

Appendix B

Summary of Previous Investigations/Remediation and Annotated Bibliography

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Terms

AEA	<i>Atomic Energy Act of 1954</i>
AR	Administrative Record
ARCL	allowable residual contaminant level
AWQC	ambient water quality criteria
bgs	below ground surface
BHI	Bechtel Hanford, Inc.
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
CHPRC	CH2M HILL Plateau Remediation Company
COC	contaminant of concern
COPC	contaminant of potential concern
cpm	counts per minute
Cr(VI)	hexavalent chromium
CSM	conceptual site model
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
CVP	cleanup verification package
CY	calendar year
D&D	decontamination and decommissioning
DO	dissolved oxygen
DOE	U.S. Department of Energy
DOE-RL	U.S. Department of Energy, Richland Operations Office
DQO	data quality objective
Ecology	Washington State Department of Ecology
EE/CA	engineering evaluation/cost analysis
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ERA	expedited response action
ERDF	Environmental Restoration Disposal Facility
ESD	explanation of significant difference

FFS	focused feasibility study
FH	Fluor Hanford, Inc.
FHC	final hazard classification
FS	feasibility study
FSB	fuel storage basin
FY	fiscal year
gpm	gallons per minute
GPR	ground-penetrating radar
HAB	Hanford Advisory Board
IRM	interim remedial measure
ISRM	in situ redox manipulation
ISS	interim safe storage
IX	ion exchange
LFI	limited field investigation
LLBG	low-level burial ground
LLWMA	low-level waste management area
N/A	not applicable
NCP	National Contingency Plan (40 CFR 300, “National Oil and Hazardous Substances Pollution Contingency Plan”)
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List (40 CFR 300, Appendix B)
NRDWL	Nonradioactive Dangerous Waste Landfill
OU	operable unit
PCB	polychlorinated biphenyl
PNL	Pacific Northwest Laboratory
PNNL	Pacific Northwest National Laboratory
ppm	parts per million
RAA	remedial action alternative
RAG	remedial action goal
RAO	remedial action objective

RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
RDR/RAWP	remedial design report/remedial action work plan
RFI/CMS	RCRA facility investigation/corrective measures study
RHO	Rockwell Hanford Operations
RI	remedial investigation
ROD	record of decision
RSVP	remaining site verification package
RTD	removal, treatment, and disposal
RUM	Ringold upper mud
SAP	sampling and analysis plan
SARA	<i>Superfund Amendments and Reauthorization Act of 1986</i>
SVOC	semivolatile organic compound
Tri-Parties	U.S. Department of Energy, U.S. Environmental Protection Agency, and Washington State Department of Ecology
Tri-Party Agreement	<i>Hanford Federal Facility Agreement and Consent Order</i>
TSD	treatment, storage, and disposal
UPR	unplanned release
UTL	upper tolerance limit
VOC	volatile organic compound
WDOH	Washington State Department of Health
WHC	Westinghouse Hanford Company
WIDS	Waste Information Data System

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Table B-1. Summary of Previous Investigations and Remediation at 100-D/H

Scope of Work and Publication Date	Conclusions/Implications	Reference
Vadose Zone Investigations		
<p>Initial Vadose Zone Radiological Characterization (1978)—To evaluate radionuclide inventories, distribution, and concentrations at inactive solid and liquid wastes sites, reactors, and associated facilities, focusing on 100-D and 100-H liquid waste-receiving sites. Characterization included 104 borings up to 11 m (35 ft) deep and analysis of soil samples for 13 radionuclides.</p>	<p>Maximum contaminant activities at 100-D appeared to be associated with areas where effluent entered the waste site near discharge pipes and beneath the engineered structures of waste sites. Activities of high-distribution coefficient contaminants such as cesium-137 generally decreased with depth below points of effluent releases, although activities as high as 1,200 pCi/g were present at a depth of 7.6 m (25 ft) in the 116-DR-1&2 Trench. The maximum vertical extent of significant cesium-137 contamination (14 pCi/g) was detected at 10 m (34 ft) bgs adjacent to the 116-D-7 Retention Basin. Mobile contaminants such as tritium were also detected near the vertical extent of the investigation. The distribution of europium isotopes and cobalt-60 in the subsurface varied and activities in some borings decreased with depth.</p> <p>Of the 13 radionuclides subject to analysis, 11 in 100-D and 12 in 100-H were detected at concentrations greater than 1 pCi/g. Contamination was present at the maximum depth of exploration in both areas, indicating that future work should include deeper sampling.</p>	<p><i>Radiological Characterization of the Retired 100 Areas</i> (UNI-946)</p>
<p>100-D Area LFIs (1994, 1995)—To assess potential effects associated with discharging effluent to the soil column at high-priority waste sites, 18 borings up to 16 m (52 ft) deep and 7 test pits up to 6.1 m (20 ft) deep were advanced and soil samples were analyzed for metals, anions, VOCs, SVOCs, PCBs, pesticides, radionuclides, and inorganics.</p>	<p>Soil samples from the boreholes and test pits were screened for total VOCs, total chromium, and radiological contamination. Total VOC concentrations detected during screening were in the range of 0.4 and 6.2 ppm, respectively. Total chromium was detected at a maximum concentration of 516 mg/kg at the sodium dichromate/acid pumping station. Beta-gamma radiological contamination above background ranged between 150 and 14,000 cpm, with the maximum reading at 116-DR-9 at 0 to 1.5 m (0 to 5 ft) bgs. Radiological contamination (80 cpm) at 130-D-1 was detected to a maximum depth of 11 m (35 ft).</p> <p>The LFI concluded radiological contamination was the primary concern in 100-D soil and the main contributor to overall risk. Radionuclides detected above background included cobalt-60, strontium-90, cesium-137, europium-152, europium-154, plutonium-239/240, and americium-241.</p> <p>Metals other than chromium were detected above background concentrations at several waste sites. When the LFIs were performed in the early 1990s, none of the metal concentrations exceeded the 1991 levels for the “Model Toxics Control Act—Cleanup,” “Unrestricted Land Use Soil Cleanup Standards” (WAC 173-340-740[3]). Since then, regulations have been amended (1996, 2001, and 2007 “Model Toxics Control Act—Cleanup,” “Unrestricted Land Use Soil Cleanup Standards” [WAC 173-340-740]), and the cadmium concentrations detected now exceed the standard at 116-D-1A and 116-DR-9. VOCs and SVOCs were detected at concentrations that were generally low, often below quantitation limits.</p> <p>Based on LFI data and process knowledge, the 116-DR-1&2 Trench, 116-D-1A Trench, and 116-DR-9 Retention Basin were believed to be the worst-case waste sites. They received 200,000 to 40,000,000 L (50,000 to 10,000,000 gal) of effluent and 40 to 1,000 kg (90 to 2,000 lb) of sodium dichromate.</p> <p>Thirteen waste sites were recommended to continue as interim remedial measure candidates and six were recommended to be discontinued as interim remedial measure candidates.</p>	<p><i>Limited Field Investigation Report for the 100-DR-1 Operable Unit</i> (DOE/RL-93-29); <i>RCRA Facility Investigation/Corrective Measures Study Work Plan for the 100-DR-2 Operable Unit, Hanford Site, Richland, Washington</i> (DOE/RL-93-46); Appendix D, “Limited Field Investigation/Qualitative Risk Assessment Report for the 100-DR-1 Operable Unit”</p>
<p>100-H Area LFIs (1994, 1995)—Included 5 borings up to 7.8 m (26 ft) deep and 1 test pit 1.2 m (4 ft) deep; septic system liquid and sludge sampling; surface soil sampling; and analysis of samples for cyanide, metals, VOCs, SVOCs, PCBs, pesticides, and radionuclides.</p>	<p>No intrusive investigations were performed in the 100-HR-2 OU LFI. Investigations in the 100-HR-2 OU consisted mainly of a review of analogous site information, an evaluation of historical data, and soil gas and surface geophysical surveys. Data from 100-BC and 100-D source OUs were deemed analogous to the 100-HR-2 OU because the reactors and support facilities were similar in use and construction. Therefore, it was expected that waste sites would have similar process histories, waste streams, and expected suites of contaminants. In addition, field screening was performed on a discolored soil site near the 1607-H-1 Septic System; discoloration was determined to be most likely due to coal ash from the power plant. A surface radiation survey covering the 100-HR-2 OU also was performed in accordance with DOE/RL-93-20, <i>RCRA Facility Investigation/Corrective Measures Study Work Plan for the 100-HR-2 Operable Unit, Hanford Site, Richland, Washington</i>.</p> <p>The LFI results indicate the most elevated radionuclide contamination between 2.5 and 5.4 m (8.2 and 18 ft) bgs. The LFI concluded that radiological contamination was the primary concern in 100-H soil and the main contributor to overall risk.</p> <p>Sixteen waste sites were recommended to continue as interim remedial measure candidates and two were recommended to be discontinued as interim remedial measure candidates based on the LFI and prior information.</p>	<p><i>Limited Field Investigation Report for the 100-HR-1 Operable Unit</i> (DOE/RL-93-51); <i>Limited Field Investigation Report for the 100-HR-2 Operable Unit</i> (DOE/RL-94-53)</p>

Table B-1. Summary of Previous Investigations and Remediation at 100-D/H

Scope of Work and Publication Date	Conclusions/Implications	Reference
<p>Column Leaching Tests (2000, 2001, 2008)—A series of leachability tests were conducted to assess leaching of Cr(VI) from contaminated soils at 100-D and 100-H on shallow soils with elevated Cr(VI) from the 116-D-7 and 116-H-7 Retention Basins. Additional tests on 100-D and 100-BC soil.</p> <p>In one experiment, approximately 12 pore volumes of groundwater (shown to have a similar composition to vadose zone pore water) were forced through the column packed with 116-D-7 Retention Basin contaminated soil, and the Cr(VI) concentrations in the effluent were measured periodically. This volume of water simulated 15 cm (6 in.) of rainfall and 76 cm (30 in.) of irrigation water that would be typical.</p> <p>Cr(VI) leachability experiments were also conducted on 100-D and 100-BC yellow-stained soil collected from near sodium dichromate storage tanks and railroad tracks, as well as uncontaminated soil samples that were then spiked with Cr(VI) (PNNL-17674, <i>Geochemical Characterization of Chromate Contamination in the 100 Area Vadose Zone at the Hanford Site</i>). Packed column experiments were conducted with a strong reductant (e.g., calcium polysulfide solution) to characterize and measure solution and soil reductive capacity.</p>	<p>Upon completion of testing at the retention basins, less than 1 percent of the Cr(VI) originally present in the soil had been removed. Separate leach tests were then performed with separate aliquots of this soil using distilled water as the leachate (distilled water was used to minimize variables in this testing). Again, less than 1 percent of the Cr(VI) was leached from these soils. Single and sequential leaching experiments with contaminated 116-H-7 Retention Basin soil using water with the same chemical composition as groundwater also showed little leaching of Cr(VI) (less than 2 percent). Generally, Cr(VI) concentrations in the leachate were undetectable.</p> <p>Results from 100-D and 100-BC tests indicated that at least four pools of Cr(VI) with different leaching behavior were present in the tested soils. The first pool contained the majority (about 95 percent) of the Cr(VI) mass in a highly mobile form that is easily removed from the contaminated soils in the first pore volumes of leaching experiments. The second pool represented Cr(VI) material held in physically and mineralogically remote sites that provided a longer-term, continuing source of Cr(VI). The third pool consisted of reduced trivalent chromium most likely formed by surface-mediated redox reaction of aqueous Cr(VI) with ferrous iron-bearing soil minerals present in the soil. This pool did not contribute to the transport of Cr(VI) through soil. The fourth pool was composed of Cr(VI) in the form of BaCrO₄ that most likely precipitated out of the oversaturated soil solution. Under the tested conditions, BaCrO₄ was insoluble and did not contribute to the overall transport of Cr(VI).</p> <p>Results suggested that after Cr(VI) was discharged to soil, the majority remained mobile and was flushed readily, while the remainder was sequestered by a number of mechanisms, and more strongly so with time. Flushing had already been completed in retention basin soils (that had been subjected to intensive infiltration) but not in yellow-colored soil near sodium dichromate tanks and railroad tracks.</p> <p>Adsorption of Cr(VI) to soil from spiked solutions was low, and calculated retardation coefficients were close to one. Results indicated that Cr(VI) was reduced only partially to chromium(III). However, a significant amount of the Cr(VI) was mobilized ahead of the polysulfide solution front under the tested flow conditions. This may have significant implications for in situ reductive remediation techniques. The experiments suggested that it would be difficult to design a remedial measure using infiltration of liquid-phase reductants without increasing transport of Cr(VI) toward the water table.</p>	<p><i>Cleanup Verification Package for the 116-D-7 Retention Basin (CVP-99-00007); Cleanup Verification Package for the 116-H-7 Retention Basin (CVP-2000-00027); Geochemical Characterization of Chromate Contamination in the 100 Area Vadose Zone at the Hanford Site (PNNL-17674)</i></p>
<p>Cr(VI) Source Identification in 100-D (2010) and 100-H (2010)—Recent investigations were undertaken at 100-D to identify significant source locations for the southern (DOE/RL-2009-92, <i>Report on Investigation of Hexavalent Chromium in the Southwest 100-D Area</i>) and northern (DOE/RL-2010-40, <i>Report on Investigation of Hexavalent Chromium Source in the Northern 100-D Area</i>) plumes.</p> <p>The scope of work for the southern plume investigation included installing 11 additional groundwater monitoring wells in the unconfined aquifer, measuring Cr(VI) in vadose zone soil samples collected during drilling, gauging groundwater elevations in new and existing wells, and collecting and analyzing groundwater samples for Cr(VI).</p> <p>The scope of work for the source investigation for the northern plume (DOE/RL-2010-40) included the advancement of nine borings and installation of three groundwater monitoring wells. Drilling locations were selected at areas of suspected contamination based on historical records and field observations during recent waste site remedial actions. The vicinity of the 100-D-30 waste site, referred to as the sodium dichromate trench, was a primary focus of the vadose zone investigation.</p>	<p>Investigations were undertaken in 100-D to identify significant source locations for the southern and northern plumes. These projects acknowledged the difficulty of pinpointing vadose zone source locations. Therefore, these projects focused on using hydrogeologic and geochemical information from the aquifer to identify the locations where Cr(VI) was entering the aquifer from the vadose zone. By contrast, the Cr(VI) plume in 100-H was relatively small and shrinking with time.</p> <p>While this chromium source investigation did not identify a specific vadose zone source contributing to the southern plume hot spot, several potential source areas were identified for further evaluation, including the following:</p> <ul style="list-style-type: none"> • 100-D-12 Sodium Dichromate/Acid Rail Car and Truck Unloading Station and Associated French Drain • 100-D-56 Sodium Dichromate Pipeline between the 183-DR Head House and 185-D Deaeration Plant • 100-D-100 area of contaminated soil near 183-DR Head House • 100-D-104 area of contaminated soil near former 185-D Deaeration Plant • 100-D-30 area of contaminated soil near Well 195-D5-122 • 100-D-77 footprint of the 183-DR Water Treatment Building <p>In the southern plume, a groundwater hot spot with Cr(VI) concentrations greater than 63,000 µg/L was detected, and a 1 ha (2.5 ac) circular area containing several specific potential sources was identified as a likely source area. The northern plume investigation focused on the 100-D-30 Waste Site, the sodium dichromate trench where a sodium dichromate tank had been located. Neither investigation detected significant Cr(VI) in the deep vadose zone.</p> <p>One theory for a long-term Cr(VI) source was that a persistent, dense plume of Cr(VI) rests on topographically low areas of the RUM unit surface underlying the former 100-D-12 French Drain. This dense plume may be relatively immobile under the natural hydraulic gradient, which is rather minor. However, the pump-and-treat system has the ability to cause turbulent flow in the unconfined aquifer, thereby disrupting the groundwater flow regime, possibly causing the dense plume to migrate from its current position. This needs to be considered in the operation and possible expansion of the pump-and-treat system.</p>	<p><i>Report on Investigation of Hexavalent Chromium in the Southwest 100-D Area (DOE/RL-2009-92); Report on Investigation of Hexavalent Chromium Source in the Northern 100-D Area (DOE/RL-2010-40)</i></p>

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Scope of Work and Publication Date	Conclusions/Implications	Reference
<p>Orphan Site Evaluation in 100-D (2009) and 100-H (2009)— Through review of historical information, aerial photographs, and walking surveys.</p>	<p>The evaluations identified 30 new waste sites in 100-D and 15 new waste sites in 100-H. The remainder of 100-D/H will be evaluated by the end of FY 2011 (September 30, 2011); sampling and analysis will then be conducted on any new waste sites that may be identified, and remediation will be carried out as appropriate, either before or after the next ROD is approved.</p>	
Groundwater Investigations		
<p>Groundwater Monitoring</p>	<p>Groundwater samples have been and continue to be collected every 1 to 2 years, depending on location. Groundwater data are used to create maps and plots that illustrate groundwater flow, water table elevations, hydrogeochemistry, and contaminant concentration trends and distribution. The results are published in the annual Hanford Site groundwater monitoring reports (e.g., DOE/RL-2010-11, <i>Hanford Site Groundwater Monitoring and Performance Report for 2009: Volumes 1 & 2</i>) and are discussed in Chapter 4.</p>	<p>DOE/RL-2010-11, <i>Hanford Site Groundwater Monitoring and Performance Report for 2009: Volumes 1 & 2</i></p>
Aquifer Testing		
<p>Aquifer Testing (2009)—Aquifer tests (with time-series sampling) were performed in CY 2009 to gather data to provide additional information on the deep chromium contamination. Test objectives were to gather data to help to refine the conceptual model for the source of deep contamination, evaluate the potential hydraulic connection between the Hanford formation aquifer and the upper portion of the RUM unit, evaluate the hydraulic properties of the upper portion of the RUM, and indicate the extent of Cr(VI) contamination in the RUM.</p>	<p>The aquifer testing conducted at three sets of 100-H wells (199-H4-12C, 199-H4-15CS, and 199-H3-2C) showed elevated Cr(VI) contamination that may have been driven into the RUM unit by the high hydraulic head conditions from cooling water discharges during H Reactor operations. The results of this investigation were published in a report during CY 2010.</p> <p>Cr(VI) concentrations in groundwater from Wells 199-H4-12C (pumping 20 gpm for 43 days) and 199-H4-15CS (pumping 4 gpm for nearly 6 hours) remained at approximately 100 µg/L during constant-rate pumping tests. Further inland, at Well 199-H3-2C (pumping 40 gpm), Cr(VI) concentrations ranged from 5 to 52 µg/L during the 43-day constant-rate pumping test.</p> <p>Analysis of the drawdown data indicated transmissivity of tested zones of the RUM ranges from 125.5 to 237.1 m/day (412 to 778 ft²/day) using the Cooper-Jacob straight-line method. Changes in Columbia River stage strongly affected groundwater levels in all three confined aquifer wells at ratios ranging from 0.08 (at 199-H3-2C) to 0.30 (at 199-H4-12C). Delay to river stage changes ranged from 13 hours at 199-H3-2C to less than half an hour at 199-H4-12C.</p> <p>The pumping test data sets, including groundwater-level data from the Hanford formation aquifer at all three test locations and RUM saturated units at the 199-H4-15 nested well site, did not show indication of borehole leakage effects (i.e., the data did not show evidence that the pumping well boreholes were acting as conduits for the exchange of groundwater between different aquifer zones).</p> <p>Cr(VI) concentrations in groundwater from shallow monitoring wells were monitored during the approximately 80-day period when the 100-H pump-and-treat system was shut down. Inspection of Cr(VI) concentration versus time showed that there were no clear concentration trends for Cr(VI) in unconfined aquifer monitoring wells subsequent to the temporary shutdown of the 100-H pump-and-treat system. There is, therefore, no support for any significant rebound of Cr(VI) concentrations.</p> <p>Comparison of historical and recent groundwater levels in 199-H4-15 nested piezometers suggests the steepness of the upward vertical gradient has decreased in recent years. This decrease in vertical gradient may help explain concentration trends in both the confined RUM and unconfined Hanford formation aquifer.</p> <p>The distribution of Cr(VI) within the Hanford formation aquifer and RUM unit underlying 100-H suggests that the large groundwater mound associated with former H Reactor operations was the cause of RUM effects. This large groundwater mounding event, in combination with the pinching out of the top-most clay facies overlying the silty-sand facies within the RUM unit, could have forced Cr(VI)-contaminated groundwater into the RUM unit. After the Cr(VI) entered the RUM unit, it appears the plume migrated through a permeable sand seam, migrating east toward the river.</p>	<p>DOE/RL-2010-11, <i>Hanford Site Groundwater Monitoring and Performance Report for 2009: Volumes 1 & 2</i></p>

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Pore Water and Aquifer Tube Studies		
<p>River Substrate Pore Water, River Water, Riverbank Seeps, and Aquifer Tube Sampling (1996)—And screening/analysis for Cr(VI), nitrate, specific conductance, pH, DO, and turbidity. Physical characteristics of substrate also surveyed to identify suitable spawning habitat. A 3,110 m (10,200 ft) length of shoreline adjacent to 100-D/H was investigated, including 100 pore water sample sites, 100 river water samples, 11 riverbank seeps, and 16 multi-depth aquifer tube clusters.</p>	<p>Cr(VI) was detected in 41 of the 100 pore water sample sites. At 19 of these sites, concentrations exceeded both the chronic AWQC of 11 µg/L and the acute AWQC of 16 µg/L that were in force at the time (these have since been changed to 10 and 15 µg/L, respectively). The highest detected concentration was 632 µg/L. Approximately one-third of the riverbed segment along which the samples were collected was found to be affected by contaminated groundwater discharge. However, the only salmon spawning habitat found to be affected by the Cr(VI) discharge was between sample sites TDP-12A and TDP-16A, which represents about one-tenth of the riverbed in the study area. The report concluded that backfill around the 100-D/DR effluent outfall piping system may serve as a preferential flow pathway for Cr(VI)-contaminated groundwater flow to the river. In addition, areas of hardpan on the riverbed indicate the likelihood of localized release points in the riverbed rather than a uniform release of groundwater throughout the riverbed.</p> <p>Water samples were analyzed for nitrate, because it was used in past reactor decontamination activities, was present in the groundwater, and has the potential to react with chromium. Nitrate concentrations in pore water samples ranged from 0.02 to 6.67 mg/L, with the highest value at the site collocated with the highest Cr(VI) concentration. (No AWQCs for aquatic life have been established for nitrate.) Specific conductance ranged from 122 to 338 µS/cm. Values for pH, DO, and hardness were within normally expected ranges (for these samples, as well as those discussed below).</p> <p>Cr(VI) was not detected in any of the river water column samples (using a detection limit of approximately 10 µg/L), suggesting rapid mixing and attenuation of contaminated groundwater at the riverbed substrate/surface water interface. Nitrate concentrations ranged from 0.02 to 0.14 mg/L, and specific conductance ranged from 117 to 150 µS/cm. Based on the measured specific conductance values in river column samples, pore water-specific conductance measurements above 150 µS/cm (in the absence or presence of chromium) are considered to indicate groundwater influence.</p> <p>Cr(VI) was detected in most of the riverbank seepage samples, at concentrations up to 28 µg/L (using a detection limit of approximately 1 µg/L), nitrate concentrations ranged from 0.2 to 2.3 mg/L, and specific conductance ranged from 140 to 283 µS/cm.</p> <p>Cr(VI) was detected in most of the aquifer tube samples at concentrations up to 869 µg/L, nitrate concentrations ranged from 0.02 to 16.1 mg/L, and specific conductance ranged from 135 to 539 µS/cm.</p> <p>The study results were deemed a reliable indication of the groundwater contaminant pathways to the Columbia River and suitable for use in the design of pump-and-treat systems. In particular, the results could be used to locate groundwater extraction wells to intercept Cr(VI)-contaminated groundwater before it discharged to the river.</p>	<p><i>Chromium in River Substrate Pore Water and Adjacent Groundwater: 100-D/DR Area, Hanford Site, Washington</i> (BHI-00778)</p>
Other Studies		
<p>Aerial Radiological Surveys (1980, 1990, 1992, 2000, 2005)—Of the Hanford Site and surrounding area.</p> <p>The purpose of the 100-D Island radiological surveys was to determine the extent of detectable radiological contamination on the island and to attempt to determine the source of the contamination. The surveys, conducted by WHC, involved approximately 5 ha (12.5 ac) of reconnaissance across the upstream portion of 100-D Island. The WDOH evaluation looked at particle density of speck contamination on downstream portions of the island.</p>	<p>Much investigative work has been focused along the Columbia River because of the potential risk of exposure to people and the environment. DOE has completed routine radiological surveys of the river shore, as well as sampling of the riverbank seeps and sediment.</p> <p>Aerial radiological surveys were completed in 1988 to define areas of radioactive contamination, covering the Hanford Site and the banks of the Columbia River downriver to McNary Dam. The radiation levels over more than 95 percent of the site were reported to be due to normal background radiation. The main areas of elevated radionuclide activity were near nine deactivated plutonium-production reactors, the Columbia Generating Plant, 200 East/200 West Areas, and Energy Northwest. Several slough areas along the Columbia River also showed elevated radioactivity; these areas were sampled and the radionuclide content was found to be only slightly above background. This sampling also confirmed that the sensitivity of the aerial radiological survey equipment used was sufficient to detect low levels of radioactivity.</p> <p>In 2005, air emissions from Hanford Site stacks located in the 100 and 300 Areas were evaluated using previous background soil sampling work, radiological surveys, and an evaluation of the materials (radionuclides and metals) emitted and their amounts. The report concluded that there were no locations of elevated radioactivity or metals in the 100, 300, or associated 600 Areas because aerial deposition, other than those discrete areas already identified as waste sites in the WIDS.</p> <p>Ninety-five percent of the site had normal background radiation. Other areas have been investigated and are identified in WIDS. Several slough areas along the Columbia River slightly exceeded background.</p> <p>The following information summarizes two radiological surveys at the 100-D Island. WHC conducted the first investigation in 1992. The second investigation was conducted in 1995 by WDOH. In addition, descriptions of other investigations of the 100-D Island can be found in <i>Screening Assessment and Requirements for a Comprehensive Assessment: Columbia River Comprehensive Impact Assessment</i> (DOE/RL-96-16).</p> <p>From April 12 to 18, 1992, a series of radiological surveys was performed at the upstream half of 100-D Island. Radiological surveys were completed using the Ultrasonic Ranging and Data System and conducted using both a digital count-rate meter with a sodium iodide detector reporting in counts per minute and a dose rate meter reporting in microroentgens per hour (µR/h). Five ha (12.5 ac) of 100-D Island were</p>	<p><i>Radiological Survey of Exposed Shorelines and Islands of the Columbia River Between Vernita and the Snake River Confluence</i> (PNL-3127); <i>An Aerial Radiological Survey of the Hanford Site and Surrounding Area, Richland, Washington</i> (EGG-10617-1062); <i>Sampling and Analysis of 100 Area Springs</i> (DOE/RL-92-12); <i>Hanford Site Environmental Report for Calendar Year 1999</i> (PNNL-13230); <i>RCBRA Stack Air Emissions Deposition Scoping Document</i> (DOE/RL-2005-49); <i>Screening Assessments and Requirements for a Comprehensive Assessment, Columbia River Comprehensive Impact Assessment</i> (DOE/RL-96-16)</p>

Table B-1. Summary of Previous Investigations and Remediation at 100-D/H

Scope of Work and Publication Date	Conclusions/Implications	Reference
	<p>surveyed with Ultrasonic Ranging and Data System equipment. The radiological survey indicated low levels of cobalt-60 contamination on the island surface. Results of the radiological survey are published in BHI-00134, <i>100-D Island USRADS Radiological Surveys Preliminary Report – Phase II</i>. The results of the upstream survey indicate that cobalt-60 contamination on the upper end of 100-D Island does not pose a significant human health risk.</p> <p>An additional radiological survey was conducted by WDOH on a sandy downstream section of 100-D Island in 1995. A walking survey of exposed island shoreline was conducted when river levels were at their lowest. All surveys were performed using μR meters suspended approximately 2 to 4 cm (0.78 to 1.5 in.) above the ground. Background exposure rates along the river shore ranging from 7 to 8 μR/hr were measured. A pressurized ion chamber was used to measure variations in background at three island locations. Ambient background measurements recorded by the pressurized ion chamber varied from 8.8 to 9.5 μR/hr.</p> <p>Conclusions reached by WDOH were consistent with findings of previous studies. The ambient gamma radiation level measured at several island locations was near background. Burial depth and contact radiation levels of excavated discrete particles were within the range of values previously reported. No particles were found on the sandy downstream section of the island. The number of particles per unit volume was 1.3×10^{-1} particles/m^3. Three discrete particles were detected and contact measurements ranged from 85 to 2,000 μR/hr, or about 10 to 200 times greater than background levels.</p> <p>WDOH/ERS-96-1101, <i>100-D Island Radiological Survey</i>, concluded that radiological hazards and potential health effects from exposure to cobalt-60 particles on the downstream section of 100-D Island are consistent with evaluations documented in previous correspondence and reports. The net results from the survey support a conclusion that cobalt-60-contaminated particles in downstream 100-D Island sediments do not pose significant human health risks. However, WDOH recommended removal of such particles if found during the course of cleanup actions. Radiological postings are maintained in a manner consistent with Hanford Site contractor protocols because the island is owned by DOE.</p> <p>Levels of ionizing radiation that are protective of human health have also been shown to be protective of ecological receptors (IAEA 332, <i>Effects of Ionizing Radiation on Plants and Animals at Levels Implied by Current Radiation Protection Standards</i>). Therefore, ecological risks from cobalt-60 particles are not expected to be significant.</p>	
<p>Radiological Survey of the River Shore (1980)—From Hanford Site to approximately 100 km (60 mi) downstream. Measurements were made at nearly 30,000 locations.</p>	<p>A constant and uniformly distributed layer of contamination above background was observed over the entire study area, which was attributed to past Hanford operations. Ninety-two areas of increased radiation levels were evenly distributed over the survey area and attributed to contaminated sediments that have been concentrated in some places by river action. Discrete particles of contamination containing cobalt-60 were found along the river, usually in flat rocky areas with little or no vegetation. The first two types of contamination were deemed below applicable dose limits, and deleterious health effects because of the particles were deemed unlikely.</p>	<p><i>Radiological Survey of Exposed Shorelines and Islands of the Columbia River Between Vernita and the Snake River Confluence</i> (PNL-3127)</p>
<p>Sampling of 26 Riverbank Springs (1992)—And chemical and radiological analysis.</p>	<p>Results show that radiological and nonradiological contaminants continue to enter the Columbia River from the retired reactor areas of the 100 Area via the springs. However, because of the high attenuation factor, contaminant concentrations in river water samples were generally below detection limits and detected concentrations, with a few exceptions at specific locations, were below drinking water standards. The primary contaminants in the springs, detected at concentrations above drinking water standards, were strontium-90, tritium, and chromium. The results of the study were to be used to develop a long-term spring sampling program.</p>	<p><i>Sampling and Analysis of 100 Area Springs</i> (DOE/RL-92-12)</p>
<p>Sampling of River Sediment (1993)—At 28 locations in the Hanford Reach, 44 sediment samples were collected and analyzed for metals and radionuclides. Naturally occurring isotopes were not analyzed. The near-shore and shoreline sample locations included 3 upriver of the Hanford Site reactors, 22 near the reactors, and 3 downstream of the reactors near the Hanford Townsite; sampling depths were 0 to 15 cm (0 to 6 in.) and 30 to 61 cm (12 to 24 in.).</p>	<p>Contamination by arsenic, chromium, copper, lead, and zinc was found, as defined by concentrations exceeding the 95 percent upper threshold limit values as presented in <i>Hanford Site Background: Part 1, Soil Background for Nonradionuclide Analytes</i> (DOE/RL-92-24). Zinc and lead were detected most frequently; zinc exceeded in 9 percent of samples, and lead exceeded in 68 percent of samples. However, arsenic, lead, and zinc contamination may not be attributable to Hanford activities, as elevated concentrations were detected in 75 percent of upriver samples. Radionuclides were detected in all samples except four near the Hanford Townsite, but generally at concentrations less than 1 pCi/g. Cesium-137 and europium-152 were the most frequently detected and at the highest activities (up to 4.6 and 1.8 pCi/g). Radionuclide varieties and concentrations were greatest in the area from 100-D to the 100-F Slough.</p>	<p><i>100 Area Columbia River Sediment Sampling</i> (WHC-SD-EN-TI-198)</p>
<p>Evaluation of Existing Soil Radionuclide Data (1995)—Assessed the adequacy of existing soil data to serve as a radiological background baseline (<i>Hanford Site Background: Evaluation of Existing Soil Radionuclide Data</i> [DOE/RL-95-55]).</p>	<p>Soil background data were collected at a depth of 2.5 cm (approximately 1 in.) by PNNL and WDOH radiation surveillance programs in southeastern Washington. The 95 percent UTL of the data was calculated based upon lognormal, Weibull, or nonparametric population distributions. The assessment recommended that any future acquisition of background soil radionuclide data should be designed to complement this collected dataset.</p>	<p><i>Hanford Site Background: Evaluation of Existing Soil Radionuclide Data</i> (DOE/RL-95-55)</p>

Table B-1. Summary of Previous Investigations and Remediation at 100-D/H

Scope of Work and Publication Date	Conclusions/Implications	Reference
<p>Evaluation of Soil Background for Radionuclides (1996)—Evaluated data on the background activities of naturally occurring and anthropogenic radionuclides in soil samples collected from the vadose zone (DOE/RL-96-12, <i>Hanford Site Background: Part 2, Soil Background for Radionuclides</i>).</p>	<p>Forty-five systematic random subsurface vadose zone samples collected between 0.30 and 58 m (1 and 190 ft) bgs were selected for radionuclide background at the Hanford Site. Also included were three ecosystem judgment samples taken from the surface, one sample of Ringold Formation collected from an outcrop on the east side of the Columbia River, and one basalt sample used as an internal standard. All 50 samples were analyzed for potassium-40, radium-226, thorium-232, and uranium, and 49 results were used for the statistical evaluation. Results from these tests concluded that the surface and vadose zone datasets cannot be considered equal for any of the background radionuclides tested. On average, the vadose zone data are larger than the surface data for thorium-232, uranium-234, and uranium-238, and are smaller for potassium-40 and radium-226.</p>	<p><i>Hanford Site Background: Part 2, Soil Background for Radionuclides</i> (DOE/RL-96-12)</p>
<p>Sitewide Study of Nonradionuclides (2001)—A 1993 Sitewide study of nonradionuclides in background soils at Hanford was updated in 2001 (DOE/RL-92-24, <i>Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes</i>) to characterize the type and concentration of nonradionuclides that occurred naturally in the soil. In addition, physical properties and other factors were noted that might affect the natural soil chemistry.</p>	<p>This Sitewide approach for determining background was based on the assumption that the basic characteristics that control the chemical composition of the vadose zone sediments are similar throughout the site. By using this approach, a single and consistent dataset was provided for assessing the nature and extent of contamination. Background concentrations of metals were determined using the 95 percent ($\alpha=0.05$) UTL for a lognormal distribution of the data collected by systematic random sampling.</p>	<p><i>Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes</i> (DOE/RL-92-24)</p>
<p>Assessment of Groundwater Background (1997)—Interpreted groundwater background data collected from the unconfined aquifer beneath the Hanford Site (DOE/RL-96-61, <i>Hanford Site Background: Part 3, Groundwater Background</i>).</p>	<p>Data sources used included historical data gathered in conjunction with monitoring activities, and data collected specifically for evaluating groundwater background.</p>	<p><i>Hanford Site Background: Part 3, Groundwater Background</i> (DOE/RL-96-61)</p>
<p>Survey of Air Emissions (2005)—From Hanford Site stacks in the 100 and 300 Areas.</p>	<p>No new locations of elevated radioactivity or metals because of aerial deposition were identified.</p>	<p><i>RCBRA Stack Air Emissions Deposition Scoping Document</i> (DOE/RL-2005-49)</p>
<p>Annual Environmental Monitoring—Of many media on and off the Hanford Site (vegetation, wildlife, air, soil, and water).</p>	<p>Reports were prepared annually from 1988 through 2010.</p>	<p><i>Hanford Site Environmental Report for Calendar Year 2000</i> (PNNL-13487)</p>
<p>Remedial Investigation of the Columbia River (2009-2010)—Additional information regarding groundwater discharge to the Columbia River was identified as necessary to support remedy decisions. To address this data need, sampling was conducted under a program outside the 100-D/H RI/FS effort. The Columbia River RI work plan (DOE/RL-2008-11, <i>Remedial Investigation Work Plan for Hanford Site Releases to the Columbia River</i>) was implemented in three phases during 2009 and 2010 to address the uncertainty related to the nature and extent of contaminants entering the river, specifically via groundwater upwelling. The field summary report for this work (WCH-380, <i>Field Summary Report for Remedial Investigation of Hanford Site Releases to the Columbia River, Hanford Site, Washington: Collection of Surface Water, Pore Water, and Sediment Samples for Characterization of Groundwater Upwelling</i>) was published in July 2010.</p>	<p>The first phase of the Columbia River RI sampling (termed Phase IIa) focused on identifying riverbed areas where groundwater was entering the Columbia River. Pore water data were collected using a multi-sensor water-sampling probe capable of being inserted about 30 cm (12 in.) into the riverbed, and measuring conductivity and temperature in situ. Five cross-river transects in 100-D and six in 100-H were sampled at five separate locations. In addition, 10 locations around each transect were sampled.</p> <p>The second phase (termed Phase IIb) returned to 30 of the Phase IIa sample locations to collect pore water for indicator contaminant analysis. For 100-D/H, the indicator contaminant was Cr(VI). Phase IIb sampling was conducted at locations that clearly showed groundwater upwelling based on conductivity and temperature variances between the surface water and pore water, and were deemed most likely to show contamination by the Tri-Parties.</p> <p>At 100-D, of the 30 Phase IIb sites where pore water was measured for Cr(VI), 11 sample results were reported at levels exceeding AWQC (10 µg/L). The two highest Cr(VI) pore water concentrations (112 and 331 µg/L) were collected from two regions with water depths <0.9 m (3 ft) below the low-water mark. The highest Cr(VI) pore water concentration (331 µg/L) was located just upstream of the 181-D River Pump Station. The second highest hexavalent concentration (112 µg/L) was located about 9.7 m (32 ft) offshore of an area where groundwater plume estimates show Cr(VI) concentrations of 100 µg/L in the wells.</p> <p>At 100-H, of the 30 Phase IIb sample locations where pore water was measured for Cr(VI), 15 sample results exceeded the AWQC (10 µg/L), with results ranging from 12 to 46 µg/L. Three of these locations were downriver (near the White Bluffs townsite boat launch). One location, where the pore water strontium-90 was reported at 6.78 pCi/L, was comparable to the predicted 100-H strontium-90 groundwater plume concentration (8 pCi/L) in that area.</p> <p>The third phase identified six Phase IIb sample locations for sampling and analysis of pore water, surface water (defined as water 0.3 m [1 ft] above the riverbed), and collocated sediment for a wide range of potential contaminants. One additional pore water sample location in 100-D and two additional pore water sample locations for Cr(VI) only in 100-H were also chosen. The Phase III samples were analyzed for radiological and nonradiological analytes.</p>	<p><i>Remedial Investigation Work Plan for Hanford Site Releases to the Columbia River</i> (DOE/RL-2008-11); <i>Field Summary Report for Remedial Investigation of Hanford Site Releases to the Columbia River, Hanford Site, Washington: Collection of Surface Water, Pore Water, and Sediment Samples for Characterization of Groundwater Upwelling</i> (WCH-380)</p>

Table B-1. Summary of Previous Investigations and Remediation at 100-D/H

Scope of Work and Publication Date	Conclusions/Implications	Reference
	<p>For the six 100-D Phase III sample locations, the laboratory results for Cr(VI), total uranium, and strontium-90 in surface water were all at nondetect levels. Pore water sample results for Cr(VI) ranged from 9 to 640 µg/L. A single pore water detection of strontium-90 (1.5 pCi/L) was reported at a station along the Hanford shoreline adjacent to 100-D Island. Tritium was also detected in pore water over a range of 353 to 14,100 pCi/L, with the maximum found in an area of a known groundwater plume.</p> <p>For the six 100-H Phase III sample locations, the laboratory results for Cr(VI), total uranium, and strontium-90 in surface water were also all at nondetect levels. Pore water sample results for Cr(VI) ranged from 7 to 50 µg/L, with the maximum value found at a location upriver of 100-H. Tritium was detected over a range of 454 to 1,250 pCi/L, with the maximum found at the same upriver location as the maximum Cr(VI) value. The strontium-90 pore water results were all nondetects, with the exception of a 6 pCi/L value found within the area of a known 100-H groundwater plume.</p> <p>The Phase III sediment samples were attained as close to the pore water sample locations as reasonably possible, with a preference given to locations with sediment deposits. The Cr(VI) results for bulk sediment had concentrations ranging from 0.2 to 4.7 mg/kg, with the highest concentration found in 100-D.</p>	
<p>Phytoremediation Pilot Test (2009-2010)—Coyote willows were planted and monitored in a test plot in 100-K adjacent to the Columbia River. Phytoremediation would be carried out as a final polishing step to remove strontium-90.</p>	<p>The coyote willows will actively accumulate strontium-90 in their leaves and stems to concentrations over 70 times those present in the soil pore water surrounding their roots. Plant material must be harvested periodically to keep strontium-90 from entering the food chain. Results to date are promising. The coyote willow (which is a common plant that grows along the banks of the Columbia River) potentially could be used as part of a treatment that prevents strontium-90 from entering the Columbia River. Phytoremediation is the use of plants and microorganisms associated with plant roots to extract, evapotranspire, immobilize, contain, or degrade contaminants. In the case of the radionuclides and metals that are COPCs in 100-D/H, degradation would not be among the phytoremediation mechanisms.</p> <p>The coyote willow is considered the most suitable plant for use along the Columbia River shore. Known for its rapid and robust regrowth abilities, coyote willow is already used extensively along the Columbia and Yakima Rivers for bank stabilization and revegetation purposes. As part of a treatment train of remedial technologies aimed at treating strontium-90 in 100-N, phytoremediation using coyote willow would be the final polishing step. The technique potentially could have applicability in portions of 100-D/H.</p> <p>A pilot study in the late spring of 2007 began planting 50 coyote willows in a fenced area at 100-K. (Even though this study was carried out at 100-K, it was for the purposes of 100-N.) This part of the study targeted plant growth rather than phytoremediation capabilities because this location was not contaminated with strontium-90. Often flooded by the annual high Columbia River stage well into June, this site was a severe test for the willow shrubs' ability to survive realistic field conditions.</p> <p>Given the steadily increasing growth rate of the trees at 100-K following yearly harvests of their aboveground tissue, this type of plant can remove significant amounts of contamination from the shoreline area while not disturbing the natural soil structure. Laboratory studies have also shown that herbivorous insects such as aphids or moth larvae would not be a source of strontium-90 offsite transport from the trees. Further, controlled harvesting schedules and engineered barriers (fencing and netting) would prevent animal intrusion and plant detritus release.</p> <p>The phytoremediation demonstration is continuing at 100-K.</p>	<p><i>100-N Area Strontium-90 Treatability Demonstration Project: Food Chain Transfer Studies for Phytoremediation Along the 100-N Columbia River Riparian Zone</i> (PNNL-18294)</p>
<p>Calcium Polysulfide Injection Treatability Test (2006)—A test was carried out in 100-K that involved injecting calcium polysulfide, a strong reducing chemical, into the aquifer. Once in the groundwater, the calcium polysulfide reduces Cr(VI) to chromium(III) and forms a permeable reactive zone that continues to reduce Cr(VI) in groundwater that flows through it. By injecting calcium polysulfide in a row of wells perpendicular to the groundwater flow direction, this technology could be employed to create a permeable reactive barrier similar to the ISRM barrier.</p>	<p>An in situ approach that could be a cost effective supplement to the present pump-and-treat systems was tested in 2005 (DOE/RL-2006-17, <i>Treatability Test Report for Calcium Polysulfide in the 100-K Area</i>). The test entailed injecting calcium polysulfide, a strong reductant, into the aquifer in 100-K, which theoretically would reduce Cr(VI) to chromium(III) and form a permeable reactive zone. This technology effectively reduced Cr(VI) in the aquifer, and the permeable reactive zone continued reducing Cr(VI) under natural groundwater flow conditions. An analysis of groundwater chemistry before, during, and after the test showed that manganese and iron were mobilized, while arsenic was not. Pre- and post-treatment aquifer testing showed that the remediation system did not degrade aquifer permeability.</p> <p>This test was considered successful, and the data collected were deemed sufficient to scale-up the treatment technology. Water in the treatment area continues to be monitored, along with water from a second well roughly 200 m (660 ft) downgradient of the test area, to evaluate the persistence of the reducing zone and any adverse effects the test may have on aquifer chemistry.</p>	<p><i>Treatability Test Report for Calcium Polysulfide in the 100-K Area</i> (DOE/RL-2006-17)</p>
<p>Biostimulation Treatability Tests (2008, 2009)—Two in situ biostimulation tests were undertaken in 100-D by injecting molasses and emulsified vegetable oil into single wells, and one was undertaken in the horn area by injecting a polylactate compound into a single well.</p>	<p>All three tests were successful at reducing nitrate, DO, and Cr(VI) for at least 10 months to 2 years. Molasses was successfully distributed to a radius of about 15 m (50 ft) from the injection well, and emulsified vegetable oil was successfully distributed to a radius of about 8 m (25 ft) from the injection well.</p> <p>A biostimulation treatability study (PNNL-18784, <i>Hanford 100-D Area Biostimulation Treatability Test Results</i>) in 100-D focused on determining whether in situ biostimulation could be effective in conjunction with the existing ISRM barrier in 100-D. The longevity of the ISRM barrier was being decreased by high concentrations of nitrate and DO. It was thought that if the two technologies prove compatible, in situ biostimulation could serve as an inexpensive method for supplementing the ISRM reduction of Cr(VI), as well as reducing nitrate and DO flowing into the ISRM barrier. In situ biostimulation could be designed to treat groundwater contaminants over relatively long periods via</p>	<p><i>In Situ Long-Term Reductive Bioimmobilization of Cr(VI) in Groundwater Using Hydrogen Release Compound</i> (Faybishenko et al., 2009); <i>Hanford 100-D Area Biostimulation Treatability Test Results</i> (PNNL-18784)</p>

Table B-1. Summary of Previous Investigations and Remediation at 100-D/H

Scope of Work and Publication Date	Conclusions/Implications	Reference
	<p>slow-release substrates, buildup of biomass, and/or relatively inexpensive re-injection of substrates.</p> <p>Another field test of biostimulation was conducted at “Site 100H” in the horn area by injecting a glycerol polylactate hydrogen release compound into the aquifer to bioimmobilize Cr(VI). Initial Cr(VI) concentrations at the test site were approximately 60 to 80 µg/L. The source of the Cr(VI) was believed to be in 100-D. The results of this experiment showed that a single injection of hydrogen release compound into groundwater (in August 2004) stimulated an increase in biomass, a depletion of terminal electron acceptors (oxygen, nitrate, and sulfate), and an increase in ferrous iron, resulting in a significant decrease in soluble Cr(VI) concentrations. Shifts in isotopic composition (chromium-53/chromium-52 ratios) are indicative of a process of biogeochemical reduction of Cr(VI) to chromium(III) rather than simple attenuation by dilution or dispersion. Cr(VI) concentrations remained below the background concentration in the downgradient pumping/monitoring well, and below the detection limit in the injection well, for more than 3 years after injection. The degree of sustainability of Cr(VI) reductive bioimmobilization under different oxidation-reduction conditions at this and other contaminated sites is currently under study.</p> <p>Biostimulation treatability studies at 100-D/H showed that biostimulation successfully decreased nitrate, DO, and Cr(VI) concentrations.</p>	
<p>Electrocoagulation Treatability Study (2008)—The performance objective was to determine Cr(VI) removal efficiency with the goal of decreasing Cr(VI) concentrations to 20 µg/L or less. The test period was approximately 6 months, during which a total of 10.3 million L (2.8 million gal) of groundwater was treated.</p> <p>A 2007 treatability study evaluated the potential for this technology for 100-D. The study objectives were as follows:</p> <ul style="list-style-type: none"> • Determine the operability, robustness, and treatment efficiency of an electrocoagulation system • Characterize the volume and composition of the resulting waste • Obtain design data for scaling the process from a 190 L/min (50 gpm) to a 1,900 L/min (500 gpm) system <p>The study setup included an electrocoagulation unit and a downstream water treatment system that included a clarifier, filters, and a filter press to dewater the sludge. The water passed through the electrocoagulation unit, then precipitates were removed, and the water was re-oxygenated and then re-injected into the aquifer.</p>	<p>The data evaluation at the conclusion of the test suggested that electrocoagulation could achieve the treatment goal in over 90 percent of the samples with one or more passes through the treatment system, but could not operate unattended. Thus, it was concluded that cost and operational factors do not favor the use of this technology.</p>	<p><i>Treatability Test Report for the Removal of Chromium from Groundwater at 100-D Area Using Electrocoagulation (DOE/RL-2008-13)</i></p>
Risk Assessments		
<p>Qualitative Risk Assessments of Waste Sites—Evaluate risks to human health and ecological receptors before remediation.</p>	<p>Various for different waste sites—results are summarized in the interim RODs.</p>	<p>Numerous documents (see annotated bibliography, Appendix B)</p>
<p>Waste Site CVPs—To document that the remediation has achieved protectiveness as defined by the interim action ROD. Adequate cleanup is defined to be protective of human health, groundwater and the Columbia River. Ecological receptors have been evaluated using screening criteria in recent CVPs and RSVPs; however, with no established cleanup numbers for terrestrial evaluation, those sites exceeding the screening criteria will require evaluation in the context of additional lines of evidence to determine protectiveness in the context of the final ROD.</p>	<p>Various for different waste sites.</p>	<p>Numerous documents (see annotated bibliography, Appendix B)</p>

Table B-1. Summary of Previous Investigations and Remediation at 100-D/H

Scope of Work and Publication Date	Conclusions/Implications	Reference
<p>River Corridor Baseline Risk Assessment (RCBRA) (2010)— Consists of: (1) human health and ecological risk assessment of the source and groundwater component, which addresses 570 km² (220 mi²) of land and involves evaluating over 440,000 analytical results for more than 35,000 environmental samples; and (2) ecological risk assessment of the river component upland, riparian, and near-shore zones. See Chapter 6 of this document for more information.</p> <p>Most of the river effluent pipelines are known or suspected to contain low levels of residual contamination from past reactor operations. Two past characterization efforts obtained samples of the river effluent pipelines from the B, C, D, DR, and F Reactors. Characterization data collected during the river pipelines evaluations were used to evaluate risks from contaminants within the pipelines and to propose RAOs, such as pipeline removal.</p> <p>Effluent pipelines from the H Reactor could not be sampled because of high-river-flow velocities and cold water temperatures. Effluent pipelines at the KE Reactor, KW Reactor, N Reactor, and the Hanford Generating Plant also were not sampled. These effluent pipelines were used for discharge of nonradioactive effluent in accordance with an NPDES permit.</p>	<p>Results are summarized in Chapter 6 of this document. Published in 1984, UNI-3262, <i>River Discharge Lines Characterization Report</i>, discussed samples of scale (flakes of mostly rust) from the interior surfaces and enclosed sediment of the effluent pipelines from the C, DR, and F Reactors. The pipelines were also visually inspected underwater by a diver, and their positions and physical conditions were assessed. Samples of scale and sediment were analyzed for radionuclides. The major radionuclides detected included cobalt-60, cesium-137, europium-152, europium-154, and europium-155. Radionuclide concentrations were greater in the scale than in the sediment. Direct beta-gamma radiation measurements were also obtained for interior and exterior pipe surfaces. The dose rates measured for direct contact with the interior of the pipe surfaces were low at less than 1 mrem/hr, and readings on the exterior were lower than the instrument's detection capability.</p> <p>In 1994, a comprehensive geophysical survey (WHC-SD-EN-TI-278, <i>Columbia River Effluent Pipeline Survey</i>) located and mapped the reactor effluent pipelines. The study relied mainly on remote-sensing geophysical techniques including navigation and echo sounding, side-scanning radar, sub-bottom profiling, seismic reflection profiling, and GPR. The results indicated that the pipelines have neither broken loose nor moved from their original locations. However, portions of some pipelines are no longer buried and have been exposed. Exposed pipe sections were believed to be associated with areas of turbulent flow conditions at the river bottom.</p> <p>In 1995, pipe scale and sediment from the interior of the effluent pipelines from 100-B and 100-D were sampled and physically characterized using a robotic transporter (BHI-00538, <i>100 Area River Effluent Pipelines Characterization Report</i>). Analytical data from these two effluent pipelines were intended to complement the 1984 radionuclide data (UNI-3262) and were expected to represent worst-case conditions with respect to radiological contamination. This assumption was based on the long years of pipeline service and the volume of effluent known to have been discharged from the B and D/DR Reactors. The samples taken in 1995 were analyzed for a larger number of radionuclides than in the 1984 study and were also analyzed for metals and total organic carbon.</p> <p>In most cases, when the results of all radionuclide analyses are decayed to 2005, the concentrations of the samples taken in 1995 are lower than 1984 concentrations. Most metals were at concentrations below the analytical detection limits. However, the concentrations of total chromium and mercury were above detection limits; total chromium detections were over 1,000 ppm in the scale of some samples. Studies of similar concentrations of chromium in solids and water in N Reactor coolant piping suggest that the chromium is not soluble (BHI-01141, <i>100 Area River Effluent Pipelines Risk Assessment</i>). This information suggests that chromium scale in effluent piping has limited potential for ecological exposure.</p> <p>The analytical results from the 1984 and 1995 effluent pipeline characterization studies at the B, C, D/DR, and F Reactors may reasonably be extrapolated to effluent pipelines at 100-H and 100-K because operations among these reactors was similar. However, operating histories for effluent pipelines 100-N-77 or 100-N-80 suggest that contamination would only be found at negligible levels. Reactor cooling operations at N Reactor differed significantly from the other 100 Area reactor areas in that the N Reactor used a secondary system intended to keep cooling water from becoming contaminated. As a result, the 100-N-77 effluent pipeline primarily discharged raw river water that was used to remove heat from the secondary cooling system at the N Reactor. It also provided a disposal method, although only on an emergency basis, for primary cooling water and FSB water that were more likely to be contaminated. Effluent in the 100-N-77 effluent pipeline would have normally contained zero to very low levels of radioactive fission products (DOE/RL-95-111, <i>Corrective Measures Study for 100-NR-1 and 100-NR-2 Operable Units</i>).</p>	<p><i>River Corridor Baseline Risk Assessment, Volume II: Human Health Risk Assessment</i>, (DOE/RL-2007-21, Volume II, Parts 1 and 2)</p>
	<p>Risk Evaluation for River Effluent Pipelines. Evaluations of human health and ecological risk have been performed for the river effluent pipelines as they are today, located on or beneath the river channel bottom, and for a scenario in which a pipeline section breaks away from the main pipeline and is washed onto the shore of the river. Both the 1995 and 1998 risk assessment efforts (BHI-00538 and BHI-01141, respectively) relied on data collected from the 1984 and 1995 characterization work. The 1998 risk assessment (BHI-01141) presented qualitative information on the ecological risks associated with radionuclides in pipe scale, and these risks because ingestion were characterized as small to individuals and, therefore, of little consequence to populations. The evaluation of human health and ecological risk performed in 1998 (BHI-01141) concluded that concentrations of chromium and mercury in the scale and sediment within the pipelines pose minimal ecological risk because they have been in contact with river water without dissolving since the reactors were shut down in 1971. Based on the results of the 1998 risk evaluation of the pipelines under current conditions (in the river), there were no unacceptable risks and, therefore, no requirement under CERCLA to remediate the river effluent pipelines. However, the risk evaluation did determine that should portions of the river pipelines become dislodged and wash ashore, there may be elevated human health risk.</p>	

Table B-1. Summary of Previous Investigations and Remediation at 100-D/H

Scope of Work and Publication Date	Conclusions/Implications	Reference
Deactivation, Decommissioning, Decontamination, and Demolition		
ISS (2003, 2005, 2005, 2005, 2005) —Of the D, DR, and H Reactors.	Reactors were protected from environmental degradation and spread of contamination was prevented.	<i>Cleanup Verification Package for the 118-DR-2:2, 105-DR Reactor Below-Grade Structures and Underlying Soils, and the 100-D-49:4 Reactor Cooling Water Effluent Underground Pipeline (CVP-2003-00016); 105-D Reactor Interim Safe Storage Project: Final Report (BHI-01741); 105-H Reactor Interim Safe Storage Project Final Report (WCH-33); Cleanup Verification Package for the 118-D-6:2, 105-D Reactor Ancillary Support Areas, Below-Grade Structures, and Underlying Soils; the 118-D-6:3, 105-D Reactor Fuel Storage Basin and Underlying Soils; and the 132-D-4, 105-D Reactor Exhaust Stack Foundation (CVP-2005-00003); Cleanup Verification Package for the 118-H-6:2, 105-H Reactor Ancillary Support Areas, Below-Grade Structures, and Underlying Soils; the 118-H-6:3, 105-H Reactor Fuel Storage Basin and Underlying Soils; the 118-H-6:6 Fuel Storage Basin Deep Zone Side-Slope Soils; the 100-H-9, 100-H-10, and 100-H-13 French Drains; the 100-H-11 and 100-H-12 Expansion Box French Drains; and the 100-H-14 and 100-H-31 Surface Contamination Zones (CVP-2006-00003)</i>
Facility D&D and Facility Deactivation, Decontamination, Decommissioning and Demolition.	Out of 128 facilities, 115 have been demolished and removed.	<i>Integrated 100 Area Remedial Investigation/ Feasibility Study Work Plan, Addendum 1: 100-DR-1, 100-DR-2, 100-HR-1, 100-HR-2, and 100-HR-3 Operable Units (DOE/RL-2008-46-ADD1)</i>
Waste Site Remediation		
Remediation and Interim Closure of Waste Sites.	Of the 238 waste sites in 100-D/H (including the 45 orphan sites described in the next row), 162 have been closed out, interim closed, rejected, or given no action or not accepted status. The 86 remaining waste sites were scheduled to be addressed by 2011.	Numerous documents (see annotated bibliography, Appendix B)
Groundwater Remediation		
Pump-and-Treat (2009, 2010 [first system, HR-3, began operating in 1997]) —The HR-3 system consists of 10 extraction wells, a 1,100 L/min (300 gpm) IX water treatment plant, and 4 re-injection wells remediating Cr(VI) in 100-H and the northern plume of 100-D. The DR-5 system, which began operating in 2004, consists of four extraction wells, a 190 L/min (50 gpm) IX water treatment plant, and one re-injection well to address a “hot spot” in the 100-D southern plume. Expansion of pump-and-treat operations is underway, with installation of additional injection and extraction wells in the 100-HR-3 OU, including in the horn area for the first time, and construction of two new IX plants (DX and HX) with a combined capacity of 5,000 L/min (1,300 gpm).	A long-term pumping test was carried out in the deeper RUM unit to evaluate the potential persistence of dissolved Cr(VI) in that aquifer. The Cr(VI) plume in the shallow aquifer of 100-D was not remediating as well as anticipated because of the presence of continuing Cr(VI) sources in the vadose zone and/or aquifer. The RI further evaluates Cr(VI) in the RUM unit and the continuing Cr(VI) sources in the 100-D vadose zone and/or aquifer.	<i>Calendar Year 2008 Annual Summary Report for the 100-HR-3, 100-KR-4, and 100-NR-2 Operable Unit Pump-and-Treat Operation (DOE/RL-2009-15); Hanford Site Groundwater Monitoring and Performance Report for 2009: Volumes 1 & 2 (DOE/RL-2010-11)</i>

Table B-1. Summary of Previous Investigations and Remediation at 100-D/H

Scope of Work and Publication Date	Conclusions/Implications	Reference
<p>Resin Testing (2009)—Testing was undertaken to support the selection of an IX resin and regeneration process option for design of the expansion of the groundwater pump-and-treat capacity in 100-D (DX facility) and 100-H (HX facility, which is similar in design to the DX facility). The evaluation considered six resins and four regeneration process options (in-vessel regeneration, onsite regeneration, offsite regeneration, and employment of single-use resin).</p>	<p>The performance of Purolite® A500 (a regenerable resin) and ResinTech® SIR-700 (a single-use, disposable resin) were most efficient. Following are the recommendations resulting from the evaluation:</p> <ul style="list-style-type: none"> • Design the IX vessels so they can use either Purolite A500 or ResinTech SIR-700 without modification. The DX system was designed to accommodate either A500 or SIR-700. • Address uncertainties and risks associated with Purolite A500 regeneration and safe handling and disposal considerations for ResinTech SIR-700. A disposal pathway has been identified for SIR-700 through an existing waste treatment/stabilization contract with PermaFix Northwest, and other treatment options are being explored as cost-reduction methods. However, potential issues with treatment of resin regeneration wastewater were not resolved. Further, single-use resin (SIR-700) was specified for both DX and HX. • Determine whether to initiate a larger scale test of ResinTech SIR-700. A limited-scope, larger scale test was conducted to demonstrate loading SIR-700 into a vessel and removing it using current operating practices. No operational issues were identified. • Develop DX facility modifications needed to optimize the use of ResinTech SIR-700. Beaker and small-scale tests have been conducted to identify the initial pH operating range for DX. Further testing objectives or evaluations may be identified during facility cleanup. • Continue evaluation of Sitewide resin-handling strategies. 	<p><i>Resin Evaluation and Test Report to Support DX Treatment System</i> (SGW-41642)</p>
<p>DX and HX Pump-and-Treat System Pre-Conceptual Design (2009)—Includes the 100 Area DX treatment facility, injection and extraction wells, and the balance of plant.</p>	<p>The design called for groundwater to be extracted, treated by IX, and re-injected back into the aquifer at a rate up to 2,300 L/min (600 gpm). The system included additional extraction wells and injection wells. The water was to be treated in 6 IX treatment trains, each of which has four columns (lead, lag 1, lag 2, and polish) containing a strong-base resin (Dowex® 21K) with offsite regeneration of spent resins (however, resin type was still being evaluated). The design for the 100 Area HX pump-and-treat system is similar.</p>	<p><i>Functional Design Criteria for the 100-DX Pump and Treat System</i> (SGW-40243)</p>
<p>ISRM Barrier (2009 [barrier was installed in 2004])—Sodium dithionite is injected into 65 wells spaced across the width of 100-D southern plume parallel to the shoreline. This creates a permeable treatment zone that the contaminated groundwater can flow through whereby Cr(VI) is reduced to trivalent chromium. Zero valent iron is being tested as a way to fortify the barrier and increase its effectiveness.</p>	<p>The barrier was originally estimated to be effective for 15 to 20 years; however, a widespread groundwater plume of approximately 60 mg/L of nitrate may reduce the barrier's longevity. At the time of the study, about 17 of the wells showed signs of performance deterioration. A particulate iron injection method and a biostimulation method were tested as possible fixes for the wells that were not performing properly. The ISRM barrier at the other 48 wells continued to function effectively. Additional pump-and-treat in this area may be undertaken to help protect the river from excessive Cr(VI) concentrations.</p>	<p><i>Fiscal Year 2008 Annual Summary Report for the In Situ Redox Manipulation Operations</i> (DOE/RL-2009-01)</p>
Remedial Process Optimization		
<p>Remedial Process Optimization for 100-D (2008, 2009)—This work consists of five tasks:</p> <ul style="list-style-type: none"> • Review the CSM and implications for site remediation • Review the design and performance of the existing 100-D ex situ remedial systems and treatability actions and identify system or process modifications to improve performance • Identify and screen in situ and ex situ remedial technologies with the potential to improve remedial performance at the site • Develop potential RAAs for the site based on the screened technologies • Develop pre-conceptual designs and costs for three pump-and-treat technologies that were identified in the screening process for inclusion in one or more of the proposed RAAs 	<p>The top-scoring river protection technologies were biological barrier, followed by hydraulic barriers at the river, sparging wells, and chemical barrier. The top-scoring vadose zone treatment technologies were biological infiltration, followed by chemical infiltration, RTD, and water flushing. The top-scoring groundwater treatment technologies were in situ biological treatment, followed by in situ chemical treatment, in situ biological barrier, and in situ chemical barrier. The top-scoring ex situ groundwater treatment technologies were optimize existing systems, followed by extraction of groundwater and re-infiltration with biological amendments, ferrous iron reduction, and continue all actions (keep using IX as in the past).</p> <p>Specific work proposed, included the following: perform resin testing and DR-5 regeneration system design testing; identify optimal short-term remedial strategies for the DR-5 and/or HR-3 treatment systems; expedite the river protection strategy; develop well field design and pre-conceptual designs and cost estimates for DX and HX pump-and-treat systems; and implement a treatability test of full-scale bioremediation in 100-D.</p> <p>These efforts also culminated in the development of a two-step or phased approach for implementation of proposed remedial alternatives to 100-D/H and the horn area. The following RAAs were developed:</p> <ul style="list-style-type: none"> • Phase 1—Continue current actions. Existing institutional controls to remain in place and RTD and pump-and-treat operations to continue and be expanded. • Phase 2—Continue current actions with in situ chemical or biological remediation. Current actions to continue with the addition of the option to conduct in situ bioreduction or chemical reduction. 	<p><i>Remedial Process Optimization for the 100-D Area Technical Memorandum Document</i> (SGW-38338); <i>Technical Memorandum: Remediation Technology Screening for the 100-HR-3 Operable Unit</i> (SGW-41521)</p>

Table B-1. Summary of Previous Investigations and Remediation at 100-D/H

Scope of Work and Publication Date	Conclusions/Implications	Reference
<p>100-HR-3 Remedial Process Optimization Modeling (2009)— Groundwater flow and contaminant transport modeling was performed to calculate appropriate pumping rates for 100-HR-3 OU injection and extraction wells to prevent the discharge of Cr(VI) to the Columbia River substrate at concentrations exceeding those considered protective of aquatic life by 2012, and attain target cleanup levels in the 100-HR-3 OU by 2020. These objectives will be met by pump-and-treat.</p>	<p>The proposed well field design for attainment of the 2012 and 2020 goals consisted of 8 existing and 30 new extraction/injection wells in 100-D, 9 existing monitoring wells to be used as extraction/injection wells in 100-D, 13 existing and 40 new extraction/injection wells in 100-H, and 1 existing monitoring well to be used as an extraction/injection well in 100-H.</p>	<p><i>100-HR-3 Remedial Process Optimization Modeling Technical Memorandum (SGW-40044)</i></p>

Notes: The acronyms/terms used in this table are defined in the list of Terms in the front matter of this appendix.

® ResinTech is a registered trademark of ResinTech Inc., West Berlin, New Jersey.

® Purolite is a registered trademark of the Purolite Company, Bala Cynwyd, Pennsylvania.

® Dowex is a registered trademark of the Dow Chemical Company, Midland, Michigan.

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
8901		100-D/DR 100-H	100-HR-3	Jan. 1995	DOE-RL, J.K. Erickson	“Response to U.S. Environmental Protection Agency (EPA) Expedited Review Comments on <i>Preliminary Determination of Chromium Concentration Within Pore Water, Periphyton, and Chinook Salmon Eggs at Hanford Reach Spawning Area in Proximity to 100-HR-3 Operable Unit, BHI-00156, Rev. 0A, November 1994</i> ”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196033966	Response to EPA’s comments on contaminants and their relationship with the river’s salmon and eggs.	D	E			NO	NO
9048		100-D/DR	100-D ISLAND	Jan. 1995	S.H. Wisness	“Completion of 100-D Island Portion of Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) Milestone M-16-80, and 100N Portion of the Columbia River”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196036768	Response to EPA and Ecology’s letter dated November 8, 1994, regarding EPA and Ecology’s view of actions necessary to be protective of human health and safety from possible effects of exposure to discrete radioactive particles (specks) through public use of 100-D Island. This letter refutes these claims.	D		Y		YES	NO
9916		100-D 100-H	100-HR-3	Feb. 1995	DOE-RL, J.K. Erickson	“Response to the State of Washington Department of Ecology General Comments on <i>Preliminary Determination of Chromium Concentration within Pore Water, Periphyton, and Chinook Salmon Eggs at Hanford Reach Spawning Area in Proximity to 100-HR-3 Operable Unit, BHI-00156, Rev. 0A, November 1994</i> ”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196033897	Response to Ecology’s general comments on preliminary determination of chromium concentration within pore water, periphyton, and Chinook Salmon eggs at the Hanford Reach spawning area in proximity to 100-HR-3 OU.		G,Z,E	Y,X		NO	NO
10376	N/A	100-D 100-H	100-BC-1 100-BC-5 100-DR-1 100-HR-1 100-KR-1	1990	PNL, J.N. Allen	<i>The Ecology and Behavior of the Long-Billed Curlew in Southeastern Washington</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196018268	The primary focus of this document is the long-billed curlew; however, a description is also provided of 100-D/H topography, vegetation, and climate.		C,E,T				
10745		100-DR	100-DR-1	Mar. 1995	R.W. Carpenter	<i>Investigation and Characterization 100-D Area Retention Basins</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196015067	In this report, the Waste Site and Facility Research Office conducted a review of specific waste sites at or near the 107-D and 107-DR Retention Basins, Effluent Lines, the 100-DR Process Sewer System, and the 1907-DR Process Sewer Outfall. This effort included, but was not limited to, a review of historical documents, drawings, and historic photographs and sketches.	D,H,P	H	Y,S,X	A	YES	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
14073		100	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	Apr. 1995	L.K. McClain	"100 Area Chromium Concentration"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196024281	The letter presumes that the initial results of sampling performed to date provides adequate basis to justify expenditures to install and operate 500 gpm pump-and-treat systems at 100-H and each site that may be contributing chromium contamination to the river. This letter is in reply to the Confederated Tribes and Bands of the Yakama Indian Nation's letter to Mr. John D. Wagoner from Mr. Russell Jim, "Chromium Contamination in Ground Water Plumes Currently Poisoning Fish Spawning in the Columbia River's Hanford Reach; Request for Immediate Action to Remediate Condition and Eliminate Source of Chromium."		G,E,H	Y,P	A	NO	NO
14480		100-D/DR	100-HR-3	May 1995	DOE-RL, J.K. Erickson	"Notification of Recent Malfunction at the 100-HR-3 Pump and Treat System"	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196021399	Letter stating that on May 4, 1995, at 7:00 a.m., the operating technician arrived at the 100-HR-3 pump-and-treat site and found that the order of flow to the IX columns had changed from the previous day. As a result, the most saturated column was re-ordered as the last column in a series of three, thus reducing the effectiveness of the system and allowing contaminants to bleed-off of the last column into the effluent. As a worst-case estimate, approximately 5,100 gal of treated water containing 180 ppb chromium were re-injected into the ground during the night.			Y		YES	NO
16136		100-D 100-H	100-HR-3 100-KR-4	June 1995	DOE-RL, J.K. Erickson	"Responses to Comments on the Focused Feasibility Studies (FFSs) and Proposed Plans for the 100-KR-4 and 100-HR-3 Groundwater Operable Units"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196013675	DOE-RL responses to EPA and Ecology comments on the FFSs and proposed plans for the 100-HR-3 and 100-KR-4 OUs. These responses reflect the proposed strategy presented to EPA and Ecology by Mr. K.M. Thompson, as well as the additional commitments made at the HAB meeting held in Portland, Oregon, on June 12, 1995.		Z,E	Y,X	M	NO	YES
18195		100-D 100-H	100-HR-3 100-KR-4	July 1995	DOE-RL, J.K. Erickson	"Revised Responses to Comments on the Focused Feasibility Studies (FFS) and Proposed Plans for the 100-HR-3 and 100-KR-4 Groundwater Operable Units (OUs)"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196007389	DOE-RL summary of responses to comments on the FFSs and proposed plans for the 100-HR-3 and 100-KR-4 OUs, and the 100-KR-4 and 100-HR-3 responses to Washington State, Ecology, and EPA comments to the FFS and proposed plans for the OUs. These documents have been revised to reflect agreements between DOE-RL, EPA, and Ecology from a June 21, 1995, comment resolution meeting.		Z,E	Y,X,P	M	NO	YES
31340		100 AREA	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	Jan. 1, 2000	N/A	"Public Comments Received on the proposed document <i>Columbia River Impact Evaluation Plan</i> DOE/RL-92-28 Revision 0"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196110049	CTUIR are pleased to submit the enclosed technical analysis of DOE/RL-92-28. Our technical evaluation reveals that the document is insufficient in several areas. For instance, the document fails to integrate a substantial amount of historical data and does not provide a comprehensive overview of the environmental and health effects caused by Hanford operations. CTUIR have reviewed DOE/RL-92-28, and the comments are provided in this document.	D,P,H	E,Z,G,C, T	Y,S,P,X	A,M	YES	YES
32519		100-D 100-H	100-HR-3 100-KR-4	June 1996	DOE-RL, A.C. Tortoso	"Transmittal of Appendix A Draft Numerical Modeling Material"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197189100	To support the interim action design process, numerical groundwater models were developed for each of the three areas of the interim action: one each of the 100-H and 100-D Areas of the 100-HR-3 OU, and one of the 100-KR-4 OU. The numerical models were used to help determine the placement of new wells, and the use of existing wells to support the interim action. The numerical modeling was also used to estimate extraction and injection rates for interim action design purposes.	D			A,M	NO	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
33112		100-BC 100-HR	100-BC-1 100-DR-1 100-HR-1	June 1996	DOE-RL, G.H. Sanders, N.A. Werdel	“Transmittal of 100 Area Remedial Design Report/ Remedial Action Work Plan, DOE/RL-96-17, Rev. 0 (Enclosure 1); and 100-BC-1, 100-DR-1, and 100-HR-1 Sampling and Analysis Plan, DOE/RL-96-22, Rev. 0 (Enclosure 2) for Final Approval”	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196136003	This change request establishes milestones for remedial action and disposal of investigative-derived waste for 37 waste sites in the 100 Area of the Hanford Site. This action is required by EPA/ROD/R10-95/126, <i>Interim Remedial Action Record of Decision for the 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units, Hanford Site, Benton County, Washington.</i>					NO	NO
36014	Draft B	100-BC 100-DR 100-HR	100-BC-1 100-DR-1 100-HR-1	Aug. 1996	DOE-RL, G.I. Goldberg	<i>Explanation of Significant Difference (ESD) for the Interim Remedial Action Record of Decision (ROD) for the 100-BC-1, 100-DR-1, 100-HR-1 Operable Units, Hanford Site, Benton County, Washington, Draft B</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D197141942	This data compilation report contains an inventory of readily available information on existing-groundwater wells, hydrology, and geology that can be used by RI/FS investigators. It is intended as a reference document that describes the available data, when the data were collected, and how the data can be accessed. It has been designed as a supplement to other reports that evaluate existing information relative to past-practice objectives. The document will be updated periodically to reflect the installation of new monitoring wells; rehabilitation and remediation of existing wells; and new geologic, hydrologic, and groundwater chemistry information. The geographic area covered by this data compilation includes that portion of the Hanford Site north of Hanford gridline N56,000 (Figure 1-1). An attempt has been made to document all known wells that have been drilled in this area and all readily available groundwater chemistry and water-level data. The information search has focused on existing electronic databases and data compilations such as Hanford wells.	D,H		Y,S		NO	NO
40568		100-D 100-H	100-HR-3	Dec. 1996	DOE-RL, A.C. Tortoso	“Responses to Comments from the Nez Perce Tribe on the Draft <i>In Situ Redox Manipulation Field Injection Test Report – Hanford 100-H Area</i> , June 1996, Pacific Northwest National Laboratory, Richland, Washington”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197189331	DOE-RL response to comments from the Nez Perce Tribe, Department of Environmental Restoration and Waste Management.		Z	Y,X,P	A,M	NO	NO
44060		100-D	100-HR-3 100-KR-4	Mar. 1997	DOE-RL, A.C. Tortoso,	“Request for Review of Planned Activities within One Quarter Mile of the Columbia River”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197187517	This decision document presents the selected interim remedial actions for portions of the Hanford Site 100 Area, 100-HR-3 and 100-KR-4 OUs. It is primarily a summary document and includes site history, contaminant description, and alternative procedures.	D,H,P	G,Z,E	Y,S,X,P	A,M	YES	YES
44128		100-D/DR	100-HR-3	Mar. 1997	Nez Perce Tribe, D.L. Powaukee	“Response to Draft <i>Treatability Test Plan for In Situ Redox Manipulation in the 100-HR-3 Operable Unit D-Area</i> , January 1997, Pacific Northwest National Laboratory, Richland, Washington”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197147091	Letter from Nez Perce Tribe to DOE-RL containing questions, concerns, and suggestions regarding the draft treatability test plan for ISRM in the 100-HR-3 OU (PNNL, 1997).		G,Z,E	Y,X		NO	NO
45578		100-D 100-H 100-K	100-HR-3 100-KR-4	Apr. 1997	DOE-RL, A.C. Tortoso	<i>Interim Action Monitoring Plan for the 100-HR-3 and 100-KR-4 Operable Units</i> , DOE/RL-96-90, Rev. 0	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197234568	The purpose of this DQO was to develop a consensus between DOE-RL, EPA, and Ecology on the IRM design scope and the scope of monitoring activities necessary to document the effectiveness of the 100-HR-3 and 100-KR-4 interim actions.	D		Y,S,X,P		NO	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
46067		100-BC 100-DR 100-HR	100-BC-1 100-DR-1 100-HR-1	May 1997	DOE-RL, G.I. Goldberg, J.E. Rasmussen	<i>Amendment to the Interim Remedial Action Record of Decision for the 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units, Hanford Site, Benton County, Washington</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D197225332	This decision document changes components of the selected interim remedial action for the Hanford Site 100 Area radioactive liquid effluent disposal sites and clarifies the role of revegetation of remediated sites with respect to the completion of the remedial actions. The interim action ROD for the 100 Area radioactive liquid effluent disposal sites signed in September 1995 selected excavation, treatment as necessary or appropriate, and onsite disposal for 37 waste sites in the 100-BC-1, 100-DR-1, and 100-HR-1 OUs at an estimated cost of \$491 million. This amendment increases the scope of the selected remedy to include 34 additional sites in the 100 Area that received similar waste discharges and reduces the overall estimated cost for the remedial action to \$194 million for 71 sites. This amendment also recognizes the results of the soil-volume-reduction treatability studies that indicate soil washing for volume reduction is not cost effective. Therefore, this treatment step will no longer be retained as an option for the 100 Area radioactive liquid effluent disposal sites. This amendment also clarifies that revegetation of remediated waste sites will be addressed using the guidance provided in the current mitigation action plan (DOE/RL-96-19, <i>Mitigation Action Plan for Liquid Waste Sites in the 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units</i>). Those activities will provide overall environmental benefit to the site, but are not part of, or necessary, for the completion of the selected remedial action. All other elements of the selected remedy as set forth in the ROD are unchanged.	H				NO	YES
46067		100 AREA	100-BC-1 100-DR-1 100-HR-1	May 1997	DOE-RL, G.I. Goldberg, J.E. Rasmussen,	<i>Amendment to the Interim Remedial Action Record of Decision for the 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units, Hanford Site, Benton County, Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197225332	This document presents an amendment to EPA/ROD/R10-95/126.	D	G,Z	Y,X	M	NO	YES
46139		100-D	100-HR-3	May 1997	DOE-RL, K.M. Thompson	“U.S. Department of Energy, Office of Science And Technology (EM-50), Hanford Technology Deployment Initiative (TDI) Proposal for Redox Manipulation for Groundwater Remediation at 100-D Area”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197269270	This proposal offers deployment of a proven new technology to remediate subsurface chromate contamination plumes in the Hanford Site 100 Area. The deployment proposed for funding under this technical deployment initiative will be for a 500-linear-foot section of the chromate plume in 100-HR-3 OU in the 100-D Area.	D,P	Z,E	Y,P	M	NO	NO
52646		100-BC 100-DR	100-BC-1 100-DR-1 100-DR-2	Oct. 1997	DOE-RL, N.A. Werdel	“Notice of Implementation of Lead Encapsulation for 100 Area Remedial Action Projects”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198004290	Letter from DOE-RL. During excavation at the 100-BC and 100-DR remedial action projects, small volumes of lead/lead-containing materials were encountered. These materials contain leachable lead concentrations that exceed ERDF waste acceptance criteria limits and will require treatment before disposal.			y	M	NO	NO
53926		100-D/DR	100-DR-1	Dec. 1997	DOE-RL, G.I. Goldberg	“Waste Stream Considerations and Waste Designation by Representative Sampling, 100-DR-1 Remedial Action Project”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198066715	Letter from DOE-RL to Ecology discussing excavations in the 116-DR-9 and 116-D-7 concrete-lined basins that encountered construction elements within the matrix of radioactively contaminated demolition debris that have high lead (pH) concentrations in excess of ERDF acceptance limits.			Y	M	YES	YES

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
55404		100 AREA 200 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Jan. 26, 1998	DOE-RL, R.D. Hildebrand	“Review and Comment on Needs and Requirements for Consolidation of Site-Wide Groundwater Modeling at the Hanford Site”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198099117	In response to both internal and external recommendations, DOE-RL initiated a Sitewide model consolidation process, which is to include the participation of all affected Hanford programs, to eliminate redundancies and promote consistency in groundwater analyses produced for Hanford programs. The purpose of the model consolidation is to establish a Sitewide modeling process to foster (1) consistent assumptions in applications across programs, (2) model enhancements based on new data/information and improved technical capabilities, and (3) model flexibility to address new program needs and decisions. As an initial step in FY 1998, the consolidation process is to provide a current Hanford Sitewide groundwater model based on a consensus hydrogeologic conceptual model, consolidated database, and the selection of computer codes to implement the numerical model developed.	D,H,P	Z,G	Y	M,A	YES	
57631		100-BC 100-FR 100-HR, 100-KR 100-NR	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Mar. 1998	DOE-RL, M.J. Furman	<i>Groundwater Monitoring Plans for Low-Level Burial Grounds and Liquid Effluent Retention Facility</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D198132581	This report presents the final status groundwater monitoring plan for the Hanford Site LLBGs in compliance with RCRA. Five LLWMAs located in the central portion of the Hanford Site make up the LLBGs. The first wastes were disposed to these facilities in 1960, and they will remain in operation as the Hanford Site continues with its current mission of site cleanup. The three major purposes of this document are as follows: <ul style="list-style-type: none"> • Define the final status groundwater monitoring networks for the four operational LLWMAs (one LLWMA has not been used as of this date) • Select constituents and parameters that will be used to determine if a release has occurred from a LLWMA • Present the statistical method used to evaluate the effect of each LLWMA on the groundwater 	D	G,Z		A	NO	NO
59689		100 AREA	100-DR-2	July 1998	J.D. Wagoner, M.A. Wilson, R.F. Smith	<i>Action Memorandum 105-F and 105-DR Reactor Buildings and Ancillary Facilities, Hanford Site, Benton County, Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198146374	The purpose of this Action Memorandum is to document approval of the proposed non-time-critical removal action described herein for the 105-F and 105-DR Reactor Buildings and ancillary facilities at the Hanford Site. The ancillary facilities are the 116-D Exhaust Air Stack, 116-DR Exhaust Air Stack, 117-DR Exhaust Filter Building, and 119-DR Exhaust Air Sample Building. Within the 105-DR Reactor Building proper resides the 105-DR Large Sodium Fire Facility TSD unit, which will also be addressed through the removal action.	H,D,P		Y,S			YES
71203		100-D	100-HR-3	July 1999	DOE-RL, A.C. Tortoso	“Hanford In Situ Redox Manipulation (ISRM) Jeopardy Finding”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199159385	DOE-RL performed this analysis regarding potential effects on federally protected anadromous fish that could arise due to the proposed deployment of ISRM. It discusses how contaminants could affect certain species.	D	C,E	Y,X,P	M	YES	NO
75536	Draft C	100 AREA	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-1	Dec. 21, 1999	DOE-RL, G.H. Sanders	“Transmittal of DOE/RL-98-18, Draft C, 100 Area Burial Grounds Focused Feasibility Study; and DOE/RL-99-59, Draft A, 100 Area Burial Grounds Proposed Plan”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199159593	The FFS presents the evaluation of alternatives for remediation of 45 burial grounds located in the 100 Area. The proposed plan identifies preferred alternatives for remediation of these burial grounds.			Y			

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
77878		100 AREA	100-D	2000 APR	DOE-RL, C. Smith, G. Goldberg	“Meeting Minutes Transmittal/Approval Unit Managers’ Meeting Remedial Action and Waste Disposal Unit/Source Operable Unit 3350 George Washington Way, Richland, Washington December 1999”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8299874	The meeting minutes include attachments, and Attachment 6 provides a report on borehole drilling and raw data from 100-D. The primary objective of this project is to develop a vertical profile of the distribution of chemical and radioactive contamination in the deep zone (i.e., >4.6 m to the groundwater) of the 116-DR-1 and 116-DR-2 Trenches.	D,P	G	Y		NO	NO
8901		100-D/DR 100-H	100-HR-3	Jan. 1995	DOE-RL, J.K. Erickson	“U.S. Environmental Protection Agency (EPA) Expedited Review Comments on Preliminary Determination of Chromium Concentration within Pore Water Periphyton and Chinook Salmon Eggs at Hanford Reach Spawning Area in Proximity to 100-HR-3 Operable Unit, BHI-00156, Rev. 0-A, November 1994”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196033966	EPA’s comments on contaminants and their relationship with the river’s salmon and eggs.	D	E			NO	NO
9048		100-D/DR	100-D ISLAND	Jan. 1995	S.H. Wisness	“Completion of 100-D Island Portion of Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) Milestone M-16-80, and the 100-N Portion of the Columbia River”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196036768	Response to EPA and Ecology’s letter dated November 8, 1994, regarding EPA and Ecology’s view of actions necessary to be protective of human health and safety from possible effects of exposure to discrete radioactive particles (specks) through public use of 100-D Island. This letter refutes these claims.	D		Y		YES	NO
9916		100-D 100-H	100-HR-3	Feb. 1995	DOE-RL, J.K. Erickson,	“Response to the Washington State Department of Ecology General Comments on Preliminary Determination of Chromium Concentration Within Pore Water Periphyton, and Chinook Salmon Eggs at the Hanford Reach Spawning Area in Proximity to 100-HR-3 Operable Unit, BHI-00156, Rev 0-A, November 1994”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196033897	Response to Ecology’s general comments on preliminary determination of chromium concentration within pore water, periphyton, and Chinook Salmon eggs at the Hanford Reach spawning area in proximity to 100-HR-3 OU.		G,Z,E	Y,X		NO	NO
10376	N/A	100-D 100-H	100-BC-1 100-BC-5 100-DR-1 100-HR-1 100-KR-1	1990	PNL, J.N. Allen	<i>The Ecology and Behavior of the Long-Billed Curlew in Southeastern Washington</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196018268	The primary focus of this document is the long-billed curlew; however, a description of 100-D/100-H topography, vegetation, and climate is also included.		C,E,T				
10745		100-DR	100-DR-1	Mar. 1995	BHI, R.W. Carpenter	<i>Investigation and Characterization 100-D Area Retention Basins</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196015067	In this report, the Waste Site and Facility Research Office conducted a review of specific waste sites at or near the 107-D and 107-DR Retention Basins, effluent lines, 100-DR Process Sewer System, and 1907-DR Process Sewer Outfall. This effort included, but was not limited to, review of historical documents, drawings, and historic photographs and sketches.	D,H,P	H	Y,S,X	A	YES	NO

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14073		100	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	Apr. 18, 1995	L.K. McClain	“100 Area Chromium Concentration”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196024281	The letter presumes that the initial results of sampling performed to date provides adequate basis to justify expenditures to install and operate 500 gpm pump-and-treat systems at the 100-H Area, and each site that may be contributing chromium contamination to the river. This letter is in reply to the Confederated Tribes and Bands of the Yakama Indian Nation’s letter to Mr. John D. Wagoner from Mr. Russell Jim, “Chromium Contamination in Ground Water Plumes Currently Poisoning Fish Spawning in the Columbia River’s Hanford Reach; Request for Immediate Action to Remediate Condition and Eliminate Source of Chromium,” March 15, 1995.		G,E,H	Y,P	A	NO	NO
14480		100-D/DR	100-HR-3	May 1995	DOE-RL J.K. Erickson	“Notification of Recent Malfunction at 100-HR-3 Pump and Treat System”	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196021399	Letter stating that on May 4, 1995, at 7:00 a.m., the operating technician arrived at the 100-HR-3 pump-and-treat site and found that the order of flow to the IX columns had changed from the previous day. As a result, the most saturated column was reordered as the last column in a series of three, thus reducing the effectiveness of the system and allowing contaminants to bleed-off of the last column into the effluent. As a worst-case estimate, approximately 5,100 gal of treated water containing 180 ppb chromium were re-injected into the ground during the night.			Y		YES	NO
16136		100-D 100-H	100-HR-3 100-KR-4	June 1995	DOE-RL, J.K. Erickson	“Responses to Comments on the Focused Feasibility Studies (FFS) and Proposed Plans for the 100-KR-4 and 100-HR-3 Groundwater Operable Units”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196013675	DOE-RL responses to EPA and Ecology comments on the FFS and proposed plans for the 100-HR-3 and 100-KR-4 OUs. These responses reflect the proposed strategy presented to EPA and Ecology by Mr. K.M. Thompson, as well as the additional commitments made at the HAB meeting held in Portland, Oregon, on June 12, 1995.		Z,E	Y,X	M	NO	YES
18195		100-D 100-H	100-HR-3 100-KR-4	July 1995	DOE-RL, J.K. Erickson	“Revised Responses to Comments on the Focused Feasibility Studies (FFS) and Proposed Plans for the 100-HR-3 and 100-KR-4 Groundwater Operable Units (OU)”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196007389	DOE-RL summary of responses to comments on the FFS reports and proposed plans for the 100-HR-3 and 100-KR-4 OUs, and the 100-KR-4 and 100-HR-3 responses to Ecology and EPA comments to the FFS and proposed plans for the OUs. These documents have been revised to reflect agreements between DOE-RL, EPA, and Ecology from a June 21, 1995, comment resolution meeting.		Z,E	Y,X,P	M	NO	YES
31340		100 AREA	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	Jan. 1, 2000	N/A	“Public Comments Received on the proposed document <i>Columbia River Impact Evaluation Plan</i> DOE/RL-92-28 Revision 0”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196110049	CTUIR are pleased to submit the enclosed technical analysis of DOE/RL-92-28. Our technical evaluation reveals that the document is insufficient in several areas. For instance, the document fails to integrate a substantial amount of historical data and does not provide a comprehensive overview of the environmental and health effects caused by Hanford operations. CTUIR have reviewed DOE/RL-92-28, and the comments are provided in this document.	D,P,H	E,Z,G,C, T	Y,S,P,X	A,M	YES	YES
32519		100-D 100-H	100-HR-3 100-KR-4	June 1996	DOE-RL, A.C. Tortoso	“Transmittal of Appendix A Draft Numerical Modeling Material”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197189100	To support the interim action design process, numerical groundwater models were developed for each of the three areas of the interim action; one each of the 100-H and 100-D Areas of the 100-HR-3 OU, and one of the 100-KR-4 OU. The numerical models were used to help determine the placement of new wells and the use of existing wells to support the interim action. The numerical modeling was also used to estimate extraction and injection rates for interim action design purposes.	D			A,M	NO	NO

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33112		100-BC 100-HR	100-BC-1 100-DR-1 100-HR-1	1996	DOE-RL, G.H. Sanders, N.A. Werdel	“Transmittal of 100 Area Remedial Design Report/Remedial Action Work Plan DOE/RL-96-17, Rev. 0 (Enclosure 1), and 100-BC-1, 100-DR-1, and 100-HR-1 Sampling and Analysis Plan, DOE/RL-96-22, Rev. 0 (Enclosure 2) for Final Approval”	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D19613603	This change request establishes milestones for remedial action and disposal of investigative derived waste for 37 waste sites in the Hanford Site 100 Area. This action is required by EPA/ROD/R10-95/126.					NO	NO
36014	Draft B	100-BC 100-DR 100-HR	100-BC-1 100-DR-1 100-HR-1	1996	DOE-RL, G.I. Goldberg	“Explanation of Significant Difference (ESD) for the Interim Remedial Action Record of Decision (ROD) for the 100-BC-1, 100-DR-1, 100-HR-1 Operable Units, Hanford Site, Benton County, Washington, Draft B”	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D197141942	This data compilation report contains an inventory of readily available information on existing groundwater wells, hydrology, and geology that can be used by RI/FS investigators. It is intended as a reference document that describes the available data, when the data were collected, and how the data can be accessed. It has been designed as a supplement to other reports that evaluate existing information relative to past-practices objectives. The document will be updated periodically to reflect the installation of new monitoring wells; rehabilitation and remediation of existing wells; and new geologic, hydrologic, and groundwater chemistry information. The geographic area covered by this data compilation includes that portion of the Hanford Site north of Hanford gridline N56,000. An attempt has been made to document all known wells that have been drilled in this area and all readily available groundwater chemistry and water-level data. The information search has focused on existing electronic databases and data compilations such as Hanford wells.	D,H		Y,S		NO	NO
40568		100-D 100-H	100-HR-3	Dec. 1996	DOE-RL, A.C. Tortoso	“Responses to Comments from the Nez Perce Tribe on the Draft In Situ Redox Manipulation Field Injection Test Report - Hanford 100-H Area, June 1996, Pacific Northwest National Laboratory, Richland, Washington”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197189331	DOE-RL response to comments from the Nez Perce Tribe, Department of Environmental Restoration and Waste Management, on the draft ISRM field injection test report (PNNL, 1996).		Z	Y,X,P	A,M	NO	NO
44060		100-D	100-HR-3 100-KR-4	Mar. 1997	DOE-RL, A.C. Tortoso	<i>Request for Review of Planned Activities Within One Quarter Mile of the Columbia River</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197187517	This decision document presents the selected interim remedial actions for portions of the Hanford Site 100 Area 100-HR-3 and 100-KR-4 OUs. It is primarily a summary document and includes site history, contaminant description, and alternative procedures.	D,H,P	G,Z,E	Y,S,X,P	A,M	YES	YES
44128		100-D/DR	100-HR-3	Mar. 1997	Nez Perce, D.L. Powauke	“Nez Perce Comments on Draft Treatability Test Plan for In Situ Redox Manipulation in 100-HR-3 OU D-Area”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197147091	Letter from Nez Perce to DOE-RL containing questions, concerns, and suggestions for the draft treatability test plan for ISRM in the 100-HR-3 OU (PNNL, 1997).		G,Z,E	Y,X		NO	NO
45578		100-D 100-H 100-K	100-HR-3 100-KR-4	Apr. 1997	DOE-RL A.C. Tortoso	“Interim Action Monitoring Plan for the 100-HR-3 and 100-KR-4 Operable Units, DOE/RL-96-90, Rev. 0”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197234568	The purpose of this DQO report was to develop a consensus between DOE-RL, EPA, and Ecology on the IRM design scope and the scope of monitoring activities necessary to document the effectiveness of 100-HR-3 and 100-KR-4 interim actions.	D		Y,S,X,P		NO	NO

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46067		100-BC 100-DR 100-HR	100-BC-1 100-DR-1 100-HR-1	1997	DOE-RL, G.I. Goldberg, J.E. Rasmussen	<i>Amendment to the Interim Remedial Action Record of Decision for the 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units, Hanford Site, Benton County, Washington</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D197225332	This decision document changes components of the selected interim remedial action for the Hanford Site 100 Area radioactive liquid effluent disposal sites and clarifies the role of revegetation of remediated sites with respect to the completion of the remedial actions. The interim action ROD for the 100 Area radioactive liquid effluent disposal sites signed in September 1995 selected excavation, treatment as necessary or appropriate, and onsite disposal for 37 waste sites in the 100-BC-1, 100-DR-1, and 100-HR-1 OUs at an estimated cost of \$491 million. This amendment increases the scope of the selected remedy to include 34 additional sites in the 100 Area that received similar waste discharges and reduces the overall estimated cost for the remedial action to \$194 million for 71 sites. This amendment also recognizes the results of the soil-volume-reduction treatability studies that indicate soil washing for volume reduction is not cost effective. Therefore, this treatment step will no longer be retained as an option for the 100 Area radioactive liquid effluent disposal sites. This amendment also clarifies that revegetation of remediated waste sites will be addressed using the guidance provided in the current mitigation action plan (DOE/RL-96-19). Those activities will provide overall environmental benefit to the site, but are not part of, or necessary, for the completion of the selected remedial action. All other elements of the selected remedy as set forth in the ROD are unchanged.	H				NO	YES
46067		100 AREA	100-BC-1 100-DR-1 100-HR-1	May 1997	DOE-RL, G.I. Goldberg, JE Rasmussen,	<i>Amendment to the Interim Remedial Action Record of Decision for the 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units, Hanford Site, Benton County, Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197225332	This document presents an amendment to EPA/ROD/R10-95/126.	D	G,Z	Y,X	M	NO	YES
46139		100-D	100-HR-3	May 1997	K.M. Thompson	“U.S. Department of Energy, Office of Science and Technology (EM-50), Hanford Technology Deployment Initiative (TDI) Proposal for Redox Manipulation for Groundwater Remediation at 100-D Area”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197269270	This proposal proposes deployment of a proven new technology to remediate subsurface chromate contamination plumes in the Hanford Site 100 Area. The deployment proposed for funding under this technology deployment initiative will be for a 500-linear-foot section of the chromate plume in the 100-HR-3 OU in the 100-D Area.	D,P	Z,E	Y,P	M	NO	NO
52646		100-BC 100-DR	100-BC-1 100-DR-1 100-DR-2	Oct. 1997	DOE-RL, N.A. Werdel,	“Notice of Implementation of Lead Encapsulation for 100 Area Remedial Action Projects”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198004290	Letter from DOE-RL. During excavation at the 100-BC and 100-DR remedial action projects, small volumes of lead/lead-containing materials were encountered. These materials contain leachable lead concentrations that exceed ERDF waste acceptance criteria limits and will require treatment before disposal.			y	M	NO	NO
53926		100-D/DR	100-DR-1	Dec. 1997	DOE-RL, G.I. Goldberg,	“Waste Stream Considerations and Waste Designation by Representative Sampling, 100-DR-1 Remedial Action Project”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198066715	Letter from DOE-RL to Ecology discussing excavations in the 116-DR-9 and 116-D-7 concrete-lined basins that encountered construction elements within the matrix of radioactively contaminated demolition debris that have high lead (pH) concentrations in excess of ERDF acceptance limits.			Y	M	YES	YES

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55404		100 AREA 200 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Jan. 26, 1998	R.D. Hildebrand	“Review and Comment on Needs and Requirements for Consolidation of Site-Wide Groundwater Modeling at the Hanford Site”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198099117	In response to both internal and external recommendations, DOE-RL initiated a Sitewide model consolidation process, which is to include the participation of all affected Hanford programs, to eliminate redundancies and promote consistency in groundwater analyses produced for Hanford Site programs. The purpose of the model consolidation is to establish a Sitewide modeling process to foster (1) consistent assumptions in applications across programs, (2) model enhancements based on new data/information and improved technical capabilities, and (3) model flexibility to address new program needs and decisions. As an initial step in FY 1998, the consolidation process is to provide a current Hanford Sitewide groundwater model based on a consensus hydrogeologic conceptual model, a consolidated database, and the selection of computer codes to implement the numerical model developed.	D,H,P	Z,G	Y	M,A	YES	
57631		100-BC 100-FR 100-HR, 100-KR 100-NR	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	1998	DOE-RL, M.J. Furman	<i>Groundwater Monitoring Plans for Low-Level Burial Grounds and Liquid Effluent Retention Facility</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D198132581	This report presents the final status groundwater monitoring plan for the Hanford Site LLBGs in compliance with RCRA. Five LLWMAs located in the central portion of the Hanford Site make up the LLBGs. The first wastes were disposed to these facilities in 1960, and they will remain in operation as the Hanford Site continues with its current mission of site cleanup. The three major purposes of this document are as follows: <ul style="list-style-type: none"> • Define the final status groundwater monitoring networks for the four operational LLWMAs (one LLWMA has not been used as of this date) • Select constituents and parameters that will be used to determine if a release has occurred from a LLWMA • Present the statistical method used to evaluate the effect of each LLWMA on the groundwater 	D	G, Z		A	NO	NO
59689		100 AREA	100-DR-2	July 14, 1998	J.D. Wagoner, M.A. Wilson, R.F. Smith	<i>Action Memorandum: USDOE Hanford 100 Area National Priorities List, 105-F and 105-DR Reactor Buildings and Ancillary Facilities, Hanford Site, Benton County, Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198146374	The purpose of this Action Memorandum is to document approval of the proposed non-time-critical removal action described herein for the 105-F and 105-DR Reactor Buildings and ancillary facilities. The ancillary facilities are the 116-D Exhaust Air Stack, 116-DR Exhaust Air Stack, 117-DR Exhaust Filter Building, and 119-DR Exhaust Air Sample Building. Within the 105-DR Reactor Building proper resides the 105-DR Large Sodium Fire Facility TSD unit, which will also be addressed through the removal action.	H,D,P		Y,S			YES
71203		100-D	100-HR-3	July 1999	DOE-RL, A.C. Tortoso	“Hanford In Situ Redox Manipulation (ISRM) Jeopardy Finding”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199159385	DOE-RL performed this analysis regarding potential effects on federally protected anadromous fish that could arise due to the proposed deployment of ISRM. It discusses how contaminants could affect certain species.	D	C,E	Y,X,P	M	YES	NO
75536	Draft C	100 AREA	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-1	Dec. 21, 1999	G.H. Sanders	“Transmittal of DOE/RL-98-18, Draft C, 100 Area Burial Grounds Focused Feasibility Study; and DOE/RL-99-59, Draft A, 100 Area Burial Grounds Proposed Plan”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199159593	The FFS presents the evaluation of alternatives for remediation of 45 burial grounds located in the 100 Area. The proposed plan identifies preferred alternatives for remediation of these burial grounds.			Y			
77878		100 AREA	100-D	Apr. 2000	DOE-RL, C. Smith, G. Goldberg	“Meeting Minutes, Unit Manager’s Meeting, 100 Area Remedial Action and Waste Disposal Unit Source OU,” December 1999	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8299874	The meeting minutes include attachments, and Attachment 6 is a report on borehole drilling and raw data from 100-D. The primary objective of this project is to develop a vertical profile of the distribution of chemical and radioactive contamination in the deep zone (i.e., >4.6 m to the groundwater) of the 116-DR-1 and 116-DR-2 Trenches.	D,P	G	Y		NO	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
77994		100 AREA	100-D	Mar. 2000	DOE-RL, C. Smith, G. Goldberg	“Meeting Minutes, Unit Manager’s Meeting, Remedial Action and Waste Disposal Unit Source OU 100 Area,” May 1999	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8282140	The meeting minutes include attachments, and Attachment 5 relates to sampling of the 100 Area with the samples coming from 100-D. This document describes the process, procedures and testing that will be conducted during bench-scale testing designed to determine a Cr(VI) sediment/water distribution coefficient and leachability of Cr(VI) in the 100 Area sediments where site-specific information does not currently exist.	P	G,Z	Y	M	NO	NO
79767		100 AREA 300 AREA	100-BC 100-D/DR 100-F 100-H 100-K 100-N	July 2000	N/A	“Meeting Minutes, Unit Manager’s Meeting, 100 Area Remedial Action and Waste Disposal Unit Source OU,” March 2000	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D8415219	Varied collection of attachments that contains a brief overview of a closeout strategy for 100-H.			Y			
84092		100 AREA	100-DR-2	Nov. 21, 2000	M.R. Morton	<i>Reactor ISS Project 105-DR Valve Pit Walls and Underlying Soils</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8686057	Concrete sampling results in the subject areas, completed as part of DOE/RL-99-35, have exceeded the action levels prescribed in the SAP. The purpose of this letter is to provide the technical basis for leaving these concrete structures in place and documenting concurrence of that basis by all the decision makers for this project. The affected area is the 105-DR Room 230B valve pit walls greater than 3 ft below grade and adjacent to the DR Reactor safe storage enclosure that will be constructed around the reactor block.			Y			
90577		100 AREA	100-BC-1 100-BC-2 100-KR-2 100-FR-2 100-DR-1 100-DR-2 100-HR-2	July 2001	BHI, V.R. Dronen	“Errata to the DOE/RL-98-18, 100 Area Burial Grounds Focused Feasibility Study, Revision 1” (CCN 082337, dated September 28, 2000)	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8848948	Contains tables listing specific 100 Area OUs, their locations, and COPCs.	D		Y		NO	NO
109385		100 ARE	105-D 105-H	Aug. 2003	DOE-RL, A Tortoso, D.C. Smith	“Meeting Minutes, Unit Manager’s Meeting, 100 Area Remedial Action Unit Source OU,” July 24, 2003	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D2984324	Meeting minutes contain a document that is prepared as an addendum to the air monitoring plan, Appendix B of <i>Removal Action Work Plan for 105-D and 105-H Building Interim Safe Storage Projects and Ancillary Buildings</i> (DOE/RL-2000-57). Revisions to the air monitoring plan, as described in this document, apply to all Decommissioning Project activities conducted at the 105-D and 105-H Reactor Buildings.	D	G	Y		NO	NO
123732		100 AREA	100-BC 100-D 100-H 100-K 100-N 100-F	Aug. 2005	DOE-RL, D.C. Smith, K.M. Thompson	“Meeting Minutes, Unit Manager’s Meeting, 100 Area Remedial Action Unit Source OU,” June 23, 2005	http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA01163241	Meeting minutes contain status updates on OUs located within the 100 Area.	D		Y		NO	NO
128832		100 AREA 300 AREA	100-BC 100-D/DR 100-F 100-H 100-K 100-N	June 2006		“Meeting Minutes, Unit Manager’s Meeting, 100 Area and 300 Area Groundwater and Remedial Action Unit and Source OU,” December 8, 2005	http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA03629477	Attachment 4 provides a small status update for 100-HR-3 and its contaminants.			Y			

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
129208		100 AREA 300 AREA	100-BC 100-D/DR 100-F 100-H 100-K 100-N	July 2006	DOE-RL, K.D. Bazzell	“Meeting Minutes, Unit Manager’s Meeting, 100 Area and 300 Area Groundwater and Remedial Action Unit and Source OU,” June 8, 2006	http://pdw.hanford.gov/arpir/pdf.cfm?accession=da04278416	Attachment 4 provides a small status update for 100-HR-3 and its contaminants, as well as other OUs.			Y			
135828		100 AREA 300 AREA	100-BC 100-D/DR 100-F 100-H 100-K 100-N	Sept. 2007	DOE-RL, S. Charboneau, B. Charboneau	“Meeting Minutes, Unit Manager’s Meeting, 100 Area and 300 Area Groundwater Source OU Facility [D4 and ISS] and End State and Final Closure,” August 9, 2007	http://pdw.hanford.gov/arpir/pdf.cfm?accession=da05849091	Contains a status update for contaminants in 100-HR-3, as well as other OUs.			Y			
9100210		100-D/DR	100-HR-3	Dec. 1990	DOE-RL, R.D. Izatt	“Notification of Activity Near Bald Eagle Communal Roosting Habitat”	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196033732	Letter naming 100-HR-3 as a bald eagle roosting area.			E		NO	NO
9102762		100-D	100-HR-3	Apr. 1991	Ecology, T.L. Nord	“Ecology Comments on Draft B– RCRA Facility Investigation and Corrective Measures Study Work Plan for the 100-HR-3 Operable Unit”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196071231	A list of Ecology’s comments and concerns regarding Draft B of the work plan (DOE/RL-88-38).	D	G,Z	Y,S,X,P		NO	NO
9103771		100 AREA	100-BC-1 100-BC-5 100-DR-1 100-HR-1 100-HR-3 100-DR-1	Aug. 5, 1991	DOE-RL, S.H. Wisness	“Documentation of 100 Area Work Plan Rescoping Negotiations”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196071204	The purpose of this letter report is to describe the format, content, and investigative strategy to be used in rescoped work plans for the 100-HR-1, 100-DR-1, and 100-BC-1 Source OUs, and the 100-HR-3 and 100-BC-5 Groundwater OUs, based on the new Hanford Site past-practice investigation strategy. This strategy resulted from the recognition by EPA, Ecology, and DOE-RL, the three parties to the Tri-Party Agreement (Ecology et al., 1989), that there is a need for greater efficiency over the existing RI/FS and RFI/CMS investigative approaches at the 100 Area of the Hanford Site. In particular, the three parties have recognized that, to expedite the ultimate goal of cleanup, much more emphasis needs to be placed on initiating and completing waste site cleanup through interim measures.	H,P		Y,X	M	NO	NO
9103771		100-D/DR 100-H 100-BC	100-HR-1 100-HR-3 100-DR-1 100-BC-1 100-BC-5	Aug. 1991	DOE-RL, S.H. Wisness	“Documentation of 100 Area Work Plan Rescoping Negotiations”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196071204	The purpose of this letter report is to describe the format, content, and investigative strategy to be used in rescoped work plans for the 100-HR-1, 100-DR-1, and 100-BC-1 Source OUs, and the 100-HR-3 and 100-BC-5 Groundwater OUs, based on the new Hanford Site past-practice investigation strategy.	D,P	G	Y,S,X		NO	NO
9104255		100-BC 100- HR 100-DR	100-BC-1 100-BC-5 100-DR-1 100-HR-1 100-HR-3	1991	DOE-RL, S.H. Wisness	“Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Past Practice Units Rescoped Work Plans, 100-HR-1, 100-HR-3, 100-DR-1, 100-BC-1, and 100-BC-5”	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196078285	The rescoped work plans provide individual OU schedules and a 100 Area integrated schedule in Chapter 6. These schedules were based on known resources (infrastructure and support systems) in FYs 1992 and 1993. Out-year resources are leveled to these baselines. Therefore, the schedules as presented may not show RI or FS tasks that are either undefined at this time, or are resource limited.					NO	NO
9106057		100-D/DR 100-H	100-HR-1 100-HR-3 100-DR-1	Dec. 1991	L. Goldstein	“Ecology Review of the Draft C 100-HR-1, 100-HR-3, and 100-DR-1 Operable Units Work Plans”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196082617	Provides Ecology’s review of the Draft C work plans for the 100-HR-1, 100-HR-3, and 100-DR-1 OUs.	D	G,Z	Y		YES	NO

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9203159	Draft A	100 AREA	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	July 15, 1992	L.E. Gadbois	“Technical Review of Columbia River Impact Evaluation Plan DOE/RL-92-28 Draft A”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196104307	This report is a concise presentation of the information needed to evaluate the effects of 100 Area contaminants on the Columbia River. A summary of past and existing levels of surface water contamination is presented for locations upstream and downstream of the Hanford Site.	D	Z	Y			
9400608	REV. 0	100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	Dec. 14, 1993	S.H. Wisness	“Draft Responses to Regulator and Public Comments on DOE/RL-92-28, Columbia River Impact Evaluation Plan, Revision 0”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196101852	In summary, the results of this impact evaluation are (1) preliminary, (2) include only the contaminants with the most apparent potential for effects, (3) include limited data on river sediment, and (4) include only several of the exposure pathways. The results of this assessment are intended only to indicate additional data needs to support a full river study and risk assessment. This plan covers only the section of the Hanford Reach through the 100 Area.		Z	S	A	YES	
9406009		100-BC 100-D/DR 100-H	116-D-3116-D-4116-H-3116-B-9116-B-10	Sept. 1994	C.A. Brandt	“Biological Review of the Removal of French Drains & Dry Well Project, 100B, 100D, and 100H Areas, #94-CHI-002”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196015084	Letter discussing biological review of the removal of French drains and dry well project in the 100-B, 100-D, and 100-H Areas.		E				
0100X-IG-G0001		100-BC, 100-DR, 100-HR	100-BC-1 100-DR-1 100-HR-1	1996	BHI, W.S. Thompson	<i>Field Instruction Guide for the Remediation of 100-BC-1, 100-DR-1, and 100-HR 1 Waste Sites</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D199021854	This field instruction guide provides direction to field analytical personnel for implementing <i>100-BC-1, 100-DR-1, and 100-HR-1 Sampling and Analysis Plan</i> (DOE/RL-96-22). The SAP is the controlling document in performing work. All references to the SAP are italicized to distinguish SAP references from field instruction guide references. This instruction guide will be revised as field conditions dictate or when upper-tier requirements in the SAP are changed. The field instruction guide is issued and controlled as an instruction guide. All revisions to this field instruction guide will be approved by the resident engineer using a design change notice. The resident engineer for each of the remediation projects covered by the SAP will provide direction as needed, as described in this guide. A sample authorization form will be prepared for each remedial action activity that provides analytical parameters, analytical methods, sample container type and volume, and holding time for each laboratory (standard fixed laboratory or quick-turnaround laboratory).	D		Y		NO	NO
0100X-IG-G0001	REV. 1	100-BC 100-DR 100-HR	100-BC-1 100-DR-1 100-HR-1	1996	BHI, W.S. Thompson	<i>Field Instruction Guide for the Remediation of 100-BC-1, 100-DR-1, and 100-HR-1 Waste Sites</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D199021855	This field instruction guide provides direction to field analytical personnel for implementing the <i>100-BC-1, 100-DR-1, and 100-HR-1 Sampling and Analysis Plan</i> (DOE/RL-96-22). The SAP is the controlling document in performing work. All references to the SAP are italicized to distinguish SAP references from field instruction guide references. This instruction guide will be revised as field conditions dictate or when upper-tier requirements in the SAP are changed. The field instruction guide is issued and controlled as an instruction guide. All revisions to the field instruction guide will be approved by the resident engineer using a design change notice. The resident engineer for each of the remediation projects covered by the SAP will provide direction as needed, as described in this guide. A sample authorization form will be prepared for each remedial action activity that provides analytical parameters, analytical methods, sample container type and volume, and holding time for each laboratory (standard fixed laboratory or quick-turnaround laboratory).					NO	NO

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
0100X-IG-G0001	REV. 2	100-BC 100-DR 100-FR	100-BC-1 100-DR-1 100-DR-2 100-FR-1 100-FR-2	1999	BHI	<i>Instruction Guide for Remediation of the 100 Areas Waste Sites</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D8702132	This instruction guide provides direction to field analytical personnel for implementing the <i>100 Area Remedial Action Sampling and Analysis Plan</i> (DOE/RL-96-22). The SAP is the controlling document for performing work. All references to the SAP appear as underlined and italics to distinguish SAP references from instruction guide references. This instruction guide will be revised as field conditions dictate or when upper-tier requirements in the SAP are changed. The instruction guide is issued and controlled as an instruction guide. All revisions to the instruction guide will be approved by the resident engineer using a design change notice. The resident engineer for each of the remediation projects covered by the SAP will provide direction as needed and as described in this instruction guide.			Y		NO	NO
0100X-IG-G0001	REV. 2	100 AREA	100-BC-1 100-DR-1 100-DR-2 100-FR-1 100-FR-2	Jan. 1, 1999	N/A	<i>Instruction Guide for Remediation of the 100 Areas Waste Sites</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8702132	The purpose of this appendix is to provide guidance regarding the frequency of measurement and action levels for the radiological control technician performing surveys in support of 100 Area remedial action sites. The survey performed is primarily to guide excavation of soils and material. This guidance is limited to 100 Area OUs currently undergoing remediation. This guidance is for aiding the 100 Area OUs in the excavation of soils and material; it is not for release of the site. The guidance provides the action levels and frequency of measurements when using hand-held instruments used in determining the level of radioactivity in soil and soil-like material; it is not for material that has surface contamination. Items with surfaces (not contaminated in depth or volume) will be surveyed and released based on the guidance in the site-specific survey technical assessment.	D,H,P	G	Y,S	A		
0100X-IG-G0001		100 AREA	100-BC-1 100-DR-1 100-HR-1	Oct. 1996	BHI, W.S. Thompson	<i>Field Instruction Guide for the Remediation of the 100-BC-1, 100-DR-1, and 100-HR-1 Waste Sites</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199021854	This field instruction guide provides direction to field analytical personnel for implementing <i>100-BC-1, 100-DR-1, and 100-HR-1 Sampling and Analysis Plan</i> (DOE/RL-96-22). The SAP is the controlling document in performing work. It is a manual for sampling these specific areas and includes notes on contaminants and procedures.	P	G	Y	M	NO	YES
01-ERD-050		100-D/DR	100-D/DR	Mar. 2001	DOE-RL, A.C. Tortoso	“Transmittal of 100-D/DR Area In Situ Redox Manipulation (ISRM) Barrier Fourth Quarter Fiscal Year 2000 Technical Memorandum”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8686235	This technical memorandum discusses the performance of the ISRM treatment barrier of the chromium-contaminated groundwater plume west of the D/DR Reactors in the 100-D Area. The report covers the fourth quarter of FY 2000, from July 1 through October 31, 2000. The data presented in this report are limited to data that were available as of October 31, 2000. Not all analytical laboratory results were available for inclusion in this report. Data not included will be presented in the FY 2000 annual report for the 100-D/DR Area ISRM site.	P	Z	Y,X,P		NO	NO
01-ERD-074		100-D/DR	100-HR-3	May 2001	DOE-RL, A.C. Tortoso	“Transmittal of Contained-In Request for 100-HR-3 Operable Unit Groundwater in the Vicinity of the 183-H Solar Evaporation Basins”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8722056	This document provides data to support a contained-in determination for groundwater in the vicinity of the 100-HR-3 OU. The groundwater beneath and near the 183-H Solar Evaporation Basins has been contaminated from past leaks from the basins. The basins received listed wastes that could have leached into the underlying groundwater. As a result, extracted groundwater and material that come into contact with the groundwater (e.g., resins) are assumed to contain listed waste.	D,H,P		Y,S,X		NO	NO
01-ERD-083		100-D	100-HR-3	May 2001	DOE-RL, A.C. Tortoso	“Transmittal of 100-D/DR Area In Situ Redox Manipulation (ISRM) Barrier First Quarter Fiscal Year 2001 Technical Memorandum”	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D8729842	This FY 2001 quarterly progress and performance report discusses the ISRM interim remedial action and barrier emplacement activities at the 100-HR-3 OU from October 1 through December 31, 2000. The remedial action is located in the 100-D Area of the Hanford Site.	D		Y,X	A	NO	NO

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01-RCA-418		100 AREA	100-DR-1 100-DR-2 100-HR-3	Aug. 27, 2001	J. Hebdon	“Concurrence on Selection of Recommended Option for the In-Situ Redox Manipulation (ISRM) Mitigation Plan”	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D8818754	This document presents a mitigation plan to address a significant trend of increasing Cr(VI) concentrations observed in the central treatability test portion of the ISRM barrier (i.e., wells 199-134-7, 199-D4-9, 199-D4-10, 199-D4-11, and 199-D4-12) in 2000 and 2001. Previous Cr(VI) measurements were near or below detection limits since dithionite injection/withdrawal in 1997 and 1998. This mitigation plan provides three options for a path forward to address this trend in the treatability study portion of the ISRM barrier, including advantages/disadvantages, a timing for implementation, and a recommended approach.		Z,G	Y,S,P	A		YES
01-RCA-418		100-D/DR	100-DR-1 100-DR-2	Aug. 2001	DOE-RL, J. Hebdon	“Concurrence on Selection of Recommended Option for the In-Situ Redox Manipulation (ISRM) Mitigation Plan”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8818754	This document presents a mitigation plan to address a significant trend of increasing Cr(VI) concentrations observed in the central treatability test portion of the ISRM barrier.	P	G,Z	Y,X,P	M	NO	YES
02-ERD-003		100-D100-H	100-HR-3 100-KR-4	Oct. 2001	DOE-RL, J.P. Sands	“Transmittal of Design Documents for the 100-HR-3 and 100-KR-4 Pump and Treat System Upgrades”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8868782	These documents provide information related to the completed design for the enhancements to the 100-HR-3 and 100-KR-4 pump-and-treat system, as specified in Action Item #100-1 of the Hanford Site’s first 5-year review report prepared by EPA. Preliminary design information was provided to EPA and Ecology during meetings on August 9 and August 30, 2001, respectively.	D,P		Y		NO	NO
02-ERD-0036		100-D/DR	100-DR-1 100-DR-2 100-HR-3	Jan. 2002	DOE-RL, O.C. Robertson	“Transmittal of 100-D/DR Area In Situ Redox Manipulation Fourth Quarter Fiscal Year 2001 Technical Memorandum”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8949764	This technical memorandum discusses the construction and performance of the ISRM treatment zone of the chromium-contaminated groundwater plume west of the D/DR Reactors in the 100-D Area of the Hanford Site. The report covers the fourth quarter of FY 2001, from July 1 through September 30, 2001. Activities associated with this report are part of Phase II treatment zone construction activities, which began at the start of FY 2001 (October 1, 2000). The data presented in this report are limited to those that were available as of October 1, 2001. Deployment of ISRM is specified in <i>Interim Remedial Action Record of Decision Amendment: 100-HR-3 Operable Unit, Hanford Site, Benton County, Washington</i> (EPA/541/R-00/122).	D	G,Z	Y,X,P	A,M	YES	NO
02-ERD-0072		100-D/DR	100-DR-1 100-DR-2 100-HR-3	May 2002	DOE-RL, M. McCormick	“Transmittal of 100-D/DR Area In Situ Redox Manipulation Barrier First Quarter Fiscal Year 2002 Technical Memorandum”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D9056157	This technical memorandum summarizes construction activities and performance of the ISRM treatment zone west of the D/DR Reactors in the 100-D Area of the Hanford Site. The report covers the first quarter of FY 2002, from October 1 through December 31, 2001. Deployment of ISRM is specified in EPA/541/R-00/122.	D	G,Z	Y,X,P	A,M	YES	NO
02-ERD-009		100-D/DR	100-DR-1 100-DR-2 100-HR-3	Oct. 2001	DOE-RL, M. McCormick	“Transmittal of 100-D/DR Area In Situ Redox Manipulation Barrier Third Quarter Fiscal Year 2001 Technical Memorandum”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8924042	This technical memorandum discusses the performance of the ISRM treatment zone of the chromium-contaminated groundwater plume west of the D/DR Reactors in the 100-D Area of the Hanford Site. The report covers the third quarter of FY 2001, from April 1 through June 30, 2001. Activities associated with this report are part of Phase II treatment zone construction activities, which began at the start of FY 2001 (October 1, 2000). The data presented in this report are limited to those that were available as of June 30, 2001. Deployment of ISRM is specified in EPA/541/R-00/122.	D	G,Z	Y,X,P	A,M	YES	NO
02-WMD-0232		100-D/DR	100-DR-1 100-HR-3	July 2002	DOE-RL, A.C. Tortoso	“Transmittal of 100-D/DR Area In Situ Redox Manipulation Second Quarter Fiscal Year 2002 Technical Memorandum”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D9109659	This technical memorandum summarizes construction activities and performance monitoring results for the ISRM treatment zone west of the D/DR Reactors in the 100-D Area of the Hanford Site. The report covers the second quarter of FY 2002, from January 1 through March 31, 2002.	P	Z	Y,X,P		NO	NO
03-ERD-0050		100 AREA	100-DR-2	Jan. 16, 2003	N/A	“Contract No. DE-AC06-93RL12367 –	http://pdw.hanford.gov/arpir/pdf.cfm?accession	The purpose of this evaluation is to document interpretations regarding the recycling of materials originating from Hanford Site facilities subject to	H,D		Y,S	A		

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
						Approved Decommissioning Projects Discussion Papers”	=D9217536	CERCLA response authorities in order to maximize beneficial recycling while ensuring compliance with CERCLA regulatory provisions for offsite acceptability determinations. Waste characterization sampling of the 117-DR Exhaust Filter Building and associated tunnels is described in the Phase II and Phase III SAPs for the F and DR Reactors and ancillary facilities. Recent inspections indicate some unanticipated materials in the facility that requires additional characterization before removal and disposal. These include seal pit water, residual sludge in the seal pits, and solid material on the face of the high-efficiency particulate air filters. Samples of these materials will be collected for waste characterization purposes to support removal of the structure and building contents for subsequent disposal.						
06-AMRC-0027		100-D/DR	100-DR-1 100-DR-2	Nov. 2005	DOE-RL, D.T. Evans	“Transmittal of the Air Monitoring Plan for the 100-D/DR Area Remaining Sites and Burial Grounds Remedial Action”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA01352257	This remedial action work scope is for the removal and disposal of waste material and associated soil and debris from burial grounds and remaining waste sites located in the 100-DR-1 and 100-DR-2 OUs. The remedial action operations include characterizing, excavating, sorting, size-reducing, stockpiling, treating (if necessary), decontaminating, containerizing, staging, loading, and transporting materials from the waste sites.	D,P	G	Y,X	M	YES	NO
07-AMRC-0253		100-H	100-HR-2	July 2007	DOE-RL, J.R. Franco	“Replaces Transmittal 07-AMRC-0239, Dated 7/12/2007 – Transmittal of Review Copies of Waste Site Reclassification Forms and Supporting Documentation for the 128-H-2 and 128-H-3 Sites”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=da05453861	Information regarding reclassification of 128-H-2 100-H Burning Ground #2 and 128-H-3 100-H Burning Ground #3, in combination with aerial and historical photographs.	D,H	G			NO	NO
08-AMRC-0033		100-BC	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-2 100-HR-2 100-KR-2	2007	DOE-RL, DA Correspondence	“Transmittal of the Approved Explanation of Significant Difference for the Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units 100 Area Burial Grounds, October 2007”	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=DA06144408	This ESD was issued because the selected remedy in the Burial Grounds ROD allows for consideration of eight “balancing factors” to determine the extent of additional excavation needed in situations where residual contamination exists below the engineered structure and at a depth greater than 4.6 m (15 ft). The ESD describes changes to an approved remedy that do not fundamentally alter the overall cleanup approach, and it is based on the AR. The purpose is to provide public notice of the significant changes identified herein and the information that led to the changes. Additionally, the Burial Grounds ROD requires a public involvement period of no less than 30 days before making any determination to invoke the balancing factors. A 30-day advanced notice announcing the public comment period was published on July 17, 2007. A fact sheet was prepared by the Tri-Parties and mailed on August 27, 2007, to interested individuals on the Hanford Site mailing list, which is maintained by Ecology. A summary of the comments and responses to public comments received during the public comment period are included in the Responsiveness Summary (Attachment A) of this ESD. The ESD will become part of the AR for the cleanup decisions for the Hanford Site 100-BC Area.	D,H		Y		NO	NO
09-AMCP-0225	1	100-H 100-K 100-N	100-HR-3 100-KR-4 100-NR-2	Sept. 2009	DOE-RL, M. McCormick	<i>Calendar Year 2008 Annual Summary Report for the 100-HR-3, 100-KR-4, and 100-NR-2 Operable Unit Pump-and-Treat Operation, DOE/RL-2009-15, Revision 1</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0095793	This annual summary report discusses the groundwater remedial actions for 2008 in the 100 Area, including interim remedial actions at the 100-HR-3, 100-KR-4, and 100-NR-2 OUs. Pump-and-treat practices are discussed.	D,P	Z	Y,X,P	A	NO	NO
09-AMRC-0094		100-D/DR	100-D-3	Apr. 2009	DOE-RL, M.S. French	“Transmittal of Approved Waste Site Reclassification	http://pdw.hanford.gov/arpir/pdf.cfm?accession	Transmittal of attachment to Waste Site Reclassification Form 2008-017, with a description of the 100-D-3 waste site.	D,H,P		Y,S,X		NO	NO

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
						Form and Supporting Documentation for the 100-D-3 Site, Revision 0"	=0904240116							
10-AMRC-0020		100-D/DR	100-DR-1	Nov. 2009	DOE-RL, M.S. French	"Transmittal of Approved Waste Site Reclassification Form and Supporting Documentation for the 100-D-31:6 Site"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0095359	This report demonstrates that the 100-D-3 1:6 subsite, the 184-D Powerhouse sewer pipelines, meets the objectives for interim closure as established in the RDR/RAWP (DOE/RL-96-17). These results show that residual soil concentrations support future land uses that can be represented (or bounded) by a rural residential scenario. The results also demonstrate that residual contaminant concentrations support unrestricted future use of shallow zone soil (i.e., surface to 4.6 m [15 ft]) and contaminant levels remaining in the soil are protective of groundwater and the Columbia River.	D	Z,T	Y	A	NO	NO
10-AMRC-0029		100-D/DR	100-DR-1	Dec. 2009	Ecology, M.E. Jones	"Transmittal of Approved Waste Site Reclassification Form and Supporting Documentation for the 100-D-31:5 Waste Site"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0912080798	The 100-D-3 1:5, 188-D Ash Disposal Pipeline verification sampling data, site evaluations, and supporting documentation demonstrate that this site meets the objectives established in the RDR/RAWP (DOE/RL-96-17). The evaluation shows that the site has been successfully remediated and that there are no residual hazardous/dangerous materials present above the RAOs in the soil. Therefore, the 100-D-31:5 subsite is protective of human health, groundwater, and the Columbia River.	P	G	Y,X	A	YES	NO
10-AMRC-0066	0	100-H	100-HR-2	Mar. 2010	DOE-RL	"Transmittal of Approved Waste Site Reclassification Forms and Supporting Documentation for 128-H-2, 100-H Burning Ground #2, and 128-H-3, 100-H Burning Ground # 3, Revision 0"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0084725	This report declares that confirmatory sampling and visual observation show that no hazardous/dangerous materials are present at the sites and, accordingly, no residual contamination above the RAOs is present in the soil. Therefore, the sites are protective of human health, groundwater, and the Columbia River.	D,H	G,Z	Y	A	YES	NO
10-AMRC-0069	REV. 0	100 AREA	100-DR-2	Mar. 3, 2010	DOE-RL, M.S. French	"Transmittal of Approved Cleanup Verification Package for the 100-D-47 Burial Ground 4E, Revision 0"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0084724	Results of verification sampling, laboratory analyses, and data evaluations for the 100-D-47 site (which includes the remediation footprint and the overburden/layback stockpiles) indicate that all RAOs and goals for direct exposure, protection of groundwater, and protection of the Columbia River have been met.	H,D,P	Z,E	Y,S	A	YES	YES
10-AMRC-0083	REV. 0	100 AREA	100-DR-2	Apr. 5, 2010	DOE-RL, M.S. French	"Transmittal of Approved Cleanup Verification Package for the 118-DR-1, 105-DR Gas Loop Burial Ground, Rev. 0"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0084529	This CVP documents completion of remedial action, sampling activities, and compliance with cleanup criteria for the 118-DR-1, 105-DR Gas Loop Burial Ground on the Hanford Site.	H,D,P	Z,E	Y,S	A	YES	YES
10-AMRC-0088	0	100-D/DR	100-DR-1	Apr. 2010	DOE-RL, M.S. French	"Transmittal of Approved Waste Site Reclassification Form and Supporting Documentation for the 100-D-29 Effluent Line Leak #2, Revision 0"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0084444	This report demonstrates that the 100-D-29 waste site meets the objectives for interim closeout, as established in the RDR/RAWP for the 100 Area (DOE/RL-96-17).	D,P	G	Y	A,M	NO	NO
10-AMRC-0112	0	100-H	100-HR-2	June 2010	DOE-RL, M.S. French	"Transmittal of Approved Waste Site Reclassification Form and Supporting Documentation for the 100-H-39, 100-H Possible Thimble Pit Locations Site, Revision 0"	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0084325	Report using site evaluations and supporting documentation for the 100-H-39, 100-H possible thimble pit locations.	D		Y		NO	NO

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
10-AMRC-0121		100-D/DR	100-DR-1	Apr. 2010	DOE-RL, M.S. French	“Transmittal of Waste Site Reclassification Forms (WSRF) and Supporting Documentation for the 116-DR-8, 100-D-15, and 1607-D2:2 Waste Sites for the State of Washington Department of Ecology (Ecology) Approval”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=1006280697	The 116-DR-8 Seal Pit Crib verification sampling data, site evaluations, and supporting documentation demonstrate that this site meets the remediation objectives established in the RDR/RAWP for the 100 Area (DOE/RL-96-17).	D,H,P	Z	Y,X	A	NO	NO
10-AMRC-0169	0	100-H	100-HR-2	Sept. 2010	DOE-RL, M.S. French	“Transmittal of Approved Waste Site Reclassification Form and Supporting Documentation for the 100-H-37 Mud Dauber Site, Revision 0”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0084248	Information and data regarding the sampling and identification of mud dauber nests at 100-H.		E	Y	A	NO	NO
2003-09		100 AREA	100-DR-2	Apr. 12, 2004	H. Bilson, J.B. Price	Waste Site Reclassification Form, “100-DR-2, 128-D-1 Burn Pit”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D5382896	This demonstrates that the historical data available for the 128-D-1 are of sufficient quality and quantity to support the “no action” interim closure. The site achieves the RAOs and the corresponding RAGs established in the RDR/RAWP for the 100 Area (DOE/RL-96-17) implemented for EPA/ROD/R10-99/039, <i>Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units, Hanford Site, Benton County, Washington (100 Area Remaining Sites).</i>	D,H	G,E				
2005-016		100-D/DR	100-DR-1	June 2005	Ecology, J.B. Price DOE-RL, J. Zeisloft	Waste Site Reclassification Form, “100-DR-1, 100-D-50:10”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA01953843	This report demonstrates that the 100-D-50:10 pipelines site meets the objectives for interim closure.	D,P		Y,X	A	NO	NO
2005-024		100-D/DR	100-DR-1	May 2006	Ecology, J.B. Price DOE-RL, K. Bazzell	Waste Site Reclassification Form, “100-DR-1, 132-D-2”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=da02604359	This report demonstrates that the 132-D-2 site meets the objectives for interim closure as established in the RDR/RAWP for the 100 Area (DOE/RL-96-17).	D,P		Y,X	A	NO	NO
2005-033		100-D/DR	100-DR-1	May 2006	Ecology, J.B. Price DOE-RL, K. Bazzell	Waste Site Reclassification Form, “100-DR-1, 132-D-3”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=da02604391	This report demonstrates that the 132-D-3 site meets the objectives for interim closure as established in the RDR/RAWP for the 100 Area (DOE/RL-96-17).	D,P		Y,X	A	NO	NO
2005-035		100-D/DR	100-DR-1	Sept. 2005	Ecology, J.B. Price DOE-RL, K. Bazzell	Waste Site Reclassification Form, “100-DR-1, 132-DR-1”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA01162846	This report demonstrates that the 132-DR-1 site meets the objectives for interim closure as established in the RDR/RAWP for the 100 Area (DOE/RL-96-17). These results show that the site and contaminant levels remaining will be protective of direct exposure, groundwater, and the Columbia River. However, the acceptability of unrestricted direct exposure to below-grade structure surfaces in the deep zone has not been demonstrated; therefore, institutional controls to prevent uncontrolled drilling or excavation into the deep zone are required.	D,P	Z	Y,X	A,M	YES	NO
2005-036		100-D/DR	100-DR-1	Feb. 2006	Ecology, J.B. Price DOE-RL, K. Bazzell	Waste Site Reclassification Form, “100-DR-1, 1607-D4”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA02171613	This report demonstrates that the 1607-D4 site meets the objectives for interim closure as established in the RDR/RAWP for the 100 Area (DOE/RL-96-17).	D,P		Y,X	A	NO	NO
2006-004		100-D/DR	100-DR-1	Sept. 2006	Ecology,	Waste Site Reclassification	http://pdw.hanford.gov/arpir/pdf.cfm?accession	This report demonstrates that the 100-D-24 site meets the objectives for “no	D,P		Y,X	A	NO	NO

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					J.B. Price DOE-RL, K. Bazzell	Form, "100-DR-1, 100-D-24"	=da03897951	action" as established in the RDR/RAWP for the 100 Area (DOE/RL-96-17).						
2006-025		100-D/DR	100-DR-1	Nov. 2007	Ecology, J.B. Price DOE-RL, K. Bazzell	Waste Site Reclassification Form, "100-DR-1, 100-D-50:5"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=da06227580	This report demonstrates that the 100-D-50:5 site meets the objectives for "no action" as established in the RDR/RAWP for the 100 Area (DOE/RL-96-17).	D,P		Y,X	A	NO	NO
2006-030		100-D/DR	100-DR-1	Aug. 2006	Ecology, J.B. Price DOE-RL, K. Bazzell	Waste Site Reclassification Form, "100-DR-1, 100-D-9"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=da03634605	This report demonstrates that the 100-D-9 Boiler Fuel Oil Tank Site meets the objectives for interim closure as established in the RDR/RAWP for the 100 Area (DOE/RL-96-17).	D,P		Y,X	A	NO	NO
2007-009	NA	100-HR-2, 128-H-3	100 AREA	June 27, 2007	S.L. Charboneau	Waste Site Reclassification Form, "100-HR-2, 128-H-3"	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=DA05358553	It has been determined through the analysis of historical photographs and the findings from field investigations that the 128-H-2 site was not a burn pit, but rather an old borrow area created during the 100-H Area construction activities.	D,H,P	G,Z,E	COPC	A	NO	NO
2007-023		100-D/DR	100-DR-1	Mar. 2008	DOE-RL, SL Charboneau Ecology, J.B. Price	Waste Site Reclassification Form, "100-DR-1, 100-D-33"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0804220044	The 100-D-33, Minor Construction Burial Ground #4 East Trench and 100-D-35, Minor Construction Burial Ground #4 West Trench site evaluations and supporting documentation demonstrate that these sites meet the objectives established in the RDR/RAWP for the 100 Area (DOE/RL-96-17).	D,P		Y,X	A	NO	NO
2007-024		100-D/DR	100-DR-1	Mar. 2008	DOE-RL, SL Charboneau Ecology, J.B. Price	Waste Site Reclassification Form, "100-DR-1, 100-D-35"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0804220045	The 100-D-33, Minor Construction Burial Ground #4 East Trench and 100-D-35, Minor Construction Burial Ground #4 West Trench site evaluations and supporting documentation demonstrate that these sites meet the objectives established in the RDR/RAWP for the 100 Area (DOE/RL-96-17).	D,P		Y,X	A	NO	NO
2007-030		100-D/DR	100-DR-1	Mar. 2008	DOE-RL, SL Charboneau Ecology, J.B. Price	Waste Site Reclassification Form, "100-DR-1, 100-D-2"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0804220047	This report demonstrates that the 100-D-2 waste site meets the objectives for interim closure as established in the RDR/RAWP for the 100 Area (DOE/RL-96-17).	D,P		Y,X	A	NO	NO
9111L445-WES-234		100-DR-1	Vadose zone	Nov. 16, 1991	Weston	<i>Data Package Summary and Validation Summary, Analytical Laboratory 100-DR-1 Sampling, Sample Numbers B01885, B01887, B018F4, and B018F3</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196064222	Alpha spectroscopy has been requested on samples from the 100-DR-1 vadose project (OSM project number 91-083). Alpha spectroscopy is to be performed on all 100-DR-1 vadose samples that have this analysis indicated on the sample analysis request form. The isotopes of concern for the alpha spectroscopy are uranium-235, uranium-238, plutonium-239/240, and americium-241.			Y		NO	NO
9112L745-WES-255		100-DR	100-DR	Dec. 13, 1991	Weston	<i>Data Package Summary and Validation Summary, Analytical Laboratory 100-DR-1 Sampling, Sample Numbers B018G7 and B018G6</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196070917	Alpha spectroscopy has been requested on samples from the 100-DR-1. Alpha spectroscopy is to be performed on all 100-DR-1 vadose samples that have this analysis indicated on the sample analysis request form. The isotopes of concern for the alpha spectroscopy are uranium-235, uranium-238, plutonium-239/240, and americium-241.			Y		NO	NO
9201L148-WES-316		100-DR	100-DR	Jan. 28, 1992	Weston	<i>Data Package Summary and Validation Summary Analytical Laboratory, 100-HR-3 and 100-DR-1 Sampling, Sample Numbers B01T24 and B018B5</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196070702	Alpha spectroscopy has been requested on samples from the 100-DR-1. Alpha spectroscopy is to be performed on all 100-DR-1 vadose samples that have this analysis indicated on the sample analysis request form. The isotopes of concern for the alpha spectroscopy are uranium-235, uranium-238, plutonium-239/240, and americium-241.			Y		NO	NO

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BHI-00028	REV. 00	100 AREA	100-D 100-C 100-F 100-H	Aug. 1994	BHI, J.G. Field, R.D. Belden	<i>100 Area Pilot-Scale Soil-Washing Test Alternatives and Recommendations</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196065370	This engineering study includes an evaluation of alternatives for 100 Area soil-washing treatability studies to transport, store, process, and dispose of soils from four sites at the Hanford Site.	D,P	G,Z		M	NO	YES
BHI-00443	REV. 00	100-D100-H	100-DR-1 100-HR-3	Dec. 1995	BMI, V.M. Johnson	<i>In Situ REDOX Manipulation: Site Evaluation for Chromate Remediation in Groundwater</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197186271	This document assesses whether the 105-D Reactor area location is potentially suitable for implementing REDOX as a method for remediating chromate-contaminated groundwater. Data for the 100-H Area are also included in this report as another potential location.	P	G,Z	Y,X		NO	NO
BHI-00127	REV. 00	100-H	100 AREA	Feb. 1, 1995	D.H. Deford, M.W. Einan	<i>100-H Area Technical Baseline Report</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196035437	Three OUs are associated with the 100-H Area. Two of these, 100-HR-1 and 100-HR-2, include liquid and solid waste disposal sites in the vicinity of and related to, the H Reactor and associated facilities. The third, 100-HR-3, addresses only groundwater. This report describes facilities and waste sites from the 100-HR-1 and 100-HR-2 OUs, including cribs, trenches, pits, french drains, retention basins, solid waste burial grounds, septic tanks, and drain fields. Each waste site is described separately, and photographs have been provided when available.	D,H,P	G,Z,C,T	X,P	A	NO	NO
BHI-00137	REV. 00	100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	Nov. 1, 1994	N/A	<i>100 Area Source Operable Unit Focused Feasibility Study Cost Models</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196054519	The purpose of this document is to provide cost estimate models for the remedial alternatives developed in DOE/RL-94-61, <i>100 Area Source Operable Unit Focused Feasibility Study Report</i> .		E	Y	M,A		
BHI-00345	REV. 0	100 AREA	100-HR-3	Dec. 1995	N/A	<i>Pore Water Chromium Concentrations at 100-H Reactor Area Adjacent to Fall Chinook Salmon Spawning Habitat of Hanford Reach, Columbia River</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196010904	This report describes a field investigation of the groundwater at the 105-H Reactor area that is discharged into the Columbia River in the vicinity of fall Chinook salmon (<i>Onchorynchus tshawytscha</i>) spawning habitat. The field investigation acquired substrate pore water quality and contaminant data from the Columbia River for determining the potential exposure of ecological receptors to contaminated groundwater discharges to the river. Before this study, no data had been collected to determine if water quality in the substrate of the Hanford Reach at the groundwater/river interface (hereafter referred to as pore water) exceeded the EPA AWQC for the protection of aquatic organisms in surface waters. The Hanford Reach is the portion of the Columbia River that crosses the Hanford Site.	D,H,P	E,Z	Y	A,M	YES	
BHI-00405	REV. 0	100-D/DR	100-DR-1	May 1995	BHI, M.T. Stankovich	<i>Data Validation Summary Report for the 100-DR-1 Operable Unit 100-D-Ponds Phase II Sampling</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196011988	The information provided in this validation summary report includes data from the chemical analyses of samples from the 100-DR-1 OU 100-D Ponds Phase II sampling investigation. All of the data from this sampling event and their related quality assurance samples were reviewed and validated to verify that the reported sample results were of sufficient quality to support decisions regarding remedial actions performed at this site. Sample analyses included volatile organic, semi-volatile organic, pesticide/PCB, metals, general chemistry, and radiochemistry.	D	Z		A	NO	NO
BHI-00455	REV. 1	100 AREA	100-HR-3	July 1, 1997	G.R. Chiaramonte	<i>Decision Process for Hanford Sitewide Groundwater Remediation</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197301497	This document describes a decision process for planning future investigations and remediation of contaminated groundwater within the Hanford Site. The decision process identifies key decisions and activities, defines the criteria used in decision making, and defines the logic that links the decisions and the activities in a step-wise manner. The investigations, treatability studies, and initial IRM phases conducted by the environmental restoration projects to date have made significant progress in addressing Hanford groundwater contamination. However, these projects have not developed long-term goals or specific criteria for decision making to guide the remainder of the remediation projects leading into final remedy decisions. It is intended that the decision	D,H,P	Z,E	Y,P		YES	YES

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								process define the decision making criteria to support future characterization and remediation planning. This should help to ensure that groundwater remediation goals are clearly identified, are met to the maximum extent practicable, and are conducted in a cost effective manner. To date, six pilot-scale pump-and-treat projects addressing the following plumes have been completed: <ul style="list-style-type: none"> • Uranium and technetium plume at the 200-UP-1 OU • Carbon tetrachloride (and associated organics) plume at the 200-ZP-1 OU • Combined plutonium, cesium, and strontium plume at the 200-BP-5 OU • Technetium and cobalt plume at the 200-BP-5 OU • Strontium plume at N Springs • Chromium plume at the 100-HR-3 OU 							
BHI-00608	REV. 1	100 AREA 200 AREA	100-HR-3 200-PO-1	Sept. 1, 1996	A. Law	<i>Hanford Site Wide Groundwater Flow and Transport Model Calibration Report</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197301520	This report presents the results of the development and calibration of a three-dimensional, finite-element model (VAM3DCG) for the unconfined groundwater flow system at the Hanford Site. This flow system is the largest radioactively contaminated groundwater system in the United States. Eleven groundwater plumes have been identified that contain organics, inorganics, and radionuclides. Because groundwater from the unconfined groundwater system flows into the Columbia River, the development of a groundwater flow model is essential to the long-term management of these plumes. The conceptual geologic and hydrogeologic models provide the basis for the inputs to the numerical groundwater flow model. The descriptions of the conceptual models are based on numerous technical reports that describe the Hanford Site subsurface environment. This section discusses the salient features of the subsurface environment as they relate to the Sitewide groundwater model.	D	G,Z	S,Y,X,P	M,A			
BHI-00620	REV. 0	100 AREA	100-HR-3 100-KR-4	Apr. 1, 1996	R.E. Peterson, S.J. Hope	<i>Description of Work and Sampling and Analysis Plan for Pore Water Sampling at Groundwater-River Interface Adjacent to 100-D/DR, -K, and -H Reactor Areas</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197189082	Objectives to investigate chromium-bearing groundwater movement into the Columbia River were determined during DQO workshops. The following description of work and SAP were developed based on objectives from the DQO process to investigate chromium-bearing groundwater movement into the river. The requirements of Step 7 of the DQO process were also used. Samples are being obtained from near-shore river substrate at the 100-D/DR Area (completed in October/November 1995), 100-K Area, and 100-H Area. This field investigation is based on similar work accomplished in March and April 1995 at the H Reactor groundwater-river interface (BHI-00156, <i>Preliminary Determination of Chromium Concentration Within Pore Water and Embryonic Chinook Salmon at Hanford Reach Spawning Area in Proximity to 100-HR-3 Operable Unit</i> ; BHI-00345, <i>Chromium Concentration in 100-H Reactor Area Pore Water within Chinook Salmon Spawning Habitat of the Hanford Reach, Columbia River</i>). Pore water samples will be analyzed in the laboratory for Cr(VI) and total chromium. In addition, pore water, seep, and water column samples will be analyzed for Cr(VI), nitrate, DO, pH, hardness, turbidity, temperature, and specific conductance using field analysis techniques and methods.	H,D,P	Z,E	Y,P	A,M			
BHI-00639	REV. 2	100-D Pond	TSD	1997	G.B. Mitchem	<i>120-D-1 (100-D) Ponds Training Plan</i>	http://www.osti.gov/scitech/servlets/purl/16069	Training plan for the 100-D Ponds TSD unit.	D	C,E			NO	YES	

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BHI-00764	0	100-HR-3 100-KR-4	100 AREA	May 23, 1996	E. Lau, J.N. Winters	<i>100-HR-3 and 100-KR-4 Interim Remedial Measures Pump-and-Treat Acquisition and Design Strategy Plan</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D197188944	This document describes a plan for the acquisition/design for the 100-HR-3 and 100-KR-4 groundwater pump-and-treat systems.	H,P	Z,T	S,X,P	N/A	NO	NO
BHI-00765	DRAFT A	100-D100-H100-K	100-HR-3 100-KR-4	June 1996	BHI, W.S. McKinley	<i>Remedial Design Report and Remedial Action Work Plan for the 100-HR-3 and 100-KR-4 Groundwater Operable Units' Interim Action</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196147717	This document is a combination RDR/RAWP for the 100-HR-3 and 100-KR-4 OU interim actions. Preparation of this document was required by the interim ROD issued in April 1996 by EPA and Ecology. This document describes the design basis, provides a description of the interim action, and identifies how they will meet the requirements set forth in the interim ROD.	D,P	G,Z,T	Y,S,X,P	A,M	YES	NO
BHI-00770	0	100-D 100-H 100-HR-3 100-KR-4	100 AREA	May 1, 1996	D.A. Myers, J.E. Auten	<i>100-HR-3 and 100-KR-4 Pump-and-Treat Drilling Description of Work</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D197189092	This document describes the installation of wells necessary to implement the 100-HR-3 and 100-KR-4 interim remedial action. The placement of wells described is based on numerical modeling and requirements contained in the ROD dated April 1, 1996.	D,P	G,Z,E,T	S, P	A,M	NO	NO
BHI-00772	REV. 1	100 AREA	100-HR-3 100-KR-4	June 1, 1996	W.S. McKinley	<i>Design Criteria and Design Basis for the 100-HR-3 and 100-KR-4 Pump-and-Treat Projects</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D197189695	This document describes the project objectives and design criteria to be used for the 100-HR-3 and 100-KR-4 groundwater pump-and-treat design efforts. This document is intended to serve as a vehicle for early documentation and approval of BHI project objectives and design criteria while the detailed design work progresses concurrently.	H,D,P	Z,E	Y,S,X,P	A,M	YES	
BHI-00874	DRAFT A	100-D100-K100-H	100-HR-3 100-KR-4	Aug. 1996	BHI, S.G. Weiss	<i>Mitigation Action Plan for the 100-HR-3 and 100-KR-4 Pump and Treat</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197189320	This document discusses wells being drilled in 100-D, 100-K, and 100-H with focus on mitigation for cultural and natural resources while minimizing the effect, rectifying the effect afterward, and/or compensating for significant effects.	D	G,E			YES	NO
BHI-00917	REV. 0	100-BC 100-KR 100-HR 100-FR	100-BC-5, 100-FR-3 100-HR-3 100-KR-4	1996	R.E. Peterson, R.F. Raidl, C.W. Denslow	<i>Conceptual Site Models for Groundwater Contamination at 100-BC-5, 100-KR-4, 100-HR-3, and 100-FR-3 Operable Units</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D197142704	This document presents technical information on groundwater contamination in the 100-BC-5, 100-FR-3, 100-HR-3, and 100-KR-4 Groundwater OUs on the Hanford Site. These OUs are defined for groundwater that underlies the retired plutonium-production reactors and support facilities located along the Hanford Reach of the Columbia River. An additional 100 Area groundwater OU, 100-NR-2, is addressed by separate documentation. In this document, the most recent site information has been assembled into CSMs. The objective was to assemble and evaluate the best information available to support a better understanding of the nature, extent, and transport of contamination in each groundwater OU. These CSMs are recommended for use to assess and prioritize 100 Area groundwater remediation options.		Z	Y	M	NO	NO
BHI-00986	REV. 0	100-D 100-H	100-DR-1 100-HR-3	Feb. 1997	BHI	<i>In Situ Redox Manipulation Treatability Test -- Waste Management Plan</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197234555	This waste management plan provides guidance for the management of waste generated from groundwater well installations in the 100-HR-3 OU. The plan provides guidance for the management of waste generated from groundwater well installations in the 100-HR-3 OU.		G,Z	Y		NO	YES
BHI-01043	REV. 0	100-D/DR	100-HR-3	Aug. 1997	BHI, L.D. Walker, R.E. Peterson	<i>Description of Work for the Drilling within Chromium Plume West of 100-D/DR Reactors</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197303607	This document describes the work scope associated with installing four new monitoring wells in the 100-D/DR Area (100-HR-3 OU). The new work scope is described in a baseline change proposal (BCP-97211, "Phase 2 Characterization of the 100-D Area Hot Spot").	D	G,Z,T	Y,X,P	M	NO	NO
BHI-01153	REV. 0	100 AREA	100-BC100-D/DR 100-F100-H100-K100-N	Feb. 1998	BHI, D.B. Erb, J.V. Borghese, R.E. Peterson	<i>Aquifer Sampling Tube Completion Report: 100 Area and Hanford Townsite Shorelines</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198103289	This report summarizes the installation and sampling activities of the work performed in the fall of 1997. The summary includes the depths and locations where sampling tubes are installed and the results of sampling activities. Recommendations for data evaluation and future use of the tubes are also included.	D,H,P	Z,E	Y,S,X,P	A,M	NO	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
BHI-01158	REV. 0	100-D/DR	100/DR-1	Mar. 1998	BHI, D. Blumenkranz, F.M. Corpuz, J.D. Fancher	<i>Clean Up Verification Package for the 107-D5 Trench</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198121054	The purpose of this CVP is to document attainment of the RAOs for the 107-D5 Sludge Trench. An evaluation of data collected during remedial actions is presented in this package for attainment of the specific RAG for direct exposure, protection of groundwater, and protection of surface waters, including the Columbia River.	D,H	G,Z,T	Y	A	NO	NO
BHI-01183	DRAFT A	100 AREA	100-DR-2 100-FR-1	May 1, 1998	R.A. Thoren	<i>105-F and DR Phase I Sampling and Analysis Plan</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198121056	This SAP presents the rationale and strategy for the sampling and analysis activities proposed in support of D&D of the 105-F and 105-DR Reactor Buildings.	H,D,P		Y,S	A	YES	
BHI-01237	REV. 1	100 AREA	100-HR-3	Jan. 1, 2000	G.B. Mitchem, J.G. Woolard, G.A. Day	<i>Description of Work for Fiscal Years 1999 and 2000 Drilling Within the Chromium Plume West of the 100-D/DR Reactors</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D8415370	This document describes the FY 1999 and FY 2000 work scope associated with installing groundwater wells in the vicinity of the 100-D Area chromium plume west of the D/DR Reactors (100-HR-3 OU).	H,D,P	Z,E,G	Y,P,S	A,M	YES	YES
BHI-01309	REV. 0	100 AREA	100-DR-1 100-DR-2 100-HR-3	Sept. 1, 1999	V.J. Rohay	<i>The Chromium Groundwater Plume West of the 100-D/DR Reactors: Summary and Fiscal Year 1999 Update</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199158623	This report discusses the high concentrations of chromium that have been identified west of the D/DR Reactors in the groundwater and pore water below the Columbia River. The purpose of this report is to provide (1) a summary of previous investigations describing the extent and source of the plume; (2) the analytical results of groundwater samples collected from the 12 wells in FY 1999; (3) a conceptual model of the geology, general hydrology, and chromium plume in the area west of the D/DR Reactors; and (4) recommendations for future investigations, data collection, and groundwater sampling.	H	G,Z	P,Y,S	A,M		
BHI-01381	REV. 0	100-D100-H	100-HR-3	Aug. 2000	BHI, J.E. Laurenz	<i>In Situ Redox Manipulation Barrier Well Completion Report for the 100-HR-3 Groundwater Operable Unit, FY 2000</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8849000	This well completion report describes the FY 2000 field activities associated with installing 16 groundwater wells to support the ISRM treatment barrier in the 100-D Area chromium plume west of the D/DR Reactors (100-HR-3 OU). This groundwater plume is not within the current treatment zone for the initial 100-HR-3 interim remedial action (groundwater pump and treat). Fourteen barrier wells (i.e., injection and withdrawal) were designed to support placement of the ISRM treatment barrier. Two compliance monitoring wells were located, designed, and completed to monitor the effectiveness of the ISRM treatment barrier.	D,H	G,Z	Y,P	A	NO	NO
BHI-01494	REV. 0	100 AREA	100-BC 100-K 100-N100-D/DR100-H 100-F	June 2001	BHI, R.F. Raidl	<i>Aquifer Sampling Tubes Data Summary, Fall 2000</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8796866	This report summarizes the aquifer sampling tube results for samples collected along the Columbia River shoreline in the fall of 2000. The focus of this effort was to identify the tubes that best represented groundwater quality as compared to those affected by the groundwater/river water mixing zone.	D,H,P	G,Z	Y,X,P	A,M	NO	NO
BHI-01560	REV. 0	100-D/DR	100-HR-3	Sept. 2001	BHI, D.C. Weekes, L.C. Swanson, L.C. Trice	<i>ISRM Barrier Well Completion Report for the 100-HR-3 Groundwater Operable Unit, Fiscal Year 2001</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8924047	This well completion report describes the Phase II FY 2001 field activities associated with installing 32 groundwater wells to support the ISRM treatment barrier. The barrier is being constructed to intercept a 100-D Area chromium plume west of the D/DR Reactors (100-HR-3 OU). This portion of the groundwater plume is not within the current treatment zone for the initial 100-HR-3 interim remedial action.	D	G,Z	Y,P		NO	NO
BHI-01638	REV. 0	100-D/DR	100-HR-3	June 2002	BHI, C.R. Martinez, D.C. Weekes	<i>ISRM Barrier Well Completion Report for the 100-HR-3 Groundwater Operable Unit, Fiscal Year 2002</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D9109655	This well completion report describes the Phase III FY 2002 field activities associated with installing 20 groundwater wells to support the ISRM treatment zone. Installation of the ISRM wells is an integral part of the continuing actions to construct a treatment zone that will intercept and prevent discharge of a Cr(VI) plume into the Columbia River.	D	G,Z	Y,X,P		NO	NO

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BHI-01771	REV. 0	100-D/DR	100-D/DR	Apr. 2005	DOE-RL	<i>190-DR Process Water Pump House Below-Grade Concrete Structure Sampling and Analysis Plan</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D7892481	This SAP presents the strategy and procedures for sampling and analysis activities to support leaving the 190-DR Process Water Pump House below-grade structure (located in the 100-D/DR Area) "in place" as clean concrete. Leaving the below-grade concrete in place presents a substantial cost savings from removing, transporting, and disposing of the concrete at ERDF or an alternate location. The characterization strategy includes facility-specific historical research and facility inspections before facility demolition. Focused, worst-case sampling is used to support the process knowledge of the facility.	D,P	G,Z	Y,S,X	A,M	NO	NO
BHI-00986	REV. 0	100 AREA	100-HR-3	Dec. 31, 1997	A.J. Knepp	<i>In Situ Redox Manipulation Treatability Test – Waste Management Plan</i>	http://www.osti.gov/scitech/servlets/purl/16072	This document provides guidance for the management of waste generated from groundwater well installations in the 100-IR-3 OU. The well installations are necessary to implement the ISRM treatability test to determine methods for in situ remedial efforts to prevent discharge of Cr(VI) at levels above those considered protective of aquatic life in the Columbia River and riverbed sediments. Twelve wells are currently scheduled for installation in the 100-HR-3 OU in support of ISRM. The wells will be used for injection of chemical agents, monitoring of processes, and extraction of remediated groundwater. The injection, monitoring, and extraction activities associated with this treatability test are not covered by this waste management plan.	D,H,P	Z,G	Y,S			YES
BHI-TP-00007	REV. 00	100-D/DR	100-DR-1	Dec. 1994	BHI, K.E. Cook	<i>Soil Washing Field Test Procedure for the 100-DR-1 Operable Unit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196034903	This document will be the controlling document for the pilot plant testing of the soil-washing process designed to reduce the volume of contaminated soil in the 100 Area trenches. The testing is designed to fulfill requirements of Tri-Party Agreement Milestone M-15-07B.	D,P	G,Z	Y	A	NO	NO
BNWL-1377	N/A	100 AREA	100 AREA	1970	BNWL, D.G. Watson, C.E. Cushing, C.C. Coutant, W.L. Templeton	<i>Radioecological Studies on the Columbia River Part I</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196029568	The purpose of this study is (1) to define the interspecies and seasonal variations in the concentration of several of the more biologically important radionuclides, and (2) to update the findings earlier investigations for the 100 Area.	D,P,H	Z,C,E	Y,S	A		
C-93-1	N/A	100 AREA	100-DR-2 100-DR-3	Apr. 14, 1994	N/A	<i>Federal Facility Agreement and Consent Order Change Control Form: Consolidate Operable Units 100-DR-2 and 100-DR-3</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196086142	This document is a request to change the 100-DR-2 OU boundary to include the 100-DR-3 OU waste sites. DOE, EPA, and Ecology agree that consolidating the 100-DR-3 OU into the 100-DR-2 OU will allow for a more efficient and effective LFI of the remaining 105-DR Reactor area waste sites.	D					
CP-15095	REV. 0	100-D/DR	100-DR-1	Mar. 2003	FH	<i>In Situ REDOX Manipulation First Quarter Fiscal Year 2003 Technical Memorandum</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=d1122014	This technical memorandum summarizes the activities and performance monitoring results for the ISRM treatment zone west of the D/DR Reactors in the 100-D Area of the Hanford Site. This report encompasses first quarter of FY 2003, from October 1 through December 31, 2002.	P	Z	Y,X,P		NO	NO
CP-16348	REV. 0	100-D/DR	100-DR-1 100-HR-3	June 2003	FH	<i>In Situ REDOX Manipulation Second Quarter Fiscal Year 2003 Technical Memorandum</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D2129685	This technical memorandum summarizes the activities and performance monitoring results for the ISRM treatment zone west of the D/DR Reactors in the 100-D Area of the Hanford Site. This report encompasses the second quarter of FY 2003, from January 1 through March 31, 2003.	P	Z	Y,X,P		NO	NO
CVP-2000-00001	REV. 0	100-D/DR	100-D-18	Sept. 2000	BHI	<i>Cleanup Verification Package for the 100-D-18 Sludge Trench</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8503416	This CVP documents completion of remedial action for the 100-D-18 Sludge Trench.	D,P	G,Z,T	Y,X	A,M	YES	YES

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
CVP-2000-00002	REV. 0	100-D/DR	116-D-1 116-D-2	Sept. 2000	BHI	<i>Cleanup Verification Package for the 116-DR-1&2 Process Effluent Trenches</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8503376	This CVP documents completion of remedial action for the 116-DR-1&2 Process Effluent Trenches. The selected remedial action for the 116-DR-1&2 site included (1) excavating the site to the extent required to meet specified soil cleanup levels, (2) disposing of contaminated excavation materials at ERDF in the 200 Area of the Hanford Site, and (3) backfilling the site with clean soil to average adjacent grade elevation.	D,P	G,Z,T	Y,X	A,M	YES	YES
CVP-2000-00003	REV. 0	100-D/DR	100-DR-1	Mar. 2001	BHI	<i>Cleanup Verification Package for the D and DR Group 2 North Pipelines (100-D-48:1/49:1), 100-D-19 Sludge Trench, and UPR-100-D-4 Unplanned Release Site</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8850953	This CVP documents completion of remedial action for a portion of the D/DR Group 2 Pipelines, the 100-D-19 Sludge Trench, and the UPR-100-D-4 site.	D,P	G,Z,T	Y,X	A,M	YES	YES
CVP-2000-00004	REV. 0	100-D/DR	1607-D2	Sept. 2000	BHI	<i>Cleanup Verification Package for the 1607-D2 Septic Pipelines</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8504445	This CVP documents completion of remedial action for the 1607-D2 Septic Pipelines.	D,P	G,Z,T	Y,X	A,M	YES	YES
CVP-2000-00005	REV. 0	100-D/DR	100-D-2 100-D-3	Sept. 2000	BHI	<i>Cleanup Verification Package for the D and DR Group 2 Pipelines (100-D-48:2/49:2) and Unplanned Release Sites (UPR-100-D-2 and UPR-100-D-3)</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8504424	This CVP documents completion of remedial action for a major segment of the D/DR Group 2 pipelines and for two UPR sites. This CVP also documents the suitability of stockpiled pipeline overburden soil for use as backfill. The D/DR Group 2 Pipeline segments addressed in this CVP include D and DR Reactor cooling water effluent pipelines between D Avenue and the 116-D-7 and 116-DR-9 Retention Basins. These pipeline segments have WIDS identifiers 100-D-48:2 (D Reactor pipelines) and 100-D-49:2. The UPR sites are associated with leaks from the effluent pipelines and have WIDS identifiers UPR-100-D-2 and UPR-100-D-3.	D,P	G,Z,T	Y,X	A,M	YES	YES
CVP-2000-00008	REV. 0	100-D	116-D-4	Oct. 2000	BHI	<i>Cleanup Verification Package for the 116-D-4 Crib</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D5623021	This CVP documents completion of remedial action for the 116-D-4 Crib.	D,P	G,Z,T	Y,X	A,M	YES	YES
CVP-2000-00009	REV. 0	100-D/DR	100-DR-1	Nov. 2000	BHI	<i>Cleanup Verification Package for the 116-D-6 French Drain</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8565673	This CVP documents completion of remedial action for the 116-D-6 French Drain. Because the 116-D-6 excavation sidewalls were removed during pipeline excavation, only the floor of the excavation in the deep zone for the 116-D-6 site remained to be addressed in this CVP.	D,P	G,Z,T	Y,X	A,M	YES	YES
CVP-2000-00010	REV. 0	100-BC 100-DR 100-HR	100-BC-1 100-DR-1 100-HR-1	2001	BHI	<i>Cleanup Verification Package for the 116-D-1A/116-D-1B Storage Basin Trenches and 100-D-46 Burial Ground</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D8686320	This CVP documents completion of remedial action for the 116-D-1A/116-D-1B Storage Basin Trenches and 100-D-46 Burial Ground (referred to as the 116-D-1A/ 116-D-16 site). The 116-D-1A/116-D-1B site is located within the 100-DR-1 OU in the 100 Area of the Hanford Site. The 116-D-1A site is a trench located approximately 30 m (100 ft) east of the 105-D Reactor Building. This trench was 40 m (130 ft) by 3 m (10 ft) by 1.8 m (6 ft) deep. It was used from 1947 to 1952 and received contaminated water and sludge from the 118-D-6 FSB.	D,H		Y	A,M	NO	NO
CVP-2000-00013	REV. 0	100-D	100-DR-1	Oct. 2000	BHI	<i>Cleanup Verification Package for the 116-D-2 Pluto Crib</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D5623125	This CVP documents completion of remedial action for the 116-D-2 Pluto Crib. The 116-D-2 site is an inactive liquid waste crib that operated from 1950 to 1952, and possibly as late as 1956. It was used to isolate coolant flow from process tubes containing ruptured fuel elements until the ruptured fuel could be discharged.	D,P	G,Z,T	Y,X	A,M	YES	YES
CVP-2000-00014	REV. 0	100-D/DR	100-DR-1	Oct. 2000	BHI	<i>Cleanup Verification Package for the 116-DR-6 Liquid Disposal Trench</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D5623285	This CVP documents completion of remedial action for the 116-DR-6 Liquid Disposal Trench.	D,P	G,Z,T	Y,X	A,M	YES	YES

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
CVP-2000-00015	REV. 0	100 AREA	100-DR-2	Oct. 2000	BHI	<i>Cleanup Verification Package for the 116-DR-4 Pluto Crib</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D5623450	This CVP documents completion of remedial action for the 116-DR-4 Pluto Crib (also referred to as the 105-DR Pluto Crib), which is located within the 100-DR-2 OU in the 100 Area. The 116-DR-4 site is located in the southeastern portion of 100-D/DR, approximately 1,150 m (3,770 ft) from the Columbia River. The 116-DR-4 site was a liquid waste disposal site that received DR Reactor process effluent contaminated during fuel element cladding failures. It is located approximately 61 m (200 ft) southeast of the 105-DR Reactor Building.	H,D	T,G,Z	Y,S	A,M	YES	
CVP-2000-00016	REV. 0	100 AREA	100-D-12	Oct. 2000	BHI	<i>Cleanup Verification Package for the 100-D-12 Sodium Dichromate Pump Station</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D5623587	This CVP documents completion of remedial action for the 100-D-12 Sodium Dichromate Pump Station.	D,H,P	G,Y	Y,S	A,M	YES	
CVP-2000-00018	REV. 0	100-D/DR	100-DR-1	Nov. 2000	BHI	<i>Cleanup Verification Package for the 100-D-52 Drywell</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8565696	This CVP documents completion of remedial action for the 100-D-52 Drywell.	D,P	G,Z,T	Y,X	A,M	YES	YES
CVP-2000-00019	REV. 0	100 AREA	100-DR-2	Sept. 2000	BHI	<i>Cleanup Verification Package for the 116-DR-7 Inkwell Crib</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8503435	This CVP documents completion of remedial action for the 116-DR-7 Inkwell Crib (also referred to as the 105-DR Inkwell Crib). The 116-DR-7 site is located within the 100-DR-2 OU in the 100 Area. The 116-DR-7 Inkwell Crib was an inactive waste site that operated during 1953. It received liquid potassium borate solution (ink) that was drained from the 3X system before the Ball 3X system upgrade.	H,D	T,Z,G	Y,S	A,M	YES	
CVP-2000-00024	REV. 0	100-BC	100-BC-1 100-DR-1 100-HR-1	2001	BHI	<i>Cleanup Verification Package for the 1607-H2 Septic System</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D8650014	This CVP documents completion of remedial action for the 1607-H2 Septic System (also referred to as the 1607-112 site). The 1607-1-12 site is located within the 100-HR-1 OU in the 100 Area. The site has also been known as the 124-H-2 sanitary sewer system. The site is located north of the 105-H Reactor Building in an area that, before World War II and the formation of the Hanford Site, was occupied by fruit tree orchards. The 1607-1-12 Septic System was used from 1949 until 1965, receiving sanitary waste from the 182-H, 183-H, 190-H, and other 100-H Area office and maintenance buildings. The 1607-1-12 site consisted of a septic tank, drain field, and associated piping.	D,H		Y	A,M	NO	NO
CVP-2000-00033	REV. 0	100-D	100-DR-1	Apr. 2001	BHI	<i>Cleanup Verification Package for the 100-D-48:4 Small Cooling Water Effluent Pipelines</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8726599	This CVP documents completion of remedial action for the 100-D-48:4 Small Cooling Water Effluent Pipelines.	D,P	G,Z,T	Y,X	A,M	YES	YES
CVP-2000-00034	REV. 0	100-D/DR	100-DR-1	Apr. 2001	BHI	<i>Cleanup Verification Package for the 100-D and 100-DR Group 3 Pipelines (100-D-48:3 and 100-D-49:3) and 100-D-5 and 100-D-6 Burial Grounds</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8726630	This CVP documents completion of remedial action for the 100-D/DR Group 3 Pipelines and 100-D-5/D-6 Burial Grounds.	D,P	G,Z,T	Y,X	A,M	YES	YES
CVP-2003-00016 (Section1)	REV. 0	100	100-D	Dec. 2003	BHI	<i>Cleanup Verification Package for the 118-D-2:2, 105-DR Reactor Below-Grade Structures and Underlying Soils, and the 100-D-49:4 Reactor Cooling Water Effluent Underground Pipeline (Section 1 of 3)</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D5630718	This CVP calculates the groundwater concentrations, dose, and risk contributions from remaining four radionuclide contaminants in the residual concrete and soil in Zone 6 at the DR Reactor remediation site over a period 1,000 years from present.	H,D,P	G,Z	Y	A,M	YES	YES

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
CVP-2003-00016 (Section3)	REV. 0	100	100-D	Dec. 2003	BHI	<i>Cleanup Verification Package for the 118-D-2:2, 105-DR Reactor Below-Grade Structures and Underlying Soils, and 100-D-49:4 Reactor Cooling Water Effluent Underground Pipeline (Section 3 of 3)</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D5631428	This CVP calculates the groundwater concentrations, dose, and risk contributions from remaining four radionuclide contaminants in the residual concrete and soil in Zone 6 at the DR Reactor remediation site over a period 1,000 years from present.	H,D,P	G,Z	Y	A,M	YES	YES
CVP-2003-00018	REV. 0	100 AREA	100-DR-2	Feb. 2004	BHI	<i>Cleanup Verification Package for the 105-DR Large Sodium Fire Facility (122-DR-1:2, 100-D-53/122-DR-1:4, 132-DR-2/122-DR-1:5), the 119-DR Exhaust Stack Sampling Building (100-D-64), and the 100-D-23 and 100-D-54 Dry Wells</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D5634929	This CVP documents completion of remedial/removal action for the soil column and below-grade structures of the 105-DR Large Sodium Fire Facility (122-DR-1:2, 100-D-53/122-DR-1:4, 132-DR-2/122-DR-1:5), the 119-DR Exhaust Stack Sampling Building (100-D-64), and the 100-D-23 and 100-D-54 Dry Wells (referred to as the 117-DR facilities site). These sites are located south of the 105-DR Reactor Building within the 100-DR-2 OU in the 100-D Area. The purpose of this CVP is to document that the 117-DR facilities site has been remediated in accordance with the applicable regulatory documents.	H,D	E	Y,S	A,M	YES	
CVP-2005-00003	REV. 0	100-D/DR	100-DR-1	July 2005	BHI	<i>Cleanup Verification Package for the 118-D-6:2, 105-D Reactor Ancillary Support Areas, Below-Grade Structures, and Underlying Soils; the 118-D-6:3, 105-D Reactor Fuel Storage Basin and Underlying Soils; and the 132-D-4, 105-D Reactor Exhaust Stack Foundation</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA00913319	This CVP documents completion of removal actions for the D Reactor ancillary support areas, below-grade structures, and underlying soils; the D Reactor FSB and underlying soils (118-D-6:3); and the D Reactor exhaust stack foundation (132-D-4). The D Reactor is one of nine surplus plutonium-production reactors.	D,P	G,Z,T	Y,X	A,M	YES	YES
CVP-2009-00002	N/A	100 AREA	100-DR-2	Jan. 27, 2010	N.M. Menard	“Transmittal of the Signed Waste Site Reclassification (WSRF) for the Cleanup Verification Package (CVP) for 100-D-47 and Documentation of the Department of Ecology’s (Ecology) Comparison of Site Data with Washington Administrative Code (WAC) 173-340 (2007) Requirements”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=1001280546	The 100-D-47 Burial Ground 4E was constructed to receive control rod waste from Project CG-558. Remediation, verification sampling, and comparison of residual contaminant concentrations against cleanup levels have been performed in accordance with RAOs and RAGs established by the ROD.	D	Z	S			
CVP-98-00001	REV. 0	100-D/DR	100-DR-1	Mar. 1999	BHI	<i>Cleanup Verification Package for the 100-D-22 Sludge Pit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199153644	This CVP presents the results of the remedial action performed at the 100-D-22 Sludge Pit, located at the 100-DR-1 OU in the Hanford Site 100 Area. The 100-D-22 Sludge Pit is also known as the 107-D1 Sludge Pit.	D,H	Z	Y,S,X	A,M	YES	NO
CVP-98-00002	REV. 0	100-D/DR	100-DR-1	Mar. 1999	BHI	<i>Cleanup Verification Package for the 100-D-21 Sludge Pit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199153672	This CVP presents the results of the remedial action performed at the 100-D-21 Sludge Pit located at the 100-DR-1 OU in the Hanford Site 100 Area. The 100-D-21 Sludge Pit is also known as the 107-D2 Sludge Pit.	D,H	Z	Y,S,X	A,M	YES	NO
CVP-98-00003	REV. 0	100-D/DR	100-DR-1	Mar. 1999	BHI	<i>Cleanup Verification Package for the 100-D-20 Sludge Pit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199153675	This CVP for the 100-D-20 Sludge Pit documents the completion of cleanup activities at the site. The 100-D-20 site is also known as the 107-D3 Sludge Pit.	D,H	Z	Y,S,X	A,M	YES	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
CVP-98-00004	REV. 0	100-D/DR	100-DR-1	Mar. 1999	BHI	Cleanup Verification Package for the 100-D-4 Sludge Pit	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199153679	This CVP for the 100-D-4 Sludge Pit (also known as the 107-D5 Sludge Pit) documents the completion of cleanup activities at the site.	D,H	Z	Y,S,X	A,M	YES	NO
CVP-98-00005	REV. 0	100-D/DR	100-DR-1	Mar. 1999	BHI	Cleanup Verification Package for the 1607-D2:1 Abandoned Tile Field	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199153682	This CVP presents the results of the remedial action performed at the 1607-D2 site, which is part of the 1607-D2 septic system.	D,H	Z	Y,S,X	A,M	YES	NO
CVP-99-00007	REV. 0	100-D	116-D-7	Aug. 2000	BHI	Cleanup Verification Package for the 116-D-7 Retention Basin	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D5615147	This CVP documents the completion of remedial action for the 116-D-7 Retention Basin waste site. Extensive data and sampling information are provided.	D,P	G,Z,T	Y,X	A,M	YES	YES
D195066674		100-BC 100-DR 100-HR	100-BC-1 100-DR-1 100-HR-1	1995	EPA, Ecology, and DOE	Interim Remedial Action Record of Decision for the 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units, Hanford Site, Benton County, Washington	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D195066674	This decision document presents the selected interim remedial actions for portions of the 100 Area, which were chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the NCP. Specifically the selected remedial actions will address 37 high-priority waste sites that received liquid radioactive effluent discharges in the 100-BC-1, 100-DR-1, and 100-HR-1 OUs, as well as adjacent contaminated sites that are within the area required for remediation. This decision is based on the AR for this site and for the specific OUs. This ROD also provides a decisional framework to evaluate leaving some contamination in place at a limited number of sites, specifically where contamination begins at depths below 15 ft. The decision to leave wastes in place at such sites will be a site-specific determination made during remedial design and remedial action activities that will balance the extent of remediation with protection of human health and the environment, disturbance of ecological and cultural resources, worker health and safety, remediation costs, operation and maintenance costs, and radioactive decay of short-lived (half-life less than 30.2 years) radionuclides. The application of the criteria for the balancing factors, the process for determining the extent of remediation at deep sites, and the public involvement process during such determinations shall be specified further in the RDR. This is discussed further in Sections IV, VII, and X.	D,H	G,Z,E		M	NO	YES
DOE/RL-92-12	N/A	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5 100-D 100-F 100-K 100-H 100-N	100 AREA	Feb. 1992	DOE-RL	Sampling and Analysis of 100 Area Springs	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196090827	This study was initiated, in fulfillment of Tri-Party Agreement Milestone M-30-01, to evaluate the effect to the Columbia River from contaminated springs and seeps. This was done by ascertaining the concentrations of chemical and radiological constituents discharged through springs into the Columbia River. Definition of the chemical and radiological concentrations retained on sediments adjacent to springs was attempted. Sediment samples were collected adjacent to the springs to indicate retention of contaminants by the sediments. Near-shore river water samples were also collected adjacent to the springs.	D,H,P	G,Z,C, E	S	A	NO	
DOE/RL-93-04	0	100-BC 100-F 100-HR-1	100 AREA	May 1993	N/A	100 Area Excavation Treatability Test Plan	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196136746	This test plan documents the requirements for a treatability study on field radionuclide analysis and dust-control techniques to be used during remedial actions involving excavation. The data from the treatability study program are used to support future FFSS, IRM selection, OU final remedy selection, remedial design, and remedial actions.	H,P	G,C	X,P	A	NO	NO

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D197268361	0	100-BC-5 100-HR-3 100-KR-4	100 AREA	Sept. 19, 1997	DOE-RL, A.C. Tortoso	<i>100 Area Riverbank Seepage Sampling Results (FY 1997)</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197268361	This report transmits a summary of riverbank seepage sampling conducted in the 100-BC-5, 100-KR-4, and 100-HR-3 OUs. The report identifies the work completed and presents tables that list the results from the analytical laboratories. Samples included riverbank seepage water and fine-grained sedimentary material associated with the seepage. The sampling event is part of RIs for the OUs and complements the performance monitoring activities that are associated with the IRM for chromium contamination.	D	G,Z	S,X	A	NO	NO
D8453142		100-BC 100-DR 100-HR 100-KR 100-FR	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-2	2000	EPA, Ecology, and DOE-RL	<i>Declaration of the Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units, Hanford Site (100 Area Burial Grounds), Benton County, Washington</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D8453142	This ROD presents the selected interim remedial actions for portions of the 100 Area (100 Area Burial Grounds), which were chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the NCP. This decision is based on the AR for this site and for the specific OUs. The response action selected in this interim action ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment. Such a release or threat of release may present an imminent and substantial endangerment to public health, welfare, or the environment.	D,H	G,Z,E		M	NO	YES
DOE/RL-2000-01	REV. 0	100-D 100-K 100-N	100-DR-1 100-HR-3 100-KR-4	June 2000	DOE-RL	<i>Annual Summary Report Calendar Year 1999 for the 100-HR-3 and 100-KR-4 Pump-and-Treat Operations and Operable Units</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8373958	This annual summary report discusses the interim remedial actions at the 100-HR-3 and 100-KR-4 OUs for January 1 through December 31, 1999. This is the third annual summary report submitted for these OUs; the first report was released in April 1998 (DOE/RL-97-96) and the second report in May 1999 (DOE/RL-99-13). Ongoing annual summaries and performance evaluations of each of the pump-and-treat systems are required.	D,H,P		Y,S,X	A,M	NO	YES
DOE/RL-2000-45	DRAFT A	100-D/DR	100-D	Aug. 2000	DOE-RL	<i>Engineering Evaluation/ Cost Analysis for the 105-D Reactor Facilities and Ancillary Facilities</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8342222	This document presents the results of an EE/CA conducted to evaluate alternatives to address removal actions at the 105-D Reactor Building, including the FSB and below-grade portions of the reactor, excluding the reactor block. It includes a site description, including ecological aspects, risk analysis, and alternative measures.	D,H,P	E	Y,X	M	YES	YES
DOE/RL-2000-57	2	100-D/DR 100-H	100-DR-1 100-DR-2 100-HR-1 100-HR-2	Sept. 2002	DOE-RL	<i>Removal Action Work Plan for 105-D and 105-H Building Interim Safe Storage Projects and Ancillary Buildings</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D9177865	This document contains the removal action work plan for the 105-D and 105-H Reactor Buildings and ancillary facilities. DOE has determined that hazardous substances in the 105-D and 105-H Reactor Buildings and ancillary facilities present a potential threat to human health or the environment. DOE has also determined that a non-time-critical removal action is warranted at these facilities.	D,H,P		Y,X	M	YES	NO
DOE/RL-2000-59	REV. 0	100-BC 100-FR 100-HR 100-IU	100-BC-5 100-FR-3 100-HR-3 100-IU-2 100-IU-6	2000	DOE-RL	<i>Sampling and Analysis Plan for Aquifer Sampling Tubes</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D8510131	This SAP presents the overall rationale and strategy for the sampling and analyses proposed for samples collected from aquifer sampling tubes adjacent to and within the Columbia River. The FY-specific sampling locations and analyses for aquifer sampling tubes are finalized and are documented in a FY groundwater aquifer tubes sampling and analysis instruction. The sampling and analysis instruction is prepared in accordance with BHI-EE-01, <i>Environmental Investigation Procedures</i> , Procedure 1.15, "Sampling Documents," and provides FY-specific sampling that implements the requirements of this SAP. Groundwater contamination is known or suspected along the Hanford Site shoreline of the Columbia River, adjacent to the retired reactor areas. Aquifer sampling tubes were installed along the 100 Area and Hanford Townsite shorelines in an effort to monitor the extent and concentration of contaminated groundwater discharging into the river. Aquifer sampling tubes are driven into the aquifer at the shoreline to obtain groundwater samples from near or within the groundwater/river water interface. Because of the ease of installation, the tubes provide more continuous coverage of the Hanford Site shoreline than groundwater monitoring wells.	D,H		Y	A	NO	NO

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DOE/RL-2000-67	REV. 1	100-D/DR 100-H	100-D 100-H	Oct. 2002	DOE-RL	<i>105-D and 105-H ISS Project Sampling and Analysis Plan for Waste and Soil Characterization</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D9190976	This SAP presents the rationale and strategy for the sampling and analysis activities proposed in support of the 105-D and 105-H ISS Projects. The purpose of the proposed sampling and analysis activities is to support the planning and decision making activities for the waste designation and disposal activities at the D and H Reactors.	D,H,P	Z	Y,S,X	M	NO	NO
DOE/RL-2000-74	REV. 0	100-D/DR 100-H	100-HR-3	June 2001	DOE-RL	<i>Fiscal Year 2000 Annual Summary Report for In Situ Redox Manipulation Operations</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8794373	This annual barrier installation progress and performance report discusses the ISRM interim remedial action at the 100-IR-3 OU from October 1, 1999, through September 30, 2000. This report specifically addresses actions performed at the Cr(VI) plume in the southwest portion of the 100-D Area.	D,P	G,Z	Y,X,P	A	NO	NO
DOE/RL-2001-04	REV. 0	100 AREA	100-HR-3 100-KR-4 100-NR-2	Aug. 2001	N/A	<i>Annual Summary Report Calendar Year 2000 for the 100-HR-3, 100-KR-4, and 100-NR-2 Operable Units and Pump-and-Treat Operations (Section 1 of 2)</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8843184	This annual progress and performance evaluation report discusses the groundwater remedial actions in the 100 Area, including the interim actions at the 100-HR-3 and 100-KR-4 OUs, and it also discusses the ERA in the 100-NR-2 OU. Previously, 100-NR-2 pump-and-treat performance was reported with the 200-UP-1 and 200-ZP-1 pump-and-treat systems.	D,H,P	G,Z	Y,S,P	A,M		YES
DOE/RL-2001-18	REV. 0	100-D/DR 100-H	100-DR-1 100-HR-1	July 2001	DOE-RL	<i>Sampling and Analysis Plan for Interim Closure of 105-D and 105-H Reactor Below-Grade Structures and Underlying Soils</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8796894	This SAP presents the rationale and strategy for the sampling and analysis activities proposed for the interim closure of the D and H Reactors for the 105-D and 105-H ISS Project. The purpose of the proposed sampling and analysis activities is the characterization of the below-grade structures and underlying soils.	D,P	G,Z	Y,X	A,M	NO	YES
DOE/RL-2001-35	REV. 0	100-BC 100- DR 100-HR	100-BC-1 100-DR-1 100-HR-1	2001	DOE-RL	<i>100 Area Burial Grounds Remedial Action Sampling and Analysis Plan</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D8949758	This SAP presents the rationale and strategy for the sampling and analysis activities developed in support of remediation of the 100 Area Burial Grounds. The purpose of the proposed sampling and analysis activities is the characterization of contaminated soil and debris for waste designation, and post-remediation characterization of the residual soils in pits and trenches for site closeout. Waste designation is presented for information purposes only and the generator is responsible for proper waste designation. This SAP is based on the DQOs developed for the 100 Area Burial Grounds (BHI-01501, <i>Data Quality Objective Summary for the 100 Area Burial Grounds and 300-FF-2 Operable Unit Waste Sites</i>).	D,H		Y	M	NO	NO
DOE/RL-2002-01	REV. 0	100-D/DR 100-H	100-HR-3	May 2002	DOE-RL	<i>Fiscal Year 2001 Annual Summary Report for the In Situ Redox Manipulation Operations</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D9061454	This report presents a construction activity summary and evaluation of the performance of the ISRM interim remedial action located in the 100-D Area within the 100-HR-3 OU. The ISRM is a permeable groundwater treatment zone technology established to remedy the Cr(VI)-contaminated groundwater plume. This report is for the period of October 1, 2000, through September 30, 2001.	D,H,P	G,Z	Y,S,X,P	A	NO	NO
DOE/RL-2002-05	REV. 0	100 AREA	100-HR-3 100-KR-4 100-NR-2	Sept. 2002	DOE-RL	<i>Calendar Year 2001 Annual Summary Report for the 100-HR-3, 100-KR-4, and 100-NR-2 Operable Unit Pump and Treat Operations</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D9174398	This annual progress and performance evaluation report discusses the groundwater remedial actions in the 100 Area, including the interim remedial actions at the 100-HR-3, 100-KR-4, and 100-NR-2 OUs. Pump-and-treat systems using an IX medium for contaminant removal were selected as the 100-HR-3 and 100-KR-4 OU interim remedial actions and as the ERA for the 100-NR-2 OU. The systems were designed to achieve the RAOs, as well as specific operational and aquifer performance criteria described in EPA/ROD/R10-96/134.	H,D,P	Z	Y,P	A,M		

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DOE/RL-2003-05	REV. 0	100-D/DR	100-DR-1 100-HR-3	May 2003	DOE-RL	<i>Fiscal Year 2002 Annual Summary Report for the In Situ Redox Manipulation Operations</i> (Section 1 of 2)	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D1486900	This report presents a construction activity summary and evaluation of the performance of the ISRM interim remedial action in the 100-D Area within the 100-HR-3 OU. The ISRM is a permeable groundwater treatment zone technology established to remedy the Cr(VI)-contaminated groundwater plume. This report is for the period of October 1, 2001, through September 30, 2002. (Note: Many of the pages and much of the data in tables are covered by a darkened screen.)	D,H,P	G,Z,T	Y,S,X,P	A,M	NO	NO
DOE/RL-2003-09	REV. 0	100 AREA	100-HR-3	May 2003	DOE-RL	<i>Calendar Year 2002 Annual Summary Report for the 100-HR-3, 100-KR-4, and 100-NR-2 Operable Unit Pump-and-Treat Operations</i> (Section 1 of 3)	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D1719245	FH is currently operating five groundwater pump-and-treat systems across the Hanford Site. Three systems address groundwater in the 100 Areas: the 100-HR-3 system treating Cr(VI) at two sites (100-D and 100-H), the 100-KR-4 system also treating Cr(VI), and the 100-NR-2 system treating strontium-90. Two pump-and-treat systems are remediating groundwater in the 200 West Area: the 200-UP-1 system treating technetium-99, uranium, carbon tetrachloride, and nitrate; and the 200-ZP-1 system treating carbon tetrachloride, chloroform, and trichloroethene. This annual summary report of progress and performance evaluation discusses the groundwater remedial actions in the 100 Area, including the interim remedial actions at the 100-HR-3, 100-KR-4, and 100-NR-2 OUs. The interim remedial actions chosen for the 100-HR-3 and 100-KR-4 OUs are pump-and-treat systems that use an IX medium for contaminant removal. The systems were designed to achieve three RAOs, as well as specific operational and aquifer performance criteria described in EPA/ROD/R10-96/134. The three RAOs are identified as follows: <ul style="list-style-type: none"> • RAO #1—Protect aquatic receptors in the river bottom substrate from contaminants in groundwater entering the Columbia River. • RAO #2—Protect human health by preventing exposure to contaminants in the groundwater. • RAO #3—Provide information that will lead to a final remedy. 	D,H,P	Z	Y,P	A,M		
DOE/RL-2003-33	REV. 1	100 AREA	100-DR-2 100-NR-1 100-NR-2	Feb. 5, 2007	N/A	<i>100-N Ancillary Facilities Waste Characterization Sampling and Analysis Plan</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=da04600897	This SAP presents the strategy, requirements, and procedures for sampling and analysis activities to support waste management decisions associated with deactivation, decontamination, decommissioning, and demolition activities of ancillary support facilities located at the 100 Area's N Reactor site. Characterization of the 190-DR Process Water Pump House was included in the original version of this SAP. The 190-DR Process Water Pump House was characterized during FY 2004 in accordance with Rev. 0 of this SAP.	H		Y	A	YES	
DOE/RL-2003-63	REV. 0	100 AREA	100-DR-1 100-HR-3	Oct. 7, 2004	N/A	<i>Sampling and Analysis Plan for In Situ Redox Manipulation Project</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D6434974	This SAP updates the monitoring requirements described in the ISRM RDR/RAWP (DOE/RL-99-51) by adding the monitoring wells completed after 1999 and the nearby aquifer sampling tubes installed during 2004. Updates to the RDR/RAWP well and aquifer tube lists and the analytical testing requirements have been included in the applicable tables of this SAP.	D,H,P	Z	Y,S,P	A	YES	
DOE/RL-2004-06	REV. 0	100-D/DR 100-H	100-HR-3	June 2004	DOE-RL	<i>Fiscal Year 2003 Annual Summary Report for the In Situ Redox Manipulation Operations</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D5235508	This annual progress and performance report discusses the ISRM interim remedial action at the 100-HR-3 OU from October 1, 2002, through September 30, 2003 (FY 2003). This report specifically addresses remedial actions performed at the Cr(VI) plume in the southwest portion of the 100-D Area.	D,H,P	Z	Y,S,X,P	A	NO	NO

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DOE/RL-2004-21	REV. 0	100-D/DR 100-H 100-K	100-HR-3 100-KR-4 100-NR-2	May 2004	DOE-RL	<i>Calendar Year 2003 Annual Summary Report for the 100-HR-3, 100-KR-4, and 100-NR-2 Operable Unit Pump-and-Treat Operations</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D6309428	This annual summary report discusses the groundwater remedial actions in the 100 Area, including the interim remedial actions at the 100-HR-3, 100-KR-4, and 100-NR-2 OUs. This report discusses progress toward the RAOs in the respective conclusion section for each OU. The report is organized into three major sections, each presenting the annual summary and performance evaluation for the three respective OUs. Section 2.0 discusses the 100-HR-3 OU, Section 3.0 discusses the 100-KR-4 OU, and Section 4.0 discusses the 100-NR-2 OU. An evaluation of costs is presented in Section 5.0, and the references cited in this report are included as Section 6.0.	D,P	Z	Y,S,X,P	A,M	NO	NO
DOE/RL-2004-59	REV. 0	100-D/DR	100-DR-1	Sept. 2004	DOE-RL	<i>Surveillance and Maintenance Plan for the 105-D Reactor Safe Storage Enclosure</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D6309428	This document provides the plan for implementing surveillance and maintenance activities to ensure that the safe storage enclosure at the Hanford Site's D Reactor is maintained in a safe, environmentally secure, and cost effective manner until subsequent closure during the final disposition phase of decommissioning.	D,H,P		Y,X	M	YES	NO
DOE/RL-2005-18	REV. 0	100-D/DR 100-H 100-K	100-HR-3 100-KR-4 100-NR-2	May 2005	DOE-RL	<i>Calendar Year 2004 Annual Summary Report for the 100-HR-3, 100-KR-4, 100-NR-2 Operable Unit Pump-and-Treat Operations</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA088495	This 2004 annual summary report discusses the groundwater remedial actions in the 100 Area, including the interim remedial actions at the 100-HR-3, 100-KR-4, and 100-NR-2 OUs. This report discusses progress toward the RAOs in the respective conclusion section for each OU. The report is organized into three major sections, each presenting the annual summary and performance evaluation for the three respective OUs. Section 2.0 discusses the 100-HR-3 OU, Section 3.0 discusses the 100-KR-4 OU, and Section 4.0 discusses the 100-NR-2 OU. An evaluation of costs is presented in Section 5.0, and the references cited in this report are included as Section 6.0. It also provides a summary of major CY 2004 activities, major trends, and significant differences between 2003 and 2004 for each OU.	D,P	Z	Y,S,X,P	A,M	NO	NO
DOE/RL-2005-39	REV. 0	100-D/DR	100-DR-1 100-HR-3	May 2005	DOE-RL	<i>Fiscal Year 2004 Annual Summary Report for the In Situ Redox Manipulation Operations</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA067008	This annual progress and performance report discusses the ISRM interim remedial action at the 100-HR-3 OU from October 1, 2003, through September 30, 2004 (FY 2004). This report specifically addresses remedial actions performed at the Cr(VI) plume in the southwest portion of the 100-D Area.	D,H,P	G,Z	Y,S,X,P	A	NO	NO
DOE/RL-2005-45	REV. 0	100 AREA	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-1	1-Aug-05		<i>Surplus Reactor Final Disposition Engineering Evaluation</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA00913933	This engineering evaluation presents an assessment of the decommissioning and final disposition options for the Hanford Site surplus production reactors. The evaluation will consider whether changes have occurred regarding technical innovations, environmental values, regulatory requirements, or other information documented in the Final EIS (<i>Final Environmental Impact Statement: Decommissioning of Eight Surplus Production Reactors at the Hanford Site, Richland Washington</i> [DOE/EIS-0119D]) that might lead to a different decision. This engineering evaluation summarizes the information and alternatives that were included in the Final EIS and updates the cost information and radionuclide inventories that were used to support the conclusions. This report also includes a summary of the activities implemented to date to support decommissioning of the Hanford Site surplus reactors and summarizes actual decommissioning costs incurred to date to place the reactors in ISS.	H,D		Y,S			YES
DOE/RL-2005-97	0	100-D/DR 100-H	100-HR-3	May 2006	DOE-RL	<i>Fiscal Year 2005 Annual Summary Report for the In Situ Redox Manipulation Operations</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA02798007	This annual progress and performance report discusses the ISRM interim remedial action at the 100-HR-3 OU from October 1, 2004, through September 30, 2005. This report specifically addresses remedial actions performed at the Cr(VI) plume in the southwest portion of the 100-D Area.	D,H,P	Z	Y,S,X,P	A	NO	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
DOE/RL-2006-75 [REISSUE]	REV. 1	100 AREA	100-HR-3	Oct. 15, 2008	N/A	<i>Supplement to the 100-HR-3 and 100-KR-4 Remedial Design Report and Remedial Action Workplan for the Expansion of the 100-KR-4 Pump-and-Treat System</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0812030152	The purpose of the 2008 100-KR-4 pump-and-treat system expansion was to increase the areal extent of Cr(VI) plume capture and the capacity of the system to aid in meeting the RAOs presented in EPA/ROD/R10-96/134. Implementation of this expansion will aid in satisfying the 100-KR-4 action items listed in DOE/RL-2006-20, <i>The Second CERCLA Five-Year Review Report for the Hanford Site</i> .	D,H,P	Z	Y,S,P	A,M	YES	
DOE/RL-2006-76	REV. 0	100-D/DR 100-H 100-K	100-HR-3 100-KR-4 100-NR-2	May 2007	DOE-RL	<i>Calendar Year 2006 Annual Summary Report for 100-HR-3, 100-KR-4, and 100-NR-2 Operable Unit Pump-and-Treat Operations</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA05059816	This 2006 annual summary report discusses the groundwater remedial actions in the 100 Area, including the interim remedial actions at the 100-HR-3, 100-KR-4, and 100-NR-2 OUs. This report discusses progress toward the RAOs in the respective conclusion section for each OU. The report is organized into three major sections, each presenting the annual summary and performance evaluation for the three respective OUs. Section 2.0 discusses the 100-HR-3 OU, Section 3.0 discusses the 100-KR-4 OU, and Section 4.0 discusses the 100-NR-2 OU. An evaluation of costs is presented in Section 5.0, and the references cited in this report are included as Section 6.0.	D,P	Z	Y,S,X,P	A,M	NO	NO
DOE/RL-2007-19 [REISSUE]	REV. 0	100-D/DR, 100-H	100-HR-3	July 2007	DOE-RL	<i>Fiscal Year 2006 Annual Summary Report for the In Situ Redox Manipulation Operations</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=DA05392882	This annual progress and performance report discusses the ISRM interim remedial action at the 100-HR-3 OU from October 1, 2005, through September 30, 2006. This report specifically addresses remedial actions performed at the Cr(VI) plume in the southwest portion of the 100-D Area.	D,H,P	Z	Y,S,X,P	A	NO	NO
DOE/RL-2008-05	REV. 0	100-H 100-K 100-N	100-HR-3 100-KR-4 100-NR-2	June 2008	DOE-RL	<i>Calendar Year 2007 Annual Summary Report for the 100-HR-3, 100-KR-4, and 100-NR-2 Operable Unit Pump-and-Treat Operations</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0807090160	This annual summary report discusses the groundwater remedial actions for 2007 in the 100 Area, including interim remedial actions at the 100-HR-3, 100-KR-4, and 100-NR-2 OUs.	D,P	Z	Y,X,P	A	NO	NO
DOE/RL-2008-13	REV.0	100 AREA		Sept. 24, 2009	S.W. Petersen	<i>Treatability Test Report for the Removal of Chromium from Groundwater at 100-D Area Using Electrocoagulation</i>	http://www.osti.gov/bri/dge/product.biblio.jsp?query_id=29&page=1&osti_id=966148	The primary purpose of the treatability study was to determine the effectiveness of Cr(VI) removal and the robustness/implementability of an electrocoagulation system. Secondary purposes of the study were to gather information about derivative wastes and to obtain data applicable to scaling the process from the treatability scale to full scale.	D,H,P	H	P,S,Y	A	NO	NO
DOE/RL-2008-42	REV. 0	100-D 100-H	100-HR-3	Apr. 2009	DOE-RL, D.C. Weekes	<i>Hydrogeological Summary Report for 600 Area Between 100-D and 100-H for the 100-HR-3 Groundwater Operable Unit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0911161139	This report presents data obtained from the field investigation of the horn area between the 100-D and 100-H Areas in the 100-HR-3 OU in FY 2007 and FY 2008. The purpose of this document is to provide (1) a summary of previous investigations describing the extent of the Cr(VI); (2) the analytical results of groundwater samples collected from the field investigation; (3) an update of the geology, general hydrology, and chromium plumes; and (4) recommendations for future investigations, data collection, and groundwater sampling.	D,P	G,Z,E,T	Y,S,X,P	A,M	NO	YES
DOE/RL-2008-46-ADD 1	REV. 0	100-D/DR	100-DR-1 100-DR-2 100-HR-1 100-HR-2 100-HR-3	Mar. 2010	DOE-RL	<i>Integrated 100 Area Remedial Investigation/Feasibility Study Work Plan, Addendum 1: 100-DR-1, 100-DR-2, 100-HR-1, 100-HR-2, and 100-HR-3 Operable Units</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0084374	This document is Addendum 1 of the <i>Integrated 100 Area Remedial Investigation/Feasibility Study Work Plan</i> (DOE/RL-2008-46). The purpose of a work plan is to explain the RI/FS project background and rationale and to present detailed plans for investigation of a contaminated site under CERCLA. This document supports final remedy selection under CERCLA for the 100-D/H OUs at the Hanford Site. The CERCLA RI/FS results are also intended to address RCRA corrective action requirements.	D,H,P	G,Z,C,E, T	Y,S,X,P	A,M	YES	YES

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
DOE/RL-2009-09	REV. 1	100 AREA	100-HR-3	Aug. 24, 2009	N/A	<i>Sampling and Analysis Plan for Installation of 100-HR-3 Groundwater Operable Unit Remedial Process Optimization Wells</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0909171091	This SAP addresses the installation of new groundwater extraction and injection wells in the 100-HR-3 Groundwater OU at the Hanford Site. These wells will facilitate remedial process optimization through expansion of the 100-HR-3 Groundwater OU pump-and-treat system currently in place to remediate Cr(VI)-contaminated groundwater. The Cr(VI) plume resulted from leaks of sodium dichromate solutions from unlined basins during reactor operations in the 100-D and 100-H Areas, and from leaks and spills of concentrated sodium dichromate stock solutions at those areas.	D,H,P	Z	Y,S,P	A,M	YES	
DOE/RL-2009-15	REV. 0	100 AREA	100-HR-3 100-KR-4 100-NR-2	May 27, 2009	N/A	<i>Calendar Year 2008 Annual Summary Report for the 100-HR-3, 100-KR-4, and 100-NR-2 Operable Unit Pump-and-Treat Operation</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0906180630	CHPRC is currently operating seven groundwater pump-and-treat systems across the Hanford Site. Five systems address groundwater in the 100 Area, which include two systems to treat Cr(VI) in the 100-HR-3 OU; two systems to treat Cr(VI) in the 100-KR-4 OU; and the 100-NR-2 system, which treats strontium-90 and is in cold-standby status. Two pump-and-treat systems are remediating groundwater in the 200 West Area: the 200-UP-I OU system, and the 200-ZP-1 OU system (which is actively treating carbon tetrachloride, chloroform, and trichloroethene). This annual summary report discusses the groundwater remedial actions in the 100 Area, including interim remedial actions at the 100-HR-3, 100-KR-4, and 100-NR-2 OUs. A detailed description of the progress and performance of the ISRM barrier was reported separately in DOE/RL-2009-01. The ISRM barrier is located in the southwestern portion of the 100-D Area. Additional information addressing source investigation activities, system modifications to existing pump-and-treat systems, and special projects are presented in DOE/RL-2008-66, <i>Hanford Site Groundwater Monitoring for Fiscal Year 2008</i> .	D,H,P	Z	Y,S,P	A,M	YES	
DOE/RL-2009-40	0	100-D/DR	100-DR-1 100-DR-2 100-HR-1 100-HR-2 100-HR-3	Mar. 2010	DOE-RL	<i>Sampling and Analysis Plan for the 100-DR-1, 100-DR-2, 100-HR-1, 100-HR-2, and 100-HR-3 Operable Units Remedial Investigation/ Feasibility Study</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0084375	This SAP supports the RI/FS process for 100-D/H. The 100-D/H area is associated with four source OUs: 100-DR-1, 100-DR-2, 100-HR-1, and 100-HR-2. The 100-HR-3 Groundwater OU underlies the four source OUs. This SAP describes the sampling and analysis to be performed associated with environmental investigation wells for soil samples (boreholes), test pits, groundwater monitoring wells, and aquifer tubes within the area.		G,Z	Y,P	A,M	YES	NO
DOE/RL-88-30	REV. 2, Vol. 2	100-BC 100-DR 100-FR 100-HR 100-IU 100-KR 100-NR 1100-EM 1100-IU 200-BP 200-IU 200-NO 200-PO 200-RO 200-SO 200-SS 200-TP 200-UP 200-ZP 300-FF		1992	DOE-RL	<i>Hanford Site Waste Management Units Report</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196092158	This report summarizes the OUs in several areas of the Hanford Site. Each OU has several waste units (cribs, ditches, ponds, etc.). The OUs are summarized by describing each unit. Some of the descriptions include unit name, unit type, waste category start data, site description, etc. The descriptions vary for each waste unit in each OU and area of the Hanford Site.					NO	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
DOE/RL-88-36	REV. 0	100-D 100-H	100-HR-3	Sept. 1992	DOE-RL	<i>RCRA Facility Investigation/ Corrective Measures Study Work Plan for the 100-HR-3 Operable Unit, Hanford Site, Richland, Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196116797	This work plan and the attached supporting project plans establish the OU setting and the objectives, procedures, tasks, and schedule for conducting the RFI/CMS for the 100-HR-3 OU.	D,H,P	G,Z,E,C, T	Y,S,X,P	A,M	YES	YES
DOE/RL-89-09	Draft A	100-DR-1	100-DR-1	Oct. 1989	DOE-RL	<i>RCRA Facility Investigation/ Corrective Measures Study Work Plan for the 100-DR-1 Operable Unit, Hanford Site, Richland, Washington</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D195066104	The purpose of this work plan and the attached project plans is to document the project scoping process and outline all of the RFI/CMS activities for the 100-DR-1 OU. This report details all the aspects of the 100-DR-1 OU, the main categories to be addressed and extensive work approaches, and corrective measures.	D,H,P	G,Z,C,E, T	Y,S,X	A,M	YES	YES
DOE/RL-89-09	Draft B	100-D/DR	100-DR-1	Aug. 1990	DOE-RL	<i>RCRA Facility Investigation/ Corrective Measures Study Work Plan for the 100-DR-1 Operable Unit, Hanford Site, Richland, Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196025510	The purpose of this work plan and the attached project plans is to document the project scoping process and outline all RFI/CMS activities for the 100-DR-1 OU. The function of the RFI/CMS process is to determine the nature and extent of the threat presented by releases of hazardous and radioactive substances from the 100-DR-1 OU and to evaluate proposed corrective measures for such releases.	D,H,P	G,Z,C,E, T	Y,S,X,P	A,M	YES	YES
DOE/RL-89-09	REV. 0	100-D/DR	100-DR-1	Sept. 1992	DOE-RL	<i>RCRA Facility Investigation/ Corrective Measures Study Work Plan for the 100-DR-1 Operable Unit, Hanford Site, Richland, Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196109973	The purpose of this work plan and the attached project plans is to document the project scoping process and outline all RFI/CMS activities for the 100-DR-1 OU. The function of the RFI/CMS process is to determine the nature and extent of the threat presented by releases of hazardous and radioactive substances from the 100-DR-1 OU and to evaluate proposed corrective measures for such releases.	D,H,P	G,Z,C,E, T	Y,S,X,P	A,M	YES	YES
DOE/RL-90-25		100 AREA	100-DR-2, 100-HR-3	Sept. 1990	N/A	<i>State Environmental Policy Act (SEPA) Checklist for the 105-DR Large Sodium Fire Facility Closure Plan</i>	http://www.osti.gov/bri/dge/purl.cover.jsp?purl=/6406818-xRKnMS/	This closure plan presents a description of the 105-DR Large Sodium Fire Facility, the history of wastes managed, and the procedures that will be followed to close this facility as an alkali metal treatment facility. No future use of this facility is predicted. The 105-DR Large Sodium Fire Facility is located within the 100-DR-2 and 100-HR-3 OUs.	D,H,P	G,E	Y	A	NO	YES
DOE/RL-91-25		100-BC 1100-EM 200-BP 300-FF 100-HR 100-DR 100-IU 100-KR 100-KW 100-KE 100-NR 100-FR		1991	DOE-RL	<i>Environmental Restoration and Waste Management Site-Specific Plan for Richland Operations Office, Hanford Site Five-Year Plan, Fiscal Years 1993-1997</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196072700	This plan provides a summary of environmental and waste management activities planned at the Hanford Site. Activities planned through FY 1997 are discussed in more detail than longer-range activities. This plan covers activities funded by the Office of Environmental Restoration and Waste Management within DOE. Some of these activities were funded under Nuclear Energy, Energy Research, and Defense Programs before November 1989. The documents that make up the site-specific plan serve multiple planning purposes. These documents are written to for the following purposes: <ul style="list-style-type: none"> • Provide Hanford Site implementation detail for the <i>Environmental Restoration and Waste Management Five-Year Plan</i> (DOE/S-0078P) • Describe the activities and strategy for waste management operations, environmental restoration, and corrective activities, with emphasis on FY 1991 through FY 1997 • Summarize long-range planning and scheduling for waste management and environmental restoration activities • Assist in the evolution from a high-security, production-oriented culture toward a culture of open communication, clearly understood and demonstrated priorities for environmental stewardship, and accountable management • Provide a baseline for planning, budgeting, and measuring progress from FY 1991 through FY 1997 • Meet DOE requirements that each field organization have a long-range environmental protection plan and waste management plan • Describe the policies of DOE and its contractors related to meeting waste 					NO	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
								management and environmental restoration objectives <ul style="list-style-type: none"> • Prioritize work needed from FY 1991 through FY 1997 on the basis of potential risks to the public, workers, and the environment • Reaffirm the FY 1992 program and provide the basis for the FY 1993 budget. 						
DOE/RL-92-11, PAGE CHANGES		100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	Nov. 5, 1993	N/A	<i>100 Area Feasibility Study Phases I and II, Page Changes to Draft B</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196093855	This document discusses the decision logic diagrams that were developed to determine the regulatory COCs. Contaminants that the data showed to be below background were included on a suspect contaminant list (i.e., future characterization data may warrant their inclusion as COCs). The qualitative toxicity assessment further refined the COCs determination by evaluating the toxicological significance of each regulatory COC. The end product of this effort was a list of potential COCs and suspect contaminants for sources, groundwater, and the 100-N Area.	D,H	G,Z	Y,X	A	YES	YES
DOE/RL-92-12		100 AREA	100-BC 100-D/DR 100-F 100-H 100-K 100-N	Feb. 1992	DOE-RL	<i>Sampling and Analysis of 100 Area Springs</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196090827	This study was initiated, in fulfillment of Tri-Party Agreement Milestone M-30-01, to evaluate the effect to the Columbia River from contaminated springs and seeps. This was done by ascertaining the concentrations of chemical and radiological constituents discharged through springs into the Columbia River. Definition of the chemical and radiological concentrations retained on sediments adjacent to the springs was attempted. Sediment samples were collected adjacent to the springs to indicate retention of contaminants by the sediments. Near-shore river water samples were also collected adjacent to the springs.	D,P	G,Z,C,E	Y,X	A,	NO	NO
DOE/RL-92-26-1		100 AREA 200 AREA	100-D/DR 100-H 100-N 216-A 216-B	June 1992	DOE-RL	<i>Quarterly Report of RCRA Groundwater Monitoring Data for Period January 1 through March 31, 1992</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196103498	This quarterly report contains data that were received before the May 15, 1992, laboratory reporting deadline. The report contains not only data from the January through March quarter, but also missing data from previous quarterly sampling events.	D,P	Z	Y	A	NO	NO
DOE/RL-92-26-2		100 AREA 200 AREA	100-D/DR 100-H 100-N 216-A 216-B	Oct. 1992	DOE-RL	<i>Quarterly Report of RCRA Groundwater Monitoring Data for Period April 1 through June 30, 1992</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196113748	This report contains data from Hanford Site groundwater monitoring projects. This quarterly report contains data that were received before September 1, 1992. The report contains not only data from the April through June quarter, but also missing data from previous quarterly sampling events. In addition, the report contains data from samples for the July through September quarter that were collected in June. Projects that have two sampling dates for this quarter may have had their July through September samples collected early, and the data are reported in this quarterly report.	D,P	Z	Y	A	NO	NO
DOE/RL-92-28	REV. 1	100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	Mar. 1994	N/A	<i>Columbia River Impact Evaluation Plan</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196084453	Because of past practices, four areas of the Hanford Site (the 100, 200, 300, and 1100 Areas) have been included on EPA's NPL under CERCLA. In addition to the four NPL sites, more than 60 RCRA TSD facilities will be closed or permitted to operate in accordance with RCRA regulations. To accomplish the timely cleanup of the past-practice units, the Tri-Party Agreement (Ecology et al., 1989) was signed by Ecology, EPA, and DOE-RL, and milestones were adopted to support the agreement. These milestones represent the actions needed to ensure acceptable progress toward Hanford Site compliance with CERCLA, RCRA, and RCW 70.105, "Hazardous Waste Management." This plan was prepared to fulfill the requirement of Tri-Party Agreement Milestone M-30-02, which requires a plan to determine cumulative health and environmental impacts to the Columbia River in the 100 Area. This plan supplements the CERCLA RI/FS and RFI/CMS that will be carried out in the 100 Area. To support the plan development process, existing information was reviewed and a preliminary impact evaluation was performed based on	D,H,P	Z,E,C,G	Y,S,P,X	A,M	YES	

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
								this information.						
DOE/RL-92-28	Draft A	100 AREA	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5 100-D 100-N 100-H 100-K 100-F	June 1992	DOE-RL	<i>Columbia River Impact Evaluation Plan</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196102620	The purpose of this report is to satisfy Tri-Party Agreement Milestone M-30-02, which is "Submit a plan (primary document) to EPA and Ecology to determine cumulative health and environmental impacts to the Columbia River." While most of the information presented in this report is general to the 100 Area, 100-D/DR is also discussed.	D,P	G,Z,E	Y,S,X,P	A,M	YES	NO
DOE/RL-92-73	REV. 0	100-D/DR 100-H	100-HR-3	Feb. 1993	DOE-RL	<i>100-HR-3 Groundwater Treatability Test Plan</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196126235	This test plan outlines the specifications, responsibilities, and general methodology for conducting a groundwater treatability study at the 100-HR-3 OU. The objective of this treatability study is to evaluate biodegradation, chemical reduction/precipitation, and IX technologies as a means of removing contaminants from the 100-HR-3 groundwater. Reverse osmosis is specifically excluded from the scope of this test plan because it is currently being considered for other 100 Area treatability studies.	D	Z	Y	M	NO	NO
DOE/RL-93-04	REV. 0	100-HR-1,	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	May 1993	N/A	<i>100 Area Excavation Treatability Test Plan</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196136746	This test plan documents the requirements for a treatability study on field radionuclide analysis and dust-control techniques. These systems will be used during remedial actions involving excavation. The data from this treatability study will be used to support the FS process. Development and screening of remedial alternatives for the 100 Area using existing data have been completed and are documented in DOE/RL-92-11, <i>100 Area Feasibility Study, Phases 1 and 2</i> . Based on the results of the FS, DOE/RL-92-48, <i>Treatability Study Program Plan</i> , identifies and prioritizes treatability studies for the 100 Area. The data from the treatability study program support future FFS, IRM selection, OU final remedy selection, remedial design, and remedial actions.	D,H,P	G,C	Y,S,X,P	A	NO	NO
DOE/RL-93-20	Draft A	100-BC 100-D 100-F 100-H 100-K 100-N 100-IU	100 AREA	Nov. 1993	N/A	<i>RCRA Facility Investigation/ Corrective Measures Study Work Plan for the 100-HR-2 Operable Unit, Hanford Site, Richland, Washington</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196093837	This work plan establishes the OU setting and the objectives, approach, tasks, and schedule for conducting the RFI/CMS for the 100-HR-2 OU in the 100 Area.	D,H,P	G,Z,C, E,T	S,X,P	A	YES	
DOE/RL-93-29	REV. 0	100-DR-1	100-DR-1 100-BC-1 100-HR-1	June 1994	DOE	<i>Limited Field Investigation Report for the 100-DR-1 Operable Unit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196016850	This LFI report summarizes the data collection and analysis activities conducted during the 100-DR-1 Source OU LFI and the associated qualitative risk assessment, and makes recommendations on the continued candidacy of high-priority sites for IRMs. The results and recommendations presented in this report are generally independent of future land-use scenarios. This report is unique in that it is based on Hanford-specific agreements discussed in the Tri-Party Agreement (Ecology et al., 1989), DOE/RL-91-45, <i>Hanford Site Baseline Risk Assessment Methodology</i> ; RCRA Facility Investigation/ Corrective Measures Study Work Plan for the 100-DR-1 Operable Unit, Hanford Site, Richland, Washington (DOE/RL-89-09); and DOE/RL-91-40, <i>Hanford Past-Practice Strategy</i> , described and justified in the Tri-Party Agreement change package dated May 16, 1991 (Ecology et al., 1991). The LFI emphasizes initiating and completing waste site cleanup through interim actions.	D,H,P	G,Z,E,T	Y,S,X	A,M	YES	YES

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
DOE/RL-93-43	REV. 0	100-D/DR	100-HR-3	Sept. 1994	DOE-RL	Limited Field Investigation Report for the 100-HR-3 Operable Unit	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196060716	This LFI was conducted to assess the applicability of IRMs for reducing human health and environmental risks within the 100-HR-3 Groundwater OU. This LFI report is a secondary document summarizing the data collection and analysis activities conducted during the 100-HR-3 OU LFI and the associated qualitative risk assessment.	D,P	G,Z,E,T	Y,S,X	A	YES	NO
DOE/RL-93-46	REV. 2	100 AREA	100-DR-2	May 1995	N/A	RCRA Feasibility Investigation/ Corrective Measures Study Work Plan for the 100-DR-2 Operable Unit, Hanford Site, Richland, Washington	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196020069	This work plan establishes the OU setting and the objectives, approach, tasks, and schedule for conducting the RCRA Facility Investigation/Corrective Measures Study Work Plan for the 100-DR-2 Operable Unit, Hanford Site, Richland, Washington (DOE/RL-93-46). This work plan is intended to cover the entire RFI/CMS program, but it is focused on LFI activities.	D,H,P	G,E,Z	Y,S	A,M	YES	YES
DOE/RL-93-51	REV. 0	100 AREA	100-HR-1	Aug. 1994	N/A	Limited Field Investigation Report for the 100-HR-1 Operable Unit	http://www.osti.gov/scitech/servlets/purl/10187991	This LFI report summarizes the data collection and analysis activities conducted during the 100-HR-1 Source OU LFI and the associated qualitative risk assessment (WHC-SD-EN-RA-004, <i>Qualitative Risk Assessment for the 100-HR-1 Source Operable Unit</i>), and makes recommendations on the continued candidacy of high-priority sites for IRMs. The results and recommendations presented in this report are generally independent of future land-use scenarios. This report is unique in that it is based on Hanford-specific agreements discussed in the Tri-Party Agreement (Ecology et al., 1989); DOE/RL-91-40; DOE/RL-91-45; and DOE/RL-88-35, <i>RCRA Facility Investigation/Corrective Measures Study Work Plan for the 100-HR-1 Operable Unit, Hanford Site, Richland, Washington</i> , and must be viewed in this context.	D,H,P	G,E,Z	Y,S	A,M	YES	
DOE/RL-93-56-1		100 AREA 200 AREA	100-D/DR 100-H 100-N 216-A 216-B	July 1993	DOE-RL	Quarterly Report of RCRA Groundwater Monitoring Data for Period January 1 through March 31, 1993	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196132331	Water chemistry and levels are described in this quarterly report. The report contains data received between March 8 and May 24, 1993, which are the cutoff dates for the reporting period. This report may contain not only data from the January through March quarter, but also data from earlier sampling events that were not previously reported.	D,P	Z	Y	A	NO	NO
DOE/RL-93-88	REV. 0	100 AREA 200 AREA 300 AREA	100 AREA 200 AREA 300 AREA	Feb. 1994	DOE-RL	Annual Report for RCRA Groundwater Monitoring Projects at Hanford Site Facilities for 1993	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196094135	This report presents the annual hydrogeologic evaluation of 20 RCRA groundwater monitoring projects and one nonhazardous waste facility at the Hanford Site.						
DOE/RL-94-100	Draft A	100-D/DR	100-DR-1	Sept. 1994	DOE-RL	Proposed Plan for Interim Remedial Measures at the 100-DR-1 Operable Unit, Hanford Site, Richland, Washington	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196057727	This proposed plan introduces the preferred alternative for addressing contaminated soil and solid waste at the 100-DR-1 OU. It also includes a summary of other alternatives analyzed for the 100-DR-1 OU. This proposed plan is intended to be a fact sheet for public review that summarizes the comparison analysis of different remedial alternatives.	D,P	E	Y,X	M	YES	YES
DOE/RL-94-150	REV. 0	100 AREA	100-D/DR 100-H 100-K 100-F	Dec. 1994	DOE-RL, R.E. Fitzner	Bald Eagle Site Management Plan for the Hanford Site, South-Central Washington	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196033942	This document discusses the habitat and activities of bald eagles and peregrine falcons on the Hanford Site, with nesting sites in 100-D/H.	D	E,C,T			NO	NO
DOE/RL-94-36-2		100 AREA 200 AREA	100-D/DR 100-H 100-N 216-A 216-B	Oct. 1994	DOE-RL	Quarterly Report of RCRA Groundwater Monitoring Data for Period April 1 through June 30, 1994	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196057292	This quarterly report contains data received between May 20 and August 19, 1994, which are the cutoff dates for this reporting period. This report may contain not only data from the April through June quarter, but also data from earlier sampling events that were not previously reported. The quarterly report is a means of reporting groundwater data that were collected from the previous quarter. Data interpretations are not made during the quarterly reporting process.	D,P	Z	Y	A	NO	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
DOE/RL-94-36-3		100 AREA 200 AREA	100-D/DR 100-H 100-N 216-A 216-B	Jan. 1995	DOE-RL	<i>Quarterly Report of RCRA Groundwater Monitoring Data for Period July 1 through September 30, 1994</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196043531	This quarterly report contains data received between August 20 and November 18, 1994, which are the cutoff dates for this reporting period. This report may contain not only data from the July through September quarter, but also data from earlier sampling events that were not previously reported.	D,P	Z	Y	A	NO	NO
DOE/RL-94-36-4		100 AREA 200 AREA	100-D/DR 100-H 100-N 216-A 216-B	Apr. 1995	DOE-RL	<i>Quarterly Report of RCRA Groundwater Monitoring Data for Period October 1 through December 31, 1994</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196021847	This quarterly report contains data received for this reporting period. This report may contain not only data from this reporting period, but also data from earlier sampling events that were previously not reported.	D,P	Z	Y	A	NO	NO
DOE/RL-94-53	NA	100-H	100 AREA	July 1995	N/A	<i>Limited Field Investigation Report for the 100-HR-2 Operable Unit</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196058248	This report summarizes the data collection and analysis activities conducted during the 100-HR-2 OU investigative phase and the associated qualitative risk assessment.	D,H,P	G,Z,C, E,T	COPC; S,X	A,M	YES	NO
DOE/RL-94-54	REV. 0	100 AREA	100-HR-3	Aug. 1994	N/A	<i>Pilot-Scale Treatability Test Plan for the 100-HR-3 Operable Unit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196071678	This document presents the treatability test plan for pilot-scale pump-and-treat testing at the 100-HR-3 OU. The test will be conducted in fulfillment of interim Tri-Party Agreement Milestone M-15-06E, to begin pilot-scale pump-and-treat operations by August 1994. The scope of the test was determined based on the results of tab/bench-scale tests (WHC-SD-ER-DTR-001, <i>Treatment Test for Ex Situ Removal of Chromate, Nitrate, and Uranium(VI) from Hanford (100-HR-3) Groundwater, Final Report</i>) conducted in fulfillment of Tri-Party Agreement Milestone M-15-06B. This test plan discusses a pilot-scale pump-and-treat test for the chromium plume associated with the D Reactor portion of the 100-HR-3 OU. Data will be collected during the pilot test to assess the effectiveness, operating parameters, and resource needs of the IX pump-and-treat system. The test will provide information to assess the ability to remove contaminants by extracting groundwater from wells and treating extracted groundwater using IX.	D,H,P	Z,G	Y,P	A,M	YES	YES
DOE/RL-94-61 APPENDIX N	Draft A	100 AREA	100-BC 100-D/DR100-K 100-F 100-N 100-H	Oct. 1997	DOE-RL	<i>Remedy Selection Process for Remaining 100 Area Source Operable Unit Waste Sites</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198019475	This report has two objectives. The initial objective is to summarize the waste site categorization process for the 100 Area Remaining Sites. The second objective is, for those remaining sites that have been categorized to be addressed under CERCLA, to present the remedy selection process. The tables contain extensive modeling.	D,H,P	G,Z	Y,S,X	M	NO	YES
DOE/RL-94-61 APPENDIX J	REV. 0	100 AREA	100-DR-2	Nov. 1995	N/A	<i>100-DR-2 Operable Unit Focused Feasibility Study</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196003067	This 100-DR-2 OU FFS is prepared in support of the CERCLA RI/FS process for the 100 Area. This 100-DR-2 FFS evaluates the remedial alternatives for interim action at 14 high-priority waste sites (candidates for IRMs) within the 100-DR-2 Source OU and provides the information needed for timely selection of the most appropriate interim action at each waste site.	D,H,P	E	Y,S	A	NO	YES
DOE/RL-94-61 APPENDIX N	REV. 0	100 AREA 200 AREA	100-BC 100-D 100-F 100-H 100-N 100-K 100-IU-2 100-IU-6 200-CW-3	Oct. 1998	DOE-RL	<i>Remedy Selection Process for Remaining Source Operable Unit Waste Sites</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198209199	This document has been prepared as an appendix to DOE/RL-94-61. The process document and its appendices evaluate potential remedial alternatives for waste site groups in the 100 Area of the Hanford Site.	D,H,P	G,Z,E	Y	M	YES	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
DOE/RL-94-64	Draft A	100-D/DR	100-DR-1	Sept. 1994	DOE-RL	<i>100-DR-1 Operable Unit Focused Feasibility Study Report</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196059641	This 100-DR-1 OU-specific FFS is prepared in support of a RFI/CMS for the 100-DR-1 OU. DOE/RL-94-61 is a required reference document to this OU-specific FFS, which together provide a complete detailed analysis of remedial alternatives.	D	G,Z,E	Y	A,M	YES	YES
DOE/RL-94-67	REV. 0	100-HR-3	100 AREA	Aug. 1995	N/A	<i>100-HR-3 Operable Unit Focused Feasibility Study</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196006763	This FFS presents a detailed analysis of alternatives for an IRM in the 100-HR-3 OU. This study presents a specialized view of applicable and implementable remedial technologies for COPCs that are typical to all of the 100 Area OUs. This FFS refines the analysis of remedial technologies for groundwater by incorporating contaminated characteristics and hydrogeologic conditions specific to the 100-HR-3 OU.	H,P	G,Z,C,E,T	Y,S,X,P	A,M	YES	NO
DOE/RL-95-46	REV. 0	100-D/DR	100-DR-1	Sept. 1995	DOE-RL	<i>Soil Washing Pilot Plant Treatability Test for the 100-DR-1 Operable Unit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196005402	This report documents procedures and results for the soil-washing pilot-scale test performed at the 116-D-1B Trench. The test was performed to meet Tri-Party Agreement Milestone M-15-07B. The intent of this report is to relay information regarding the test and provide valuable information that may be used to assess the feasibility of soil washing at this and other Hanford area waste sites. Several appendices have been added to supplement and enhance the information presented.	D,P	G,Z	Y	A	NO	NO
DOE/RL-95-67	Draft A	100 AREA	100-DR-2	June 1995	N/A	<i>Proposed Plan for Interim Remedial Measures at the 100-DR-2 Operable Unit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196007375	This proposed plan identifies the preferred alternative for IRMs for remedial action of radioactive liquid waste disposal sites and solid waste burial grounds that include contaminated soils, equipment, and structures at the 100-DR-2 OU. It also summarizes other remedial alternatives evaluated for interim remedial measures in this OU. The intent of IRMs is to speed up actions to address contaminated areas that pose potential threats to human health and the environment.	H,D	E	Y,S		YES	YES
DOE/RL-95-69-2		100 AREA 200 AREA	100-D/DR 100-H 100-N 216-A 216-B	Oct. 1995	DOE-RL	<i>Quarterly Report of RCRA Groundwater Monitoring Data for Period April 1 through June 30, 1995</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D197186725	This quarterly report contains data received between April and June 1995, which are the cutoff dates for this reporting period. This report may contain not only data from the April through June quarter, but also data from earlier sampling events that were not previously reported.	D,P	Z	Y	A	NO	NO
DOE/RL-95-83	REV. 0	100-D	100-HR-3	Dec. 1995	DOE-RL	<i>The Pilot-Scale Treatability Test Summary for the 100-HR-3 Operable Unit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197188558	This document presents the test report for a pilot-scale, pump-and-treat treatability test conducted at the 100-HR-3 Groundwater OU.	D,P		Y,X,P	A	NO	NO
DOE/RL-96-108	REV. 0	100-BC, 100-DR, 100-HR, 100-KR	100-BC-1 100-DR-1 100-HR-1 100-KR-2	Dec. 1996	DOE/RL	<i>Proposed Amendment to the September 1995 Record of Decision for the 100-BC-1, 100-DR-1, 100-HR-1 Operable Units</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196247366	This ROD amendment is being proposed for the following reasons: <ul style="list-style-type: none"> Expand the scope of the remedial action to include 34 additional sites within the 100 Area. These sites received similar discharges of radioactive liquid effluent as the original 37 high-priority radioactive liquid waste disposal sites presented for remediation in the September 1995 ROD. The additional sites pose a similar level of risk to human health and the environment that also requires remediation. The additional sites are in the 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-KR-1, and 100-KR-2 OUs. The estimated cost of remediation and disposal of the 34 additional sites at ERDF is approximately \$112 million. Table 3 at the end of this document provides a brief description of the additional sites. Cost evaluations during remedial design for the original 37 sites identified significant opportunities for streamlining and coordination of remediation activities. Those evaluations, together with lessons learned from demonstration projects and an ERA, resulted in reductions to cost estimates for remediation of 100 Area waste sites. This proposed amendment will document the status of treatment for volume reduction and revegetation efforts at 100 Area liquid waste disposal sites. 	H				NO	YES

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
DOE/RL-96-17	REV. 5	100-BC 100-D 100-H 100-F, 100-K	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-1	Sept. 2004	DOE/RL	<i>Remedial Design Report/Remedial Action Work Plan for the 100 Area</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D6542354	The primary purpose of this RDR/RAWP is to describe the design and the implementation of the remedial action processes. This document streamlines the requirements; the RDR and RAWP are combined to cover both the remedial designs and remedial actions. This document pertains to all of the waste sites included in the interim action ROD, the ROD amendment, the Remaining Sites ROD (EPA/ROD/R10-99/039), and the 100 Area Burial Grounds ROD (as described in Section 1.3 of the RDR/RAWP), and provides a basis that could be followed, with minimal additions, by future 100 Area source OU RODs. The RAOs identified in the RODs apply to contaminants in soils, structures, and debris. The interim action ROD specifically defines three RAOs. The Remaining Sites ROD (EPA/ROD/R10-99/039) specifically defines two RAOs, which are the same as the first two RAOs in the interim action ROD. The 100 Area Burial Grounds ROD also specifically defines two RAOs, which are the same as the first two RAOs in the interim action ROD.					NO	NO
DOE/RL-96-19	REV. 0	100-BC, 100-DR, 100-HR	100-BC-1 100-DR-1 100-HR-1	May 1996	S.G. Weiss	<i>Mitigation Action Plan for Liquid Waste Sites in the 100-BC-1, 100-DR-1, and 100-HR-1 Units</i>	http://www.osti.gov/scitech/biblio/272505	This mitigation action plan explains how mitigation measures for these remedial activities will be planned and implemented for remediation of waste sites in the 100-BC-1, 100-DR-1, and 100-HR-1 OUs. The new activities planned in the ROD are not anticipated to result in releases of hazardous substances and will minimize disturbance of currently undisturbed areas. However, certain actions required by the ROD may result in the redisturbance of areas of recovering vegetation. This document presents a strategy for limiting disturbances and identifies an opportunity for revegetating a previously disturbed site; the knowledge gained from this demonstration project can be applied to final revegetation of the remainder of the remediated sites and the sites disturbed during cleanup when remediation of an area is completed. This work will be conducted in coordination with the Natural Resource Trustee Council and Native American Tribes to help minimize effects to natural resources and cultural resources from project activities and to restore the remediated sites to an appropriate level of habitat.	D,H				NO	NO
DOE/RL-96-22	REV. 4	100 AREA 200 AREA	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-HR-1 100-HR-2 100-FR-1 100-FR-2 100-KR-1 100-KR-2 100-IU-2 100-IU-6 200-CW-3	Sept. 2004	DOE-RL	<i>100 Area Remedial Action Sampling and Analysis Plan</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D6542136	This SAP presents the rationale and strategies for the sampling, onsite measurements, and analyses that will be conducted at 100 Area waste sites (excluding burial grounds, which are addressed in a separate SAP). These past-practice waste sites are located in the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-HR-1, 100-HR-2, 100-FR-1, 100-FR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 OUs.	D,H,P	Z	Y,S,X	A,M	YES	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
DOE/RL-96-43	REV. 0	100-D Ponds	TSD unit	Aug. 1996		<i>Sampling and Analysis Plan for the 100-D Ponds Voluntary Remediation Project</i>	http://www.osti.gov/scitech/biblio/656451	This SAP describes the sampling and analytical activities that will be performed to support closure of the 100-D Ponds RCRA TSD unit. This SAP includes the field sampling plan and the quality assurance project plan. The field sampling plan defines the sampling and analytical methodologies to be performed, and the quality assurance project plan provides information on the requirements for precision, accuracy, representativeness, comparability, and completeness of the analytical data. Two sampling and analysis efforts, Phase I and Phase II, have been conducted to characterize the 100-D Ponds. The COCs are comprised of selected metals and PCBs. Extensive sampling, analyses, validation, and quality control will be performed.	H,D,P	E,G	Y,S,X	A,M	YES	YES
DOE/RL-96-90	REV. 0	100 AREA	100-HR-3 100-KR-4	Apr. 1997	N/A	<i>Interim Action Monitoring Plan for the 100-HR-3 and 100-KR-4 Operable Units</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D197194770	This interim action monitoring plan is based on the guidelines and stipulations in the ROD and RDR/RAWP, and on discussions and agreements from the DQO process. This plan describes interim action compliance, performance, and operational monitoring at the 100-HR-3 and 100-KR-4 interim action pump-and-treat systems. The plan contains detailed descriptions of sample locations at these sites, frequency of sampling, and types of analytes.	D,P	Z	Y	A	YES	
DOE/RL-97-48	REV. 0	100-H	100-HR-1 100-HR-3	June 1997	DOE-RL	<i>183-H Solar Evaporation Basins Postclosure Plan</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197226569	This document provides a description of the 183-H Solar Evaporation Basin, post-closure actions, and post-closure care requirements subject to compliance under the Permit. Corrective actions required for dangerous waste constituents remaining at 183-H will occur in conjunction with CERCLA. Ten remedial actions are discussed for the 100-HR-1 Source OU, and 11 remedial actions are discussed for the 100-HR-3 Groundwater OU.	D,H,P	Z	Y,S,X	M	NO	NO
DOE/RL-97-53	REV. 0	100-D/DR	100-HR-3	Dec. 1997	R.E. Peterson	<i>Waste Management Plan for the Drilling Within the Chromium Plume West of 100-D/DR Reactors</i>	http://www.osti.gov/scitech/biblio/16183	This waste management plan provides guidance for managing the drilling spoils generated during installation of groundwater wells at 100-D/DR, which is part of the 100-HR-3 OU. The wells are being installed to meet two objectives: (1) to better define the nature and extent of a previously identified chromium plume in the area, and (2) to serve as groundwater extraction wells if contamination warrants such use. The new wells will be located in the vicinity of well 199-D4-1, which was installed in October 1996 in response to the discovery of high concentrations of chromium in water samples from the aquifer beneath the shoreline and from riverbed sediments (BHI-00778).	D,H,P	G,Z	Y,S,X,P	A	NO	YES
DOE/RL-97-83	REV. 0	100-B 100-C 100-K 100-F 100-IU 100-D 100-H 200-CW	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-1	1998	DOE-RL	<i>Proposed Plan for Interim Remedial Actions at the 100 Area Remaining Sites</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D198209197	This proposed plan identifies the preferred alternative for interim remedial actions and corrective actions at waste sites and solid waste management units at the Hanford Site, as identified in Tables A-1 and A-2 of Appendix A. The waste sites subject to this Proposed Plan are referred to as the "100 Area Remaining Sites," which consist of radioactively and chemically contaminated soils, structures, and associated debris located within 12 OUs in the 100 Area and one OU in the 200 Area. Contamination at the 100 Area Remaining Sites presents a risk to human health and the environment. Also included in this Proposed Plan is the preferred alternative for disposal of 100 Area reactor building materials.	H				YES	YES
DOE/RL-97-96	REV. 0	100 AREA	100-D 100-H 100-HR-3 100-KR-4	Apr. 1998	N/A	<i>100-HR-3 and 100-KR-4 Operable Units Interim Action Performance Evaluation Report</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D198088271	This performance evaluation report is the first of several reports required by the Remedial Design Report and Remedial Action Work Plan for the 100-HR-3 and 100-KR-4 Groundwater Operable Units Interim Action (RDR/RAWP) (DOE/RL-96-84) to evaluate the performance of the treatment systems at the 100-HR-3 and 100-KR-4 OUs. Specifically, this performance evaluation report includes a summary and evaluation of the treatment process data, water-level data, and hydrochemical data collected from the July 1, 1997, through January 1998, and from October 1, 1997, through January 1998 for the 100-HR-3 and 100-KR-4 pump-and-treat systems, respectively.	D	G,Z	Y,S,X,P	N/A	YES	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
DOE/RL-98-18	Draft B	100 AREA	100-BC 100-D 100-H 100-K 100-F	Mar. 1999	DOE-RL	<i>100 Area Burial Ground Focused Feasibility Study</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199146236	The purpose of this FFS is to develop and evaluate alternatives for the remediation of 45 solid waste burial grounds located in the 100 Area. The alternatives considered provide a range of potential response actions for remediation. DOE-RL, EPA, and Ecology will use this FFS as the basis for selecting a preferred remedial alternative to mitigate potential risks to human health and the environment presented by these burial grounds.	D,H,P	G,Z,C,E, T	Y,S,X	A,M	YES	YES
DOE/RL-98-23	REV. 0	100 AREA	100-DR-2	May 1998	N/A	<i>Engineering Evaluation/Cost Analysis for the 105-DR and 105-F Reactor Facilities and Ancillary Facilities</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198097718	This document presents the results of an EE/CA that was conducted to evaluate alternatives to address final disposition of the 105-DR and 105-F Reactor Buildings, including the FSBs and below-grade portions of the reactors but excluding the reactor blocks.	H,D,P	E	Y,S		NO	YES
DOE/RL-99-04	REV. 0	100-D	100-HR-3	June 1999	DOE-RL	<i>Proposed Plan for an Amendment of the Interim Remedial Action at the 100-HR-3 Operable Unit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199146515	This proposed plan provides for public comment on the treatment of toxic chromium in the groundwater at the Hanford Site that discharges to the Columbia River. The proposed amendment recommends deployment of a new innovative technology (ISRM) for remediation of a recently characterized chromium-contaminated groundwater plume within the 100-D Area.	D,H,P	G,Z,E	Y,S,X,P		YES	YES
DOE/RL-99-12	Draft A	100 AREA	100-BC 100-D100-H100-K	Feb. 1999	DOE-RL	<i>Sampling and Analysis Plan for Disposition of the Standing Legacy Wastes in the 105-B, -D, -H, -KE, and -KW Reactor Buildings</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199128707	This SAP presents the rationale and strategy for the sampling and analysis activities that support disposition of standing legacy waste in the Hanford Site's 105-B, 105-D, 105-H, 105-KE, 105-KW Reactor Buildings. The standing legacy waste will be removed and dispositioned to reduce ongoing surveillance and maintenance activities in those facilities. The purpose of the proposed sampling and analysis activities is to characterize the standing legacy waste for waste designation.	D		Y	M	NO	NO
DOE/RL-99-13	REV. 0	100-D100-K100-N	100-DR-1 100-HR-3 100-KR-4	May 1999	DOE-RL	<i>Annual Summary Report, February to December 1998, for the 100-HR-3 and 100-KR-4 Pump-and-Treat Operations and Operable Units</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199158563	This annual progress and performance evaluation report discusses the interim remedial actions in the 100-HR-3 and 100-KR-4 OUs for February 1, 1998, through December 31, 1998. This is the second annual summary report submitted; the first was released in April 1998 (DOE/RL-99-13). Ongoing annual summaries and performance evaluations of each of the pump-and-treat systems are required.	D,H,P		Y,S,X	A,M	NO	YES
DOE/RL-99-35	REV. 1	100 AREA	100-DR-2 100-FR-1	Jan. 2000	N/A	<i>Sampling And Analysis Plan for 105-F and 105-DR Phase III Below-Grade Structures and Underlying Soils</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8415398	This SAP presents the rationale and strategy for sampling and analysis activities proposed in support of Phase III of the 105-F/105-DR ISS Project. The purpose of the proposed sampling and analysis activities is the characterization of the Phase III below-grade structures and underlying soils. The SAP also presents the sampling design for disposition of wastes generated during D&D of the 105-F/105-DR Phase III on-grade slabs and below-grade concrete structures. This SAP is based on the DQOs developed for the 105-F/105-DR below-grade structures and underlying soils.	D,H,P	G	Y,S	A	YES	YES
DOE/RL-99-58	REV. 0	100 AREA	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-1	Sept. 2000	N/A	<i>Sampling and Analysis Plan for the 100 Area Remaining Sites</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8501259	This confirmatory SAP presents the rationale and strategy for sampling and analysis activities that support clean site confirmation of remaining source OU waste sites as described in the Remaining Sites ROD (EPA/ROD/R10-99/039). The purpose of the proposed sampling and analysis activities is the characterization of waste sites, which are candidates for clean site confirmation without remedial action. The results of the sampling and analysis activities will also support future waste profiling and waste designation if contamination at the candidate sites is determined at levels that require remedial actions.	D,H,P	G	Y,X,S	A,M	YES	YES

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
DOE/RL-99-58	REV. 1 Draft A	100 AREA 200 AREA 300 AREA	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-1 100-FR-2 100-HR-1 100-HR-2 100-KR-1 100-KR-2 100-IU-2 100-IU-6 200-CW-3 300-FF-2	Feb. 2003	DOE-RL	<i>Sampling and Analysis Plan for the 100/300 Area Remaining Sites</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=d0999190	This SAP presents the strategy for sampling and analysis activities to support no action or remediation decisions for the 100/300 Area remaining sites. These sites are described in EPA/ROD/R10-99/039, and <i>Interim Action Record of Decision for the 300-FF-2 Operable Unit</i> (EPA, 2001). This SAP is based on BHI-01249, <i>Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort</i> . The term "candidate site" has been used in this SAP to distinguish the remaining sites from source and solid waste sites where contaminant levels are known to exceed action levels. Insufficient information is currently available to determine if the candidate sites require remediation or no action.	D,H,P	G,Z	Y,S,X	M	NO	YES
DOE/RL-99-59	Draft A	100 AREA	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-1	Dec 1999	N/A	<i>Proposed Plan for 100 Area Burial Grounds Interim Remedial Action</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199159595	This proposed plan identifies the preferred alternative for interim remedial action at 45 solid waste burial grounds located in the 100 Area source OUs of the Hanford Site. In addition, this proposed plan includes summaries of other alternatives analyzed for remediation of the burial grounds.	H,D	C,E	Y,S		YES	YES
DOE/RW-0164	Vol. 8	Hanford Sitewide		Dec. 14, 2007	DOE	<i>Consultation Draft Site Characterization Plan</i> [Section 8 of 9]	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196007935	This report discusses the acceptable performance of the proposed Hanford Site geologic repository that depends, in part, upon the prevention of unacceptable levels of radiation exposure to Hanford Site workers and members of the general public. During the period of repository operation, meteorological conditions can affect the performance and safety of repository activities. In the event of a significant release of radioactive material to the atmosphere, meteorological conditions would play an important role in determining the environmental impact of the release. This document relates to the Hanford Site as a whole and is not unit-specific.	H	C			NO	NO
EPA/541/R-00/121		100-BC 100-DR 100-FR 100-HR 100-KR	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-2 100-HR-2 100-KR-2	2000	EPA	<i>Declaration of the Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units, Hanford Site (100 Area Burial Grounds), Benton County, Washington</i>	http://www.epa.gov/superefund/sites/rods/fulltext/r2000100003110.pdf	This ROD presents the selected interim remedial actions for portions of the 100 Area (100 Area Burial Grounds), which were chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the NCP. This decision is based on the AR for this site and for the specific OUs. The ROD presents the selected interim remedial actions for portions of the 100 Area (100 Area Burial Grounds), which were chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the NCP. This decision is based on the AR for this site and for the specific OUs.	D,H	G,Z,E	Y	M	NO	YES
EPA/541/R-08/044		100-BC, 100-DR, 100-HR	100-BC-1, 100-DR-1, 100-HR-1	1997	EPA	<i>Amended Record of Decision for the 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units Interim Remedial Actions, Hanford Site, Benton County, Washington</i>	http://www.epa.gov/superefund/sites/rods/fulltext/a1097044.pdf	This ROD amendment was developed in accordance with CERCLA, as amended by SARA and, to the extent practicable, the NCP. The ROD amendment is based on the AR for the 100 Area. This decision document changes components of the selected interim remedial action for the Hanford 100 Area radioactive liquid effluent disposal sites and clarifies the role of revegetation of remediated sites with respect to the completion of the remedial actions. The interim action ROD for 100 Area radioactive liquid effluent disposal sites signed in September 1995 (EPA/ROD/R10-95/126) selected excavation, treatment as necessary or appropriate, and onsite disposal for 37 waste sites in the 100-BC-1, 100-DR-1, and 100-HR-1 OUs at an estimated cost of \$491 million. This amendment increases the scope of the selected remedy to include 34 additional sites in the 100 Area that received similar waste discharges and reduces the overall estimated cost for the remedial action to \$194 million for 71 sites. This	H				NO	YES

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development	
								amendment also recognizes the results of the soil-volume-reduction treatability studies that indicate soil washing for volume reduction is not cost effective. Therefore, this treatment step will no longer be retained as an option for the 100 Area radioactive liquid effluent disposal sites. This amendment also clarifies that revegetation of remediated waste sites will be addressed using the guidance provided in the current mitigation action plan (DOE/RL-96-19). Those activities will provide overall environmental benefit to the site but are not part of, or necessary, for the completion of the selected remedial action. All other elements of the selected remedy as set forth in the ROD are unchanged.							
EPA/541/R-99/039		100-BC 100-DR 100-FR 100-HR 100-KR 100-IU	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-1 100-FR-2 100-HR-1 100-HR-2 10-KR-1 100-KR-2 100-IU-2 100-IU-6 200-CW-3	1999	EPA	<i>Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units, Hanford Site, Benton County, Washington (100 Area Remaining Sites)</i>	http://www.epa.gov/superfund/sites/rods/fulltext/r1099039.pdf	This ROD presents the selected interim remedial actions for portions of the Hanford Site 100 Area (100 Area Remaining Sites), 100 Area reactor waste, and portions of the 200 Area. Components of the selected remedy include RTD for the forty-six 100 Area sites such as follows: (1) remove contaminated soils, structures, and associated debris; (2) treat these wastes as required to meet ERDF requirements; (3) dispose of contaminated materials at the Hanford Site's ERDF; and (4) backfill excavated areas with clean material and revegetate the areas.	D,H	G,Z,E	Y	M	NO	YES	
EPA/ROD/R10-00/121		100-BC 100-DR 100-FR 100-HR 100-KR	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-2 100-HR-2 100-KR-2	2000	EPA	<i>Interim Remedial Action Record of Decision, 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units, Hanford Site (100 Area Burial Grounds), Benton County, Washington</i>	http://www.epa.gov/superfund/sites/rods/fulltext/r1000121.pdf	This ROD presents the selected interim remedial actions for portions of the Hanford Site 100 Area (100 Area Burial Grounds), which were chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the NCP. This decision is based on the AR for this site and for the specific OUs.	D,H	G,Z,E	Y	M	NO	YES	
EPA/ROD/R10-95/126		100-BC 100-DR 100-HR	100-BC-1 100-DR-1 100-HR-1	1995	EPA	<i>Interim Remedial Action Record of Decision, 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units, Hanford Site, Benton County, Washington</i>	http://www.epa.gov/superfund/sites/rods/fulltext/r1095126.pdf	This ROD presents the selected interim remedial actions for portions of the Hanford Site 100 Area that were chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the NCP. Specifically the selected remedial actions will address 37 high-priority waste sites that received liquid radioactive effluent discharges in the 100-BC-1, 100-DR-1, and 100-HR-1 OUs, as well as adjacent contaminated sites that are within the area required for remediation. This decision is based on the AR for this site and for the specific OUs.	D,H	G,Z,E	Y		NO	YES	
EPA/ROD/R10-99/039		100-BC 100-DR 100-FR 100-HR 100-KR 100-IU 200-CW	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-1 100-FR-2 100-HR-1 100-HR-2 100-KR-1 100-KR-2 100-IU-2 100-IU-6 200-CW-3	1999	EPA	<i>Interim Action Record of Decision, 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units, Hanford Site, Benton County, Washington</i>	http://www.epa.gov/superfund/sites/rods/fulltext/r1099039.pdf	This decision document presents the selected interim remedial actions for portions of the 100 Area (100 Area Remaining Sites), 100 Area reactor waste, and portions of the 200 Area, which were chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the NCP. This decision is based on the AR for this site and for the specific OUs.	D,H	G,Z,E	Y	M	NO	YES	

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
HNF-12140	REV. 0	100-D/DR	100-DR-1 100-HR-3	Nov. 2002	FH, L.C. Swanson, L.J. Farrell	<i>In Situ Redox Manipulation (ISRM) Third Quarter Technical Memorandum</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D9200143	This technical memorandum summarizes the activities and performance monitoring results for the ISRM treatment zone west of the D/DR Reactors in the 100-D Area of the Hanford Site. This report encompasses third quarter FY 2002, which covers the period from April 1 through June 30, 2002.	D	G,Z	Y,S,X,P	M	NO	NO
HW-28830	N/A	100-BC 100-DR 100-F 100-H	100-BC-1 100-BC-5 100-FR-1 100-HR-1	Aug. 3, 1953	J.K. Soldat, G.R. Quimby	<i>Effective Retention Time of Hanford 107 Reactor Effluent Retention Basins</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196044984	This report summarizes the retention time of the waste effluent basins in the reactor areas to determine the concentrations of beta particle emitters in the reactor effluent water admitted to the Columbia River. The report covers the BC, D/DR, F, and H Reactors.		Z	Y,S	A		
HW-33524		100-DR	100-DR	July 20, 1954	H.V. Clukey	<i>Disposal of Irradiated Waste "Ink" Solution (Production Test 105-529-A)</i>	http://www.osti.gov/scitech/servlets/purl/6825826	This report discusses the boron solution that circulated through special poison tubes to achieve more variable control of neutron flattening that was tested in the DR Reactor.	D,H,P	Z,E	Y,S,X	A	NO	YES
HW-60601	N/A	100 AREA	100 AREA	June 9, 1959	W.H. Bierschenk	<i>Aquifer Characteristics and Groundwater Movement at Hanford</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196029475	The purposes of this report are to (1) describe the hydrological studies and tests at Hanford that permit calculation of the hydraulic characteristics of the aquifers present, (2) determine the general directions and average rates of groundwater flow, (3) point out important factors that affect the movement of groundwater and wastes, (4) estimate a mean lateral path of potential groundwater contamination from disposal sites to the Columbia River and the "time of travel," and (5) indicate what additional geological and hydrological information is needed.		Z	Y,S	A		
HW-83710	N/A	100-H	100-HR-1	1990		<i>Control of Underground Radioactive Materials in Deactivated Areas, Part II, 100-H Reactor Area</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196015077	This document provides a brief overview of description, history, and processes for the 105-H Reactor area.	D,H,P					
BHI-00402	REV. 00	100-D100-H	100-HR-3	June 1995	BHI	<i>Validation Summary Analytical Laboratory 100-HR-3 Sample Numbers</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196118922	This report presents a summary of data validation results for groundwater samples collected for the 100-HR-3 OU round 8 groundwater sampling task. The analyses performed for this project consisted of metals, general chemistry, and radiochemistry			Y	A	NO	NO
M-15-93-02		100 AREA	100-HR-3	Jan. 25, 1994	N/A	Federal Facility Agreement and Consent Order Change Control Form, "100-HR Area Groundwater Operable Unit Milestone Revision"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=d0926100	This document discusses groundwater cleanup through the accelerated start of the pilot-scale pump-and-treat projects for the 100 Area. The contaminant addressed in the 100-H Area was chromium. The treatment systems will be modified/expanded as needed during the treatability and remediation activities to improve the efficiency of the cleanup activities.	H,D	E,Z	Y,X	A	YES	
M-15-95-02B		100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2 100-HR-1	Apr. 1995	N/A	Federal Facility Agreement and Consent Order Change Control Form, "100 Area Source Operable Unit Milestone Changes"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196024318	This change action revises future Tri-Party Agreement milestones for 100 Area source OU FFS proposed plans to reflect the recently proposed 100 Area ROD strategy. In summary, the strategy initially specifies completion of FFSs and proposed plans for high-priority liquid waste disposal sites at the 100-BC-1, 100-DR-1, and 100-HR-1 OUs. The strategy then specifies addressing the remainder of the 100 Area by writing RODs on a "reactor area" basis (i.e., one for 100-BC, one for 100-DR and 100-HR combined, and one for 100-FR and 100-KR combined).	D	Z				
M-16-00-02		100 AREA	100-DR-1 100-DR-2 100-HR-3	June 30, 2000	N/A	Federal Facility Agreement and Consent Order Change Control Form, "In Situ Redox Manipulation Barrier Implementation at the 100-D/DR Western Chromium-Contaminated Groundwater Plume, 100-HR-3"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8366955	This document discusses the ROD that directed removal of chromium contamination from the groundwater at the 105-H and 105-D/DR Reactor areas using pump-and-treat technology. Since issuance of the 1996 ROD, analysis of the results from pore water sampling along the Columbia River indicate an additional, separate chromium plume southwest of the current 100-D/DR Area pump-and-treat system. The extent of this plume was subsequently delineated through the installation of groundwater monitoring wells, and it was determined not to be captured by the 100-HR-3 OU pump-and-treat system. A ROD			P,Y,S			

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
						Groundwater Operable Unit Agreement and Consent Order (Agreement)"		amendment was signed by the Tri-Parties in October 1999, changing the selected remedial action specified in the <i>Interim Remedial Action Record of Decision Amendment: 100-HR-3 Operable Unit</i> (EPA/541/R-00/122) to deployment of a new innovative technology (ISRM) for remediation of the newly characterized chromium groundwater plume. The technology involves creating a permeable groundwater treatment barrier that reduces the mobility and toxicity of chromium in groundwater.						
M-24-02-02		100 AREA	100-HR-3 100-KR-4 200-UP-1 200-ZP-1 300-FF-5	Mar. 2004	J.B. Hebdon, M.A. Wilson, N. Ceto, R.J. Schepens	Federal Facility Agreement and Consent Order Change Control Form, "Overall Strategy and Approach for Groundwater Protection Monitoring and Remediation Under Tri-Party Agreement Milestone Series M-024"	http://www.hanford.gov/files.cfm/Fed_Fac_Agreement_M-24-02-02_.pdf	This Tri-Party Agreement change request formalizes the Tri-Parties efforts to determine a better integrated, more effective, and more cost efficient approach for well installation to meet cleanup and regulatory objectives for Hanford Site groundwater protection activities in the 100-HR-3 OU.	D,H,P	Z	Y,P,S			
M-24-05-01		100 AREA	100-HR-3 100-KR-4 100-NR-2 200-BP-5 200-PO-1	June 28, 2005	M. Wilson, M. McCormick, N. Ceto	Federal Facility Agreement and Consent Order Change Control Form, "Groundwater Protection Monitoring and Remediation Well Installation Priority List for CY 2005 - CY 2008 and Modify Tri-Party Agreement Interim Milestone M-024-47"	http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA527676	This Tri-Party Agreement change request formalizes the Tri-Parties efforts to determine a better integrated, more effective, and more cost efficient approach for well installation to meet cleanup and regulatory objectives for Hanford Site groundwater protection activities in the 100-HR-3 OU.	D,H,P	Z	Y,S			
N/A	N/A	100 AREA	100-HR-1 100-HR-3	Aug. 1989	N/A	<i>Non-Intrusive Activities, 100-HR-1 Operable Unit RFI/CMS, August 1989 to April 15, 1990</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D195064670	This report discusses nonintrusive activities at the 100-HR-1 and 100-HR-3 OUs from August 1989 to April 1990. These tasks are all nonintrusive in nature, and many of them are intended to affect the ultimate completion of the drilling program once the work plan is approved.	P	G,Z,C,T	Y,S,X,P	A,M	YES	NO
N/A	N/A	100 AREA	100-HR-3	1999	N/A	<i>Focus Sheet Protecting Columbia River from Hanford Chromium</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199144829	A proposed plan is being issued that recommends use of a new technology to cleanup a recently characterized chromium-contaminated groundwater plume at the Hanford Site within the 100-HR-3 OU (<i>Proposed Plan for an Amendment of the Interim Remedial Action at the 100-HR-3 Operable Unit</i> [DOE/RL-99-04]). The new technology will be used for this specific plume only and will not alter or affect the pump-and-treat operation specified in the ROD that is currently addressing other chromium plumes in the 105-D and 105-H Reactor areas.	D,H,P	G,Z,E	Y,S,X,P	N/A	NO	NO
N/A	N/A	100 AREA	100-H	Feb. 1988	N/A	<i>Groundwater Monitoring Compliance Projects for Hanford Site Facilities, Progress Report for Period October 1 to December 31, 1987</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196074485	This report documents the progress of four Hanford Site groundwater monitoring projects for the period from October 1 to December 31, 1987. The four disposal facilities are the 300 Area Process Trenches, 183-H Solar Evaporation Basins, 200 Areas LLBGs, and NRDWL.	D,H,P	Z	X,P	A,M	NO	NO
N/A	0	100-H	100-BC-1 100-DR-1 100-HR-1 100-IU-1 100-IU-3	1995	DOE, EPA, Ecology	<i>Proposed Plan Focus Sheet, Hanford 100 Area Environmental Cleanup Along the Columbia River</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196016598	This focus sheet provides a brief overview of the preferred alternative for proposed cleanup alternatives for interim remedial actions at the 100-BC-1, 100-DR-1, and 100-HR-1 OUs.	D,H,P		Y			YES

Table B-2. Annotated Bibliography

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N/A	N/A	100-D 100-H	100-BC-1 100-DR-1 100-HR-1	1993	DOE, EPA, Ecology	<i>Fact Sheet, Proposed Plan to Amend the Record of Decision for 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196247075	This fact sheet describes the proposed plan to amend the ROD for the 100-BC-1, 100-DR-1, and 100-HR-1 OUs.	H,P		S			YES
N/A	N/A	100-D 100-H	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-1	1998	DOE, EPA, Ecology	<i>Focus Sheet, Proposed Plan for Clean Up at the 100 Area Remaining Sites</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D198208156	This focus sheet describes the proposed plan to conduct cleanup at wastes sites in the 100 Area of the Hanford Site. The 207 wastes sites, referred to as the "100 Area Remaining Sites," may consist of radioactively and chemically contaminated soils, structures, and debris. The focus sheet discusses (1) use of the proposed cleanup alternative of RTD at 46 wastes sites, (2) use of the "plug-in approach" at the remaining 161 sites, and (3) use of proposed alternatives for disposal of excess equipment and debris from the 100 Area reactor buildings to ERDF.	H,P		S			YES
N/A	N/A	100-D 100-H	1100-EM-1 200-BP- 1300-FF-1 300-FF-5 100-KR-1 100-KR-4 100-DR-1 100-HR-1 100-HR-3 100-NR-1 100-NR-3 100-FR-1 100-FR-3	1992	DOE, EPA, Ecology	<i>Current Status of Operable Unit Investigations, February 5-6, 1992</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199055253	Provides a brief overview of the COPCs for the OUs during the time specified.	P		Y,S			
N/A	N/A	100 AREA		2000	DOE, EPA, Ecology	<i>Public Notice, Proposed Plan to Clean Up Hanford 100 Area Burial Grounds, Request for Public Comment</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8317868	The proposed plan discusses alternatives analyzed for remediation (cleanup) of 45 burial grounds located in the 100 Area of the Hanford Site.	P		Y,S			YES
N/A	N/A	100-D 100-DR 100-H	100-DR-1 100-DR-2 100-DR-3 100-HR-1 100-HR-3	2000	DOE, EPA, Ecology	<i>Engineering Evaluation/Cost Analysis Fact Sheet, Cleanup of D and H Reactor Facilities, Request for Public Comment</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8415327	An overview of the EE/CAs to evaluate alternatives for final disposition of the D and H Reactor facilities and four ancillary facilities located in the 100-D/DR and 100-H Areas of the Hanford Site.	P		Y,S			YES
N/A	N/A	100-D 100-H	100-HR-1	1977	PNL, D.D. Dauble, R.H. Gray	<i>Checklist and Relative Abundance of Fish Species from the Hanford Reach of the Columbia River</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196029457	A checklist of fish species collected in over 30 years of research is presented for the Columbia River adjoining the U.S. Energy Research and Development Administration's Hanford Site. Differences in species composition and relative abundance within the area are discussed.		E				
N/A	N/A	100 AREA	100-HR-1	1979	PNL, C.E. Cushing	<i>Trace Elements in Columbia River Food Web</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196029460	This report discusses the comparison of data with other published information. It reveals the complexity of food web relationships and the difficulty in extrapolation of data. A general discussion of the 100 Area is provided.		E	Y	A		

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
N/A		100 AREA	100-BC-1 100-DR-1 100-HR-1 100-IU-1 100-IU-3 100-BC-1 100-DR-1 100-HR-1 100-IU-1 100-IU-3	June 1995	DOE, EPA, and Ecology	<i>Proposed Plan Focus Sheet, Hanford 100 Area Environmental Cleanup Along the Columbia River</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196016598	This focus sheet describes a proposal for the first reactor area environmental cleanup of the 100 Area of the Hanford Site.	D,H,P		y		NO	YES
N/A		100 AREA	100-K 100-D 100-N 100-F	Oct. 1993		<i>Public Comments Received on Proposed Document Columbia River Impact Evaluation Plan, DOE/RL-92-28, Rev. 0</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196110049	This document contains public comments from several sources for DOE/RL-92-28. While most of the text generally involves the 100 Area, the specific OUs are discussed in various sections.	P		Y,X		YES	NO
N/A		100 AREA	100-BC-1 100-DR-1 100-HR-1	Dec. 18, 1996	DOE, EPA, and Ecology	<i>Fact Sheet, Proposed Plan to Amend the Record of Decision for the 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196247075	This fact sheet describes the proposed plan to amend the ROD for the 100-BC-1, 100-DR-1, and 100-HR-1 OUs issued by EPA, DOE, and Ecology. The proposed plan explains the basis for increasing the number of waste sites to be remediated and reducing the cost estimates for this project.	D,H,P		Y		NO	YES
N/A		100 AREA	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-1	Nov. 2, 1998	DOE, EPA, and Ecology	<i>Focus Sheet, Proposed Plan for Clean Up at the 100 Area Remaining Sites</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198208156	This proposed plan discusses the following: (1) use of the proposed cleanup alternative of RTD at 46 of the wastes sites, (2) use of the "plug-in approach" at the remaining 161 sites, and (3) use of proposed alternatives for disposal of excess equipment and debris from the 100 Area reactor buildings to ERDF.	D,H,P		Y		NO	YES
N/A		100 AREA 200 AREA 300 AREA 1100 AREA	100-HR-3 100-DR-1 100-KR-1 100-BC-1 100-BC-5	Apr. 1990	DOE, EPA, and Ecology	<i>Current Status of Operable Unit Investigations, April 17, 1990</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199034054	Provides a brief description of specific areas and the current status.	D		Y		NO	NO
N/A		100 AREA 200 AREA 300 AREA 1100 AREA	100-KR-1 100-KR-4 100-BC-1 100-BC-5 100-HR-1 100-HR-3 100-DR-1 100-NR-1 100-NR-3	Oct. 1991	DOE, EPA, and Ecology	<i>Current Status of Operable Unit Investigations, October 16-17, 1991</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199055097	Provides a brief description of specific areas and the current status.	D		Y		NO	NO
N/A		100 AREA 200 AREA 300 AREA 1100 AREA	100-KR-1 100-KR-4 100-BC-1 100-BC-5 100-HR-1 100-HR-3 100-DR-1 100-NR-1 100-NR-3	Feb. 1992	DOE, EPA, and Ecology	<i>Current Status of Operable Unit Investigations, February 5-6, 1992</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199055253	Provides a brief description of specific areas and the current status.	D		Y		NO	NO

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
N/A		100 AREA		May 2000	DOE, EPA, and Ecology	Public Notice, <i>Proposed Plan to Cleanup Hanford 100 Area Burial Grounds, Request for Public Comment</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8317868	This public notice presents background information, as well as the evaluated and preferred alternatives for cleanup of the 100 Area.	D				NO	YES
N/A		100 AREA	100-D/DR 100-H	Aug. 2000	DOE, EPA, and Ecology	<i>Engineering Evaluation/Cost Analysis Fact Sheet, Cleanup of D and H Reactor Facilities</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8415327	This EE/CA fact sheet includes background information, as well as the evaluated and preferred alternatives specific to the D and H Reactor facilities.	D				NO	YES
N/A		100 AREA	100-BC-1 100-DR-1 100-HR-1	Mar. 1995	EPA, D.R. Sherwood Ecology, S.M. Alexander	“Examination of Proposed Plans for 100-BC-1, 100-DR-1, and 100-HR-1 and Subsequent Record of Decision by EPA, Ecology, DOE-RL, DOE-HQ, and Hanford Contractors”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196029685	This letter from EPA and Ecology focuses on certain aspects of the continuing cleanup plan for the three operable areas listed for the 100 Area. These aspects include, but are not limited to, cost effectiveness, goals, and risk associated with plans already in place.	D	G,Z,E	Y,X		YES	NO
N/A		100-D/DR 100-H	100-DR-1 100-HR-1	Oct. 1997	Ecology, K.K. Holliday, W.W. Soper	“Concurrence with Inclusion of Proximity Sites”	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D197298905	Letter from Ecology confirming the addition of the 100-D-25, 100-D-29, UPR-100-D-2, UPR-100-D-3, UPR-100-D-4, UPR-100-D-5, and 100-H-2 waste sites for remedial actions at the 100-DR-1 and 100-HR-1 OUs.						
N/A		100 AREA	100 AA 100-BC-1 100-BC-2 100-BC-5 100-DR-1	May 26, 1993	E.D. Goller	Meeting Minutes, Unit Manager’s Meeting, “100 Aggregate Area/100 Area Operable Units,” April 28, 1993	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196129522	Includes information on the 100 Aggregate Areas.			Y			
N/A		100 AREA	116-D-3 116-D-4 116-H-3 116-B-9 116-B-10	Sept. 1994	PNL, C.A. Brandt	“Biological Review of the Removal of French Drains & Dry Well Project, 100B, 100D, and 100H Areas”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196015084	Short letter summarizing the project in which the French drains were evaluated in specific sites.	D	E			YES	NO
N/A		100 AREA	100-BC-1 100-BC-2 100-KR-2 100-FR-2 100-DR-1 100-DR-2 100-HR-2	Oct. 2000	EPA, Ecology, and DOE	<i>Declaration of the Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units, Hanford Site (100 Area Burial Grounds), Benton County, Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8453142	This ROD presents the selected interim remedial actions for portions of the Hanford Site 100 Area. The response action selected in this interim action ROD is necessary to protect the public health or welfare and the environment from actual or threatened releases of hazardous substances into the environment. It includes the risk analysis and alternatives.	D,H,P	G,Z,E	Y,S,X	M	YES	YES
N/A		100-D/DR	100-DR-1	Sept. 2006	Ecology, J.B. Price	“Notification of Violations Related to Interim Remedial Action at the 100-D-56 Pipeline”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=da03634555	From June 20 through August 31, 2006, Ecology performed an inspection of remedial activities at the 100-D-56 Remaining Site within the 100 Area. Following this inspection, Ecology identified numerous violations of Tri-Party Agreement requirements. Ecology also identified a number of serious concerns. The violations include failure to comply with IIFACO primary documents, including the RDR/RAWP for the 100 Area (DOE/RL-96-17), and the 100 Area ROD. Ecology’s inspection report is enclosed.	D,P		Y	M	NO	NO
N/A		100-D/DR	100-DR-1	Sept. 2009	Ecology, M.E. Jones	“Transmittal of the Signed Waste Site Reclassification Form for the Remaining Sites Verification Package (RSVP) for the 100-D-31:6 and Documentation of the Department of Ecology’s (Ecology) Comparison of Site	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0910070065	Provides Ecology’s comparison of supporting data for the 100-D-31:6 RSVP with WAC 173-340 (2007) requirements.		E	Y,X		NO	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
						Data with Washington Administrative Code (WAC) 173-340 (2007) Requirements”								
N/A		100-D/DR	100-DR-1	Nov. 2009	Ecology, M.E. Jones	“Transmittal of the Signed Waste Site Reclassification Form for the Remaining Sites Verification Package (RSVP) for 100-D-61 and documentation of the Department of Ecology’s (Ecology) Comparison of Site Data with Washington Administrative Code (WAC) 173-340 (2007) Requirements”	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0911120131	Provides Ecology’s comparison of supporting data for the 100-D-61 RSVP with WAC 173-340 (2007) requirements.		E	Y,X		NO	NO
N/A		100-D/DR	100-DR-1	Dec. 2009	DOE-RL, M.S. French	“Transmittal of the Signed Waste Site Reclassification Form for the Cleanup Verification Package (CVP) for 100-D-32 and documentation of the Department of Ecology’s (Ecology) Comparison of Site Data with Washington Administrative Code (WAC) 173-340 (2007) Requirements”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0912280263	Provides Ecology’s comparison of supporting data for the 100-D-32 CVP with WAC 173-340 (2007) requirements.		E	Y		NO	NO
N/A		100-D/DR	100-DR-1	Apr. 2010	Ecology, N.M. Menard	“Transmittal of the Signed Waste Site Reclassification Form (WSRF) for the Remaining Sites Verification Package (RSVP) for 100-D-29 and Documentation of the Department of Ecology’s (Ecology) Comparison of Site Data with Washington Administrative Code (WAC) 173-340 (2007) Requirements”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=1004120203	Provides Ecology’s comparison of supporting data for the 100-D-29 RSVP with WAC 173-340 (2007) requirements.		E	Y		NO	NO

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
N/A		100-D/DR	100-DR-1	May 2010	Ecology, N.M. Menard	“Transmittal of the Signed Waste Site Reclassification Form (WSRF) for the Cleanup Verification Package (CVP) for 100-D-42, 100-D-43, and 100-D-45 and Documentation of the Department of Ecology’s (Ecology) Comparison of Site Date with Washington Administrative Code (WAC) 173-340 (2007) Requirements”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=1005210590	Provides Ecology’s comparison of supporting data for the 100-D-42, 100-D-43, and 100-D-45 CVP with WAC 173-340 (2007) requirements.		E	Y,X		NO	NO
N/A		100-D/DR	100-DR-1	Oct. 2010	Ecology, N.M. Menard	“Transmittal of the Signed Waste Site Reclassification Form (WSRF) for the Cleanup Verification Package (CVP) for 1607-D2:2 and Documentation of the Department of Ecology’s (Ecology) Comparison of Site Data with Washington Administrative Code (WAC) 173-340 (2007) Requirements”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=1010180126	Provides Ecology’s comparison of supporting data for the 1607-D2:2 CVP with WAC 173-340 (2007) requirements.		Z	Y		NO	NO
N/A		100-D/DR	100-DR-1	Oct. 2010	Ecology, N.M. Menard	“Transmittal of the Signed Waste Site Reclassification Form (WSRF) for the Remaining Sites Verification Package (RSVP) for 116-DR-8 and Documentation of the Department of Ecology’s (Ecology) Comparison of Site Data with Washington Administrative Code (WAC) 173-340 (2007) Requirements”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=1010180127	Provides Ecology’s comparison of supporting data for the 116-DR-8 Seal Pit Crib RSVP with WAC 173-340 (2007) requirements.			Y		NO	NO
N/A		100 AREA	100-D	Oct. 1999	PNNL, K.E. Parker, R.J. Serne	<i>Estimation of Distribution Coefficients and Leachability of Hexavalent Chromium in 100-D Area Hanford Formation Sediments</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8282149	This document describes bench-scale testing conducted to estimate Cr(VI) sediment/water distribution coefficients and leachability of Cr(VI) in the Hanford Site’s 100 Area sediments where site-specific information does not currently exist. Samples used for testing were obtained from the 100-D Area.	D,H	Z	Y,S,X	A	NO	NO
N/A		100 AREA 200 AREA 300 AREA	100-H 216-A 216-B	Sept. 1989	PNL	<i>RCRA Ground-Water Monitoring Projects for Hanford Facilities, Progress Report for the Period April 1 to June 30, 1989</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D195066098	This report describes progress from April 1 through June 30, 1989, for 13 RCRA groundwater monitoring projects at the following Hanford Site hazardous waste disposal facilities: 300 Area Process Trenches, 183-H Solar Evaporation Basins, five waste management areas in the 200 Area LLBGs, NRDWL, 1301-N Liquid Waste Disposal Facility, 1324-N Surface Impoundment and 1324-NA Percolation Pond, 1325-N LWDF, 216-A-10 Crib, 216-A-29 Ditch, 216-A-36B Crib, 216-B-3 Pond, 2101-M Pond, and Grout Treatment Facility.						

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
N/A		100 AREA 200 AREA 300 AREA	100-HR-3 100-NR-1 200-ZP-2 300-FF-1 300-FF-5	Oct. 1990	P.T. Day	“Streamlining the RI/FS Process at Hanford”	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196105630	EPA and DOE-RL selected six separate projects that are feasible and would meet EPA’s criteria for ERAs. A short discussion is provided for each of these candidate projects.	D		Y,S,X		NO	NO
N/A		100-D	100-HR-3	Mar. 1997	PNL, J.S. Fruchter	<i>Treatability Test Plan for In Situ Redox Manipulation in the 100-HR-3 Operable Unit D-Area</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197198402	The <i>Proposed Plan for Interim Remedial Measure at the 100-HR-3 Operable Unit</i> (DOE/RL-94-102) identified the preferred alternative for an IRM at the 100-HR-3 OU. The preferred alternative involves pumping contaminated groundwater from the 100-HR-3 OU, treating the groundwater using IX, and disposing of treated groundwater using upgradient injection wells to return it to the aquifer. The proposed plan also considered the possibility that alternative technologies could immobilize Cr(VI) in the aquifer without the use of pump-and-treat.	D,P	G,Z	Y,X,P	A,M	YES	YES
N/A		100-D100-H	100-HR-3	Aug. 2009	DOE, Ecology, and EPA	<i>Explanation of Significant Differences for the 100-HR-3 and 100-KR-4 Operable Units Interim Action Record of Decision, Hanford Site, Benton County, Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=0096029	The Tri-Parties issued this ESD to provide public notice regarding significant changes to the interim action ROD. Two significant changes to the ROD made by this ESD include the following: (1) the projected cost for pump-and-treat operations is being increased, and the cost will be more than 50 percent of the estimate in the ROD; and (2) re-injection location requirements for treated water are being revised to allow re-injection other than in upgradient locations to control migration of the plume and to prevent the 100-KR-4 chromium plume from converging with and interfering with remedial action of the strontium-90 plume at the 100-N Area.	D,H,P	H	Y,P		NO	NO
NONE	NA	100 AREA	100-BC 100-D/DR 100-H 100-F 100-KE/KW	Nov. 1998	EPA, Ecology, and DOE	<i>Focus Sheet, Proposed Plan for Clean Up at the 100 Area Remaining Sites</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D198208156	The purpose of this fact sheet is to provide the public with the following information on cleanup of the 100 Area Remaining Sites: (1) use of the proposed cleanup alternative of RTD at 46 wastes sites, (2) use of the “plug-in approach” at the remaining 161 sites, and (3) use of proposed alternatives for disposal of excess equipment and debris from the 100 Area reactor buildings to ERDF.	D,H,P				NO	
NOTLISTED		100-B	100-BC-1	Dec. 2, 1991	N/A	WIDS General Summary Report, December 2, 1991	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196082668	WIDS report for various sites in the Hanford Site 100-B Area.					NO	NO
NOT LISTED		100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	June 1993	N/A	<i>Public Notice, Comment Period for 100 Area Excavation Treatability Test Plan, June 7–July 6, 1993</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196136740	This focus sheet discusses DOE/RL-93-04, <i>100 Area Excavation Treatability Test Plan</i> . It provides a general overview and discusses the alternatives for cleanup.	D,H,P		Y		NO	NO
NOT LISTED	REV. 0	100 AREA	100-D 100-F	NA	DOE, EPA, and Ecology	<i>Focus Sheet, Safe Storage of 100 Area Reactors (105-DR and 105-F)</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198097532	The EE/CA evaluates alternatives for final disposition of the DR and F Reactor facilities (excluding the reactor blocks) and four ancillary facilities located in the 100-D and 100-F Areas along the Columbia River on the Hanford Site.	D,H,P		S		NO	YES
NOT LISTED	REV. 0	100 AREA		Nov. 1998	DOE, EPA, and Ecology	<i>Focus Sheet, Proposed Plan for Clean Up at 100 Area Remaining Sites</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198208156	The proposed plan presents the recommended alternatives for removal and disposal of excess equipment and debris potentially containing hazardous and radioactive substances from the 105-B, 105-D, 105-H, 105-KE, and 105-KW Reactor Buildings. The two alternatives evaluated include (1) leaving the contaminated materials in place within the buildings, and (2) removal of the contaminated material and onsite disposal at ERDF. The materials that would be removed from the reactor facilities are contaminated with many of the same radiological and chemical contaminants as the soil waste sites outlined in the proposed plan.	D,H,P		S		NO	YES

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
NOT LISTED		100 AREA		2000	N/A	Public Notice, <i>Proposed Plan to Clean Up Hanford 100 Area Burial Grounds, Request for Public Comment</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8317868	The <i>Proposed Plan for the 100 Area Burial Grounds Interim Remedial Action</i> (DOE/RL-99-59) discusses alternatives analyzed for remediation of 45 burial grounds located in the 100 Area of the Hanford Site. The Tri-Parties have proposed that remove, treat as appropriate, and dispose of burial ground waste at ERDF is the preferred alternative for remediation of these sites.	H		Y,S		NO	YES
NOT LISTED		100 AREA 300 AREA		Oct. 31, 2001	N/A	<i>Proposed Tri-Party Agreement Modifications and Reference Documents for 100 Area and 300 Area Waste Sites and Facilities Cleanup Milestones, Environmental Restoration Project (M-16-01-05, M-16-01-06, M-93-01-02, M-94-01-01)</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8959592	This document provides the tentative agreement for cleanup actions along the Columbia River on the Hanford Site. These draft agreements set deadlines or milestones for all near-term cleanup actions in the 100 and 300 Areas, for reactor ISS in the 100 Area, and final disposition of surplus facilities in the 300 Area.	H		Y,S		YES	NO
NOT LISTED		100 AREA	100-DR-2	Mar. 23, 2010	N.M. Menard	“Transmittal of the Signed Waste Site Reclassification Form (WSRF) for the Cleanup Verification Package (CVP) for 118-DR-1 and Documentation of the Department of Ecology’s (Ecology) Comparison of Site Data with Washington Administrative Code (WAC) 173-340 (2007) Requirements”	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=1003290271	This transmittal discusses the 118-DR-1, 105-DR Gas Loop Burial Ground remediation, verification sampling, and comparison of residual contaminant concentrations to the cleanup levels that have been performed in accordance with RAOs and RAGs established by the ROD for the 100 Area Burial Grounds (EPA/541/R-00/121). The selected remedy involved (1) excavating the site to the extent required to meet specified soil cleanup levels, (2) disposing of contaminated excavation materials at ERDF, (3) demonstrating through verification sampling that cleanup goals have been achieved, and (4) proposing the site for reclassification as “interim closed out.”	H,D	Z,E	Y,S			
NOT LISTED		100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	1993	N/A	Public Notice, <i>Comment Period for 100 Area Excavation Treatability Test Plan, June 7–July 6, 1993</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196136740	This focus sheet discusses DOE/RL-93-04. The “observational approach” is being considered as a removal technique. The idea behind the observational approach is that a cleanup action can be performed within an OU based on the LFI and/or characterization previously performed in another similar area. The specific site characterization will then be performed during waste removal.	D,H		Y,S			
NOT LISTED		100 AREA	100-BC-1 100-DR-1 100-DR-3 100-FR-2 100-HR-1	1993	N/A	<i>Fact Sheet, Changes Proposed to Hanford Tri-Party Agreement Negotiations for Disposition of Hanford Surplus Reactors</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D197210287	The proposed modifications presented in this fact sheet document agreed-upon work schedules that will govern the decommissioning and final disposal of DOE’s nine surplus reactors along the Columbia River.	D,H		Y,S			YES
NOT LISTED		100 AREA, 300 AREA	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-DR-1	1993	N/A	<i>Proposed Tri-Party Agreement Modifications and Reference Documents for 100 Area and 300 Area Waste Sites and Facilities Cleanup Milestones, Environmental Restoration Project (M-16-01-05, M-16-01-06, M-93-01-02, M-94-01-01)</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8959592	This document discusses the cleanup schedules consistent with the common objective to achieve remediation of waste sites and facilities in the Hanford Site 100 and 300 Areas.	D					YES

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
NOT LISTED	NA	100 AREA 200 AREA 300 AREA	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-1 100-FR-2 100-HR-1 100-HR-2 100-IU-2 200-IU-4 200-PO-2 200-UP-2 300-FF-1	Dec. 2, 1991	N/A	WIDS General Summary Report, December 2, 1991	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196082668	Provides information from the WIDS database, including site descriptions, associated structures, waste types and amounts, cleanup actions, and comments.	P	G,Z	S	M	NO	
NOT LISTED	NA	100 AREA 200 AREA	100-IU-2 100-IU-6 100-BC 100-D 100-DR 100-F 100-H 100-KE 100-KW	NA	N/A	<i>Focus Sheet, Proposed Plan for Clean Up at the 100 Area Remaining Sites</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D198208156	The purpose of this fact sheet is to present information on cleanup at the 100 Area Remaining Sites on the following: (1) use of the proposed cleanup alternative of RTD at 46 wastes sites, (2) use of the "plug-in approach" at the remaining 207 sites, and (3) use of proposed alternatives for disposal of excess equipment and debris from the 100 Area reactor buildings to ERDF.	D,H,P	G,Z,E	S,X	A		
NOT LISTED		100 AREA	100-HR-3	Oct. 1999	Ecology, EPA, and DOE	<i>Interim Remedial Action Record of Decision Amendment: 100-HR-3 Operable Unit</i>	http://cumulis.epa.gov/superrods/?fuseaction=ata.rodinfo&id=1001114&mRod=10011142000AMD122	In April 1996, an interim remedial action ROD for the 100-HR-3 OU was signed by the Tri-Parties directing removal of Cr(VI) contamination from the groundwater at the H and D/DR Reactor areas using the 100-D pump-and-treat system. During pore water sampling along the Columbia River, another Cr(VI) plume was discovered southwest of the current 100-D pump-and-treat system. The extent of this plume was subsequently delineated by installation of groundwater monitoring wells, and the plume was determined not to be captured by the 100-HR-3 OU pump-and-treat system. This ROD amendment alters the selected remedy action specified in the interim remedial action ROD for the 100-HR-3 OU by deploying a new innovative technology (ISRM) for remediation of this recently characterized Cr(VI) plume in the 100-D Area.	D,H,P	E,Z	Y,S,X,P		YES	YES
NOT LISTED		100 AREA 1100 AREA 200 AREA 300-AREA	100-BC-1 100-BC-5 100-DR-1 100-FR-1 100-FR-3 1100-EM-1 200-BP-1 300-FF-1 300-FF-5	Oct. 17, 1991	N/A	<i>Current Status of Operable Unit Investigations, October 16-17, 1991</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199055097	This document provides the current status of OU investigations at the 1100-EM-1, 200-BP-1, 300-FF-1, 300-FF-5, and 100 Areas. The processes used in each of these areas are also discussed.	P		Y			
NOT LISTED		100 AREA	100-HR-3	Oct. 1999	C.C. Clark, K.A. Klein, M.A. Wilson	<i>Interim Remedial Action Record of Decision Amendment: 100-HR-3 Operable Unit</i>	http://cumulis.epa.gov/superrods/?fuseaction=ata.rodinfo&id=1001114&mRod=10011142000AMD122	This ROD amendment alters the selected remedy action specified in the interim remedial action ROD for the 100-HR-3 OU by deployment of a new innovative technology (ISRM) for remediation of the recently characterized Cr(VI) plume in the 100-D Area.	D,H,P	E,Z	Y,S,X,P		YES	YES

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
NOT LISTED		100 AREA 1100 AREA 200 AREA 300-AREA	100-BC-1 100-BC-5 100-DR-1 100-FR-1 100-FR-3 1100-EM-1 200-BP-1 300-FF-1 300-FF-5	Oct. 17, 1991	N/A	<i>Current Status of Operable Unit Investigations, October 16-17, 1991</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199055097	This document provides the current status of OU investigations at 1100-EM-1, 200-BP-1, 300-FF-1, 300-FF-5, and 100 Areas. The processes used in each of these areas are also discussed.	P		Y			
NOT LISTED		100-BC 100-DR 100-HR	100-BC-1 100-DR-1 100-HR-1	Sept. 1995	EPA, Ecology, and DOE	<i>Interim Remedial Action Record of Decision for the 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units, Hanford Site, Benton County, Washington</i>	http://www.epa.gov/superfund/sites/rods/fulltext/r1095126.pdf	This ROD presents the selected interim remedial actions for portions of the 100 Area, which were chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the NCP. Specifically, the selected remedial actions will address 37 high-priority waste sites that received liquid radioactive effluent discharges in the 100-BC-1, 100-DR-1, and 100-HR-1 OUs, as well as adjacent contaminated sites that are within the area required for remediation. This decision is based on the AR for this site and for the specific OUs.	D,H	G,Z,E	Y		YES	YES
NOT LISTED		100-BC 100-DR 100-FR 100-HR 100-KR 100-IU	100-BC-1	July 1999	EPA, Ecology, and DOE	<i>Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units, Hanford Site, Benton County, Washington (100 Area Remaining Sites)</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D199153689	This ROD presents the selected interim remedial actions for portions of the 100 Area (100 Area Remaining Sites), 100 Area reactor waste, and portions of the 200 Area, which were chosen in accordance with CERCLA, as amended by the SARA and, to the extent practicable, the NCP. This decision is based on the AR for this site and for the specific OUs.	D,H	G,Z,E	Y		YES	YES
NOT LISTED		100 AREA	100-BC-1 100-BC-2 100-DR-1 100-DR-2 100-FR-2	Sept. 2000	EPA, Ecology, and DOE	<i>Interim Remedial Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units, Hanford Site (100 Area Burial Grounds), Benton County, Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8453142	This ROD describes DOE's performance of a 100 Area-wide Phase 1 and 2 FS and a 100 Area Burial Ground FFS for soils, structures, and debris that received chemical and radioactive solid wastes. Waste site-specific qualitative risk assessments, comprised of human health risk assessments and ecological risk assessments, were also conducted to evaluate current and potential effects of contaminants in those OUs on human health and the environment.	D,H,P	E,Z,G	Y,S	A,M	YES	YES
NOT LISTED		100 AREA	100-DR-1 100-DR-2	Oct. 28, 1999	K.E. Parker, R.J. Serne	<i>Estimation of Distribution Coefficients and Leachability of Hexavalent Chromium in 100-D Area Hanford Formation Sediments</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8282149	This document describes bench-scale testing conducted to estimate Cr(VI) sediment/water distribution coefficients and leachability of Cr(VI) in the 100 Area sediments where site-specific information does not currently exist. Samples used for testing were obtained from the 100-D Area. This document is organized as follows: <ul style="list-style-type: none"> • Introduction, including background project information and test objectives • Scope and design of the testing • Methods and materials • Results and discussion • Conclusions • Data appendices 	H,D,P	G,Z	Y	A		

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
NOT LISTED			100 AA 100-BC-1 100-BC-2 100-BC-3 100-BC-4	Jan. 15, 1991	J.D. Goodenough	Meeting Minutes, "Unit Manager's Meeting: 100 Aggregate Area/100 Area Operable Units," December 19, 1990	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196038976	This document provides the meeting minutes from the Unit Manager's Meeting on the 100 Aggregate Area OUs.			Y,S,X	A	YES	
NOT LISTED		100 AREA	100 AA 100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-DR-1	June 24, 1992	E.D. Goller	Meeting Minutes, "Unit Manager's Meeting: 100 Aggregate Area/100 Area Operable Units," May 27, 1992	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196103936	This document provides the meeting minutes from the Unit Manager's Meeting on the 100 Aggregate Area OUs.	D		S,Y	A	YES	
NOT LISTED	FINAL	100 AREA	100 AA 100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-HR-1 100-DR-1 100-HR-3	July 29, 1992	E.D. Goller	Meeting Minutes, "Unit Manager's Meeting: 100 Aggregate Area/100 Area Operable Units," June 24, 1992	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196105497	This document provides the meeting minutes from the Unit Manager's Meeting on the 100 Aggregate Area OUs. Details are provided on the field activities associated with nonintrusive source sampling in the 100-HR-1 OU and will serve as a field guide for those performing the work. It should be used in conjunction with DOE/RL-88-35 for general investigation strategy and with WHC-CM-7-7, <i>Environmental Investigations and Site Characterization Manual</i> , for specific procedures. This description of work describes specific LFI activities and sampling locations in accordance with discussions at the June 27, 1991, 100 Area work plan re-scoping meeting.	D,H,P		Y,S	A	YES	
NOT LISTED		100 AREA	100 AA 100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	July 28, 1993	E.D. Goller	Meeting Minutes, "Unit Manager's Meeting: 100 Aggregate Area/100 Area Operable Units," June 23, 1993	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196107427	This document provides the meeting minutes from the Unit Manager's Meeting on the 100 Aggregate Area OUs.	D,H,P		Y	A	YES	
NOT LISTED		100 AREA	100 AA 100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5 100-DR-1 100-HR-1 100-HR-3 100-KR-1	Sept. 23, 1992	E.D. Goller	Meeting Minutes, "Unit Manager's Meeting: 100 Aggregate Area/100 Area Operable Units," August 26, 1992	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196110641	This document provides the meeting minutes from the Unit Manager's Meeting on the 100 Aggregate Area OUs.	H	E,Z,G,T	Y	A,M		
NOT LISTED	FINAL	100 AREA 300 AREA	100-KR-4 100-DR-1 100-HR-1 100-NR-1 100-HR-3 100-NR-2 100-BC-1 100-KR-1 100-FR-1 100-BC-5 100-FR-3	Oct. 21, 1992	E.D. Goller	Meeting Minutes, "Unit Manager's Meeting: 100 Aggregate Area/100 Area Operable Units," September 23, 1992	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196116849	This document provides the meeting minutes from the Unit Manager's Meeting on the 100 Aggregate Area OUs.	D,P,H	Z,T,G	Y	A,M		YES

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
NOT LISTED		100 AREA	100 AA 100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-NR-1	Nov. 18, 1992	ED Goller	Meeting Minutes, "Unit Manager's Meeting: 100 Aggregate Area/100 Area Operable Units," October 21, 1992	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196118389	This document provides the meeting minutes from the Unit Manager's Meeting on the 100 Aggregate Area OUs.		E	Y,X,S	A		
NOT LISTED		100 AREA	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	Dec. 2, 1992	S.W. Clarke	Meeting Minutes, "100 Area Exposure Scenarios for Qualitative Risk Assessments," December 2, 1992	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196118519	The 100 Area Unit Manager's and the interagency Risk Assessment Committee met December 2, 1992, and agreed upon exposure scenarios for performance of qualitative risk assessments at priority waste sites in the 100 Area OUs. Tables of proposed exposure scenarios for qualitative risk assessments for the 100-BC-1, 100-DR-1, and 100-HR-1 Source OUs and the 100-BC-5 Groundwater OU were sent to all parties for review before the meeting.					YES	
NOT LISTED		100 AREA	100 AA 100-BC-1 100-BC-2 100-BC-5 100-DR-1	June 23, 1993	E.D. Goller	Meeting Minutes, "Unit Manager's Meeting: 100 Aggregate Area/100 Area Operable Units," May 26, 1993	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196131418	DOE-HQ comments on the work plan addressing all of the remaining source OU waste sites in the 100-BC Area have been incorporated and the document is due to EPA and Ecology on May 21, 1993, for review.			Y			
NOT LISTED		100 AREA	100 AA 100-BC-1 100-BC-2 100-BC-5 100-DR-1	Aug. 25, 1993	E.D. Goller	Meeting Minutes, Unit Manager's Meeting: 100 Aggregate Area/100 Area Operable Units," July 28, 1993	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196115230	This document provides the meeting minutes from the Unit Manager's Meeting on the 100 Aggregate Area OUs.			Y	A		
NOT LISTED		100 AREA	100 AA 100-BC-1 100-BC-2 100-BC-5 100-DR-1	Nov. 17, 1993	E.D. Goller	Meeting Minutes, "Unit Manager's Meeting: 100 Aggregate Area/100 Area Operable Units," September 29, 1993	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196115230	The need for information on the transport of contaminated groundwater from the Hanford Site 100 Area into the Columbia River is recognized in Tri-Party Agreement Milestone M-30-00, "Integrated General Investigations and Studies for the 100 Areas." The central theme of this milestone is the relationship between contaminated groundwater underlying the 100 Area OUs and the Columbia River. The objective of these investigations is to obtain information on the nature, extent, and transport of contaminants from the 100 Area to the Columbia River via the groundwater pathway. This information may be used to support decisions regarding remediation of contaminated groundwater.	D,H,P	Z,G	Y,S			
NOT LISTED		100 AREA	100-BC-1 100-BC-5 100-DR-1 100-HR-1 100-HR-3	Apr. 17, 1990	N/A	<i>Current Status of Operable Unit Investigations, April 17, 1990</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199034054	This OU contains an equipment and vehicle maintenance area, as well as a landfill. Radioactive contamination is not a concern at this OU, but contamination by substances such as battery acid, antifreeze, and various solvents is known to exist. The RI/FS work plan was approved in September 1989. Four field activities for Phase I of the RI have been completed. A total of 22 vadose zone boreholes and 16 groundwater wells have been drilled and sampled. Groundwater flow at the landfill is generally to the east-northeast, toward the 300 Area and away from North Richland. Trichloroethene (a solvent) has been found in concentrations up to 92 ppb (the drinking water standard is 5 ppb) in monitoring wells on the east side of the Horn Rapids Landfill. Aroclor-1248 (a PCB) has been found in a vadose zone boring on the southern edge of the Horn Rapids Landfill, 1 ranging in concentrations from 65,000 ppb just below the surface to 28 ppb at a depth of 14 ft. A degradation product of the pesticide DDT was found in the same borehole in concentrations of 1,200 ppb near the surface to 14 ppb at a depth of 8 ft. The RI Phase I report is being prepared, and work is proceeding on the FS, which will identify remedial action alternates.	D,H,P	Z	Y		YES	

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
NOT LISTED		100 AREA	100-HR-3	Apr. 1, 1996	EPA, Ecology, and DOE	<i>Declaration of the Record of Decision for the 100-HR-3 and 100-KR-4 Operable Unit, USDOE Hanford 100 Area</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196097243	This ROD presents the selected interim remedial actions for portions of the 100 Area, which were chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the NCP. This decision is based on the AR for this site. Because of the discharge of groundwater from the OUs into the river, chromium (a metal that is toxic to aquatic organisms in low concentrations) poses a risk to aquatic organisms in the Columbia River adjacent to the 100-D/DR, 100-H, and 100-K Areas. The most toxic form of chromium, Cr(VI), readily dissolves in water and, therefore, moves freely with groundwater. Cr(VI) has been detected in groundwater and in the groundwater/river interface where groundwater upwells into the river. Once discharged to the river, Cr(VI) is easily assimilated by aquatic organisms, some of which are adversely affected. Trivalent chromium is less soluble and less toxic, and it is not easily transported by groundwater. Most chromium in groundwater at the Hanford Site is Cr(VI) because of the original sources and prevailing geochemical conditions. In August 1994, a pilot-scale treatability test began at the 100-D/DR Area to assess the effectiveness of an IX treatment system to remove Cr(VI) from groundwater. Through July 1995, this pump-and-treat system had extracted more than 15 million L (4 million gal) of groundwater and removed more than 17 kg (38 lb) of chromium. This system is successful in removing chromium from extracted groundwater at 100-D/DR, indicating that an IX treatment system can be a successful groundwater treatment technology for chromium in the 100 Area.	D,H,P	Z,E	Y,S,P,X	A	YES	YES
NOT LISTED		100 AREA	100-BC-1 100-BC-5 100-DR-1 100-HR-1 100-HR-3	Apr. 17, 1990	N/A	<i>Current Status of Operable Unit Investigations, April 17, 1990</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199034054	This report discusses the status of the OU investigations through April 17, 1990.	D,H,P	Z	Y			YES
NOT LISTED		100 AREA	100-HR-3, 100-KR-4	June 12, 2001	D. Audet	<i>Laboratory Evaluation of the Behavioral Avoidance-Preference Response of Chinook (Oncorhynchus tshawytscha) Salmon to Chromium in the Hanford Reach of the Columbia River, Washington, USA</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8793363	The Hanford Natural Resource Trustee Council, in conjunction with the U.S. Fish and Wildlife Service and the U.S. Geological Survey, designed a series of studies to assess the effects of chromium on Chinook salmon (<i>Oncorhynchus tshawytscha</i>) under exposure conditions similar to those that may exist in the Hanford Reach of the Columbia River. This study builds upon previous studies (Farag et al., 2000, <i>The Potential for Chromium to Adversely Affect Chinook Salmon (Oncorhynchus tshawytscha) in the Hanford Reach of the Columbia River, Washington, USA</i> ; PNNL-13471, <i>Chromium Toxicity Test for Fall Chinook Salmon (Oncorhynchus tshawytscha) Using Hanford Site Groundwater: Onsite Early Life-Stage Toxicity Evaluation</i>) and is a continuation of those efforts.	D,H	E,Z	Y	A	YES	YES
NOT LISTED		100 AREA	100 AA 100-BC-1 100-BC-2 100-BC-5 100-DR-1	Nov. 17, 1993	E.D. Goller	Meeting Minutes, "Unit Manager's Meeting: 100 Aggregate Area/100 Area Operable Units," September 29, 1993	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196105803	The need for information on the transport of contaminated groundwater from the 100 Area of the Hanford Site into the Columbia River is recognized in Tri-Party Agreement Milestone M-30-00, "Integrated General Investigations and Studies for the 100 Areas." The central theme of this milestone is the relationship between contaminated groundwater underlying the 100 Area OUs and the Columbia River. The objective of these investigations is to obtain information on the nature, extent, and transport of contaminants from the 100 Area to the Columbia River via the groundwater pathway. This information may be used to support decisions regarding remediation of contaminated groundwater. (Marginal redlines in the text indicate changes made to the May 26, 1993, draft that was reviewed by EPA and Ecology).	D,H,P	Z,G	Y,S			

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
OSWER 9355.4-01 FS		100 AREA	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	Aug. 1990	EPA	<i>Guide on Remedial Actions at Superfund Sites with PCB Contamination</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196079027	This fact sheet summarizes relevant considerations in the development, evaluation, and selection of remedial actions at Superfund sites with PCB contamination. It provides a general framework for determining cleanup levels, identifying treatment options, and assessing necessary management controls for residuals.	P		Y			
PNL-10195		100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Nov. 1994	P.D. Thorne Q.C. MacDonald M.A. Chamness S.E. Schubert V.R. Vermeul	<i>Three-Dimensional Conceptual Model for Hanford Site Unconfined Aquifer System: FY 1994 Status Report</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199061222	This report provides an update on the development of a three-dimensional conceptual model of groundwater flow in the unconfined aquifer system for the Hanford Site. The conceptual model will provide a basis for three-dimensional numerical modeling and will enable better understanding and more accurate predictions of contaminant transport under changing Site conditions. The area included in the conceptual model has been extended to include the entire Hanford Site south and west of the Columbia River, and the area south of the Hanford Site to the confluence of the Yakima and Columbia Rivers.	D,H,P	G,Z,T,C	S,Y,P	A,M	YES	YES
PNL-3127		100-BC 100-HR 100-KR 100-NR	100-BC-5 100-HR-3 100-KR-1 100-KR-4 100-NR-1	1980	PNL, M.J. Sula	<i>Radiological Survey of Exposed Shorelines and Islands of Columbia River Between Vernita and the Snake River Confluence</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196044964	This document describes a radiological survey that was performed to evaluate the magnitude and distribution of radioactive contamination on the exposed shorelines of the Columbia River along and downstream of the Hanford Site. The area encompassed by the survey includes the low-lying exposed land on both sides of the river, from the uppermost point of production reactor discharge into the river at the 100-B Area to the confluence of the Snake and Columbia Rivers, almost 60 mi downstream of the starting point. Measurable radioactive contamination resulting from past Hanford operations was found to be present on the shorelines of the Columbia River along the study area. The absence of short-lived radionuclides in the shore sediments and the presence of contamination several meters above recent maximum river levels indicate that the material was deposited some years ago.					NO	NO
PNL-4237		100 AREA	100-H	Apr. 1982	P.A. Eddy, C.S. Cline, L.S. Prater.	<i>Radiological Status of the Ground Water Beneath the Hanford Site, January-December 1981</i>	http://www.osti.gov/scitech/biblio/5247320	This program is designed to evaluate existing and potential pathways of exposure to radioactivity from Hanford Site operations. The objectives of the groundwater monitoring program conducted by Pacific Northwest Laboratory are as follows: (1) measure and report the concentration and distribution of radioactive and other chemical constituents in the groundwater, (2) determine movement and transport of contaminants with time, and (3) determine the effect of contamination on people and their environment. All routine groundwater samples for 1981 referred to in this report were taken by the PNL Environmental Evaluations Section of the Occupational and Environmental Protection Department. The samples were analyzed by PNL's Technical Analysis Section. In addition, the U.S. Geological Survey collected and analyzed samples from specific wells. Program overview and coordination was provided by the members of the Environmental Evaluations Section. Data from other Hanford contractors were used to construct the maps in this report.	D,H,P	Z	Y,P,X,S	A	YES	
PNL-6728		100-BC 100-DR 100-HR 100-KR	100-BC-1 100-BC-5 100-DR-1 100-HR-3 100-KR-1	1988	PNL, T.L. Liikala	<i>Geohydrologic Characterization of the Area Surrounding the 183-H Solar Evaporation Basins</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D195063972	An assessment-level compliance monitoring project was established for the 183-H Basins because hazardous waste constituents were known to have entered the groundwater beneath the facility. Three phases were defined for this project, with work being concentrated in five areas: geology, hydrology, groundwater monitoring, geochemistry, and groundwater modeling. These characterization activities resulted in the definition of CN, principal lithologic and hydrostratigraphic units. Groundwater monitoring results indicated a contamination peak, which occurred between April and August 1986. Further monitoring has shown that nitrate, sodium, gross alpha, and gross beta are the clearest indicators of groundwater contamination attributable to the 183-H Basins. In addition, the concentrations of these contaminants are affected	D,H	G, Z, C	Y,P		NO	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
								by variations in Columbia River stage. Future studies will focus on continued groundwater monitoring throughout the closure and post-closure periods for the 183-H Basins, sampling of the Columbia River and nearby groundwater springs, and soil sampling adjacent to the facility.						
PNL-7396		100 AREA 300 AREA	100-BC-5 100-HR-3 100-KR-4 300-FF-5	June 1990	J.C. Evans R.W. Bryce D.J. Bates M.L. Kemner	<i>Hanford Site Ground-Water Surveillance for 1989</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196055127	Five hundred and sixty-seven wells were sampled during 1989 for Hanford groundwater monitoring activities. This report contains a list of the analytical results for CY 1989 for species of importance as potential contaminants. Radiological monitoring results indicated that gross alpha, gross beta, tritium, cobalt-60, strontium-90, technetium-99, iodine-129, and cesium-137 concentrations in groundwater of the unconfined aquifer in or near operating areas were at levels above MCLs.	D,H,P	T,Z,G	Y,S,X,P	A,M	YES	YES
PNL-7500		100 AREA	100-HR-3 100-KR-4	Dec. 1990	R.L. Dirkes	<i>1988 Hanford Riverbank Springs Characterization Report</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196110656	This report presents the results of a special study to characterize the riverbank springs (i.e., groundwater seepage) entering the Columbia River along the Hanford Site. Radiological and nonradiological analyses were performed. River water samples were also analyzed from upstream and downstream of the Site, as well as from the immediate vicinity of the springs. In addition, irrigation return water and spring water entering the river along the shoreline opposite Hanford were analyzed. Hanford-originated contaminants were detected in spring water entering the Columbia River along the Hanford Site.	D,H,P	Z,G	S,Y,X,P	A	YES	
PNL-8073		100-BC 100- HR 100-KR 300-FF	100-BC-5 100-HR-3 100-KR-4 300-FF-5	1992	PNL, J.C. Evans R.W. Bryce D.J. Bates	<i>Hanford Site Ground-Water Monitoring for 1990</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196103572	PNL monitors groundwater quality across the Hanford Site for DOE to assess the effect of Site operations on the environment. Monitoring activities were conducted to determine the distribution of mobile radionuclides and identify chemicals present in groundwater as a result of Site operations and, whenever possible, to relate the distribution of these constituents to Site operations. To comply with RCRA, additional monitoring was conducted at individual waste sites by the Site operating contractor, WHC, to assess the effect that specific facilities have had on groundwater quality. A total of 629 wells were sampled during 1990 by all Hanford groundwater monitoring activities.			Y		NO	NO
PNL-8143		100 AREA	100-BC 100- D 100-F 100-H 100-K 100-N	Sept. 1992	PNL, J.C. Chatters H.A. Gard P.E. Minthorn	<i>Fiscal Year 1991 Report on Archaeological Surveys of the 100 Areas, Hanford Site, Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196109574	Work includes (1) a literature search to determine if previous archaeological surveys had been conducted in the vicinity of any of the OUs and, if so, what sites had been located; (2) an archaeological survey of any areas not previously inspected.	D,H				NO	NO
PNL-8150		100 AREA	100-HR-3 100-KR-4	June 1992	D.A. Baker, J.K. Soldat	<i>Methods for Estimating Doses to Organisms from Radioactive Materials Released into the Aquatic Environment</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196007152	This report presents the revised models and the updated computer program, CRITR2, for the assessment of radiological doses to aquatic organisms and their predators; tables of the required input are also provided.	D,H,P	E	Y	A,M	YES	
PNL-8332		100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Nov. 1992	P.D. Thorne M.A. Chamness	<i>Status Report on the Development of the Three-Dimensional Conceptual Model for the Hanford Site Unconfined Aquifer System</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199061224	This report presents the status of development of a three-dimensional conceptual model for the unconfined aquifer system at Hanford. A conceptual model is needed to support development of a realistic three-dimensional numerical model for predicting groundwater flow and the transport of contaminants. The conceptual model is currently being developed for a study area extending from the 200 East Area to the Columbia River, and southward from Gable Mountain to the Supply System. The report focuses on developing a hydrogeologic framework, assessing available hydraulic property data, describing flow-system boundaries, and evaluating areal recharge and leakage.	D,H	Z,G	Y	M		

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
PNL-8337		100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Nov. 1992	D.R. Newcomer, P.D. Thorne	<i>Summary and Evaluation of Available Hydraulic Property Data for Hanford Site Unconfined Aquifer System</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199061221	Improving the hydrologic characterization of the Hanford Site unconfined aquifer system is one of the objectives of the Hanford Site Groundwater Surveillance Project. To help meet this objective, hydraulic property data available for the aquifer have been compiled, mainly from reports published over the past 40 years. Most of the available hydraulic property estimates are based on constant-rate pumping tests of wells. Slug tests have also been conducted at some wells and analyzed to determine hydraulic properties. Other methods that have been used to estimate hydraulic properties of the unconfined aquifer are observations of water-level changes in response to river stage, analysis of groundwater mound formation, tracer tests, and inverse groundwater flow models.	D,H,P	Z	Y	A,M		
PNL-8391		100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	June 1993	G.W. Gee, L.L. Cadwell, H.D. Freeman, M.W. Ligothke, S.O. Link, R.A. Romine, W.H. Walters, Jr.	<i>Testing and Monitoring Plan for the Permanent Isolation Surface Barrier Prototype</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196016836	This document is a testing and monitoring plan for a prototype barrier to be constructed at the Hanford Site in 1993. The prototype barrier is an aboveground structure engineered to demonstrate the basic features of an earthen cover system, designed to permanently isolate waste from the biosphere.	D,H	G,C,E		A		
PNL-8610		100 AREA	100-HR-3	May 1993	B.M. Peyton, K.R. Martin	<i>100 Area Groundwater Bionitrification Bench-Scale Treatability Study Procedures</i>	http://www.osti.gov/bri/dge/product.biblio.jsp?query_id=9&page=0&osti_id=10157653	This document describes the methodologies and procedures for conducting the bench-scale bionitrification treatability tests at PNL. Bionitrification is the biological conversion of nitrate and nitrite to gaseous nitrogen. The tests will use statistically designed batch studies to determine if bionitrification can reduce residual nitrate concentration to 45 mg/L, which is the current MCL. Groundwater samples will be tested from two wells in the 100-HR-3 OU.	H,D,P	Z	Y	A	YES	
PNL-8654		100 AREA	100-HR-3 100-KR-4	May 1993	R.L. Dirkes, G.W. Patton, B.L. Tiller	<i>Columbia River Monitoring: Summary of Chemical Monitoring Along Cross Sections at the Vernita Bridge and Richland</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196006912	This report presents the results of the chemical monitoring performed by the Surface Environmental Surveillance Project along cross sections of the Columbia River established at Vernita Bridge and the Richland pump house. Potential Hanford-originated chemical constituents of interest were selected based on their presence in groundwater near the river, past surveillance efforts that have documented their entry into the river, and reviews of special study reports, CERCLA RI/FS documentation, RFI/CMS plans, and preliminary risk assessments. The results presented in this report include VOCs, metals, and anions. The data were generated as part of the routine Columbia River monitoring program currently conducted as part of the Surface Environmental Surveillance Project.	D,H	Z	Y	A	YES	
PNL-8789		100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	Sept. 1993	A.T. Cooper, R.K. Woodruff	<i>Investigation of Exposure Rates and Radionuclide and Trace Metal Distributions Along the Hanford Reach of the Columbia River</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196084641	This report describes a study conducted as an activity of the Hanford Site Surface Environmental Surveillance Project to investigate exposure rates and radionuclide and trace metal distributions along the Hanford Reach. The study was designed as a field survey rather than as a statistically based sampling design. The results provide current external exposure rates, characterize radionuclide concentrations, and provide new data on the concentrations of trace metals in shoreline soils along the Hanford Reach. Trace metals are of interest because of their use and disposal to the river and soil column in reactor and chemical-processing operations.	D,H,P	G,Z	S,Y	A	YES	YES

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PNL-8819		100 AREA	100-HR-3	Sept. 1993	M.K. Wright	<i>Fiscal Year 1992 Report on Archaeological Surveys of the 100 Areas, Hanford Site, Washington</i>	Fiscal year 1992 report on archaeological surveys of the 100 Areas, Hanford Site, Washington	During FY 1992, the Hanford Cultural Resources Laboratory conducted a field survey of the 100-HR-3 OU (600 Area) and tested three sites near the 100 Area reactor compounds on the Hanford Site at the request of WHC. These efforts were conducted in compliance with Section 106 of the <i>National Historic Preservation Act</i> and are part of a cultural resources review of 100 Area CERCLA OUs in support of CERCLA characterization studies. The results of the FY 1992 survey and test excavation efforts are discussed in this report. The Hanford Cultural Resources Laboratory surveyed 518 ha in the 100-HR-3 OU and conducted test excavations at three prehistoric sites near the F and K Reactors to determine their eligibility for listing on the National Register of Historic Places.	D,H,P	E,G				
PNL-8877		100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	Sept. 1993	J.F. Donaghue, E. Hauth, E.A. Flores, D.E. Toman, S.W. Gajewski	<i>Permitting Strategy for Hanford Site Research, Development, and Demonstration Activities for Treatment, Storage, or Disposal of Hazardous Waste: Volume 3: Battelle Technology Summaries</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196088717	As part of the Hanford Site RCRA Permitting Strategy Project, PNL initiated a technology survey to determine which activities were ongoing or proposed that involved the treatment of hazardous wastes.	P		Y,S			
PNL-8935		100 AREA	100-HR-3 100-KR-4	Nov. 1993	C.A. Brandt, K. Alford, G. McIlveny, A. Tijerina	<i>Plant Reestablishment After Soil Disturbance: Effects of Soil, Treatment, and Time</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196006913	Using primarily the Basalt Waste Isolation Project treatment sites, the objective of this report was to determine the relationships between soil and seed treatments, soil type, and disturbance history, and the establishment of native versus alien plant cover. This report describes the methods used to revegetate sites, if any; presents the results of the evaluation; and provides a discussion of the relative effectiveness of the treatment options.	D,H,P	E,Z		A		
PNL-8971		100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Dec. 1993	P.D. Thorne	<i>Three-Dimensional Conceptual Model for Hanford Site Unconfined Aquifer System, FY 1993 Status Report</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199061223	The Ground-Water Surveillance Project is responsible for monitoring the movement of chemical and radioactive contaminants in groundwater beneath the Hanford Site. To support this effort, a three-dimensional conceptual model of groundwater flow in the unconfined aquifer system is being developed. The conceptual model will be the basis for three-dimensional numerical modeling and will enable more accurate predictions of contaminant transport under changing site conditions.	D,H,P	Z,G	Y,S	M,A		
PNNL-11372		100 AREA	100-H	Nov. 1996	J.S. Fruchter, J.E. Amonette, C. R. Cole	<i>In Situ Redox Manipulation Field Injection Test Report – Hanford 100-H Area</i>	http://www.osti.gov/scitech/biblio/434299	This report presents the results of an ISRM field injection withdrawal test performed at the 100-H Area in FY 1996 by researchers at PNNL. The test is part of the overall ISRM project, the purpose of which is to determine the potential for remediating contaminated groundwater with a technology based on in situ manipulation of subsurface reduction-oxidation (redox) conditions. The ISRM technology would be used to treat subsurface contaminants in groundwater zones at DOE sites.	H,D,P	Z,G	Y,S,P	A,M	YES	
PNNL-11516		Entire river next to Hanford Site	Entire river next to Hanford Site	Mar. 1997	D.R. Lee, D.R. Geist, K. Saldi, et al.	<i>Locating Ground-Water Discharge in the Hanford Reach of the Columbia River</i>	http://www.osti.gov/scitech/biblio/901992	A bottom-contacting probe for measuring electrical conductivity at the sediment-water interface was used to scan the bed of the Columbia River adjacent to the Hanford Site during a 10-day investigation. Four river sections, each about 1 km in length, were scanned for variations in electrical conductivity. The primary objectives of this study were to (1) evaluate the potential for locating the submerged groundwater discharges in variable flow regimes and diverse river substrate characteristics using an electrical conductivity probe (developed at Chalk River Laboratories, Atomic Energy of Canada, Limited); and, if feasible, (2) collect quantitative information on the spatial characteristics of groundwater plumes that enter the river along the Hanford Reach.	P	Z,G	Y,P,X,S	A		

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PNNL-11809		100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Jan. 1998	F.N. Hodges	<i>Results of Phase I Groundwater Quality Assessment for Single-Shell Tank Waste Management Areas T and TX-TY at the Hanford Site</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D198175199	PNNL conducted a Phase I RCRA groundwater quality assessment for DOE-RL under the requirements of the Federal Facility Compliance Agreement. The purpose of the investigation was to determine if the single-shell tank Waste Management Areas T and TX-TY have affected groundwater quality.	D,H,P	Z	Y,S,P,X	A		
PNNL-11958	REV. 1	100-BC, 100-FR, 100-HR, 100-KR, 100-NR	100-BC-5, 100-FR-3, 100-HR-3, 100-KR-4, 100-NR-2	1998	PNNL, D.G. Horton, G.V. Last, S.P. Reidel	<i>Proposal for Fiscal Year 1999 Vadose Zone Monitoring and Guidance for Subsequent Years for Liquid Waste Disposal Facilities</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D199047735	This document is prepared by PNNL in response to DOE's request for a proposal describing vadose zone monitoring of liquid waste disposal facilities that are not part of the Tank Waste Remediation System. This document includes the needs and objectives of vadose zone monitoring and provides proposed rationale and general framework for vadose zone monitoring of past-practice cribs, ditches, trenches, and other disposal facilities. The monitoring described in the document will be modified as necessary and incorporated into the Groundwater Vadose Zone Integration Project. The proposed vadose zone monitoring complements the 200 Areas soil remediation strategy developed by the Hanford Site's Environmental Restoration Contractor. Most 200 Areas past-practice liquid waste disposal facilities are slated for remediation, ranging from complete cleanup to in-place management. The monitoring discussed in this proposal will track vadose zone contamination until remedial actions can occur. Also, if in some instances vadose zone contamination is managed in place, periodic monitoring to assess the effectiveness of that remedial decision may be necessary. It is expected that this proposal will undergo changes as the priorities and activities of Hanford Site environmental restoration evolve.		G		A	NO	NO
PNNL-11989	REV. 1	100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Sept. 1999	D.R. Newcomer, E.C. Thornton, M.J. Hartman, P.E. Dresel	<i>Integrated Monitoring Plan for the Hanford Groundwater Monitoring Project</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D2756668	This document provides an integrated monitoring plan for the Groundwater Project. It includes the well and constituent lists for monitoring required by AEA and its implementing orders, includes other established monitoring plans by reference, and appends a master well/constituent/frequency matrix for the entire Hanford Site.	D,H,P	Z	P,S,Y,X	A,M		
PNNL-12025		100 AREA	100-HR-3	Oct. 1998	D.R. Geist, R.P. Mueller	<i>Evaluation of Fall Chinook Salmon Spawning Adjacent to the In Situ Redox Manipulation Treatability Test Site, Hanford Site, Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199159405	The ISRM experiment is being evaluated as a potential method to remove contaminants from groundwater adjacent to the Columbia River near the 100-D Area. The ISRM experiment involves using sodium dithionate to precipitate chromate from the groundwater.	P	E,Z,C	Y,S,P	A,M		
PNNL-12153		100 AREA	100-D	Apr. 1999	M.D. Williams, V.R. Vermeul, J.E. Szecsody, et al.	<i>100-D Area In Situ Redox Treatability Test for Chromate-Contaminated Groundwater: FY 1998 Year-End Report</i>	http://www.osti.gov/scitech/biblio/5787	This report describes the results of the site characterization, emplacement, and groundwater monitoring activities conducted for the ISRM treatability test for chromate contamination in the aquifer on the west side of 100-D Area (100-HR-3 OU) of the Hanford Site. This document describes the treatability test, DQOs, permitting requirements, cultural and biological survey results, data-gathering activities, and SAP. The objective of the 100-D Area ISRM treatability test is to develop performance and cost data at a pilot-scale for an assessment of this technology for treating chromate-contaminated groundwater at the Hanford Site.	D,H,P	Z,G,E	Y	A	NO	NO
PNNL-12192		100 AREA	100-HR-3	May 1999	M.D. Williams, V.R. Vermeul, M. Oostrom, et al.	<i>Anoxic Plume Attenuation in a Fluctuating Water Table System: Impact of 100-D Area In Situ Redox Manipulation on Downgradient Dissolved Oxygen Concentrations</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D199159399	This report describes the results of a study on the fate of an anoxic groundwater plume in an unconfined oxidizing aquifer with a fluctuating water table. An innovative remediation technology, ISRM, which establishes reducing conditions in an aquifer to treat reduction-oxidation-sensitive contaminants in groundwater, has been applied at the Hanford Site 100-D Area. A side effect of the ISRM-established barrier is an anoxic plume that forms downgradient from the site. Before the ISRM treatability test at the 100-D Area, DO concentration measurements indicated that the groundwater was saturated	D,H,P	Z	P,Y,S	A,M		

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								with oxygen (7 to 9 mg/L). Following the emplacement of the 56 m (150 ft)-long test section, the DO concentrations decreased to nearly 0 mg/L in wells within the treated area. The DO concentrations in the downgradient well (27 m [90 ft] from the treatment zone) was at 20 percent oxygen saturation during the latest sampling round. While an anoxic plume forms downgradient from an ISRM zone, numerous processes exist in a normally oxidizing aquifer to attenuate the anoxic plume as it migrates downgradient from the reduced zone to the Columbia River.							
PNNL-13021		100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Sept. 1999	D.R. Newcomer, J.P. McDonald, M.A. Chamness	<i>Water-Level Monitoring Plan for the Hanford Groundwater Monitoring Project</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D2760519	This document presents the water-level monitoring plan for the Hanford Groundwater Monitoring Project, conducted by PNNL. Water-level monitoring of the groundwater system beneath the Hanford Site is performed to fulfill the requirements of various state and federal regulations, orders, and agreements. The primary objective of this monitoring is to determine groundwater flow rates and directions. To meet this and other objectives, water levels are measured annually in monitoring wells completed within the unconfined aquifer system, the upper basalt-confined aquifer system, and in the lower basalt-confined aquifers for surveillance monitoring. At regulated waste units, water levels are taken monthly, quarterly, semiannually, or annually, depending on the hydrogeologic conditions and regulatory status of a given site.	D,H	Z,T,G	X	A,M	YES		
PNNL-13080		100-BC 100-FR 100-HR 100-KR 100-NR	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	2000	PNNL, M.J. Hartman	<i>Hanford Site Groundwater Monitoring: Setting, Sources, and Methods</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D2760032	This report includes a description of groundwater monitoring requirements, site hydrogeology, and waste sites that have affected groundwater quality or that require groundwater monitoring. Monitoring networks and methods for sampling, analysis, and interpretation are summarized. Vadose zone monitoring methods and statistical methods also are described. Whenever necessary, updates to information contained in this document will be published in future groundwater annual reports.	D,H	G,Z		A	NO	NO	
PNNL-13116		100-BC 100-FR 100-HR 100-KR 100-NR	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	2000	PNNL, L.F. Morasch, M.J. Hartman, W.D. Webber	<i>Hanford Site Groundwater Monitoring for Fiscal Year 1999</i> [Section 1 of 2]	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D2736610	This report presents the results of groundwater and vadose zone monitoring and remediation for FY 1999 at the Hanford Site. Water-level monitoring was performed to evaluate groundwater flow directions, track changes in water levels, and relate such changes to evolving disposal practices.			Y		NO	NO	
PNNL-13261		100 AREA	100-HR-3	June 2000	E.C. Thornton, K.B. Olsen, R. Schalla	<i>Description of Work for Drilling at the 183-DR Site in Support of the In Situ Gaseous Reduction Test</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8373929	In situ gaseous reduction is a technology currently being developed by DOE for the remediation of soil waste sites contaminated with Cr(VI). Prior work suggests that a candidate for application of this approach is the 183-DR site at Hanford. However, deep vadose zone drilling is needed to verify the presence of a Cr(VI) source and to determine the concentration levels and spatial distribution of contamination. This document presents the requirements associated with drilling one to two vadose zone boreholes at 183-DR to obtain this information. If Cr(VI) is determined to be present at levels of at least 10 ppm in the vadose zone in one of the initial boreholes, that hole will be completed for gas injection and six additional gas extraction boreholes will be drilled and completed. This network will be used as a flow cell for performing a gas treatment test at the site.	D,H,P	G	P,Y,S	A,M			
PNNL-13349		100-D	100-HR-3	Oct. 2000	M.D. Williams, V.R. Vermeul, J.E. Szecsody, et al.	<i>100-D Area In Situ Redox Treatability Test for Chromate-Contaminated Groundwater</i>	http://www.osti.gov/scitech/biblio/765145	This report describes the results of the site characterization, emplacement, and groundwater monitoring activities conducted for the ISRM treatability test for chromate contamination in the aquifer on the west side of 100-D Area. The objective was to develop performance and cost data at a pilot-scale for an assessment of this technology for treating chromate-contaminated groundwater at the Hanford Site.	H,D,P	G,E,Z	Y,S	A,M	NO	NO	

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PNNL-13471		100 AREA	100-HR-3	July 2001	C.A. McKinstry, C.S. Abernethy, D.D. Dauble, G.W. Patton, M.A. Chamness	<i>Chromium Toxicity Test for Fall Chinook Salmon (Oncorhynchus tshawytscha) Using Hanford Site Groundwater: Onsite Early Life-Stage Toxicity Evaluation</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D8793373	The objective of this study was to evaluate site-specific effects for early life-stage (eyed eggs to free swimming juveniles) fall Chinook salmon that might be exposed to Cr(VI) from Hanford Site groundwater sources.	D,H,P	E,C,Z	Y,S,X	A		
PNNL-13788		100 AREA 200 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Mar. 2002	L.F. Morasch, M.J. Hartman, W.D. Webber	<i>Hanford Site Groundwater Monitoring for Fiscal Year 2001</i> [Section 2 of 2]	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D2740450	Radioactive and hazardous wastes in the soil column from past intentional liquid waste disposal, unplanned leaks, solid waste burial grounds, and underground tanks at the Hanford Site are potential sources of continuing and future vadose zone and groundwater contamination. Subsurface source characterization, vadose zone monitoring, soil-vapor monitoring, and vadose zone remediation were conducted in FY 2001 to better understand the distribution and mechanisms that control the movement of subsurface contamination.	D,H,P	T,Z,G	Y,S,X,P	A,M	YES	YES
PNNL-13788-SUM		100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Mar. 2002	L.F. Morasch, M.J. Hartman, W.D. Webber	<i>Summary of Hanford Site Groundwater Monitoring for Fiscal Year 2001</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D9161420	This booklet summarizes a more detailed report, <i>Hanford Site Groundwater Monitoring for Fiscal Year 2001</i> . That report is prepared annually to present the results of groundwater and vadose zone monitoring and remediation at the DOE Hanford Site. The results primarily rely on data from samples collected between October 1, 2000, and September 30, 2001. This summary booklet is designed to briefly (1) describe the highlights for FY 2001, (2) identify emerging issues in groundwater monitoring, (3) discuss groundwater flow and movement, and (4) provide an overview of current contamination in the Hanford Site groundwater and vadose zone.	D,H,P	Z,G,E	Y,S	A	YES	
PNNL-13910		100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Sept. 2002	L.F. Morasch, R.L. Dirkes, R.W. Hanf, T.M. Poston	<i>Hanford Site Environmental Report for Calendar Year 2001</i> [Section 1 of 2]	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D3048254	The Hanford Site environmental report is prepared annually for DOE in accordance with the requirements of <i>DOE Environment, Safety and Health Reporting Manual</i> (DOE M 231.1-1) and <i>Environment, Safety, and Health Reporting</i> (DOE O 231.1A). The report provides an overview of activities at the site; demonstrates the status of the site's compliance with applicable federal, state, and local environmental laws and regulations, executive orders, and DOE policies and directives; and summarizes environmental data that characterize Hanford Site environmental management performance. The report also highlights significant environmental programs and efforts. Some historical and early 2004 information is included, where appropriate. More detailed environmental compliance, monitoring, and surveillance information may be found in additional reports referenced in the text.	D,H,P	Z,E,C,G	Y,S,X	A,M	YES	
PNNL-13910-SUM		100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Sept. 2002	G.P. O'Connor, R.W. Hanf, T.M. Poston	<i>Summary of the Hanford Site Environmental Report for Calendar Year 2001</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D3049241	This booklet summarizes the <i>Hanford Site Environmental Report for Calendar Year 2001</i> . The report includes information and summary data that describe environmental management performance at the Site, demonstrate the status of the Site's compliance with applicable federal, state, and local environmental laws and regulations, and highlight significant environmental monitoring and surveillance programs and efforts. The document is written to meet requirements and guidelines of DOE and the needs of the public. This summary booklet is designed to briefly (1) describe the Hanford Site and its mission; (2) describe environmental programs at the Hanford Site; (3) discuss estimated radionuclide exposures to the public from Hanford Site activities during 2001; (4) summarize the status of compliance with the Site's environmental regulations; and (5) present information on environmental monitoring and surveillance and groundwater protection and monitoring.	D,H,P	Z,G,E	Y,S	A	YES	

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
PNNL-14111		100-BC 100-FR 100-HR 100-KR 100-NR	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	2002	PNNL, M.J. Hartman, P.E. Dresel, J.W. Lindberg, J.P. McDonald, D.R. Newcomer, E.C. Thornton	<i>Fiscal Year 2003 Integrated Monitoring Plan for the Hanford Groundwater Monitoring Project</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D9192290	This document is an integrated monitoring plan for the Groundwater Monitoring Project. It documents well and constituent lists for the monitoring required by the AEA and its implementing orders.	D,H		Y,X	M	NO	NO
PNNL-14187-SUM		100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Mar. 2003	L.F. Morasch, M.J. Hartman, W.D. Webber	<i>Summary of Hanford Site Groundwater Monitoring for Fiscal Year 2002</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D2984289	This booklet summarizes a more detailed report, <i>Hanford Site Groundwater Monitoring for Fiscal Year 2002</i> . That report is prepared annually to present the results of groundwater and vadose zone monitoring and remediation the DOE Hanford Site. The results primarily rely on data from samples collected between October 1, 2001, and September 30, 2002. This summary booklet is designed to briefly (1) describe the highlights for FY 2002; (2) identify emerging issues in groundwater monitoring; (3) discuss groundwater flow and movement; and (4) provide an overview of current contamination in the Hanford Site groundwater and vadose zone.	D,H,P	Z	Y,S	A,M		
PNNL-14295-SUM		100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Sept. 2003	G.P. O'Connor, L.F. Morasch, R.W. Hanf, T.M. Poston	<i>Summary of the Hanford Site Environmental Report for Calendar Year 2002</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D2984227	The Hanford Site Environmental Report, published annually since 1958, includes information and summary data that provide an overview of the activities at the Hanford Site; demonstrate the status of the Site's compliance with applicable federal, state, and local environmental laws and regulations, executive orders, and DOE policies; summarize environmental data that characterize Hanford Site environmental management performance; and highlight significant programs. This booklet summarizes the <i>Hanford Site Environmental Report for Calendar Year 2002</i> . This booklet briefly describes (1) the Hanford Site and its mission; (2) environmental programs at the Hanford Site; (3) estimated radionuclide exposures to the public from Hanford Site activities in 2002; (4) the status of the Site's compliance with environmental regulations; and (5) information on environmental monitoring and surveillance programs and activities.	D,H,P	Z,G,E	Y,S	A	YES	
PNNL-14444		100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Oct. 2003	M.J. Hartman, R.E. Peterson	<i>Aquifer Sampling Tube Results for Fiscal Year 2003</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D3253922	This report discusses the results of the FY 2003 sampling events associated with aquifer tubes along the Columbia River in the northern Hanford Site. Aquifer tube data help to define the extent of groundwater contamination near the Columbia River, determine vertical variations in contamination, monitor the performance of interim remedial actions near the river, and support impact studies.	D,H,P	Z	Y,P,S	A	YES	YES
PNNL-14548		100 AREA 200 AREA 300 AREA	River near Hanford	Apr. 2004	M.J. Hartman, L.F. Morasch, W.D. Webber	<i>Hanford Site Groundwater Monitoring for Fiscal Year 2003</i>	http://www.osti.gov/scitech/biblio/15007188	This report presents the results of groundwater and vadose zone monitoring and remediation for FY 2003 (October 2002 through September 2003) on the Hanford Site. The most extensive contaminant plumes in groundwater are tritium, iodine-129, and nitrate, which all had multiple sources and are very mobile in groundwater. The largest portions of these plumes are migrating from the central Hanford Site to the southeast, toward the Columbia River. Concentrations of tritium, nitrate, and some other contaminants continued to exceed drinking water standards in groundwater, discharging to the river in some locations. However, contaminant concentrations in river water remained low and were far below standards. Carbon tetrachloride and associated organic constituents form a relatively large plume beneath the central part of the Hanford Site. Monitoring for CERCLA is conducted in 11 groundwater OUs. The objective of two interim remediation systems in the 200 West Area is to prevent the spread of carbon tetrachloride and technetium-99/uranium plumes.	D,H,P	Z	Y,S,P	A,M	YES	

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PNNL-14687		100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Sept. 2004	L.F. Morasch, R.L. Dirkes, R.W. Hanf, T.M. Poston	<i>Hanford Site Environmental Report for Calendar Year 2003</i> [Section 1 of 2]	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D6396066	The Hanford Site Environmental Report is prepared annually for DOE in accordance with the requirements of <i>DOE Environment, Safety and Health Reporting Manual</i> (DOE M 231.1-1) and <i>Environment, Safety, and Health Reporting</i> (DOE O 231.1A). The report provides an overview of activities at the Site; demonstrates the status of the Site's compliance with applicable federal, state, and local environmental laws and regulations, executive orders, and DOE policies and directives; and summarizes environmental data that characterize Hanford Site environmental management performance. The report also highlights significant environmental programs and efforts. Some historical and early 2003 information is included where appropriate. More detailed environmental compliance, monitoring, and surveillance information may be found in additional reports referenced in the text.	D,H,P	Z,E,C,G	Y,S,X	A,M	YES	
PNNL-14687-SUM		100 AREA	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	Sept. 2004	L.F. Morasch, R.L. Dirkes, R.W. Hanf, T.M. Poston	<i>Summary of the Hanford Site Environmental Report for Calendar Year 2003</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D6395667	This booklet summarizes the Hanford Site Environmental Report, published annually since 1978, and includes information and summary data that provide an overview of the activities at DOE's Hanford Site. Included in this booklet are brief descriptions of (1) the Hanford Site and its mission; (2) cleanup activities at the Hanford Site; (3) estimated radiological doses to the public and biota from Hanford Site activities in 2003; (4) status of the Site's compliance with environmental regulations; and (5) information on environmental monitoring and surveillance programs and activities.	D,H,P	Z,G,E	Y,S	A	YES	
PNNL-15176		100-BC 100-FR 100-HR 100-KR 100-NR	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	2005	PNNL, J.T. Rieger, M.J. Hartman	<i>Fiscal Year 2005 Integrated Monitoring Plan for the Hanford Groundwater Performance Assessment Project</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=DA273110	This groundwater project integrates monitoring for various objectives into a single sampling schedule to avoid redundancy of effort and to improve efficiency of sample collection. This report documents the purposes and objectives of groundwater monitoring, which fall into three general categories: (1) plume and trend tracking, (2) monitoring of TSD units, and (3) independent assessment of performance monitoring for groundwater remediation activities.			Y		NO	NO
PNNL-15499	DRAFT A	100-D	100-D	Nov. 30, 2005	J.E. Szecsody, J.S. Fruchter, J.L. Phillips, et al.	<i>Effect of Geochemical and Physical Heterogeneity on the Hanford 100-D Area In Situ Redox Manipulation Barrier Longevity</i>	http://www.osti.gov/bri/dge/product.biblio.jsp?query_id=29&page=1&osti_id=877065	The purpose of this study was to quantify the influence of physical and/or geochemical heterogeneities in the Hanford 100-D Area ISRM barrier that may be contributing to the discontinuous chromate breakthrough locations along the 65-well (2,300 ft long) barrier. Chromate breakthrough has been observed in as many as 17 of the 70 ISRM injection wells. Breakthrough has occurred at various locations along the barrier length with, in many cases, adjacent wells indicating good barrier performance. In addition to this spatial variability, observed chromate concentrations over the degraded sections of the barrier also vary seasonally. There is widespread nitrate upgradient of the ISRM barrier (60 mg/L) and lower nitrate concentrations downgradient. A recent nitrate study showed that, while the presence of nitrate will decrease barrier longevity uniformly, it cannot account for specific locations of chromate breakthrough. Possible causes of chromate breakthrough investigated during this study included high hydraulic conductivity zones, zones of low reducible iron, and high hydraulic conductivity zones with low reducible iron.	H,D,P	G,Z	S,Y,P		NO	NO
PNNL-15499	REV. 1	100-D		Dec. 2005	J.E. Szecsody, J.S. Fruchter, J.L. Phillips, et al.	<i>Effect of Geochemical and Physical Heterogeneity on the Hanford 100-D Area In Situ Redox Manipulation Barrier Longevity</i>	http://www.pnl.gov/main/publications/external/technical_reports/PNNL-15499Rev1.pdf	The purpose of this study was to quantify the influence of physical and/or geochemical heterogeneities in the Hanford 100-D Area ISRM barrier that may be contributing to the discontinuous chromate breakthrough locations along the 65-well (2,300 ft long) barrier. Chromate breakthrough has been observed in as many as 17 of the 70 ISRM injection wells. Breakthrough has occurred at various locations along the barrier length with, in many cases, adjacent wells indicating good barrier performance. In addition to spatial variability, observed chromate concentrations over the degraded sections of the barrier also vary seasonally. There is widespread nitrate upgradient of the ISRM barrier (60 mg/L)	H	G,Z	S,Y		YES	NO

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								and lower nitrate concentrations downgradient. A recent nitrate study showed that, while the presence of nitrate will decrease barrier longevity uniformly, it cannot account for specific locations of chromate breakthrough. Possible causes of chromate breakthrough investigated during this study included high hydraulic conductivity zones, zones of low reducible iron, and high hydraulic conductivity zones with low reducible iron.						
PNNL-15670		100 AREA 200 AREA 300 AREA	River near Hanford	Feb. 2006	M.J. Hartman L.F. Morasch, W.D. Webber	<i>Hanford Site Groundwater Monitoring for Fiscal Year 2005</i>	http://www.osti.gov/bri/dge/product.biblio.jsp?query_id=1&page=0&osti_id=889070	This report presents the results of groundwater monitoring for FY 2005 at DOE's Hanford Site. Results of groundwater remediation, vadose zone monitoring, and characterization are summarized. The most extensive contaminant plumes in groundwater are tritium, iodine-129, and nitrate, which all had multiple sources and are very mobile in groundwater. The largest portions of these plumes are migrating from the central Hanford Site to the southeast, toward the Columbia River. Carbon tetrachloride and associated organic constituents form a relatively large plume beneath the west-central part of the Hanford Site. Cr(VI) is present in plumes beneath the reactor areas along the river and beneath the central part of the Site. Strontium-90 exceeds standards beneath all but one of the reactor areas. Technetium-99 and uranium plumes exceeding standards are present in the 200 Areas. A uranium plume underlies the 300 Area. Monitoring for CERCLA is conducted in 11 groundwater OUs. The objective of two interim remediation systems in the 200 West Area is to prevent the spread of carbon tetrachloride and technetium-99/uranium plumes.	D,H,P	Z	Y,S,P	A,M	YES	
PNNL-16178		100-H	183-H BASIN	Oct. 2006	M.J. Hartman	<i>Results of Groundwater Monitoring for the 183-H Solar Evaporation Basins</i>	http://www.osti.gov/scitech/biblio/896350	The 183-H Solar Evaporation Basins (183-H Basins) were located in the 100-H Area of the Hanford Site and have been demolished and backfilled in accordance with RCRA (<i>Dangerous Waste Portion of the Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste</i> , Permit No. WA4890008967, Rev. 8 [also referred to as the Hanford Facility RCRA Permit]). Post-closure actions remain for the 183-H Basins. Groundwater is monitored in accordance with WAC 173-303-645(11), "Dangerous Waste Regulations," "Releases from Regulated Units," and Part VI, Chapter 2 of the Hanford Facility RCRA Permit. The waste discharged to the basins originated in the 300 Area fuel fabrication facility and included solutions of chromic, hydrofluoric, nitric, and sulfuric acids that had been neutralized. The waste solutions contained various metallic and radioactive constituents (e.g., chromium, technetium-99, and uranium). Between 1985 and 1996, remaining waste was removed, the facility was demolished, and the underlying contaminated soil was removed and replaced with clean fill.	H,D,P	Z	Y			
PNNL-16340		100 AREA 300 AREA		Jan. 2007	N.J. Fix	<i>The Columbia River Protection Supplemental Technologies Quality Assurance Project Plan</i>	http://www.pnl.gov/main/publications/external/technical_reports/PNNL-16340.pdf	DOE has conducted interim groundwater remedial activities on the Hanford Site since the mid-1990s for several groundwater contamination plumes. DOE established the Columbia River Protection Supplemental Technologies Project in 2006 to evaluate alternative treatment technologies. The objectives for the Technology Project are as follows: develop a 300 Area polyphosphate treatability test to immobilize uranium, design and test infiltration of a phosphate/apatite technology for strontium-90 at 100-N, perform carbon tetrachloride and chloroform attenuation parameter studies, perform vadose zone chromium characterization and geochemistry studies, perform in situ biostimulation of chromium studies for a reducing barrier at 100-D, and perform a treatability test for phytoremediation for strontium-90 at 100-N. This document provides the quality assurance guidelines that will be followed by the Technologies Project.			S,Y	A	YES	YES

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
PNNL-16760		100-D 100-K 100-BC	Vadose zone	Sept. 2007	P.E. Dresel, M.J. Truex, M.D. Sweeney	<i>Review of Techniques to Characterize the Distribution of Chromate Contamination in the Vadose Zone of the 100 Areas at the Hanford Site</i>	http://www.osti.gov/bri/dge/purl.cover.jsp?purl=/921428-YGQWeA/	The purpose of this report is to identify and evaluate the state-of-the-art techniques for characterization of chromate contamination in the vadose zone of the 100 Area at the Hanford Site. The techniques include direct techniques for analysis of chromium in the subsurface, as well as indirect techniques to identify contamination through geophysical properties, soil moisture, or co-contaminants. Characterization for the distribution of chromium concentration in the vadose zone is needed to assess potential sources for chromate contamination plumes in groundwater at the 100-D, 100-K, and 100-BC Areas. No methods for vadose zone chromate characterization have been fully developed and demonstrated.	D,H,P	Z,G	P,Y,S	A	NO	NO
PNNL-18797		100 AREA	100-HR-3	Oct. 2009	K.J. Cantrell	<i>Precipitate Formation Potential of Resin Regeneration Effluent in the 100-HR-3 Operable Unit</i>	http://www.osti.gov/bri/dge/product.biblio.jsp?query_id=9&page=0&osti_id=967932	The purpose of this report is to apply geochemical modeling techniques to evaluate the potential for precipitate formation in the IX regeneration effluent solutions as they are re-injected into the subsurface aquifer and to determine its potential effect on aquifer porosity.		Z		A,M		
PNNL-SA-50369		100-D		May 2006	J.S. Fruchter, M.J. Truex, V.R. Vermeul, et al.	<i>Project Work Plan: Hanford 100-D Area Treatability Demonstration – In Situ Biostimulation for Reducing Barrier</i>	http://www.osti.gov/bri/dge/product.biblio.jsp?query_id=29&page=1&osti_id=950189	This work plan supports a new, integrated approach to accelerate cleanup of chromium in the Hanford 100 Area. The current treatment approach was driven by a series of interim action of RODs issued in the mid-1990s. The RODs were concerned primarily with protection of the Columbia River by the means of reducing the mass of chromium in the groundwater. The RODs called for pumping groundwater and treating the extracted water with IX technology and one innovative technology, the ISRM barrier. The discovery of two new contaminated groundwater areas has resulted in the need to improve and accelerate the approach to groundwater cleanup at 100-D. This proposal is one component of an integrated strategy for accelerating remediation of 100-D groundwater. This new approach will provide supplemental treatment upgradient of the ISRM barrier by directly treating chromium and other oxidizing species in groundwater (i.e., nitrate and DO), thereby increasing the longevity of the ISRM barrier and protecting the ecological receptors and human health at the river boundary.	H,D,P	Z	Y,P	A	YES	YES
RHO-BWI-LD-5		100-BC 100-HR 100-NR	100-BC-1 100-BC-5 100-HR-3 100-NR-1	1978	RHO, K.R. Fecht	<i>Geology of Gable Mountain-Gable Butte Area</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196044987	The study of Gable Mountain and Gable Butte described in this report had the following objectives: <ul style="list-style-type: none"> • Map and describe the rock units and geologic structures exposed on Gable Mountain and Gable Butte, and project these structural and stratigraphic features into the adjacent subsurface using available borehole data as control for projections. • Map and describe the fluvial sediments that surround Gable Mountain and Gable Butte. • Evaluate the west end of Gable Mountain for use as a near-surface test facility. The near-surface test facility is an underground test facility being constructed on the west end of Gable Mountain to test the thermal and mechanical response of basalt rock to electric heater and spent fuel loadings. Geologic studies specifically for the siting of this facility are being finalized. • Make preliminary geologic interpretation based on the above studies of the geologic features of the Gable Mountain/Gable Butte area as they relate to basalt repository siting considerations in the Pasco Basin. 		G			NO	NO

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RHO-RE-SR-86-24 P		100-BC 100-HR 100-KR 200-BP 300-FF	100-BC-5 100-HR-3 100-KR-4 200-BP-1 300-FF-5	1986	RHO, A.G. Law A.L. Schatz	<i>Results of the Separations Area Ground-Water Monitoring Network for 1985</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D195065508	The purpose of this report is to present a summary of the CY 1985 results for the Rockwell Hanford Operations groundwater monitoring program for the Separations Area of the Hanford Site. This monitoring program is in partial fulfillment of the DOE requirement that all radioactivity in the environment shall be monitored. The objectives of the monitoring program are to (1) evaluate the quality of groundwater for compliance with DOE guidelines, (2) assess the performance of waste disposal and storage sites in the Separations Area, (3) determine the effect of waste disposal operations on the groundwater, and (4) provide data for hydrologic analyses and model application.		Z			NO	NO
RL-REA-2514		100 AREA	100 AREA	Oct. 1965	G. Herman, Jr.	<i>Underground Radioactive Materials in 100-H and F Plants</i>	http://www.osti.gov/bri/dge/product.biblio.jsp?query_id=1&page=0&osti_id=5129123	This report describes the underground radioactive materials in the deactivated 105-H and 105-F Reactor areas. It includes the location of solid waste burial grounds that are marked with permanent marker posts, and also locations that are not permanently marked but over which access controls should be maintained until their radioactivity is no longer of concern.	H,D,P		Y,S			
WHC-SD-EN-AP-097	REV. 1	100 AREA		Aug. 1992	F.W. Gustafson	<i>Description of Work for 100 Area Columbia River Sediment Sampling</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196106997	This document details Columbia River sediment investigation field activities associated with 100 Area OU RIs. The scope of this effort is to determine if radiological contaminants are present in Columbia River sediments as a result of reactor operations. It is not within the scope of this investigation to determine the extent of the contamination. Sampling locations will be chosen based on areas of obvious sediment deposition downriver from outfall pipes and spillways. This description of work will serve as a field guide for those performing the work. It should be used in conjunction with the RI/FS work plan for 100 Area OUs for general investigation strategy and with WHC-CM-7-7 for specific procedures.	D,H		Y,P,X	A	NO	NO
WHC-SD-EN-AP-097	REV. 0	100 AREA	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	July 1992	F.W. Gustafson	<i>Description of Work for 100 Area Columbia River Sediment Sampling</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196102567	This document details the Columbia River sediment investigation field activities associated with the 100 Area OU RIs. This description of work will serve as a field guide for those performing the work. It should be used in conjunction with RI/FS work plan for the 100 Area OUs for general investigation strategy and with WHC-CM-7-7 for specific procedures.	D	Z		A		
WHC-SD-EN-AP-097	REV. 2	100 AREA	100-BC-2 100-BC-3 100-BC-4 100-BC-5 100-BC-1	Oct. 1992	F.W. Gustafson	<i>Description of Work for 100 Area Columbia River Sediment Sampling</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196113638	This document details Columbia River sediment investigation field activities associated with 100 Area OU RIs. The scope of this effort is to complete a preliminary survey to determine if a notable level (statistically elevated contaminant levels when compared with reference samples) of chemical and radiological contaminants are present in Columbia River sediments and to obtain preliminary data on the extent of contamination if present. Sampling locations will be chosen based on areas of obvious sediment deposition downriver from outfall pipes and spillways and within backwater river channels.	H,D	G,T,Z,E	Y	A	YES	YES
WHC-SD-EN-AP-097	REV. 3	100 AREA	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	Jan. 1993	F.W. Gustafson	<i>Description of Work for 100 Area Columbia River Sediment Sampling</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196120883	This document details Columbia River sediment investigation field activities associated with 100 Area OU RIs. This work is driven by DOE/RL-92-28. This plan indicates data gaps to be filled before a complete risk assessment can be completed for the CERCLA RI/FS activities at the Hanford Site 100 Area. The scope of this effort is to complete a preliminary survey to determine if a notable level (elevated contaminant levels when compared with reference samples) of chemical and radiological contaminants are present in Columbia River sediments and to obtain a preliminary data on the extent of contamination, if present.	D	G	Y	A	YES	

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WHC-SD-EN-AP-110	REV. 0	100-D/DR	100-DR-1	Oct. 1992	WHC, J.M. Frain	<i>Proposal for the 100-D Pond Expedited Response Action</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196113618	This document provides information for a proposed ERA at the Hanford Site 100-D Ponds at the Hanford Site. This information provides EPA and Ecology with a general understanding of the proposed project. If the ERA process is continued, a comprehensive ERA proposal will be prepared in accordance with the Tri-Party Agreement (Ecology et al., 1989). This will allow for public involvement and regulatory approval of the ERA before actual implementation of the proposed response action.	D,H,P	Z			NO	NO
WHC-SD-EN-AP-118	REV. 0	100 AREA	100-BC-1 100-DR-1	Feb. 1993	J.G. Field	<i>100 Area Test Pit Sampling for Soil Washing Bench-Scale Tests, Description of Work</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196120519	This description of work details the field activities associated with backhoe excavation and sampling of two test pits: one at the inlet end of the 116-C-1 Trench located in the 100-BC-1 OU; and the other at the inlet end of the 116-D-1B Trench in the 100-DR-1 OU. Work will be performed to obtain soil samples for 100 Area bench-scale treatability tests, as specified in <i>100 Area Soil Washing Treatability Test Plan</i> (DOE/RL-92-51). The description of work will serve as a field guide for those performing the work. Neither test pit 116-C-1 nor 116-D-1B are located inside of a surface radiation zone; however, the sites are currently surrounded by permanent concrete monuments and underground contamination warning signs. Low-level radioactivity is expected to be encountered at depths of 15 to 30 ft. The maximum depth of test pits will be 30 ft.	D	G	Y		NO	NO
WHC-SD-EN-AP-139	REV. 1	100 AREA	100-DR-2	Nov. 1993	N.M. Naiknimbalkar	<i>Description of Work for 100-DR-2 Operable Unit Vadose Drilling</i>	http://www5.hanford.gov/pdw/fsd/AR/FSD0001/FSD0036/D196106611/D196106611_10164_18.pdf	This description of work details the field activities associated with boreholes/test pits in the 100-DR-2 OU and will serve as a field guide for those performing the work. It should be used in conjunction with the work plan for the 100-DR-2 OU (<i>Description of Work for 100-DR-2 Operable Unit Vadose Drilling/Test Pits</i> [WHC-SD-EN-AP-139]) for general investigation strategy and with WHC-CM-7-7 for specific procedures. The 100-DR-2 work plan is in preparation. Since the 100-DR-2 OU is adjacent to 100-DR-1 OU, and because the 100-DR-1 work plan (DOE/RL-89-09) has been approved, several subsections of the approved work plan have been cited as guidance. The soil screening, geologic sampling, soil sampling, analytical sampling, and geophysical logging will be conducted in accordance with the 100-DR-1 work plan.	D,P	G	S	A		
WHC-SD-EN-AP-168	REV. 0	100-D 100-H	100-HR-3	Apr. 1994	WHC, D.J. Vaught	<i>In Situ Permeable Flow Sensor Installation at 100-H Description of Work</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196084494	This description of work details the field activities associated with drilling four boreholes in the 100-HR-3 OU for placement of four in situ permeable-flow sensors near the 183-H Basin. A sonic drill rig funded under a Cooperative Research and Development Agreement will be used to drill the boreholes.	D	G		M	NO	NO
WHC-SD-EN-ES-031	REV. 0	100-DR	100-DR-1	Nov. 1992	I.D. Jacques	<i>100-DR-1 Operable Unit Soil Gas Report</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196117794	A soil-gas survey was conducted for the 100-DR-1 OU as directed by the <i>RCRA Facility Investigation/Corrective Measures Study Work Plan for the 100-DR-1 Operable Unit, Hanford Site, Richland, Washington</i> (DOE/RL-89-09). The samples were analyzed for VOCs characteristic of the materials used at each sample site. Sites 1716-D and 126-D-2 are listed specifically.	P		Y	A	NO	NO
WHC-SD-EN-ES-043	REV. 0	100-HR-3	100 AREA	Feb. 1994	B.M. Peyton	<i>100 Area Groundwater Bionitrification Bench-Scale Treatability Study Final Report</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196093538	Bionitrification is the biological conversion of nitrate and nitrite to gaseous nitrogen. This document describes the methodologies used and the results obtained in the bench-scale bionitrification treatability tests at PNL. The tests showed that bionitrification could reduce initial groundwater nitrate concentrations to less than 45 mg/L, the current maximum contaminant level per the <i>Safe Drinking Water Act of 1974</i> . Tests were carried out in anaerobic shake flasks to demonstrate nitrate removal and to determine the effects of carbon source and concentration, pH, and temperature on the denitrification ability of a Hanford denitrifying microbial consortia. Growth rates in the actual groundwater were slightly lower than in laboratory-prepared, simulated groundwater. The effects of pH and temperature are similar to those observed in	D,H,P	G, Z	Y,S	A	NO	NO

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
								other tests with different denitrifying microorganisms. The results and conclusions for this test were obtained specifically for the 100-HR-3 groundwater treatability test. These results should not be construed or mistaken to be generally applicable to any other treatability study.						
WHC-SD-EN-PMP-001	REV. 0	100-BC 100-HR 100-KR 300-FF	100-BC-5 100-HR-3 100-KR-4 300-FF-5	1991	WHC, R.L. Jackson	<i>Project Management Plan – RCRA Groundwater Monitoring</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196124088	This project management plan describes the management system used by the Geosciences Group of the Environmental Engineering and Geotechnology Function to control RCRA groundwater monitoring on the Hanford Site. The activities controlled by this project management plan include monitoring well network design and installation, monitoring well logging and testing, monitoring of groundwater quality and groundwater levels, analyzing monitoring well data, documenting these activities, and reporting of monitoring results for Hanford Site facilities falling under RCRA authority.				A	NO	NO
WHC-SD-EN-RA-005		100-DR	100-DR-1	July 1994	N.M. Naiknimbalkar	<i>Qualitative Risk Assessment for 100-DR-1 Source Operable Unit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196072997	The purpose of the qualitative risk assessment at the 100-DR-1 OU is to focus on a limited set of human and environmental exposure scenarios in order to provide sufficient information to assist the Tri-Parties in making defensible decisions on the necessity of IRMs. Frequent and occasional use scenarios are evaluated in the human health qualitative risk assessment to provide bounding estimates of risk, which are based on the residential and recreational exposure scenarios, respectively, as presented DOE/RL-91-45, as agreed by the 100 Area Tri-Party unit managers.	D,H,P	Z,E	Y,S	A	YES	NO
WHC-SD-EN-RA-007	REV. 0	100 AREA	100-HR-3	Sept. 1994	S.E. Vukelich	<i>Qualitative Risk Assessment for the 100-HR-3 Groundwater Operable Unit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196056420	This report provides the qualitative risk assessment for the 100-HR-3 Groundwater OU. The application of Hanford past-practice strategies at the 100-HR-3 OU is discussed in detail in <i>RCRA Facility Investigation/Corrective Measures Study Work Plan for the 100-HR-3 Operable Unit, Hanford Site, Richland, Washington</i> (DOE/RL-88-36).	D,H,P	Z,E	S,Y	A	YES	
WHC-SD-EN-SAD-002	REV. 0	100 AREA	100-B 100-C 100-D 100-DR 100-F 100-H 100-KE 100-KW 100-N	Sept. 1991	W.E. Taylor	<i>100 Area Low Hazard Characterization Activities Safety Assessment</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196078231	This safety assessment was prepared to document the analysis of hazards leading to the conclusion that the activity does not present an unacceptable hazard to the facility worker, the onsite person 100 m from the activity, and the nearest resident. The activities described include well drilling, borehole drilling, and backhoe (or similar equipment) excavation of small contaminant inventory waste sites in the 100 Area. The EPA took action on October 4, 1989, to include the Hanford Site 100 Area on the National Priority List. WHC is preparing to perform characterization activities in the 100 Area and nearby 600 Area locations for DOE, with agreement of EPA and Ecology. Descriptions of the types of characterization activities to be performed in the 100 Area are provided in the OU work plan (DOE/RL-89-09). This safety assessment documents the analysis of hazards, leading to the conclusion that the activity does not present an unacceptable hazard to the three receptor groups of concern: the facility worker, the onsite person located 330 ft (100 m) from the activity, or the offsite individual.	D,H,P	G,Z,C, E,T	Y,S,X	A	NO	NO
WHC-SD-EN-TC-003	REV. 0	100-D 100-H	100-HR-3	July 1993	WHC, J.B. Duncan	<i>Test Procedures Treatment Tests for Ex Situ Removal of Chromate Nitrate and Uranium(VI) from Hanford Groundwater</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196126249	These test procedures describe laboratory studies proposed to investigate ex situ methods to remove chromate, nitrate, and uranium from contaminated Hanford Site groundwater. Uranium is the major species contributing to the elevated alpha levels. By removing the uranium, the alpha levels will be significantly reduced for the uranium concentration present in the 100-HR-3 Groundwater OU.	D	Z	Y	M	NO	NO

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
WHC-SD-EN-TC-004	REV. 0	100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	Sept. 1993	D. Blumenkranz, J. Frain	<i>100 Area Excavation Treatability Test Procedures</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196114513	This document describes the procedures required for the successful implementation of the 100 Area excavation treatability test. This test is outlined in DOE/RL-93-04. The test plan has been reviewed by DOE-RL, EPA, Ecology, and the public. Treatability studies are primary components of the CERCLA RI/FS process, providing critical performance and cost information to evaluate and select remedial alternatives at hazardous waste sites. The purpose of this treatability test is two-fold: (1) to obtain a correlation between radiological field surveys and laboratory measurements, and (2) to test a variety of dust-suppression methods.	H,P,D	G	Y,S,X	A	YES	YES
WHC-SD-EN-TI-006	REV. 0	100 AREA	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	Mar. 1992	R.E. Peterson	<i>Hydrologic and Geologic Data Available for the Region North of Gable Mountain, Hanford Site, Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196090833	This data compilation report contains an inventory of readily available information on existing groundwater wells, hydrology, and geology that can be used by RI/FS investigators. It is intended as a reference document that describes the available data, when data were collected, and how the data can be accessed. It has been designed as a supplement to other reports that evaluate existing information relative to past-practices objectives. The document will be updated periodically to reflect the installation of new monitoring wells; rehabilitation and remediation of existing wells; and new geologic, hydrologic, and groundwater chemistry information.	H,D,P	Z,G		A		
WHC-SD-EN-TI-011	REV. 0	100-BC	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	Mar. 1992	K.A. Lindsey	<i>Geology of the Northern Part of the Hanford Site: An Outline of Data Sources and Geologic Setting of the 100 Areas</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196090817	This report outlines the types of geologic data for the Hanford Site north of the Gable Mountain anticline and where the data can be obtained. Based on the available data, preliminary geologic interpretations are presented. These interpretations are divided into four site-specific sections: (1) 100-BC and 100-K, (2) 100-N and 100-D, (3) 100-H, and (4) 100-F. This report includes a brief discussion of regional geology in order to put the study area in its geologic context.	D,H,P	G,Z		A,M	YES	NO
WHC-SD-EN-TI-023	REV. 0	100 AREA	100-HR-3	Oct. 1992	M.J. Hartman, R.E. Peterson	<i>Hydrologic Information Summary for the Northern Hanford Site</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196110687	The various 100 Area groundwater OU work plans include data evaluation tasks. Task 6 in each work plan pertains to groundwater investigations, and Task 4 pertains to surface water and sediment investigations. This report represents an initial step to integrate the data evaluation tasks. The work plans recognize that data compilation and evaluation continue as the RI proceeds. This document includes an initial evaluation of information on hydrogeologic characteristics, monitoring wells, water table elevations, and groundwater quality for the 100 Aggregate Area.	D,H,P	Z,T,G	Y,P,S	A		
WHC-SD-EN-TI-078	REV. 0	100 AREA	100-HR-3	Mar. 1993	S.E. Vukelich	<i>Data Validation Report for the 100-HR-3 Operable Unit Second Quarter Sampling</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196125582	Data from the chemical analysis of 168 samples from the 100-HR-3 OU second quarter groundwater RI, and their related quality assurance samples were reviewed and validated to verify that reported sample results were of sufficient quality to support decisions regarding remedial actions performed at this site.		Z	Y	A		
WHC-SD-EN-TI-083	REV. 0	100 AREA	100-HR-3	Mar. 1993	S.E. Vukelich	<i>Data Validation Report for 100-HR-3 Operable Unit Groundwater Drilling</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196127027	Data from the chemical analysis of 69 samples from the 100-HR-3 OU groundwater drilling RI, and their related quality assurance samples were reviewed and validated to verify that reported sample results were of sufficient quality to support decisions regarding remedial actions performed at this site.		Z	Y	A		
WHC-SD-EN-TI-084	0	100-D/DR	100-DR-1	Dec. 1992	N.M. Naiknimbalkar	<i>Data Validation Report for the 100-DR-1 Operable Unit Vadose Sampling</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196119196	Data from the chemical analysis for the 100-DR-1 OU vadose sampling RI, and their related quality assurance samples were reviewed and validated to verify that reported sample results were of sufficient quality to support decisions regarding remedial actions performed at this site.			Y		NO	NO
WHC-SD-EN-TI-127	REV. 0	100 AREA	100-HR-3	Mar. 1993	S.E. Vukelich	<i>Data Validation Report for the 100-HR-3 Operable Unit Third Quarter Sampling</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196124094	Data from the chemical analysis of 168 samples from the 100-HR-3 OU second quarter groundwater RI and their related quality assurance samples were reviewed and validated to verify that reported sample results were of sufficient quality to support decisions regarding remedial actions performed at this site.		Z	Y	A		

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WHC-SD-EN-TI-132	REV. 0	100 AREA	100-HR-3	Mar. 1993	K.A. Lindsey, G.K. Jaeger	<i>Geologic Setting of the 100-HR-3 Operable Unit, Hanford Site, South-Central Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196126259	The purpose of this report is to describe the geologic setting of the 100-HR-3 OU. This discussion is based on (1) data acquired during recent drilling activities for both CERCLA and RCRA, (2) data from older projects and boreholes in the area, and (3) analyses of geologic units from boreholes located elsewhere in the region and from outcrops interpreted to be analogous to those found within the 100-HR-3 OU area. The report is divided into three main areas of discussion: (1) a brief review of the regional and 100 Area settings, (2) detailed discussion of 100-HR-3 OU geology, and (3) site-specific discussions of the geology of both the 100-H and 100-D Areas.	D,H	T,G,Z	Y,S	A	YES	
WHC-SD-EN-TI-160	REV. 0	100 AREA	100-HR-3	July 1993	S.E. Vukelich	<i>Data Validation Report for the 100-HR-3 Operable Unit Fourth Quarter Sampling</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196131861	This report discusses the data from the chemical analysis of 80 samples from the 100-HR-3 OU sampling event. The related quality assurance samples were reviewed and validated to verify that reported sample results were of sufficient quality to support decisions regarding remedial actions performed at this site.		Z	Y	A		
WHC-SD-EN-TI-181	REV. 0	100 AREA	100-DR-1 100-DR-2 100-DR-3	Aug. 1993	WHC, R.W. Carpenter	<i>100-D Area Technical Baseline Report</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196115503	This document is prepared in support of the Hanford Site 100 Area environmental restoration activity. It provides a technical baseline of the waste sites located at the 100-D Area. The report is based on an environmental investigation performed by the WHC History Office in support of the Environmental Restoration Engineering Function and is also based on reviews and evaluations of numerous Hanford Site current and historical reports, drawings, and photographs, supplemented by Site inspections and employee interviews. No intrusive field investigation or sampling was conducted. All Hanford coordinate locations are approximate locations taken from several different maps and drawings of the 100-D Area. Every effort was made to derive coordinate locations for the center of each facility or waste site (except where noted) using standard measuring devices. The 100-D Area is made up of three OUs: 100-DR-1, 100-D-2, and 100-DR-3. All three OUs are addressed in this report. These OUs include liquid and solid waste disposal sites in the vicinity of, and related to, the D and DR Reactors. A fourth OU, 100-HR-3 is not addressed in this report. This report describes waste sites that include cribs, trenches, pits, French drains, retention basins, solid waste burial grounds, septic tanks, and drain fields. Each waste site is described separately and photographs are provided, where available.	D,H,P	G,E	Y,S	A	NO	NO
WHC-SD-EN-TI-204	REV. 0	100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	Sept. 1994	K.A. Bergstrom	<i>Ground-Penetrating Radar Investigation Conducted in the 100 Areas, Hanford Sites: Fiscal Year 1992</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196061851	During FY 1992, the Geophysics Group conducted 45 GPR surveys in the 100 Area. The objectives of the investigations varied, from locating cribs, trenches and septic systems to helping site boreholes. The results of each investigation were delivered to clients in the form of a map that summarized the interpretation of a given site; no formal reports were prepared. The purpose of this document is to show the locations and provide reasoning why each of the surveys was conducted. The data and interpretation of each survey are available by contacting the WHC Geophysics Group. Maps showing the locations and basic parameters of each survey are provided in the appendices of the report.	H	G		A		
WHC-SD-EN-TI-216	REV. 0	100 AREA 200 AREA	100-B 100-D 100-F 100-H 100-K 100-N 200 West, 200 East	Jan 1994	J.A. Stegen	<i>Vegetation Communities Associated with the 100 Area and 200 Area Facilities on the Hanford Site</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196101081	This study was conducted to determine the plant communities and estimate vegetation cover in and directly adjacent to the 100 and 200 Areas, primarily in relation to waste sites, as part of a comprehensive ecological study for CERCLA characterization of the 100 and 200 Areas. During the summer of 1993, field surveys were conducted, and a map of vegetation communities in each area, including dominant species associations, was produced. The field surveys consisted of qualitative community delineations. The community delineations described were made by field reconnaissance and are qualitative in nature. The delineations were made by visually determining the dominant plant species	D,H,P	G,Z,C,E	S,X	A	NO	NO

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								or vegetation types and were based on the species most apparent at the time of inspection. Additionally, 38 transects were run in these plant communities to try to obtain a more accurate representation of the community. Because habitat disturbances from construction/operation activities continue to occur in these areas, users of this information should use caution when applying these maps without a current ground survey. This work will complement large-scale habitat maps of the Hanford Site.						
WHC-SD-EN-TI-240	REV. 0	100 AREA 300 AREA	100-DR-1	Apr. 1994	J.D. Ludowise	<i>Vitrification Testing of Soil Fines from Contaminated Hanford 100 Area and 300 Area Soils</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196085322	This report describes the results of crucible-scale vitrification tests of soil fines performed by PNL. The 100 Area sample came from laboratory-scale tests conducted on soil from the 116-D-1B Trench in 100-DR-1 OU. The soil fines tested include both nonradioactive surrogate from the 600 Area and actual radioactive soil fines from the 100 and 300 Areas.	D	G	Y	A	NO	NO
WHC-SD-EN-TI-278	REV. 0	100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	June 1994	WHC, P.J. Valcich	<i>Columbia River Effluent Pipeline Survey</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196074913	This report presents the results of a comprehensive marine geophysical survey conducted in the Columbia River. The purpose of this investigation was to map the location and burial depth of 14 effluent pipelines that extend into the Columbia River. There is concern that some of the pipelines may be uncovered, which may create a hazard to navigation in this part of the river. The survey was conducted from April 11–17, 1994, by Golder Associates under the direction of WHC. A comprehensive marine geophysical survey (using precision navigation and echo-sounding, side-scanning sonar, sub-bottom profiling, seismic reflection profiling, and GPR) was used to locate and map the 14 effluent pipelines. These pipelines extend into the Columbia River from six abandoned nuclear facilities in the 100 Area.	D	G,T			NO	NO
WHC-SD-EN-TI-302	REV. 0	100 AREA	100-HR-3 100-KR-	July 1995	E.C. Thornton	<i>Speciation and Transport Characteristics of Chromium in the 100-D/H Areas of the Hanford Site</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D195066203	This document presents the results of laboratory and field investigations conducted in FY 1993 and FY 1994 to determine chromium speciation and transport characteristics in the 100-D/H Areas of the Hanford Site. Analyses of groundwater and seep water samples indicate that dissolved chromium is primarily in the hexavalent oxidation state. Sediment characterization activities suggest that a minor portion of chromium may be reduced and precipitated on riverbank sediments as groundwater passes through the river/aquifer interfacial zone. Laboratory mixing tests conducted with chromate-contaminated groundwater and Columbia River water suggest that chromium remains primarily in the hexavalent oxidation state after entering the Columbia River, with total chromium concentration values decreasing in proportion to the degree of dilution.	D,H,P	Z,G	Y,S,X	A	YES	
WHC-SD-EN-TP-031	REV. 0	100 AREA	100-HR-3	Mar. 1994	L.C. Swanson, M.J. Hartman	<i>Aquifer Test Plan for the 100-HR-3 Operable Unit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196088859	This test plan directs hydrologic testing activities planned at three existing CERCLA wells in the 100-HR-3 OU. Three additional wells will be installed near the existing wells and used as additional testing and observation points during the field activities. A primary objective of the testing program is to provide more detailed hydraulic characterization information for the unconfined aquifer and targeted test sites than provided by initial reconnaissance-level slug testing. A second objective is to evaluate the applicability of slug interference and dipole flow tests for detailed hydraulic characterization in an unconfined aquifer. The aquifer testing program will also be useful for substantiating hydraulic conductivities reported from previous slug tests and evaluating the effects of filter pack volume/ configuration on slug test data.	D,H,P	Z	Y,P,S	A	YES	YES

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
WHC-SD-ER-DTR-001	REV. 0	100 AREA	100-HR-3	Feb. 1994	J.B. Duncan, M.A. Beck	<i>Treatment Tests for Ex Situ Removal of Chromate, Nitrate, and Uranium(VI) from Hanford (100-HR-3) Groundwater Final Report</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196089542	This report describes batch and IX column laboratory-scale studies investigating ex situ methods to remove chromate (Cr(VI) and nitrate) and uranium (present as uranium(VI)) from contaminated Hanford Site groundwater. The technologies investigated included chemical precipitation or co-precipitation to remove chromium and uranium; and anion exchange to remove chromate, uranium, and nitrate. The technologies investigated were specified in the 100-HR-3 groundwater treatability test plan. The method suggested for future study is anion exchange.	D,H,P	Z	Y	A		
WHC-SD-ER-TA-001		100 AREA	100-HR-3 100-KR-4	Feb. 1991	M.P. Connelly J.D. Davis P.D. Rittmann	<i>Numerical Simulation of Strontium-90 Transport from 100-N Area Liquid Waste Disposal Facilities</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196068231	This report describes an analysis of groundwater movement and transport of strontium-90 in groundwater from the 100-N Area liquid waste disposal facilities to the Columbia River. To provide a perspective on the potential effects of discharges of groundwater contaminated by strontium-90 to the Columbia River, the analysis included estimates of maximum radiation doses to humans that could result if remedial actions were not taken. The objectives of the analysis were to help define the need for additional data and to predict the future effects of the facilities on the groundwater quality at the shoreline of the Columbia River adjoining the 100-N Area, given the cessation of effluent discharges to the facilities.	D,H,P	Z,G	Y,S,P	A	YES	
SGW-39305	REV. 0	100 AREA	100-D	Oct. 2008	FH	<i>Technical Evaluation of the Interaction of Groundwater with the Columbia River at the Department of Energy Hanford Site, 100-D Area</i>	http://www.osti.gov/bri/dge/purl.cover.jsp?url=/943297-EPTwMW/	In April 2008, an expert panel of scientists was convened to review existing information and then provide observations and suggestions to improve the current understanding of groundwater/surface water interactions in the 100 Area (primarily focusing on 100-D Area). The expert panel was asked to identify additional analyses or approaches that could provide critical information needed to design and implement remediation systems to minimize effect to river aquatic systems. This report provides the results of this project. Section 1 of the report provides introductory information, including background, goal/objectives of the project, and the approach. Section 2 discusses the conceptual model framework, as well as chromium distribution and attenuation. Section 3 evaluates data acquisition, network design, and data analysis. Section 4 provides an evaluation of the role of modeling and current models, and Section 5 describes the role of groundwater/ surface water interactions in the selection of remedial alternatives.	H	Z,E	S,Y	A,M	NO	NO
SGW-41534	REV. 0	100 AREA	100-HR-3	Aug. 19, 2009	CHPRC	<i>Description of Work for the Installation of 35 Remedial Process Optimization Wells in the 100-H Area for the 100-HR-3 Operable Unit, Fiscal Year 2009</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0908311236	This document describes the processes involved in the installation of 35 CERCLA remedial process optimization wells within the 100-H Area of the 100-HR-3 OU. The remedial process optimization wells will be used to expand the 100-HR-3 OU pump-and-treat system that uses an IX medium to treat contaminated groundwater.	D,H,P	G,Z	P,Y,S	A,M	YES	
TPA-CN-368		100-D/DR	100-DR-1	June 30, 2010	DOE-RL, B.L. Charboneau	<i>Tri-Party Agreement Change Notice: DOE/RL-2009-40, Sampling and Analysis Plan for the 100-DR-1, 100-DR-2, 100-HR-1, 100-HR-2, and 100-HR-3 Operable Units Remedial Investigation/ Feasibility Study, Rev. 0</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=1009100198	Includes the analytical performance requirements for soil/aquifer sediment samples from 100-D-12.			Y		NO	NO
TS-PIC-89714	N/A	100-H	100 AREA	Mar. 1989	EPA	<i>Aerial Photographic Analysis of Rockwell Hanford Operations Area 100-H Richland, Washington</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196074515	This report presents the results of an archival aerial photographic analysis of the 100-H Area located approximately 64 km (40 mi) north of Richland, Washington. The plutonium-production project consists of several separate operations and processing areas, which include 100-H. The 100-H Area covers approximately 150 ha (370 ac).	D,H,P	G,Z,T	S,X	A	NO	NO

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UNI-1888	0	100 AREA	100 AREA	1981	UNC, E.M. Greager	<i>Biotransport of Radionuclides in the 100 Areas</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196018258	The purpose of this investigation is to determine the potential for radionuclide biotransport in the 100 Area and assess its significance. Based on the radioanalytical results of vegetation and wildlife samples collected in the 100 Area, it appears that a limited amount of radionuclide biotransport is occurring in the 100 Area.	D,P	G,Z,E,T	Y,S	A	N	N
UNI-3001		100 AREA	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	Dec. 27, 1984	J.F. Beckstrom	<i>ARCL Calculations For Decommissioning the 117-H Filter Building</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196015407	This document describes how the ARCL method was used in conjunction with in situ decommissioning to permanently disposition the 117-H Building. Using these strategies, the decommissioned 117-H Building will not cause a dose to a maximally exposed individual greater than 25 mrem/yr to the whole body or any organ. Since this is one of the first efforts in decommissioning of a Hanford facility using the ARCL method, a very conservative application of the ARCL method has been used. The conservatisms include the following: <ul style="list-style-type: none"> • The sample with the highest activity for each isotope was used to calculate the ARCL value for each section of the 117-H Building. • All alpha activity remaining in the 117-H Building was attributed to plutonium-239. • The depth of clean fill over the rubble is greater than 5 m in most cases. However, a contamination condition of 1 to 4 m deep was used for all sections of the 117-H Building, except for the seal pits, where a contamination condition of greater than 5 m was used. The ARCL calculations indicate that the 117-H Filter Building can be decommissioned in situ with a potential dose to a maximally exposed individual of less than 1 mrem/yr, well below the 25 mrem/yr guideline. 	H		Y,S		YES	NO
UNI-3714	REV. 1	100 AREA	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	Apr. 1987	J.M. Steffes, R.L. Miller	<i>Radionuclide Inventory and Source Terms for the Surplus Production Reactors at Hanford</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196008078	The purpose of this document is to provide estimated inventories of radionuclides and other hazardous materials in the eight Hanford 100 Area surplus production reactor buildings. This information is intended to support the preparation of an EIS, which is being prepared by PNL for the final decommissioning of these facilities. Radionuclide inventories have been estimated for the eight surplus production reactors at Hanford. The inventories listed represent more than 95 percent of the total curie burden; the remaining 5 percent is distributed in piping, tunnels, and various other locations within the reactor building and unaccounted for inventories within the reactors or FSBs. Estimates are conservative, as the methodology was designed to overestimate the radionuclide inventories in the facilities. The estimated inventory per reactor facility ranges from 13,000 Ci to 18,000 Ci. The majority of the current inventory consists of tritium, carbon-14, cobalt-60, and nickel-63. The information in this document combines data from previous characterization efforts and introduces adjustments for added information and refinement. The inventory of hazardous materials in the reactor facilities is also addressed.	D,H,P		Y,S	A	NO	NO
UNI-3760		100-BC 100-DR 100-HR	100-BC-5 100-DR-1 100-HR-1	1986	UNC, I.D. Jacques	<i>UNC Environmental Surveillance Report for the 100 Areas – FY 1985</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196018795	The Environmental Surveillance Program for the 100 Area provides monitoring of specific environmental media. The information is used to assist in evaluating the environmental impact of N Reactor facilities, the shutdown reactor facilities, and burial grounds in the retired 100 Areas. This document is used primarily to evaluate facility operation and management practices. The report does not include estimates of radiation doses to the public resulting from 100 Area facility operations. Reports of population dose commitments and other environmental information for the Hanford Site are prepared and issued by PNL. The Environmental Surveillance Program provides radionuclide release information to PNL for the preparation of such documents.				A	NO	NO

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
UNI-3855		100-F, 200-H, and 100-BC stacks	100-BC-1 100-DR-1 100-DR-2 100-FR-1 100-KR-2	July 24, 1986	E.W. Powers, J.M. Steffes	116-C, -F, and -H Reactor Exhaust Ventilation Stack Demolition Hanford Site Individual Facility Report	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196007362	This report documents the decommissioning of three reactor exhaust stacks at the Hanford Site. Each of the eight retired reactors had an exhaust stack designated as the 116 Building or stack. This report covers the demolition of the 116-C, 116-F, and 116-H stacks. These stacks were successfully demolished and buried in place and the area was returned to natural terrain in September 1983.	D,H,P		Y,S		NO	NO
UNI-3870		100-D/DR	100-DR-1	Nov. 1986	UNC, R.B. Loveland,J.F. Beckstrom	ARCL Calculations for Decommissioning the 117-D Filter Building	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196108297	This document describes how the ARCL method was used in conjunction with the in situ decommissioning alternative to permanently dispose of the 117-D Filter Building. Instead of calculating eight separate ARCL values for each section of the building, one ARCL value was determined for the whole structure. The highest concentration of radionuclides for each section was weighted against the sectional surface area to establish the average concentration for the building. The weighted average was used to determine the ARCL value and the total isotopic inventory for the 117-D Building. The ARCL value, as calculated in this report, is based on radionuclide concentration.	D,H,P		Y,X	A	YES	NO
UNI-65		100-B 100-D 100-F	100-HR-1	Aug. 23, 1973	UNI, T.E. Dabrowski	Radioactive Tumbleweeds in the 100 Areas	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196018260	On July 25, 1973, Reactor Plant Services reported that radioactive tumbleweeds were observed growing in the 100-B, 100-D, and 100-F Area burial grounds. The purpose of this document is to report the extent and nature of the radioactivity observed, the short-term corrective actions taken, possible longer-term corrective methods, and a recommended course of action for selecting a final, long-term weed abatement program.	D	C, T	Y	A		
W0368-QES		100-D/DR	100-DR-1	Apr. 1995	C.I. Jensen	Validation Summary Analytical Laboratory 100-DR-1 Sample Numbers	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196118930	This report presents a summary of the data validation results for water samples collected for the 100-DR-1 soil-washing treatability test sampling task.			Y	A	NO	NO
WCH-00050	REV. 2	100 AREA	118-D-1 118-D-2 118-D-3 118-H-1 118-H-2 118-H-3	Apr. 12, 2007	T.J. Rodovsky	Final Hazard Categorization for the Remediation of the 118-D-1, 118-D-2, 118-D-3, 118-H-1, 118-H-2, and 118-H-3 Solid Waste Burial Grounds	http://www.osti.gov/bri/dge/product.biblio.jsp?query_id=1&page=0&osti_id=944090	This report presents the FHC for remediation of the 118-D-1, 118-D-2, and 118-D-3 Burial Grounds located within the 100-D/DR Area, and the 118-H-1, 118-H-2, and 118-H-3 Burial Grounds located within the 100-H Area. The 118-D-1, 118-D-2, and 118-D-3 Burial Grounds are located within the 100-DR-2 OU, and the 118-H-1, 118-H-2, and 118-H-3 Burial Grounds are located with the 100-HR-2 OU. A material at risk calculation was performed that determined the radiological inventory for each burial ground to be Hazard Category 3.	H,D,P	T,C,Z,G, E	Y,S	A	YES	
WCH-00050	REV. 1	100 AREA	118-D-1 118-D-2 118-D-3 118-H-1 118-H-2 118-H-3	Dec. 6, 2006	T.J. Rodovsky	Final Hazard Categorization for the Remediation of the 118-D-1, 118-D-2, 118-D-3, 118-H-1, 118-H-2, and 118-H-3 Solid Waste Burial Grounds	http://www.osti.gov/bri/dge/product.biblio.jsp?query_id=1&page=0&osti_id=944091	This report presents the FHC for remediation of the 118-D-1, 118-D-2, and 118-D-3 Burial Grounds located within the 100-D/DR Area of the Hanford Site and the 118-H-1, 118-H-2, and 118-H-3 Burial Grounds located within the 100-H Area. A material at risk calculation was performed that determined the radiological inventory for each burial ground to be Hazard Category 3. Because the initial hazard categorization was determined to be Category 3 for each of the sites, the development of an FHC was required. This resulted in an FHC of below Category 3 based of the analysis presented in this document. This FHC determination concludes that no activity/process authorized under this categorization could credibly result in undue risk to workers, the public, or the environment.	H,D,P	T,C,Z,G, E	Y,S	A	YES	
WCH-00050	REV. 0	100-D/DR 100-H	118-D-1 118-D-2 118-D-3 118-H-1 118-H-2 118-H-3	Mar. 1, 2006	T.J. Rodovsky	Final Hazard Categorization and Auditable Safety Analysis for the Remediation of the 118-D-1, 118-D-2, 118-D-3, 118-H-1, 118-H-2 and 118-H-3 Solid Waste Burial Grounds	http://www.osti.gov/bri/dge/product.biblio.jsp?query_id=29&page=0&osti_id=945400	This report presents the final hazard categorization for remediation of the 118-D-1, 118-D-2, and 118-D-3 Burial Grounds located within the 100-D/DR Area and the 118-H-1, 118-H-2, and 118-H-3 Burial Grounds located within the 100-H Area. This FHC determination concludes that no activity/process authorized under this FHC could credibly result in undue risk to workers, the public, or the environment.	D,P,H	C,Z,G,T, E	Y	M	YES	NO

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WCH-00050	REV. 3	100-D/DR 100-H	118-D-1 118-D-2 118-D-3 118-H-1 118-H-2 118-H-3	May 20, 2008	K.L. Vialetti	<i>Final Hazard Categorization for the Remediation of the 118-D-1, 118-D-2, 118-D-3, 118-H-1, 118-H-2, and 118-H-3 Solid Waste Burial Grounds</i>	http://www.osti.gov/bri/dge/product.biblio.jsp?query_id=29&page=0&osti_id=945404	This report presents the FHC for remediation of the 118-D-1, 118-D-2, and 118-D-3 Burial Grounds located within the 100-D/DR Area, and the 118-H-1, 118-H-2, and 118-H-3 Burial Grounds located within the 100-H Area. This FHC determination concludes that no activity/process authorized under this FHC could credibly result in undue risk to workers, the public, or the environment.	D,P,H	C,Z,G,T, E	Y	M	YES	NO
WCH-050	REV. 4	100-D/DR 100-H	118-D-1 118-D-2 118-D-3 118-H-1 118-H-2 118-H-3	June 17, 2009	J.D. Ludowise	<i>Final Hazard Categorization for the Remediation of the 118-D-1, 118-D-2, 118-D-3, 118-H-1, 118-H-2, and 118-H-3 Solid Waste Burial Grounds</i>	http://www.osti.gov/scitech/biblio/972717	This report presents the FHC for remediation of the 118-D-1, 118-D-2, and 118-D-3 Burial Grounds located within the 100-D/DR Area, and the 118-H-1, 118-H-2, and 118-H-3 Burial Grounds located within the 100-H Area. This FHC determination concludes that no activity/process authorized under this FHC could credibly result in undue risk to workers, the public, or the environment.	D,P,H	C,Z,G,T, E	Y	M	YES	NO
WHC-EP-0087		100-BC 100-FR	100-BC-1 100-BC-5 100-FR-1	1987	WHC, R.K. Wahlen, R.L. Miller	<i>Estimates of Solid Waste Buried in the 100 Area Burial Grounds</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196008314	The information in this report is designed to support future decommissioning plans, to provide information for assessing compliance with CERCLA, and to update the WIDS database. Mercury was used in manometers and other instruments in the 100 Area. Since these instruments were broken occasionally, it is a good assumption that mercury was either buried or drained to a crib or trench in the area. However, it is expected that the amount of mercury would be no more than found in any other industrial plant and is not addressed further in this report. Section 5.1 discusses the mercury used in the tritium-separation process that was performed in 100-BC Area. Small amounts of additional waste from special programs include equipment and materials from tritium-separation lines, steam generator tubes and zirconium waste from N Reactor, sawdust and animal waste, boron steel balls, and desiccant (silica gel). Materials represented are lithium-aluminum alloy, mercury, lead, aluminum, palladium, and stainless steel, as well as a typical reactor-type spectrum of radionuclides. No attempt is made to quantify extraneous waste such as scrap lumber, used lubricating oil, etc., which was disposed of in some of the burial grounds, as described in this document.	D,H				NO	NO
WHC-EP-0142-1		100-BC 100-HR 100-KR 300-FF	100-BC-5 100-HR-3 100-KR-4 300-FF-5	1988	WHC, A.L. Schatz, M.D. McElroy	<i>Ground-Water Maps of the Hanford Site Separations Area, June 1988</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196007062	The Separations Area water table map is prepared semiannually from water-level measurements made in June and December. For the June 1988 map, approximately 190 wells were used for contouring the water table. The water table mound beneath the deactivated U Pond continues to decrease in size. This reflects the effect of shutting off flow to the pond in the fall of 1984. During the period from December 1987 to June 1988, the mound decreased slightly. This mound has had an overall decline of approximately 8 ft since 1984. The water table map also shows the locations of wells where the June 1988 measurements were obtained, and the data for these measurements are also provided.					NO	NO
WHC-EP-0142-2		100-BC 100-HR 100-KR 200-BP 300-FF	100-BC-5 100-HR-3 100-KR-4 200-BP-1 300-FF-5	1989	WHC, A.L. Schatz, G.L. Kasza	<i>Groundwater Maps of the Hanford Site Separations Area, January 1989</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D195062758	This set of groundwater maps consists of (1) Separations Area depth-to-water map, (2) Separations Area water table map, and (3) a map comparing the potentiometric surface of the Rattlesnake Ridge confined aquifer with the water table of the unconfined aquifer. The field measurements for these maps were collected during the period January 19 to February 8, 1989, and are provided in this report. For clarity, the locating prefixes have been omitted from all well numbers shown on the maps in this report. Wells in the 200 Area have the prefix "299-," and the wells outside of these areas have the prefix "699-."					NO	NO

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WHC-EP-0142-3		100-BC 100-HR 100-KR 300-FF	100-BC-5 100-HR-3 100-KR-4 300-FF-5	Sept. 1989	G.L. Kasza S.P. Reidel A.L. Schatz	<i>Groundwater Maps of the Hanford Site Separations Area, June 1989</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D195066317	The groundwater maps of the Hanford Site Separations Area recorded in June 1989 were prepared by the WHC Environmental Engineering and Technology Function, Environmental Division. The groundwater maps are updated on a semiannual basis and are complementary to the Hanford Site water table map prepared by PNL. This set of groundwater maps consists of: (1) Separations Area depth-to-water map, (2) Separations Area water table map, and (3) a map comparing the potentiometric surface of the Rattlesnake Ridge confined aquifer with the water table of the unconfined aquifer. The field measurements for these maps were collected during June 1989 and are listed in this document. For clarity, the locating prefixes have been omitted from all well numbers shown on the maps in this report. Wells in the 200 Area have the prefix "299-" and the wells outside of these areas have the prefix "699-."					NO	NO
WHC-EP-0216		10 AREA 200 AREA 300 AREA 600 AREA 1100 AREA	100-BC 100-DR 100-FR 100-HR 100-KR 100-IU	1989	WHC	<i>Preliminary Operable Units Designation Project</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D195060570	The Preliminary Operable Units Designation Project organizes the radioactive, hazardous chemical, and mixed waste management units and resulting groundwater contamination plumes at the Hanford Site into groups that, because of complementary characteristics, would be amenable to combined characterization and/or remediation. These groups are referred to as OUs. Currently, 78 OUs have been designated, including over 1,500 waste management units and four groundwater contamination plumes identified on the Hanford Site. The OU designations included all individual waste management units identified by the WIDS database as of February 28, 1989.	D				NO	NO
WHC-EP-0258-2		100 AREA	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	May 1992	C.J. Perkins	<i>Westinghouse Hanford Company Environmental Surveillance Annual Report—100 Areas: Calendar Year 1990</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196100478	Results from the near-field Environmental Surveillance Program for the Hanford Site 100 Area are presented in this report. The Environmental Surveillance Program provides sampling and monitoring of several parameters to evaluate the environmental impact of 100-N Area reactor facilities, the shutdown reactor facilities, and burial grounds in the retired 100 Areas. Discharges to the environment are reported in annual effluent release reports.	D,H,P	Z,G,E	X,Y,S	A	YES	
WHC-EP-0260		100 AREA 300 AREA	100-BC-5 100-HR-3 100-KR-4 300-FF-5	Dec. 1989	J.A. Serkowski, W.A. Jordan	<i>Operational Groundwater Monitoring at the Hanford Site—1988</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D195066316	The purpose of this annual report is to describe the operational groundwater monitoring network and summarize the results generated during CY 1988. The objectives of this report are as follows: <ul style="list-style-type: none"> • Provide the requirements applicable to groundwater monitoring beneath waste disposal sites • Describe the operational groundwater monitoring program • Present the results of the operational groundwater monitoring network and pertinent results from other Hanford groundwater monitoring programs • Compare the analytical results with the applicable requirements 	D,H,P	Z,G	Y,S	A	YES	
WHC-EP-0394-1		100 AREA 200 AREA	100-BC-5 100-HR-3 100-KR-4 300-FF-5	Dec. 1990	G.L. Kasza S.F. Harris M.J. Hartman	<i>Ground Water Maps of the Hanford Site</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196038135	This report presents the results of the June 1990 groundwater-level measurement program at the 100 and 200 Areas of the Hanford Site. The water levels beneath these areas are measured regularly on a semiannual basis, and the data received are used to produce a set of maps for public release.	D,H,P	Z		A,M		
WHC-EP-0394-10		100 AREA 300 AREA	100-BC-5 100-HR-3 100-KR-4 300-FF-5	June 1995	J.A. Serkowski M.J. Hartman M.D. Sweeney	<i>Groundwater Maps of the Hanford Site, December 1994</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196006896	This document is the latest update to a series of semiannual reports providing the results of the water-level measurement activity at the Hanford Site. These reports present a compilation of the groundwater-level measurement data from monitoring wells collected during the months of June or December.	D,H,P	Z,C		A		

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WHC-EP-0394-11		100 AREA 200 AREA 300 AREA	100-BC-5 100-HR-3 100-KR-4 300-FF-5	Mar. 1996	J.A. Serkowski M.J. Hartman M.D. Sweeney	<i>Groundwater Maps of the Hanford Site, June 1995</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196083665	This document highlights the three major operational areas (the 100, 200 and 300/1100 Areas) where wastes were discharged to the soil. Each area includes a summary discussion of the data, a well index map, and a contoured map of the water table surface. Appendix A contains all of the data collected for this program.	D,H,P	Z		A,M		
WHC-EP-0394-2		100 AREA	100-BC-5 100-HR-3 100-KR-4 300-FF-5	June 1991	G.L. Kasza M.J. Hartman F.N. Hodges	<i>Groundwater Maps of the Hanford Site, December 1990</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196068114	This report presents the December 1990 groundwater-level measurement data for the 100, 200, 300, and 1100 Areas of the Hanford Site. The depth to the groundwater in the unconfined aquifer beneath these areas is reported on a semiannual basis.	D,H,P	Z	X	A		
WHC-EP-0394-3		100 AREA 300 AREA	100-BC-5 100-HR-3 100-KR-4 300-FF-5	Dec. 1991	G.L. Kasza M.J. Hartman F.N. Hodges D.C. Weekes	<i>Groundwater Maps of the Hanford Site, June 1991</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196083619	This series of reports is prepared semiannually to present water-level measurements taken each June and December at the Hanford Site. Each report presents a compilation of groundwater-level measurement data from the unconfined aquifer and selected confined aquifer wells that were collected during the subject month. The groundwater data are also presented in graphic form in a series of groundwater maps to illustrate the hydrologic conditions at the Hanford Site. In addition, these reports provide water-level data to support the various site characterization and groundwater monitoring programs currently in progress on the Hanford Site.	D,H,P	Z		A		
WHC-EP-0394-4		100 AREA 300 AREA	100-BC-5 100-HR-3 100-KR-4 300-FF-5	June 1992	G.L. Kasza M.J. Hartman F.N. Hodges D.C. Weekes	<i>Groundwater Maps of the Hanford Site, December 1991</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196096999	The series of semiannual reports provide the results of the water-level measurement activity at the Hanford Site. These reports present a compilation of the groundwater-level measurement data from monitoring wells collected during the months of June or December.	D,H,P	Z,C		A		
WHC-EP-0394-5		100 AREA 300 AREA	100-BC-5 100-HR-3 100-KR-4 300-FF-5	Dec. 1992	G.L. Kasza M.J. Hartman F.N. Hodges D.C. Weekes	<i>Groundwater Maps of the Hanford Site, June 1992</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196119699	This report presents the June 1992 water-level data for the uppermost aquifer beneath the Hanford Site. During June 1992, the depth to the groundwater was measured in over 700 wells.	D,H,P	Z		A		
WHC-EP-0394-6		100 AREA 300 AREA	100-BC-5 100-HR-3 100-KR-4 300-FF-5	Sept. 1993	WHC	<i>Groundwater Maps of the Hanford Site, December 1992</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196097003	This report is the latest update to a series of semiannual reports providing the results of the water-level measurement activity at the Hanford Site. These reports present a compilation of the groundwater-level measurement data from monitoring wells collected during the months of June or December.	D,H,P	Z,C		A		
WHC-EP-0394-7		100 AREA 300 AREA	100-BC-5 100-HR-3 100-KR-4 300-FF-5	Feb. 1994	G.L. Kasza M.J. Hartman W.A. Jordan D.C. Weekes	<i>Groundwater Maps of the Hanford Site, June 1993</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196096952	This report presents the June 1993 water-level data for the uppermost aquifer beneath the Hanford Site. During that month, the depth to the groundwater was measured in over 700 wells.	D,H,P	Z		A		
WHC-EP-0394-8		100 AREA 300 AREA	100-BC-5 100-HR-3 100-KR-4 300-FF-5	July 1994	G.L. Kasza M.J. Hartman W.A. Jordan J.V. Borghese	<i>Groundwater Maps of the Hanford Site, December 1993</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196074919	The report is the latest update to a series of semiannual reports providing the results of the water-level measurement activity at the Hanford Site. These reports present a compilation of the groundwater-level measurement data from monitoring wells collected during the months of June or December.	D,H,P	Z,C		A		
WHC-EP-0394-9		100 AREA 200 AREA 300 AREA 1100 AREA	100-BC-5 100-HR-3 100-KR-4 300-FF-5	Dec. 1994	J.A. Serkowski W.A. Jordan M.J. Hartman	<i>Groundwater Maps of the Hanford Site, June 1994</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196041820	This report is a continuation of reports that document the configuration of the uppermost unconfined aquifer beneath the Hanford Site. This series presents the results of the semiannual water-level measurement program and the water table maps generated from these measurements. The reports document the changes in groundwater levels at the Hanford Site during the transition from nuclear material production to environmental restoration and remediation.	D,H,P	Z		A,M		

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WHC-EP-0448		100 AREA	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	Apr. 1992	M.R. Sackschewsky D.S. Landeen	<i>Fiscal Year 1991 100 Areas CERCLA Ecological Investigations</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196133899	The status of the ecological investigations conducted by WHC during FY 1991 at the 100-HR-3 and 100-BC-5 OUs associated with H, D, DR, B, and C Reactors. The ecological investigations provide a basic description of the flora and fauna that inhabit the OUs, emphasizing species that have been given special status under existing state and/or federal laws. Such a description may allow for the identification of indicator species that can be monitored to assess the effectiveness of corrective actions. The 1991 WHC field investigations have concentrated on the following: (1) bird surveys, (2) mammal and insect surveys, (3) vegetation surveys, and (4) vegetation sampling. These ecological field investigations identify possible contaminant transport pathways (terrestrial and aquatic) and evaluate existing concentrations of contaminants in biota associated with the OUs. The COCs are those that have been detected in groundwater and springs and those that have been released to disposal facilities overlying the OUs.	D,H,P	E	X,Y,S	A	YES	
WHC-EP-0510	DRAFT	100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	Oct. 1992	R.E. Fitzner, S.G. Weiss	<i>Bald Eagle Site Management Plan for the Hanford Site, South Central Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196110616	Bald eagles regularly use the Hanford Site in south-central Washington State during winter months for roosting, perching, and foraging. Each of these activities requires buffer zones to protect eagles from human disturbances. The buffer zones listed in this document have been recommended as a way to protect the eagles. Buffer zones developed in this plan follow recommended guidelines and are intended for use in planning and conducting CERCLA and/or RCRA investigations and other Hanford Site activities.	D,H	E			NO	NO
WHC-EP-0510	REV. 1	100 AREA	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	Feb. 1994	R.E. Fitzner, S.G. Weiss	<i>Bald Eagle Site Management Plan for the Hanford Site, South-Central Washington</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196110616	The CERCLA RIs of waste sites on the Hanford Site will involve lands containing or adjacent to a bald eagle nest, winter concentration areas, or communal night roost. Because these CERCLA investigations may affect bald eagles and to meet the requirements of WAC 232-12-292, "Permanent Regulations," "Bald Eagle Protection Rules," DOE has prepared this Bald Eagle Site Management Plan. However, it is intended that this management plan be used or updated so it remains applicable to future activities that may affect bald eagles on the Hanford Site.	D,H,P	Z,C,E,T		A	NO	NO
WHC-EP-0513		100-BC 100-D 100-F 100-H 100-K 100-N 200 AREA 300 AREA 600 AREA 1100 AREA		June 1994	R.E. Fitzner, S.G. Weiss J.A. Stegen	<i>Threatened and Endangered Wildlife Species of the Hanford Site Related to CERCLA Characterization Activities</i>	http://www.osti.gov/scitech/biblio/10167540	Because the Hanford Site in south-central Washington State was placed on the NPL to be remediated, DOE-RL began waste site characterization activities. These activities are being conducted in the 100, 200, 300, 600 and 1100 Areas of the Hanford Site in a number of OUs. Activities include nonintrusive activities (e.g., surface radiation surveys, GPR surveys, geologic investigations, and surface water and sediment sampling) and intrusive activities (test pit soil sampling, waste site cleanup and borehole and well drilling). Other work includes air monitoring, ecological investigations, and cultural resources investigations. To protect species of concern, potential habitats should be avoided during certain times of the year. This document identifies areas of potential habitat and avoidance times for each species. Please note that the degree of avoidance depends on the human and wildlife activity. Best professional judgment by qualified individuals is critical in identifying the needs of threatened and endangered species protection during site characterization and eventual cleanup.	H,D,P	G,Z,T,E		A,M	YES	YES

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
WHC-EP-0601		100-BC 100-H 100-F 100-N 100-D	100-BC-1	Oct. 1992	WHC, R.M. Mitchell, S.G. Weiss	<i>A Synthesis of Ecological Data from the 100 Areas of the Hanford Site</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196133322	This document provides complete plant and wildlife species lists for the Hanford Site and information on levels of contamination (as current as possible) in biota. A list of major species has also been proposed. These species are structurally or functionally important in the ecosystem, are granted protective management status, provide an environmental service to humans, or serve as a possibly important pathway for contaminant movement. From this information, potential indicator species (i.e., those that might be used to evaluate future prevailing environmental conditions at the Hanford Site) have been suggested. Because of the large amount of information available regarding biota on the Hanford Site, and to make review of the two important ecosystems (Columbia River and terrestrial) easier, this document discusses each ecosystem independently. A large amount of information is associated with the aquatic resources of the Columbia River, which borders each of the 100 Area. However, much of the information related to terrestrial ecology has been collected in the Arid Lands Ecology Reserve and 200 Area. Therefore, the available information is used for reference in this document, with the assumption that most communities in these areas demonstrate a similarity of life forms. Unique studies conducted on manmade ponds and ditches in the 200 Area that could provide information on Columbia River studies are also discussed in this document.	D	C	Y		NO	NO
WHC-EP-0609		100-BC 100-DR	100-BC-1 100-BC-2 100-BC-5 100-DR-1 100-DR-2	Dec. 1992	WHC, R.E. Peterson, V.G. Johnson	<i>Riverbank Seepage of Groundwater Along the 100 Area Shoreline, Hanford Site</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196124079	Chemical and radiological data are described for samples of riverbank seepage, near-shore river water, and sediment associated with seepage. Sampling locations are along the right bank (generally southern shoreline) of the Columbia River on the Hanford Site. Locations extend from the 100-B Area approximately 26 mi downstream to the northern edge of the Hanford Townsite. The data were obtained during environmental surveillance activities and also from RIs to characterize the influence of contaminated groundwater on the Columbia River. This report expands the initial interpretations of analytical results from the 1991 sampling project conducted along the 100 Area shoreline (DOE/RL-92-12). It is intended to support the objectives of a Tri-Party Agreement milestone pertaining to the impact of contaminated groundwater from the Hanford Site entering the Columbia River through shoreline seepage. The interpretations presented discuss Hanford Site contamination indicators in three different contexts: <ul style="list-style-type: none"> • Riverbank seepage water quality data obtained in 1991 are compared to previously collected data. • Riverbank seepage water quality is compared to groundwater quality observed in wells located along the shoreline. • Selected chemical and radiological characteristics of sediments associated with riverbank seepage are described. 	D,H,P	Z	Y,S	A	NO	NO
WHC-MR-0257		100-DR	100-DR-1	May 1991	WHC, J.R. Kunk, T.H. Mitchell	<i>100-DR-1 Geophysical Surveys</i>	http://pdw.hanford.gov/arpir/index.cfm/docDetail?accession=D196078996	This report summarizes the results of the geophysical surveys conducted at the 100-DR-1 OU. The surveys were conducted by WHC's Geosciences Group. The geophysical method used was GPR.	D,H,P	G				
WHC-MR-0272	NA	100 AREA	100-DR-1 100-HR-1 100-HR-3	Nov. 1991	WHC	<i>Ecological Data Compilations Investigations Status Report for 100 Area Operable Units</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196079006	This report summarizes the status of the terrestrial and aquatic ecological data compilation investigations that were conducted in FY 1991 for the 100-DR-1, 100-HR-1, and 100-HR-3 OUs.	D,H,P	E,Z	Y,S	A		

Table B-2. Annotated Bibliography

Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
WHC-SA-1674-VA	NA	100 AREA	100-HR-3	Dec. 1992	R.E. Peterson, M.P. Connelly	<i>Characterization of Chromium Plume in Groundwater Along Columbia River Shoreline</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196006110	This investigation is being conducted to provide information for two areas of cleanup-related decision making. First, existing data will be used to calculate the volume of groundwater affected by chromium contamination and the total amount of chromium contained in the plume. This information will be used to help design treatment processes, if risk-based decisions conclude that remediation is warranted. Second, there is uncertainty regarding sources for the chromium contamination currently observed. The locations of disposal areas and their period of use are not well documented. By better characterizing changes in the plume characteristics over time, it may be possible to evaluate the potential for currently unidentified continuing sources of chromium.	D,H,P	Z,G	P,Y,S			
WHC-SD-EN-AP-060	REV. 1	100-D/DR100-H	100-HR-3	Nov. 1991	WHC, J.W. Roberts	<i>Description of Work for the 100-HR-3 Groundwater Operable Unit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196078977	This description of work details the field activities associated with 22 groundwater wells in the 100-HR-3 OU and will serve as a field guide for those performing the work.		G	Y		NO	NO
WHC-SD-EN-AP-067	REV. 2	100-DR	100-DR-1	June 1992	WHC, M.T. Stankovich	<i>100-DR-1 Area Nonintrusive Source Investigation Activities</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D196100573	This document details the field activities associated with nonintrusive source sampling in 100-DR-1 OU and will serve as a field guide for those performing the work.	D,P	G,Z	Y		NO	NO
WHC-SD-EN-AP-139	REV. 0	100-DR	100-DR-2 100-DR-1	Aug. 1993	N. Naiknimbalkar	<i>Description of Work for 100-DR-2 Operable Unit Vadose Drilling/Test Pits</i>	http://www.osti.gov/scitech/search/author/%2522Naiknimbalkar,%2520N.%2522	This description of work details the field activities associated with boreholes/test pits in the 100-DR-2 OU and will serve as a field guide for those performing the work. It should be used in conjunction with the work plan for the 100-DR-2 OU for general investigation strategy and with <i>Environmental Investigations and Site Characterization Manual</i> (WHC-CM-7-7) for specific procedures.	D,H,P	G	Y	A,M	NO	NO
WHC-SD-EN-AP-168	REV. 0	100 AREA	100-HR-3	Apr. 18, 1994	D.J. Vaught	<i>In Situ Permeable Flow Sensor Installation at 100-H Description of Work</i>	http://www.osti.gov/scitech/biblio/10157060	This description of work details the field activities associated with drilling four boreholes in the 100-HR-3 OU for placement of four in situ permeable flow sensors near the 183-H Basin. A sonic drill rig funded under a Cooperative Research and Development Agreement will be used to drill the boreholes. This project includes installation of automatic data logging and telemetry equipment. Each sensor will be supplied with a data logger at the surface, which will be wired to a cellular phone onsite or to an existing telemetry station to transmit data to a computer at 2440 Stevens Center in Richland. Power to operate the sensors and data loggers will be supplied by a small gasoline or diesel generator. Processed data will be used to develop a three-dimensional flow net of the unconfined aquifer near and within the Columbia River-influenced mixing zone.	P					
WHC-SD-EN-AP-186	REV. 0	100 AREA	105-DR	June 12, 1995	Z.C. Knaus	<i>105-DR Large Sodium Fire Facility Decontamination, Sampling, and Analysis Plan</i>	http://www.osti.gov/bri/dge/purl.cover.jsp?purl=/95212-izlX2p/webviewable/	This SAP describes decontamination and the Phase I sampling and analysis activities associated with the proposed RCRA partial clean closure of the 105-DR Large Sodium Fire Facility in accordance with WAC 173-303-610, "Dangerous Waste Regulations," "Closure and Post-Closure."	D,H,P			A	NO	NO
WHC-SD-EN-TI-006	REV. 0	100-BC 100-K 100-D 100-N 100-H 100-F	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	1992	R.E. Peterson	<i>Hydrologic and Geologic Data Available for the Region North of Gable Mountain, Hanford Site, Washington</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196090833	This document provides a catalog of hydrologic and geologic data that are currently available for the northern portion of the Hanford Site. The data include geologic logs and samples, groundwater chemistry, water-level, and surface water information. All known wells are listed with well construction information and current users.					NO	NO
WHC-SD-EN-TI-011	REV. 0	100-BC 100-H 100-F 100-N 100-D 100-K	100-BC-1 100-BC-2 100-BC-3 100-BC-4 100-BC-5	1992	K.A. Lindsey	<i>Geology of the Northern Part of the Hanford Site: Outline of Data Sources and the Geologic Setting of 100 Areas</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196090817	This report outlines the types of geologic data for the Hanford Site north of the Gable Mountain anticline and identifies where this data can be obtained. Based on the available data, preliminary geologic interpretations will be presented. These interpretations will be divided into four site-specific sections: (1) 100-BC and 100-K, (2) 100-N and 100-D, (3) 100-H, and (4) 100-F. This report includes a brief discussion of regional geology in order to put the study area in its geologic context.		G			NO	NO

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
WHC-SD-EN-TI-181	REV. 0	100-D	100-DR-1 100-DR-2 100-DR-3	Aug. 1993	R.W. Carpenter	<i>100-D Area Technical Baseline Report</i>	http://www.osti.gov/bri/dge/product/biblio.jsp?query_id=25&page=0&osti_id=10185042	This document supports the environmental remediation efforts in the 100 Area by providing remediation planners with key data characterizing the D and DR Reactor sites. It provides operational histories of the 100-D/DR Areas, as well as each of their associated liquid and solid waste sites.	D,H,P	E	X,Y,S	A,M	YES	YES
WHC-SD-EN-TI-195	REV. 0	100-D	105-DR Pluto Crib 116-DR-4	Oct. 1993	K.A. Bergstrom	<i>Geophysical Survey of 105-DR Pluto Crib, 116-DR-4, 100-D Area</i>	http://www.osti.gov/bri/dge/product/biblio.jsp?query_id=29&page=1&osti_id=10190699	The objective of this geophysical survey was to verify the location of the 105-DR Pluto Crib, 116-DR-4. A surface monument currently marks the location. The crib is 10 ft × 10 ft and is 15 ft deep. GPR was the geophysical method selected to conduct the investigation.	D				NO	NO
WHC-SD-EN-TI-198	REV. 0	100 AREA	Vernita to Hanford Townsite	Sept. 8, 1993	S.G. Weiss	<i>100 Area Columbia River Sediment Sampling</i>	http://www.osti.gov/bri/dge/product/biblio.jsp?query_id=22&page=0&osti_id=10184754	The purpose of this investigation was to determine if radiological and chemical contaminants are present in Columbia River sediments. This study is among the activities identified in DOE/RL-92-28 and is intended as a first step in establishing an appropriate and comprehensive river sediment sampling program. The study was not intended to determine the extent of contamination.	H,D,P	G,Z,T	X,Y,S	A,M	NO	NO
WHC-SD-EN-TI-212	REV. 0	100-DR	100-DR-1	Jan. 28, 1994	N.M. Naiknimbalkar	<i>100-DR-1 Radiological Surveys</i>	http://www.osti.gov/scitech/biblio/10126409	This report summarizes and documents the results of the radiological surveys conducted over the surface of the 100-DR-1 OU. This report explains the survey methodology using the Ultrasonic Ranging and Data System. The 100-DR-1 radiological survey field task consisted of two activities: (1) characterization of the OU-specific background conditions, and (2) a radiological survey of the OU's surface area. The radiological survey, along with the background study, were conducted by WHC's 100 Area Restoration and Remediation Health Physics Organization. The survey methodology was based on use of the Ultrasonic Ranging and Data System for automated recording of the gross-gamma radiation levels at or near 6 in. and at 3 ft from the surface soil.	D,H,P			M	NO	NO
WHC-SD-EN-TI-216	REV. 0	100 AREA 200 AREA	100-BC 100-D 100-H 100-K 100-F 100-N	Jan. 1994	WHC, J.A. Stegen	<i>Vegetation Communities Associated with the 100 Area and 200 Area Facilities on the Hanford Site</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196108768	The Hanford Site lies within the broad, semiarid, shrub-steppe vegetation zone of the Columbia Basin. Thirteen different habitat types on the Hanford Site were mapped in PNL-8942, <i>Habitat Types on the Hanford Site: Wildlife and Plant Species of Concern</i> . In a broad sense, this classification is correct. On a smaller scale, however, finer delineations are possible. This study was conducted to determine the plant communities and to estimate the vegetation cover in and directly adjacent to the 100 and 200 Areas, primarily in relation to waste sites, as part of a comprehensive ecological study for the CERCLA characterization of the 100 and 200 Areas. During the summer of 1993, field surveys were conducted, and a map of vegetation communities in each area, including dominant species associations, was produced. The field surveys consisted of qualitative community delineations. The community delineations described were made by field reconnaissance and are qualitative in nature. The delineations were made by visually determining the dominant plant species or vegetation types and were based on the species most apparent at the time of inspection. Additionally, 38 transects were run in these plant communities to obtain a more accurate representation of the community. Because habitat disturbances from construction/operational activities continue to occur in these areas, users of this information should use caution when applying these maps without a current ground survey. This work will complement large-scale habitat maps of the Hanford Site.					NO	NO

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
WHC-SD-EN-TP-031	REV. 0	100 AREA	100-HR-3	Mar. 28, 1994	L.C. Swanson, M.J. Hartman	<i>Aquifer Test Plan for the 100-HR-3 Operable Unit</i>	http://www.osti.gov/scitech/servlets/purl/10144201	A primary objective of the testing program is to assess the usefulness of slug tests, slug interference tests, and dipole tests to estimate aquifer properties at the Hanford Site. If these tests produce reliable aquifer properties, these methods may provide adequate aquifer properties for modeling and even remediation (e.g., for the chromium treatability study in the 100-H Area). Recent aquifer testing in the 100-HR-3 OU consisted of reconnaissance-level slug tests. This proposed testing program is expected to provide additional estimates of aquifer parameters including vertical hydraulic conductivity and storativity, and to substantiate previously estimated values of horizontal hydraulic conductivity. A second objective of the testing is to evaluate the applicability of slug interference and dipole flow testing for hydraulic characterization in an unconfined aquifer.	D,H,P	Z,G	Y,X	A,M	YES	
WHC-SD-ER-TI-006	REV. 0	100-BC 100-K 100-H 100-N		1991	R.K. Ledgerwood	<i>Summaries of Well Construction Data and Field Observations for Existing 100 Aggregate Area Operable Unit Resource Protection Wells</i>	http://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=D196076165	This document summarizes available construction data and field observations for existing resource protection groundwater wells within or associated with the 100 Aggregate Area of the Hanford Site. Construction data and field observation summaries tabulate pertinent construction data and results of field observations of the wells. Preliminary recommendations for remediation based on the data are also provided. The as-built drawing or well construction and completion summary is based on review of existing drilling records and the results of field observations.					NO	NO
WMP-17678	REV. 0	100-D/DR	100-DR-1 100-HR-3	July 2003	FH, R.O. Mahood	<i>In Situ REDOX Manipulation Third Quarter Fiscal Year 2003 Technical Memorandum</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D2771601	This technical memorandum summarizes the activities and performance monitoring results for the ISRM treatment zone west of the D/DR Reactors in the 100-D Area. The report encompasses the third quarter of FY 2003, which covers the period from April 1 through June 30, 2003.	P	Z	Y,X,P	A	NO	NO
WMP-19830	REV. 0	100-D/DR	100-DR-1 100-HR-3	Aug. 2004	FH, R.O. Mahood	<i>In Situ REDOX Manipulation First Quarter Fiscal Year 2004 Technical Memorandum</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D6147507	This technical memorandum summarizes the activities and performance monitoring results for the ISRM treatment zone west of the D/DR Reactors in the 100-D Area. The report encompasses the first quarter of FY 2004, from October 1 through December 31, 2003.	P	Z	Y,X,P		NO	NO
WMP-20914	REV. 0	100-D/DR	100-DR-1 100-HR-3	Aug. 2004	FH	<i>In Situ REDOX Manipulation Second Quarter Fiscal Year 2004 Technical Memorandum</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D6147382	This technical memorandum summarizes the activities and performance monitoring results for the ISRM treatment zone west of the D/DR Reactors in the 100-D Area. This report encompasses the second quarter of FY 2004, from January 1 through March 31, 2004.	P	Z	Y,X,P		NO	NO
WMP-25223	REV. 0	100 AREA	100-HR-3	Mar. 23, 2005	FH	<i>Description of Work for 2005 Installation of Groundwater Wells at the In Situ Redox Manipulation Project, 100-HR-3 Operable Unit</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D7785575	This description of work describes the ISRM treatment zone well drilling, construction, and mitigation subsurface soil sampling to be conducted during FY 2005 as part of the ISRM interim remedial action at 100-D/DR Areas in the 100-HR-3 OU. The new wells will be installed near two selected well locations along the ISRM treatment zone: one new well upgradient of each selected treatment zone well, and the second new well downgradient of each well.	D,H,P	Z,G	Y,S	A,M	YES	

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Document #	REV./ Draft/ Vol.	Area	OU	Date	Authors/ Originator	Title	Link	Summary	Background Site	Physical Setting	Contaminant Description	Analysis and Modeling	Risk Assessment	Alternatives Development
WMP-26460	REV. 0	100 AREA	100-HR-3	Oct. 27, 2005	FH	<i>Four Characterization and Monitoring Wells Drilled in the 100-D/DR ISRM Treatment Zone in Fiscal Year 2005: Summary of Drilling Activities</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=DA01231202	This report describes the FY 2005 field activities associated with the installation of four characterization and monitoring wells drilled in the 100-D Area to support 100-HR-3 OU remediation activities. These wells were installed by FH as part of the ISRM interim remedial action at 100-D/DR in the 100-HR-3 OU. In particular, these wells were installed to support recommendations for understanding the loss of reductive capacity in the ISRM barrier as put forward by the Hanford Site.	D,P	G,Z	P,S,Y	A		
WMP-28119	REV. 0	100-D		Feb. 6, 2006	S.W. Petersen	<i>Mending the In Situ Manipulation Barrier</i>	http://www.osti.gov/scitech/biblio/876695	In early 2004, DOE-RL and FH requested technical assistance from the DOE EM-23 Technical Assistance Program to provide a team of technical experts to develop recommendations for mending the ISRM barrier in the 100-D Area. To accommodate this request, EM-23 provided support to convene and participate in a 2.5-day workshop with the objective of identifying and recommending options to enhance the performance of the 100-D Area reactive barrier and of a planned extension to the northeast. This report provides written documentation of the team's findings and recommendations.	H,D	Z	Y	A,M	NO	YES
		Entire Hanford Site	100-BC-5 100-FR-3 100-HR-3 100-KR-4 100-NR-2	July 27, 1999	DOE-RL	<i>Risk/Impact Technical Report for the Hanford Groundwater/Vadose Zone Integration Project Final Draft</i>	http://pdw.hanford.gov/arpir/pdf.cfm?accession=D199158735	The purpose of this technical report is to describe methods for evaluating different kinds of risks and other effects that could result from multiple contamination sources at the Hanford Site. The overall goal is to strengthen the scientific foundation of environmental decisions to be made in order to help the groundwater/vadose zone component of the Environmental Management Program move forward through the assessment and implementation phase with the best knowledge available.	D,H,P	G,Z,C,E,T	Y,S,X,P	A,M	YES	YES

Notes: The acronyms/terms used in this table are defined in the list of Terms in the front matter of this appendix.

The codes identified in this table are defined as follows:

- A = analysis
- C = climate
- D = description
- E = ecology
- G = geology
- H = history
- M = modeling
- P = processes
- S = source
- T = topography
- X = release
- Y = COPC
- Z = hydrology

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