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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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May 24, 2017

17-NWP-062

Mr. Kevin Smith, Manager  
Office of River Protection  
United States Department of Energy  
PO Box 451, MSIN: H6-60  
Richland, Washington 99352

Re: State Waste Discharge Permit No. ST0004502 Renewal Application—200 Area Treated Effluent Disposal Facility

Dear Mr. Smith:

Thank you for completing an application for the renewal of State Waste Discharge permit No. ST0004502 (ST4502), received by this office on June 28, 2016. The Department of Ecology (Ecology) has reviewed and accepted your application as sufficiently complete on May 23, 2017. Although sufficiently complete, Ecology is requesting additional information prior to permit issuance. Ecology's comments, which require clarification of the application material, are enclosed.

Ecology is currently drafting the permit. However, we will not be able to complete issuance before the permit expiration date on June 30, 2017. Therefore, Ecology is extending the term of permit ST4502. Until the renewal permit is issued, the terms and conditions of the current ST4502 permit will remain in effect and are enforceable for up to five years, or until further notice by Ecology. This extension will allow Ecology additional time to review the renewal application and will allow the Department of Energy Office of River Protection (USDOE-ORP) sufficient time to provide the requested clarifying information.

Ecology requests that USDOE-ORP provide us with the additional clarifying information within the enclosure and return to Ecology no later than September 29, 2017.

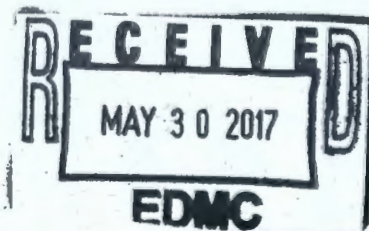
Please contact Katie Wilson, Permit Lead, at [katie.wilson@ecy.wa.gov](mailto:katie.wilson@ecy.wa.gov) or (509) 372-7885, or Stephanie Schleif, Project Manager, at [stephanie.schleif@ecy.wa.gov](mailto:stephanie.schleif@ecy.wa.gov) or (509) 372-7929 if you have any questions.

Sincerely,

 for Ron Skinnarland

Ron Skinnarland  
Waste Management Section Manager  
Nuclear Waste Program

Enclosure  
cc: See page 2



17-NWP-062

17-NWP-062

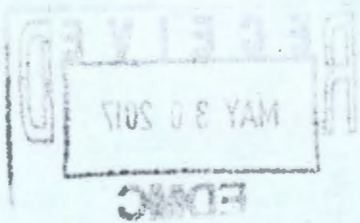
Mr. Kevin Smith  
May 24, 2017  
Page 2 of 2

cc electronic w/enc:

Dave Bartus, USEPA  
Dennis Faulk USEPA  
Dennis Bowser, USDOE-ORP  
Rana Evans, USDOE-ORP  
Eric Faust, USDOE-RL  
Jon Perry, MSA  
Lucinda Borneman, WRPS  
Holly Bowers, WRPS  
Jessica Joyner, WRPS  
Rose Ferri, YN  
Ken Niles, ODOE  
Stephanie Schleif, Ecology  
Ron Skinnarland, Ecology  
Katie Wilson, Ecology  
Charles Gilman, Ecology/Permit Fee Unit  
Environmental Portal  
Hanford Facility Operating Record  
USDOE-ORP Correspondence Control  
WRPS Correspondence Control

cc w/enc:

Rod Skeen, CTUIR  
Gabriel Bohnee, NPT  
Russell Jim, YN  
Susan Leckband, HAB  
Administrative Record, State Waste Discharge Permit ST0004502  
NWP Central File



# Review Comment Record

## Washington State Department of Ecology Nuclear Waste Program

Date: 1/20/2017

Page 1 of 9

**Document Title(s)/Number(s):**

State Waste Discharge Permit ST0004502 Renewal Application

Document Manager	Telephone Number	Project Manager	Telephone Number	Facility Site ID	Cleanup Site ID
Katie Wilson	(509) 372-7885	Stephanie Schleif	(509) 372-7929		

Item No.	Pg. # Sec. # Para./Sent.	Comment or Question	Modification Needed	Basis/Justification	Permittee Response	Ecology Response	Open/Close	Reviewer Initials
1.	Enclosure 3, Pg 3, Section 7, para 1, sent 2	What is the pivot table? Table 3 is not provided. Table 2 is not mentioned in the enclosure, nor provided.	Please provide table 3.	All referenced material needs to be provided to evaluate application.				
2.	Enclosure 3, Table 1	Analytes have minimum, average, and maximum values even when the results were non-detect or only one detected result. Please explain how minimums, averages, and maximums were obtained using non-detect results.	Clarify how non-detects were evaluated.	Clarification needed to evaluate application.				
3.	Enclosure 3, Table 1	Comments for chloroform indicated seven results above limit and one exceedance. The permit limit and the WAC 173-200-040 criterion limit is the same. How is "above limit" and "exceedance" considered different?		WAC 173-200-040(2)(a), Table 1.				
4.	Enclosure 3, Table 1	Not all lab qualifiers are reported in "Lab Qualifier" column of Table 1. Is the column only meant to have a qualifier if the entire data set was non-detect (U qualifier)?	Clarify meaning of column.	Clarification needed to evaluate application.				
5.	Enclosure 3, Appendix A, Table A-1	Is the reported value of non-detects the detection level or 1/2 the detection value? ST0004502 pg 9 states to report single analytical values below detection as "< detection level" and to use either 0 or 1/4 the detection value if the parameter is reported below detection (nondetect) for calculating monthly averages. The bromide minimum value reported in Enclosure 3 Table 1 is 0.025 ug/mL, which is also the reported value in Enclosure 3, Appendix A, Table A-1. All bromide samples appear to be U flagged, non-detect, and the monthly averages would be 0.	Clarify the reported values and how non-detects are calculated in accordance with the permit.	Water Discharge Permit ST0004502, S2.A, pg 9.				
6.	Enclosure 3, Appendix A	Lab qualifiers should be defined at the end of the tables.	Define all lab qualifiers used in the tables.	Clarification needed to evaluate application.				
7.	Enclosure 3, Appendix B	Lab qualifiers should be defined at the end of the tables.	Define all lab qualifiers used in the tables.	Clarification needed to evaluate application.				
8.	Enclosure 3, Appendix B, Table B-2	According to ST0004502 S2.A pg 9, the reported value used for non-detect results should be 0 or 1/2 the detection level, depending on if another sample was detected in the reporting period.	Update the reported values or clarification of how reported values of non-detects are used to calculate the monthly averages.	Water Discharge Permit ST0004502, S2.A, pg 9.				

**Review Comment Record**

**Washington State Department of Ecology  
Nuclear Waste Program**

Date: 1/20/2017

Page 2 of 9

Item No.	Pg. # Sec. # Para./Sent.	Comment or Question	Modification Needed	Basis/Justification	Permittee Response	Ecology Response	Open/Close	Reviewer Initials
9.	Enclosure 4, Appendix A, pg 5, bullet 5	Where is the end-of-pipe (or other AKART technologies) evaluation?						
10.	Enclosure 4, Appendix A, Pg 5, Recommendation	<p>"Develop pollutant loading limits and BMPs to replace concentration-based limits for effluents that don't require treatment. ... Discrete/new effluents such as WTP effluents which require treatment, retention, and verification sampling can continue to be subject to concentration-based limits."</p> <p>How will TEDF execute this? Will there be separate sampling events? Will they be compared as separate events?</p>	Clarify within response column.	Conflicting statements are not enforceable.				
11.	Enclosure 4, appendix B, pg 8, discussion, para 1, sent 2.	How are monthly samples averaged monthly? Both chloroform and total trihalomethane are sampled monthly using 24-hour composite samples. Does this mean the sample collected for the month is applied to the average daily flow rate? Does it mean that the value from the sampling is applied to the average daily flow?	Explain within response column.	Explanation needed to evaluate application.				
12.	Enclosure 4, appendix B, pg 8, discussion, para 1, sent 3.	<p>"The TEDF effluent is monitored for these pollutants using a 24-hr flow-proportional composite sample."</p> <p>The permit specifies that TTHM and chloroform are to be sampled using a grab sample collected over 15 minutes or less. Why are the samples being collected as a 24-hour composite?</p>	Explain.	Permit No. ST0004502.				
13.	Enclosure 4, Appendix D, pg 1, para. 2, sent. 4	How was the prescribed tolerance determined?	Clarify in the response column how the tolerance for pH and conductivity drift was determined.	Clarification needed to evaluate application.				
14.	Enclosure 4, Appendix D, pg 1, para. 3	Enclosure 6 states that the combined pH measure is likely not as technically rigorous as the individual pH 4 and pH 10 and should only be used for informational purposes. The individual pH data sets should be used as the technical basis for reducing the calibrations.	Update the technical basis with the individual pH data sets.	More technically rigorous data is needed to evaluate the application.				

# Review Comment Record

## Washington State Department of Ecology Nuclear Waste Program

Date: 1/20/2017

Page 3 of 9

Item No.	Pg. # Sec. # Para./Sent.	Comment or Question	Modification Needed	Basis/Justification	Permittee Response	Ecology Response	Open/Close	Reviewer Initials
15.	Enclosure 4, Appendix D, pg 2, para. 2, sent. 3	States "it can also be noted from the data that the drift is not linear with time." There is no statement in either enclosure 4, appendix D alluding that the data is arranged in sequence of time. Actually, it appears with the combined pH that all pH 4 is listed first and then all pH 10 drift values. The tables and figures do not support the statement without explanation of the sequential order.  Enclosure 6 data tables lists the dates associated with the drift values.	Clarify.	Clarification needed to evaluate application.				
16.	Enclosure 4, Appendix D, Figures 1 and 3	Is there an explanation for the spikes observed above the tolerance levels?	Explain, in the response column, pH and conductivity spike above the tolerance levels and what will be done if drift occurs above the tolerance level in any calibration event.	Clarification needed to evaluate application.				
17.	Enclosure 4, Appendix D	The application also requests to modify the sample frequency of the pH and conductivity probe to include an exception from continuous sampling during periods of insufficient flow (Enclosure 4, Appendix C). How has removing the pump from flow (or removing from power) affected the drift? Would the probes be additionally calibrated after periods of insufficient flow?	Clarify how insufficient flow could affect the drift and how calibrations will be handled during times of insufficient flow.	Clarification needed to evaluate application.				
18.	Enclosure 4, Appendix D	Are monthly calibrations supported in instrument manuals?		Explanation needed to evaluate application.				
19.	Enclosure 5, pg 1, Section 1, para. 3, sent. 2	"The loading is calculated by multiplying the sample results by the volume discharged." What volume discharged is being referenced in this calculation? The volume discharged for the day it was sampled or the average daily discharge for the month?	In the response column, clarify how the mass loadings will be calculated.	Clarification needed to evaluate application.				
20.	Enclosure 5, pg 2, Section 3, bullet 2	"For determine the minimum loading levels, the inputs are the permit detection levels in ST0004502." Detection levels (quantitation levels) are still a requirement of the lab to meet a specific concentration. As the lab will still be providing results in concentration, the lab will still need to meet the quantitation levels defined in the permit.  Including "minimum loading levels" implies that there is a minimum amount of contaminant that must be discharged from the facility. This establishes an unnecessary condition.	Explain, in the response column, what the minimum loading level is used for.	Explanation needed to evaluate application.				

**Review Comment Record**

**Washington State Department of Ecology  
Nuclear Waste Program**

Date: 1/20/2017

Page 4 of 9

Item No.	Pg. # Sec. # Para./Sent.	Comment or Question	Modification Needed	Basis/Justification	Permittee Response	Ecology Response	Open/Close	Reviewer Initials
21.	Enclosure 5, pg. 2, Section 3, bullet 4	3.526 MGD  This value is a reasonable volume if the evaporator was operating consistently. The average flow rate for the last 12 months of the exercise was 0.65 MGD, one fifth of the maximum observed flow and one tenth of the maximum design flow. How will the facility account for mass loading rates during times of lower flow like what has been typically seen to ensure that the overall concentration limits would not be exceeded?	Using the response column, explain how the typical flow seen at the facility will compare to the proposed mass loading rates.	Explanation needed to evaluate application.				
22.	Enclosure 5, pg 3, Section 5, step 5	Why not compare the maximum concentration to the flow for the month it came from rather than the maximum flow the system has seen? April 2012 had 411 ug/L iron, with an average daily flow of 0.0564 MGD, which would be 0.19 lbs/day. This is only 2% of the proposed mass loading limit, but would exceed if it was concentration based (137% of the limit).	Using the response column, explain how the proposed mass loading rates will still allow the facility to be in compliance with groundwater discharge concentrations.	WAC 173-200-040				
23.	Enclosure 6, pg 1, section 3, para 2, sent 3	What determines the tolerance limits?	Use the response column to explain.	Explanation needed to evaluate application.				
24.	Enclosure 6, Appendix A	Does the order of the data have any effect on the SPC method? When combining the pH 4 and pH 10 plots?	Use the response column to explain.					
25.	Appendix A & B	Data provided suggests that a change to mass based loading limits will violate Groundwater Quality Criteria set for Chloroform under WAC 173-200-040.	Our records indicate an AKART (all known, available, and reasonable methods of prevention, control and treatment) was submitted for Chloroform but it only considered WTP discharges which is not yet on-line. Provide AKART for Chloroform considering current discharge/flow configuration.	WAC 173-216-110 (1),(a) Any permit issued by the department shall specify conditions necessary to prevent and control waste discharges into the waters of the state, including the following, whenever applicable: (a) All known, available, and reasonable methods of prevention, control, and treatment WAC 173-200-050 (3) All enforcement limits shall, at a minimum, be based on all known, available, and reasonable methods of prevention, control, and treatment.				

Review Comment Record

Washington State Department of Ecology  
Nuclear Waste Program

Date: 1/20/2017

Page 5 of 9

26.	Appendix A & B	Data provided suggests that a change to mass based loading limits will violate Groundwater Quality Criteria set for Chloroform under WAC 173-200-040.	Generally, mass based loadings are applied to surface water discharges where localized mixing/dilution occurs between the outfall and the stream which causes the concentration of the pollutant of concern to drop below surface water quality standards at an acceptable point downstream. TEDF discharges to groundwater with minimal to no localized mixing (dispersion). Prolonged discharges to TEDF which exceed current groundwater standards (while still falling within proposed loading limits) could potentially travel through the groundwater as a localized plume with concentrations exceeding established groundwater quality criteria. Provide evidence that proposed (concentration or loadings) will meet the conditions in 173-200-50(3). (b), (i) through (v) for exception. Provide worst case scenario for loadings where concentrations are highest (i.e. low flows but high concentrations) when providing evidence. Apply AKART as applicable.	WAC 173-200—50.(3).(b) (b) Where a criterion is established for a given contaminant, the enforcement limit shall not exceed the criterion except as follows: (i) When the natural ground water quality for a contaminant exceeds the criterion, the enforcement limit for that contaminant shall be equal to the natural level. (ii) When the background ground water quality exceeds a criterion, the enforcement limit at the point of compliance shall not exceed the background ground water quality for that criterion. Enforcement limits based on elevated background ground water quality shall in no way be construed to allow continued pollution of the receiving ground water. (iii) When a criterion is less than the practical quantification level, the enforcement limit shall be established in an alternate location to provide a realistic estimate that the criterion shall not be exceeded in the ground water. Evaluation for such enforcement limits shall be performed in accordance with WAC 173-200-080(5). (iv) When naturally nonpotable ground water exceeds a secondary contaminant criterion, an enforcement limit for a secondary contaminant may exceed a criterion when it can be demonstrated to the department's satisfaction that: (A) The environment is protected; (B) Human health is protected in consultation with the				
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Review Comment Record

Washington State Department of Ecology  
Nuclear Waste Program

Date: 1/20/2017

Page 6 of 9

				<p>Washington state department of health;                  (C) Existing and future beneficial uses are not harmed; and                  (D) All known, available, and reasonable methods of prevention, control, and treatment will not result in concentrations less than the secondary contaminant criteria.                  (v) Enforcement limits may exceed criteria in isolated artificial or seasonal ground waters when all of the following conditions exist:                  (A) The isolated artificial or seasonal ground waters are of insufficient quantity for use as a drinking water source;                  (B) Established enforcement limits will not cause harm to existing and future beneficial uses including support of seasonal wetlands;                  (C) Accumulation of contaminants will not cause adverse acute or chronic effects to human health as determined in consultation with the Washington state department of health;                  (D) Accumulation of contaminants will not cause adverse acute or chronic effects to the environment.                  (vi) In rare circumstances the department may allow an enforcement limit to exceed a criterion for an activity for a period not to exceed five years without reconsideration of the evidence presented in subitems (A), (B), and (C) of this subdivision, and if all of the following conditions are met:                  (A) The permit holder or responsible person</p>				
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**Review Comment Record**

**Washington State Department of Ecology  
Nuclear Waste Program**

Date: 1/20/2017

Page 7 of 9

Item No.	Pg. # Sec. # Para./Sent.	Comment or Question	Modification Needed	Basis/Justification	Permittee Response	Ecology Response	Open/Close	Reviewer Initials
				demonstrates to the department's satisfaction that an enforcement limit that exceeds a criterion is necessary to provide greater benefit to the environment as a whole and to protect other media such as air, surface water, soil, or sediments; (B) The activity has been demonstrated to be in the overriding public interest of human health and the environment; (C) The department selects, from a variety of control technologies available for reducing and eliminating contamination from each potentially affected media, the technologies that minimize impacts to all affected media; and (D) The action has been approved by the director of the department or his/her designee.				
27.	Enclosure 2, page 65 of 78	Elevated levels of chromium, iron, nickel, and manganese should not be attributed to the corrosion of the well screen. WAC 173-160-201(2) states that the well material must be compatible with the formation.	Provide information that verifies the elevated levels of these constituents is a result of well screen corrosion, e.g. metallurgical evaluation of the casing, water samples, etc.					
28.	Enclosure 2, page 75 of 78, Figure G.5-7	What are the well numbers associated with the wells in this figure?	Provide an updated figure G.5-7 to Ecology including the well numbers.					
29.	Enclosure 3, table A-1	Are the sample results provided in table A-1 the monthly averages, or are these individual sample results?	Please clarify using the response column.					
30.	Draft Permit, Enclosure 7, Pg. 21 of 28	In which document is the determination of the loading capacity located?	Provide the location of the loading capacity information for T'EDF.					
31.	Draft Permit Section S3.E	Discussion with HQ and engineers has led to the determination that vacuum relief valves should not leak if they are functioning normally. If the valves are leaking regularly, we will need to quantify the rate of the leak and include that within the permit.	An average rate of leakage for the vacuum relief valves needs to be provided to Ecology.					

**Review Comment Record**

**Washington State Department of Ecology  
Nuclear Waste Program**

Date: 1/20/2017

Page 8 of 9

Item No.	Pg. # Sec. # Para./Sent.	Comment or Question	Modification Needed	Basis/Justification	Permittee Response	Ecology Response	Open/Close	Reviewer Initials
32.	Draft Permit Section S4.A	Where is the TEDF O&M Manual currently kept?						
33.	Draft Permit Section S5 & Enclosure 2, page 7 of 78	How can we guarantee there are no solids being discharged to TEDF? It is indicated that TEDF has a solid waste control plan. Why does TEDF have a Solid Waste Control Plan?	Please provide this plan to Ecology.					
34.	Fact Sheet	The current fact sheet estimates a travel time of approximately 120 to 300 years for the effluent to reach the Columbia River. Ecology HGs have reviewed this number and don't believe it to be accurate. Is there more recent modeling that may provide an update on the travel time?	Please provide the basis for the 120 to 300 year estimation. Please include whether this flow is in the Ringold Formation Unit A or the Hanford formation?					
35.	Fact Sheet	The current fact sheet states that "The infiltration systems are capable of handling the planned design flows per WHC-SD-W049-ER-003, Revision 0..." Where is the approved design flow documented? Also, where is the approved design criteria (average monthly flow and average yearly flow) and loading capacity of the basins located?	Please list the sections of the documents that contain this information.					
36.	Draft fact sheet	Please provide Ecology a copy-pastable facility location map of the Hanford Site and the location of TEDF within the Site. This figure will be placed within the Fact Sheet as Figure 1.	Provide this map to Ecology for inclusion within the updated Fact Sheet.					
37.	Draft fact sheet	Please provide the Address, Telephone number and fax number for the Responsible Official, Kevin Smith.	This information will be included in Table 1 of the updated Fact Sheet.					
38.	Draft fact sheet	Provide a range of values to help Ecology understand what "very high" is in reference to the hydraulic conductivity of the Hanford formation.						
39.	Draft fact sheet	Provide what the unsaturated vertical hydraulic conductivity of the Hanford formation is.						
40.	Draft fact sheet	Please provide the reasoning (in the response column) for listing both design capacity and loading capacity under the Design Criteria section.						
41.	Draft fact sheet	Please provide a description of how flow is measured during times when the flow is too low for the pump to collect samples.						

**Review Comment Record**

**Washington State Department of Ecology  
Nuclear Waste Program**

Date: 1/20/2017

Page 9 of 9

Item No.	Pg. # Sec. # Para./Sent.	Comment or Question	Modification Needed	Basis/Justification	Permittee Response	Ecology Response	Open/Close	Reviewer Initials
42.	Permit, Intro section table, row 7	"Engineering Study for Water Treatment System for the Central Plateau," Rev.0, dated March 2, 2015 states that 283-W is still in service, but 283-E has been placed "out of service or in a dry lay-up condition in 1999." This makes it seem as though the facility can be reinstated. <u>WHC-SD-LEF-EV-001 REV. 0, Appendix C, page C-7</u> shows the 284-W Power Plant package boiler was placed into a dry lay-up state, but was then brought back into service. Is this a possibility for the 283-E package boiler?	Please provide evidence that these boilers are permanently out of service to facilitate removal from the permit.					
43.	Permit, Intro section table, row 7	The first map in enclosure 2 (the permit application) identifies 283-W as an authorized generator—is the package boiler the only part of the system that has been taken out of service? Does TEDF receive other effluent from this facility?	Provide explanation within response column.					
44.	Permit, Intro section table, row 8	How has the cooling tower been closed? Is there potential for future discharges?	Provide explanation within response column.					
45.	Permit Section S2.E	How are pH measurements captured at TEDF? Are they manually collected as a grab sample, or is the pH instrument continuously sampling the effluent?	Provide explanation within response column.					
46.	Permit Section S2.E.5	The permit shell reads "Establish a calibration frequency for each device or instrument in the O&M manual that conforms to the frequency recommended by the manufacturer." Has WRPS attempted to find calibration recommendations for the equipment?	Provide explanation within response column.					