

**D&D Project Management Assessment Plan and Report
LDR Assessment of the 241-CX Tank System**

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A management assessment on the 241-CX Tank System was conducted between March, 2005 and May 2009. The management assessment focused on management of mixed waste (MW) and potential mixed waste (PMW). MW and PMW are reported in the annual Hanford Site Mixed Waste Land Disposal Restrictions Report prepared pursuant to Tri-Party Agreement Milestone M-26-01. MW reported in the LDR report includes waste managed in satellite accumulation areas, 90-day accumulation areas, stored in a Treatment, Storage, and/or Disposal Unit, and mixed waste forecasted to be generated within the next 5 years. In general, PMW includes materials that have not been generated as mixed waste and waste that has not been actively managed as mixed waste. PMW also includes those materials that reasonably could be expected to be generated as mixed waste at some future time. This report discusses the purpose, scope, and results of the assessment.

Assessment Plan

- **Purpose and Scope**

The primary purpose of the management assessment is to provide information as part of continuing process of evaluating whether current management practices are adequate to ensure that the threat to human health and the environment will be minimized. Additional functions of the management assessment include: (1) Assessing whether MW and PMW is being properly reported at the 241-CX Tank System, (2) Assessing the information reported in the annual LDR report (looking at the mixed waste stored in the 241-CX Tank System) to determine if it is still accurate, (3) preparing the data gap plan (Attachment 1), (4) filling in the Ecology approved checklist (Attachment 2), and (5) when necessary, including corrective action forms.

- **Assessment Personnel**

G. J. LeBaron, Environmental Compliance Officer (ECO), Lead Assessor;
A.G. Miskho, Assessor

- **Assessment Schedule**

March 2005 through May 2009

- **Performance Objectives/Lines of Inquiry**

1. Is all MW and PMW being reported in the LDR report, as defined by the LDR Report?
2. Are there any sampling results for the MW or PMW related to waste designations?
3. What inventory records exist for the MW or PMW?
4. Is any mixed waste stored in the 241-CX Tank System being properly reported in the LDR Report?

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Source Documents:

1. CY2008 Hanford Site Mixed Waste Land Disposal Restrictions Summary Report (DOE/RL-2009-27), mixed waste storage information for the 241-CX Tank System.
2. E. Van Mason, Ecology, Inspection Report, Nuclear Waste Program Hanford Project Dangerous Waste Compliance Inspection M-26 Inspection of the 241-CX Tank System, dated November 3, 2004. This inspection report contained the following list of references:
 - a. BHI-01173 Rev 1, Auditable Safety Analysis for Surveillance and Maintenance of the 241-CX Tank System, September 2000.
 - b. DOE/RL-92-18 Draft A, Semi-Works Source Aggregate Area Management Study Report, July 1992. (See Reference 6.e as draft A was superseded by Revision 0 of the document).
 - c. Environmental Restoration Contractor Team Interoffice Memorandum and attached Field Activity Report; Johansen T.M. to Galgoul, M.J., Re: Tank 241-CX-71 Sampling for the Determination of Potentially Hazardous Wastes, June 27, 2002. (This reference discusses the same data package for Tank 241-CX-71 discussed in reference 2.p)
 - d. H-2-44501, Area Map 200 East "C" Plant Facilities.
 - e. H-2-4319, Hot Semi-works Tank Sections TK-70.
 - f. H-2-4323, Hot Semi-works Details TK-70
 - g. H-2-4420, Plot Plan, Hot Semi Works Waste Self Concentrator
 - h. Hanford Site Waste Management Units report, May 1987.
 - i. Heine, W.F. Hazardous Waste Issues at Strontium Semi-Works, August 9, 1989 (a presentation).
 - j. Lundstrom, D.L., to Bauer, J.D., and Lerch, R.E., Re: Tank 241-CX-72 at the Strontium Semi-Works, July 7, 1994.
 - k. Marske, Steve G., Tank 241-CX-72 White Paper, March 1993.
 - l. WHC-SD-EN-AP-036, Rev 0 241-CX-71 Task Plan.
 - m. WHC-SD-DD-TI-039 Rev 0 Tank 241-CX-71 Preliminary Waste Characterization, June 30, 1989
 - n. WHC-SD-EN-ES-040 Rev. 0, Engineering Study of 50 Miscellaneous Inactive Underground Radioactive Waste Tanks Located at the Hanford Site, Washington.
 - o. WHC-SD-DD-TI-057 Rev. 0, Summary of Radioactive Underground Tanks Managed by Hanford Restoration Operations, October 24, 1991.
 - p. WHC-SD-DD-TI-058 Rev. 0, Tank 241-CX-71 Waste Characterization, 1991 (This reference discusses the same data package for Tank 241-CX-71 discussed in reference 2.c)
 - q. WHC-SD-DD-TI-070 Rev. 0, Galbraith, M.J., Literature Search for Process Knowledge to Characterize the waste in Tank 241-CX-72, July 1992.
 - r. WHC-SD-CP-TI-148 Rev. 0, Subrahmanyam, V.B., Radiological Evaluation of Hot Semi-Works Waste Tank 241-CX-72, June 27, 1989
 - s. WIDS, Waste Information Data System general summary reports for 241-CX-70, 241-CX-71, and 241-CX-72.

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3. E. Van Mason, Ecology, letter to Keith Klein, RL, and Ronald G. Gallagher, FHI, "Ecology's M-26 Land Disposal Restriction Report Inspection of the 241-CX Tank System, dated November 10, 2004.
4. Keith Klein, RL, letter to Michael A. Wilson, Ecology, "Calendar Year 2004 Land Disposal Restrictions Report Comment Responses," 05-AMCP-0318, dated July 12, 2005, comments #1, #3, and #5.
5. Keith Klein, RL, and Roy Schepens, ORP, letter, to Michael A. Wilson, Ecology, "Calendar Year (CY) 2003 Land Disposal Restrictions (LDR) Report Comment Responses," 05-AMCP-0024, dated October 28, 2004, comment #1.
6. Tanks/Lines/Pits/Boxes/Septic Tank and Drain Fields Waste Group Operable Units RI/FS Work Plan and RCRA TSD unit Sampling Plan, Includes 200-IS-1 and 200-ST-1 Operable Units, DOE/RL-2002-14, Revision 1, Draft A, dated December 2004, contains the following related references:
 - a. 12712-PCL88-019, 1988, Analysis of Sludge Samples from Hot Semi-Works Tank CX-70, Westinghouse Hanford Company, Richland Washington
 - b. AR00227, 1974, Disposition and Isolation of Tanks 270-E-1, 270-W, 241-CX-70, 241-CX-71, and 241-CX-72, letter from D. G. Harlow to J. A. Teal, dated July 2, 1974, Atlantic Richfield Hanford Company, Richland Washington
 - c. BHI-01018, 2002, Environmental Restoration Contractor Management Plan for Inactive Miscellaneous Underground Storage Tanks (IMUSTS), Rev 2, Bechtel Hanford Company, Inc, Richland Washington
 - d. CP-13196, 2004, Remedial Investigation Data Quality Objectives Summary Report, 200-IS-1 and 200-ST-1 Operable Units, Rev 0 Fluor Hanford Inc., Richland Washington
 - e. DOE/RL-92-18, 1993 Semi-Works Source Aggregate Area Management Study Report, Rev 0, U.S. Department of Energy Richland Operations Office, Richland Washington.
 - f. HW-31767, 1954, Hot Semi-Works REDOX Studies, General Electric Company, Richland Washington
 - g. HW-52860, 1957, Standby Status Report Hot Semi-Works Facility, General Electric Company, Richland Washington
 - h. HW-72666, 1963, Hot Semi-Works Strontium-90 Recovery Program, General Electric Company, Richland Washington
 - i. SD-WM-SAR-003, 1984, Safety Analysis Report for the Decontamination and Decommissioning of the Strontium Semi-Works Complex, Rockwell Hanford Operations, Richland Washington.
 - j. WHC-SD-CP-TI-148, 1989, Radiological Evaluation of Hot Semi-works Tank 241-CX-72, Westinghouse Hanford Company, Richland Washington
 - k. WHC-SD-DD-SAD-001, 1990, Safety Evaluation for Interim Waste Management Activities in Tank 241-CX-70, Tank 241-CX-71, and 241-CX-72, Westinghouse Hanford Company, Richland Washington
 - l. WHC-SD-DD-TI-040, 1989, Tank 241-CX-72 Preliminary Waste Characterization, Rev. 0, Westinghouse Hanford Company, Richland Washington

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- m. WHC-SD-DD-TI-051, 1990, An Estimation of the Radionuclide Content of Tank 241-CX-72, Westinghouse Hanford Company, Richland Washington
- n. WHC-SD-EN-ES-019, 1992, Semi-Works Aggregate Area Management Study, Technical Baseline Report, Westinghouse Hanford Company, Richland Washington
- 7. WHC-SC-DD-TI-071, 1992, Facility Decommissioning Report for Tank 241-CX-70, Rev 0, Westinghouse Hanford Company, Richland Washington
- 8. Tri-Party Agreement Modifications for Central Plateau Waste Site and Groundwater Remediation relating to 200 Area Non-Tank Farms Operable Units, approved February 25, 2007, containing the following interim milestone: M-013-27: Submit a revised RI/FS work plan for 200-IS-1 and 200-ST-1 OUs to Ecology ..., due date 6/30/2007
- 9. Tri-Party Agreement interim milestone M-020-54, Submit 241-CX-70 Storage Tank, 241-CX-71 Neutralization Tank, 241-CX-72 Storage Tank Closure/Post Closure Plan to Ecology in Coordination with the 200-IS-1 Tanks/Lines/Pits/Boxes Operable Unit Work Plan Feasibility Study Scheduled under M-13-00, due 12/31/2008.
- 10. John B. Price, Ecology, to Larry Romine, RL, "Letter 02-WMD-044, 'Stabilization Option for Hexone Tanks,' from P. Knollmeter, USDOE, to B Wilson, Ecology, dated November 21, 2001," dated March 28, 2006, which discusses 241-CX Tank System closure.
- 11. C. J. Geier, WHC to Distribution, "Action Description Memorandum for the Terminal Clean-out and Stabilization of Strontium Semiworks' tank 241-CX-70 Tank, 241-CX-71 Tank, and 241-CX-72 Tank," dated February 21, 1990.
- 12. Part A Permit Application for the 241-CX Tank System, Revision 6, October 1, 2008.
- 13. John B. Price, Ecology, to Joel Hebdon, RL "Modification of Inspection Frequency of Certain Hanford Facility Treatment Storage, and/or Disposal (TSD) Units," dated June 10, 2003.

Performance Objectives:

The performance objectives/lines of inquiry were met through the assessment methodology.

- **Assessment Methodology**

The assessment methodology included a review of source documents relating to the 241-CX Tank System and a field visit during Ecology's compliance inspection of the 241-CX Tank System.

Assessment Results

- **Executive Summary**

Review of the source documents and selected references resulted in no assessment findings and three observations. The status of each 241-CX tank is discussed in the Data Gap Plan (Attachment 1).

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Within the 241-CX Tank System, MW exists in two of the three tanks, 241-CX-71 and 241-CX-72. The 241-CX Tank System is being accurately reported in the LDR report (6.39m3).

The 241-CX-70 tank is empty (Reference 7), however closure standards for a TSD unit tank system as described in Washington Administrative Code (WAC) 173-303-610 were not addressed when the tank was emptied. A subsidence event occurred above the tank in 2004 and Ecology was notified (Attachment 3).

Lastly, the waste in tank 241-CX-71 designated as mixed waste for waste code WT02 (References 2.c and 2.p). MW or PMW other than the inventory of 241-CX-71 and 241-CX-72 does not exist at the 241-CX Tank System. The closure plan will address the piping leading up to the tanks in the event any waste remained in the tank system ancillary equipment.

- **Assessment Findings and Observations**

Since no findings were identified, no corrective action forms are needed.

No observations were noted as part of the assessment.

- **Assessment Approval**

Management Assessment by:



G. J. LeBaron, ECO Assessment Lead

25 SEP '09
Date



A. G. Miskho, Assessor, LDR Report
Coordinator

9/25/09
Date

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ATTACHMENT 1 - DATA GAP PLAN

This section fulfills the requirements of a Data Gap Plan, pursuant to the TPA under Milestone M-26-01¹. Accordingly, a data gap plan must contain the following:

- What you know and what you don't know
- What you need to know
- Why the level of unknowns is acceptable or not acceptable from a safety basis for the interim until action is planned or that more information is needed to make this determination.

The above Data Gap Plan elements need to be addressed for the MW matrices identified by the LDR storage assessment². The 241-CX Tank System LDR storage assessment identified the following MW matrices:

Mixed Waste Matrices: 241-CX tank system volumes	
241-CX-70 tank system:	No inventory
241-CX-71 tank system:	Estimated at 3.79m ³ mixed waste
241-CX-72 tank system:	Estimated at 2.6m ³ mixed waste

What you know and what you don't know

The information presented in this section was obtained from the LDR storage assessment.

241-CX-70

Summary:

241-CX-70 tank was emptied on December 20, 1991, however WAC 173-303-610 closure standards for a TSD unit were not addressed after the tank was emptied. It is accurate for the LDR report to indicate no volume of stored MW for the 241-CX-70 tank. The waste removed from the 241-CX 70 tank was managed as transuranic MW and stored at the 224-T Transuranic Waste Storage and Assay Facility (Reference 7). The integrity of 241-CX-70 tank and whether the tank leaked is not known at this time.

In 2004, a subsidence event occurred in the access space created using plywood shoring above the 241-CX-70 tank. Ecology was notified (See Attachment 3), and Ecology initiated an inspection (See References 2 and 3).

¹ Letter, Alan E. Hopko, RL, to E. K. Thompson, FH, "Contract No. DE-AC06-96RL13200 – Annual Land Disposal Restriction (LDR) Report Requirements and Notification to Conduct Assessments," 02-WMD-213, #0202987, dated June 25, 2002.

² Letter, Sally A. Sieracki, RL, to E. K. Thompson, FH, "Contract No. DE-AC06-96RL13200 – Resource Conservation and Recovery Act (RCRA) Assessment – A&E-SEC-02-009," 02-PMO-0003, #0203878, dated August 19, 2002.

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Regarding the reporting of 241-CX-70 in the LDR report, when a tank is empty and there is no MW volume being stored. Normally, an empty tank would only be reported in the LDR report when MW is forecasted to be generated within 5 years by removal of the tank and the tank designates as hazardous debris. In this case however, because the three tanks are identified in the Part A Permit Application for the TSD unit, the 241-CX-70 tank will continue to be reported in the LDR report for the 241-CX Tank System until it is removed from the Part A Permit Application. This decision can be reevaluated in the future.

Reference:

Reference 7, Section 2.2.4 states: "Installation of the system began in September 1991, and waste removal operations were completed on December 20, 1991 when the entire tank contents were removed."

Reference 7, Section 2.2.5 item 4 states: "The 55-gal drums are stored at TRUSAF, 224-T, in 200 West Area. Transport of the barrels commenced on May 5, 1992 and was extended over a 10-work day period. The last of the barrels were moved on Mary 18, 1992,"

241-CX-71

Summary:

241-CX-71 tank is full of sludge and limestone based on the records describing the 1990 sampling event (References 2.c and 2.p). No references estimate the amount of waste in the tank, so a design capacity number will be used to calculate the waste volume. References have different volume capacities for this tank. For planning purposes, the capacity of 1,000 gal [~3.79m³] will be used from Reference 6 since it is the most recent and is consistent with the Part A Permit Application (Reference 12). The CY2008 LDR report (Reference 1) indicates 6.4m³ of waste for the system so the volume number is considered accurate.

After re-evaluation of the sampling result data package from the 1990 sampling effort (References 2.c and 2.p), the WT02 waste designation is not proposed to be changed for the waste in 241-CX-71.

Lastly, the integrity of 241-CX-71 tank and whether the tank leaked is not known at this time.

References:

Reference 2.a, Section 2.1.5 states: "in 1986, 241-CX-71 tank was topped off with concrete. ... Core drillings of the tank were completed in October 1990. Although five core samples were taken, the detailed results of the analyses were inadequate for designation of waste (WHC 1991)."

Reference 2.c states: "On October 23, 1990, samples were collected from Tank 241-CX-71 to determine the inventory of potentially hazardous wastes. ... The analytical data showed results at less than the detection limit or at extremely low concentrations for the contaminants of concern." In the results section: "Extremely low concentrations of methyl ethyl ketone, xylene, and toluene ranging from 7 to 54 parts per billion were measured. Cyanide was measured in the sludge at 21 parts per million. All of the liquid samples and one (of 4 total) solid samples

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showed 'less than' results on Total Organic Carbon (TOC) analysis." One riser was used to collect four sample intervals.

Reference 2.p, Section 4.0 states: "The characterization data provided by the K-25 and 222-S Laboratories was reviewed. As reported in Appendix H (Encke 1991), and a waste designation of Washington State toxic code WT01 or WT02 was recommended. Further analysis of the same data was performed and, as reported in Appendix I (Landon 1991), a minimum waste designation of WT02 was recommended and additional codes may eventually be applied depending on the resolution of each Federal and Washington State code determination. The presence of cyanide at one elevation was the basis for the WT02 designation."

Reference 6 Section 2.2.3.3 states: Tank 241-CX-71 was used from 1952 through 1957... The design capacity ... is 1,000 gal [~ 3.79 m³]. ... 241-CX-71: WT02 (dangerous toxic – state only) because of cyanides and nitrates."

Reference 6.e Section 2.3.2.2 states: "(1,000) gallon design capacity.... To renew the limestone bed as it was dissolved by the acid, limestone was periodically added through the large central riser pipe. Cummings (1989) and others indicate that there is little reliable historical information concerning this tank."

Reference 11 states the tank has 5,000 gallon (~ 19 m³) capacity and is believed to be nearly completely filled with crushed limestone. Also, Reference states: "After June 1957, Tank 241-CX-71 was no longer used."

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241-CX-72

Summary:

241-CX-72 tank is calculated to contain 2.66 m³ of waste based on an 11 ft depth (reference 6) in a 3.3 foot diameter (reference 6.e says 40in.) cylindrical tank. References have different volume capacities for this tank ranging from 2,000 gallons to 20,000 gallons. The CY2006 LDR report (Reference 1) indicates 2.6 m³ of waste for the system so the volume number will be revised in the next LDR Report annual update to add in the volume from 241-CX-71. The waste codes assigned to the 241-CX-72 waste from the Part A Permit Application (D002, D004-D011, WC02, WC01, WT01, WT02) were assigned conservatively because current compositions are unknown. WC02 and WC01 waste codes were eliminated from WAC 173-303 in 1995, so these waste codes need to be deleted from the Part A Permit Application during the next revision (Observation 3). The tank has not been sampled. The waste designation for 241-CX-72 is not complete or accurate. Ecology's letter in 1994 deferred sampling of 241-CX-72 (Reference 2.j) provided that four conditions were met (see below). These conditions have been met and are still being met. The monthly inspection frequency in the Ecology 1994 letter was superseded with an annual frequency in 2003 (Reference 13) with one condition.

The integrity of 241-CX-72 tank and whether the tank leaked is not known at this time.

References:

Reference 2.a, Section 2.1.6 states: "The 241-CX-72 tank was initially decommissioned in 1986... that filled the tank's void space with grout. ... However in 1988, when an agitator rod was inadvertently pulled from the tank and found to have approximately 2,000 to 8,000 disintegrations per minute alpha contamination, it was suspected that the tank still contained contamination, and a radiological investigation/evaluation was performed."

Reference 2.a, Section 2.1.8 states: "A greenhouse and caisson were constructed over the tank in 1990 to support drilling operations to remove the grout. Because the tank contained an agitator assembly, mockup testing of grout removal activities was conducted from January to September 1992. The mockup testing was ultimately terminated due to problems encountered when drilling through a mockup of grout and embedded steel."

Reference 2.j states: "[Ecology] has concluded its review of the conditions in Tank CX-72, and now agrees to the deferral of sampling until work on the 200-SO-1 operable unit begins. ... To ensure that conditions in Tank CX-72 do not deteriorate, I am requesting that the following measures be taken until the 200-SO-1 work plan deems otherwise:

- Maintain the building over Tank CX-72 in its present condition
- Prohibit the use of this building for any purpose other than the current one
- Preserve access to the drywell in tank CX-72
- Conduct monthly inspections to verify compliance with the above conditions"

[Note: Ecology approved an annual inspection frequency in 2003 (Reference 13) and the operable unit has been changed from 200-SO-1 to 200-IS-1]

Reference 2.q, executive summary states: "The lack of historical documentation on the specific wastes placed in the tank prevents the use of the process knowledge to eliminate analyses from the list to be performed."

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Reference 6, Section 2.2.3.3 states: “Tank 241-CX-72 was used for approximately 1 year in 1956... In 1986, 241-CX-72 was filled with 7.3m (24 feet) of grout over a 3.4m (11-ft) heel of non-liquid mixed waste. The design capacity is 2,340 gallons. 241-CX-72: D002 (corrosive), D004 (arsenic), D005 (barium) D006 (cadmium), D007 (chromium), D008 (lead), D009 (mercury), D010 (selenium), D011 (silver), WC02 and WT01 (extremely hazardous toxic), and WT02 (dangerous toxic – state only) because of cyanides and nitrates.”

Reference 6.e, Section 2.3.2.3 states: “... an upright, cylindrical single-shell carbon steel tank, approximately 1.0 m (40 in.) in diameter.... The tank was grouted in 1979 as part of the decommissioning process. Approximately 4.6m (15 ft) of the internal system of actuator rods was pulled from the tank by heavy equipment sometime between 1986 and 1988 resulting in contamination to the ash material covering this area and the discovery that the tank still contained waste.... After discovery of the remaining waste, Griffin and Ludowise (1989) concluded that the contents of the 241-CX-72 Storage Tank could be considered transuranic waste and should be retrieved, and that the retrieval of the waste from the 241-CX-72 Storage Tank was feasible using existing technology and methods. More recently, however, plans to drill out the grout cap have been abandoned and Decontamination and Decommissioning has recommended deferring sampling or cleanup of the tank to the CERCLA operable unit activities.”

Reference 6.l, Section 4.1 states: “Although the types of chemicals and chemical compositions were documented, the quantities used and the current compositions are unknown. A formal waste designation has not been performed on the waste in this tank because the quantity, concentrations, and current chemical composition are not known.”

Reference 11 states the last activity on the tank was filling the tank with grout in 1986.

Reference 13 states: “However, if any annual inspection identifies any potential threats to human health or the environment, Ecology must be immediately notified and will reevaluate the necessity of monthly or quarterly inspections.”

What you need to know

The information for this item contains the information needed to approach the Tri-Party Agreement lead regulatory agency project manager (Ecology in this case) in order to have discussions on the MW matrices.

According to Reference 3, Ecology’s letter “expects the [200-IS-1] work plan to propose specific sampling and analysis for the 241-CX tank system. The proposal should be designed to characterize the waste as well as characterize the nature and extent of releases from the tanks.” According to Reference 10, Ecology’s letter recommends DOE proceed with closure by removing each of the three 241-CX tanks. Ecology also indicated that “sampling of the tanks residuals and the soils to determine if the tanks leaked ... is not a viable alternative because the tanks are small in volume and sampling the tanks and soils will not: be cost or time effective

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compared with removal, provide reasonable assurances that human health and the environment will be protected, and ensure that tank removal is unnecessary.”

Tri-Party Agreement milestone M-013-27, “Submit a revised RI/FS work plan for the 200-IS-1...”, due June 30, 2007, was established on February 25, 2007 (Reference 8). The revised RI/FS work plan was submitted to Ecology for comment.

Why the level of unknowns is acceptable or not acceptable from a safety basis for the interim until action is planned or that more information is needed to make this determination.

The level of unknowns regarding the MW matrices will not result in any concerns regarding the safe management of the matrices. Reference 2.a states: “As a result of the research performed and documented in this auditable safety analysis (ASA), there were no indications found that would change the existing priority for closure of the TSD unit.” In addition, Ecology’s 1994 letter (Reference 2.j) transmitted their safety evaluation for 241-CX-72 that was performed by an independent contractor. The mixed waste in tanks below ground provides a barrier of protection for the MW.

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Attachment 2 – Checklist

241-CX Tank System LDR Storage Assessment Checklist

Task	Date
Conduct kick-off meeting with project and contractor management assessment team	March 29, 2005
Offer pre-meeting to Ecology	October 18, 2005
Conduct Ecology Pre-meeting if requested by Ecology	December 13, 2005
Perform walk through of project facilities/locations to identify mixed waste/potential mixed waste	N/A – Walk through occurred as part of Ecology’s 1994 Compliance inspection.
Review records and perform follow-up actions. Use last approved annual LDR report for comparison	November 14, 2006
Draft LDR Storage Assessment Report/Data Gap Plan for project review	1 st draft (FH Project): November 29, 2006 2 nd draft (FH project): March 27, 2007 3 rd draft (RL Program) May 7, 2007
Incorporate project comments	November 13, 2007
Share draft report with Ecology for comment	November 20, 2007
Incorporate Ecology comments	March 18, 2009
Finalize report	September 24, 2009

Note: The finalized report will be presented at a Tri-Party Agreement Project Manager’s meeting for entering the report into the Administrative Record.

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Attachment 3 – 241-CX-70 Subsidence Notification

A caisson was constructed of plywood above 241-CX-70 for access. Over the years, the plywood rotted and water from a rather heavy rain ran into the caisson carrying the dirt around it. In May 2004, the ground was considered stable in the immediate vicinity, but access to the site will be controlled to prevent the development of a hazardous condition from further erosion and subsidence. Ecology was notified via the attached email of the subsidence event.

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Haas, Christian

From: Haas, Christian
Sent: Wednesday, June 02, 2004 10:32 AM
To: Price, John (ECY)
Cc: Skinnarland, E R (Ron)
Subject: Tank 241-CX-70 Ground Subsidence Situation Report

John,

This message is to make you aware of a situation concerning ground subsidence near a RCRA permitted tank (241-41-CX-70), located just to the southeast of the old "Hot Semi-Works" facility. This facility is located in the 200 East Area just to the south of 7th Street (East of B Plant, North of PUREX). The subsidence was discovered during a routine surveillance. The area has been controlled and posted to reflect conditions. For now, the ground is stable in the immediate vicinity, but access will be controlled to site to prevent the development of a safety hazard from further erosion and subsidence.

The tank is constructed of concrete with a one quarter inch stainless steel liner. Concrete thickness varies from one to two feet (the sides and top are one foot thick). The tank is twenty feet in diameter and fifteen feet high. The top of the tank is located approximately eleven feet below grade. The tank was used to store high level process waste in support of the Semiworks process. Prior to being emptied of liquid (1979) and sluiced to remove sludge (1988), the tank had contained about 10,300 gallons of mixed waste. Radiological contaminants included Am, Pu, Cs, Sr. The tank was dried and is considered to be empty. Photos show it clean (staining, but no material). The tank riser area is surrounded by a square wooden structure which appears to have degraded significantly. The purpose of the wood, acting as shoring, was to facilitate access to the access pit and one riser.

With respect to probable cause, we believe that water (rain, snow runoff) has infiltrated the ground around the wooden structure and cause accelerated rotting of the wood. We believe that the wood has failed and the soil has intruded into the area around the risers.

We are continuing to probe the reasons for this subsidence. As part of this probe, we have located a sketch of the tank showing prominent features including a riser and a capped access port. The cap (weight - 2100 pounds) is a mushroom shaped concrete "plug" inserted into the port on the top of the tank. In continuing to ask questions, we are unable to assure ourselves that the port, although covered, is also sealed. It is possible that, if the cap/port interface has not been sealed, water (and some entrained dirt) could have leaked into the tank. This means that this tank that was reported to be empty, could actually contain water (and some entrained dirt). This may explain at least some of the subsidence.

This tank was decommissioned under the CX-70 Project. We reviewed our existing documentation and talked with an engineer that had been assigned to this project when it was completed (Under KEH). The documentation did not show the cap being sealed (although it could have been-we just can't prove it). The engineer could not recall a sealing activity.

Efforts are currently underway to evaluate removal of the cover over the deteriorated wood

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shoring to examine the cap itself and to evaluate the probability of flow into the tank. We may be able to insert a camera into the riser to verify the absence or presence of in-leakage.

If you have any questions or require any additional information, please contact me at the numbers listed below.

Thanks,
Chris Haas
Environmental Compliance Officer,
FH Central Plateau D&D Project
Office - 376-3509
Cell - 727-7796