STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
3100 Port of Benton Blvd • Richland, WA 99354 • (509) 372-7950

July 5, 2019

19-NWP-106

By certified mail

Brian T. Vance, Manager
Richland Operations Office
United States Department of Energy
PO Box 550, MSIN: H5-20
Richland, Washington 99352

Ty Blackford, President and CEO
CH2M HILL Plateau Remediation Company
PO Box 1600, MSIN: A7-01
Richland, Washington 99352

Re: Dangerous Waste Compliance Inspection on November 13, 2018 and January 24, 2019 at T Plant Complex, RCRA Site ID: WA7890008967, NWP Compliance Index No 18.653.

Dear Brian T. Vance and Ty Blackford:

Thank you for your staff's time during the inspection on November 13, 2018 and January 24, 2019. The Department of Ecology's (Ecology) compliance report of this inspection is enclosed. The report cites four areas of non-compliance and five concerns.

To return to compliance, complete the actions required in the compliance problems section of the report and respond to Ecology within the timeframes specified. Include all supporting documentation in your response, (such as photographs, records, and statements explaining the actions taken and dates completed). Submit this information to Jackson Davis at 3100 Port of Benton Boulevard, Richland, Washington 99354.

Failure to correct the deficiencies may result in an administrative order, a penalty, or both, as provided by the Hazardous Waste Management Act (Revised Code of Washington 70.105.080 and .095). Persons who fail to comply with any provision of this chapter are subject to penalties of up to $10,000 per day per violation.

Specific deficiencies or violations not listed in the enclosed compliance report do not relieve your facility from having to comply with all applicable regulations.

19-NWP-106
T Plant Complex
RCRA Site ID: WA7890008967
NWP Compliance Index No.: 18.653
Inspection Date: November 13, 2018 and January 24, 2019

If you have questions or need further information, please contact me at (509) 372-7930 or jackson.davis@ecy.wa.gov .

Sincerely,

Jackson Davis
Dangerous Waste Compliance Inspector
Nuclear Waste Program

so
Enclosure

cc electronic w/enc:
Dave Bartus, EPA
Jack Boller, EPA
Dave Einan, EPA
Duane Carter, USDOE
Mark French, USDOE
Tony McKarns, USDOE
Ingrid Siddoway, USDOE
Allison Wright, USDOE
Noah Cruz, CPHRC
Diane Leist, CHPRC
Linda Petersen, CHPRC
Dave Richards, CHPRC
Jon Perry, MSA
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Ken Niles, ODOE
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John Martell, WDOH
Debra Alexander, Ecology
Kathy Conaway, Ecology
Suzanne Dahl, Ecology
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John Price, Ecology
Laura Schroder, Ecology
Alex Smith, Ecology
John Temple, Ecology
Environmental Portal
Hanford Facility Operating Record
CHPRC Correspondence Control
MSA Correspondence Control
USDOE-RL Correspondence Control

cc w/enc:
Susan Leckband, HAB
Hanford Administrative Record
NWP Central File
NWP Compliance Index File: 18.653

cc w/o enc:
Matt Johnson, CTUIR
Jack Bell, NPT
Alyssa Buck, Wanapum
Laurene Contreras, YN

Washington Department of Ecology

Nuclear Waste Program

Compliance Report

SITE:	**T-Plant Complex**
RCRA Site ID:	**WA7890008967**
Inspection Date:	November 13, 2018 and January 28, 2019
Site Contacts:	Linda Petersen and Noah Cruz, CH2M Hill Plateau Remediation Company (CHPRC) Allison Wright and Tony McKarns, United States Department of Energy – Richland Operations Office (USDOE-RL)
Site Location:	Hanford Site
At This Site Since:	1943 NAICS#: 56221, 924110, 54171
Current Site Status:	Treatment, Storage, and Disposal Facility (TSDF) / Large Quantity Generator

Ecology

Lead Contact: Jackson Davis Phone: (509) 372-7930 FAX: (509) 372-7971

Other Representatives: Kathy Conaway, Jared Mathey, Johnathan Rogers, Adam Shaffer

Report Date: 7/5/2019

Index #: 18.653

Report By: Jackson Davis

(Signed) 7/5/19 (Date)

Site Location

The Hanford Site was assigned a single United States Environmental Protection Agency (EPA) identification number, and is considered a single Resource Conservation and Recovery Act (RCRA) of 1976, as amended, facility even though the Hanford Site contains numerous processing areas spread over a large geographic area. The Hanford Site is a tract of land approximately 580 square miles and is located in Benton County, Washington. This site is divided into distinct Dangerous Waste Management Units (DWMUs) organized administratively into "unit groups." A unit group may contain only one DWMU or many; currently, there are 30 unit groups at the Hanford Site. Individual DWMUs make up a small portion of the Hanford Site. Additional descriptive information on the individual DWMUs is contained in unit group permit applications and in Parts III, V, and VI of the Hanford Facility RCRA Permit, Dangerous Waste Portion, WA7890008967, Revision 8C (hereafter referred to as the Permit).

Owner and Operator Information

The United States Department of Energy – Richland Operations Office (USDOE-RL) is the owner and operator of the T-Plant Complex (T-Plant) and oversees ongoing waste management and cleanup activities at the Hanford Site. CHPRC is contracted by the USDOE-RL to co-operate the T-Plant and associated DWMU, which includes performing waste treatment, storage, and disposal activities, conducting waste characterization, designation, and transportation services.

Compliance Background

For more complete information regarding the compliance history of T Plant prior to 2016, refer to Compliance Index Number 15.549. For 2017, Ecology conducted a Follow-up Inspection (FUI) as part of Pollution Control Hearings Board (PCHB) Case No. 16-107. A Settlement Agreement reached on June 29, 2017 required the following summarized agreements:

- CHPRC to establish a 90-day accumulation area at the T Plant Complex to hold waste pending analysis, prior to moving waste into permitted storage.
- CHPRC to update facility operating records for the T Plant Complex to document dates of storage.

For 2018, refer to compliance Index Number 18.626. Compliance found risk labeling issues and first names missing from inspection records.

Inspection Summary

At 9:05 AM, I met with representatives from CHPRC and USDOE-RL in building MO-892. Fourteen people attended including Ecology Inspector Kathy Conaway, and myself. Allison Wright and Tony McKarns represented USDOE-RL. Linda Petersen and Noah Cruz were my primary contacts. For a complete list, see Attachment A, "Attendance Rosters." Dave Richards, T-Plant Operations Manager delivered a safety briefing. Ms. Conaway asked what waste management activities they were doing that day. Mr. Richards said they were performing preventative maintenance on emergency lighting and replacing a backflow preventer. Ms. Conaway asked if there was any waste processing or sorting. Mr. Richards said no, but there were three operators performing monthly maintenance.

I asked if there were any Satellite Accumulation Areas (SAAs). Mr. Richards said there were accumulation containers, and managed as permitted storage, not SAA. I asked when they designate the waste generated into these storage containers. Mr. Richards said they designate prior to waste generation and during the planning process. I asked what the waste acceptance criteria of T-Plant were and he said HNF-0063. I asked if they managed a 90-day accumulation area. Mr. Richards said they had one set up (as per the settlement agreement), but that there was no waste in it.

I asked if the facility had received any waste in the last year. Mr. Richards said they had only received K-Basin waste managed under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Mr. Richards also said there was one container of CERCLA waste managed in the 211-T Cage. I asked how the CERCLA sludge was managed and Ms. Horn said that CHPRC had a procedure identifying the actions they would take to meet Applicable or Relevant and Appropriate Requirements (ARARs) (see CERCLA Remedial Action Work Plan, DOE/RL-2011-15).

I asked Mr. Richards if there was any bulk sodium remaining from the 221-T Containment System Test Facility (CSTF). Mr. Richards said no, however, they were storing sodium hydroxide product in the Building 271-T Aqueous Makeup Unit (AMU). I asked if the product was used in a treatment process. Mr. Richards said they were not currently using it in any process, but were maintaining it in the facilities product inventory to use at USDOEs discretion.

Note: USDOE-RL filed a RCRA "Part A" permit application on August 15, 1987, to treat sodium waste in the Head End of T-Plant. USDOE-RL withdrew the application on June 22, 1989 (see Administrative Record [AR]: E0006491, D199017707). During operation, the waste generated in CSTF included alkali metal waste and dilute aqueous solutions of related hydroxides (see AR: D197182647).

I asked if any treatment had taken place in the past year. Mr. Richards said they had packaged and shipped expired chemicals to Stericycle. He also said they were preparing Work Packages for absorption, and void filling mixed waste oil containers.

I asked Mr. Richards which DWMUs were currently managing dangerous waste. After discussing each unit in the current permit application (DOE/RL-2015-74), I selected the following areas for the field inspection:

- 221-T Canyon Deck (from Operations Gallery)
- 221-T Tank System (from Operations Gallery)
- 2706-T Yard
- 2706-T Pad
- 214-T Building
- 211-T Cage
- 271-AMU (not a DWMU)

I asked Mr. Richards which containers were being used as "accumulation containers" in permitted storage. Mr. Richards listed the following accumulation containers:

- 221T-18-000031
- 0090667
- 0092092
- 0094701
- 0090668

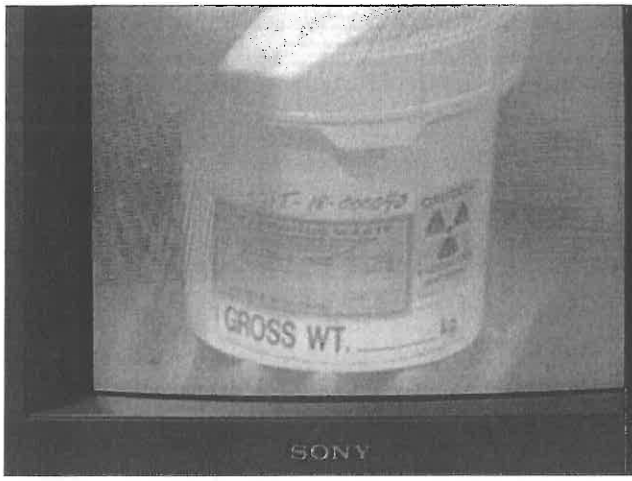
I asked how they were managing Universal Waste and Mr. Richards said there was one container in the 271-T Shift Office and others in 2716T. I included these two areas for the field inspection.

We entered 271-T, T-Plant Services Building, at 9:39 am. Mr. Richards led us to the Shift Office, 271-T, Room 212. I observed a Universal Waste container for alkaline batteries labeled with an accumulation start date of May 23, 2018.

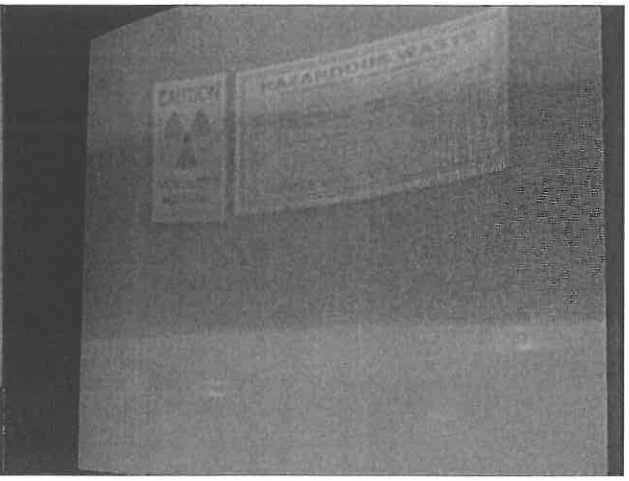
Next, we walked to the Operations Gallery. I observed an empty Storage cabinet. I observed warning signs saying "Danger Unauthorized Personnel Keep Out." I saw there was a fire extinguisher within 50 feet of the cabinet and pull alarms nearby. I asked about eyewash stations and Mr. Richards said there were portable eyewash stations in Building 271-T had that would be taken to DWMUs by personnel when waste management work was taking place.

Next, in the Operations Gallery, Mr. Richards led us to a room with a wall of monitors. He explained this is where they could observe the canyon deck without entry. He explained they divided the Canyon Deck into 20 sections, each section with a left cell (L) and a right cell (R). Mr. Richards indicated toward a monitor on the wall and stated we were observing the West Tunnel camera. I observed the 221-T Railroad Tunnel DWMU on the monitor. He added that K-Basin sludge entered the canyon through the railroad tunnel by truck.

I observed two Dangerous Waste containers while looking south on the Section 2 camera. I observed these were containers 221T-18-000040 and 0090667. I observed on the inventory list that container 221T-18-000040 was described as "LLMW from decon work on stanchion" and was designated dangerous with contamination from waste listed for ignitability and toxicity. Container 0090667 contents described as "metal halide bulbs" and designated dangerous for toxicity characteristic. Each container carried a radioactive material sticker. I asked Mr. Richards if there were any major risk markings in addition to the radioactive material label. Mr. Richards said there were not. I took photographs of each container on the monitors, as did Mr. Cruz who took a photograph of any photograph I took. Note: Mr. Cruz's photos of the monitors are the shown below.



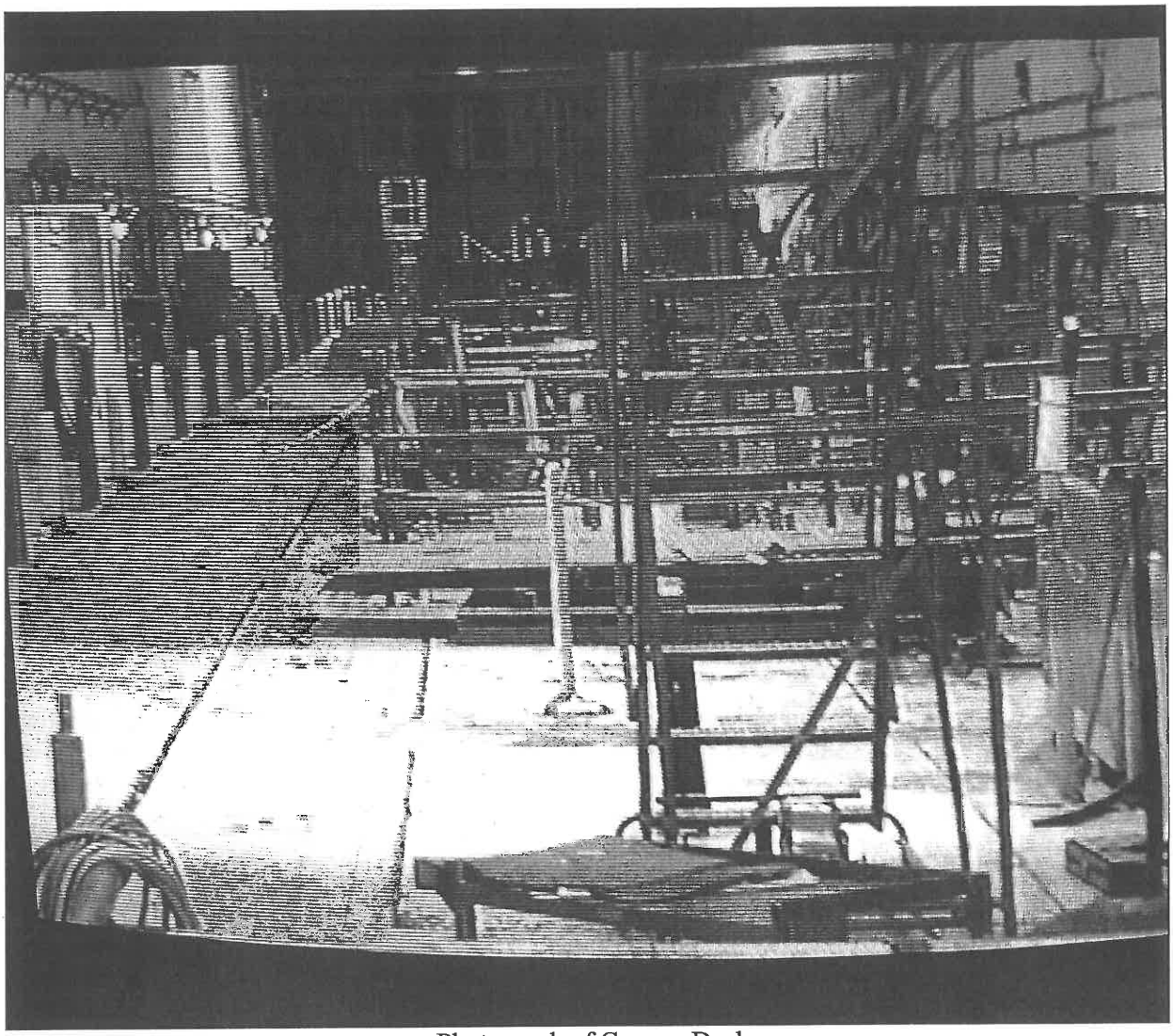
221T-18-000040 via Camera,
Provided to Ecology January 24, 2019



0090667,
Provided to Ecology January 24, 2019

I asked to see what was visible of T-Plant tank system. Mr. Richards said we could see the cell covers from cameras on the Canyon Deck. He added the Sludge Transportation and Storage Containers were in Cell 15-L and that a portable camera was set up in that section. From there, we could see the cover blocks on cell 15-R, which holds Tank 15-1. At 10:05 am I photographed the cover of cell 15-R.

I asked to see Section 11. Mr. Richards switched to the camera for Section 10 and zoomed in, explaining that the cover of 11-L was visible behind the portable stairs, under the stack of sheet steel, and the cover for 11-R was just behind that. I took a photo of the feed from the camera in Section 10 at 10:09 am. I asked if there were cameras on the deck where I could observe the areas above tanks TK5-6, TK5-7, TK5-9, and TK6-1. Mr. Richards said there were not.



Photograph of Canyon Deck,
Provided to Ecology January 24, 2019

T Plant provided the following inventory to Ecology on November 13, 2018:

Table 1: T-Plant Inventory, 221-T Canyon Deck and Tank System

Package ID	Facility/DWMU	TSD Accept Date	Accumulation Date	Waste Codes
221T-96-000009	221-T Canyon Deck	-	2/28/1996	D004-D011
221T-18-000040	221-T Canyon Deck	-	10/9/2018	F001-F005
0090667	221-T Canyon Deck	-	10/15/2018	D005, D009
TK5-6	T-Plant	-	6/3/1999	D005-D008, F001-F005
TK5-7	221-T Canyon Deck	6/3/1999	6/3/1999	D005-D008, F001-F005
TK5-9	T-Plant	-	6/3/1999	D005-D008, F001-F005
TK6-1	221-T Canyon Deck	6/3/1999	6/3/1999	D005-D008, F001-F005
TK11-R	221-T Canyon Deck	-	6/3/1999	D005-D008, F001-F005
TK15-1	221-T Canyon Deck	6/3/1999	6/3/1999	D005-D008, F001-F005

I asked if there were hazardous waste labels, or major risk labels in place for the tank system. Mr. Richards said no. Mr. Marrot said there were dangerous waste warnings on the door to the Canyon Deck. I asked where fire extinguishers were located and Mr. Richards said at every exit, and located one using the Section 10 camera. I asked if there were spill kits and Mr. Richards said the spill kits were in metal supply cabinets by Perma-Con 1 and 2 (which were, he explained, steel-walled structures on the canyon deck from past transuranic waste repackaging operations).

On the way out of Building 271-T, we stopped on the first floor so I could see the 271-T AMU tank where sodium hydroxide was stored. I observed the top of the tank was below floor level. The top of the tank was visible and the lid was closed and tagged with a Chemical Inventory Tracking System (CITS) inventory sheet. I observed a portable eyewash system nearby.

T Plant provided the following inventory to Ecology on November 13, 2018:

Table 2: T-Plant Inventory, 2706-T Pad

Package ID	Facility/DWMU	TSD Accept Date	Accumulation Date	Waste Codes
0022097	2706-T Pad	8/5/2005	6/30/2005	D008

Leaving 271-T, we walked to the 2706-T Pad. I observed the pad was marked with a sign reading "unauthorized personnel keep out." I observed two fire extinguishers were present. I did not observe a spill kit. Mr. Richards stated a spill kit was located in the Emergency Response cage. On the edge of the pad, I observed a large storage box. I asked what was inside and Mr. Richards said it was a glove box from the Plutonium Finishing Plant (PFP) that was being managed as TSCA waste. I observed a label on the end of the box read "232-Z-CERCLA" and identified the PCB out of service date as 7/11/2005. I observed from the inventory provided, that the glovebox was from the Building 232-Z (an Incineration Facility formerly adjacent to the PFP stack). I asked if there was anything else on the pad, and Mr. Richards stated there was a container used to store lead blankets, and were staged for future use.

At 10:30 am, we walked across the asphalt and entered the 2706-T yard. Outside the yard, I observed a security sign, "unauthorized personnel keep out." Inside the yard, I observed a pair of storage modules. Each storage module had three bays. Outside I observed fire extinguishers and pull alarms, and inside each module I observed an automatic sprinkler system.

Inside Bay 1 of Module HS-030 I observed four containers of TRUM waste. Inside of Bay 2, I observed four containers, two of which, 0059277 and 0064499, were not on the inventory. Mr. Richards stated Container 0059277 was non-dangerous and container 0064499 was recyclable oil that they were going to absorb. I asked why they were going to absorb it if it was recyclable. Mr. Richards said that it was too expensive to test the oil to be released from the site. Inside Bay 3, I observed two containers. Mr. Richards said container 218T-17-000048 contained expired product, 1-octanol, which they intended to absorb and dispose.

T Plant provided the following inventory to Ecology on November 13, 2018:

Table 3: T-Plant Inventory, 2706-T Yard, HS-030

Package ID		Facility/ DWMU	TSD Accept Date	Accumulation Date	Waste Codes
Bay 1	Z9-770818	2706-T Yard	12/7/1979	12/7/1979	D006-D008, D011, D039, F001-F003, F005
	Z9-770411	2706-T Yard	12/5/1979	12/5/1979	D006-D008, D011, D039, F001-F003, F005
	Z9-770440	2706-T Yard	12/5/1979	12/5/1979	D006-D008, D011, D039, F001-F003, F005
	Z9-770521	2706-T Yard	12/5/1979	12/5/1979	D006-D008, D011, D039, F001-F003, F005
Bay 2	0092092	2706-T Yard	-	9/11/2018	D005, D009
	0094701	2706-T Yard	-	7/3/2018	D005
	0059277*	Not on Inventory			
	0064499*				
Bay 3	0090668	2706-T Yard	-	10/11/2018	D009
	221T-17-000048	2706-T Yard	-	12/20/2017	WT02

* Containers were observed in DWMU, but not listed on DW Inventory.

In Bay 1 of HS-032, I observed four 85- gallon containers of TRUM waste. In Bay 2, I observed a single container, 0047674, which Mr. Richards identified as containing sample returns from TK11-L. Outside of Bay 3, I observed postings for a designated Less-than-90-day storage area. Inside, the module was empty.

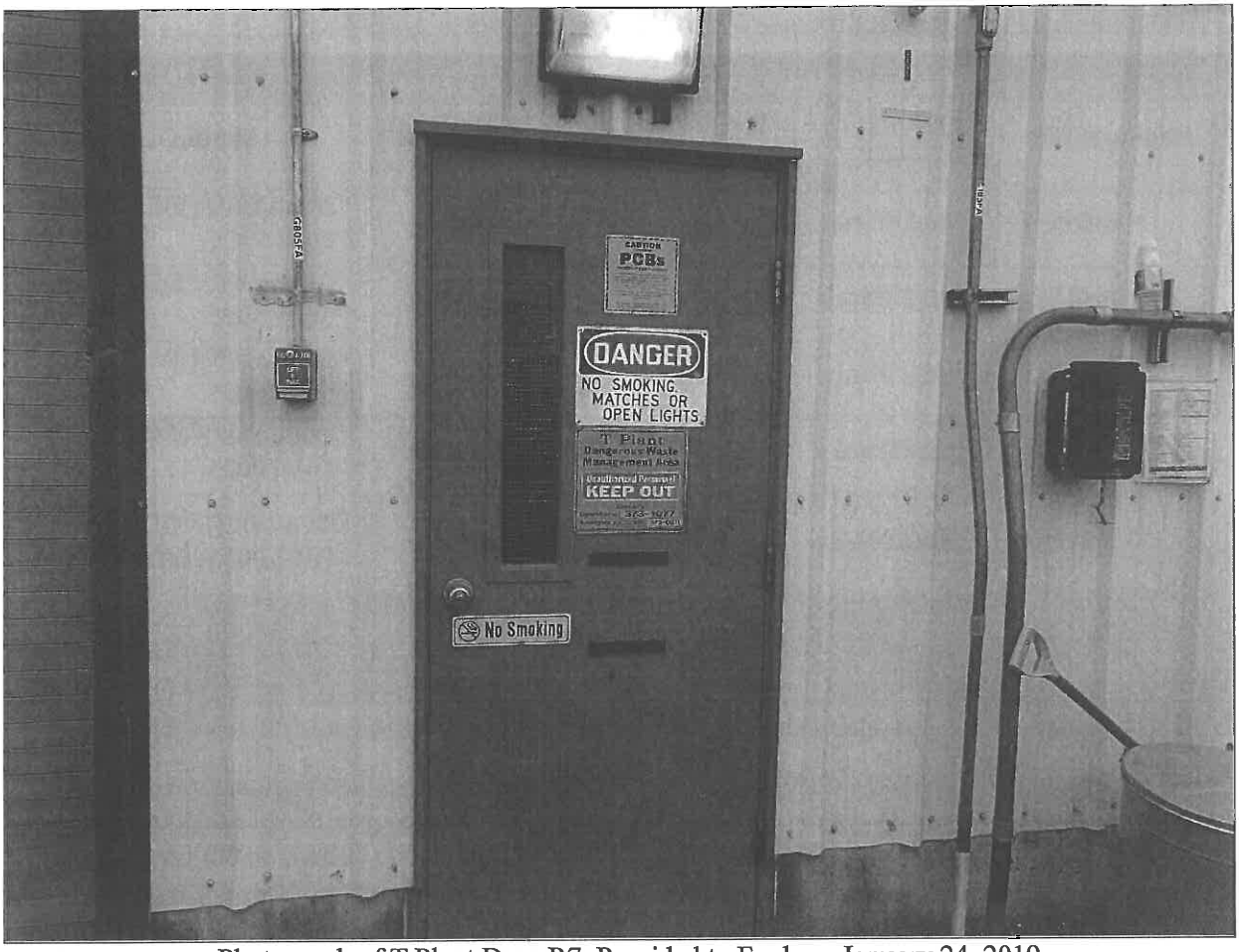
T Plant provided the following inventory to Ecology on November 13, 2018:

Table 4: T-Plant Inventory, 2706-T Yard, HS-032

Package ID		Facility/ DWMU	TSD Accept Date	Accumulation Date	Waste Codes
Bay 1	0095572	2706-T Yard	1/30/1980	1/30/1980	D006-D008, D011, D039, F001-F005
	0095569	2706-T Yard	1/28/1980	1/28/1980	D006-D008, D011, D039, F001-F005
	0095571	2706-T Yard	1/31/1980	1/31/1980	D006-D008, D011, D039, F001-F005
	0095594	2706-T Yard	1/28/1980	1/28/1980	D006-D008, D011, D039, F001-F005
Bay 2	0047674	2706-T Yard	-	11/4/2002	D006-D008, D010, D039, F001-F005, WSC2*
Bay 3	Empty				

*This is the designation provided to me the day of the inspection. See Records Review (below).

Next, we walked to building 214-T. Inside, I observed a number of contained gas tanks. Mr. Richards stated the gas was for the nitrogen purge of the K-Basins sludge. In storage, I observed 10 universal waste containers, all closed and labeled with dates in 2018. Additionally, I observed three containers marked as recyclable, and all were closed. One of these containers was labeled "used oil for recycle" and dated May 25, 2017. I observed one of the containers of batteries did not indicate a year. On a pallet by itself, I observed a single container of dangerous waste, which Mr. Richards identified as leaking alkaline batteries. In a back room of 214-T, I observed an empty flammable materials cabinet.



Photograph of T Plant Door R7, Provided to Ecology January 24, 2019

T Plant provided the following inventory to Ecology on November 13, 2018:

Table 5: T-Plant Inventory, 214-T

Package ID	Facility/DWMU	TSD Accept Date	Accumulation Date	Waste Codes
221T-18-000031	214-T	-	5/23/2018	D009, WSC2

Next, we walked past the 211-T cage. I observed one container inside the cage and it was marked CERCLA LLW. I asked what was inside the container and Mr. Richards said it was waste from their K-Basin sludge operation. I asked if it would designate as "dangerous waste" and Ms. Horn said she knew the K-Basin sludge did not designate, and said waste derived from treatment was unlikely to designate as well.

Finally, we visited Building 2715-T, Instrument Tech. Shop, so I could see the last of the universal waste. I observed a container labeled Universal "Waste: Alkaline Batteries" dated March 22, 2018. At 11:15 am, we broke for a half hour lunch.

DOCUMENT REVIEW

At 11:45 am, we met in MO-892 with the representatives from USDOE and CHPRC to review T-Plant records.

To address Contingency Plan requirements, I asked for a current copy of the Building Emergency Plan (BEP). Operating a computer connected to a projector, Kym Tarter displayed a digital copy of *Waste and Fuels Management Project Building Emergency Plan for the T-Plant Complex,* HNF-IP-0263-TPC, Revision 30. I asked who the current Building Emergency Director (BED) was. Mr. Richards said today's BED was Andy Mix.

I also asked for a current copy of the *Hanford Emergency Management Plan*, DOE/RL-94-02. Ms. Tarter displayed Hanford *Emergency Management Plan*, DOE/RL-94-02, release 36, revision 2, dated October 22, 2008.

> Note: On November 20, 2018, Allison Wright of USDOE-RL contacted me by email stating "the current version of DOE/RL-94-02, is 2014 Revision 6," and that I may have been shown an outdated version because "the IDMS Indexer was backed up yesterday, and may not have shown all the results."

I asked to see the Waste Analysis Plan (WAP). Ms. Tarter displayed *T-Plant Complex Waste Analysis Plan,* TPLN-STD-EP-53088, Revision 0, Change 4. I asked Mr. Richards to clarify an earlier statement about HNF-0063. Mr. Richards explained that the waste acceptance criteria were not in the WAP, they were in HNF-0063. I asked to see where the WAP described methods for obtaining representative samples. Ms. Tarter searched the document for "representative sample" and there were no matches. She then searched for "representative" and we still could not locate any reference to representative sampling. Next, Ms. Tarter scrolled to Section 5.1, "Sampling Methods and Equipment." This section stated "sampling methods performed at T-Plant are in accordance with WAC 173-303-110(2), 'Sampling, Testing Methods, and Analytes.' Sampling equipment appropriate to the waste type to be sampled and in accordance with WAC 173-303-110 will be used. Sampling equipment used at T-Plant is shown in Table 3." Table 3 specified a list of equipment for liquid waste and a list of equipment for homogeneous solids, no other waste types were described, and there was no discussion of how to select the appropriate sampling tool from the list. I observed one of the pieces of equipment described was a COLIWASA, but I did not observe a description of a COLIWASA method for obtaining a representative sample, such as *Standard Practice for Sampling Single or Multilayered Liquids, With or Without Solids, in Drums or Similar Containers*, ASTM D5743-97 (2013). We scrolled through the rest of the WAP and I observed no methods for obtaining representative samples were described. Mr. Richards said the WAP referenced WAC 173-303-110 instead of describing specific methods.

I asked Mr. Richards if they had any current waste resulting from treatment at T-Plant and he said no. I asked how waste stored in "accumulation containers" was tracked. Mr. Richards said they followed waste management procedures in work packages and tracked waste movements in Solid Waste Information and Tracking System (SWITS) and in the radiological logbook.

I asked if a tank integrity test had ever been performed on tanks TK5-6, TK5-7, TK5-9, TK6-1, TK11-L, TK11-R, TK15-1, or the T-Plant tank system as a whole. Mr. Richards said he did not know of any integrity assessments of the T-Plant tanks, or of any requirement to do so in any of his procedures. I asked if there was a schedule for conducting an integrity assessment over the life of the tanks listed above and Mr. Richards said there was not.

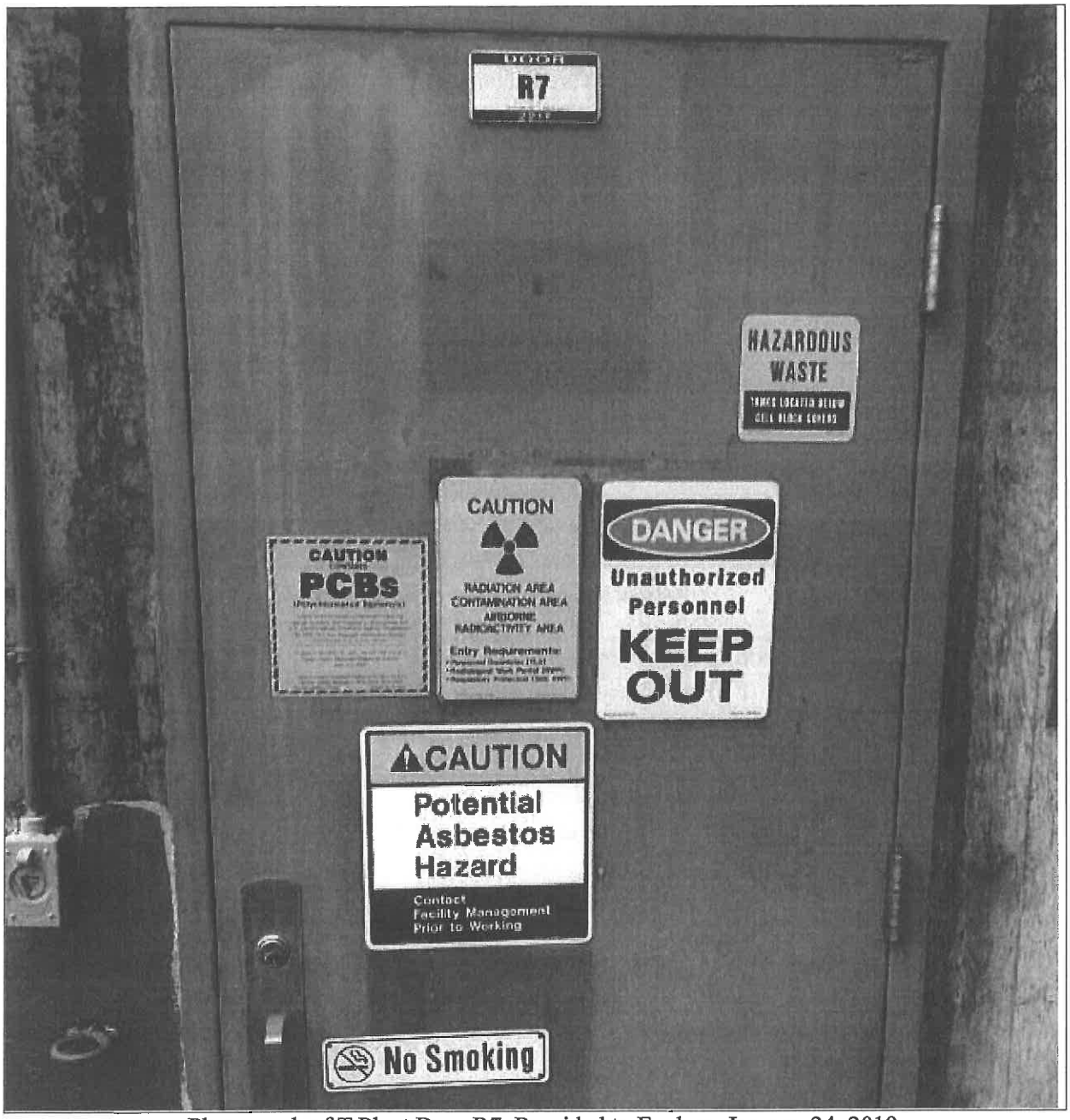
Mr. Richards said the T-Plant tanks have not been used in a long time and that water was shut off prior to 2009. He said the tanks are now undergoing dangerous waste closure. I asked if there was a heel of waste in any of the tanks. Mr. Marrot said the inventory I had been provided indicated there was a waste heel in each tank, and that those volumes are listed in WIDS and on the inventory I was provided. Information from the T-Plant inventory provided to Ecology on November 13, 2018:

Table 6: T-Plant Inventory, Tank System

Tank	Description	Tank Heel (m^3)	Mass (kg)	Tank Size (gal.)
TK5-6	Liquids and sludge containing grease and oil from decontamination activities	0.18	130	5,100
TK5-7		0.38	274	16,000
TK5-9		0.18	130	4,800
TK6-1		0.33	238	14,500
TK11-R		0.33	238	14,000
TK15-1		0.33	238	14,000
TK11-L	Not on inventory			

I asked if there was secondary containment with the T-Plant tanks. Mr. Richards said there was. I asked if the secondary containment met WAC 173-303-640 requirements. Mr. Richards said he did not believe so. Ms. Horn added that there was level monitoring in the sump. Mr. Richards said they monitor the level of 5-6, 5-7, 5-8 (Section 5 sump) and 5-9 on a daily basis. I asked if any of those tanks held a measurable volume and Mr. Richards said all readings were zero. I asked what the lowest detectable level was and Ms. Tarter displayed *Perform Daily Surveillance for T Plant Complex,* TPLN-PRO-OP-51744. On page eight of 34, the procedure reads "RECORD 5-6, 5-7, 5-8, and 5-9 liquid level at Section 5 board as follows… for values below 1.0%, RECORD 0.0% …". I observed the procedure indicated monitoring equipment read as a percentage and Appendix A had formulas for converting percentages to volumes (for example, 1.0 % of tank 11-R equals 140.1 gallons, i.e. 0% just means less than 140 gallons). I observed there was active leak detection in most of the T-Plant tank DWMUs, but not on TK6-1 or TK11-L. I asked if monitoring was done for 11-L. Mr. Richards said there was no level indicator on 11-L.

I asked if there was a picture of the security and hazard signs on the entrance to the canyon decks. Ms. Tarter displayed a picture of a door bearing legends reading "Hazardous Waste," "Danger Unauthorized Personnel Keep Out," and "Caution PCB." See photo below.



Photograph of T Plant Door R7, Provided to Ecology January 24, 2019

I asked if the Contingency Plan had been implemented in the past year. Mr. Richards said he did not have to implement the Contingency Plan in calendar year 2018. I asked if he had ever implemented the contingency plan and he said "no."

I asked how T-Plant maintains a spill log. Mr. Richards said through Environmental Compliance Officers, and that the last spill was antifreeze in the railroad tunnel cut in 2017. I asked if there had been any spills in 2018. Mr. Marrot said there was nothing on the spill log from 2018.

I asked to see a copy of the Dangerous Waste Training Plan, and Ms. Tarter displayed *T Plant Dangerous Waste Training Plan,* PRC-STD-TQ-40228, Revision 1, change 5. I next asked to see the training record for Dave Richards, BED. I compared the course requirements in the Dangerous Waste Training Plan to the BED's individual training record.

Table 7: BED Training Plan

Course Number	Course Title	Date taken	Frequency
000006	CHPRC General Employee Training	1/08/18	Annual
450700	T Plant Facility Orientation	3/16/2009	Annual
03E048	T Plant Facility Emergency and Hazard Identification Checklist	10/22/2018	Annual
02028B	Building Emergency Director Initial Training	05/10/2001	Initial
037515	Building Emergency Director Refresher training	10/08/2018	Annual

Next, I reviewed the training records for Nuclear Chemical Operator (NCO) Laura Johnson. I compared the course requirements in the Dangerous Waste Training Plan to the NCO's individual training record.

Table 8: NCO Training Plan

Course Number	Course Title	Date Taken	Frequency
000006	CHPRC General Employee Training	4/10/2018	Annual
450700	T Plant Facility Orientation	7/08/1996	Annual
03E048	T Plant Facility Emergency and Hazard Identification Checklist	10/25/2018	Annual
035100	Container Waste Management	10/14/1993	Initial
035110	Container Waste Management Refresher	4/19/2018	Annual
450160	T Plant Waste Handling Qualification	12/14/16	Biennial
450140	T Plant Base Operations	6/28/2017	Biennial
450150	T Plant Surveillance Qualification	8/14/2017	Biennial
450165	T Plant Waste Surveillance and Compliance	8/23/2017	Biennial

Next, I reviewed the training records for ECO Jonathan Fulmer. I compared the course requirements in the Dangerous Waste Training Plan to the ECO individual training record.

Table 9: ECO Training Plan

Course Number	Course Title	Date Taken	Frequency
000006	CHPRC General Employee Training	4/26/2018	Annual
450700	T Plant Facility Orientation	8/4/2015	Annual
03E048	T Plant Facility Emergency and Hazard Identification Checklist	8/8/2018	Annual
600100	Environmental Compliance Officer – Core	8/8/2018	Initial
600304	Waste Disposition – ECO	TBD	Initial

With the last training record, Kim Tarter displayed a memo indicating Mr. Fulmer had been appointed to ECO on August 13, 2018. According to WAC 173-303-330(1)(c)(ii), Mr. Fulmer had six months from his appointment date to complete the training.

Note: On December 18, 2018, I contacted Linda Peterson of CHPRC noting a discrepancy between the frequency in the training plan for course 450700 and the date taken for all three employees. Ms. Peterson spoke with project staff and later that day replied that Course Number 450700 has always been an initial training course, but that it was misprinted as an annual refresher course in Change 5 of the Dangerous Waste Training Plan. I reviewed *T Plant Dangerous Waste Training Plan,* PRC-STD-TQ-40228, Revision 1, Change 4, which Ecology requested April 10, 2018 (Compliance Index# 18.626), and confirmed that the course had previously been only on an initial training frequency. Ms. Petersen said they were already in the process of revising the training plan.

Then, I asked what procedures were used to perform Dangerous Waste inspections. Ms. Tarter displayed three procedures:

- *Perform Weekly and Daily Surveillance of WMA's*, TPLN-PRO-OP-51748, Revision 11, Change 11
- *Perform Surveillance of T Plant Emergency Equipment*, TPLN-PRO-OP-51745, Revision 10, Change 6
- *Perform Inspections of Storage Areas for Ignitable or Reactive Waste*, PRC-PRO-EP-52900, Revision 1, Change 0

I asked Ms. Tarter to open TPLN-PRO-OP-51748 and show me the inspection frequencies:

Table 10: *Perform Weekly and Daily Surveillance of WMA's*, TPLN-PRO-OP-51748

Datasheet	Inspection Name	Frequency
Appendix A	T Plant Weekly Waste Management Area RCRA Inspection	Weekly
Appendix B	T Plant Canyon/Tunnel Weekly Waste Management Area RCRA Inspection	Weekly
Appendix C	T Plant Daily Waste Management Area Inspection	Daily
Appendix D	T Plant Canyon/Tunnel Daily Waste Management Area Inspection	Daily

We reviewed the "T Plant Canyon/Tunnel Weekly Waste Management Area RCRA Inspection" datasheets for the 221T Canyon and Tunnel WMAs, conducted February 12, 2018, June 13, 2018, and October 15, 2018. I observed no open items, unsatisfactory conditions, or corrective actions to review. All datasheets had name and signature of the inspector and date and time of the inspection.

We reviewed datasheets for "T Plant Weekly Waste Management Area RCRA Inspection" conducted the weeks including February 12, 2018 and October 15, 2018, for the following WMAs:

- HS030 and HS032 Storage Modules
- 2706T Yard
- 2706T and TA Buildings and Outdoor Storage Areas
- 2706T Asphalt Pad
- 221T Railroad Tunnel
- 214T Building
- 211T Cage
- 221T BY Storage
- 243T Covered Storage Pad
- 221T Ops Gallery Storage
- 221T Head End and Ramp
- 271T Mezzanine Tank
- Operationally Closed Waste Storage Area

I observed no open items, unsatisfactory conditions, or corrective actions to review. All datasheets had name and signature of the inspector and date and time of the inspection.

Next, I reviewed Annual Ignitable/Reactive waste inspections for the following DWMUs:

- 214-T Building
- 2706-T Building
- 221-T Railroad Tunnel
- 2706 Asphalt Pad
- 2706 Yard
- 221-T Canyon Deck
- 2706-TA

The inspections were dated November of 2017, except for the 2706 Yard, which had been updated on April 11, 2018. 221-T Canyon Deck, 2706-TA, 2706 Asphalt Pad, 2706-T Building, and the 214-T Building did not have ignitable or reactive waste present at the time of the inspection. All inspection forms had name and signature of the inspector and data and time of the inspection. I observed no open items or corrective actions to review. No DWMUs exceeded the maximum allowable quantity.

I asked Ms. Tarter to open TPLN-PRO-OP-51745 and show me the inspection frequencies:

Table 11: *Perform Surveillance of T Plant Emergency Equipment*, TPLN-PRO-OP-51745

Datasheet	Inspection Name	Frequency
Appendix A	Portable Safety Shower/Eyewash Station	Weekly*
Appendix B	Monthly Fire Extinguisher Inspection	Monthly
Appendix C	Monthly First Aid Kit/AED/Emergency Medical Bag RCRA Inspection	Monthly
Appendix D	Monthly Automatic Sprinkler System Inspection	Monthly
Appendix E	Monthly Emergency Response Cage RCRA Inspection	Monthly
Appendix F	Monthly Communication Equipment RCRA Inspection	Monthly

*Performed weekly when placed in use.

I reviewed monthly inspection datasheets from Appendix B, C, D, E, and F for September 2018. I observed no open items, unsatisfactory conditions, or corrective action to review. All datasheets were marked with inspector printed name and signature, and inspection date and time. I observed that communication equipment inspection and first aid equipment inspections were both split in half and each were performed by two different inspectors on two different dates. I stated that more care could be taken to indicate the items inspected and by which inspector on each day. It appeared no weekly inspections for the portable safety shower or eyewash station performed in September 2018. I asked to see a week when the eyewash station was in use. I then reviewed the "Portable Safety Shower/Eyewash Station" datasheet for the inspection occurring October 16, 2018 at 8:40 am. I observed no open items, unsatisfactory conditions, or corrective action to review. The datasheet was marked with inspector printed name and signature, and inspection date and time.

I asked to see the Land Disposal Restrictions (LDR) notification for Package 0093492. Ms. Tarter displayed the Package Identification Number (PIN) File for Package 0093492. I observed designation records, an LDR notification, and certification. The waste description was light bulbs, and designated D009 for mercury and D005 for barium. The notification included restrictions for inorganic non-wastewater high mercury and barium characteristic debris, a manifest number (008857404JJK), and

included a certification page, but the certification read "Hazardous debris requires treatment to the alternative treatment standards of 40 CFR 268.45. Mr. Richards said the waste shipped to Perma-fix NW. I asked to see that manifest and Ms. Tarter said it was not in the system yet.

Note: On December 20, 2018, I contacted Perma-fix and requested the manifest and LDR notification for container 0093492. The notification and manifest matched the information provided by the Permittees on November 13, 2018.

I asked to see designation records or solid waste determination records for the waste in tank TK11-L. Mr. Richards said there was no designation or determination records for the tank. I asked what the number Package ID for the container with returned TK11-L sample was. Mr. Richards said 0047674. I asked to see the records for Package 0047674. T Plant provided a "Waste Designation Worksheet" dated November 12, 2018, (the day after Ecology's dangerous waste inspection). I observed the sample container was a "debris 55 -gal metal drum with glass and packing material overpacked into 85- gal drum. All content of drum is solid." I observed attached to the designation worksheet was a circa 2002 memo from MB Ellefson with the subject *Data Assessment and Designation from Sampling and Analysis of the Tank in Cell 11L of the 221-T Building.* The memo stated, "The following paragraphs describe the designation of the contents of the tank in Cell 11L":

- "The contents of the tank in cell 11L are designated as F001 through F005 based on process knowledge."
- "The waste meets the LDR treatment standards for F001, F002, F003 and F005 constituents of concern."
- "The combined liquid and solid waste conservatively designates with waste numbers D002, D006, D007, D008 and D010."
- "The liquid samples were well above the pH threshold of 12.5."

The memo also referred to a number of data quality issues that would prevent LDR certification of the waste in TK11-L. Further, the memo urged that once these data quality issues could be resolved, the waste should be resampled to demonstrate that LDR treatments standards could be certified for F004 without thermal treatment. Neither the full lab report, nor the tables and attachments mentioned in the memo were included with the designation worksheet.

I asked to see the Closure Plan and Ms. Tarter displayed *Hanford Facility Dangerous Waste Part B Permit Application; Low-Level Burial Grounds Trenches 31-34-94, T Plant Complex, And Central Waste Complex - Waste Receiving And Processing Facility Operating Unit Groups*, DOE/RL-2015-74, Revision 0, "Addendum H: Closure Plan." I observed this was the same closure plan submitted to Ecology in January of 2016.

I gave a short out briefing and thanked everyone for his or her time. I commended facility staff for the good housekeeping of T-Plant, the upkeep and access to fire suppression equipment, automatic sprinklers, pull alarms, and security postings I observed at each DWMUs. I requested the designation records for Package 0047674 and all of the 2018 manifests present and available at the facility.

Records Review

On November 13, 2018, T Plant provided records for the following shipments:

HAZWST1813	**Manifest 008857411JJK**		
	Generator	Transporter	Destination Facility
Name	US Dept of Energy c/o CHPRC	Stericycle Specialty Waste Solutions Inc	Burlington Environmental, LLC

EPA ID	WA7890008967	MMS000110924	WAD020257945
Date	7/18/18	07/18/2018	08/05/2018

The manifest was for the shipment of 30 kg of sodium metal.

HAZWST1811	**Manifest 008857407JJK**		
	Generator	Transporter	Destination Facility
Name	US Dept of Energy c/o CHPRC	Stericycle Specialty Waste Solutions Inc	Burlington Environmental, LLC
EPA ID	WA7890008967	MMS000110924	WAD020257945
Date	06/06/18	06/06/2018	06/14/18

The shipment included 172 kg of caustic neutralizer.

HAZWST1808	**Manifest 000143299DAT**		
	Generator	Transporter 1	Destination Facility
Name	US Dept of Energy c/o CHPRC	Stericycle Specialty Waste Solutions Inc	Burlington Environmental, LLC
EPA ID	WA7890008967	MMS000110924	WAD020257945
Date	05/21/2018	05/21/2018	06/14/18

This shipment included 32 items, the largest package being 321 kg of phosphoric acid solution.

I also reviewed three onsite waste tracking forms:

- ERDF18031
- ERDF18073
- ERDF18077

DESIGNATION RECORDS FOR PACKAGE 0047674

On November 13, 2018, CHPRC and USDOE provided Ecology with a SWITS "Waste Designation Worksheet" for package 0047674, which included the memo from M.D. Ellefson mentioned above. The description from the worksheet read "Debris 55 gal metal drum with glass and packing material overpacked into 85 gal drum. All content of drum is solid, all sample results are mg/l." Comments read:

> Designation Content is based on Undated Memorandum (attached) from M.D. Ellefson; to B.M. Barnes; Subject: 'Data assessment and designation from sampling and analysis of the Tank in Cell 11L of the 221-T Building' Samples Used: 221T-02-014 through 221T-02-019 solid and liquid samples (6 total) and container packaging material. All sample results are mg/L and worst case data from liquid or solid samples were used including pH.

The inventory I was provided on November 13, 2018, described Package 0047674 as "<MW> Overpack of 221T-02-000087. Tank 11L sample return debris drum" with waste codes: D006, D007, D008, D010, F001, F002, F003, F004, F005 and WSC2. The "LDR Waste Stream" was listed as M-91 Waste (RH and Large Container MLLW)."

On November 27, 2018, I spoke to Ms. Petersen on the phone about a change in designation that occurred for container 0047674. She stated that in preparation for the dangerous waste inspection, project staff had updated the designation of container 0047674 to include waste codes F005, D006, and WSC2. After the Ecology inspection, it was determined this set of codes was not appropriate, and the codes D006 and WSC2 were removed.

I reviewed the SWITS records for Package 0047674, using *Tri-Party Agreement Databases, Access Mechanism and Procedures*, from TPA Appendix F "Supporting Technical Plans and Procedures." A "Container Listing Report" for Package 0047674 indicated the designation had changed and the waste no longer carried the code for D006 (cadmium toxicity) characteristic. "Generator Comments," dated November 15, 2018 (two days after the inspection), read "D002 was originally incorrectly applied based upon the assumption the sample returns had liquid. The sample returns did not contain liquid that was placed in the debris drum and WSC2 does not apply regardless of the pH of <12.5 on the actual liquid samples not what was returned." There was no explanation for the change for D006. I observed on the inventory provided November 13, 2018 (during the inspection), container 0047674 was an overpack of 221T-02-000087, described as "tank 11L sample return debris drum" with waste codes F001-F005, D006, D007, D08, D010, and WSC2.

On December 21, 2018, I reviewed Ecology records for a prior Ecology T Plant inspection (Compliance Index #: 07.280) and observed the parent container 221T-02-000087 had been subject to prior scrutiny. Ecology inspector Bob Williams observed container 221T-02-000087 on June 26, 2007 in the 214-T building. Container 221T-02-000087 was shielded under a lead blanket. At that time, Ecology was provided with a SWITS 310 report which described the drum as "Primarily 221-T Canyon Tank Samples;" pH >12.5; waste codes D002, D006, D007, D008, D010, and F001 through F005." Bret Barnes from Fluor Hanford described the container as an accumulation drum for waste generated from sampling liquids in tanks within the 221-T Canyon Cells. Mr. Williams stated under those circumstances, the container must be a labpack and requested a WAC 173-303-161 compliant labpack container inventory. The permittees provided a Container Inventory Sheet, dated October 4, 2002, which indicated the labpack held ten samples: One from TK-5-7, with a sample number indicating it was collected in 1999; two samples collected in 2001, and seven samples collected in 2002. The other sample sources were not specified.

On December 21, 2018, I requested that the Permittees review the definition of debris and explain why Overpack 0047674 was designated as debris. On February 7, 2019, the Permittees responded:

> Overpack 0047674 contains two designations, neither of which are for debris. Designation of this waste package is similar to a lab-package, with individual designations for each waste stream.
>
> The original Ellefson memo (Item 1.4) is the valid designation for the Tank 11L sample returns contained in overpack 0047674. Additional designations associated with this T Plant inspection (18.653) for the Tank 11L sample returns included invalidated assumptions and have been withdrawn.
>
> A designation for the Tank 5-7 sample returns contained in overpack 0047674 is included with this submittal as Item 1.9.

The Permittees also provided records indicating the samples 221T-01-162 and -163 were composite solid and liquid samples from 221T-01-162 and -163.

On June 6, 2019, I observed in SWITS, the Container Listing Report, SWIR310 for container 0047674 now listed both codes for Tank 5-7 and Tank 11-L combined liquid and solid samples. I observed a note that "labeled per designation of [tank] 5-7."

T PLANT COMPLEX WASTE ANALYSIS PLAN

I reviewed *T Plant Complex Waste Analysis Plan*, revision 0, change 4, effective September 18, 2018. I observed, under Section 1.3, "Applicability," T Plant manages waste including:

- Newly generated waste from onsite and offsite generators comprised of contaminated debris, size-reduced items, and other waste types.
- Waste previously accepted at other SWOC TSDs and then transferred to T Plant.
- Retrieved waste including, but not limited to, contaminated debris, contaminated soil, absorbed oils, and labpacks.
- T Plant-generated waste from operations and maintenance (O&M) activities, including debris, discarded personal protective equipment, and maintenance waste.
- Waste treated at T Plant.

I observed the WAP described the process for receiving and confirming shipments of waste, and described methods, parameters and testing frequencies for waste generated at T Plant, including treatment residue and O&M waste. I observed Section 4.1, "Waste Resulting from Treatment at T Plant," stated waste from onsite and offsite generators may be processed at T Plant, resulting in a newly generated waste stream;" and "methods for confirming the effectiveness of treatment are shown in Table 1."

I observed Section 5.1, "Sampling Methods and Equipment" stated:

> Sampling methods performed at T Plant are in accordance with WAC 173-303-110(2), "Sampling, Testing Methods, and Analytes"

Beyond WAC 173-303-110(2), which discusses representative samples, I did not observe the plan to contain any methods for obtaining representative samples of waste for analysis.

LAND DISPOSAL RESTRICTIONS (LDR)

In a December 20, 2018, document request I asked:

> Q: When does T Plant record LDR notification for accumulation containers managed in permitted storage?

On January 24, 2019, CHPRC responded:

> A: LDR notification and certifications forms are prepared after the generator has completed waste accumulation and while a container is being processed for shipment to a TSD. A LDR form for any given container is generated as part of the initial shipment documentation.

I also reviewed copies of T Plant's procedure for authoring LDR notifications:

- *Completing Land Disposal Restriction Notifications and Certifications,* PRC-PRO-WM-52506
- *Waste Treatment Process,* PRC-PRO-WM-40522

I also requested WAC 173-303-380(1)(o), LDR notifications (operating record information required for generators that store waste streams on-site), for the following accumulation containers. Mr. Richards said these were managed under permitted storage:

- 221T-18-000031 (Building 214)
- 0090667 (Canyon)
- 0092092 (HS-30)
- 0094701 (HS-30)
- 0090668 (HS-30)

In their January 24, 2019, response CHPRC stated:

> All five containers were generated at T Plant. If an LDR notification and certification form is necessary, it will be generated as part of the initial shipment documentation.

271-T MAKEUP UNIT:

On December 20, 2019, I asked basic questions to start documenting whether the sodium hydroxide in the 271-T mezzanine had a purpose or was stored in-lieu of disposal. On January 24, 2019, CHPRC provided these responses:

> Q: Was the sodium hydroxide in the 271 T AMU purchased as a Commercial Chemical Product.
>
> A: Yes
>
> Q: What was the intended purpose of the sodium hydroxide in the 271 T AMU when it was acquired?
>
> A: This chemical product was used as part of the chemical processing of nuclear fuel and plutonium separation and to clean and decontaminate equipment.
>
> Q: What is the intended purpose now?
>
> A: It is a commercial chemical product.

Q: When was the sodium hydroxide in the 271 T AMU last used for its intended purpose?

A: Last known use was in 1991. The sodium hydroxide is a commercial chemical product that can be used for its intended purpose (e.g., pH adjustment). Per WAC 173-303-016, Table 1, commercial chemical products are not subject to speculative accumulation. This means there is no clock for recycling it and it does not become a solid waste solely because of the length of time it is retained without use.

Note: Table 1, in WAC 173-303-016, is a tool for making waste determinations when a material will be recycled, not for materials that have been abandoned. USDOE-RL and CHPRC's stated intentions for this material did not include recycling.

Q: How long has the… sodium hydroxide been in the AMU, and when is/was the manufacturer's expiration date.

A: The date the chemical product was acquired is unknown. The sodium hydroxide has not changed its chemical composition and RL is not aware of any "expiration date".

I also asked if USDOE intended to dispose of the sodium hydroxide at some point. CHPRC responded, "No. The sodium hydroxide is a chemical product with an intended future use and is not a waste, so there is no intent to dispose of it."

The administrative record, *T Plant Safety Analysis Report,* SD-CP-SAR-007, dated February 1, 1985, describes the chemical receiving and handling system differently, stating 50% NaOH was stored in 17,000 gallon horizontal storage tanks SQ-141 and SQ-142. From there, bulk caustic could be pumped directly into the canyon (entering 221-T in cell 11-L), or be mixed into a decontamination solution in one of two makeup tanks M-101 (the tank in question) or M-102 (not addressed). The bulk caustic then could be pumped into cells for decontamination. The *T Plant Safety Analysis Report* also described the chemical makeup tank, M-101 as a 1,200-gallon tank, "normally used only for mixing and interim storage of NaOH solution" and "used primarily to make up 25 wt% NaOH." Figure 6-1 describes Tank M-101 and M-202 as "also used for miscellaneous chemical make up." The two makeup tanks were capable of transferring decontamination solutions to building 271-T load-out dock or to building 221-T canyon at sections 11, 13, and 15. *Interim Safety Basis for Solid Waste Facilities (T Plant)* HNF-SD-WM-ISB-006, Rev. 1A, a January 28, 1999, update to the T Plant Interim Safety Basis (after the completion of parts of project W-259), described tank M-101, 102, and 103 as "inactive" and stated "none of these tanks are currently in service."

I requested the "Chemical Inventory Tracking System Inventory by Product" report for sodium hydroxide in 271-T. I received the "Chemical Inventory Tracking System Inventory by Location" report for 271 T/119/1, which described a 300- gallon tank of 50% sodium hydroxide solution. The MSDS date listed in the CITS report was August 8, 2015. The date and concentration listed on the MSDS and CITS form were not consistent with USDOE records and statements on when this sodium hydroxide was acquired or how it was used.

I observed the industry standard waste management practice of determining leftover products from discontinued process to be solid waste was enshrined in HFFACO, Attachment 2, "Action Plan", Section 6.3.4, which states:

> Many Hanford Site operations include systems that use chemical materials and/or solutions to perform required functions. When these systems are permanently removed from service, the chemical materials and/or solutions that no longer have a use may be considered a waste subject to the provisions of the dangerous waste regulations. For those systems that contain chemical materials and/or solutions that are considered waste, the components of the systems that contain this waste become subject to the Resource Conservation and Recovery Act (RCRA) permitting requirements of the Washington Administrative Code (WAC) 173-303 if the waste is managed for greater than 90 days.

CONTAINERS 0059277 AND 0064499

On December 20, 2018, I asked, "what was in container's 0059277 and 0064499", the two containers not on the inventory list. CHPRC responded:

> A: 0059277 contains a mixing blade designated as TSCA/LLW; 0064499 contains motor oil from forklifts designated as LLW.

I also asked why those packages were stored in a DWMU. CHPRC responded:

> A: The containers are compatible with the MLLW stored within the DWMU. The DWMU meets TSCA and LLW storage requirements.

TANK TK-11-L

In the December 20, 2018, document request I asked:

> Q: Why is TK-11-L not listed in [the Waste Information Data System (WIDS)]?
>
> A: The WIDS database tracks waste sites. Tank 11-L is not a waste site.

Maintenance of the Waste Information Data System (WIDS), TPA-MP-14, states "WIDS also documents locations evaluated and determined not to be waste management units."

> Q: Why is TK11-L not listed on the inventory?
>
> A: The inventory provided during the inspection includes actively managed dangerous or mixed waste. Tank 11-L has not been actively managed after the effective date of RCRA on the Hanford Site. T Plant Canyon (221T) Tank 11-L is listed on the Potential Mixed Waste table (Table C-2, page C-16) in the "Calendar Year 2014 Hanford Site Mixed Waste Land Disposal Restriction Full Report," DOE/RL-2015-08 R0, April 21, 2015.

Note: RCRA and the State of Washington *Hazardous Waste Management Act,* Chapter 70.105 RCW, pertains to all units that were used to store, treat, or dispose of RCRA hazardous waste and hazardous constituents after November 19, 1980; State only hazardous waste after March 12, 1982. On August 19, 1987, Chapter 70.105 RCW was amended to require that Ecology to regulate mixed waste. August 19, 1987 is the date reflected in Section 3.5 of the HFFACO.

I reviewed the *Calendar Year 2014 Hanford Site Mixed Waste Land Disposal Restriction Full Report* (CY 2014 LDR Report), DOE/RL-2015-08 R0, April 21, 2015, Section 2.3, "Potential Mixed Waste" which stated:

> The [Potential Mixed Waste Table (PMWT)] (Appendix C) includes materials that have not been generated as mixed waste and waste that has not been actively managed as mixed waste. The materials included are those that reasonably could be expected to be generated as mixed waste at some future time. The materials included in the PMWT (equipment, piping, etc.) are those that currently are not being used and do not have a clear path for reuse or recycling. The waste that has not been actively managed as mixed waste is, in many cases, at *Resource Conservation and Recovery Act of1976* (RCRA) or CERCLA past-practice units under the Tri-Party Agreement. Past-practice waste is waste that was abandoned before the first effective LDR date in Washington State, August 19, 1987. Classification of waste management units (WMUs) as past-practice units is described in Section 3.0 of the Tri-Party Agreement Action Plan. When cleanup actions occur in the operable unit (OU) for these past-practice units, mixed waste could, or is expected to be, generated. The table was developed for the following reasons:
>
> - To acknowledge that materials might become mixed waste at a future date.
> - To *begin identifying data gaps* (e.g., whether the material would be designated as mixed waste) and facilitate discussions to establish a path forward toward disposition for those materials eventually identified as mixed waste.
>
> *Emphasis added.*

I reviewed *Calendar Year 2009 Hanford Site Mixed Waste Land Disposal Restrictions Full Report*, DOE/RL-2010-27, Table C-2, "Schedule Information" which stated "Data gap plan: 3rd quarter CY 2007. Currently resolving Ecology comments." I reviewed the CY 2014 LDR Report , Table C-2, "Schedule Information," which stated "Cell 11 -L was readdressed with Ecology during Milestone M-091-the LDR compliance 01 and RCRA assessment/ permitting data gap plan process documented in the Schedules for July 24, 2008 T Plant processing and TPA project operational managers meeting activities on the minutes."

I reviewed the Project Managers Meeting Minutes for T-Plant Complex, July 24 2008, and included a *Management Assessment Plan and Report*, WSD-TP-EP-06-MA-37, which stated "No findings or observations resulted from the management assessment." The report included also stated "As of April 2002, Cell 11-L in 221-T had approximately 500 gallons in the oval tank with a pH of 13+."

I reviewed *T Plant Cell Investigation Phase II Report,* HNF-8812, dated December 18, 2002, which described cell 11-L as still having a transfer jet installed. I observed the *Management Assessment Plan and Report* provided to Ecology to address a supposed data gap, referenced the Phase II report, but completely omitted that the transfer jet was still installed.

I observed the T Plant Complex, Addendum A, Part A Form, included approval for tank storage in the 221-T tank system consisting of tank 5-6, tank 5-7, tank 5-9, tank 6-1, tank 11-R, and tank 15-1. The comments on this form indicate canyon process cells 3L, 7L, 8R, L, 10L, 13L, 13R, 14R, 15L, 16R, and 17R may have containment status (for non-liquids). Tank 11-L and cell 11-L are not mentioned.

I observed the historical record *T Plant Safety Analysis Report,* SD-CP-SAR-007, dated February 1, 1985 (2 years before effective date for mixed waste), describes equipment "Open tank 11-L (SS, 14,000-gal-capacity)" used for "radioactive liquid waste storage." The *T Plant Safety Analysis Report* also describes equipment in section 11 as including "steam jet valves" for "liquid waste transfers from tanks 11-L and 11-R". Included in that report is a piping and instrumentation diagram, Figure 7-5, "Building 221-T Canyon Liquid Waste System," which shows both tanks 11-L and 11-R were equipped with steam jets for

transferring waste to tank 15-1. I observed a note written next to the jet for TK-11-L stated "not normally needed."

The document *Interim Safety Basis for Solid Waste Facilities (T Plant)* HNF-SD-WM-ISB-006, Rev. 1A, dated January 28, 1999 (after the RCRA effective date for mixed waste), contains a similar piping and instrumentation diagram. The diagram shows steam transfer jets serving tanks 11-L and 11-R, with a note stating "not normally used" on the steam jet in 11-L.

I reviewed *Hanford Site Waste Management Units Report*, DOE/RL-88-30, Revision 28 which stated "The Hanford Site Waste Management Units Report (HSWMUR) has been created to meet the requirements of the Tri-Party Agreement (TPA) Action Plan, Section 3.5" Tank 11-L was not included in the report.

PACKAGE 221T-17-000048

On December 14, 2018, I observed the following comment had been added to SWITS for container 0064499:

> On 11/14/18 Working to package 2T-18-04237 added absorbent and then placed container 0064499 into RORO can 3261, PIN 221T-18-000008. Chemical was treated and disposed of in RO/RO 221T-18-000008. 11/15/18

A Waste Container Contents Report for container 221T-18-000008 identified the container as non-dangerous. The secondary package was identified as "3261." The report listed an accumulation date of December 1, 2011. There was no storage or disposal locations dates listed for 221T-18-000008. The comments for container 221T-18-000008 stated:

> Placed packed 221T-17-0000048 and 0064499 into RO/RO. 11/15/18

I observed, in SWITS 221T-17-0000048 was described on the T-Plant dangerous waste inventory as "excess chemicals from RR Tunnel (1-Octanol)."

On December 20, 2018, I requested designation records, LDR notification and post treatment waste analysis records for package 221T-17-00048. I received:

- 221T-17-000048, Container Inventory Sheet
- 221T-17-000048, Designation Absorbed Octanol (7-30-18)
- 221T-17-000048, Designation of Octanol (1-4-18)
- 221T-17-000048, MSDS #041261 for Octanol

Instead of post-treatment analysis, CHPRC stated "LLW waste is not subject to post-treatment waste analysis records. Verification was performed to meet ERDF waste acceptance criteria."

I observed on the inventory provided to Ecology on November 13, 2018 package 221T-17-000048 was designated with dangerous waste code WT02. The "Waste Designation Worksheet" dated January 13, 2018 described the waste as "old, expired chemical in original container" and indicated 1-octanol was toxicity category D at 100% concentration by weight (0.010% equivalent concentration [EC]).

The file titled "221T-17-000048, Container Inventory Sheet" was a single page datasheet identified in the header as *Waste Container Data Sheet Administration,* WMP-340, Section 3.10, Appendix A, "Container Inventory Sheet –Drum, Bucket, or Box." The data sheet identified the container as a 1.25 gallon "poly bucket", of mixed waste located in HS-030. The accumulation start date was December 20, 2017. The storage start date was January 8, 2018. The bucket held a 250 ml plastic bottle of "octanol" in a 4 mil poly liner. A hand written note at the bottom of the page read, "Container placed into RO/RO 221T-18-000008. Contents absorbed and disposed of on 11-14-18."

The file titled "221T-17-000048, Designation of Octanol (1-4-18)" was a two page SWITS *Waste Designation Worksheet*, Report 601, dated January 3, 2018. This worksheet identified the chemical name as 1-octanol, toxicity category "D" and the composition as 100% by weight and the total EC as 0.01%. The waste class was designated as dangerous waste (DW) with applicable waste and LDR codes of "WT02." The worksheet described the waste as "old, expired chemical in original container."

The file titled "221T-17-000048, Designation Absorbed Octanol (7-30-18)" was a two page SWITS *Waste Designation Worksheet*, Report 601, dated July 30, 2018. I observed that this designation worksheet indicated the concentration of octanol had been reduced to 0.005%. The description had changed to "expired, absorbed chemical at 5%octanol to 95% oil dri." I also observed the waste code WT02 was removed, with the comment "not enough EC%."

In the December 20, 2018 document request I asked the following questions, and on January 24, 2019, received the following responses:

> Q: Where is the waste from 221T-17-000048 currently?
>
> A: The waste from 221T-17-000048 has been disposed of at ERDF.
>
> Q: How has [the waste] been managed since the inspection?
>
> A: The waste designated as LLW, the liquids were absorbed to meet the Washington State Landfill Disposal prohibition for 'free liquids'. The absorbed waste was added to the ERDF RO/RO (T Plant CIN #221T-18-000008) on 11/14/2018 for disposal at ERDF.
>
> Q: How does CHPRC and USDOE intend to manage it in the future?
>
> A: No further management is required.

On January 25, 2019, a SWITS Waste Shipments By Source Facility for all shipments leaving T Plant Complex in Calendar Year 2019 showed 11 shipping documents:

- ERDF18036
- ERDF18073
- ERDF18077
- ERDF19017
- HAZWST1808
- HAZWST1811
- HAZWST1813
- MLLW1820
- RW911
- RW971

There was only one shipment with a date after November 13, 2019 and that was ERDF19017. A container listing report for ERDF19017 showed a single container, package ID 0092092; described as "incandescent bulbs from the crane way." I recognized this package as an "accumulation container" when I performed the inspection. I observed in SWITS, this package shipped to ERDF on December 18, 2018. This was one of the containers I requested LDR notification for on December 20, 2018. On January 24, 2019, T-Plant stated they did not have LRD notifications or certifications for this container. I observed no records in SWITS indicating the package of 1-octonal had shipped to ERDF.

January 28, 2019, Follow-up Inspection

At 11:44 AM on January 28, 2019, I sent an email announcement to CHPRC and USDOE-RL indicating Ecology would return to T Plant to evaluate Roll-On/Roll-Off (RO/RO) container 3261, container PIN 221-17-000048 and associated records.

I and support inspectors Kathy Conaway, Jared Mathey, Johnathan Rogers and Adam Schaffer arrived at T-Plant at approximately 1:30 PM. Fourteen people attended including Ecology Inspector Kathy Conaway, Adam Schiff, Johnathan Rogers and myself. Allison Wright and Tony McKarns represented USDOE-RL. Linda Petersen and Noah Cruz were my primary contacts. For a complete list, see Attachment A, "Attendance Rosters." By 1:35 PM we were settled in a small conference room. I asked Mr. Dave Richards to walk me through what happened to waste package 221T-17-000048 after November 13, 2018.

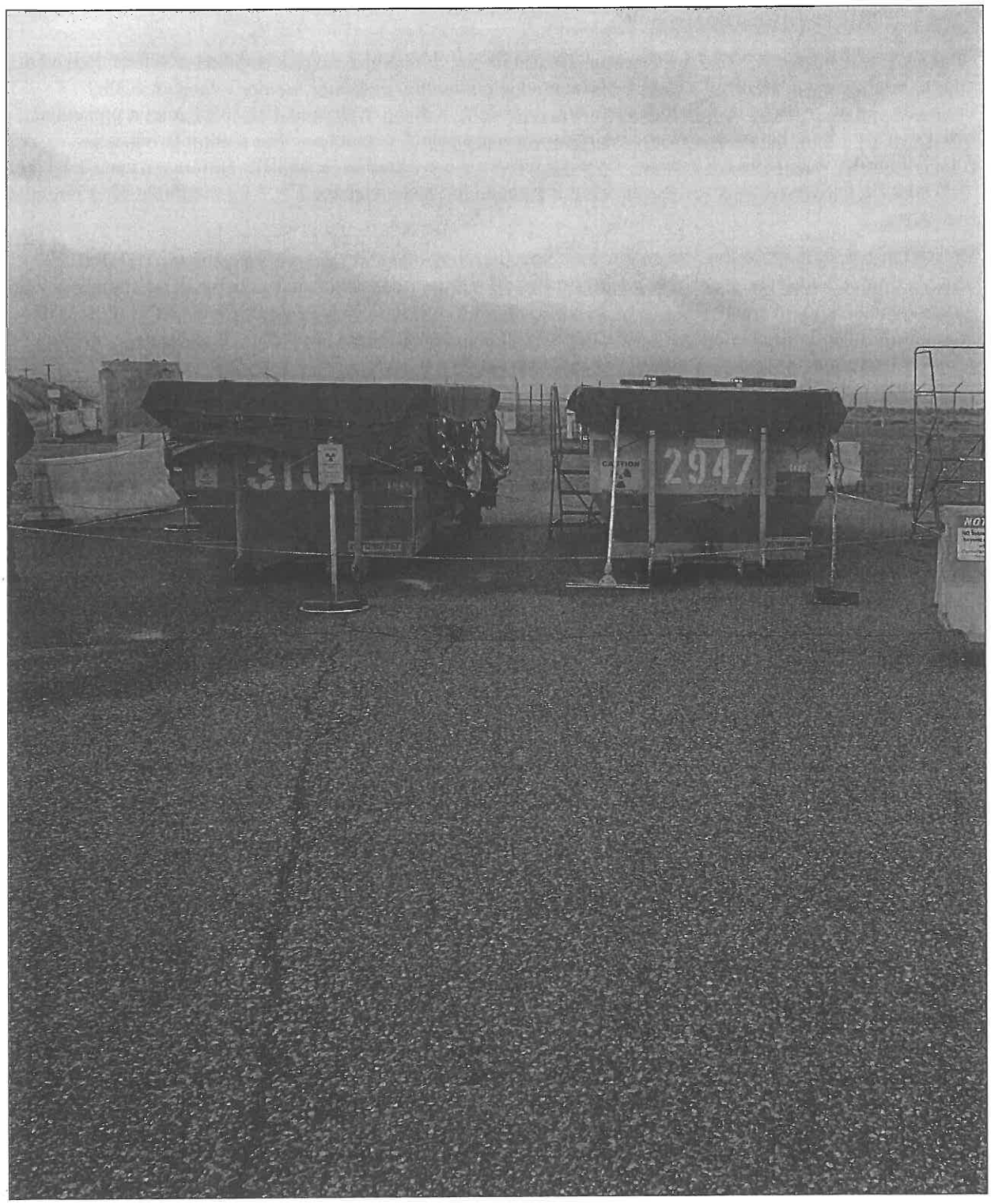
Mr. Richards said prior to the November 13 inspection they had started a work package 2T-18-04237 which included a task for absorbing a partly full, 250 ml, poly container of 1-octanol. The container was generated as unknown waste and stored in less-than 90 -day accumulation until it was designated. The octanol was absorbed on November 14, 2018 at 730 am. Mr. Richards said the sorbent was oil dry; a granular bentonite and quartz crystal, non-biodegradable material.

I asked Mr. Richards where the treatment was performed. Mr. Richards stated 2706 TA bay. I asked if it was done under treatment by generator and Mr. Richards said it was. I asked if there was a treatment log and Mr. Richards said the treatment log was the work package. I asked Mr. Richards how they evaluated if treatment was a success. Mr. Richards stated treatment success was ensured by meeting the manufacturers recommended two-to-one, solid-to-liquid ratio. The container moved to the 221 T area where step off waste is accumulated and then placed in RO/RO 3261 on November 14, 2019. Mr. Richards stated the package shipped to ERDF on December 17, 2018.

I asked when the octanol waste was first designated. Angie Willette stated they first designated the waste January 4, 2018. Angie explained the designation information came from MSDS, but the container designated based on EC. Originally, the EC was calculated as 0.01% and the waste designated as criteria WT02. I asked when the post absorption designation was completed. Ms. Willette said they designated the same container of waste again on July 30, 2018. I asked how it was determined non-dangerous. Ms. Willette said designation was automated and based on constituents. She said it was typical to designate residue post treatment. Kathy Conaway asked what the intent was. Ms. Willettes said she could not speak to that, but ERDF can accept WT02 waste, but not free liquids. I asked if the waste analysis plan was consulted when the work package was developed. Mr. Marrot said he could not recall. I asked if the paint filter test was from Table 1 of the waste analysis plan was performed Mr. Richards said it was not, and did not believe it was necessary because it was waste derived from T Plant operations and maintenance activities not waste resulting from treatment activities. I stated I would look into his argument.

I was provided with copies of PIN file 221-T-18-000008 and Work Document 2T-18-04237/W. I reviewed the short form Work Document 2T-18-04237/W, and observed Task 3, stated "ABSORB Octanol Oil (ooly bucket # 221T-17-000048) with Oil-Dry (2:1 minimum ratio by volume of absorbent to oil)." I observed the dilution ratio used for the the Waste Planning Checklist, calculated was 20:1. I observed the calculations on the Waste Designation worksheet were exaggerated even further, with 5% octanol to 95% bentonite and 9.5% silica, for a total waste mass of 109.5%. If the job was performed according to manufactures instructions and the EC were calculated with a 2:1 dilution ratio, the result would be 0.005%, an equivalent concentration greater than the 0.001% threshold for WT02.

After the meeting, Ecology Inspectors, CHPRC, and DOE-RL walked out to the outdoor storage area where RO/RO 3162 was stored prior to ERDF shipment. I observed two new RO/RO boxes, 3101 and 2947.



Compliance Problems

The Dangerous Waste inspection on November 13, 2018 and January 28, 2019, found the following compliance problems.

Each problem is covered in three parts:

(1) **Citation from the regulations**

(2) **Specific observations** from the inspection that highlight the problem

(3) **Required actions** needed to fix the problem and achieve compliance

The problems listed below must be corrected to comply with Washington Dangerous Waste Regulations (Chapter 173-303 WAC), or other environmental laws or regulations. Complete the required actions listed below and respond to Ecology at the following address within 60 of receipt of this compliance report. Include all supporting documentation such as photographs, records, and statements explaining the actions taken and dates completed to return to compliance.

Attention: Jackson Davis
Washington Department of Ecology
Nuclear Waste Program
3100 Port of Benton Blvd
Richland, WA 99354

You may request an extension of the deadlines to achieve compliance. Make the request in writing, including the reasons an extension is necessary and proposed date(s) for completion, and send it to Jackson Davis before the date specified above. Ecology will provide a written approval or denial of your request.

If you have any questions about information in this Compliance Report, please call:

Jackson Davis at (509) 372-7930

This does not relieve you of your continuing responsibility to comply with the regulations at all times.

1) **WAC 173-303-400(3), as referenced by the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C - Condition I.A Effect of Permit.**

   WAC 173-303-380(1) (o) For an on-site storage facility, the information contained in the notice (except the manifest number), and the certification and demonstration if applicable, required by the generator or the owner or operator under 40 C.F.R. 268.7;

WAC 173-303-380(1) (k) For an on-site treatment facility, the information contained in the notice (except the manifest number), and the certification and demonstration if applicable, required by the generator or the owner or operator under 40 C.F.R. 268.7;

AND

WAC 173-303-140(2)(a) Land disposal restrictions for wastes designated in accordance with WAC 173-303-070 (3)(a)(i), (ii), and (iii) are the restrictions set forth by the Environmental Protection Agency in 40 C.F.R. Part 268 which are incorporated by reference into this regulation, as modified in (c) through (f) of this subsection, and the restrictions set forth in subsections (3) through (7) of this section. The words "regional administrator" (in 40 C.F.R.) will mean the "department," except for 40 C.F.R. Parts 268.5 and 268.6; 268 Subpart B; 268.42(b) and 268.44 (a) through (g). The authority for implementing these excluded C.F.R. sections remains with the U.S. Environmental Protection Agency. The word "EPA" (in 40 C.F.R.) means "Ecology" at 40 C.F.R. 268.44(m) and 268.45(a). The exemption and exception provisions of subsections (3) through (7) of this section are not applicable to the federal land disposal restrictions.

Where the federal regulations that have been incorporated by reference refer to 40 C.F.R. 260.11, data provided under this section must instead meet the requirements of WAC 173-303-110.

§268.7. Testing, tracking, and recordkeeping requirements for generators, treaters, and disposal facilities.

(a) *Requirements for generators*: (1) A generator of hazardous waste must determine if the waste has to be treated before it can be land disposed. This is done by determining if the hazardous waste meets the treatment standards in §268.40, 268.45, or §268.49. This determination can be made concurrently with the hazardous waste determination required in §262.11 of this chapter, in either of two ways: testing the waste or using knowledge of the waste. If the generator tests the waste, testing would normally determine the total concentration of hazardous constituents, or the concentration of hazardous constituents in an extract of the waste obtained using test method 1311 in "Test Methods of Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, (incorporated by reference, see §260.11 of this chapter), depending on whether the treatment standard for the waste is expressed as a total concentration or concentration of hazardous constituent in the waste's extract. In addition, some hazardous wastes must be treated by particular treatment methods before they can be land disposed and some soils are contaminated by such hazardous wastes. These treatment standards are also found in §268.40, and are described in detail in §268.42, Table 1. These wastes, and soils contaminated with such wastes, do not need to be tested (however, if they are in a waste mixture, other wastes with concentration level treatment standards would have to be tested). If a generator determines they are managing a waste or soil contaminated with a waste, that displays a hazardous characteristic of ignitability, corrosivity, reactivity, or toxicity, they must comply with the special requirements of §268.9 of this part in addition to any applicable requirements in this section.

GENERATOR PAPERWORK REQUIREMENTS TABLE

Required information	§268.7 (a)(2)	§268.7 (a)(3)	§268.7 (a)(4)	§268.7 (a)(9)
1. EPA Hazardous Waste Numbers and Manifest Number of first shipment	✓	✓	✓	✓
2. Statement: this waste is not prohibited from land disposal			✓	
3. The waste is subject to the LDRs. The constituents of concern for F001-F005, and F039, and underlying hazardous constituents in characteristic wastes, unless the waste will be treated and monitored for all constituents. If all constituents will be treated and monitored, there is no need to put them all on the LDR notice	✓	✓		
4. The notice must include the applicable wastewater/ nonwastewater category (see §§268.2(d) and (f)) and subdivisions made within a waste code based on waste-specific criteria (such as D003 reactive cyanide)	✓	✓		
5. Waste analysis data (when available)	✓	✓	✓	
6. Date the waste is subject to the prohibition			✓	
7. For hazardous debris, when treating with the alternative treatment technologies provided by §268.45: the contaminants subject to treatment, as described in §268.45(b); and an indication that these contaminants are being treated to comply with §268.45	✓		✓	
8. For contaminated soil subject to LDRs as provided in §268.49(a), the constituents subject to treatment as described in §268.49(d), and the following statement: This contaminated soil [does/does not] contain listed hazardous waste and [does/does not] exhibit a characteristic of hazardous waste and [is subject to/complies with] the soil treatment standards as provided by §268.49 (c) or the universal treatment standards	✓	✓		
9. A certification is needed (see applicable section for exact wording)		✓		✓

Observations:

In a December 20, 2018, document request I asked:

> Q: When does T Plant record LDR notification for accumulation containers managed in permitted storage?

On January 24, 2019, CHPRC responded:

> A: LDR notification and certifications forms are prepared after the generator has completed waste accumulation and while a container is being processed for shipment to a TSD. An LDR form for any given container is generated as part of the initial shipment documentation.

I requested WAC 173-303-380(1)(o) LDR notification for the following accumulation containers, which Mr. Richards said were managed under permitted storage.

- 221T-18-000031 (Building 214)
- 0090667 (Canyon)
- 0092092 (HS-30)
- 0094701 (HS-30)
- 0090668 (HS-30)

In their January 24, 2019, response CHPRC stated:

All five containers were generated at T Plant. If an LDR notification and certification form is necessary, it will be generated as part of the initial shipment documentation.

A Container Listing Report for ERDF19017 showed a single container, package ID 0092092; described as "incandescent bulbs from the craneway." I observed in SWITS this package, which had been an accumulation container when I performed the inspection, was shipped on December 18, 2018. Package 0092092 was a container which I requested the LDR notification on December 20, 2018, two days after it had been shipped for disposal. I did not receive records.

Action Required:

LDR restrictions are determined at the point of generation and the information required in an LDR notification (except for manifest number) is required records for waste streams in on-site TSDs.

Within 60 days of receipt of this report, USDOE-RL and CHPRC must submit the information required and as applicable in WAC 173-303-380(1)(o) and (k) for containers 221T-18-000031, 0090667, 0092092, 0094701, and 0090668. Include the certification statements for containers that have shipped for disposal or been treated to meet LDR.

2) **WAC 173-303-016(4) Materials are solid waste if they are abandoned by being: …**

(c) Accumulated, stored, or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned, or incinerated; or

AND

WAC 173-303-016(7) Documentation of claims that materials are not solid wastes or are conditionally exempt from regulation. Respondents in actions to enforce regulations implementing chapter 70.105 RCW who raise a claim that a certain material is not a solid waste, or is conditionally exempt from regulation, must demonstrate that there is a known market or disposition for the material, and that they meet the terms of the exclusion or exemption. In doing so, they must provide appropriate documentation (such as contracts showing that a second person uses the material as an ingredient in a production process) to demonstrate that the material is not a waste, or is exempt from regulation. In addition, owners or operators of facilities claiming that they actually are recycling materials must show that they have the necessary equipment to do so.

Observations:

On December 20, 2019, I asked basic questions to start documenting whether the sodium hydroxide in the 271-T had a purpose or was stored in-lieu of disposal. On January 24, 2019, CHPRC provided these responses:

Q: Was the sodium hydroxide in the 271 T AMU purchased as a Commercial Chemical Product.

A: Yes

Q: What was the intended purpose of the sodium hydroxide in the 271 T AMU when it was acquired?

A: This chemical product was used as part of the chemical processing of nuclear fuel and plutonium separation and to clean and decontaminate equipment.

Q: What is the intended purpose now?

A: It is a commercial chemical product.

Q: When was the sodium hydroxide in the 271 T AMU last used for its intended purpose?

A: Last known use was in 1991. The sodium hydroxide is a commercial chemical product that can be used for its intended purpose (e.g., pH adjustment). Per WAC 173-303-016, Table 1, commercial chemical products are not subject to speculative accumulation. This means there is no clock for recycling it and it does not become a solid waste solely because of the length of time it is retained without use.

Note: Table 1, in WAC 173-303-016, is a tool for making waste determinations when a material will be recycled, not for materials that are abandoned. USDOE-RL and CHPRC's stated intentions for this material did not include recycling.

Q: How long has the… sodium hydroxide been in the AMU, and when is/was the manufacturer's expiration date.

A: The date the chemical product was acquired is unknown. The sodium hydroxide has not changed its chemical composition and RL is not aware of any "expiration date".

I also asked if USDOE intended to dispose of the sodium hydroxide at some point. CHPRC responded, "No. The sodium hydroxide is a chemical product with an intended future use and is not a waste, so there is no intent to dispose of it."

The administrative record, *T Plant Safety Analysis Report,* SD-CP-SAR-007, dated February 1, 1985, describes the chemical receiving and handling system differently, stating 50% NaOH was stored in 17,000 gallon horizontal storage tanks SQ-141 and SQ-142. From there, bulk caustic could be pumped directly into the canyon (entering 221-T in cell 11-L), or be mixed into a decontamination solution in one of two makeup tanks M-101 (the tank in question) or M-102 (not addressed). The *T Plant Safety Analysis Report* described the chemical makeup tank, M-101 as a 1,200-gallon tank, "normally used only for mixing and interim storage of NaOH solution" and "used primarily to make up 25 wt% NaOH." Figure 6-1 describes Tank M-101 and M-202 as "also used for miscellaneous chemical make up." The two makeup tanks were capable of transferring decontamination solutions to building 271-T load-out dock or to building 221-T canyon at sections 11, 13, and 15. *Interim Safety Basis for Solid Waste Facilities (T Plant)* HNF-SD-WM-ISB-006, Rev. 1A, a January 28, 1999, update to the T Plant Interim Safety Basis (made after the completion of parts of project W-259), described tank M-101, 102, and 103 as "inactive" and stated "none of these tanks are currently in service."

I requested the "Chemical Inventory Tracking System Inventory by Product" report for sodium hydroxide in 271-T. I received the "Chemical Inventory Tracking System Inventory by Location" report for 271 T/119/1, which described a 300- gallon tank of 50% sodium hydroxide solution. The MSDS date listed in the CITS report was August 8, 2015. The date and concentration listed on the MSDS and CITS form were not consistent with USDOE records and statements on when this sodium hydroxide was acquired or how it was used.

I observed the industry standard waste management practice of determining leftover products from discontinued process to be solid waste was described in HFFACO, Attachment 2, "Action Plan", Section 6.3.4, which states:

> Many Hanford Site operations include systems that use chemical materials and/or solutions to perform required functions. When these systems are permanently removed from service, the chemical materials and/or solutions that no longer have a use may be considered a waste subject to the provisions of the dangerous waste regulations. For those systems that contain chemical materials and/or solutions that are considered waste, the components of the systems that contain

this waste become subject to the Resource Conservation and Recovery Act (RCRA) permitting requirements of the Washington Administrative Code (WAC) 173-303 if the waste is managed for greater than 90 days.

Action Required:

Within 60 days of receipt of this report, the USDOE-RL and CHPRC must designate and transfer to an appropriate TSD, the residual waste from plutonium processing and decontamination operations stored in tank M-101. Alternatively, USDOE and CHPRC provide Ecology with records in accordance with WAC 173-303-016(7) demonstrating ability to use the material in the tank.

3) **WAC 173-303-800(2)**

The owner/operator of a dangerous waste facility that transfers, TSD or recycles dangerous waste must, when required by this chapter, obtain a permit in accordance with WAC 173-303-800 through WAC 173-303-840 covering the active life, closure period, groundwater protection compliance period, and for any regulated unit (as defined in WAC 173-303-040) or for any facility which at closure does not meet the removal or decontamination limits of WAC 173-303-610 (2)(b), post-closure care period, unless they demonstrate closure by removal or decontamination as provided under WAC 173-303-800 (9) and (10), or obtain an enforceable document in lieu of a post-closure permit, as provided under subsection (12) of this section. If a post-closure permit is required, the permit must address applicable groundwater monitoring, unsaturated zone monitoring, corrective action, and post-closure care requirements of this chapter. The denial of a permit for the active life of a dangerous waste management facility or unit does not affect the requirement to obtain a post-closure permit under this section.

Observations:

On November 13, 2018, I asked to see designation records or solid waste determination records for the waste in tank 11-L. Mr. Richards said there was no designation or determination records for the tank.

In the December 20, 2018, document request I asked:

Q: Why is TK-11-L not listed in [the Waste Information Data System (WIDS)]?

A: The WIDS database tracks waste sites. Tank 11-L is not a waste site.

Maintenance of the Waste Information Data System (WIDS), TPA-MP-14, states "WIDS also documents locations evaluated and determined not to be waste management units."

Q: Why is TK11-L not listed on the inventory?

A: The inventory provided during the inspection includes actively managed dangerous or mixed waste. Tank 11-L has not been actively managed after the effective date of RCRA on the Hanford Site. T Plant Canyon (221T) Tank 11-L is listed on the Potential Mixed Waste table (Table C-2, page C-16) in the "Calendar Year 2014 Hanford Site Mixed Waste Land Disposal Restriction Full Report," DOE/RL-2015-08 R0, April 21, 2015.

I reviewed the Project Managers Meeting Minutes for T-Plant Complex, July 24, 2008, and included a *Management Assessment Plan and Report*, WSD-TP-EP-06-MA-37, which stated "No findings or observations resulted from the management assessment." The report included also stated "As of April 2002, Cell 1l-L in 221-T had approximately 500 gallons in the oval tank with a pH of 13+."

I reviewed a circa 2002 memo from MB Ellefson with the subject *Data Assessment and Designation from Sampling and Analysis of the Tank in Cell 11L of the 221-T Building.* The memo stated, "The contents of the tank in cell 11L are designated as F001 through F005 based on process knowledge" and "the combined liquid and solid waste conservatively designates with waste numbers D002, D006, D007, D008 and D010."

I reviewed HFFACO, Attachment 2, "Action Plan", Appendix C, "Listing by Operable Unit" and observed Tank 11-L was not listed in the HFFACO as a past practice unit.

I observed the T Plant Complex, Addendum A, Part A Form, included approval for tank storage in the 221-T tank system consisting of tank 5-6, tank 5-7, tank 5-9, tank 6-1, tank 11-R, and tank 15-1. The comments on this form indicate canyon process cells 3L, 7L, 8R, L, 10L, 13L, 13R, 14R, 15L, 16R, and 17R may have containment status (for non-liquids). Tank 11-L and cell 11-L are not included in the permit application.

I observed the administrative record *T Plant Safety Analysis Report,* SD-CP-SAR-007, dated February 1, 1985 (2 years before effective date for mixed waste), describes equipment "Open tank 11-L (SS, 14,000-gal-capacity)" used for "radioactive liquid waste storage." The *T Plant Safety Analysis Report* also describes equipment in section 11 as including "steam jet valves" for "liquid waste transfers from tanks 11-L and 11-R". Included in that report is a piping and instrumentation diagram, Figure 7-5, "Building 221-T Canyon Liquid Waste System," which shows both tanks 11-L and 11-R were equipped with steam jets for transferring waste to tank 15-1. I observed a note written next to the jet for TK-11-L stated "not normally needed."

The document *Interim Safety Basis for Solid Waste Facilities (T Plant)* HNF-SD-WM-ISB-006, Rev. 1A, dated January 28, 1999 (after the RCRA effective date for mixed waste), contains a similar piping and instrumentation diagram. The diagram shows steam transfer jets serving tanks 11-L and 11-R, with a note stating "not normally used" on the steam jet in 11-L.

I reviewed *T Plant Cell Investigation Phase II Report,* HNF-8812, dated December 18, 2002, which described cell 11-L as still having a transfer jet installed.

I reviewed *Hanford Site Waste Management Units Report*, DOE/RL-88-30, Revision 28 which stated "The Hanford Site Waste Management Units Report (HSWMUR) has been created to meet the requirements of the Tri-Party Agreement (TPA) Action Plan, Section 3.5" Tank 11-L was not included in this report either.

Action Required:

Within 60 days of receipt of this report, CHPRC and USDOE-RL must submit to Ecology a permit application for 221-T Tank 11-L in accordance with WAC 173-303-806.

4) **WAC 173-303-140(2)(b) Land disposal restrictions for state-only dangerous waste are the restrictions set forth in subsections (3) through (7) of this section.**

   WAC 173-303-140(4)(b) Disposal of liquid waste. Special requirements for bulk and containerized liquids.

   (i) The placement of bulk or non-containerized liquid dangerous waste or dangerous waste containing free liquids (whether or not sorbents have been added) in any landfill is prohibited.

   (ii) Containers holding free liquids must not be placed in a landfill unless:
   (A) All free-standing liquid:

(I) Has been removed by decanting, or other methods; or
(II) Has been mixed with sorbent or stabilized (solidified) so that free-standing liquid is no longer observed; or
(III) Has been otherwise eliminated; or
(B) The container is very small, such as an ampule; or
(C) The container is designed to hold free liquids for use other than storage, such as a battery or capacitor; or
(D) The container is a labpack and is disposed of in accordance with WAC 173-303-161 and this chapter.

(iii) To demonstrate the absence or presence of free liquids in either a containerized or a bulk waste, the following tests must be used: Method 9095 (Paint Filter Liquids Test) as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" EPA Publication SW-846 as incorporated by reference in WAC 173-303-110 (3)(a).

Observations:

During my January 28, 2019, inspection, I asked Mr. Richards to walk me through what happened to waste package 221T-17-000048 after November 13, 2018.

Mr. Richards said prior to the inspection they had started a work package 2T-18-04237 which included a task for absorbing a partly full, 250 ml, poly container of 1-octanol. The container was generated as unknown waste and stored in less-than 90 day accumulation until it was designated. The octanol was absorbed on November 14, 2018 at 730 am. Mr. Richards said the sorbent was oil dry, a granular bentonite and quartz crystal, non-biodegradable material.

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I was provided with copies of PIN file 221-T-18-000008 and Work Document 2T-18-04237/W. I reviewed the short form Work Document 2T-18-04237/W, and observed Task 3, stated "ABSORB Octanol Oil (ooly bucket # 221T-17-000048) with Oil-Dry (2:1 minimum ratio by volume of absorbent to oil)." I observed the dilution ratio used for the Waste Planning Checklist was 20:1. I observed the calculations on the Waste Designation worksheet were exaggerated even further, with 5% octanol to 95% bentonite and 9.5% silica (calculated with a total mass of 109.5%, or 20.9:1). If the job was performed

according to manufactures instructions and the EC were calculated with a 2:1 dilution ratio, the result would be 0.005%, an equivalent concentration greater than the 0.001% threshold for WT02.

Action Required:

When a waste is stabilized to meet WAC 173-303-140(4)(b) analysis is required to determine if solidification is successful. According to Mr. Richards' statements, and the instructions in 2T-29-0537/W, only a 2:1 ratio was required. Adding 10 times the manufacturers recommended amount of absorbent does not mitigate this requirement, and doing so with the intent to designate a waste stream as non-dangerous is strictly prohibited under WAC 173-303-150. Next time bulk or containerized waste is solidified or stabilized to meet Land Disposal Restrictions, CHPRC and USDOE must be able to demonstrate the waste would pass a Paint Filter Liquids Test as required under the WAC 173-303-140(4)(b)(iii). **No further action required.**

Concerns

1) *T-Plant Complex Waste Analysis Plan,* TPLN-STD-EP-53088, Revision 0, Change 4 does not describe procedures to obtain representative samples, a requirement under WAC 173-303-300(5)(c).
2) When inspection sheets are split between two inspectors, both must sign and print their names, and put the date the work was done. It should be clear what date the inspection was performed and who it was performed by.
3) Manifests need to be available for review once waste has shipped.
4) The M-32 milestone was closed with the understanding the Permittees would close the 221-T tank system by 1999. The 221-T tank system is actively storing thousands of gallons of waste and known to be non-compliant.
5) CHPRC stated "A copy of HNF-8620, "Sampling and Analysis Plan for Characterization of Cell 11-L of the 221-T Canyon Building", is provided to Ecology as a courtesy." Providing records for work done under the TPA to Ecology is a requirement and not a courtesy. Any records relating to corrective action would be required under the Permit (Condition II.Y.2) and would be within the scope of any TSD inspection.

Attachment A

Attendance Rosters

ATTENDANCE ROSTER

INSPECTION NUMBER: 2019-010	FOLLOW-UP NUMBER: N/A
INSPECTION TITLE: (CHPRC) WASHINGTON STATE DEPARTMENT OF ECOLOGY (ECOLOGY) RCRA COMPLIANCE INSPECTION OF THE DWMUs AND 90-DAY DANGEROUS WASTE STORAGE AT THE T PLANT COMPLEX	DATE OF VISIT: ~~11-19-2018~~ 11-13-2018 corrected 1/16/2019 YPatterson

AGENCY	COMPLIANCE INDEX/AUDIT NUMBER	LOCATION OF INSPECTION
ECOLOGY	18.653	T PLANT COMPLEX

Please Print

Name	Position	Company/Organization	Phone Number
Tony McKarns	DOE ENV.	DOE	376-8981
Steve Weil	DOE ENV Sprvr	ISMS	376-5510
Jonathan Tullis	Eco	CHPRC	373-3209
Noah Cruz	Eng Lead	CHPRC	373 0098
Kevin McCallum	OPS Spclst	CHPRC	373-4311
Sarah Horn	Env Regulatory	CHPRC/WMP	942-6572
Jack Davis	Inspector	ECY	372-7930
Linda Peterson	Insp Coor	CHPRC	373-4260
Kathy Conaway	Comp Support	Ecology	372-7890
Mitch Merrott	ECO II	CHPRC	373 7351
Dave Richards	OPS MGR	CHPRC	373 4694
Doug Downs	OPS Spclst	CHPRC	373-0055
Kym Taylor	CHPRC Records	CHPRC	373-3514
Allison Wright	RL Environmental	DOE/RL/ESQ	373-7303

ATTENDANCE ROSTER

INSPECTION NUMBER: 2019-010	FOLLOW-UP NUMBER: N/A
INSPECTION TITLE: (CHPRC) WASHINGTON STATE DEPARTMENT OF ECOLOGY (ECOLOGY) RCRA COMPLIANCE INSPECTION OF THE DWMUs AND 90-DAY DANGEROUS WASTE STORAGE AT THE T PLANT COMPLEX	DATE OF VISIT: 11-13-2018 (original inspection) follow up visit on 1/28/2019

AGENCY	COMPLIANCE INDEX/AUDIT NUMBER	LOCATION OF INSPECTION
ECOLOGY	18.653	T PLANT COMPLEX

Please Print			
Name	**Position**	**Company/Organization**	**Phone Number**
Allison Wright	Environmental	DOE/RL/ESQ	373-7303
DIANE L. LEIST	INSP COORD	CHPRC/ETS	376-3920
Cheryl Edwards	Operations	CHPRC	373-0038
Keith McCallum	Environmental Projects	CHPRC	373-4311
Jacqual Davis	Inspection	ECY	372-7930
Kathy Conaway	Lead Compliance	Ecology	372-7890
Angela Willette	Project Waste Svcs Mgr	CHPRC	373-1661
Jonathan Rogers	Inspector	ECY	372-7852
Jon Fullmer	ECO	CHPRC	375-3509
Adam Shafer	Inspection	ECY	372-7909
Noah Cruz	Insp Coord	ECY	373-2098
Krishna Pandya	Record Spc	CHPRC	
Mitchell Morrett	ECO	CHPRC	373-7351
LINDA Petersen	Insp Coord	CHPRC	373-4200