep slopes could cause impacts to human safety, property and excessive erosion, scouring and other damage to the natural environment. This should be evaluated especially in areas like Basin C that have steep slopes. Additionally, some evidence indicates that solar irradiation of ponds may result in effluent discharges that have a higher temperature than receiving waters. This is especially important for discharges to Mud Lake Creek, which has low summer temperatures, and Jones Lake, which is a high productivity lake and serves as a headwater for Rock Creek. Monitoring may be necessary to fully understand the effects of this stormwater discharge.

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LID techniques proposed for Alternative 2 are described in Appendix M.

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_What are Stormwater Best Management Practices (BMPs)?_

Stormwater BMPs are actions that reduce or prevent pollution from entering stormwater runoff.