# BRIEFING SHEET

# RESULTS OF SPOKANE RIVER SEDIMENT SAMPLING FROM THE IDAHO-WASHINGTON BORDER DOWNSTREAM TO HANGMAN CREEK

**COEUR D'ALENE BASIN REMEDIAL INVESTIGATION/FEASIBILITY STUDY**
**FEBRUARY 2001**

The United States Environmental Protection Agency (EPA), in cooperation with the Washington Department of Ecology and the United States Geological Survey (USGS), sampled sediments on beaches and banks of the Spokane River in the fall of 2000. The work was conducted following sampling procedures found in EPA's *Field Sampling Plan Addendum (FSPA) No. 18*.

## Why We Sampled

In the fall of 1999, a limited number of sediment samples were collected along the lower Spokane River under FSPA No. 15. Some of these samples contained metals concentrations higher than those found naturally. In the fall 2000 sampling effort, samples were collected under FSPA No. 18 from the state line to Hangman Creek on the western edge of Spokane. Sampling locations included some of the same beaches sampled under FSPA No. 15, as well as additional beaches. The purpose of resampling the original beaches was to confirm the sampling results. The purpose of sampling new beach locations was to look at either additional areas where people recreate, or areas that provide important habitat for plants and animals. EPA wants to know the metals concentrations that people, plants, and animals might be exposed to in these locations.

## What Areas Were Sampled

Beaches and riverbanks were sampled at 25 areas along the lower Spokane River between August 28 and September 1, 2000. Figure 1 shows these areas, along with their average lead concentrations. Areas that were sampled during FSPA No. 15 are also included on Figure 1.

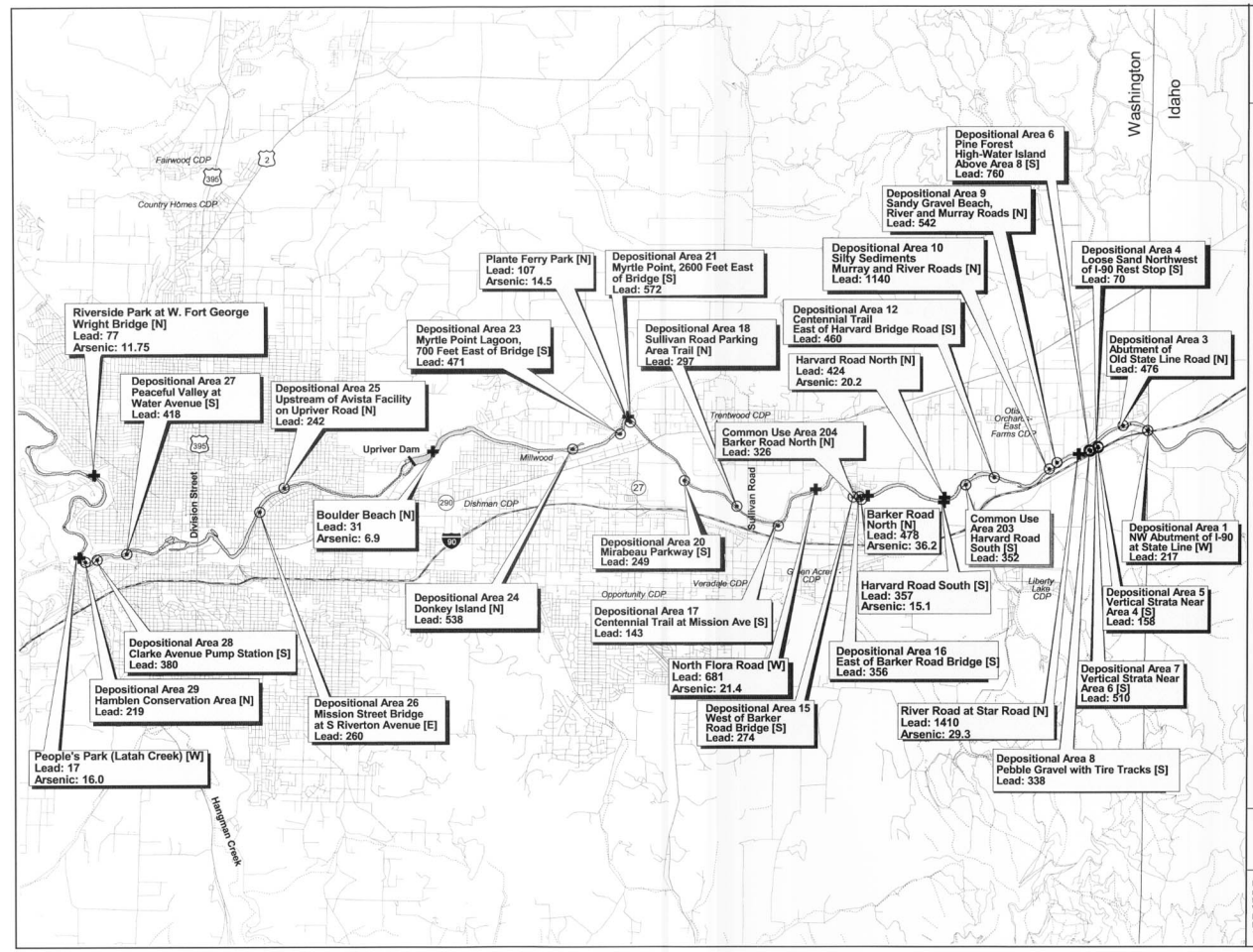
## How Areas Were Sampled

To measure the metal concentrations in the sediments, EPA used an instrument that can read metals concentrations in the field. The instrument is called a field-portable x-ray fluorescence (FPXRF) detector. The FPXRF is capable of easily detecting lead and zinc at the concentrations of interest. EPA also submitted a percentage of samples measured by the FPXRF detector to a conventional chemical laboratory for additional analysis. Then the metals concentrations from the two different methods were compared, to check the accuracy of the FPXRF analysis. The results showed that the concentrations produced by the two methods were comparable.

## Results of Sampling

The average concentrations of lead and zinc found at each location are shown in Table 1. The concentrations (milligrams per kilogram [mg/kg], or parts per million) are compared to screening levels used in the human health risk assessment for the Spokane River (URSG and CH2M HILL 2000). Screening levels for protection of human health are 700 mg/kg for lead and 17,109 mg/kg for zinc.

Lead concentrations from FSPA No. 18 samples were similar to those from FSPA No. 15 samples. Average lead concentrations upstream of Upriver Dam from FSPA No. 15 ranged from 107 mg/kg to 1,410 mg/kg, with one of six locations having an average concentration above the screening level of 700 mg/kg (URSG and CH2M HILL 2000).




# Figure 1
## Spokane River Beach and Depositional Area Sampling Sites (Combined FSPA Nos. 15 & 18 Data)

### LEGEND

Boulder Beach
Lead: 31
Arsenic: 6.9

Site Name
Lead Concentration (Average - mg/kg)
Arsenic Concentration (95% UCL - mg/kg) see Note 3

- Approximate Depositional Area Location - FSPA No. 18
- Approximate Beach Site Location - FSPA No. 15
- Stream
- Road
- Highway/State Route
- Interstate 90
- State Line
- [N] North River Bank Side


Location Map

### NOTES

1) The Washington Road and Stream data used are from the 1995 Census TIGER/Line files and EPA Region 10. The Idaho Road and Stream data are from the Coeur d' Alene Tribe. Slight differences in resolution and representation can be detected at the WA/ID state line.

2) Base map coverages obtained from BLM, the Coeur d' Alene Tribe, EPA Region 10, Spokane County, and the Census.

3) 95% UCL - 95% upper confidence level in mg/kg

4) FSPA No. 15 results from CLP laboratory
FSPA No. 18 results from FPXRF

N

Scale 1:110,000

0 1 2 Miles

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Coeur d' Alene Basin RI/FS
Briefing Sheet FSPA No. 18
Spokane River, Washington

EPA REGION 10

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11/16/2000

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: January 16, 2001

Average lead concentrations from the current sampling (FSPA No. 18) ranged from 70 mg/kg to 1,140 mg/kg. Two of 25 areas sampled had average lead concentrations greater than 700 mg/kg: Depositional Area 6 had a concentration of 760 mg/kg and Depositional Area 10 had a concentration of 1,140 mg/kg (see Figure 1). Both of these locations are found between Harvard Road bridge and the Idaho state line. A health advisory issued by the Spokane Regional Health District has been established from the Idaho-Washington state line to Upriver Dam and encompasses these two locations. Signs posted along this portion of the river alert the public to elevated levels of lead in the beach soils and describe ways the public can minimize the risk of lead exposure.

The results of the latest sampling effort were used to support an evaluation of cleanup options in the draft Coeur d'Alene Basin Feasibility Study, which is currently out for public review.

**Reference**

URSG and CH2M HILL. 2000. *Screening Level Human Health Risk Assessment for Nonresidential Receptors, Revision 2, Spokane River, Washington. Coeur d'Alene Basin RI/FS.* Prepared for U.S. Environmental Protection Agency Region 10. Seattle, Washington. September 2000.

**Table 1. Average Concentrations of Lead and Zinc Measured in Spokane River Sediments**

| Area from FSPA No. 18* | Average Concentration Lead (mg/kg) | Average Concentration Zinc** (mg/kg) |
|---|---|---|
| Northwest Abutment of I-90 at State Line Road *(Area 1)* | 217 | 3,180 |
| Abutment of Old State Line Road *(Area 3)* | 476 | 1,890 |
| Loose Sand Northwest of I-90 Rest Stop *(Area 4)* | 70 | 524 |
| Vertical Strata Near Area 4 *(Area 5)* | 158 | 967 |
| Pine Forest High-Water Island Above Area 8 *(Area 6)* | **760** | 2,990 |
| Vertical Strata Near Area 6 *(Area 7)* | 510 | 2,710 |
| Pebble Gravel with Tire Tracks *(Area 8)* | 338 | 1,480 |
| Sandy Gravel Beach, River and Murray Roads *(Area 9)* | 542 | 2,530 |
| Silty Sediments, River and Murray Roads *(Area 10)* | **1,140** | 2,940 |
| Centennial Trail East of Harvard Bridge Road *(Area 12)* | 460 | 2,040 |
| West of Barker Road Bridge *(Area 15)* | 274 | 1,440 |
| East of Barker Road Bridge *(Area 16)* | 356 | 2,400 |
| Centennial Trail at Mission Avenue *(Area 17)* | 143 | 1,140 |
| Sullivan Road Parking Area Trail *(Area 18)* | 297 | 1,890 |
| Mirabeau Parkway *(Area 20)* | 249 | 1,150 |
| Myrtle Point, 2,600 Feet East of Bridge *(Area 21)* | 572 | 1,960 |
| Myrtle Point Lagoon, 700 Feet East of Bridge *(Area 23)* | 471 | 2,100 |
| Donkey Island *(Area 24)* | 538 | 2,060 |
| Upstream of Avista Facility at Upriver Road *(Area 25)* | 242 | 2,320 |
| Mission Street Bridge at S. Riverton Avenue *(Area 26)* | 260 | 1,550 |
| Peaceful Valley at Water Avenue *(Area 27)* | 418 | 1,960 |
| Clarke Avenue Pump Station *(Area 28)* | 380 | 1,540 |
| Hamblen Conservation Area *(Area 29)* | 219 | 1,240 |
| Harvard Road South** *(Area 203)* | 357 | 1,980 |
| Barker Road North** *(Area 204)* | 326 | 3,340 |

* See Figure 1

** Estimated average at the 95% upper confidence limit.

**Bold** - Average concentration exceeds screening level.
Screening levels are 700 mg/kg for lead and 17,109 mg/kg for zinc.