

### 3.3 Water Resources

This discussion of groundwater resources beneath the City Heights site is based on observations made during the drilling of boreholes for the geologic hazards assessment, review of well logs on file at the Washington Department of Ecology, and review of geologic information for the area performed by Aspect Consulting (2009). The potential developed-condition effects of water supply, stormwater, and sewage disposal on groundwater are described in this section. Each of these utilities is discussed in more detail in Draft EIS Section 3.18. Surface water features (wetlands and streams) are described in Draft EIS Section 3.4.

#### *AFFECTED ENVIRONMENT*

Groundwater in the Cle Elum area occurs in two primary hydrogeologic units: unconsolidated alluvial and glacial sediments in the Yakima River valley bottom, and bedrock flanking the valley and underlying the alluvium. Coarse-grained portions of the unconsolidated deposits can produce quantities of water sufficient for group domestic or municipal water supply. The bedrock typically yields water sufficient only for single domestic or small group domestic use.

Most of the City Heights site is about 100 to 300 feet above the Yakima River valley, and is underlain by a relatively thin veneer (generally less than 25 feet thick) of unconsolidated deposits overlying bedrock. In these areas, the unconsolidated deposits are generally unsaturated and groundwater occurrence is limited to fractures in the bedrock. Lower elevation portions of the site, for example the western end in proposed Development Area A or in the bottom of stream drainages, may contain groundwater within the unconsolidated deposits; however, no borings were completed in these areas.

Groundwater was observed in bedrock during drilling in four of the 14 borings (B-1, B-8, B-11, and D-1) completed at the site (see Figures 3.1-1 and 3.1-2 in Draft EIS Section 3.1). Where encountered, groundwater was generally limited to discrete fracture zones in the bedrock, while non-fractured bedrock typically did not contain observable quantities of water.

It is expected that groundwater flows generally south through the City Heights site, discharging to the unconsolidated deposits in the Yakima River valley and ultimately to the Yakima River. Groundwater flow through bedrock likely occurs primarily through interconnected fractures and joints. No tests have been performed to estimate the hydraulic conductivity of the bedrock; however, it is expected to be low relative to the more coarse-grained unconsolidated deposits on the site based on the limited occurrence of water in bedrock, the higher hydraulic conductivity of the unconsolidated deposits, and the relatively low hydraulic conductivity of the bedrock.

It is not expected that the City Heights site is a significant area of groundwater recharge. Given the thin veneer of unconsolidated deposits, moderate to steep slopes, and low permeability of the bedrock, most precipitation and snowmelt is expected to exit the site as surface water runoff to the small drainage courses that pass through the property. Additional water is lost through evaporation, plant uptake and transpiration (evapotranspiration). Water that infiltrates into the unconsolidated deposits, not captured by plants, may also migrate laterally along the bedrock surface and discharge to surface drainage courses after precipitation or snowmelt events have ended.

The entire incorporated area of the City of Cle Elum is designated an aquifer recharge area under Title 18 of the City's Municipal Code. This determination was based on recognition that the City is underlain by unconsolidated alluvial deposits that represent an important source of groundwater that also discharges to surface water, thereby maintaining stream flows.

Approximately 330 acres of the City Heights property is currently outside of the Cle Elum city limits, and therefore is not included in this designation. The portion of the City Heights site that is within the City limits (approximately 28 acres) is on a slope at a higher elevation than the rest of town, and is largely underlain by bedrock, which is not expected to act as a significant source of recharge compared to the more permeable, unconsolidated alluvial deposits that underlie the incorporated area. For these reasons, the aquifer recharge area designation would not likely be applicable to the City Heights site; however, specific technical investigations have not been performed to confirm this. Kittitas County Code (KCC) identifies no critical aquifer recharge locations within the County, and therefore none on the City Heights property (KCC 17A.08.010).

There is currently no consumptive use of groundwater on the City Heights site. South of the subject property, the City of Cle Elum does not currently use groundwater for water supply. The City operates a combined water system with the Town of South Cle Elum, utilizing surface water rights on the Yakima River (point of withdrawal east of the South Cle Elum bridge), and an infiltration gallery of shallow wells adjacent to the Cle Elum River west of Bullfrog Road. The Town of South Cle Elum operates two groundwater wells south of the Yakima River, approximately 1 mile south and downgradient from the City Heights site. These wells are used seasonally (mid-April through mid-September) to minimize the quantity of water used by the Town from the combined water system. The period of use corresponds to “flip-flop” in the Yakima River, when flows are augmented by releases from upstream dams during the irrigation season (personal communication with Jeff Louman, P.E., Huibregtse Louman Associates, engineering consultant to the City of Cle Elum, September 11, 2009).

A review of the Washington Department of Ecology well log database identified records for 25 water wells within about a one-quarter mile radius of the City Heights property. The well records indicate that these wells were proposed for domestic use. One domestic water supply well was identified on the subject property in the northeast quadrant of Section 26 (Township 20N, Range 15E) (Tax Parcel No. 19165, Parcel “C”). This well is not presently in use. The well owner of record is Andrew Kurtz. The well log shows that the well is 105 feet deep with a static water level at 65 feet below ground surface (bgs). Based on Township, Range and Section (TRS) data, six other well logs were identified that may be on the subject property, but without sufficient information to accurately identify their locations. Washington State Department of Health records (based on TRS) indicate that there are three Group B groundwater distribution systems and one Group A water supply system in the vicinity of the subject property (Aspect Consulting, August 2009).

No information is available on groundwater quality underlying the City Heights site. Groundwater quality results for the Town of South Cle Elum wells (1 mile downgradient from the City Heights site and on the south side of the river), downloaded from the Washington State Department of Health Department of Drinking Water online database, meet all Federal primary and secondary drinking water standards. The well water supply is chlorinated for domestic use (personal communication with Jeff Louman, P.E., September 11, 2009).

#### *POTENTIAL IMPACTS DURING CONSTRUCTION*

Construction activities under any of the build alternatives have the potential to impact groundwater resources through the following mechanisms:

- Accidental releases of pollutants (e.g., fuel, hydraulic oil) from construction equipment that could migrate through surface soils and impact shallow groundwater quality.

- Infiltration of construction stormwater or dewatering water to the groundwater system that may contain oil, grease, sediment, or metals from construction equipment or disturbed soils.
- Short-term dewatering of saturated unconsolidated soils during trenching and installation of underground utility lines, temporarily reducing groundwater quantity.

Based on observations of existing groundwater conditions beneath the site, these impacts would be limited to short-term excavation activities at the far western end of the project site and potentially the lower elevations of the intermittent drainage courses. If left unaddressed, releases of pollutants or infiltration of water containing pollutants could result in impacts to groundwater quality; however, these risks would be addressed by proposed stormwater management measures and permit conditions described in the *Mitigation Measures* section below.

Based on the limited duration and extent of potential construction dewatering activities, any changes to groundwater quantity are not expected to constitute significant impacts.

Under the No Action Alternative, there would be no construction on the site at this time. Therefore, there would be no potential impacts to groundwater quantity or quality.

#### *POTENTIAL DEVELOPED-CONDITION IMPACTS*

##### **Water Supply Effects**

Under any of the conceptual land use alternatives, the area of the City Heights project within the City limits (approximately 28 acres) would be provided with water by the City from its existing water supply. The number of equivalent residential units (ERUs) allowable within this area (based on the minimum residential density allowed within the City limits of 4 dwelling units per acre) is 112; however, the actual number of ERUs in this area would need to be determined once a site-specific development plan is submitted for approval.

Northland Resources has applied to the City of Cle Elum to annex the remaining approximately 330 acres of the City Heights site to implement Alternative 1 or 2 of the proposed City Heights development. To address the increased demand on the City's water supply system from that portion of the project to be annexed, the City's water policy allows for two options. Under the City's water policy, the developer has the right to either contribute water to the City in sufficient quantity to serve the ERUs in the annexed area or purchase water from the City's excess supply at the rate of \$3,500 per ERU. Northland could procure and transfer new water rights to the City sufficient to meet expected annual demand for up to 875 Equivalent Residential Units (ERUs) within the development and is in the process of seeking approvals from the Department of Ecology for such a transfer (as described below). Water required to service up to 110 additional ERUs under Alternative 1 (for a total of 985) would be provided from the City's existing water rights related to the property already within the City limits. Any shortfall in the amount of water rights that Northland can transfer would need to be purchased by Northland from the City. Northland anticipates that it may need to purchase water from the City to serve up to 250 ERUs. Final amounts, to be determined after negotiations conclude with the Department of Ecology, will be included in the terms of a Development Agreement to be negotiated with the City. The *Mitigation Measures: Applicable Regulations* subsection below describes the process by which new water rights would be procured by Northland Resources and transferred to the City.

To best integrate into the existing City of Cle Elum/Town of South Cle Elum water system, the new water right would likely specify the City's existing surface water intake on the Yakima River as the point of diversion, although use of one or more groundwater supply wells to be operated by the City may also be

considered. Potential well sites include an off-site location north of proposed Development Area I, an on-site location near proposed Development Area E, or other locations to be determined.<sup>1</sup> The water distribution system to be built for the City Heights development would be tied-in to the existing City of Cle Elum water treatment and distribution system although if groundwater wells are utilized, on-site treatment facilities would be utilized instead of the City's treatment plant.

Under Alternative 3A or 3B, water supply for the City Heights development could be provided through independent Group A community water systems operating with water right permits, or by individual water right permit-exempt wells. Because the bedrock underlying the site produces relatively small quantities of water, it is expected that multiple wells to be completed throughout the site would be required to meet the residential demands of either of these alternatives.

On July 31, 2009, the Washington Department of Ecology adopted an emergency rule (Chapter 173-539A WAC) imposing a temporary moratorium on new permit-exempt wells in upper Kittitas County, including the Cle Elum area, pending completion of a groundwater study to evaluate impacts of exempt-wells on surface water flows in the Yakima River. Any property with a building permit issued after July 16, 2009 is subject to the rule. Under the rule, new permit-exempt wells are now required to be "water-budget-neutral." This rule may be modified in the future to remove the moratorium.

The *Mitigation Measures: Applicable Regulations* subsection below describes the process by which new water rights or authorization to use permit-exempt wells would be obtained. The process for achieving water-budget-neutral use of groundwater wells is also described in the same subsection.

### **Sewage Disposal Effects**

There are three potential methods of physically handling wastewater from the City Heights project. With any of the build alternatives, wastewater from City Heights could be incorporated into the existing Cle Elum wastewater collection and treatment system (a "Public System" option); however, for Alternatives 3A or 3B, the City would need to agree to provide sewer service to a project in the UGA but outside the City limits (except for the 28 acres of the City Heights property already within the City limits).<sup>2</sup> For Alternatives 1, 2 or 3A, wastewater could be treated with an on-site Membrane Bioreactor (MBR) plant, with the treated effluent potentially utilized for seasonal on-site irrigation, and the remainder discharged to the Yakima River (an "MBR System" option). For Alternatives 3A or 3B, an additional option could be to treat wastewater in on-site sewage disposal systems constructed on the site (an "On-Site Sewage Disposal Systems" option). These options are described in Draft EIS Chapter 2, Section 2.9.3, and in Chapter 3, Section 3.18.2. Either sewage collection and treatment option (Public System or MBR System) would result in no impacts to groundwater quantity or quality. If Alternative 3A or 3B is selected for implementation, and if On-Site Sewage Disposal Systems were the option selected for wastewater treatment and disposal, the volume of wastewater generated for disposal in drainfield systems would range from approximately 192,834 gallons per day (gpd) with Alternative 3A to approximately 103,758 gpd with Alternative 3B. This could have a significant effect on groundwater quantity, and depending on how well maintained these systems were, could have an effect on groundwater quality over time if system failure were to occur. Potential impacts to groundwater quality (over time) may include discharges of nutrients (nitrates and phosphates) and bacterial contaminants that would migrate to groundwater.

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<sup>1</sup> If an off-site well location is selected, provisions will be made for City access for operation and maintenance.

<sup>2</sup> Until such time as the City adopts a policy in the Capital Facilities Element of its Comprehensive Plan that specifies when and where urban services (such as water and sewer) will be available within the UGA, it cannot be assumed that the City could or would provide urban services to the 330 acres of City Heights as long as this area remains outside the City limits. For this reason, the EIS assumes that Alternative 3A or 3B would be served by septic systems and wells.

There would be no new potential impacts to groundwater quantity or quality associated with the No Action Alternative. Informal use of the site by all-terrain vehicles (ATVs) and use of the power line easements by PSE and BPA maintenance vehicles would continue, and could result in occasional minor spills or discharges of petroleum products that could infiltrate to shallow groundwater. These unintentional discharges (if any) would be unlikely to reach a level of significant adverse impact.

### **Stormwater Effects**

The following potential impacts to groundwater quantity and quality could occur in the developed condition of whichever conceptual land use alternative is selected to implement the City Heights project:

- Increased impervious surface area (e.g., structures, roads, parking areas and sidewalks) would generate an increased volume stormwater runoff which, if not infiltrated, could reduce infiltration and affect groundwater quantity.
- Stormwater from developed areas, if not treated prior to infiltration, may contain petroleum product residues, sediment, metals, pesticides, herbicides, or fertilizers that would have the potential to impact groundwater quality.

As previously described in the *Affected Environment* section, the groundwater recharge rate through the low-permeability bedrock underlying the City Heights site is expected to be low; therefore, changes in recharge due to the addition of impervious surfaces on the site are not expected to reduce groundwater availability to the point where it would constitute a significant adverse impact. Infiltration of stormwater runoff from pollutant-generating surfaces (e.g., roads and parking areas) could impact groundwater quality. These potential impacts would be addressed by the proposed stormwater management system and compliance with applicable regulations and permit conditions described in Draft EIS Section 3.18.3.

The quantity of pollutants generated in stormwater runoff would be higher in proportion to the higher development densities with Alternative 1 (985 dwelling units and 20,000 square feet of neighborhood commercial space), Alternative 2 or 3A (875 dwelling units and 40,000 square feet of neighborhood commercial space). On the other hand, the higher-density alternatives would have a coordinated stormwater management system to address these effects. The lower density of Alternative 2 or 3A would likely result in marginally less impervious surface area than Alternative 1 with a corresponding reduction in potential impacts to groundwater quantity and quality. The potential impacts of Alternative 3B (approximately 500 single-family detached homes developed under multiple ownerships within the County) cannot be compared to the other alternatives with certainty except to say that several uncoordinated rural utility systems on the site could have the potential for less attention to maintenance and could therefore result in potential adverse impacts to groundwater quality over time.

### *MITIGATION MEASURES*

#### **Water Supply Effects**

*Mitigation Measures Included in the Development Proposal.* The City Heights proposal includes two options for a “water budget neutral” approach to the provision of water supply to Alternative 1, 2, or 3A of the development. These are described below under Applicable Regulations. Proposed development under Alternatives 1 or 2 would incorporate low-flow faucets, toilets and similar fixtures to minimize domestic water supply requirements.

*Applicable Regulations for Water Supply Effects.* Surface water rights in Washington State are governed under Chapter 90.03 Revised Code of Washington (RCW), and groundwater rights are

governed under Chapter 90.44 RCW. A new water right can be issued only if the Washington Department of Ecology (Ecology) determines that: 1) water is available for appropriation, 2) the appropriation would not impair other senior water rights, 3) the proposed use is a beneficial use, and 4) the appropriation would not be detrimental to the public interest. Due to historic water shortages, Ecology has determined that water is no longer available for appropriation in the Yakima Basin without mitigation of the effects on flows in the Yakima River.

In addition to the statutory requirements, water rights in the Upper Yakima Basin are managed based on forecasts of surface water quantities available to meet out-of-stream and in-stream needs in the Yakima Basin. These forecasts, referred to as Total Water Supply Available (TWSA), are performed by the U.S. Bureau of Reclamation on at least a monthly basis during the irrigation season (mid-April through mid-September), and are used to determine whether sufficient water is available to meet projected demands, including irrigation diversions and instream flow targets. Not all demands can be met in water-short years. Under the terms of a 1945 Consent Decree issued by the District Court of Eastern Washington, water rights with a priority date earlier than May 10, 1905 are not subject to regulation based on TWSA, while water rights with a May 10, 1905 or later priority date are subject to partial or full curtailment of water use in water-short years.

Northland Resources has filed an application with Ecology for a new water right sufficient to provide year-around water supply to 875 ERUs on the City Heights property. Under Alternative 1 or 2, this water right would then be transferred to the City of Cle Elum to serve the additional demand from the City Heights development. Under Alternative 3A (development within the County under single ownership), water would not be provided to the development by the City. The water right requested from Ecology would instead authorize use of on-site or nearby off-site wells to supply the City Heights development. Ecology will consider impacts to other potentially affected water users in the area as part of their approval process for new wells to be used to serve City Heights.

In order to receive a new water right in the Yakima Basin, the new appropriation must be “water-budget-neutral,” and therefore must include a plan for mitigating the consumptive use. One way to mitigate the proposed appropriation would be by placing into the State’s Trust Water Right Program an existing water right with an equivalent amount of consumptive use (Chapter 173-539A WAC). Northland Resources currently controls several existing surface water rights for seasonal irrigation that it intends to transfer to the Trust Water Right Program to offset the consumptive use impacts of the requested new water right during the irrigation season. In addition, Northland Resources also proposes to mitigate the consumptive use of water associated with the City Heights development during the non-irrigation period through release of stored water. The water rights held by Northland Resources all have pre-1905 priority dates, and therefore are not subject to curtailment under TWSA management. As a result, new water rights with consumptive use offset by the pre-1905 irrigation water rights would also not be subject to curtailment.

Alternative 3B that would involve development within the County could rely on water right permit-exempt wells, rather than a new water right, to provide water supply. Under Ecology’s temporary moratorium on new permit-exempt wells in Upper Kittitas County (Chapter 172-539A WAC), use of these wells would require a plan for mitigating the consumptive use, in order to remain “water-budget-neutral.”

If the No Action Alternative were selected, there would be no development on the site in the near-term, and therefore no consumptive use of groundwater.

*Other Possible Mitigation Measures for Water Supply Effects.* If development were to occur under Alternative 3A or 3B, the developer could be encouraged to incorporate low-flow faucets, toilets and

similar fixtures to minimize domestic water supply requirements. Under any alternative, the developer could be encouraged to include in the Covenants, Conditions & Restrictions (CC&Rs) of the development a preference for xerophytic landscaping; i.e., plantings that would require minimal irrigation in the arid climate of Upper Kittitas County.

### **Sewage Disposal Effects**

*Mitigation Measures Included in the Development Proposal.* No mitigation measures for groundwater quantity or quality would be required for a wastewater collection and treatment option to serve Alternative 1, 2, or 3A (i.e., a Public System Option, or MBR System Option). If Alternative 3A or 3B were selected for implementation, and if on-site sewage disposal systems were selected as the means for wastewater treatment, these systems would be sited, designed, constructed, and maintained in accordance with all applicable State and local regulations to assure proper function. Due to the residential density of Alternative 3A, community on-site sewage disposal systems to serve this alternative would be maintained by a management entity approved by Kittitas County.

*Applicable Regulations for Sewage Disposal Effects.* Regulations that apply to the design, construction, and operation of the sewage disposal and treatment options being considered for the City Heights development are described in Draft EIS Section 3.18.2.

If Alternative 3A or 3B were selected for implementation, and if on-site sewage disposal systems were to be used for wastewater treatment, Kittitas County would require compliance with Chapter 246-272A of the Washington Administrative Code (WAC). This chapter regulates the location, design, installation, operation, maintenance and monitoring of on-site sewage disposal systems to protect public health and limit discharges of pollutants.

*Other Possible Mitigation Measures for Sewage Disposal Effects.* No additional mitigation recommendations were identified for potential groundwater effects due to the sewage collection, treatment and disposal options being considered for the project.

### **Stormwater Effects**

*Mitigation Measures Included in the Development Proposal.* Construction contractors would be required to comply with applicable State and local regulations and permit requirements (described below) to mitigate potential construction-related impacts to groundwater quantity or quality.

Potential impacts to groundwater quantity due to reduced recharge in the developed-condition of the site would be offset in part or in whole by the following features of the Planned Mixed-Use development:

- The open space proposal under Alternative 1, 2 or 3A would retain approximately 43 to 45 percent in a condition where the natural process of groundwater recharge would continue to occur.
- To the extent that parks and residential landscaping are irrigated, this would locally increase groundwater recharge.
- The on-site stormwater infiltration proposal would increase groundwater recharge due to the increased volume of runoff from the developed condition of the site

*Applicable Regulations for Stormwater Effects.* Under either City or County stormwater regulations applicable to conceptual land use alternatives 1, 2, 3A or 3B, new development would be required to comply with the Washington Department of Ecology (Ecology) 2004 *Stormwater Management Manual for Eastern Washington* (SWMMEW). Potential groundwater quality impacts related to stormwater can

be effectively mitigated by implementing the runoff treatment and source control Best Management Practices (BMPs) outlined in the Ecology Manual. The intent of source control BMPs is to prevent stormwater from becoming contaminated by reducing the potential for exposure to pollutants. Runoff treatment BMPs are designed to remove pollutants by gravity settling, filtration, biological uptake and/or soil adsorption. Application of appropriate BMPs to stormwater runoff prior to infiltration would be expected to mitigate potential impacts to groundwater quality.

Project construction activities will be required to comply with the conditions of a National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit administered by the Washington Department of Ecology if stormwater or dewatering water is discharged to surface waters of the State. The purpose of the NPDES permit is to protect surface water and groundwater quality from construction-related pollutant discharges. Best management practices (BMPs) required under this permit that would mitigate potential construction-related water quality impacts to groundwater include:

- Cover, contain, and protect from vandalism all chemicals, liquid products, petroleum products, and other materials that have the potential to pose a threat to human health or the environment.
- Provide secondary containment for on-site fueling tanks.
- Clean surfaces immediately after any spill has occurred.
- Perform on-site maintenance, fueling, and repair of heavy equipment and vehicles using spill prevention and control measures.

If Alternative 1 or 2 is selected, the City would conservatively assume that the 330 acres of the site presently outside the City limits are within an aquifer recharge area, and would designate it as such upon annexation. Cle Elum Municipal Code (CEMC) Title 18, Section 18.01.140 specifies design standards for the protection of aquifer recharge areas that may be interpreted to apply to Alternative 1 or 2 of the City Heights development, as follows:

*A. The City should establish land use intensity limitations, particularly residential, in accordance with the availability of City sewer and water services. Cluster development is also encouraged.*

This design standard could bring into question rural utility services that might be introduced with Alternative 3A or 3B, except that these alternatives would be developed under Kittitas County jurisdiction and therefore not subject to regulation under the Cle Elum Municipal Code. Kittitas County does not place the City Heights site within a designated aquifer recharge area (KCC Chapter 17A.08).

*B. The City prohibits the disposal of hazardous materials (materials listed by the Washington State Department of Ecology, Kittitas County Health Department, and Kittitas County Solid Waste Department) within aquifer recharge areas.*

No hazardous materials disposal is proposed as an element of the City Heights Planned Mixed-Use development.

*C. Agricultural activities, including commercial and hobby farms, are encouraged to incorporate best management practices concerning animal keeping, animal waste disposal, fertilizer use, pesticide use, and stream corridor management.*

The City Heights proposal does not include any agricultural activities. Best management practices concerning the disposal of domestic pet wastes and the use of fertilizers and pesticides can be specified in

the Covenants, Conditions and Restrictions (CC&Rs) of the development to be enforced by the Homeowner's Association.

*D. Fertilizer and pesticide management practices of schools, parks, and other nonresidential facilities that maintain large landscaped areas should be evaluated in relation to best management practices as recommended by the Washington State University Cooperative Extension Service.*

Best management practices for the use of fertilizers and pesticides in parks proposed within City Heights can also be specified in the CC&Rs for the development. No schools or other nonresidential facilities that would maintain large landscaped areas are proposed within the City Heights development.

*E. Within aquifer recharge areas, subdivisions, short plats, and other divisions of land shall be evaluated for impacts to ground water quality (including, as needed, evaluation of nitrate loading).*

If Alternative 1 or 2 is selected for implementation, the City of Cle Elum may impose conditions for the protection of groundwater quality.

*F. Requirements that developments and annexations connect to City sanitary sewer and water supply systems.*

Northland Resources, LLC has applied to the City of Cle Elum to annex the City Heights property. If Alternative 1 or 2 is selected for implementation, this development standard would be met.

*G. Underground fuel or storage tanks located within the critical recharge areas shall receive ground water monitoring provisions related to the development to continuously monitor ground water quality. The placement of underground fuel or storage tanks must comply with all applicable state and federal regulations.*

No underground fuel or storage tanks are proposed within the City Heights development.

*Other Possible Mitigation Measures for Stormwater Effects.* If stormwater or dewatering water is infiltrated rather than discharged to surface water, stormwater pre-treatment BMPs (such as gravel filter berms and sediment ponds) could be used to reduce the potential for construction-related impacts to groundwater quality.

Potential impacts to groundwater quantity from construction dewatering could be minimized by limiting dewatering to summer months when groundwater levels would be lower or not present, or infiltrating dewatering water back to the shallow groundwater system.

#### *SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS*

Provided that construction Best Management Practices are implemented and properly maintained, no significant unavoidable adverse impacts to groundwater quality or quantity would be expected to occur during construction. Site development activities would be subject to inspection by agencies that issue construction permits.

Provided that an on-site stormwater management system is designed, constructed, operated, and maintained in accordance with Ecology's 2004 *Stormwater Management Manual for Eastern Washington*, no significant unavoidable adverse impacts to groundwater quantity or quality would be

expected to occur in the developed condition of the project with any of the conceptual land use alternatives.

There are no known downgradient wells that would be affected by the use of wells on the City Heights site, and the water supply proposal would be in compliance with Ecology's "water budget neutral" rule.