

1.0 INTRODUCTION

Historical mining practices in the Coeur d'Alene basin in Idaho have resulted in sediment and soil contamination along the shoreline of the Spokane River (the river) in Washington, between the Washington – Idaho state line and Upriver Dam. Lead, arsenic, cadmium, zinc and other contaminants exceed human health- and ecological-based criteria at multiple locations.

Although there are impacts from historic mining practices throughout this reach of the Spokane River, the Washington State Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA) have prioritized nine recreational areas for cleanup: Starr Road, Island Complex, Murray Road, Harvard Road North, Barker Road North and South, Flora Road, Myrtle Point, and the Islands Lagoon. These recreational areas are shown in Figure 1. These sites were selected out of a larger group of shoreline locations based on contaminant levels, recreational use, and ecological significance.

With funding from the Washington State Legislature, Ecology is proceeding with accelerated cleanup actions at Island Complex, Murray Road, and Harvard Road North. In addition, Ecology is conducting additional sampling and characterization at Barker Road South, Flora Road, Myrtle Point, and the Islands Lagoon. EPA was the lead agency for the cleanup at Starr Road, which was completed with assistance from Ecology in late September 2006. Cleanup at Barker Road North will likely be achieved in conjunction with construction of a new bridge by the City of Spokane Valley.

This Remedial Design (RD) Work Plan addresses the remedial actions at the Island Complex, Murray Road, and Harvard Road North sites. These sites have been prioritized due to contaminant concentrations and potential risks posed to ecological receptors and recreational users. The objective of this RD Work Plan is to provide the framework and schedule for developing the design documents, including plans and specifications, for the selected remedy at these three sites. Remedial actions at the remaining 5 sites are expected to be addressed via addendum to this Work Plan, likely in 2007.

1.1 Site Location and Description

1.1.1 Island Complex

The Island Complex recreational area encompasses approximately 9.5 acres and is located at approximate river mile 95.0 about 1.0 mile west of the Idaho State line in Spokane County, Washington (Figure 2). The site is located on land owned by the State of Washington and managed by the Washington Department of Natural Resources (DNR), and can be accessed via a 0.5-mile trail through parkland owned by Spokane County. The trailhead is located at a parking lot adjacent to the river near Exit 299 on I-90.

The site appears to be comprised of a remnant detached portion of floodplain that is flanked by fluvial bar deposits and is separated from the south bank of the Spokane River by a seasonal channel (Figure 3). The seasonal channel is dry during periods of low flow in the late summer and fall, and becomes increasingly wetted with higher flows in the winter and spring. The seasonal channel may have captured a remnant channel section of Cable Creek, which currently joins the Spokane River from the southeast near the head of the island, after passing through a culvert under the Centennial Trail (Inter-Fluve, 2006).

1.1.2 Murray Road

The Murray Road site encompasses approximately 1.5 acres and is located on the north side of the Spokane River at approximate river mile 94.3 about 1.7 miles west of the Idaho State line in Spokane County, Washington (Figure 4). The Murray Road Site is adjacent to River Road and is associated with State Park recreational land. The site is accessed via a recreational trail that originates on River Road.

The area of concern at the Murray Road site is characterized by a backwater area with the presence of fine-grained sediments. During periods of moderate to high flow, the area of concern is submerged; however, it is exposed during periods of low flow in the summer and fall. Surrounding the site to the north is a small area of trees surrounded by small brush located on the steep slope directly adjacent to the Site to the north. In the upriver direction of the Site is a recreational trail area that is sparsely covered by trees and small brush, which the river flows

through during times of high flow. The river bar area bordering the fine-grained depositional area to the south, acting as a barrier to the main flow of the Spokane River, is heavily armored with river cobble. It is not expected to require remedial action.

1.1.3 Harvard Road North

The Harvard Road North recreational area encompasses approximately 3 acres and is located at approximate river mile 92.7 about 3.3 miles west of the Idaho state line in Spokane County, Washington (Figure 5). The site is located on Washington State Parks and Recreation land that is easily accessed via a short gravel driveway leading directly off Harvard Road to the west, just north of the Spokane River.

The site is comprised of a gently sloping sand and gravel section on the north bank of the river. The site experiences relatively low-velocity hydraulic conditions due to its location just upstream of a cobble outcropping and on the inside of a bend in the river. Under low-flow conditions, river flow is predominantly along the south bank, with the north bank largely dry or under shallow water. Under high-flow conditions (approximately the annual flood), velocity profile data indicate relatively low river velocities along the north bank (2 to 4 feet per second [fps]) compared with the main channel flow velocity along the south bank (8 to 10 fps).

1.2 Site Background

The Bunker Hill Mining and Metallurgical Complex National Priorities List Site (Bunker Hill) is located in Northern Idaho's Coeur d'Alene River Basin. It was listed on the National Priorities list in 1983. Since the late 1880s, mining activities in the Upper Coeur d'Alene Basin contributed an estimated 100 million tons of mine waste to the river system. Until as late as 1968, tailings were deposited directly in the river. Over time, these wastes have been distributed throughout more than 150 miles of the Coeur d'Alene and Spokane Rivers, lakes, and floodplains (EPA, 2006).

In 2004, the U.S. Army Corps of Engineers (USACE) conducted sampling at the Starr Road and Island Complex sites to determine the extent of contamination and to collect field data for remedial design and cleanup activities. The results of the investigation are documented in the

Washington Recreational Sites, Starr Road and Island Complex Field Sampling Report, dated January 7, 2005 (USACE, 2005). In addition, the Spokane Regional Health District issued a health advisory warning against frequent contact with contaminated sediment (SRHD, 2006).

Ecology has prioritized the remediation of the Island Complex recreation area primarily due to the presence of lead above the human health action level in the Bunker Hill Operable Unit 3 (OU3) Record of Decision (ROD). The site is relatively accessible for recreational use by the public and public use is likely to increase in the near future. In addition, the release of contaminated sediments from the site to the Spokane River pose a risk to wildlife, notably rainbow trout that spawn nearby.

Murray Road is a priority site due to the potential risk posed to ecological receptors and recreational users. A soil sampling effort conducted by Ecology in July 2006 identified the presence of arsenic and lead at concentrations that exceed the respective human health action levels in the Bunker Hill OU3 ROD (Table 1). Soil samples collected in July 2006 also identified the presence of cadmium, lead, and zinc at levels above preliminary site-specific ecological risk thresholds developed by Ecology for screening purposes (Table 1).

Harvard Road North has been identified by Washington Department of Fish and Wildlife (WDFW) as a key spawning site for rainbow trout. The relatively low energy hydraulic conditions along the north bank of the river have resulted in sand and gravel deposits that provide ideal spawning habitat. An intensive soil sampling effort by Ecology in the fall of 2005 identified the presence of zinc and cadmium in the areas used for spawning at levels significantly above preliminary ecological risk thresholds developed by Ecology (Table 1). The site is also a heavily used recreational access point that includes a gravel boat launch area. Ecology's sampling efforts also identified the presence of arsenic in certain areas of the site exceeding human health action levels presented in the ROD.