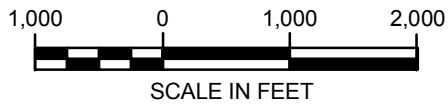


SOURCE: BONNEVILLE DAM (451218) 7.5 MINUTE USGS TOPOGRAPHIC MAP



VICINITY MAP



MARCH 2007  
25695254.00009

BRADFORD ISLAND RI/FS  
CASCADE LOCKS, OREGON

FIGURE 1-1

O:\25692709\_USACE\53-F0072173.00\_Bredford\Omaha\_DT-01\RF-FS Work Plan\PD Management Plan\Figures\Fig 1-2.dwg Apr 09, 2007 - 11:58am



- Legend**
- Highways
  - Roads
  - Trails
  - Railroads
  - Parking

MAP SOURCE: U.S. ARMY CORPS OF ENGINEERS

**BONNEVILLE DAM FEATURES**



MARCH 2007  
2569254

BRADFORD ISLAND RI/FS  
CASCADE LOCKS, OR

**FIGURE 1-2**

C:\25692709\_USACE\53-F0072\73.00\_Bradford\1\Omaha DT-01\RI-FS Work Plan\PD Management Plan\Figures\FIG 1-3.mxd



**DETAIL**

	JOB No. 25695254.00009	DESIGNED: MN	PROJ. ENGINEER: -		BRADFORD ISLAND RI/FS	DRAWING NUMBER: <b>FIGURE 1-3</b>			
	Base Map provided by USACE	DRAWN BY: HC	APPROVED BY: JTW				111 S.W. Columbia, Suite 1500 Portland, Oregon 97201 (tel) 503-222-7200 (fax) 503-222-4292	CASCAD LOCKS, OREGON	GIS FILE NUMBER: FIG 1-3.mxd
		CHECKED BY: -	DATE: MARCH 2007						
Site Map									

o:\25692709\_USACE\55-F0072173.00 Brford\Omaha DT-01\RI-FS Work Plan\PD Management Plan\Figures\Fig 3-1.dwg Apr 09, 2007 - 11:54am



MAP SOURCE: U.S. ARMY CORPS OF ENGINEERS  
NOT TO SCALE

**BONNEVILLE DAM IN RELATIONSHIP TO OTHER DAMS**



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25692709

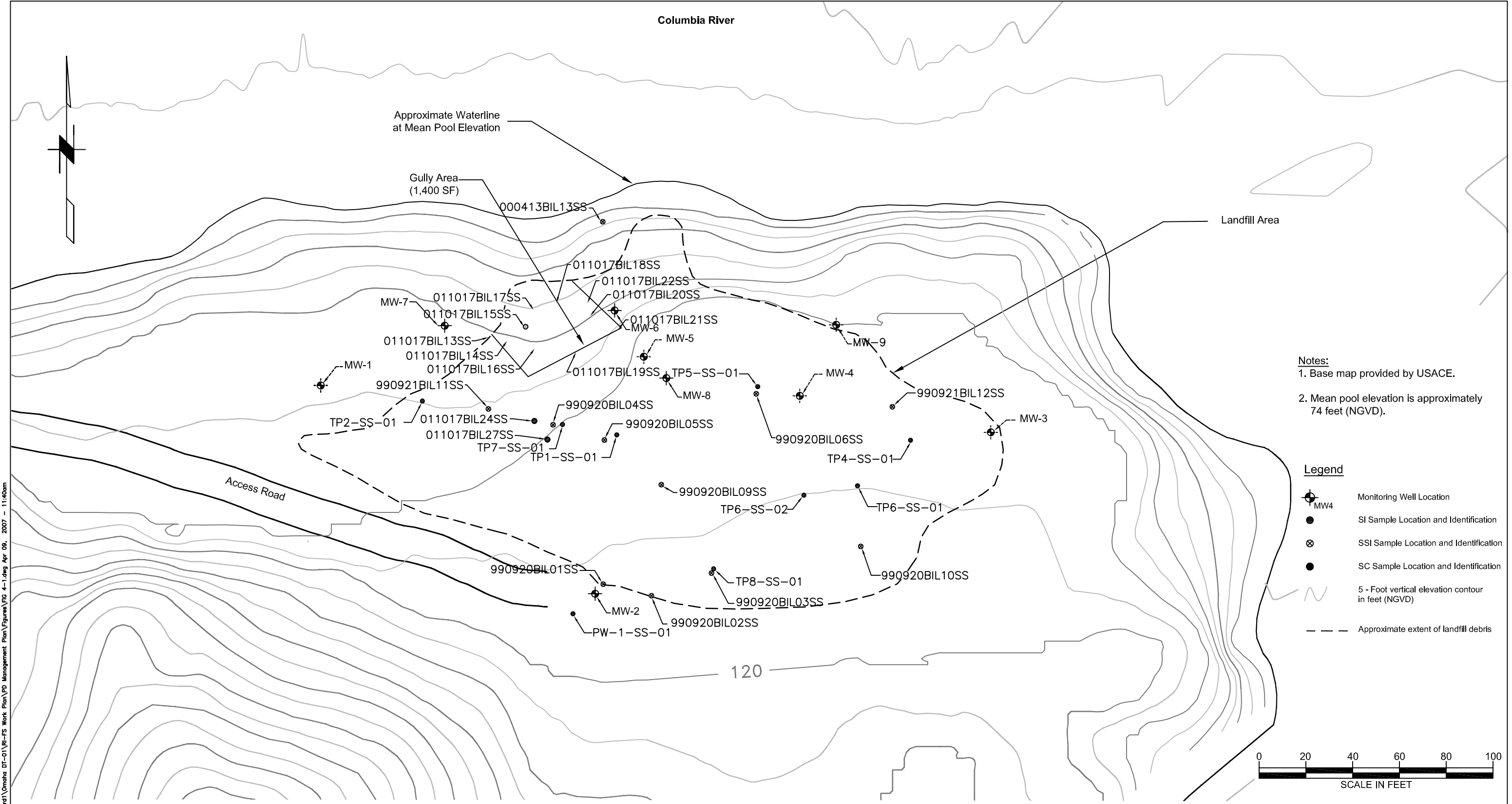
BRADFORD ISLAND RI/FS  
CASCADE LOCKS, OREGON

**FIGURE 3-1**

O:\26692709 USACE\53-F0072173.00 Bradford\1\Omaha DT-01\RI-FS Work Plan\PD Management Plan\Figures\FIG 3-2.mxd



Base Map provided by USACE	JOB No. 25692709	DESIGNED: MN	PROJ. ENGINEER: -	111 S.W. Columbia, Suite 1500 Portland, Oregon 97201 (tel) 503-222-7200 (fax) 503-222-4292	BRADFORD ISLAND RI/FS	Water Supply Well Location Robins and Bradford Island	DRAWING NUMBER: FIGURE 3-2		
	DRAWN BY: JA	APPROVED BY: JTW	CHECKED BY: -		DATE: MARCH 2007		GIS FILE NUMBER: FIG 3-2.mxd	SHEET:	REV.
	CASCADE LOCKS, OREGON								



- Notes:**
1. Base map provided by USACE.
  2. Mean pool elevation is approximately 74 feet (NGVD).

- Legend**
- Monitoring Well Location
  - SI Sample Location and Identification
  - SSI Sample Location and Identification
  - SC Sample Location and Identification
  - 5-Foot vertical elevation contour in feet (NGVD)
  - Approximate extent of landfill debris

**LANDFILL FOOTPRINT AND THE PREVIOUS SAMPLING LOCATIONS**

MARCH 2007  
25695254

BRADFORD ISLAND RI/FS  
CASCADE LOCKS, OREGON

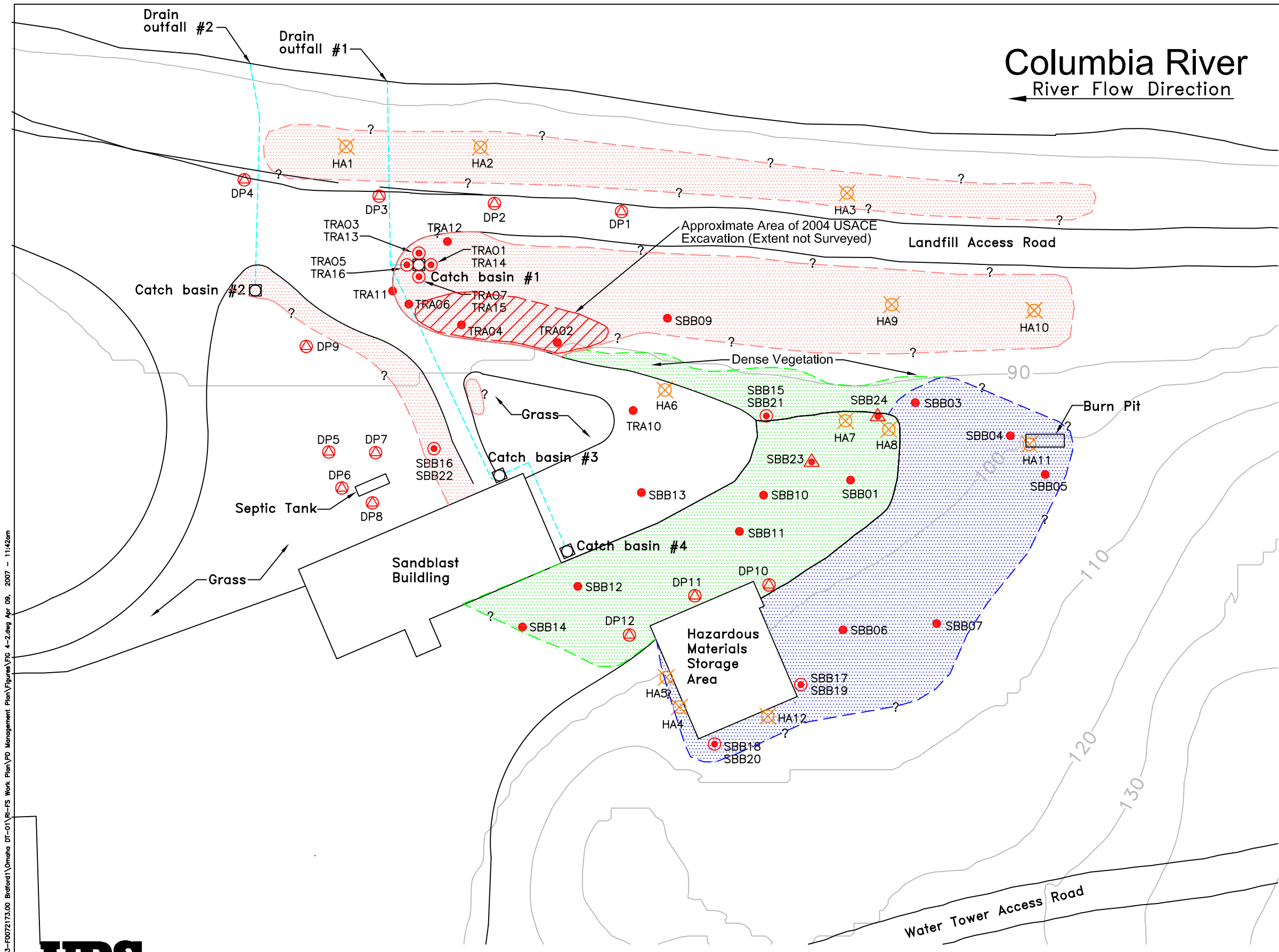
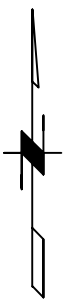
**FIGURE 4-1**



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# Columbia River

River Flow Direction ←



## LEGEND

- 10-foot vertical contour in feet above mean sea level
- Hand Auger Location
- Geoprobe Boring location
- Pavement surface sandblast grit sample location (URS, 2002a)
- Sandblast grit sample location (URS, 2002a)
- Collocated surface and subsurface sample location (URS, 2002a)
- Area 1- Approximate area of 9,277 square feet
- Area 2- Approximate area of 8,498 square feet
- Area 3- Approximate area of 15,816 square feet

Base map Source: Final Site Inspection Report  
Bradford Island Landfill, Cascade Locks,  
Oregon (Tetra Tech, 1998)



### SANDBLAST AREA, PREVIOUS SAMPLING LOCATIONS AND EXTENT OF SANDBLAST GRIT

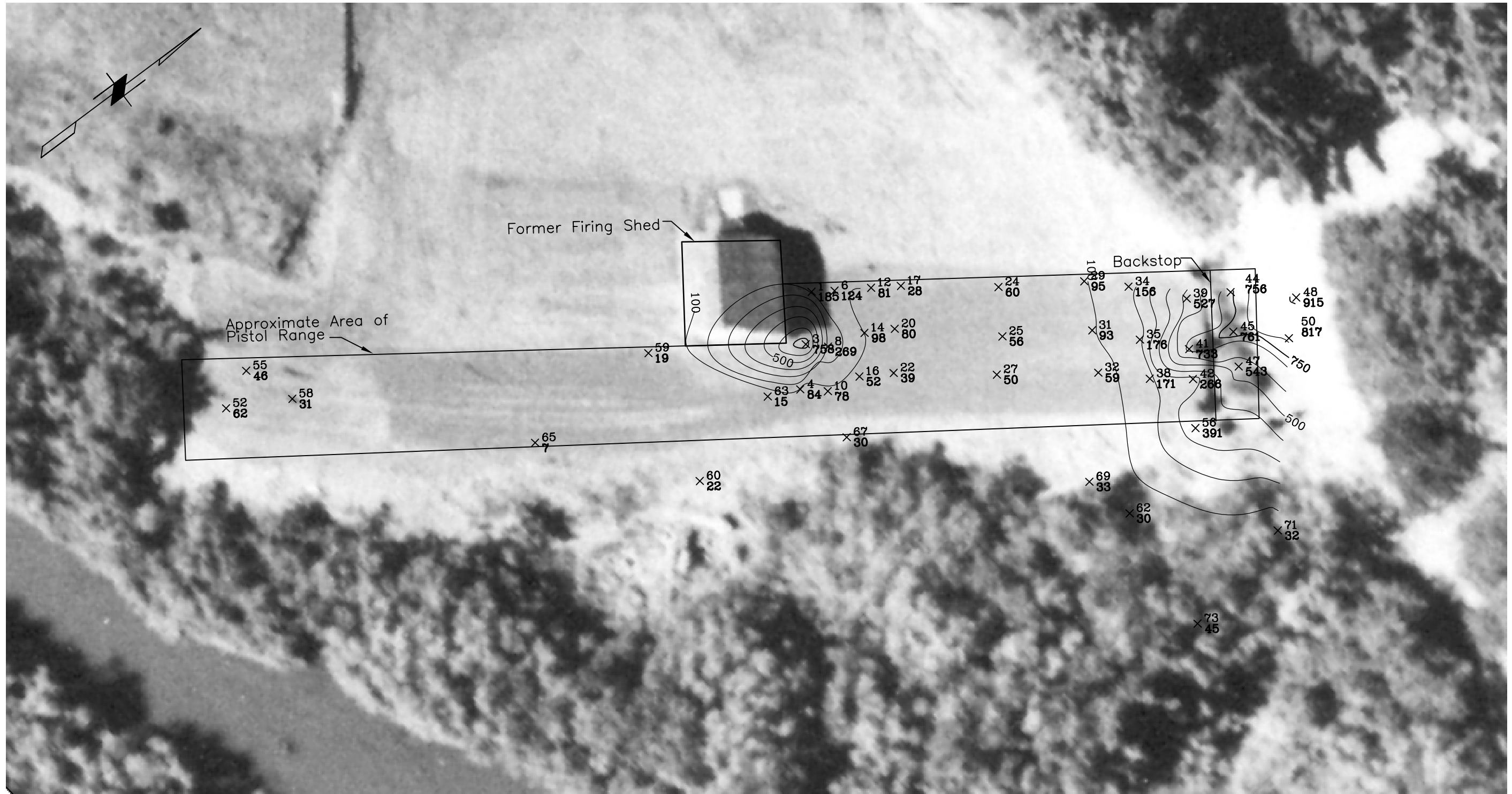
MARCH 2007  
25695254

BRADFORD ISLAND RI/FS  
CASCADE LOCKS, OREGON



FIGURE 4-2

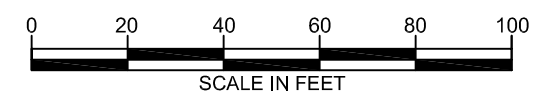
O:\25692709 USACE\3-FO072173.00 Briefing\Omaha DT-01\RI-FS Work Plan\PD Management Plan\Figures\Fig 4-2.dwg Apr 09, 2007 - 11:42am



PHOTOGRAPH SOURCE: 1958 AERIAL PHOTOGRAPH PROVIDED BY PORTLAND DISTRICT - U.S. ARMY CORPS OF ENGINEERS

X65  
7 SURFACE SOIL SAMPLE LOCATION AND IDENTIFICATION  
SOIL-LEAD CONCENTRATION IN MILIGRAMS PER KILOGRAM  
—100— SOIL-LEAD CONCENTRATION CONTOUR INTERVAL

**PISTOL RANGE - SAMPLE LOCATIONS AND SURFACE SOIL-LEAD CONCENTRATIONS**



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BRADFORD ISLAND RI/FS  
CASCADE LOCKS, OREGON

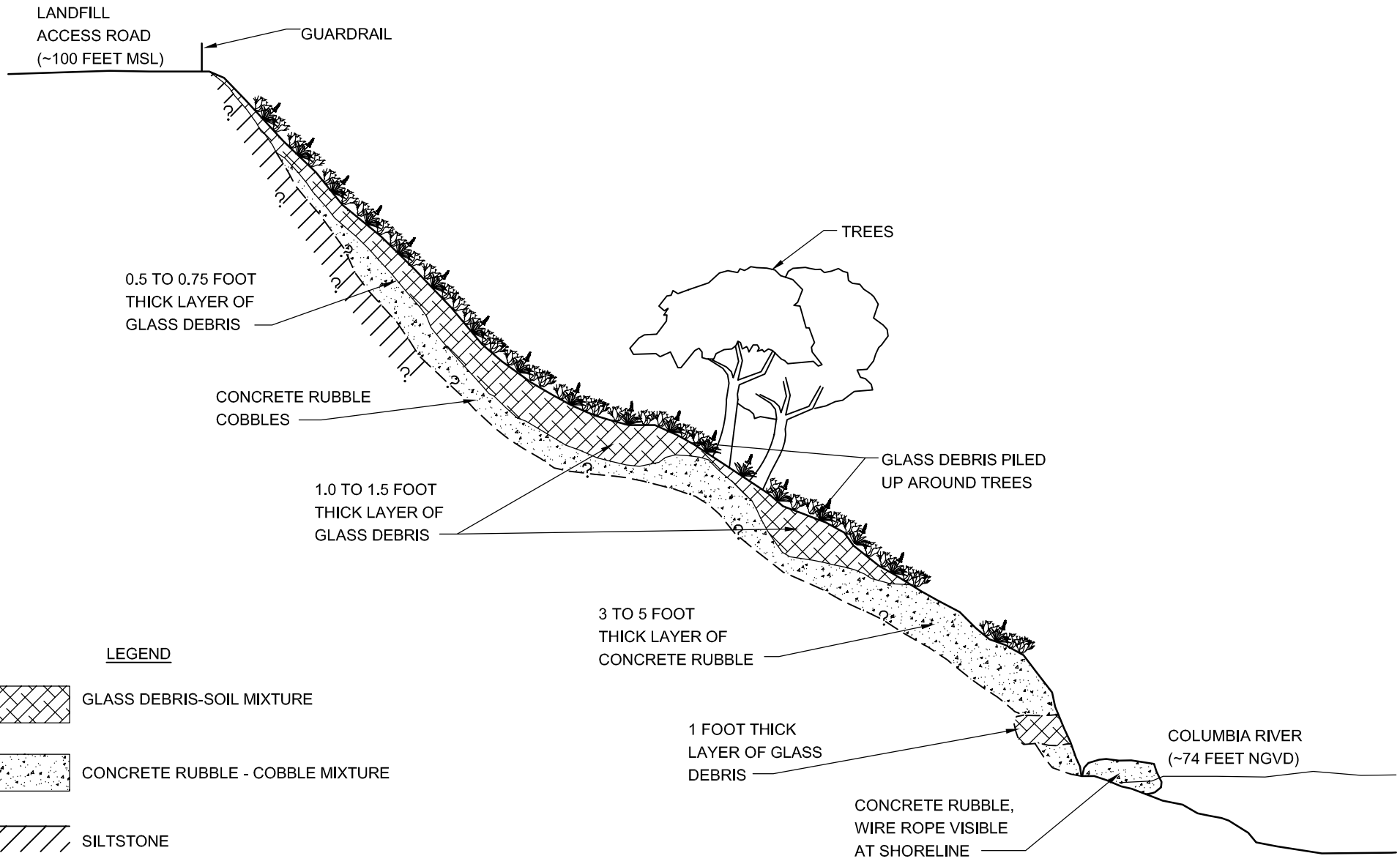


**FIGURE 4-3**

c:\25692708 USACE\53-F0072173.00 Briefing\Omaha DT-01\RI-FS Work Plan\PD Management Plan\Figures\FIG 4-3.dwg Apr 09, 2007 - 11:42am



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**BULB SLOPE CROSS SECTION SCHEMATIC**



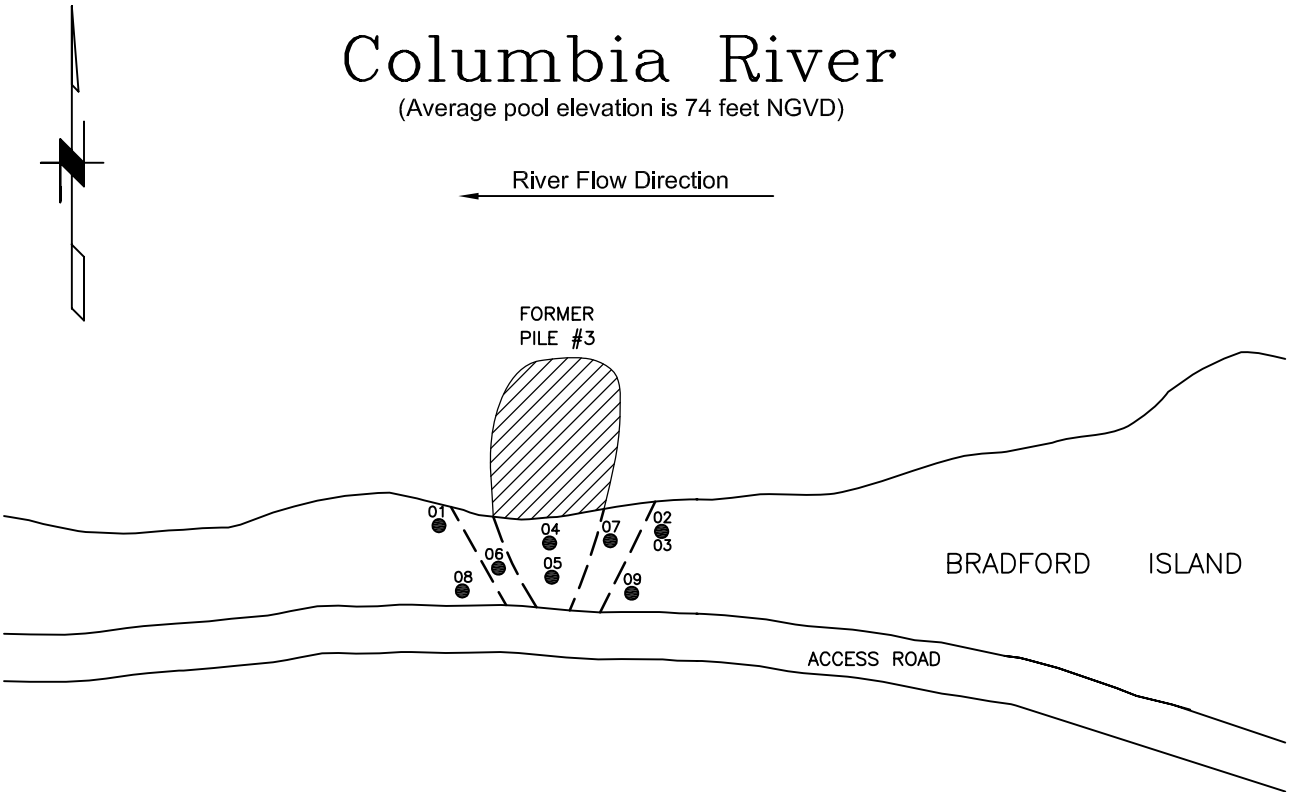
MARCH 2007  
25695254

BULB SLOPE  
BRADFORD ISLAND RI/FS  
CASCADE LOCKS, OR



**FIGURE 4-4**

# Columbia River

(Average pool elevation is 74 feet NGVD)

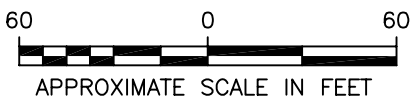


## LEGEND

-  EXTENT OF IN WATER DEBRIS PILE (DEBRIS REMOVED MARCH 2002)
-  01 SAMPLE LOCATION AND IDENTIFICATION

## NOTES

HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1927 (NAD27),  
STATE PLANE COORDINATE SYSTEM (SPCS), OREGON NORTH ZONE.

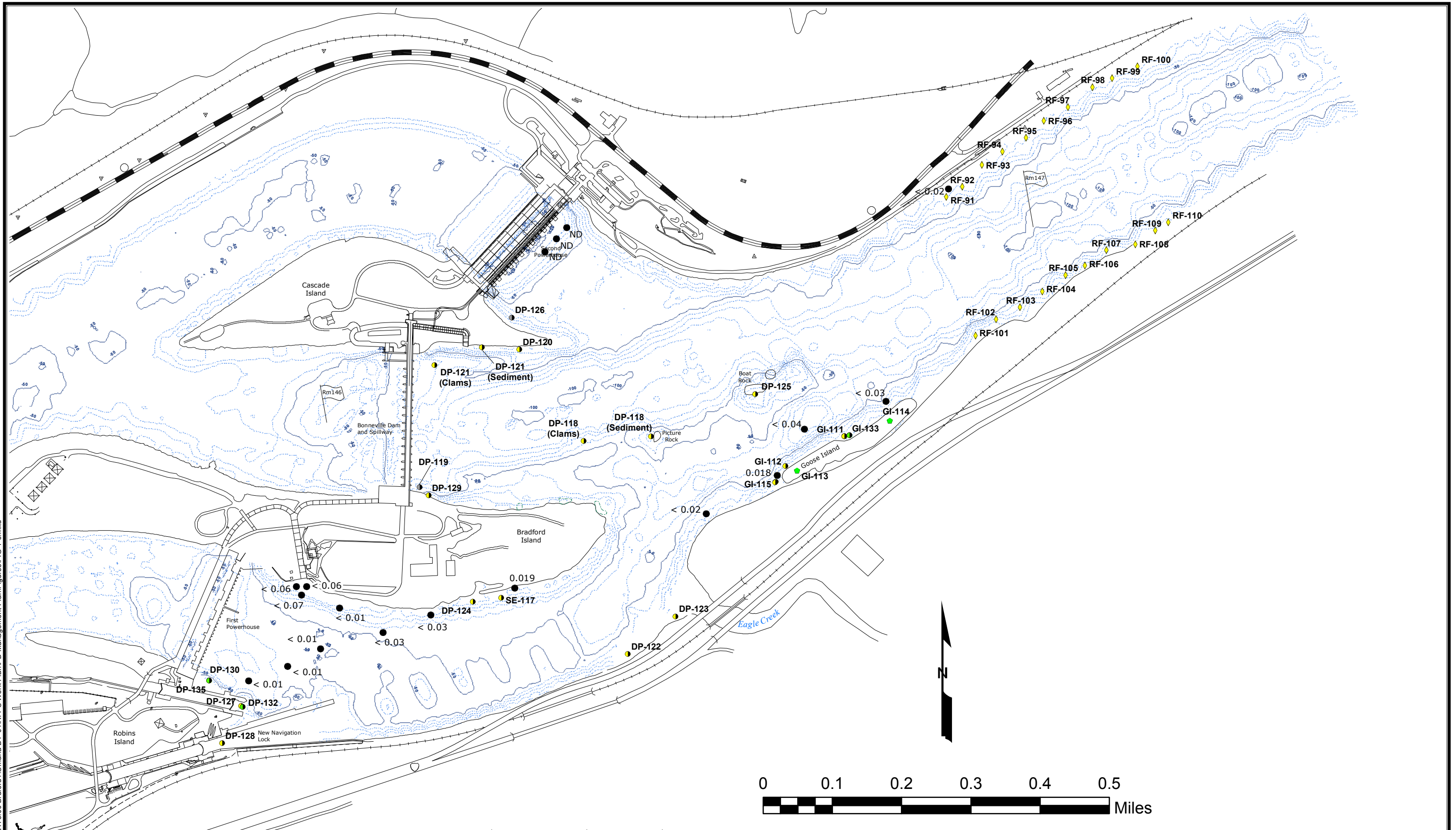


## BULB SLOPE SAMPLING LOCATIONS

MARCH 2007  
25695254

BRADFORD ISLAND RI/FS  
CASCADE LOCKS, OREGON

FIGURE 4-5



C:\25662708\_USACE\53-F0072173.00\_Bradford\10\_maha.DT-01\RI-FS Work Plan\PD\_Management Plan\Figures\FIG 4-6.mxd

**Sample Features:**

- Depositional Sample Locations
  - Depositional Surface & Subsurface (below 6 inches) Sample Was Retrieved at this Location
  - Depositional Sample Location Attempted, But Sediment Not Retrieved
  - ◆ Reference Sample Locations
  - ◆ Soil Samples
  - PCB concentrations shown are in mg/kg.
- Note: Contours indicate water depths.

JOB No. 25695254.00009	DESIGNED: MN	PROJ. ENGINEER: —
Base Map provided by USACE	DRAWN BY: HC	APPROVED BY: JTW
	CHECKED BY: —	DATE: MARCH 2007

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Portland, Oregon 97201  
(tel) 503-222-7200  
(fax) 503-222-4292

**Bradford Island RI/FS**

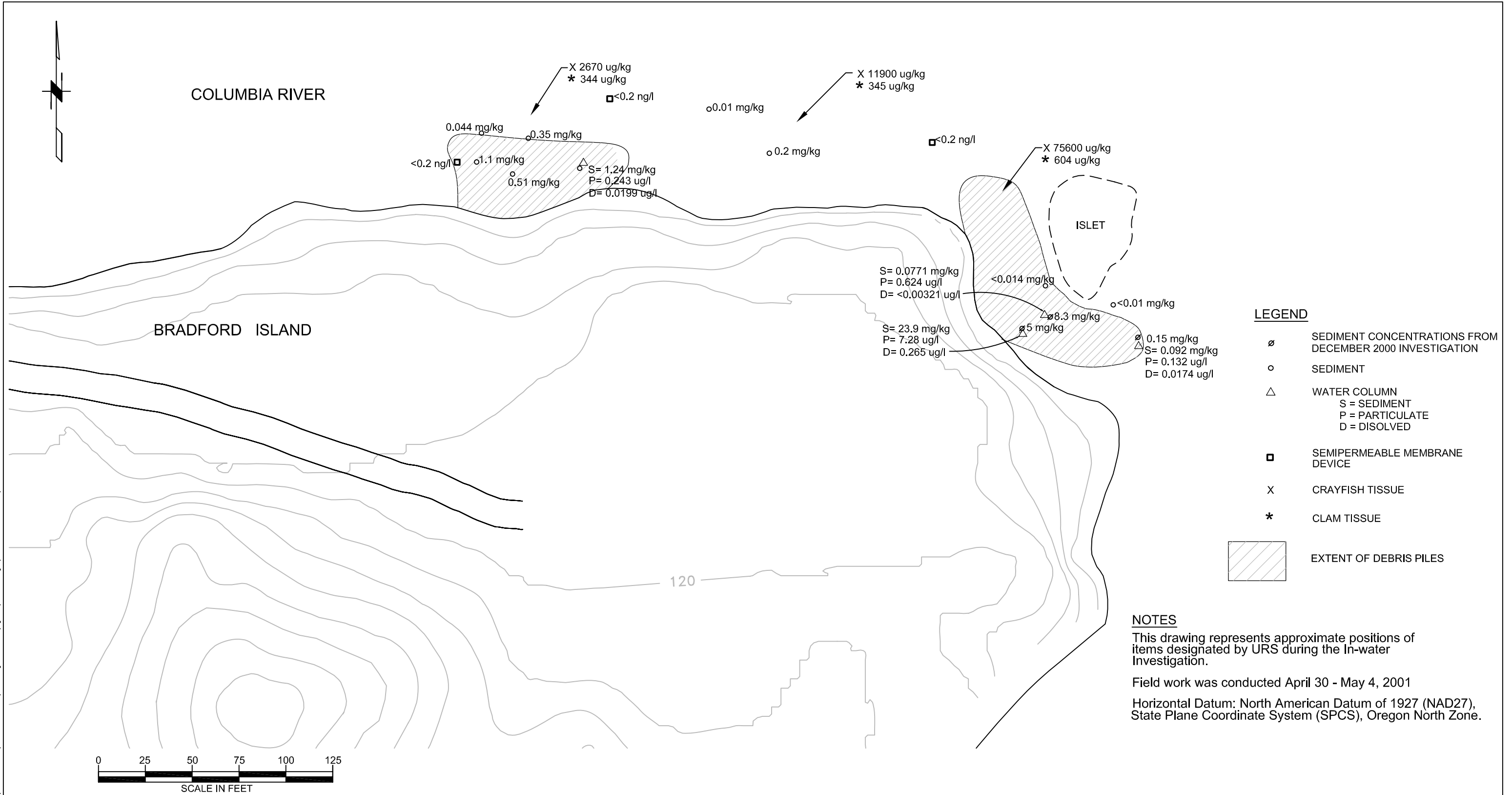
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**CASCADE LOCKS, OREGON**

Sample Locations  
Depositional and Reference Areas

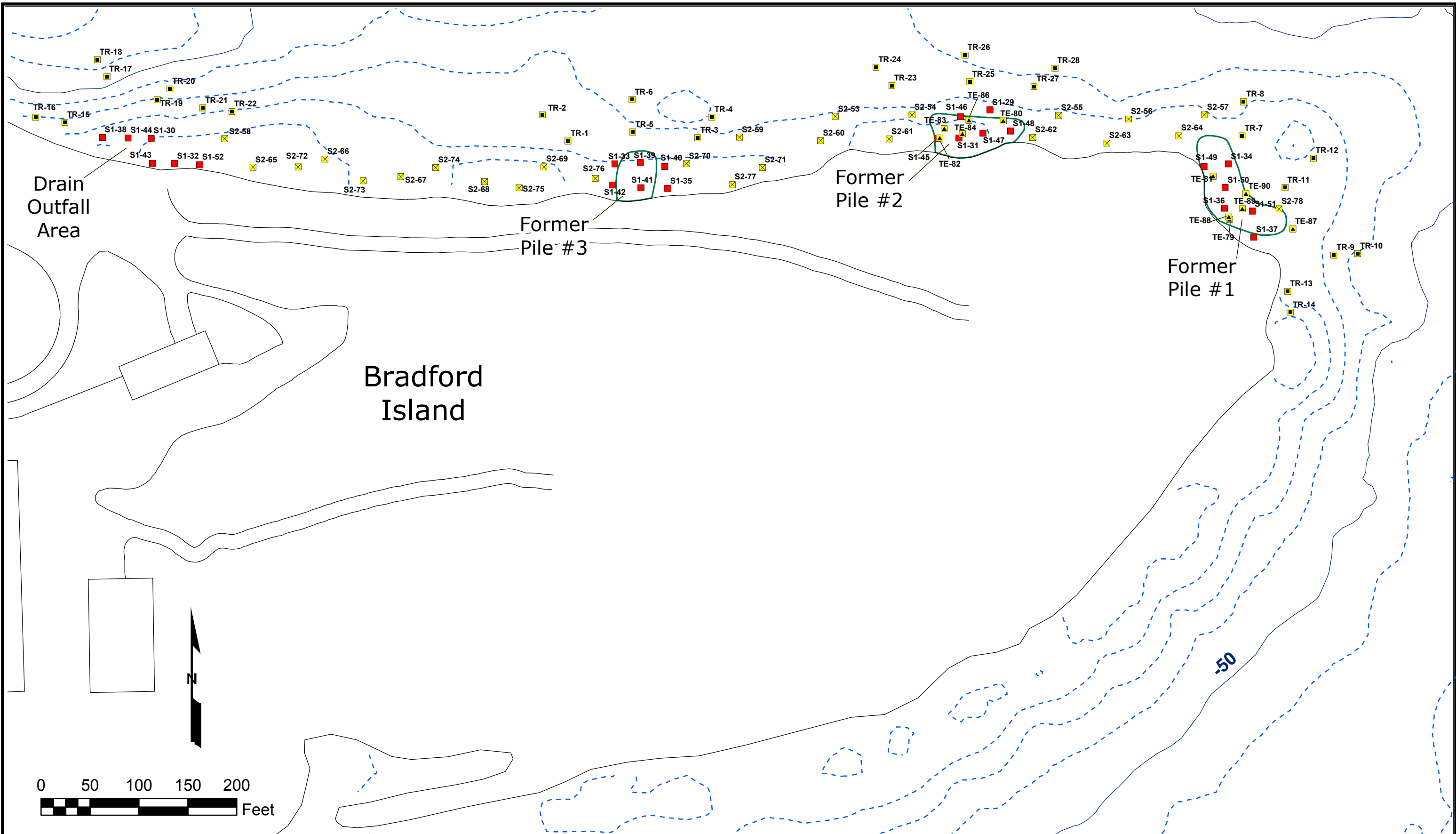
DRAWING NUMBER: <b>FIGURE 4-6</b>	
GIS FILE NUMBER: FIG 4-6.mxd	
SHEET:	REV.

o:\25692709\_USACE\33-F0072173.00\_Briefing\Omaha DT-01\RI-FS Work Plan\PD\_Management\_Plan\Figures\Fig 4-7.dwg Apr 09, 2007 - 12:10pm



**FIGURE 4-7**

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Sample Features:	
<span style="color: red;">■</span> Stage 1 Source Area Grid Sample Locations	<span style="color: yellow;">▲</span> Source Area Temporal Sample Locations
<span style="color: yellow;">■</span> Stage 2 Source Area Grid Sample Locations	<span style="color: yellow;">■</span> Source Area Transect Sample Locations

Note: Contours indicate water depths.

JOB No. 25695254.00009	DESIGNED: MN	PROJ. ENGINEER: -
Base Map provided by USACE	DRAWN BY: HC	APPROVED BY: JTW
	CHECKED BY: -	DATE: MARCH 2007

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Portland, Oregon 97201  
(tel) 503-222-7200  
(fax) 503-222-4292

**BRADFORD ISLAND RI/FS**

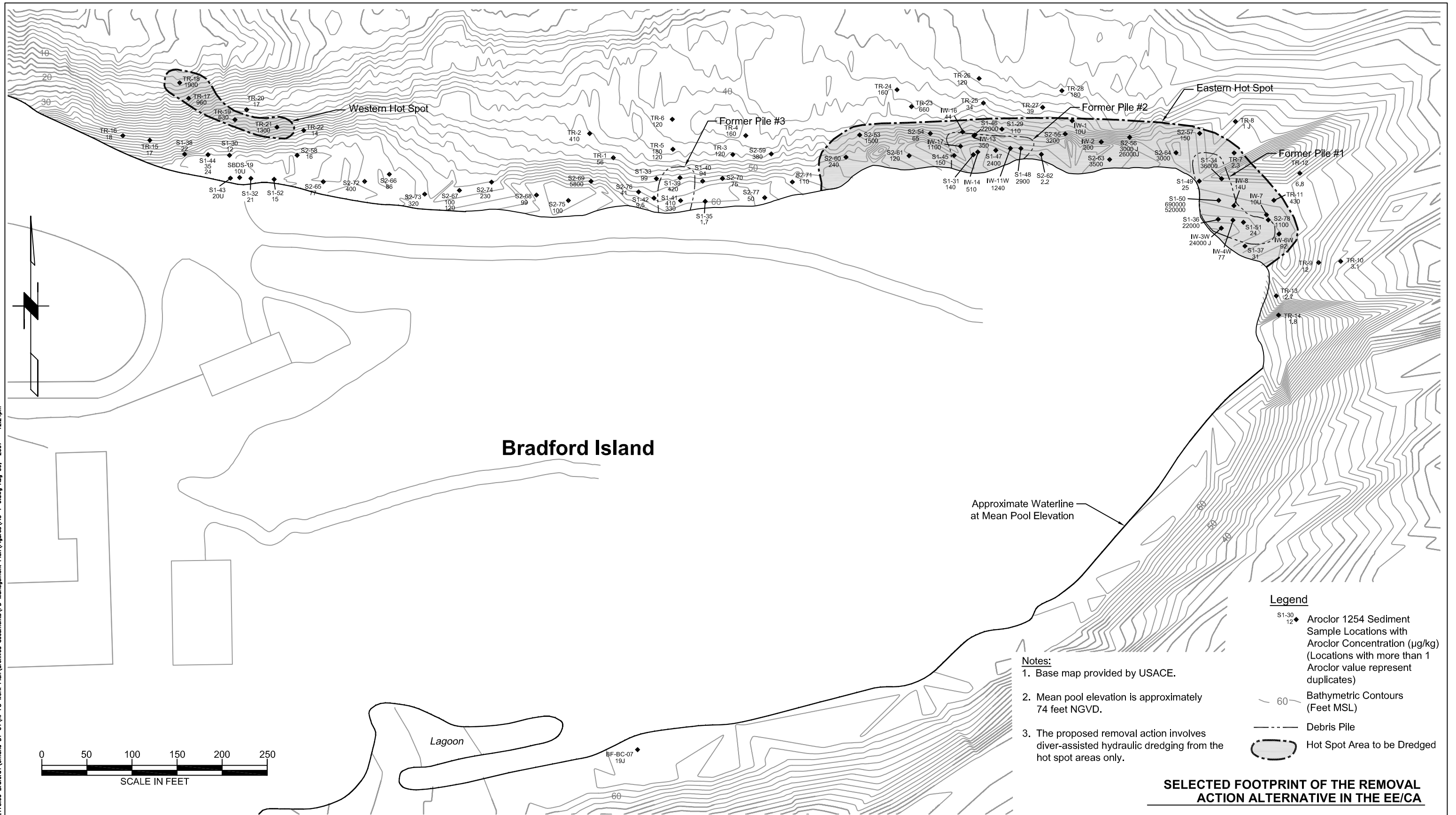
---

**CASCADE LOCKS, OREGON**

Sample Locations  
Source Area

DRAWING NUMBER: <b>FIGURE 4-8</b>	
GIS FILE NUMBER: <b>FIG 4-8.mxd</b>	
SHEET:	REV:

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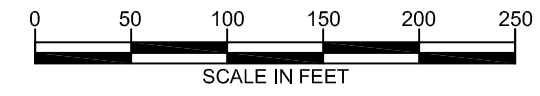


- Notes:**
1. Base map provided by USACE.
  2. Mean pool elevation is approximately 74 feet NGVD.
  3. The proposed removal action involves diver-assisted hydraulic dredging from the hot spot areas only.

**Legend**

- S1-30 12 ♦ Aroclor 1254 Sediment Sample Locations with Aroclor Concentration (µg/kg) (Locations with more than 1 Aroclor value represent duplicates)
- 60 Bathymetric Contours (Feet MSL)
- Debris Pile
- Hot Spot Area to be Dredged

**SELECTED FOOTPRINT OF THE REMOVAL ACTION ALTERNATIVE IN THE EE/CA**



AUGUST 2007  
25695254

BRADFORD ISLAND RI/FS  
CASCADE LOCKS, OREGON

**FIGURE 4-9**

O:\25692709 USACE\53-F0072173.00 Brdford\Omaha DT-01\RI-FS Work Plan\Archived documents\PD Management Plan\Figures\Fig 4-10.dwg User: Seth\_Bergeson Plotted: Aug 09, 2007 - 2:06pm Last Save: Aug 09, 2007 - 12:36pm



EXPLANATION	
	BATHYMETRIC CONTOURS (FEET MSL)
	REMOVAL AREA BOUNDARY
	BRADFORD ISLAND SHORELINE

JOB No. 25695254.00009
IMAGERY PROVIDED BY USACE

DESIGNED: CM
DRAWN BY: SB
CHECKED BY: CM

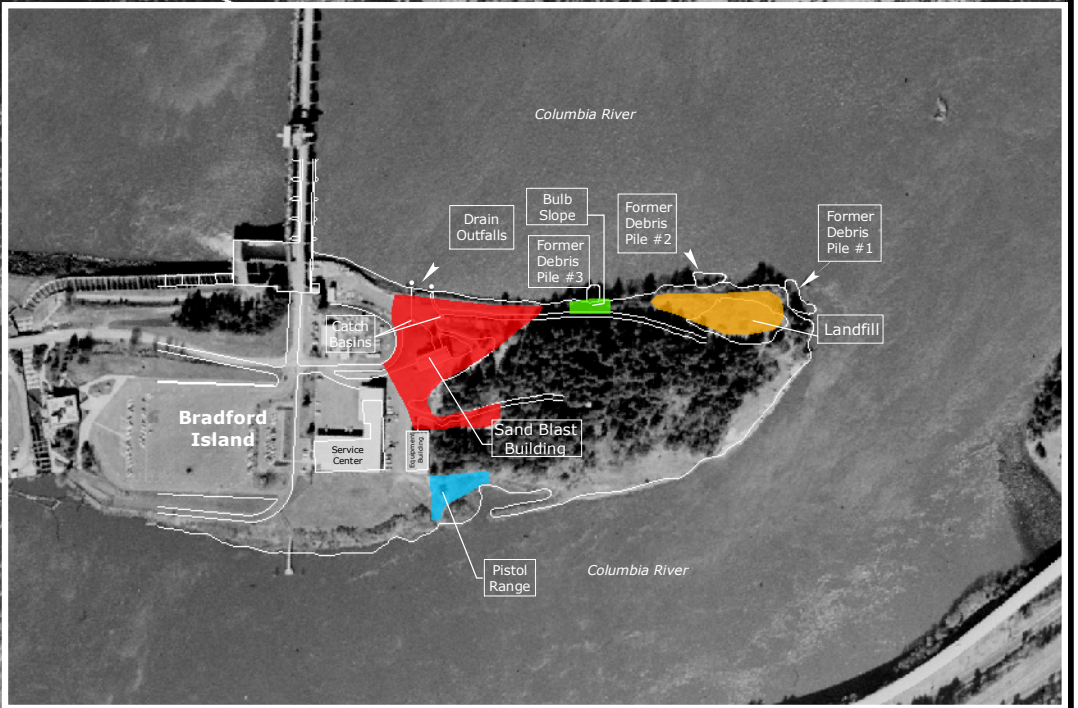
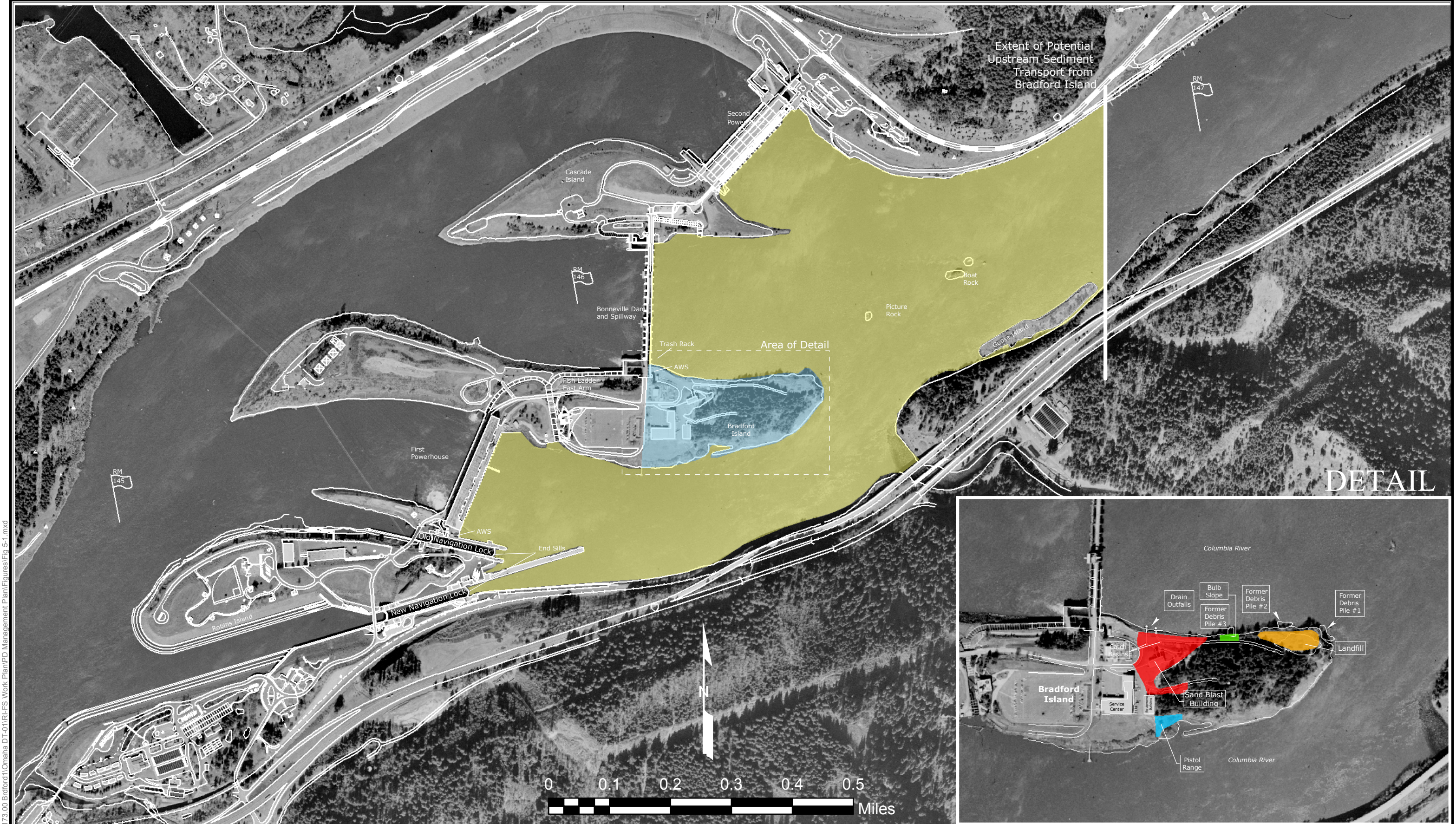
PROJ. ENGINEER: -
APPROVED BY: JTW
DATE: AUG 2007

**URS**  
 111 SW Columbia, Suite 1500  
 Portland, Oregon 97201-5814  
 (tel) 503-222-7200  
 (fax) 503-222-4292  
 www.urscorp.com


**BRADFORD ISLAND**  
  
**CASCADE LOCKS, OREGON**

**FINAL REMOVAL ACTION FOOTPRINT**

DRAWING NUMBER: FIGURE 4-10	
CAD FILE NUMBER: FIGURE 4-10	
SHEET:	REV.

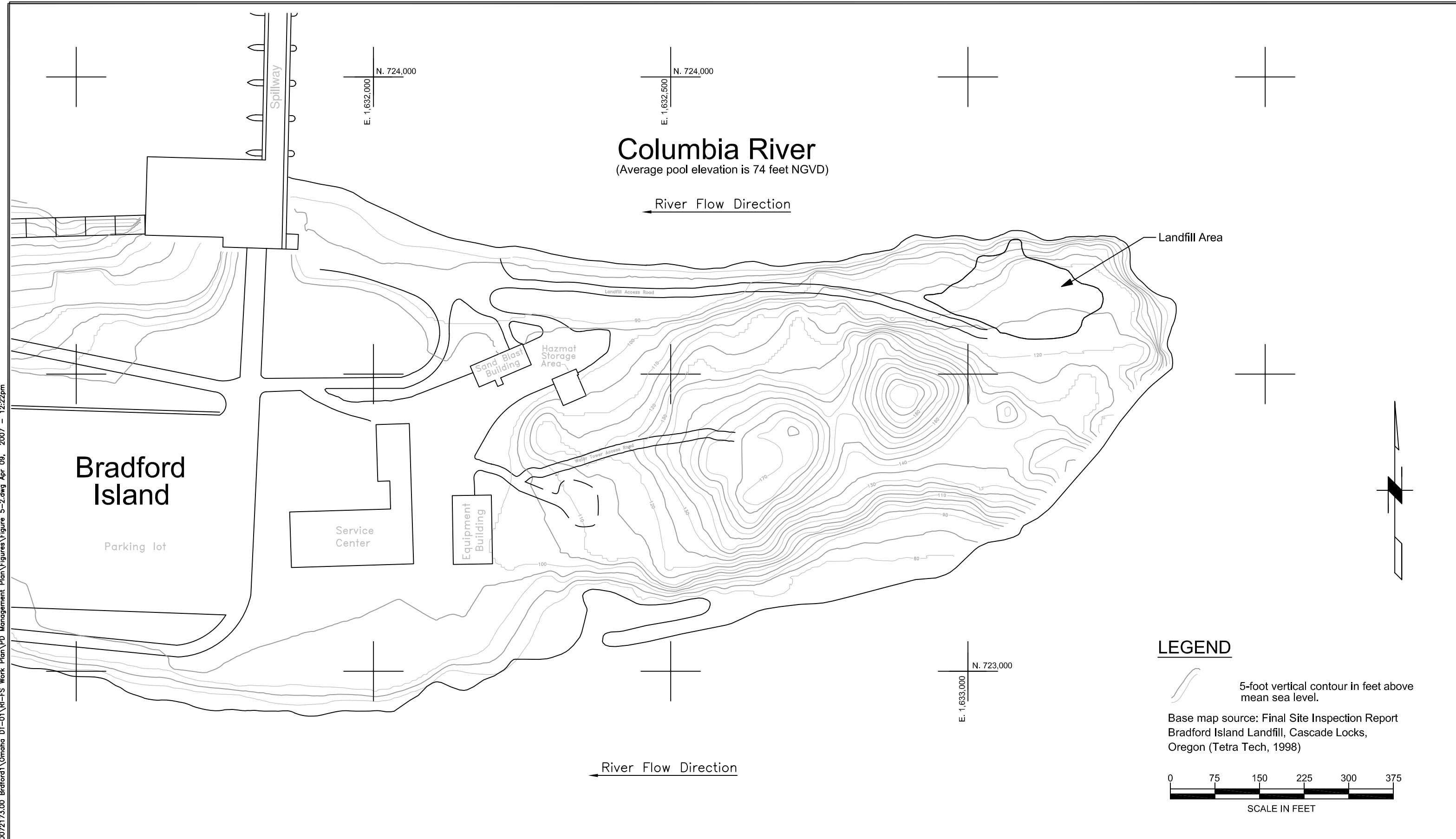


C:\25692709\_USACE\53-F0072\73.00 Bradford1\Omaha.DT-01\RI-FS Work Plan\PD Management Plan\Figures\Fig 5-1.mxd

<b>Map Features</b> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></span> River OU</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: lightblue; border: 1px solid black; margin-right: 5px;"></span> Upland OU</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: orange; border: 1px solid black; margin-right: 5px;"></span> Landfill AOPC</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: red; border: 1px solid black; margin-right: 5px;"></span> Sandblast AOPC</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: cyan; border: 1px solid black; margin-right: 5px;"></span> Pistol Range AOPC</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: green; border: 1px solid black; margin-right: 5px;"></span> Bulb Slope AOPC</li> </ul>	JOB No. 25695254.00009	DESIGNED: CM	PROJ. ENGINEER: -	 111 S.W. Columbia, Suite 1500 Portland, Oregon 97201 (tel) 503-222-7200 (fax) 503-222-4292	BRADFORD ISLAND RI/FS	Location of Proposed OUs and AOPCs CASCADDE LOCKS, OREGON	DRAWING NUMBER: FIGURE 5-1
	Base Map provided by USACE	DRAWN BY: HC	APPROVED BY: JTW		DATE: 3/29/07		GIS FILE NUMBER: Fig 5-1.mxd



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No.	DATE	BY	REVISION

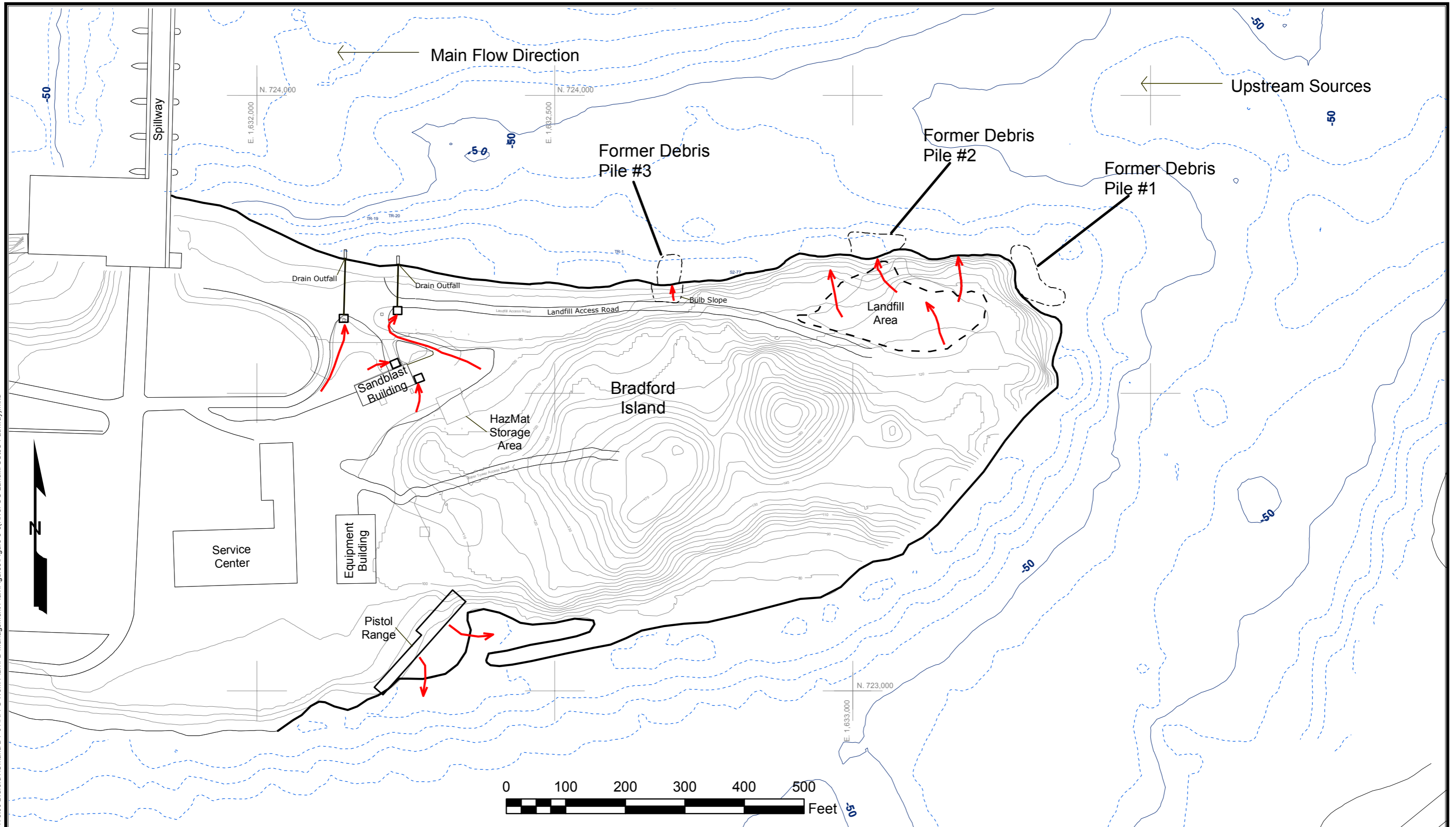
JOB No. 25695254.00009	DESIGNED: CM	PROJ. ENGINEER:
SCALE:	DRAWN BY: SB	APPROVED BY: JW
	CHECKED BY: CM	DATE: MARCH 2007

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**BRADFORD ISLAND RI/FS**  
**CASCADE LOCKS, OREGON**

**GENERAL TOPOGRAPHY OF  
 BRADFORD ISLAND**

DRAWING NUMBER: <b>FIGURE 5-2</b>	
CAD FILE NUMBER: <b>FIGURE 5-2</b>	
SHEET: 1 OF 1	REV.




O:\25692709\_USACE\53-F0072173.00\_Brdford1\Omaha DT-01\RI-FS Work Plan\PD Management Plan\Figures\Figure-5-3(River OU Landfill SStoS Pathway).mxd

<b>Sample Features:</b> Surface Water Drainage Direction Catch Basin	<b>Label Key:</b>	JOB No. 25695254.00009	DESIGNED: CM	PROJ. ENGINEER: -		<b>Bradford Island RI/FS</b>  <b>CASCADE LOCKS, OREGON</b>	River OU Sources of Contamination and Pathways	DRAWING NUMBER: FIGURE 5-3
		Base Map provided by USACE	DRAWN BY: SB	APPROVED BY: JTW				111 S.W. Columbia, Suite 1500 Portland, Oregon 97201 (tel) 503-222-7200 (fax) 503-222-4292
			CHECKED BY: CM	DATE: APRIL 2007				SHEET: REV.

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<b>Explanation</b>	 <b>Approximate Sediment Stations</b>

JOB No. 25695254.00009	DESIGNED: CM	PROJ. ENGINEER: -
Imagery provided by USACE	DRAWN BY: SB	APPROVED BY: JTW
	CHECKED BY: -	DATE: APRIL 2007

**URS**

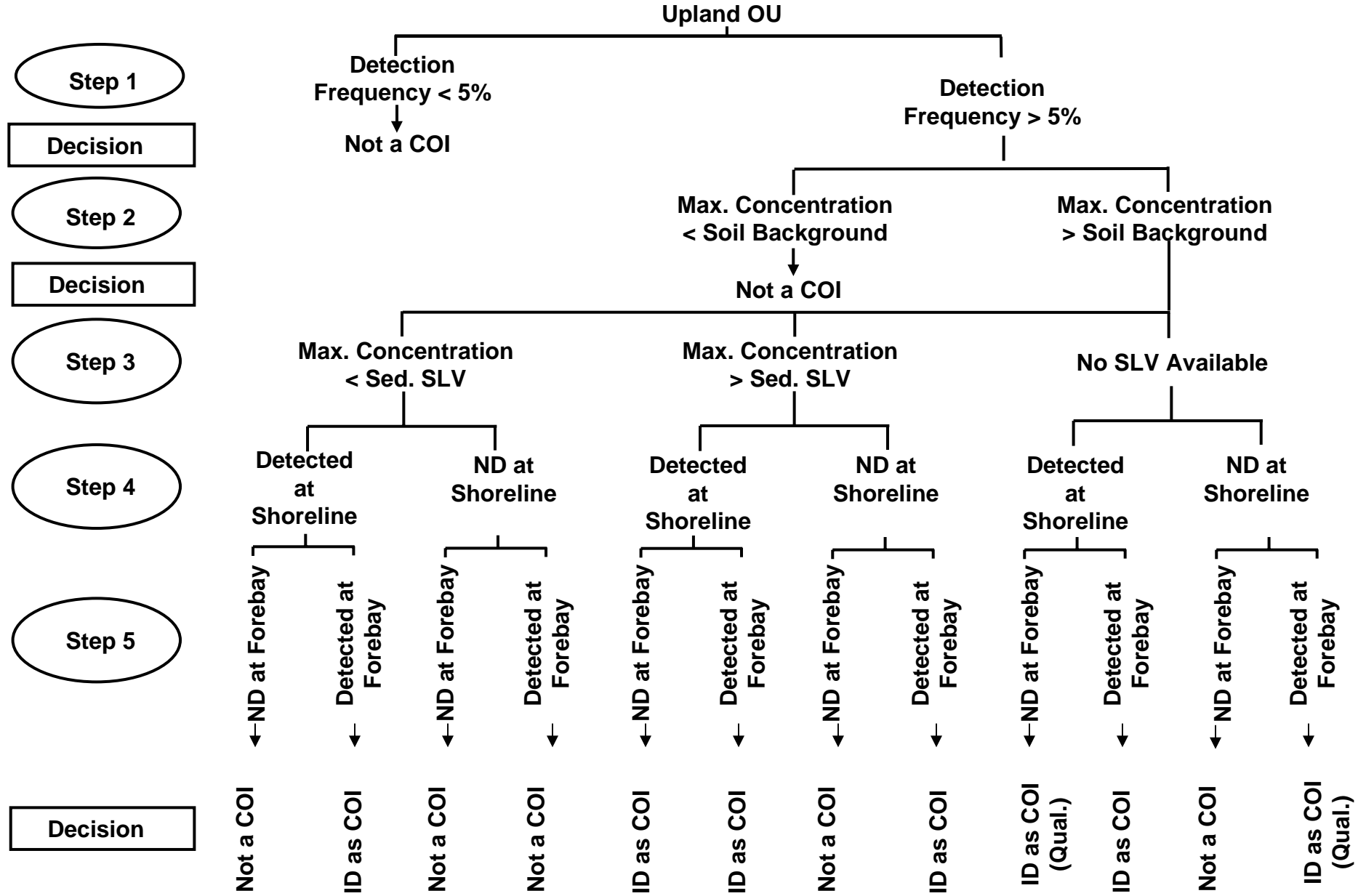
111 S.W. Columbia, Suite 1500  
Portland, Oregon 97201  
(tel) 503-222-7200  
(fax) 503-222-4292

<b>BRADFORD ISLAND</b>
<b>CASCADE LOCKS, OREGON</b>

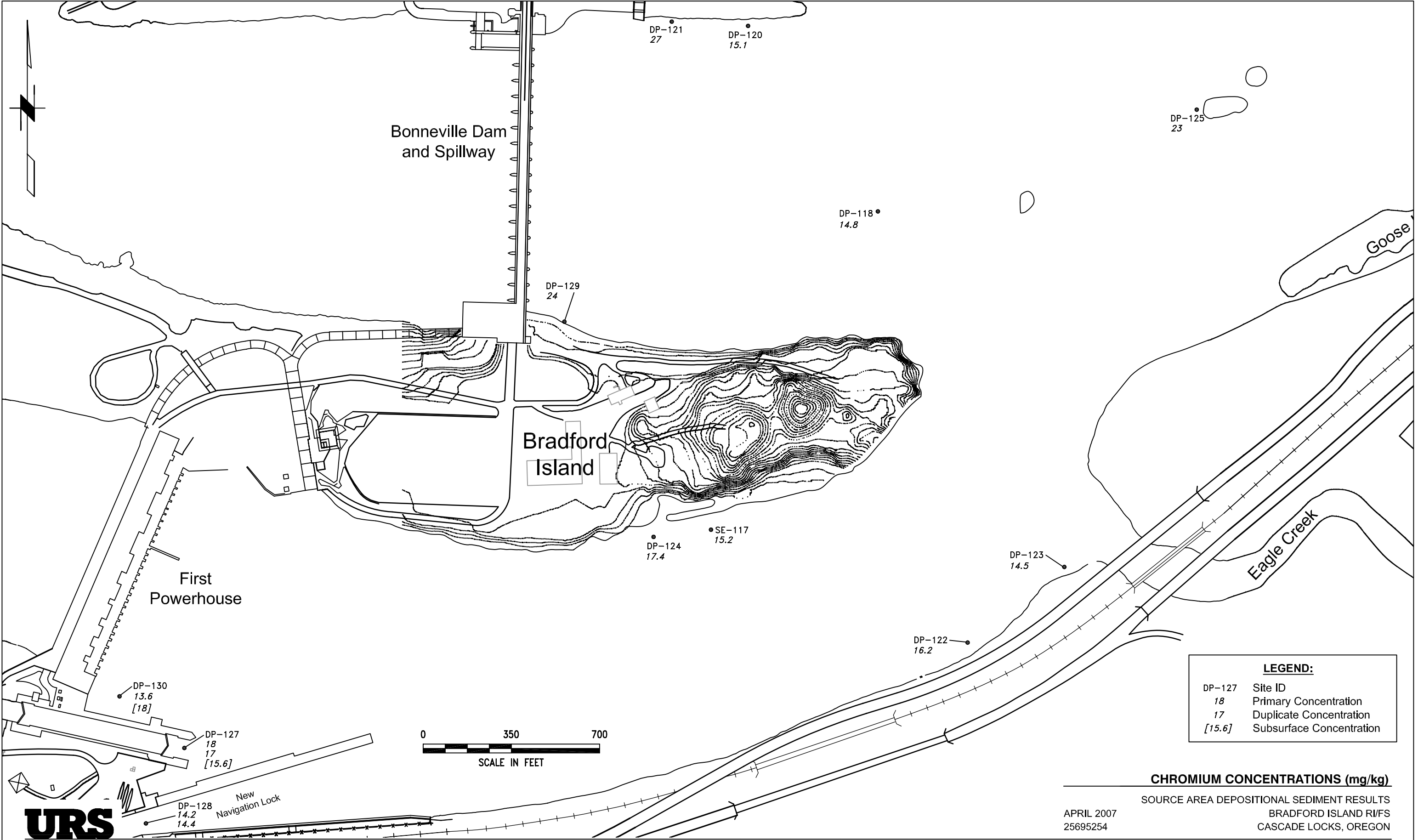
<b>DOWNSTREAM DEPOSITIONAL AREAS</b>
--

DRAWING NUMBER: <b>FIGURE 5-4</b>	
GIS FILE NUMBER: Fig 5-4.mxd	
SHEET:	REV.

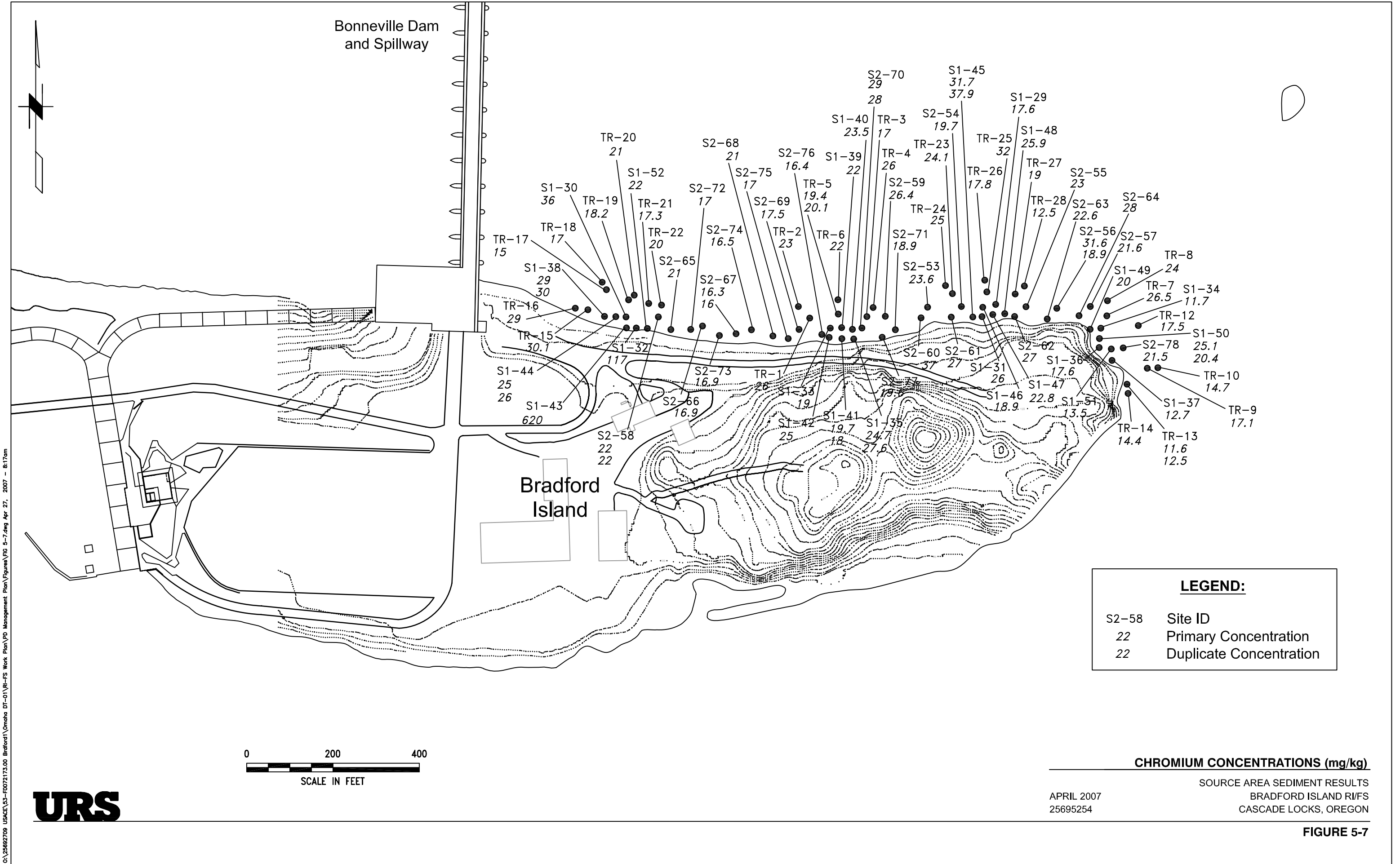
**FIGURE 5-5. Decision Flowchart for Identifying COIs in Soil for Upland Transport**



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**FIGURE 5-6**



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Bonneville Dam  
and Spillway

Bradford  
Island

LEGEND:	
S2-58	Site ID
22	Primary Concentration
22	Duplicate Concentration



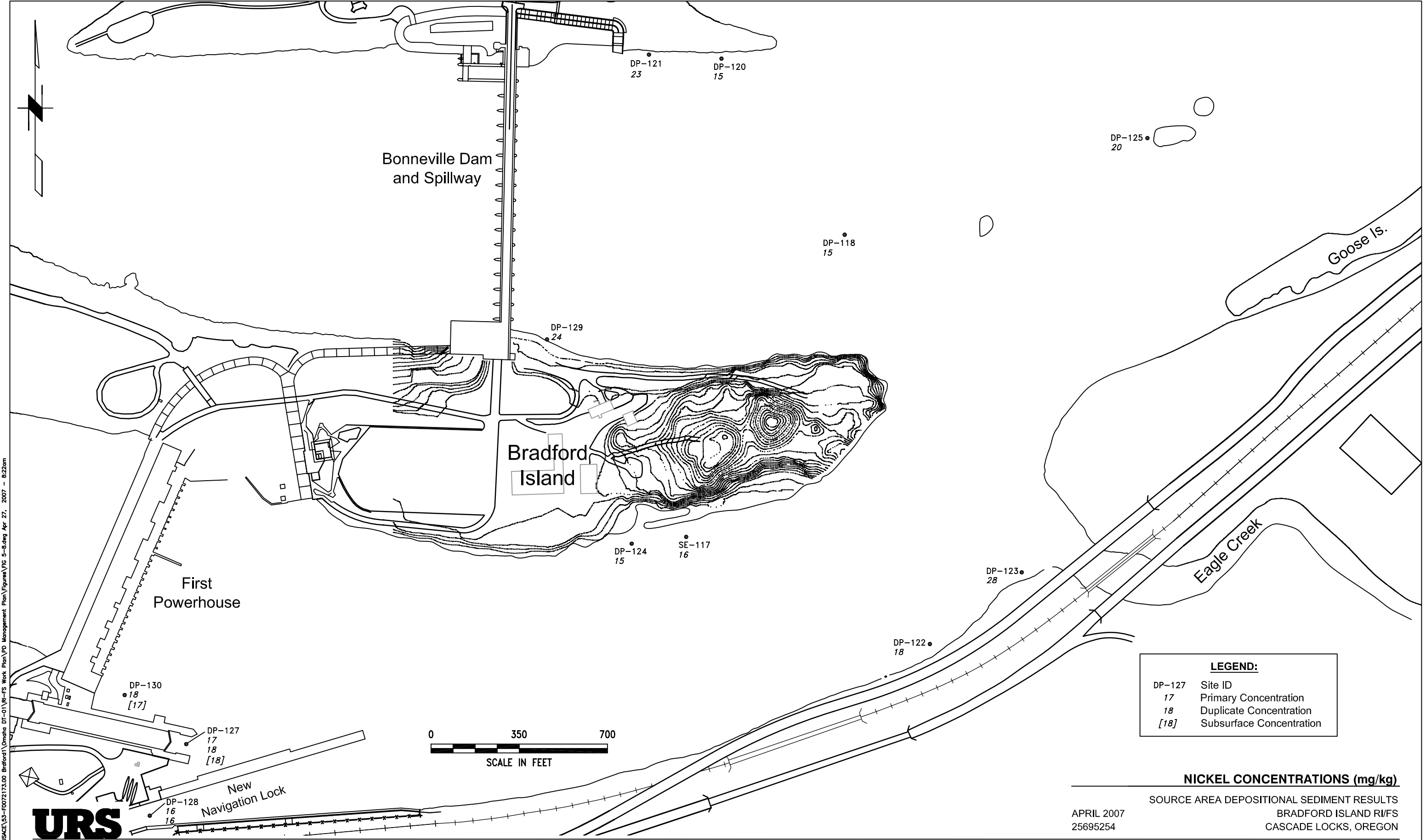
**CHROMIUM CONCENTRATIONS (mg/kg)**

APRIL 2007  
25695254

SOURCE AREA SEDIMENT RESULTS  
BRADFORD ISLAND RI/FS  
CASCADE LOCKS, OREGON



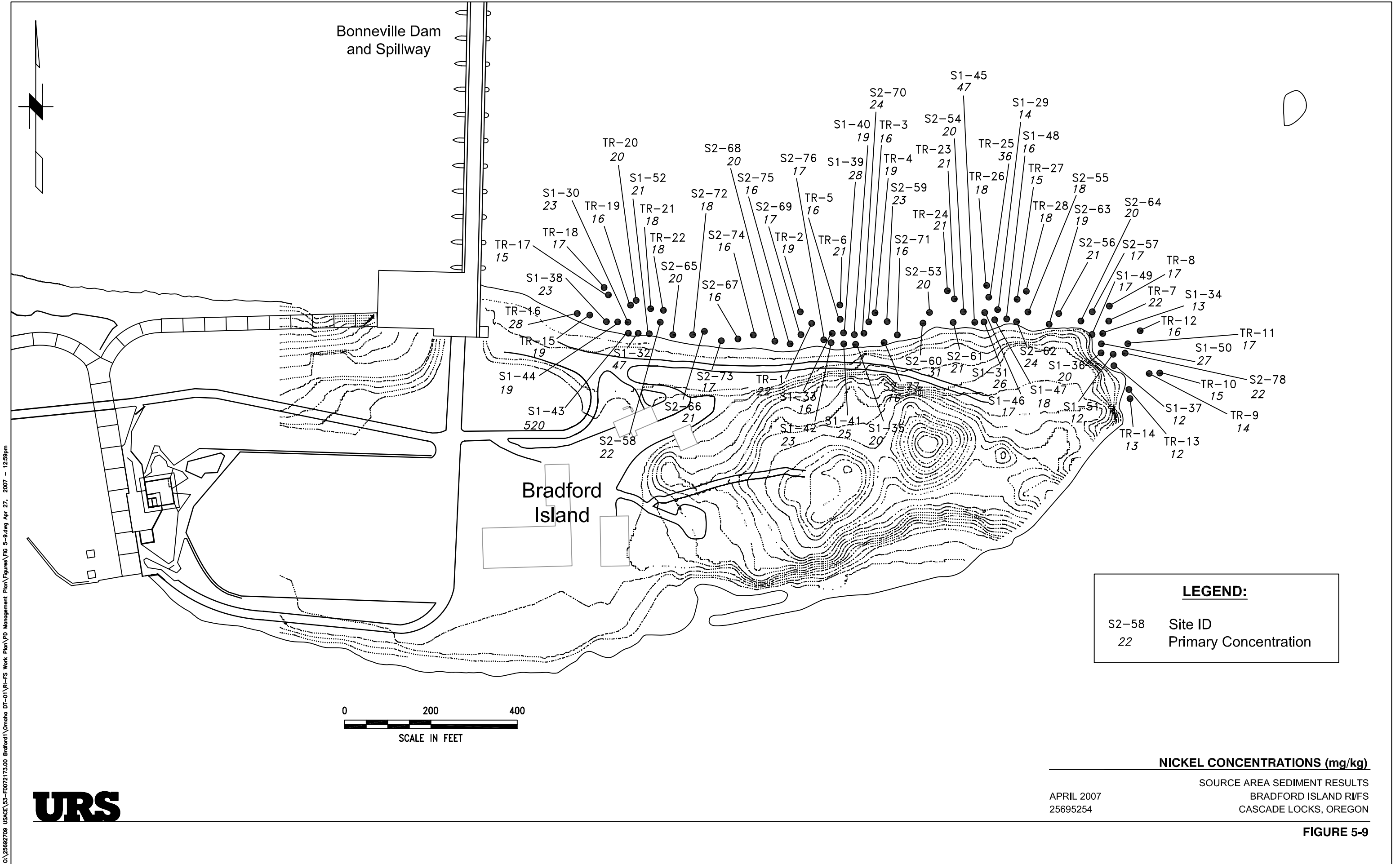
**FIGURE 5-7**



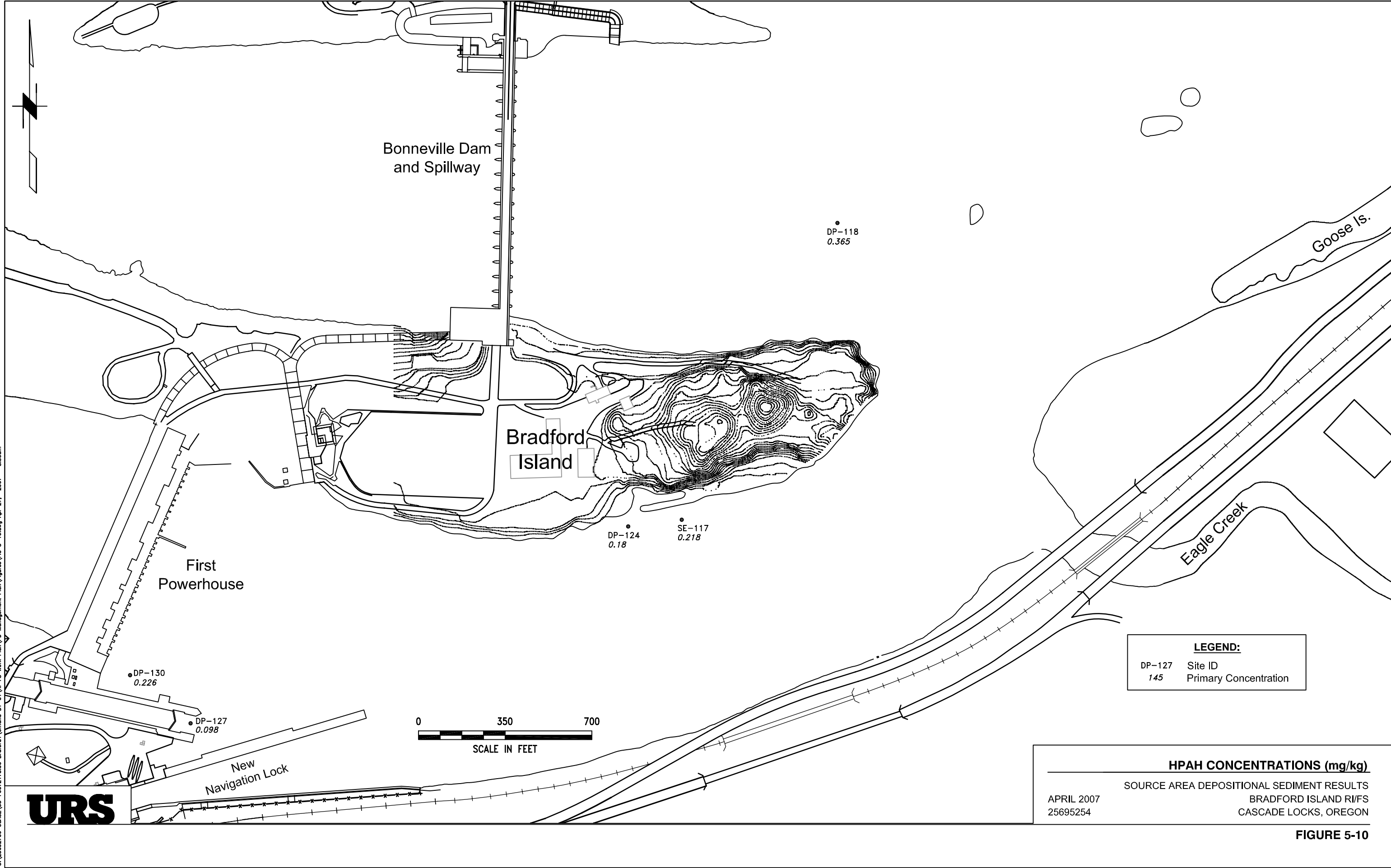
C:\25692709 USACE\33-FD072173.00 Bradford\Omaha DF-01\RI-FS Work Plan\PD Management Plan\Figures\FIG 5-8.dwg Apr 27, 2007 - 8:22am



**FIGURE 5-8**



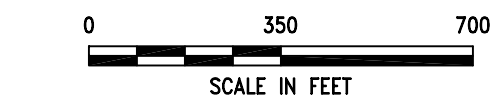




O:\25692709 USACE\3-FD072173.00 Bradford\Omaha DT-01\RI-FS Work Plan\PD Management Plan\Figures\FIG 5-10.dwg Apr 27, 2007 - 8:30am



● DP-130  
0.226  
 ● DP-127  
0.098

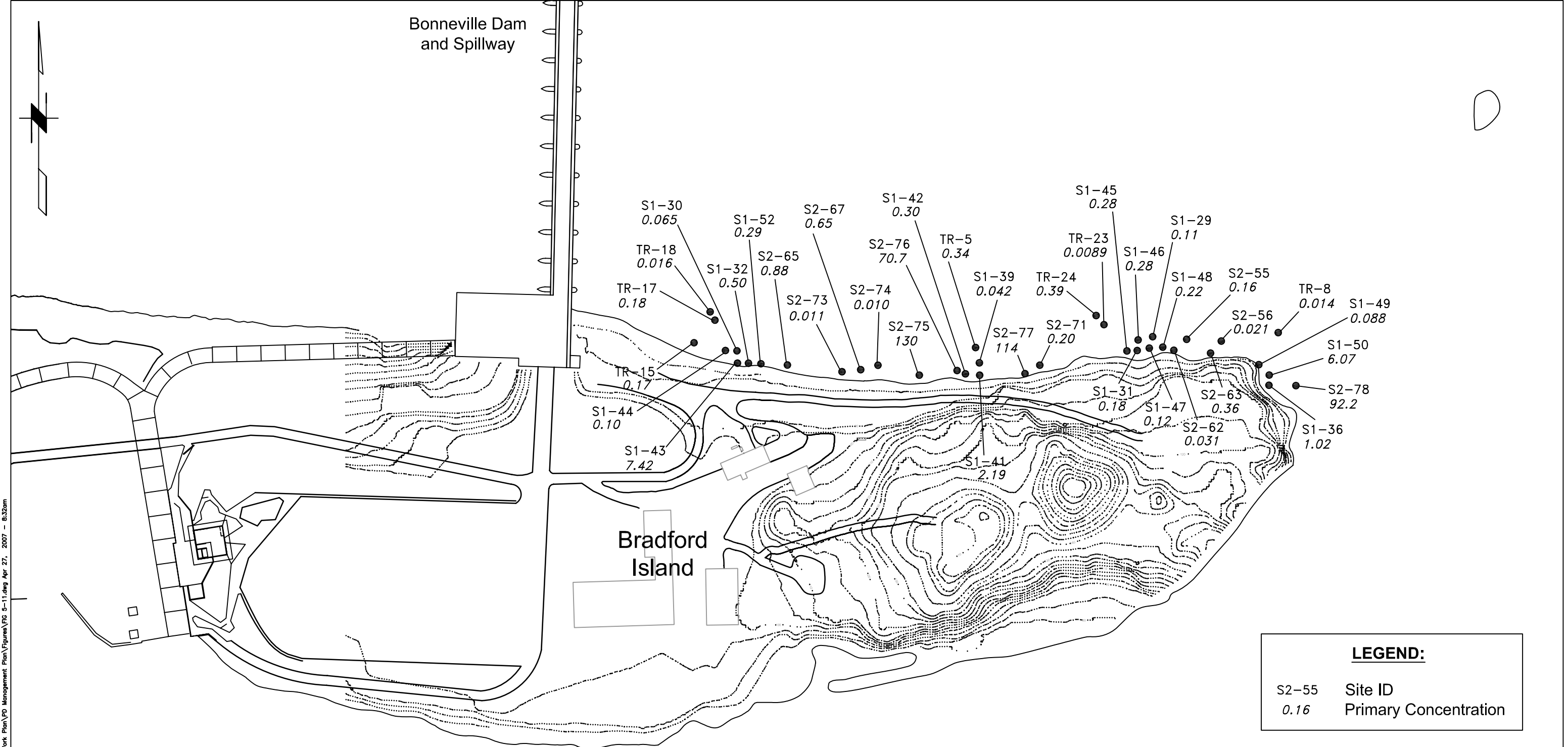
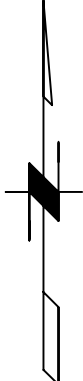


LEGEND:	
DP-127	Site ID
145	Primary Concentration

**HPAH CONCENTRATIONS (mg/kg)**  
 SOURCE AREA DEPOSITIONAL SEDIMENT RESULTS  
 APRIL 2007  
 25695254  
 BRADFORD ISLAND RI/FS  
 CASCADE LOCKS, OREGON

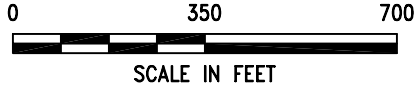
**FIGURE 5-10**

Bonneville Dam and Spillway



**LEGEND:**

S2-55 Site ID  
0.16 Primary Concentration



**HPAH CONCENTRATIONS (mg/kg)**

SOURCE AREA SEDIMENT RESULTS  
BRADFORD ISLAND RI/FS  
CASCADE LOCKS, OREGON

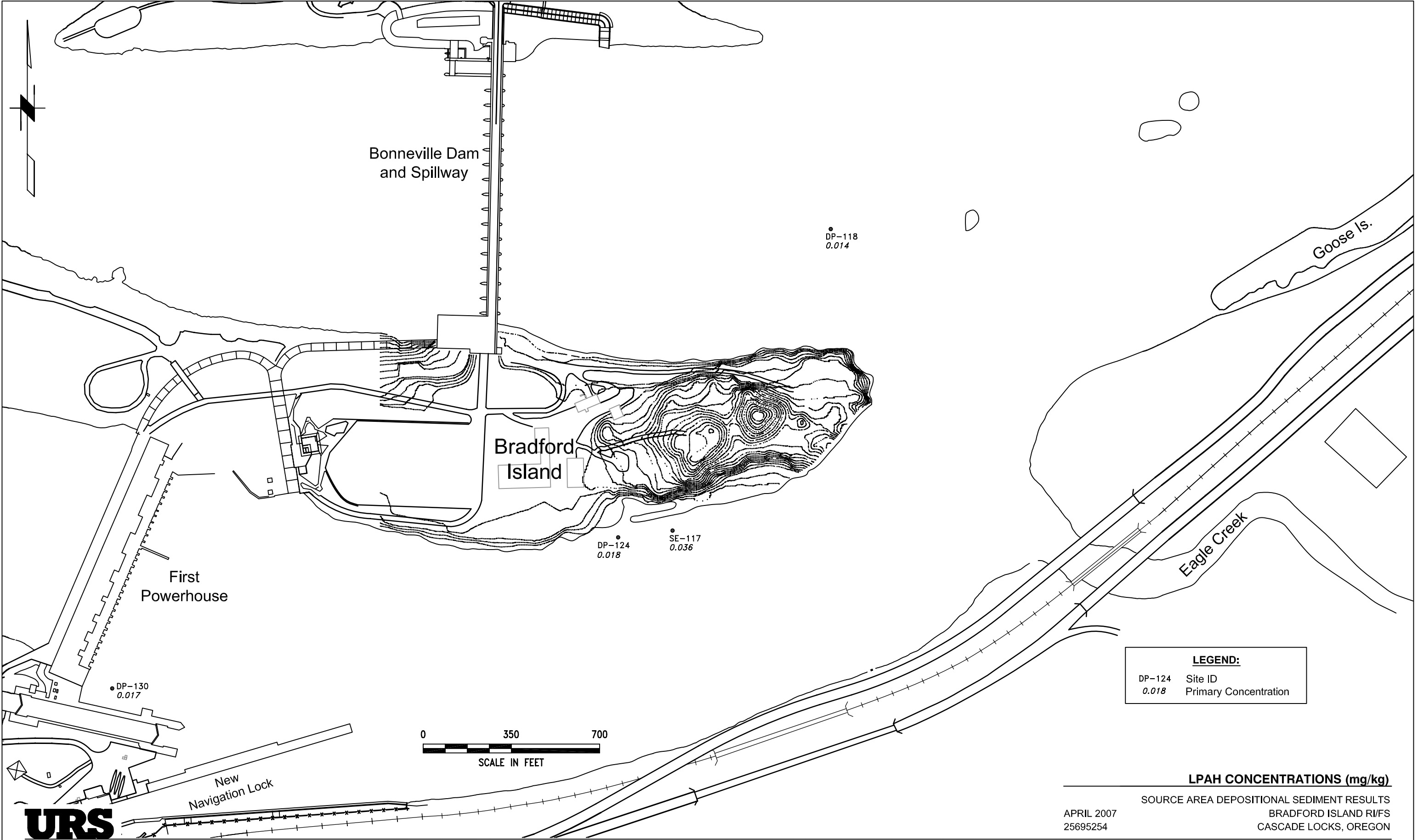
APRIL 2007  
25695254



**FIGURE 5-11**

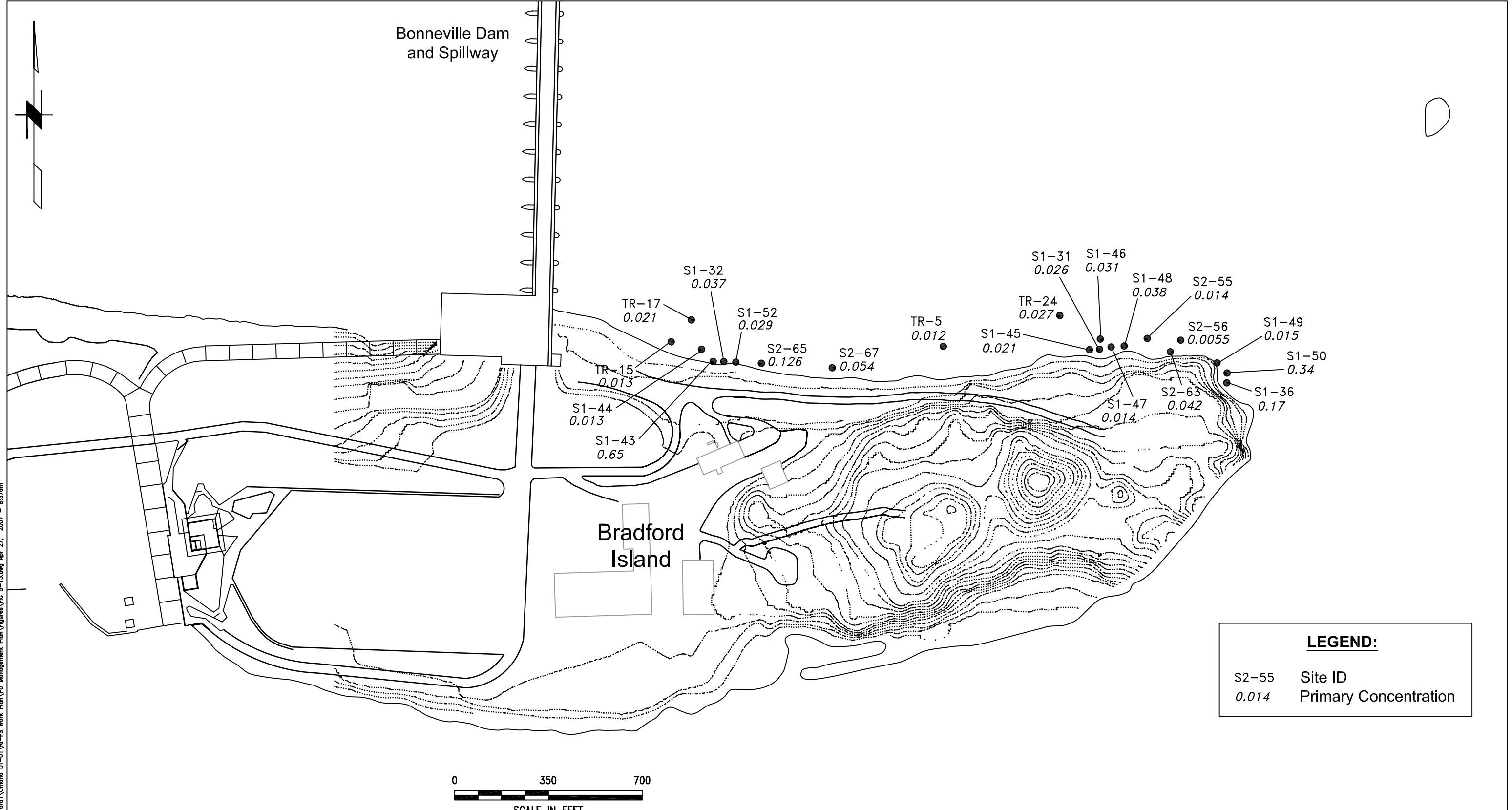
C:\25695254\USACE\53-F0072173.00 Bradford\Omaha DT-01\RI-FS Work Plan\PD Management Plan\Figures\FIG 5-11.dwg Apr 27, 2007 - 8:32am

o:\25692709 USACE\33-FD072173.00 Bradford\Omaha DT-01\RI-FS Work Plan\PD Management Plan\Figures\FIG 5-12.dwg Apr. 27, 2007 - 6:35am



**LPAH CONCENTRATIONS (mg/kg)**  
 SOURCE AREA DEPOSITIONAL SEDIMENT RESULTS  
 BRADFORD ISLAND RI/FS  
 CASCADE LOCKS, OREGON  
 APRIL 2007  
 25695254

FIGURE 5-12



O:\25692709 USACE\53-FD072173.00 Bradford\Omaha DT-01\RI-FS Work Plan\PD Management Plan\Figures\FIG 5-13.dwg Apr 27, 2007 - 8:37am



**FIGURE 5-13**

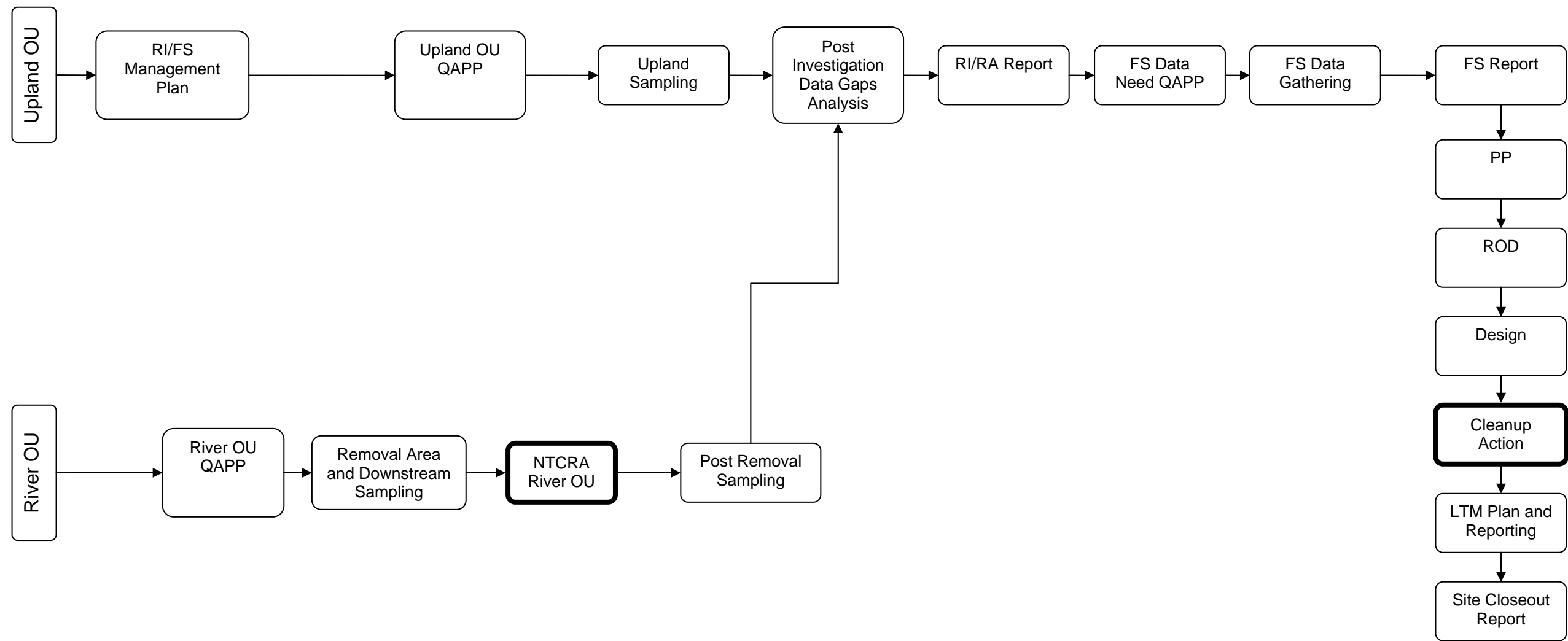



Figure 6-1 Bradford Island RI/FS Activity Interdependencies

O:\25692709\_USACE\53-F0072\73.00\_Bradford\1\Omaha.DT-01\RI-FS\_Work\_Plan\PD\_Management\_Plan\Figures\Fig 6-2.mxd



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