Water Quality

Affected Environment

Water Quality

The water quality within the project area is discussed separately for surface water and groundwater.

Surface Water

The corridor crosses 34 ***perennial*** streams and 55 ***ephemeral*** streams. Ephemeral streams contain flowing water only during a portion of the year, typically following snow melt or rain storms. An east-to-west trending ridge spans most of the project area, creating two separate drainages. Streams on the north side of the ridge flow to the north into the Columbia or Spokane rivers. These drainages are located in steep canyons that cross the corridor east of the City of Creston and include Spring, Welsh, Hawk, Stock, Saben, Squaw, Coulee, and Deep creeks. Drainage south of the ridge follows broad, shallow scabland channels from northeast to southwest before eventually reaching Crab Creek and the Columbia River.

No surface water quality problems are reported in the perennial and ephemeral streams that cross the corridor except for Sherman Creek, Deep Creek, and the Spokane River. Sherman Creek, which crosses the corridor between corridor miles 24/3 and 24/4, has impaired water quality due to elevated water temperatures. Deep Creek, which crosses the corridor between corridor miles 39/1 and 39/2, has impaired water quality due to elevated pH (EPA 2002a). In 1998, the Spokane River, which crosses the corridor between corridor miles 77/3 and 77/4, was identified as having impaired water quality due to elevated water temperatures. Water quality is also impaired in the Spokane River due to elevated concentrations of some metals (chromium, lead, and zinc), a plant nutrient (phosphorus), and an industrial contaminant (polychlorinated biphenyls (PCBs)) (EPA 2002b).

Groundwater

Groundwater quality is generally good to excellent throughout the area. Groundwater is the major water source for public water supplies, irrigation, and industrial uses for most of the area. Figure 3-36 shows two major groundwater sources that supply these needs, the Eastern Columbia Plateau Aquifer System and the Spokane Valley-Rathdrum Prairie aquifer.

Aquifers between Miocene basaltic rocks are prominent in the Columbia Plateau basaltic aquifer system. These aquifers consist of numerous flows of basaltic lava. Permeable zones between the lava flows form these aquifer layers. The Columbia Plateau basaltic aquifer system is a major source of water for municipal, agricultural, and domestic uses USGS 1991). ***Intermittent*** stream channels and wetlands of the scablands recharge groundwater to the aquifers. Regional movement of groundwater in the aquifers is generally to the southwest (Garrett A., 1968; and Luzier and Burt, 1974).

The Environmental Protection Agency (EPA) has proposed the Eastern Columbia Plateau Aquifer System as a ***sole source aquifer***. Figure 3-36 shows that the proposed aquifer boundaries would include all lands crossed by the corridor from Grand Coulee to west of the Spokane River and would include a state-recognized groundwater management zone in Douglas County.

The Spokane Valley-Rathdrum Prairie aquifer (see Figure 3-36), predominately glacial-fluvial deposits of sand and gravel (Drost and Seitz, 1978), is the major source of domestic water for Spokane County residents. EPA designated this aquifer a sole source aquifer. Construction projects that receive Federal financial assistance and have the potential to pollute the aquifer are subject to EPA review to ensure contamination does not occur. To protect the aquifer from degradation, Spokane County's Comprehensive Plan restricts activities within the aquifer-sensitive area to those described in the county's water quality management plan.

Adams, Franklin and Grant counties petitioned the Washington State Department of Ecology (Ecology) in 1997 to form the Columbia Basin Ground Water Management Area (GWMA). Ecology signed the order creating the Columbia Basin GWMA on February 4, 1998.

Funded by local, state and federal sources, the GWMA program will consist of water monitoring and characterization, public information and education, and implementation and research. A series of groundwater advisory committees have been formed to oversee the work program and make program recommendations to an executive committee. The executive committee will review the recommendations of the various committees and present a final set of recommendations to the local conservation districts and the Boards of County Commissioners of each county, who report to Ecology.

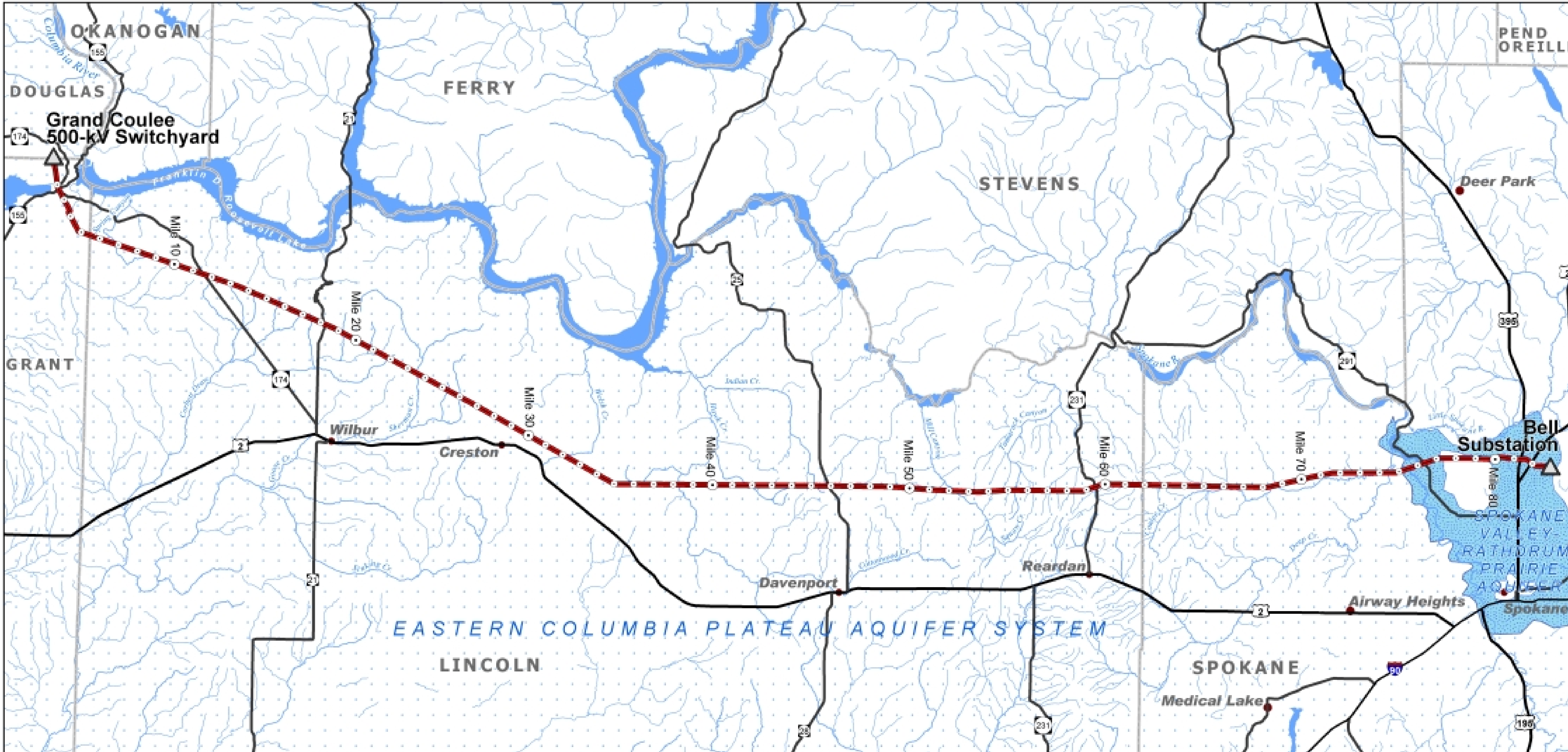
Six agencies have also agreed to participate in the program and in the development and implementation of locally driven solutions to address groundwater quality issues in areas of documented nitrate concern. Local agricultural industry representatives are also supportive of the GWMA program.

Environmental Consequences

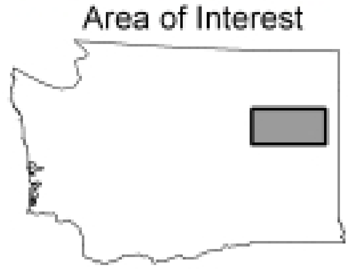
Construction and maintenance of transmission lines can directly and indirectly impact water resources. Disturbance of the ground surface and subsurface, and removal of vegetation during site and right-of-way clearing, access road widening, and structure site preparation increase the risk of soil erosion and ***mass movement***, and may change soil productivity and physical characteristics. Areas most vulnerable include soils prone to erosion, mass movement, or compaction, steep slopes, and areas where extensive access road work and clearing are required.

GRAND COULEE - BELL 500kV TRANSMISSION LINE PROJECT

WATER RESOURCES



Area of Interest



Data Source: U.S.G.S Digital Line Graphs. Bonneville Power Administration Regional GIS Database. All data is best AVAILABLE.

- Mile Marker
- Substation or Switchyard
- Grand Coulee-Bell Corridor
- Major Road
- Sole Source Aquifer
- Designated Sole Source Aquifer
- COUNTY BOUNDARY

SCALE 1:325,000

0 2 4 8 12 16 Kilometers

0 2 4 8 12 16 Miles

FIGURE3-36

Construction of access roads (clearing and widening) and towers may increase runoff, which could impair water quality by increasing turbidity and sedimentation in the streams. Increased runoff into streams could also increase bank erosion and scouring which would increase turbidity and sedimentation of the streams. Increases in sediment and turbidity depend on the degree watersheds are susceptible to erosion. Because of the connection between soil erosion and surface water quality, runoff and erosion controls may be needed to protect water quality.

Sediment introduced into surface waters is a concern where loess-covered upland soils and soils in steep canyons would be disturbed. Sediment yield for loess-covered upland soils is estimated at about 100-250 cubic meters/square km/year (0.2-0.5 acre-feet/square mile/year). Sediment yields in channeled scablands are much lower, decreasing by a factor of 10 (Pacific Northwest River Basins Commission, 1970).

Most impacts to water quality are from construction and would be short term. Impacts are greatest during and immediately after construction until revegetation, drainage, and erosion controls are established. Long-term impacts could be caused by local changes in erosion and runoff rates from road and transmission line construction and clearing. Site restoration and mitigation would reduce both short- and long-term impacts and the effect erosion, sedimentation, and soil compaction could have on other resources such as land use, water, wetlands, vegetation, and fish.

Increased runoff, as a result of construction and maintenance of a transmission line and related facilities, would not likely impact ground water resources because the surface of the aquifers are well below the ground surface and the 12-foot excavation depth for tower footings that would be placed to anchor the new steel towers.

Accidental fuel or oil spills from construction and substation equipment could impact both surface and ground waters. Accidental spills during construction and maintenance activities are usually of small volume and impacts would likely be low, especially to groundwater. Additions at Bell Substation would be designed to prevent contamination of waters in the unlikely event of a major spill or leak. Although the project is located over critical aquifers, groundwater is not likely to be affected. This project would be designed to comply with local ordinances and laws and state water quality programs to protect the quality of aquifers.

Nutrients leached from disturbed agricultural soils could increase nutrient levels in water and stimulate undesirable aquatic plants. Except for the Spokane River, nutrients have not been identified as a water quality problem along the corridor. Land use along the Spokane River within and adjacent to the corridor is not agricultural.

Extensive clearing of streamside vegetation can increases a stream's exposure to sunlight, possibly raising water temperature

Impact Definitions

A **high** impact would occur where a high-quality water body that supports fish, waterfowl, and animal habitat and/or human uses such as drinking water would be extensively altered so as to affect its uses or integrity. A high impact is expected under these conditions.

- Construction with extensive clearing and road building in highly erodible soils near or in high-quality water bodies without appropriate mitigation.
- Removal of extensive areas of riparian vegetation and shade resulting in increased temperature throughout an entire water body.
- When the possibility of oil or chemical spills reaching surface water and groundwater is high, such as in shallow groundwater areas, highly permeable soils, and no secondary spill containment or protective measures are used.

A **moderate** impact would occur where the quality of a water body would be affected locally, or if effects could be partially mitigated. A moderate impact may be expected when:

- Project activities such as erecting structures, widening access roads and clearing vegetation takes place on erodible soils near water bodies with mitigation (construct in dry season and revegetate and stabilize soils)
- Removal of riparian vegetation and shade results in localized temperature increases that affect only the immediate area, but do not jeopardize the temperature profile of an entire water body.
- There is little possibility of chemical spills affecting surface water or groundwater because groundwater table is deep, soils are relatively non-porous, and some spill-response equipment is available. Any pollution that entered water is dispersed and diluted, not affecting overall water quality.

A **low** impact would be expected where impacts to water quality could be almost completely mitigated. A low impact would be expected when:

- Structures or access roads near water bodies are in stable soils on even terrain with little or no vegetative clearing.
- Removal of very small patches of riparian vegetation along water bodies that do not contain fish and with already sparse riparian vegetation
- There is little or no possibility of oil or other pollutants affecting surface water or groundwater; groundwater is deep, soils are relatively non-porous, and facilities have good oil spill containment.

No impact occurs if surface water and groundwater are unaffected by towers and related construction, access roads, or operation and maintenance of the transmission line.

Impacts

Surface Water

Towers and Related Construction

Removal of existing wood pole structures could result in direct and indirect impacts to water quality. The greatest potential of direct impacts to water quality would result from increased erosion potential and chemical spills when wood pole structures are located immediately adjacent to water bodies. Construction equipment used in the removal process could disturb vegetation and soils in the areas around the structures to be removed, possibly resulting in disturbed soils being deposited directly in stream channels. Indirect impacts to surface water quality could result from the removal of existing wood pole structures in upland areas located away from water bodies. Disturbed vegetation and soils in areas around the structures to be removed could increase the potential for wind erosion and overland transport of soils through sheet flow to water bodies. The impact level to water quality from both direct and indirect impacts attributable to removal of existing wood pole structures is expected to be low to moderate.

There would be approximately 420 new tower sites having a disturbance area during construction of 0.5 acres each, resulting in a total area of 210 acres for new tower sites. Construction around tower sites could result in direct and indirect impacts to surface water quality. The greatest potential of direct impacts to water quality would result from increased erosion potential when tower construction sites are located immediately adjacent to water bodies. The removal of vegetation and soil disturbance at these sites has the potential to increase wind and water erosion rates, resulting in sediment deposition directly into stream channels. Erosion rates would most likely return to their current level following construction if plants become reestablished at these sites naturally or through revegetation. The potential for impacts would depend on the timing of construction, the weather conditions, local topography, the erosion potential of soils, the effectiveness of best management practices implemented during construction to minimize soil erosion, and the time required for vegetation cover to become reestablished. The potential for impacts to surface water quality would be greatest in the vicinity of perennial streams (Table 3-14). The potential impact level to water quality in these areas is expected to be low to moderate.

Indirect impacts are also possible to water quality in the vicinity of new tower sites located upland from water bodies. The potential for impacts would depend on the timing of construction, the presence or absence of water in the stream, the weather conditions, local topography, the erosion potential of soils, the effectiveness of best management practices implemented during construction to minimize soil erosion and the time required for vegetation cover to become reestablished. The impact level to water quality would be low.

Table 3-14. Proposed Activities in or Near Perennial Streams (as identified on USGS topographic maps)

Name	Corridor Mile	Proposed Activity
USBR Canal	2-1 to 2/2	None
Unnamed	3-9 to 4-1	None
Unnamed	6-2 to 6-3	None
Unnamed	6-8 to 7-1	Replace existing 4-ft dia. culvert with 6-ft dia. culvert
Unnamed	7-3 to 7-4	None
Unnamed	8-9 to 9-1	None
Unnamed	12-8 to 12-9	New access road
Unnamed	15-6 to 15-7	Access road improvements
Unnamed	15-9 to 16-1	Replace existing culvert with 32 ft. of 3-ft dia. culvert & new access road
Unnamed	16-4 to 16-5	New access road
Unnamed	16-8 to 17-1	Replace existing culvert with 32 ft. of 3-ft dia. culvert & new access road
Unnamed	17-6 to 17-7	None
Unnamed	17-9 to 17-10	None
Unnamed	18-3 to 18-4	New access road
Unnamed	18-8 to 18-9	None
Unnamed	20-1 to 20-2	New 2-ft dia. culvert
Unnamed	20-2 to 20-3	New 2-ft dia. culvert
Unnamed	20-5 to 20-6	None
Unnamed	20-7 to 20-8	None
Unnamed	21-4 to 21-5	None
Unnamed	21-6 to 21-7	None
Unnamed	22-2 to 22-3	None
Unnamed	22-7 to 22-8	None
Sherman Creek	24-3 to 24-4	Improve access to Sherman Draw Rd – add 20 cy of pit run
Unnamed	24-9 to 25-1	None
Unnamed	25-1 to 25-2	None
Unnamed	25-8 to 25-9	None
Trib. to Welsh Creek	31-8 to 32-1	None
Trib. to Welsh Creek	32-3 to 32-4	None
Welsh Creek	32-8 to 32-9	None
Trib. to Welsh Creek	33-5 to 33-6	None
Hawk Creek	39-1 to 39-2	Improve access road to reduce runoff & erosion
Spring Creek	60-8 to 60-9	None
Spokane River	77-3 to 77-4	None

Construction staging areas for the project would be temporary. Depending on their location relative to water bodies, such areas could result in direct and indirect impacts to surface water quality. If new staging areas were created adjacent to streams, or areas that drain directly to streams, they could cause potential impacts to surface water quality associated with erosion, sedimentation, and hazardous material spills. Indirect impacts could occur when such areas are sited upland and away from water bodies. The impact level to water quality from construction staging areas would be low.

Thirty-four conductor tensioning sites occupying approximately one acre each would be located about every 2.5 miles along the transmission line corridor, resulting in a total area of 34 acres. If possible, these sites would not be located within 400 feet of sensitive areas, such as water features. Equipment used for tensioning conductors may result in compaction of soils over each one-acre site, potentially resulting in increased surface runoff. Depending upon their locations relative to water bodies, they could have direct and indirect impacts. The greatest potential for direct impact would occur if conductor-tensioning sites were situated adjacent to streams, or areas that drain directly to streams, resulting in potential impacts associated with erosion, sedimentation, and hazardous material spills. Indirect impacts could occur when such areas are sited upland and away from water bodies. The impact level to water quality from conductor tensioning sites would be low.

Road Construction

The proposed project would involve improvements to existing access roads on and off the right-or-way and the construction of new access roads. Some portions of existing access roads would be improved by grading, improving drainage, and adding gravel to the road surface. In addition, new access roads would be created in locations where the existing access roads pass beneath transmission line towers that do not provide adequate clearance for tower construction vehicles. Access roads would also be relocated in a few sites where the new proposed tower locations are within, or close to, the existing access roads. In some locations, sections of access road would be constructed to ensure that the road remained within the corridor right-of-way. No permanent roads would be constructed in cultivated areas. Only temporary access on farmlands is needed. Road construction activities could have direct and indirect impacts, depending upon the locations of road construction activities relative to water bodies.

Potential impacts that are discussed below are based on a preliminary reconnaissance conducted during June 2002 to evaluate the need for new access roads and improvements to access roads. Approximately 25.5 miles (80.7 acres) of road work would be conducted including construction of 4.9 miles (15.6 acres) of new access roads, 4 miles (12.6 acres) of spur roads, and 16.6 miles (52.5 acres) of access road improvements.

Direct impacts to surface water quality could occur when road construction activities take place in or immediately adjacent to water bodies. The greatest impacts to surface water quality would due to erosion and increased runoff associated with construction of new access road, access road improvements, and construction of spurs to new tower sites. Oil and fuel spills from construction equipment could also adversely affect water quality. In areas where road construction activities occur in stream channels, direct deposition of soil in the stream channel could result in increased turbidity and sedimentation. The potential for impacts would depend on the timing of construction, the weather conditions, local topography, the erosion potential of soils, and the effectiveness of best management practices implemented during construction to minimize soil erosion. Table 3-14 identifies the locations where perennial streams cross the corridor and any locations where new access road or access road improvements would occur. Perennial streams at or near where new access roads are planned or where access road improvements are planned have the greater potential for impacts to surface water quality. The likelihood that water quality would be adversely impacted in these streams is low.

Indirect impacts to surface water quality could occur when road construction activities are located upland from water bodies. As with direct impacts, the potential for impacts would depend on the timing of construction, the presence or absence of water in the stream, the weather conditions, local topography, the erosion potential of soils, and the effectiveness of best management practices implemented during construction to minimize soil erosion. Vegetation removal and soil disturbance associated with road construction could increase erosion rates, resulting in increased wind erosion and surface runoff. Eroded soils could be carried by wind and sheet flow to water bodies, resulting in increased turbidity and sedimentation. The likelihood that water quality would be adversely impacted in these streams is low.

Culvert replacement and installation would be necessary at a number of sites where the transmission line corridor crosses streams or draws. Seventeen new culverts would be installed along the corridor and nine existing culverts would be replaced (see Table 3-15). No culvert work would be conducted in fish-bearing streams. With the exception of one culvert that would be removed and replaced with a drainage dip, all other culverts would be replaced with culverts that have a larger diameter to ensure adequate water passage during high water flow periods.

Culvert placement and the installation of new culverts could cause direct impacts to surface water quality through increased erosion and turbidity. The potential for impacts would depend on the timing of construction, the size of the area disturbed during culvert removal and placement, the weather conditions, local topography, the erosion potential of soils, and the effectiveness of best management practices implemented during construction to minimize soil erosion. Impacts would be also be minimized if construction occurs during dry periods. Thus, the potential impact to water quality due to culvert installation and replacement is expected to be low.

Potential contamination of surface water resources during project construction could result from accidental spills or leaks of petroleum products used by construction equipment. Petroleum products and other chemicals used during construction would not be stored at the project site. To minimize the risk of contamination, best management practices would be implemented. Best management practices include off-site storage of fuels and other chemicals, refueling and maintenance of construction equipment in off-site areas, inspections of construction equipment, and other practices that would limit the potential for release of chemicals at the project site.

Table 3-15. Locations of Proposed Culvert Installations and Replacements

Corridor Mile	New Culvert	Replacement Culvert
6-8 to 7-1		Replace 4-ft dia. with 6-ft dia.
13-1 to 13-2	3-ft diameter	
14-2 to 14-5	4-ft diameter	
14-9 to 15-1		Add 10 ft to 2-ft dia. culvert
15-9 to 16-1		Replace with 32 ft of 3-ft dia. culvert
16-4 to 16-5		Replace with 32 ft of 3-ft dia. culvert
16-8 to 17-1		Replace with 32 ft of 3-ft dia. culvert
20-1 to 20-2	2-ft diameter	
20-2 to 20-3	2-ft diameter	
37-3 to 37-4		2.5-ft dia. culvert with 4-ft dia culvert
39-6 to 39-7		Remove culvert & create rock drainage dip
48-4 to 48-5	Assume 2-ft diameter	
50-1		Replace 50 ft of 2-ft dia. culvert
58-4 to 58-5	Assume 2-ft diameter	
58-5 to 58-6	Assume 2-ft diameter	
58-7 to 58-8	Assume 2-ft diameter	
59-6 to 59-7	Assume 2-ft diameter	
59-7 to 59-8	Assume 2-ft diameter	
59-9 to 60-1	Assume 2-ft diameter	
61-11	Assume 2-ft diameter	
62-9 to 62-10	Assume 2-ft diameter	
63-2 to 63-3	Assume 2-ft diameter	
63-9 to 63-10	Assume 2-ft diameter	
64-2 to 64-3	Assume 2-ft diameter	
64-6 to 64-7	Assume 2-ft diameter	
66-4 to 66-5		Assume culvert replacement
Total	17	9

Operation and Maintenance

Routine operation of the transmission line would not result in direct or indirect impacts to surface water quality.

Maintenance activities could result in direct and indirect impacts to surface water quality. Direct impacts could result from vegetation maintenance including clearing of riparian vegetation, potentially resulting in localized increases in water temperature. The use of herbicides for noxious weed control could potentially impact surface water through overspray, resulting in direct application of herbicides to surface waters. However, if vegetation treatment is necessary, appropriate buffers would be established to prevent herbicides from being deposited in surface waters. Indirect impacts to surface water quality could result from use of access roads to tower maintenance. This could potentially result in erosion and sediment deposition through surface runoff, potentially impairing surface water quality. The impact level to water quality from maintenance activities is expected to be low to moderate.

Groundwater

Towers and Related Construction

The removal of existing wood pole structures, clearing of vegetation at tower construction sites, and the assembly of new towers may result in direct effects to groundwater through localized soil compaction in the vicinity of these activities, thereby reducing infiltration capacity and increasing surface runoff to streams, and spills of petroleum products. It is expected that subsoiling, normal farming, cultivation, cropping, and freeze-thaw cycles would restore soils to pre-construction conditions (Moe et al. 1971). Because no refueling would be conducted in the project area and no chemical storage would occur within the project area, any chemical spills are expected to be of small volume. Given the relatively small area that could potentially be affected, it is expected that impacts to groundwater would be low.

Construction staging areas for the project would be temporary. Impacts to groundwater associated with such areas would be direct and could include soil compaction, erosion, increased surface runoff, and hazardous material spills. However, given the relatively small area that could potentially be affected, it is expected that impacts to groundwater would be low.

Conductor tensioning sites occupying approximately one acre each would be located every 2.5 miles along the transmission line corridor. Potential impacts to groundwater would be direct. Equipment used for tensioning conductors may result in compaction of soils over each one-acre site, potentially resulting in increased surface runoff, erosion, and hazardous material spills. However, given the relatively small area that could potentially be affected, it is expected that impacts to groundwater would be low.

Road Construction

Road construction activities generally would not be expected to indirectly impact groundwater aquifers. Table 3-16 lists potential direct impacts on groundwater attributable to road construction activities. Construction activities should not affect the groundwater characteristics in the area. Potential spills or leaks of petroleum products used by construction equipment would likely be of insufficient volume to present risk to groundwater resources. Petroleum products and other chemicals used during construction would not be stored at the project site. To minimize the risk of contamination, best management practices would be implemented. Best management practices include off-site refueling of construction equipment, off-site storage of chemical, inspections of construction equipment, and other practices that would limit the potential for release of chemicals at the project site. Potential impacts to groundwater from road construction activities are expected to be low.

Table 3-16. Potential Construction Impacts to Groundwater

Construction Activity	Impact Mechanism	Potential Impact
Refueling, equipment maintenance, location of staging area	Hazardous material spills and leaks	Local groundwater contamination
Road construction and maintenance, vegetation removal, soil disturbance	Erosion and sedimentation	Increased groundwater turbidity
Road construction	Interception of subsurface flow	Local modification of hydrology and water quality in wetlands and streams

Operation and Maintenance

Routine operation and maintenance of the transmission line is expected to have no impact on groundwater quality.

Environmental Consequences of the Alternative Action

Water quality impacts are expected to be the same for the alternative action.

Cumulative Impacts

Agricultural practices can be a major contributor to soil erosion and increased sedimentation of streams. On slopes over seven percent, it is estimated that cultivated soils have lost over six inches of topsoil over a 90-year period (U.S. Department of Agriculture, Soil Conservation Service, October 1981). The U.S. Department of Agriculture's Conservation Compliance Program for Highly Erodible Land was instituted to promote soil conservation practices among farm operators. Interference with existing or planned conservation measures could result in increased or continued erosion and subsequent sedimentation. Where practical, new transmission towers would be aligned with existing steel towers; thus, interference with farm conservation efforts is not expected and would likely be improved compared to existing conditions.

Only minor, localized increases in erosion, runoff, and sedimentation may occur from the proposed action. It is expected that these increases would contribute minimally to the area's ongoing soil loss and sedimentation of drainages, thus resulting in minimal impacts to water quality.

Mitigation

Turbidity and sedimentation impacts to water resources would be reduced after temporary and permanent runoff and erosion controls are installed and would continue to diminish after revegetation.

Environmental specialists will visit the site with construction personnel to decide which standard mitigation is best suited to individual locations to reduce erosion and runoff, and stabilize disturbed areas. For areas of concern, mitigation must be undertaken during and after construction. BPA would prepare a stormwater pollution prevention plan as required under the National Pollution Discharge Elimination System General Permit. The following mitigation would be used alone or together to decrease surface runoff and exposed soil:

- Culverts will be properly sized and spaced and BPA would work with the Washington State Department of Fish and Wildlife (WDFW) to comply with hydraulic permit requirements.
- No solid materials, including building materials, would be discharged into waters of the United States unless authorized by a Section 404 permit of the Clean Water Act.
- Off-site tracking of sediment and dust generation shall be minimized.
- Vegetative buffers would be left along stream courses to minimize erosion and bank instability, where possible.
- All excavated material not reused would be deposited in an upland area and stabilized. No used material would be deposited in environmentally sensitive areas such as streams, riparian areas, wetlands, and floodplains.
- Near any water body crossing, including the Spokane River, towers would be set as far back from stream banks as practical.
- Avoid construction within designated wetland and wetland buffers to protect potential groundwater recharge areas by avoiding wetland flagged areas.
- Locate structures, new roads, and staging areas so as to avoid waters of the U.S.
- Limit disturbance to the minimum necessary when working in or next to water bodies.

- Avoid mechanized land clearing within stream channels and riparian areas to avoid soil compaction from heavy machinery, destruction of live plants, and potential alteration of surface water patterns to reduce groundwater turbidity risk.
- Apply erosion control measures such as silt fence, straw mulch, straw wattles, straw bale check dams, other soil stabilizers, and reseeding disturbed areas as required (prepare a Stormwater Pollution Prevention Plan).
- Regularly inspect and maintain project facilities, including the access roads, to ensure erosion levels remain the same or less than current conditions.
- Avoid refueling and/or mixing hazardous materials where accidental spills could enter surface or groundwater.
- Use existing road systems, where possible, to access tower locations and for the clearing of the transmission line alignment.
- Avoid construction on steep, unstable slopes if possible.
- Place tower footings on upland areas and limit access road construction adjacent to stream channels, if possible.

Environmental Consequences of the No Action Alternative

Current levels of disturbance to water quality associated with ongoing maintenance activities for the existing transmission line, substations, and right-of-way would continue under the No Action Alternative. This would include localized soil disturbance and potential sedimentation due to vehicular traffic, transmission structure replacement, vegetation management activities, and access road improvements. In addition, vehicle and machinery use and vegetation management practices could contribute minor amounts of pollutants (e.g., fuel, oil, grease, rubber particulates, woody debris) that could be transported to streams. No new impacts to water quality are expected under this alternative.

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