

## **APPENDIX H.6**

### **WRAP (CP-OP-4, CENTRAL PLATEAU) EVALUATION UNIT SUMMARY TEMPLATE**

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## **PART I. EXECUTIVE SUMMARY**

### **EU LOCATION**

The Waste Receiving and Processing Facility (WRAP) is located on the Central Plateau, in the 200W area.

### **RELATED EUS**

CWC, T Plant, LLBG

### **PRIMARY CONTAMINANTS, CONTAMINATED MEDIA AND WASTES**

Drums and boxes of low-level waste and transuranic waste for permanent disposal. Low-level waste that is processed at WRAP will be disposed of on the Hanford Site. Transuranic waste that is processed at WRAP will be shipped to the Waste Isolation Pilot Plant in New Mexico for disposal.<sup>1</sup>

### **BRIEF NARRATIVE DESCRIPTION**

The Waste Receiving and Processing Facility in Hanford's 200 West Area was constructed to process drums and boxes of low-level waste and transuranic waste for permanent disposal. The containers which are sent to WRAP include those which were stored in the 1970's and 1980's in the Low-Level Burial Grounds with the intention to retrieve them at a later date. WRAP crews inspect, treat, characterize, and re-package, if necessary, drums and boxes of waste that are removed from the burial grounds at the Site. Repacking occurs in "glove boxes" (see glove box definition) to protect employees from exposure to potentially radioactive materials. Characterization work includes the process of x-raying the contents of each drum to determine what is inside, and documenting what is found. Technicians write down the contents of each drum and, in some cases, do a voice recording during the process where they give a kind of "play by play" of what they see as they x-ray the container. This kind of work is necessary to ensure that any waste sent to another location meets the acceptance criteria of the facility where the waste will be permanently disposed of as well as if the waste requires re-packaging. Low-level waste that is processed at WRAP will be disposed of on the Hanford Site. Transuranic waste that is processed at WRAP will be shipped to the Waste Isolation Pilot Plant in New Mexico for disposal.<sup>2</sup>

### **SUMMARY TABLES OF RISKS AND POTENTIAL IMPACTS TO RECEPTORS**

Table H.6-1 provides a summary of nuclear and industrial safety related risks to humans and impacts to important physical Hanford site resources.

#### **Human Health**

A Facility Worker is deemed to be an individual located anywhere within the physical boundaries or immediate areas around the outside the facility; a Co-located Person is an individual located 100 meters

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<sup>1</sup> <http://www.hanford.gov/page.cfm/WRAP>

<sup>2</sup> <http://www.hanford.gov/page.cfm/WRAP>

from the facility boundary; and Public is an individual located at the closest point on the Hanford Site boundary not subject to DOE access control. The nuclear related risks to humans are based on unmitigated (unprotected or controlled conditions) dose exposures expressed in a range of from “low” to “high” according to the consequence levels. The estimated mitigated exposure that takes engineered and administrative controls and protections into consideration, when this information is available, is shown in parentheses within Table H.6-1, “IS” denotes insufficient information is available to provide a rating. There is one event considered in the DSA that has been considered in this EU template that is discussed below.

## **Groundwater and Columbia River**

Direct impacts to groundwater resources and the Columbia River have been rated based on available information for the current status and estimates for future time periods. These impacts are also expressed in a range of from *Not Discernible (ND)* to *Very High*.

## **Ecological Resources**

The risk ratings are based on the degree of physical disruption (and potential additional exposure to contaminants) in the current status and as a potential result of remediation options.

## **Cultural Resources<sup>3</sup>**

No risk ratings are provided for Cultural Resources. Table H.6-1 identifies the three overlapping Cultural Resource landscapes that have been evaluated: Native American (approximately 10,000 years ago to the present); Pre-Hanford Era (1805 to 1943) and Manhattan/Cold War Era (1943 to 1990); and provides initial information on whether an impact (both direct and indirect) is KNOWN (presence of cultural resources established), UNKNOWN (uncertainty about presence of cultural resources), or NONE (no cultural resources present) based on written or oral documentation gathered on the entire EU and buffer area. Direct impacts include but are not limited to physical destruction (all or part) or alteration such as diminished integrity. Indirect impacts include but are not limited to the introduction of visual, atmospheric, or audible elements that diminish the cultural resource’s significant historic features. Impacts to Cultural Resources as a result of proposed future cleanup activities will be evaluated in depth under Section 106 of the National Historic Preservation Act (16 USC 470, et. seq.) during the planning for remedial action.

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<sup>3</sup> References throughout this Evaluation Unit Summary Template supporting analyses related to Ecological Resources and/or Cultural Resources may be found in Appendices J and K, respectively. Refer to the specific EU when searching for the reference.

**Table H.6-1. Risk Rating Summary (for Human Health, unmitigated nuclear safety basis indicated, mitigated basis indicated in parentheses (e.g., “High” (Low))).**

Population or Resource		Evaluation Time Period	
		Active Cleanup (to 2064)	
		Current Condition: Stabilization & Deactivation	From Cleanup Actions: Final D&D
Human Health	Facility Worker	<b>S&amp;D:</b> High (Low)	<b>Proposed method:</b> IS (IS)
	Co-located Person	<b>S&amp;D:</b> High (Low)	<b>Proposed method:</b> IS (IS)
	Public	<b>S&amp;D:</b> Low (Low)	<b>Proposed method:</b> IS (IS)
Environmental	Groundwater <sup>(a)</sup>	<i>Not Discernible (ND)</i>	<i>ND</i>
	Columbia River <sup>(a)</sup>	<i>ND</i>	<i>ND</i>
	Ecological Resources <sup>(b)</sup>	<i>ND</i>	No cleanup decisions have been made for this EU. Estimated to be Low to Medium
Social	Cultural Resources <sup>(b)</sup>	<b>Native American</b> Direct: Unknown Indirect: Known <b>Historic Pre-Hanford</b> Direct: Unknown Indirect: Known <b>Manhattan/Cold War</b> Direct: None Indirect: Known	No cleanup decisions have been made for this EU. Estimated to be: <b>Native American</b> Direct: Unknown Indirect: Known <b>Historic Pre-Hanford</b> Direct: Unknown Indirect: Known <b>Manhattan/Cold War</b> Direct: None Indirect: Known

- a. Threat to groundwater or the Columbia River from Group A and B primary contaminants (PCs) (Table 6-1, CRESP 2015) remaining in the vadose zone. There are no vadose zone inventories associated with this EU (because of the nature of the facilities comprising the EU), and thus no threat to the vadose zone, groundwater, or the Columbia River.
- b. For both Ecological and Cultural Resources see Appendices J and K, respectively, for a complete description of Ecological Field Assessments and literature review for Cultural Resources. Ecological ratings are described in Table 4-11 of the Final Report. (IS = insufficient information)



## SUPPORT FOR RISK AND IMPACT RATINGS FOR EACH POPULATION OR RESOURCE HUMAN HEALTH

### Current

There are 14 accident scenarios postulated in the Documented Safety Analysis as being applicable to WRAP. The following selected accident scenarios from the DSA are the highest consequence events postulated for WRAP<sup>4</sup>:

Large Fire (WRAP Glovebox Deflagration): Fire involving 8 drums or other fire involving 82.5 De-Ci due to mishandling, equipment malfunction or properties of TRU waste cause burning of container contents resulting in breach of glovebox or greenhouse confinement. Other release phenomena included in this bin are fires that spread as a result of incompatible materials, accidental crushing of a TRU waste drum in the LLW supercompactor, breach of pressurized containers, and ignition from a spark or other ignition source.

*Unmitigated Consequence*: Co-located person- (770 rem) High; Public – (.73 rem) Low

Mitigation: Fire suppression systems, Building active ventilation systems, including associated exhaust HEPA filters, Building Structure, Container Vents

*Mitigated Risk*: Co-located Person: Low; Public- Low

Small Inside Fire: Small Inside Fire: A vehicle impacts a single container, the container breaches, and any local ignition source burns the waste. The accident bounds impacts to a single container, pallet of containers, or a HEPA filter because it assumes fully loaded containers pursuant to the SARAH. The unmitigated frequency is Anticipated.

*Unmitigated Consequence*: Co-located Person – (704 rem) High; Public – (0.67 rem) Low

Mitigation: Fire suppression systems, Building active ventilation systems, including associated exhaust HEPA filters, Building Structure, Container Vents, Vehicle Control ACs

*Mitigated Risk*: Co-located Person: Low; Public- Low

Criticality: Solid waste criticality due to over-batching waste containers in an unacceptable stacking configuration with fissionable materials configured and addition of moderator.

*Unmitigated Consequence*: Co-located Person- (643 rem) High; Public- (0.02 rem) Low

Mitigation: The limited curbing height, minimal slope floor, Building height and obstructions limit stacking height, criticality safety program

*Mitigated Risk*: Co-located Person- Low; Public- Low

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<sup>4</sup> HNF 14741 Pages xii-xvi

### **Risks and Potential Impacts from Selected or Potential Cleanup Approaches**

WRAP is currently in standby mode greatly reducing its risk as an operating facility. The facility may be required in the near-term future for cleanup projects on the Hanford Site, increasing the inventory and bringing workers back into the facility.

### **Groundwater, Vadose Zone, and Columbia River**

There are no reported vadose zone inventories (because of the nature of the facilities that comprise the EU) and thus no significant threats to the vadose zone, groundwater, or the Columbia River for the purposes of this Review.

### **Ecological Resources**

#### **Current**

9% of EU and 4% of the buffer area are level 3 or higher resources. Small patch of sagebrush in EU, and the habitat is not connected to any level 2 or higher resources. EU borders level 2 resources (formerly burned area).

### **Risks and Potential Impacts from Selected or Potential Cleanup Approaches**

No cleanup decisions have been made, and as a result, the potential effects of cleanup on ecological resources are uncertain for the active cleanup evaluation period.

### **Cultural Resources**

#### **Current**

Much of the land within the EU is heavily disturbed. Almost the entire EU has been inventoried for cultural resources. Geomorphology indicates a moderate potential to contain intact archaeological resources on the surface and/or subsurface. Traditional cultural places are visible from EU. A portion of a National Register eligible historic/ethnohistoric trail/road is located within 500 meters of the EU. Three archaeological resources are located within 500 meters of the EU.

The National Register eligible Manhattan Project/Cold War Era resource located within 500 meters of the EU has already been mitigated.

### **Risks and Potential Impacts from Selected or Potential Cleanup Approaches**

No cleanup decisions have been made for the deep vadose zone, and archaeological investigations and monitoring may need to occur prior to remediation. The geomorphology indicates a low to moderate potential for intact archaeological resources. Remediation disturbance may result in impacts to archaeological resources if they are present in the subsurface. No cleanup decisions have been selected, however the potential range of impacts could include: Temporary indirect effects during remediation; Permanent indirect effects are possible if contamination remains after remediation.

The National Register eligible Manhattan Project/Cold War Era resource located within 500 meters of the EU has already been mitigated.

### **Considerations for Timing of the Cleanup Actions**

The potential impact of a delay in cleanup actions would be the continued storage of the current inventory at WRAP. At present, WRAP is on standby, so another potential future impact would be the restart of treatment and repackaging operations at the facility.

## **Near-Term, Post-Cleanup Risks and Potential Impacts**

The post-cleanup risks and potential impacts are dependent on D&D methods yet to be determined.

## **PART II. ADMINISTRATIVE INFORMATION**

### **OU AND/OR TSDF DESIGNATION(s)**

Not Applicable

### **COMMON NAME(s) FOR EU**

Waste Receiving and Processing Facility (WRAP)

### **KEY WORDS**

LLW, MLLW, TRU, TRUM

### **REGULATORY STATUS:**

#### **Regulatory basis<sup>5</sup>**

10 CFR 20, "Standards for Protection Against Radiation," *Code of Federal Regulations*. Available at: <http://www.gpo.gov/fdsys/pkg/CFR-2010-title10-vol1/xml/CFR-2010-title10-vol1-part20.xml>.

*Atomic Energy Act of 1954*, 42 USC 2011, et seq. Available at:

<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0980/ml022200075-vol1.pdf>.

*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*, 42 USC 9601, et seq., Pub. L. 107-377, December 31, 2002. Available at: <http://epw.senate.gov/cercla.pdf>.

Ecology, EPA, and DOE, 1989, *Hanford Federal Facility Agreement and Consent Order Action Plan*, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington. Available at: <http://www.hanford.gov/?page=82>.

RCW 70.105, "Hazardous Waste Management," *Revised Code of Washington*, Olympia, Washington. Available at: <http://apps.leg.wa.gov/RCW/default.aspx?cite=70.105>.

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<sup>5</sup> HNF-19169, Revision 13, page A-3

*Resource Conservation and Recovery Act of 1976*, 42 USC 6901, et seq. Available at:  
<http://epw.senate.gov/rcra.pdf>.

WAC 173-303-070, “Dangerous Waste Regulations,” “Designation of Dangerous Waste,” *Washington Administrative Code*, Olympia, Washington. Available at:  
<http://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-070>.

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<http://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-080>.

WAC 173-303-081, “Dangerous Waste Regulations,” “Discarded Chemical Products,” *Washington Administrative Code*, Olympia, Washington. Available at:  
<http://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-081>.

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<http://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-082>.

WAC 173-303-090, “Dangerous Waste Regulations,” “Dangerous Waste Characteristics,” *Washington Administrative Code*, Olympia, Washington. Available at:  
<http://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-090>.

WAC 173-303-100, “Dangerous Waste Regulations,” “Dangerous Waste Criteria,” *Washington Administrative Code*, Olympia, Washington. Available at:  
<http://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-100>.

*Waste Isolation Pilot Plant Land Withdrawal Act*, Pub. L. 102-579. Available at:  
<http://www.westgov.org/wga/initiatives/wipp/PIGWeb/Introduction/WIPP%20Land%20Withdrawal%20Act.pdf>.

## Applicable regulatory documentation

DOE-STD-3009-94, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*;

PRC-PRO-NS-700 (previously HNF-PRO-700), *Safety Basis Development*;

HNF-8739, *Hanford Safety Analysis and Risk Assessment Handbook (SARAH)*.

## Applicable Consent Decree or TPA milestones

M-091 Milestone series: The scope of the M-091 Milestone series is to complete removal of the retrievably stored waste (RSW) from the burial grounds and eliminate the backlog of mixed low-level waste (MLLW) and transuranic mixed (TRUM) waste in storage by December 31, 2030. When these milestones are complete, DOE will have successfully treated the MLLW and shipped the TRUM waste offsite for disposal<sup>6</sup>.

The status of the M-091 Milestones as of April 1, 2014 is provided in Table ES-1.

**Table ES-1. Status of M-091 Milestones as of April 1, 2014**

M-091 Milestone	Status	Required Completion Date
M-091-03	Submitted annual revision of TRUM waste and MLLW PMP to Ecology.	6/30/2013
M-091-03	On schedule to submit 2014 annual revision of TRUM waste and MLLW PMP to Ecology.	6/30/2014
M-091-44P	Designation of all RH-TRUM waste and large containers of CH-TRUM waste currently in above ground storage as of June 30, 2003 was completed.	12/31/2013
M-091-40V-T01	Retrieve a minimum of 250 m3 of CH-RSW in fiscal year 2013. This target milestone was not met.	9/30/2013
M-091-46C-T02	Certify 125 m3 of small container CH-TRUM waste. This target milestone was not met	9/30/2013

Table ES-1 taken from: HNF-19169, Revision 13, page iii

## RISK REVIEW EVALUATION INFORMATION

### Completed

3/20/2017

### Evaluated by

Lyndsey Fyffe, Steve Krahn, and Bethany Burkhardt

### Ratings/Impacts Reviewed by

Henry Mayer

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<sup>6</sup> HNF-19169, Revision 13, page iii

## **PART III. SUMMARY DESCRIPTION**

The Waste Receiving and Processing Facility (WRAP) in Hanford's 200 West Area was constructed to process drums and boxes of low-level waste and transuranic waste for permanent disposal. WRAP receives drums and boxes of LLW and TRU from the Low-Level Burial Grounds that were placed there in the 1970s and 1980s. WRAP crews inspect, treat, characterize, and re-package, if necessary, drums and boxes of waste that are removed from the burial grounds at the Site. The main objective of WRAP is to confirm, repackage (if necessary), certify, and/or treat waste for shipment to a treatment, storage, and/or disposal facility.

### **CURRENT LAND USE**

Current land use is Industrial, for Waste Storage, Treatment and Management at the DOE Hanford Site<sup>7</sup>

### **DESIGNATED FUTURE LAND USE**

Industrial Exclusive<sup>8</sup>

### **PRIMARY EU SOURCE COMPONENTS**

#### **Legacy Source Sites**

Not Applicable

#### **High-Level Waste Tanks and Ancillary Equipment**

Not applicable

#### **Groundwater Plumes**

Not applicable

#### **Operating Facilities**

The WRAP operating facility is currently in standby mode. When WRAP is operational, TRU, TRUM, LLW, and LLMW waste may be processed in the TRU or TRU/LLW process lines. In addition, NDE and NDA are performed on waste boxes. The main isotope present in TRU waste is 239Pu. The maximum radioactive material inventory for a single container is assumed to be 82.5 DE-Ci.<sup>9</sup> At a maximum, WRAP was

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<sup>7</sup> The current land use is Industrial, for Waste Storage, Treatment and Management. The SWOC Operating Unit Group Dangerous Waste Management Units are designed for storage but can also perform operations such as: opening, sorting, treating (e.g., segregation, sorting for assignment to treatment), repackaging, sampling, physically/chemically screening to characterize retrieved waste, and to verify the characterization of containers of mixed waste.

<sup>8</sup> SWOC is projected to be operated as long as the waste management mission requires. Thereafter, the Central Plateau is designated for Industrial-Exclusive use. This designation is defined as an area suitable and desirable for treatment, storage, and disposal of hazardous, dangerous, radioactive, and nonradioactive wastes. It includes related activities consistent with Industrial-Exclusive uses. This designation would allow for continued Waste Management operations within the Central Plateau geographic area.

<sup>9</sup> HNF 14741 Page 3-34

designed to receive 6,825 containers each year. If all of these containers were presently stored at WRAP, and they all contained the maximum inventory, there would be 563063 DE-Ci at WRAP.

### D&D of Inactive Facilities

Not Applicable

### LOCATION AND LAYOUT MAPS

The following Figure illustrates the WRAP facility outlined in the red box. The smaller diagram in the bottom right shows the location of WRAP within the context of the entire Hanford Site.



Figure H.6-1. Map of CP-OP-04 WRAP Evaluation Unit.

## PART IV. UNIT DESCRIPTION AND HISTORY

### EU FORMER/CURRENT USE(S)

WRAP is currently in standby mode. When operational, the main objective of WRAP is to confirm, repackage (if necessary), certify, and/or treat waste for shipment to a treatment, storage, and/or disposal facility. Waste containers determined by nondestructive examination/nondestructive assay (NDE/NDA) to meet appropriate disposal criteria can be certified and shipped to a disposal facility or volume-reduced by super compaction, certified, and shipped for disposal. Under normal operating conditions, waste containers determined by NDE/NDA to contain restricted waste (or those requiring additional verification) will be opened, sorted, sampled, and treated when confined by a process enclosure. Then, the restricted waste can be either processed in WRAP, so that it is no longer noncompliant or repackaged for storage, pending treatment at an appropriate facility. The remaining compliant waste would be repackaged, certified, and shipped for disposal. WRAP receives containers (drums or boxes) of CH waste as part of the TRU waste retrieval program. Up to approximately 1,523 TRU drums are expected to enter the TRU or TRU/LLW process enclosures annually. In addition to the containerized waste that will be processed, WRAP also will perform NDE and NDA on approximately 70 waste boxes annually.<sup>10</sup>

### OPERATING FACILITIES

#### 1. Processes that produced the radioactive material and waste contained in the facility

The radioactive material contained at the WRAP facility was produced mostly on the Hanford Site and shipped to WRAP for confirmation, certification, and repackaging and treatment as necessary before shipment to a storage or disposal facility. The majority of the waste is composed of containers which were stored in the 1970's and 1980's in the Low-Level Burial Grounds with the intention to retrieve them at a later date.<sup>11</sup>

#### 2. Primary radioactive and non-radioactive constituents that are considered risk drivers

WRAP contains TRU, TRUM, LLW and MLLW.

#### 3. Containers or storage measures are used for radioactive materials at the facility

Current: Waste stored in the WRAP Operating Unit Group will be packaged in a variety of containers including galvanized or aluminized steel containers or other containers over-packed, as necessary, to meet the Waste Acceptance Criteria (WAC). The size of containers varies greatly from small drums, uniquely configured containers, to large boxes. Containers received in the WRAP Operating Unit Group are either in good condition or over-packed to maintain integrity during storage. Waste containers stored at WRAP Operating Unit Group are required to have at least two layers of containment (the outer container and the inner bags or rigid liners, both of which must be compatible with the waste in the container), or will be lined with materials, which will not react with, and are otherwise compatible with the wastes to be stored, as required by the WAC. Containers of waste stored in the WRAP Operating

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<sup>10</sup> HNF 15589 Page 16

<sup>11</sup> <http://www.hanford.gov/page.cfm/WRAP>



Unit Group may contain some liquids. Gas generation in containers may occur, at which point containers may be vented<sup>12</sup>.

Near-term Future: At present, WRAP is in standby and no new shipments of waste are arriving. In the case of more shipments in the near-term future, the containers would be anticipated to be the same as those described in the current timeframe in order to meet the WAC.

#### 4. Classification of radioactive material and waste contained or stored within the facility

The following wastes may be managed at the WRAP Operating Unit Group:

- Dangerous or mixed waste that is generated from processes at the Hanford site.
- Waste that is specifically identified in Section II, paragraph 8 of the Settlement Agreement re: 15 Washington versus Bodman, Civil No. 2:30-cv-05018-AAM, January 6, 2006.

No other wastes may be managed at WRAP unless authorized via a permit modification decision pursuant to Condition I.C.3. Requests for Permit modifications must be accompanied by an evaluation adequate for Ecology to comply with SEPA. Much of the waste WRAP Operating Unit Group stores and treats is mixed low-level waste (MLLW) or mixed transuranic (TRUM).<sup>13</sup>

#### 5. Average and maximum occupational radiation doses incurred at the facility

Annual dosimeter results of individual workers from 2013 and 2014 are shown below in Table H.6-2. WRAP is not listed below in Table H.6-2 but it could be estimated that the doses would range from lower to similar to the 200 West area dosimeter results.

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<sup>12</sup> WA7890008967, Part III, Operating Unit Group 7 Page 7-C.5

<sup>13</sup> WA7890008967, Part III, Operating Unit Group 7 Page 7-FS.3

**Table H.6-2. Thermoluminescent Dosimeter Results (2013 and 2014)<sup>14</sup>**

Location	No. of Dosimeters	(millirem/year) <sup>a</sup>				Percentage Change <sup>e</sup>
		2013		2014		
		Maximum <sup>b</sup>	Average <sup>c, d</sup>	Maximum <sup>b</sup>	Average <sup>c, d</sup>	
100-K	14	112 ± 12	86 ± 17	177 ± 140	89 ± 52	3
100-N	1	87 ± 13	84 ± 7	91 ± 14	82 ± 14	-2
200-East	42	230 ± 131	105 ± 56	217 ± 256	104 ± 57	0
200-West	24	158 ± 9	104 ± 41	157 ± 14	102 ± 42	-1
200-North	1	91 ± 14	86 ± 14	107 ± 16	91 ± 27	5
300 Area	8	124 ± 9	95 ± 26	114 ± 14	90 ± 20	-4
300 TEDF	6	93 ± 13	91 ± 4	91 ± 14	88 ± 8	-2
400 Area	7	100 ± 58	92 ± 9	98 ± 11	88 ± 11	-3
618-10	4	84 ± 11	83 ± 3	81 ± 8	80 ± 2	-2
CVDF	4	82 ± 13	80 ± 3	78 ± 9	77 ± 2	-2
ERDF	3	91 ± 11	88 ± 6	89 ± 22	84 ± 8	-4
IDF	1	102 ± 15	92 ± 16	97 ± 14	90 ± 13	-1

<sup>a</sup> To convert to international metric system units, multiply millirem/year by 0.01 to obtain millisievert/year.

<sup>b</sup> Maximum values are ± analytical uncertainty.

<sup>c</sup> ± 2 standard deviations.

<sup>d</sup> Each dosimeter is collected and read quarterly.

<sup>e</sup> Numbers indicate a decrease (-) or increase from the 2013 mean.

CVDF = Cold Vacuum Drying Facility (100-K Area).

ERDF = Environmental Restoration Disposal Facility (200-West Area).

IDF = Integrated Disposal Facility (200-East Area).

TEDF = 300 Area Treated Effluent Disposal Facility.

## 6. Processes and operations conducted within the facility<sup>15</sup>

WRAP is currently in standby mode. When operational, WRAP has the capability to treat waste through:

- Deactivation.
- Solidification or absorption of free liquids.
- Neutralization of corrosives.
- Microencapsulation.
- Macroencapsulation.
- Volume reduction of waste.
- Reaction of reactive waste.
- Repackaging of waste.

Specifically, the following processes are permitted for each area:

The 2336W Process Area gloveboxes:

- Visually examining waste, then separating and sorting wastes.
- Treating or managing prohibited waste components.

<sup>14</sup> DOE/RL-2014-52, Table 4.1., pg. 4.2

<sup>15</sup> WA7890008967, Part III, Operating Unit Group 7 Page 7-FS.3-5

- Repackaging waste to meet shipping and/or waste acceptance criteria for the onsite receiving TSD unit or offsite facility.
- Overpacking of dangerous and/or mixed waste. Waste leaving the 2336W Building Process Area is typically ready to be transferred/shipped to a receiving treatment, storage, and disposal unit or offsite facility. However, the waste may be stored at WRAP for a period of time prior to transfer/shipping out of WRAP

The WRAP Dangerous Waste Management Units (DWMUs) included in the 2336W Building:

The Process Area gloveboxes are designed for opening, sorting, and sampling to characterize or confirm the contents of containers, and treating mixed waste. Waste entering the WRAP Process Area dangerous waste management unit will be sorted in the gloveboxes. Field screening or sampling will be conducted within the gloveboxes to perform verification or assist in waste characterization. Waste treatment activities within the 2336W Building Process Area include:

- Deactivation, solidification or absorption of liquids.
- Neutralization of corrosives.
- Microencapsulation.
- Macroencapsulation.
- Absorption to accomplish deactivation of liquids and solids.
- Volume reduction of waste
- Deactivation of reactive waste.
- Repackaging of waste.
- Venting and draining of aerosol cans

2336W NDE/ NDA Area:

The 2336W NDE/NDA Area provides for equipment and container storage. The NDA equipment will be used to determine the Atomic Energy Act regulated material content of each waste container. The NDE will be used to identify waste items to indicate the physical appearance of the waste, identify if liquids are present, and/or identify if other suspect nonconformance waste forms are present to support waste characterization and processing.

2336W Shipping and Receiving Area:

This area occupies the southeast corner of the building and supports storage, container handling, and transport container loading operations

2336W Building Room 152:

This room is located between the Shipping and Receiving Area and the extra loading dock and storage area. No treatment is performed in Room 152.

2404 Waste Storage Buildings:

The 2404-W Waste Storage Buildings (2404-WA, 2404-WB, and 2404-WC) are pre-engineered buildings. The Permittees store and treat waste in these buildings. Waste treatment activities within the 2404 Waste Storage Buildings include:

- Absorption of free liquids.

- Absorption to accomplish deactivation.
- Neutralization of corrosive materials.

Building 2404-WA is now considered a part of the CWC and was not included in this analysis.

## 7. Process flow of material into and out of the facility

Current:

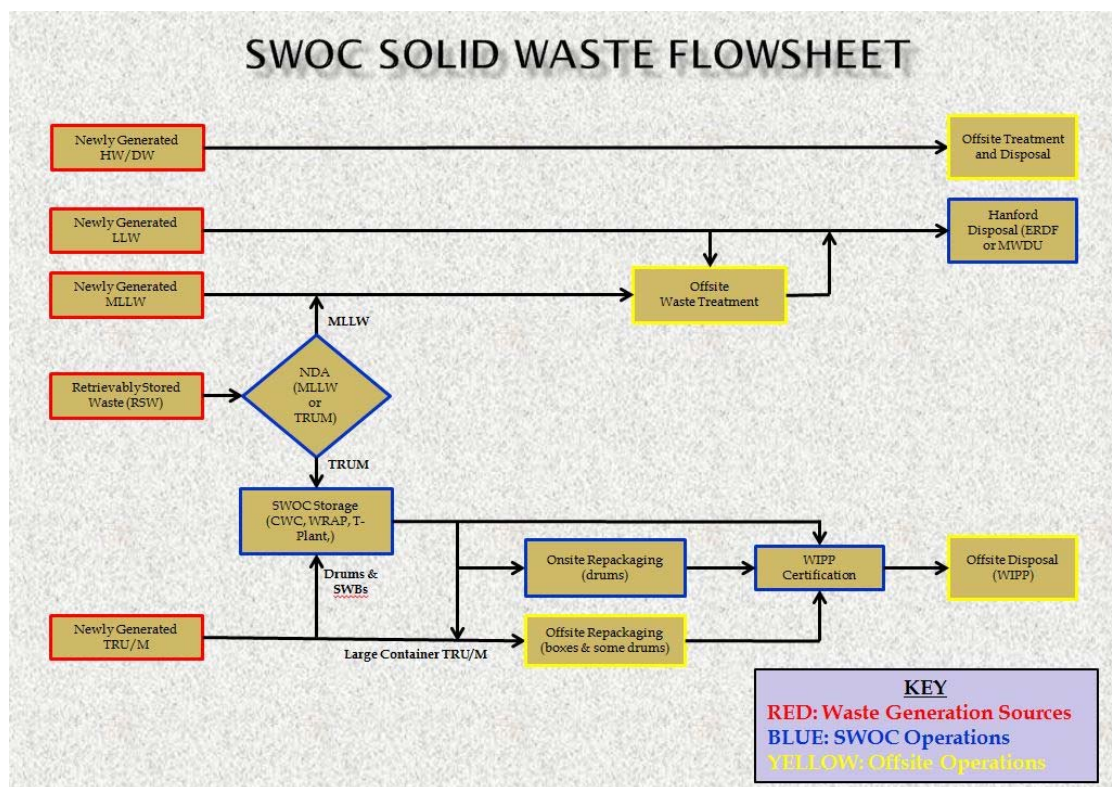


Figure H.6-2. SWOC Solid Waste Flowsheet.

Near-term: The near-term process flow of waste at the WRAP facility is anticipated to be the same as the present.

## 8. What effect do potential delays have on the processes, operations, and radioactive materials in the facility?

Current: WRAP is currently in standby mode, and no shipments of material are coming in or going out of the facility. Potential delays in receiving shipments will prolong the amount of time that the waste packages reside in their current state at their current location.

Near-term Future: Currently unknown. If shipments of material begin to be received at WRAP again, a delay in the cleanup of the site could result in prolonged times for material to sit at the WRAP facility before being shipped out for disposal. This could result in an increase of material stored at the WRAP facility.

9. What other facilities or processes are involved in the flow of radioactive material into and out of the facility?

WRAP has the capability to receive contact-handled waste containers from Hanford Site waste generators, CWC, waste retrieval operations, LLBG, T Plant, and other offsite waste generators.<sup>16</sup>

10. Shipping of material<sup>17</sup>

When operating, the WRAP process flow begins with receipt of CH and/or RH waste containers at the loading docks. Waste containers are inspected and verified for conformance to the documentation. Waste meeting the acceptance criteria is formally received. Waste not meeting the acceptance criteria is returned to the sender or isolated pending instructions for management of the waste.

Upon completion of WRAP activities, a waste container is ready for final disposal, packaged for storage, or designated for future waste processing. Completed containers are staged in the Shipping and Receiving Area until they are transferred to the CWC or other storage/disposal locations. The individual waste containers or subsequent waste packages are configured so that the waste can leave the WRAP Facility safely.

11. Infrastructure considered a part of the facility

The WRAP Operating Unit Group has the following dangerous waste management units<sup>18</sup>:

- 2336W Building (Process Area) (Storage, and Treatment within the gloveboxes).
- 2336W Building (NDE/NDA Area) (Storage).
- 2336W Building (Shipping and Receiving Area) (Storage).
- 2336W Building Room 152 (Storage).
- 2404-WA, Waste Storage Building (Storage and Treatment).
- 2404-WB, Waste Storage Building (Storage and Treatment).
- 2404-WC, Waste Storage Building (Storage and Treatment).

## **LEGACY SOURCE SITES**

Not Applicable

## **GROUNDWATER PLUMES**

Not applicable

## **D&D OF INACTIVE FACILITIES**

Not Applicable

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<sup>16</sup> HNF 14741 Page viii

<sup>17</sup> HNF 14741 Page 2-27- 2-28

<sup>18</sup> WA7890008967, Part III, Operating Unit Group 7 Page 7.FS-3

## ECOLOGICAL RESOURCES SETTING

### Landscape Evaluation and Resource Classification

Approximately 72% of the WRAP EU (Appendix J, Figure J.105 and Table J.9) contains a building complex surrounded by roads, storage areas and parking lots that are classified as a level 0 resources. No level 1 resources occur within the EU. A small isolated patch (2.1 acres,, ~10% of the EU) of level 3 habitat is located on the east side of the EU, and a similar sized patch of level 2 habitat on the west side is separated by a relatively narrow road from level 2 habitat outside the EU.

The amount and proximity of biological resources surrounding the WRAP EU were examined within the adjacent landscape buffer area, which extends 1700 ft (518 m) from the geometric center of the EU (Appendix J, Figure J.105). Almost 68% of the combined area of the EU and adjacent landscape buffer is composed of level 0 and level 1 habitats, and only 2% consists of isolated patches of level 3 resources. Level 2 habitats to the west of the EU comprise 30% of the combined acreage, and portions of that area have been revegetated with a mix of native and non-native species after fire.

### Field Survey

Much of the WRAP EU is covered by buildings and the surrounding bare ground and roads. On the west side of the EU, a patch of vegetation is dominated by big sagebrush (*Artemisia tridentata*) with an understory dominated by cheatgrass (*Bromus tectorum*) and Russian thistle (*Salsola tragus*). On the east side of the EU, the resource level 3 patch is dominated by gray rabbitbrush (*Ericameria nauseosa*), a successional shrub, with sparse big sagebrush and an understory containing native grasses (5% canopy cover) and Russian thistle (60% canopy cover) (Appendix J, J.90). Birds were observed around the buildings during the May survey and evidence of use by coyotes (*Canis latrans*) and rabbits was observed in October. Field data records at the end of this EU description in Appendix J lists the plant and animals species observed.

## CULTURAL RESOURCES SETTING

Almost the entire CP-OP-4, WRAP EU has been inventoried for archaeological resources under two previous archaeological survey efforts. Both of these survey efforts resulted in negative findings within the EU. It is unknown if an NHPA Section 106 review has been completed specifically for remediation of the CP-OP-4, WRAP EU. It is unlikely that intact archaeological material is present in the areas that have not been inventoried for archaeological resources (both on the surface and in the subsurface), because the soils in the EU are extensively disturbed.

No cultural resources are known to exist within the CP-OP-4, WRAP EU. Three archaeological isolates (2 associated with the Native American Precontact and Ethnographic Landscape and one with the Pre-Hanford Early Settlers/Farming Landscape) have been identified within 500 meters of the CP-OP-4, WRAP EU. While these isolates have not been formally evaluated for listing in the National Register of Historic Places, it should be noted that isolates are typically considered not eligible. In addition, a non-contributing segment of a National Register eligible historic/ethnohistoric trail/road corridor is located within 500 meters of the EU. Segments of the National Register-eligible Hanford Site Plant Railroad, a contributing property within the Manhattan Project and Cold War Era Historic District, with documentation required, are located within 500 meters of the CP-OP-4, WRAP EU. In accordance with the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* (DOE/RL-97-56) (DOE-RL 1998), all documentation requirements have been completed for this property.

Historic maps and aerial imagery of the area indicate a low potential for the presence of archaeological resources associated with the Pre-Hanford Early Settlers/Farming Landscape within the EU. The geomorphology indicates a moderate potential for the presence of archaeological resources associated with the Native American Precontact and Ethnographic Landscape to be present within the CP-OP-4, WRAP EU. However, extensive ground disturbance within the entire EU suggests little potential for intact cultural resources at or below ground surface. Resources, if present, would likely be limited to areas of intact or undisturbed soils.

Because of the potential for archaeological resources within the CP-OP-4, WRAP EU, it may be appropriate to conduct surface archaeological investigations prior to the initiation of any remediation activities. Indirect effects are always possible when TCPs are known to be located in the general vicinity. Consultation with Hanford Tribes (Confederated Bands of the Yakama Nation, Wanapum, Confederated Tribes of the Umatilla Indian Reservation, and the Nez Perce) and other groups associated with these landscapes (e.g. East Benton Historical Society, the Franklin County Historical Society and the Prosser Cemetery Association, the Reach, and the B-Reactor Museum Association) may be necessary to provide input on indirect effects to both recorded and potential unrecorded TCPs in the area and other cultural resource issues of concern.

## **PART V. WASTE AND CONTAMINATION INVENTORY**

### **CONTAMINATION WITHIN PRIMARY EU SOURCE COMPONENTS**

#### **Vadose Zone Contamination**

The reported inventories for CP-OP-4 (Table H.6-3 through Table H.6-5) are isolated from the environment because of the nature of the facilities comprising the EU. Thus there is no reported vadose zone inventory to be evaluated.

#### **Groundwater Plumes and Columbia River**

Not applicable

#### **Operating Facilities**

When WRAP is operational, TRU, TRUM, LLW, and LLMW waste may be processed in the TRU or TRU/LLW process lines. In addition, NDE and NDA are performed on waste boxes. The main isotope present in TRU waste is <sup>239</sup>Pu. The maximum radioactive material inventory for a single container is assumed to be 82.5 DE-Ci.<sup>19</sup> At a maximum, WRAP was designed to receive 6,825 containers each year. If all of these containers were presently stored at WRAP, and they all contained the maximum inventory, there would be 563063 DE-Ci at WRAP.

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<sup>19</sup> HNF 14741 Page 3-34

**Table H.6-3. Inventory of Primary Contaminants <sup>(a)</sup>**

WIDS	Description	Decay Date	Ref <sup>(b)</sup>	Am-241 (Ci)	C-14 (Ci)	Cl-36 (Ci)	Co-60 (Ci)	Cs-137 (Ci)	Eu-152 (Ci)	Eu-154 (Ci)	H-3 (Ci)	I-129 (Ci)
All	Sum			29	0	0	0	0	0	0	0	0
WRAP	Process Building		SWITS	29	0	0	0	0	0	0	0	0

a. NR = Not reported

b. SWITS = HNF-9668-2014 (SWITS request 2016 05)

**Table H.6-4. Inventory of Primary Contaminants (cont)<sup>(a)</sup>**

WIDS	Description	Decay Date	Ref <sup>(b,c)</sup>	Ni-59 (Ci)	Ni-63 (Ci)	Pu (total) (Ci)	Pu-239 (DE-Ci) <sup>(c)</sup>	Sr-90 (Ci)	Tc-99 (Ci)	U (total) (Ci)
All	Sum			0	0	NR		0	0	NR
WRAP	Process Building		SWITS, see also note c.	0	0	NR	560000 <sup>(c)</sup>	0	0	NR

a. NR = Not reported

b. SWITS = HNF-9668-2014 (SWITS request 2016 05)

c. Source for Pu-239 (DE-Ci) is HNF 14741 Page 3-34, where DE = dose equivalent

**Table H.6-5. Inventory of Primary Contaminants (cont)<sup>(a)</sup>**

WIDS	Description	Ref <sup>(b)</sup>	CCl4 (kg)	CN (kg)	Cr (kg)	Cr-VI (kg)	Hg (kg)	NO3 (kg)	Pb (kg)	TBP (kg)	TCE (kg)	U (total) (kg)
All	Sum		71	0	0.081	0	0.013	0	190	0.078	0.0078	0
WRAP	Process Building	SWITS	71	0	0.081	0	0.013	0	190	0.078	0.0078	0

a. NR = Not reported

b. SWITS = HNF-9668-2014 (SWITS request 2016 05)



**Table H.6-6. Summary of the Evaluation of Current Threats to Groundwater as a Protected Resource from Saturated Zone (SZ) and Remaining Vadose Zone (VZ) Contamination associated with the Evaluation Unit**

PC	Group	WQS	Porosity <sup>a</sup>	K <sub>d</sub> (mL/g) <sup>a</sup>	ρ (kg/L) <sup>a</sup>	VZ Source M <sup>Source</sup>	SZ Total M <sup>SZ</sup>	Treated <sup>c</sup> M <sup>Treat</sup>	VZ Remaining M <sup>Tot</sup>	VZ GTM (Mm <sup>3</sup> )	VZ Rating <sup>d</sup>
C-14	A	2000 pCi/L	0.23	0	1.84	---	---	---	---	---	ND
I-129	A	1 pCi/L	0.23	0.2	1.84	---	---	---	---	---	ND
Sr-90	B	8 pCi/L	0.23	22	1.84	---	---	---	---	---	ND
Tc-99	A	900 pCi/L	0.23	0	1.84	---	---	---	---	---	ND
CCl <sub>4</sub>	A	5 µg/L	0.23	0	1.84	---	---	---	---	---	ND
Cr	B	100 µg/L	0.23	0	1.84	---	---	---	---	---	ND
Cr-VI	A	10 µg/L <sup>b</sup>	0.23	0	1.84	---	---	---	---	---	ND
TCE	B	5 µg/L	0.23	2	1.84	---	---	---	---	---	ND
U(tot)	B	30 µg/L	0.23	0.8	1.84	---	---	---	---	---	ND

a. Parameters obtained from the analysis provided in Attachment 6-1 to Methodology Report (CRESP 2015).

b. “Model Toxics Control Act—Cleanup” (WAC 173-340) Method B groundwater cleanup level for hexavalent chromium.

c. Treatment amounts from the 2015 Hanford Annual Groundwater Report (DOE/RL-2016-09, Rev. 0).

d. Groundwater Threat Metric rating based on Table 6-3, Methodology Report (CRESP 2015).

## PART VI. POTENTIAL RISK/IMPACT PATHWAYS AND EVENTS

### CURRENT CONCEPTUAL MODEL

#### Pathways and Barriers

Briefly describe the current institutional, engineered and natural barriers that prevent release or dispersion of contamination, risk to human health and impacts to resources:

1. What nuclear and non-nuclear safety accident scenarios dominate risk at the facility? What are the response times associated with each postulated scenario?

There are 14 accident scenarios postulated in the Documented Safety Analysis as being applicable to WRAP. The following selected accident scenarios from the DSA are the highest consequence events postulated for WRAP<sup>20</sup>:

Large Fire (WRAP Glovebox Deflagration): Fire involving 8 drums or other fire involving 82.5 De-Ci due to mishandling, equipment malfunction or properties of TRU waste cause burning of container contents resulting in breach of glovebox or greenhouse confinement. Other release phenomena included in this bin are fires that spread as a result of incompatible materials, accidental crushing of a TRU waste drum in the LLW supercompactor, breach of pressurized containers, and ignition from a spark or other ignition source.

Small Inside Fire: Small Inside Fire: A vehicle impacts a single container, the container breaches, and any local ignition source burns the waste. The accident bounds impacts to a single container, pallet of containers, or a HEPA filter because it assumes fully loaded containers pursuant to the SARAH. The unmitigated frequency is Anticipated.

Criticality: Solid waste criticality due to over-batching waste containers in an unacceptable stacking configuration with fissionable materials configured and addition of moderator.

2. What are the active safety class and safety significant systems and controls?

Some of the safety systems are as follows<sup>21</sup>:

- Fire suppression systems
- WRAP glovebox fire suppression system
- Building active ventilation systems including associated exhaust HEPA filters (glovebox and process area) and confinement boundary
- Glovebox ventilation system

3. What are the passive safety class and safety significant systems and controls?

The following passive safety systems are credited at WRAP<sup>22</sup>:

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<sup>20</sup> HNF 14741 Pages xii-xvi

<sup>21</sup> HNF 14741 Pages xvi-xix

<sup>22</sup> HNF 14741 Pages xvi-xix

- WRAP TRUPACT loading area floor design
  - Container vent
  - Large diameter container design
  - Physical shell of WRAP gloveboxes
  - Container Venting System
4. What are the current barriers to release or dispersion of contamination from the primary facility? What is the integrity of each of these barriers? Are there completed pathways to receptors or are such pathways likely to be completed during the evaluation period? PNNL

There are three major types of barriers to release of contamination from the primary facility: (1) Engineered systems including the waste container, and secondary containment systems (buildings, berms, sumps, etc.); (2) Operating Procedures such as Waste Acceptance Criteria, Venting Programs, RCRA and radiological inspections, and others; and (3) Safety Management Systems such as radiation protection, nuclear criticality safety, and transportation safety. There is one identified completed pathway to receptors, which is the ionizing radiation associated with these packages. People in the vicinity of the packages do accumulate occupational exposure, but it is monitored to ensure it stays well below regulatory levels of concern.

5. What forms of initiating events may lead to degradation or failure of each of the barriers?

The initiating events that may lead to degradation or failure of the barriers include: worker accidents, loss of institutional controls, loss of engineering controls, structural decay or failure, wild fire or facility fire, earthquake, dam failure, ash fall and plane crash; these are evaluated in the DSA (HNF-14741).

6. What are the primary pathways and populations or resources at risk from this source?

The primary pathway of concern is airborne dispersion of material from containerized waste; the populations at risk from this source include workers (on site and non-located). There is also a pathway of exposure to ionizing radiation. People in the vicinity of the waste packages will be exposed to some amount of ionizing radiation, but it is monitored to ensure it remains below regulatory limits.

7. What is the time frame from each of the initiating events to human exposure or impacts to resources?

For all initiating events, because the primary pathway to the receptors is airborne, the time frame to human exposure or impacts will be very short, on the order of hours, days or weeks.

Are there current on-going releases to the environment or receptors?

At the time of this study, we are unaware of on-going releases to the environment or receptors, but as mentioned previously, we do have one completed pathway to workers of an occupational radiation dose.

## **POPULATIONS AND RESOURCES CURRENTLY AT RISK OR POTENTIALLY IMPACTED**

### **Facility Worker**

Workers are the resource impacted by the only current completed pathway of occupational radiation exposure. In the instance of the initiating events described above, any exposure would likely be airborne dispersion of containerized waste and exposure via inhalation or external radiation due to proximity to contamination.

### **Co-Located Person (CP)**

The co-located person will experience similar risk as the facility worker, due to the fact that in the instance of the initiating events described above, any exposure would likely be airborne dispersion of containerized waste and exposure via inhalation or external radiation due to proximity to contamination.

### **Public**

The low level public is at risk due to airborne exposure of containerized waste in an event scenario.

### **Groundwater and Columbia River**

Not applicable

### **Ecological Resources**

Summary of Ecological Review:

- The WRAP EU is composed primarily of buildings, graveled lots, and disturbed areas (~72%)
- A small patch (~2 acres) of level 3 habitat would be lost during remediation activities
- Loss of level 2 and level 3 habitat in this EU would not be expected to impact wildlife populations or habitat connectivity

### **Cultural Resources**

The CP-OP-4, WRAP EU is located within the 200-West Area of the Hanford Site, an area known to have low potential to contain Native American Precontact and Ethnographic archaeological resources and Pre-Hanford Early Settlers/Farming resources. Much of the 200 Areas were addressed in a cultural resources report entitled *Archaeological Survey of the 200 East and 200 West Areas, Hanford Site* (Chatters and Cadoret 1990). The focus of this archaeological survey was on inventorying all undisturbed portions of the 200-East and 200-West Areas. This report concluded that much of the 200-East and 200-West Areas can be considered areas of low archaeological potential with the exception of intact portions of an historic/ethnohistoric trail/road corridor which runs through the 200-West Area.

Most of the CP-OP-4, WRAP EU has been inventoried for archaeological resources. Two archaeological surveys were completed under HCRC#87-200-005 (Chatters and Cadoret 1988) and HCRC#96-200-058 (Nickens et al. 1996) with negative findings within the EU. It is unknown if an NHPA Section 106 review has been completed specifically for remediation of CP-OP-4, WRAP EU. It is unlikely that intact previously undocumented archaeological material is present in the EU, both on the surface and in subsurface areas, because the soils in the CP-OP-4, WRAP EU appear to have been heavily disturbed by Hanford Site activities.

### **Archaeological sites, buildings and Traditional Cultural Properties (TCPs) located within the EU<sup>23</sup>**

- There are no known cultural resources within the CP-OP-4, WRAP EU.

### **Archaeological sites, buildings, and TCPs located within 500 meters of the EU**

- Three archaeological isolates (2 associated with the Native American Precontact and Ethnographic Landscape and 1 with the Pre-Hanford Early Settlers/Farming Landscape) have been documented within 500 meters of the CP-OP-4, WRAP EU. While these isolates have not been formally evaluated for listing in the National Register of Historic Places, it should be noted that isolates are typically considered not eligible.
- Segments of the National Register-eligible Hanford Site Plant Railroad, a contributing property within the Manhattan Project and Cold War Era Historic District, with documentation required, are located within 500 meters of the CP-OP-4, WRAP EU. In accordance with the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* (DOE/RL-97-56) (DOE-RL 1998), all documentation requirements have been completed for this property.
- A non-contributing segment of a historic/ethnohistoric trail/road corridor has been recorded within 500 meters of the EU.

### **Closest Recorded TCP**

There are two recorded TCPs associated with the Native American Precontact and Ethnographic Landscape that are visible from the CP-OP-4, WRAP EU.

## **CLEANUP APPROACHES AND END-STATE CONCEPTUAL MODEL**

### **Selected or Potential Cleanup Approaches**

The DSA states that D&D and cleanup activities have yet to be planned.

### **Contaminant Inventory Remaining at the Conclusion of Planned Active Cleanup Period**

No cleanup decisions have been made.

### **Risks and Potential Impacts Associated with Cleanup**

The DSA states that D&D and cleanup activities have yet to be planned.

## **POPULATIONS AND RESOURCES AT RISK OR POTENTIALLY IMPACTED DURING OR AS A CONSEQUENCE OF CLEANUP ACTIONS**

### **Facility Worker**

Dependent on D&D methods, yet to be determined.

### **Co-located Person**

Dependent on D&D methods, yet to be determined.

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<sup>23</sup> Traditional cultural property has been defined by the National Park Service as “a property, a place, that is eligible for inclusion on the National Register of Historic Places because of its association with cultural practices and beliefs that are (1) rooted in the history of a community, and (2) are important to maintaining the continuity of that community’s traditional beliefs and practices” (Parker and King 1998).

**Public**

Dependent on D&D methods, yet to be determined.

**Groundwater and Columbia River**

Not applicable

**Ecological Resources**

No cleanup decisions have been made for this EU. As a result, the potential effects of cleanup on ecological resources cannot be made for the active cleanup evaluation period.

**Cultural Resources**

No cleanup decision for the remaining waste treatment, storage and disposition facilities.

**ADDITIONAL RISKS AND POTENTIAL IMPACTS IF CLEANUP IS DELAYED**

None, continued operations and maintenance of the facility. Potential for increased container maintenance due to normal degradation mechanisms (e.g., corrosion).

**NEAR-TERM, POST-CLEANUP STATUS, RISKS AND POTENTIAL IMPACTS**

Dependent on D&D methods yet to be determined.

## POPULATIONS AND RESOURCES AT RISK OR POTENTIALLY IMPACTED AFTER CLEANUP ACTIONS (FROM RESIDUAL CONTAMINANT INVENTORY OR LONG-TERM ACTIVITIES)

Table H.6-7. Summary of Populations and Resources at Risk or Potentially Impacted after Cleanup.

Population or Resource		Risk/Impact Rating	Comments
Human	Facility Worker	Insufficient information (IS)	
	Co-located Person	IS	
	Public	IS	
Environmental	Groundwater	<i>Not Discernible (ND)</i>	No risks because of the nature of the facilities that comprise the EU.
	Columbia River	<i>ND</i>	
	Ecological Resources <sup>(a)</sup>	No cleanup decisions have been made for this EU. Estimated to be ND to Low	Post-cleanup monitoring might pose a risk to level 2 and above resources.
Social	Cultural Resources <sup>(a)</sup>	No cleanup decisions have been made for this EU. Estimated to be: <b>Native American</b> Direct: Unknown Indirect: Known <b>Historic Pre-Hanford</b> Direct: Unknown Indirect: Known <b>Manhattan/Cold War</b> Direct: None Indirect: None	Permanent direct effects are possible if residual contamination remains after remediation. National Register eligible Manhattan Project/Cold War Era significant resources located within 500 meters of the EU will be demolished, but they have already been mitigated.

a. For both Ecological and Cultural Resources see Appendices J and K, respectively, for a complete description of Ecological Field Assessments and literature review for Cultural Resources. Ecological ratings are described in Table 4-11 of the Final Report. (IS = insufficient information)

## LONG-TERM, POST-CLEANUP STATUS – INVENTORIES AND RISKS AND POTENTIAL IMPACT PATHWAYS

Dependent on D&D methods yet to be determined.

## PART VII. SUPPLEMENTAL INFORMATION AND CONSIDERATIONS

N/A

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