

## **5.0 ENVIRONMENTAL IMPACTS**

### **5.1 IMPACTS OF THE PROPOSED ACTION**

Impacts from construction and routine operation of the proposed borrow sites are described in the following subsections.

#### **5.1.1 Excavation of Borrow Materials**

No radiological or toxicological exposure to personnel or the general public would be expected to occur as a result of routine excavation operations, either loading or offloading activities. The materials would be handled in a manner consistent with commercial industrial quarry activities. Hanford Site personnel handle these types of materials daily. The use of appropriate personal protective clothing, specific training, and equipment safeguards would be adequate to ensure the safe recovery and handling of this material.

#### **5.1.2 Air Quality**

The Hanford Site operates under WAC 173-400-040, "General Standards for Maximum Emissions," established by the Washington State Department of Ecology, which is designed to protect existing ambient air quality. Small quantities of gaseous, particulate, or thermal discharges would occur from typical construction and operation activities. Sources would include trucks, tractors, and construction equipment. Construction of haul roads within the CERCLA remediation areas, excavation and loading of fill material, and offloading of material may release dust into the air. Wind erosion of exposed surfaces may also contribute to dust emissions at the active borrow locations and haul roads. Dust suppression methods such as watering would be implemented. No substantial increases in overall emissions would be envisioned to result from the Proposed Action. Additionally, no radiological or toxicological exposure to personnel or the general public would be expected to occur as a result of routine excavation operations, either loading or offloading activities.

#### **5.1.3 Water Quality**

Construction and operation activities at the borrow locations may include sprinkling clean water for dust control, as necessary. The source of water used for dust suppression is the existing Hanford Site water system, which meets groundwater quality criteria standards. There would be minimal infiltration to groundwater, and the Proposed Action is not anticipated to impact the Columbia River.

#### **5.1.4 Land Use**

In accordance with land-use designations in the HCP EIS (DOE 1999), the extraction of mineral resources is prohibited in the "Preservation" designation except for remediation activities taking place in the Columbia River Corridor. Remediation activities would continue in the 100 Areas and would be considered a "Pre-existing, Nonconforming use" in the "Preservation" land-use

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designation within the Columbia River Corridor. The 100-F, 100-H, and 100-N Area borrow sources discussed in the Proposed Action are within the “Preservation” area under the HCP EIS; however, extraction of mineral resources at these sites would be an authorized “Nonconforming use” in accordance with remediation activities in the Columbia River Corridor.

The estimated surface area needed to meet projected requirements for fill material (Table 2-1) for the Proposed Action sites at the 100-F, 100-H, and 100-N Areas would be approximately 0.14 km<sup>2</sup> (0.05 mi<sup>2</sup>), 0.025 km<sup>2</sup> (0.01 mi<sup>2</sup>), and 0.18 km<sup>2</sup> (0.07 mi<sup>2</sup>), respectively. The additional areas required for the upgrade or construction of haul roads within the CERCLA remedial action areas are estimated to be 0.01, 0.015, and 0.02 km<sup>2</sup> (0.004, 0.006, and 0.008 mi<sup>2</sup>) for borrow sites at the 100-F, 100-N, and 100-K Areas, respectively. No new roads would be required for the transportation of fill material in the 100-H Area. The total disturbed surface area for the borrow locations and haul roads would be approximately 0.39 km<sup>2</sup> (0.15 mi<sup>2</sup>).

Specific actions that might be considered on a site-specific basis include grading or sloping; surface compaction; stabilization; stockpiling of removed overburden; replacing or adding soil; amending existing soils; planting native vegetation; and diversion, channeling, or collection of precipitation.

### 5.1.5 Ecological Resources

As indicated by ecological resource reviews performed for the proposed borrow sites (Appendix B), no impacts to plant or animal species of concern would be anticipated under the Proposed Action. No disturbance to bald eagles would result under the Proposed Action because the proposed borrow areas are not located in proximity to eagle roosting/nesting areas. Additionally, certain restrictions could be applied as a result of these surveys (e.g., limitations of excavation activities during migratory bird nesting seasons and bald eagle winter roosting seasons). Shorter length of haul distances required under the Proposed Action as compared to Alternative Actions would also minimize impacts to native vegetation between the borrow sites and the reactor areas. Additionally, impacts to native vegetation at the proposed borrow sites and use of haul roads would be offset by mitigation actions upon closure of these borrow sites and their associated support areas.

### 5.1.6 Cultural Resources

As indicated by previous cultural resource reviews in the project location (Appendix B), no cultural resources are known to exist within the proposed borrow areas in the 100-H and 100-N Areas. Letters from the State Historic Preservation Officer and Wanapum were received and concurred with the findings of these reviews. These letters are also included in Appendix B. The location of these proposed borrow sites would not compromise any known traditional cultural places as defined by Native American Tribes. No impacts would be incurred on *Mooli Mooli*, which is isolated from the project area by electrical transmission lines and railroad tracks. However, historic lamp fixtures are present at the proposed 100-F Area borrow location, which would require removal for preservation or appropriate disposition. If cultural resources were to be encountered during operations and/or expansion, all work would stop immediately and the Hanford Cultural Resource staff would be notified.

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### **5.1.7 Aesthetic and Visual Resources**

The construction and operation of borrow sites and associated CERCLA remedial action area haul roads under the Proposed Action would minimize additional impacts to aesthetic and visual resources, because they would be located away from high traffic areas and would not be visible to the general visiting population. The proposed borrow locations are not within the viewshed of the Columbia River or other Traditional Cultural Places defined by the Native American Tribes. Additionally, these areas would be revegetated to blend in with the surrounding terrain.

### **5.1.8 Transportation**

Potential impacts of incident-free, intra-site truck transport of borrow materials have been considered. Typically, incident-free impacts are based on consideration of traffic congestion and pollutants emitted from the vehicles during normal transportation. Occasional interference with the local traffic flow would be mitigated by appropriate administrative controls (e.g., warning signs and traffic markers) and scheduling truck traffic during nonpeak hours. The haul roads used for the Proposed Action would avoid interference with normal traffic flows because they would not use or intersect any primary Hanford Site routes.

The types of pollutants that could be present and might impact the public include sulfur oxides, particulates, nitrogen oxides, carbon monoxide, hydrocarbons, and photochemical oxidants. The shorter driving distances afforded under the Proposed Action would minimize emissions from transportation of borrow material. Vehicle emissions resulting from the Proposed Action are not anticipated to substantially impact the existing air quality on the Hanford Site. Pollution prevention policies and procedures have been established for the Hanford Site. Administrative controls such as vehicle maintenance and the consideration of alternative fuel sources would also minimize potential impacts.

### **5.1.9 Reasonably Foreseeable Accidents Considered and the Potential Effects**

The reasonably foreseeable accidents under the Proposed Action for excavation and use of borrow areas and construction of haul roads within the CERCLA remedial action areas would be typical construction and transportation accidents. Public health and safety would not be affected because the area is closed to the general public. Typical construction hazards would exist; however, the risk of severe accidents would be low because haul roads would be restricted to operational use only.

### **5.1.10 Socioeconomic Impacts**

The Proposed Action would use existing personnel at the Hanford Site; therefore, the Proposed Action would have no socioeconomic impacts.

### **5.1.11 Environmental Justice Impacts**

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Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that federal agencies identify and address, as appropriate, high and disproportionate adverse human health or socioeconomic effects of their programs and activities on minority and low-income populations. Minority populations and low-income populations are present near the Hanford Site (PNNL 2002b). The analysis of the impacts in this EA indicates that there would be minimal impacts to both the offsite population and workforce by implementing the Proposed Action. The offsite health impacts from the Proposed Action analyzed in this EA are expected to be minimal. Therefore, it is not expected that there would be any high and disproportionate adverse impacts to any minority or low-income portion of the community.

### 5.1.12 Cumulative Impacts

In analyzing the impacts of the Proposed Action, increased dust particulate releases to the atmosphere would occur temporarily during the construction and operation of the borrow sites and haul roads. However, these types of air releases are anticipated to be minor, and watering of soil would mitigate dust particulate releases. Waste generation is expected to be minimal.

Because borrow site usage would be concurrent with remedial action activities in the 100 Areas, cumulative impacts to traffic flow may result from the Proposed Action. Occasional interference with normal traffic flow with borrow material transport activities could be mitigated by scheduling truck traffic during nonpeak hours. However, impacts to traffic flow in the 100 Areas under the Proposed Action would be minimized relative to the alternative actions because of the proximity of the borrow sites to the remedial action projects.

No cumulative impacts to natural resources would be expected from the activation or operation of the borrow sites concurrent with remedial action activities in the 100 Areas. Impacts to ecological resources would be expected to be minimal because habitat value is low at all Proposed Action locations. Restoration actions taken to reestablish native species and the shrub community after operation of the borrow sites and haul roads is complete will increase habitat value beyond that of pre-excavation conditions.

Because the Proposed Action would involve only existing personnel, no change is expected in the overall workforce on the Hanford Site or within Benton and Franklin Counties. There would be no adverse socioeconomic impacts or any high and disproportionate adverse impacts to any minority or low-income portion of the community. Because there are no substantial impacts from this Proposed Action, there would be no substantial addition to Hanford Site cumulative impacts.

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### **5.2 IMPACTS FROM ALTERNATIVE ACTIONS**

#### **5.2.1 Impacts from the No-Action Alternative**

Impacts resulting from the No-Action Alternative may include disturbance of native species in and surrounding Pit 18. Additional habitat would be impacted by construction of a haul road from Pit 18 adjacent to F Avenue, and construction of new haul roads from Pit 21 to the 100-H, 100-K, and 100-N Areas. Disturbance of native species would occur in and surrounding Pit 23. Impacts to aesthetic and visual resources would result from siting Pit 18 adjacent to the existing major road (Route 2), and activities sited in Pit 23 would be within the viewshed of Gable Mountain, which is a known religious/ceremonial location identified by Tribal representatives. Impacts to cultural and aesthetic resources could result from the construction of a haul road from Pit 21 to the 100-N Area. The shortest distance from Pit 21 to the 100-N Area is an area containing rounded mounds of river-deposited sand and cobble known as *Mooli Mooli*, which is a culturally significant landform and a protected geological resource of the Hanford Reach National Monument related to the Missoula ice age floods. To avoid such impacts under the No-Action Alternative, Route 2 North, Route 4 North, and Route 1 would be used to transport materials to the 100-N and 100-K Areas.

Impacts resulting from the No-Action Alternative would also include increased heavy truck traffic on Route 1, Route 2 North, and Route 4 North, which would impact existing traffic conditions and degrade roads. Increased haul distances to the 100-F, 100-H, 100-K, and 100-N Areas from Pits 18, 21, and 23 as compared to the shorter haul distances from the 100-F, 100-H, and 100-N Area Proposed Action locations would increase impacts to air quality and transportation resources and risks. Mitigation actions would be required to prevent impacts to ecological resources associated with Pits 21 and 23.

#### **5.2.2 Impacts from Using Pits 19 and 20 and Construction of New Haul Roads to Supply Fill Material for the 100-F and 100-H Areas**

Impacts resulting from this Alternative Action would include potential disturbance to cultural and ecological resources. Longer haul distances to the 100-F Area from Pits 19 and 20 as compared to the shorter haul distances of the Proposed Action locations would increase impacts to air quality, transportation resources, and risks. Availability of these sites would be limited to times of the year when bald eagles were not present. Mitigation actions would be required to prevent impacts to cultural and ecological resources associated with Pits 19 and 20.

#### **5.2.3 Impacts from the Use of Other Onsite Borrow Material Sources**

Impacts resulting from the use of other onsite borrow material sources would include increased transportation impacts resulting from longer haul distances, increased fuel consumption, and increased traffic on prominent Hanford Site roadways, increasing the likelihood of a vehicular accident.

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Potential impacts to natural resources would include impacts to sensitive plant species in and around the Alternative Action borrow sites. Expansion of Pit 35 would potentially impact the White Bluffs Road, which is an identified historical/cultural pre-Hanford feature.

### **5.2.4 Impacts from the Procurement of Offsite Materials**

Potential transportation impacts would increase with the amount proportional to the volume of materials procured from offsite. The use of offsite borrow materials would result in increased public exposure to vehicular exhaust emissions, increased fuel consumption due to greater travel distance, and more road miles generally open to the public, which could increase the likelihood of a vehicular accident. Impacts to offsite ecological and cultural resources may occur under this alternative.