

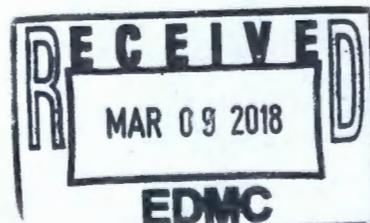
FINAL

**Office of River Protection
Consent Decree
Monthly Report
February¹ 2018**

Consent Decree, *State of Washington v. Dept. of Energy*, NO: 08-5085-FVS (October 25, 2010)

**Amended Consent Decree, *State of Washington v. Dept. of Energy*, NO: 2:08-CV-5085-RMP
(March 11, 2016)**

**Second Amended Consent Decree, *State of Washington v. Dept. of Energy*,
NO: 2:08-CV-5085-RMP (April 12, 2016)²**



¹ Except where otherwise expressly stated, the narrative descriptions of progress in this report cover the period from January 1–31, 2018. Earned Value Management System data and descriptions cover the period of December 1–31, 2017; this includes the facility completion percentage estimates included at various locations in the Waste Treatment and Immobilization Plant section.

² The cited consent decrees are between the State of Washington and U.S. Department of Energy. For each of these decrees, there are companion, separate consent decrees with the State of Oregon, as Intervenor, under the same case numbers.

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Acronyms and Abbreviations

BNI	Bechtel National, Inc.
BOF	Balance of Facilities
C#V	ventilation system for potential contamination zones C#
CD	Consent Decree (<i>State of Washington v. Dept. of Energy</i> , NO. 08-5085-FVS [October 25, 2010]; as amended, Amended Consent Decree, NO. 2:08-CV-5085-RMP [March 11, 2016]; as amended, Second Amended Consent Decree, NO. 2:08-CV-5085-RMP [April 12, 2016])
CV	cost variance
DFLAW	direct-feed low-activity waste
DOE	U.S. Department of Energy
DSA	documented safety analysis
Ecology	Washington State Department of Ecology
EMF	Effluent Management Facility
EVMS	Earned Value Management System
FY	fiscal year
HIHTL	hose-in-hose transfer line
HLW	High-Level Waste (Facility)
LAB	Analytical Laboratory
LAW	Low-Activity Waste (Facility)
LBL	Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory
ORP	U.S. Department of Energy, Office of River Protection
PJM	pulse-jet mixer
PPR	Project Performance Review
PT	Pretreatment (Facility)
SHSV	standard high-solids vessel
SV	schedule variance
USACE	U.S. Army Corps of Engineers
WTP	Waste Treatment and Immobilization Plant

Consent Decree Milestone Statistics/Status

Milestone	Title	Due Date	Completion Date	Status
Fiscal Year 2021				
D-00A-07 Interim	LAW Facility Construction Substantially Complete	12/31/2020		On Schedule
D-16B-03	Of the 12 SSTs referred to in B-1 and B-2, complete retrieval of tank waste in at least 5	12/31/2020		Notice given that a serious risk has arisen. See letter 16-ORP- 0097 ¹ .
Fiscal Year 2023				
D-00A-08 Interim	Start LAW Facility Cold Commissioning	12/31/2022		On Schedule
Fiscal Year 2024				
D-00A-09 Interim	LAW Facility Hot Commissioning Complete	12/31/2023		On Schedule
D-16B-01	Complete Retrieval of Tank Waste from the following remaining SSTs in WMA-C: C-102, C-105, and C-111	03/31/2024		On Schedule
D-16B-02	Complete retrieval of tank wastes from the following SSTs in Tank Farms A and AX: A-101, A-102, A-104, A-105, A-106. AX-101, AX-102, AX-103, and AX-104. Subject to the requirements of Section IV-B-3 DOE may substitute any of the identified 9 SSTs and advise Ecology accordingly	03/31/2024		Notice given that a serious risk has arisen. See letter 16-ORP- 0097 ¹ .
Fiscal Year 2031				
D-00A-02 Interim	HLW Facility Construction Substantially Complete	12/31/2030		Under Analysis ²
Fiscal Year 2032				
D-00A-13 Interim	Complete Installation of Pretreatment Feed Separation Vessels FEP-SEP-OOOO1A/1B	12/31/2031		On Schedule

Milestone	Title	Due Date	Completion Date	Status
D-00A-14 Interim	PT Facility Construction Substantially Complete	12/31/2031		Under Analysis ²
D-00A-19 Interim	Complete Elevation 98 feet Concrete Floor Slab Placements in PT Facility	12/31/2031		On Schedule
D-00A-03 Interim	Start HLW Facility Cold Commissioning	06/30/2032		Under Analysis ²
D-00A-06 Interim	Complete Methods Validations	06/30/2032		On Schedule
Fiscal Year 2033				
D-00A-15 Interim	Start PT Facility Cold Commissioning	12/31/2032		Under Analysis ²
Fiscal Year 2034				
D-00A-04 Interim	HLW Facility Hot Commissioning Complete	12/31/2033		Under Analysis ²
D-00A-16 Interim	PT Facility Hot Commissioning Complete	12/31/2033		Under Analysis ²
D-00A-17	Hot Start of Waste Treatment Plant	12/31/2033		Under Analysis ²
Fiscal Year 2037				
D-00A-01	Achieve Initial Plant Operations for the Waste Treatment Plant	12/31/2036		Under Analysis ²

¹ 16-ORP-0097, 2016, "State of Washington v. Moniz, Case No. 2:08-CV-5085-RMP (E.D. WA)," (external letter to M. Bellon, Washington State Department of Ecology), from K.W. Smith, U.S. Department of Energy, Office of River Protection, Richland, Washington, December 6.

² As described in "Significant Planned Activities in the Next Three Months" in the PT Facility and HLW Facility sections, DOE is considering an option to continue preservation and maintenance of the PT and HLW facilities for a period of 3 to 5 years, while DOE is focusing its efforts on bringing direct-feed LAW into operation. Accordingly, certain milestones in this table are marked as "Under Analysis." As discussed in the PT and HLW facilities' sections, DOE has asked the U.S. Army Corps of Engineers to perform a parametric analysis of certain options and funding scenarios to evaluate the likelihood of achieving certain PT- and HLW-related milestones. DOE is considering Milestones A-1 and A-17 as being "Under Analysis" because the definition of Section IV-A-2: "'Hot Start of Waste Treatment Plant' means the initiation of simultaneous operation of the Pretreatment (PT) Facility, High-level Waste (HLW) Facility and Low-activity Waste (LAW) Facility (including as needed the operations of the Analytical Laboratory (LAB) and the Balance of Facilities) treating Hanford tank wastes and producing a waste glass product." Hence, if one of the five facilities is "Under Analysis", DOE is conservatively considering the WTP milestone as "Under Analysis."

DOE = U.S. Department of Energy.

Ecology = Washington State Department of Ecology.

HLW = high-level waste.

LAW = low-activity waste.

PT = pretreatment.

SST = single-shell tank.

WMA-C = C Farm waste management area.

Consent Decree Reports/Reviews

D-16C-03 series, Submit to State of Washington and State of Oregon Quarterly Report

Due: 45 days following after each calendar year quarter (due February 14, 2018)

Status: The U.S. Department of Energy (DOE) is submitting the Consent Decree Quarterly Report that was due February 14, 2018, on March 9, 2018. DOE discussed the reasons for this late submission with the Washington State Department of Ecology (Ecology) (Alex Smith) and Oregon Department of Energy (Ken Niles) on February 13, 2018.

D-00C-02 series, Submit to State of Washington and State of Oregon Monthly Summary Reports

Due: End of each month,

Status: DOE is submitting the Consent Decree Monthly Report that was due February 28, 2018, on March 9, 2018. DOE discussed the reasons for this late submission with the Washington State Department of Ecology (Alex Smith) and Oregon Department of Energy (Ken Niles) on February 13, 2018.

D-006-00-B1, Provide State of Oregon notice of meetings in D-006-00-B, etc. no less than 30 days before they are scheduled

Status: Complete.

D-006-00-B, Meet Approximately Every Three Years after Entry of Decree to review requirements of the Consent Decree

Status: Complete (March 16, 2017).

Spare Reboiler Requirement Status

Tank Farms Assistant Manager: Glyn Trenchard

Federal Program Manager: Paul Hernandez

Milestone	Title	Due Date	Status
D-16E-02	Have available spare E-A-1 reboiler for the 242-A Evaporator	12/31/2018	On Schedule

Description of activity and progress made for the spare E-A-1 reboiler for the 242-A Evaporator, including a description of cost and schedule performance

- Washington River Protection Solutions LLC awarded a not-to-exceed design/build contract to ABW Technologies in the amount of \$461,000 for fabrication of a spare reboiler, with delivery prior to December 31, 2018. Total estimate at completion is \$776,000.
- Fabrication of the spare 242-A Evaporator reboiler is ongoing. The reboiler shell has been completed, and the nozzles have been welded to the reboiler shell. ABW Technologies is currently in the process of fitting, welding, and installing the tube sheets into the shell. Washington River Protection Solutions LLC remains on schedule to have a spare E-A-1 reboiler available for the 242-A Evaporator by December 31, 2018, as required by the Second Amended Consent Decree.

Single-Shell Tank Retrieval Program

Tank Farms Assistant Manager: Glyn Trenchard

Federal Program Manager: Jeff Rambo

Milestone	Title	Due Date	Status
D-16B-03	Of the 12 SSTs referred to in B-1 and B-2, complete retrieval of tank waste in at least 5	12/31/2020	Notice given that a serious risk has arisen. See letter 16-ORP-0097 ¹ .
D-16B-01	Complete retrieval of tank waste from the following remaining SSTs in WMA-C: C-102, C-105, and C-111	03/31/2024	On Schedule
D-16B-02	Complete retrieval of tank wastes from the following SSTs in Tank Farms A and AX: A-101, A-102, A-104, A-105, A-106, AX-101, AX-102, AX-103, and AX-104. Subject to the requirements of Section IV-B-3 DOE may substitute any of the identified 9 SSTs and advise Ecology accordingly.	03/31/2024	Notice given that a serious risk has arisen. See letter 16-ORP-0097 ¹ .

¹ 16-ORP-0097, 2016, "State of Washington v. Moniz, Case No. 2:08-CV-5085-RMP (E.D. WA)," (external letter to M. Bellon, Washington State Department of Ecology), from K. W. Smith, U.S. Department of Energy, Office of River Protection, Richland, Washington, December 6.

DOE = U.S. Department of Energy.

Ecology = Washington State Department of Ecology.

SST = single-shell tank.

WMA-C = C Tank Farm waste management area.

Significant Accomplishments During the Prior Three Months (Nov-Dec-Jan):

- Removed two obsolete sluicers and two obsolete pumps from Tank AX-102 and Tank AX-104.
- Completed installation of a 13.8 kV transformer and infrastructure to provide power for AX Tank Farm retrieval.
- Initiated installation of the caustic/water system piping from A-285 Building to AX Tank Farm.
- Initiated installation of the electrical infrastructure inside AX Tank Farm to support retrieval activities.
- Completed redesign of the A Tank Farm exhaust system.

- Completed equipment removal design for Tank A-101, Tank A-102, Tank A-103, and Tank A-106.
- Completed the fourth pit cleanout at Tank AX-101 and Tank AX-103.
- Completed retrieval operations in Tank C-105 using chemical dissolution to the limits of the approved third technology.
- Completed final rinsing of Tank C-105 and secured retrieval operation.
- Began removing shield plates and hose barns to more than 20 hose-in-hose transfer lines (HIHTL) between the C Tank Farm and the AN Tank Farm, and within C Tank Farm.
- Completed video inspection of waste in Tank A-104 and Tank A-105.
- In follow up to his letter of September 20, 2017, Principal Deputy Assistant Secretary for Environmental Management James Owendoff met with Maia Bellon, Director of Ecology, on November 9, 2017, to discuss potential initiatives to accelerate cleanup of the Hanford Site. Several of these potential initiatives were discussed at that meeting, including but not limited to, retrieving transuranic waste from the T Tank Farm and the B Tank Farm. Director Bellon responded by letter dated November 17, 2017, indicating Ecology's willingness to participate in further discussions. DOE provided a response to Ecology on December 1, 2017, which summarized DOE's key takeaways from the November meeting, highlighted numerous ideas under consideration including options for retrieving, treating, and disposing of transuranic waste, including possible utilization of the Waste Isolation Pilot Plant, and provided further information, as requested by Ecology, regarding the tank-side cesium removal system and redesign of the Low-Activity Waste Pretreatment System.

Significant Planned Activities in the Next Three Months (Feb-Mar-Apr):

- Remove legacy long-length equipment from Tank AX-102 and Tank AX-104
- Initiate fieldwork to install exhauster pads for new A Tank Farm exhausters (POR518/519)
- Construct ingress/egress tent at AN Tank Farm to support 20 HIHTL removals in fiscal year (FY) 2018
- Complete removing plates and hose barns for 12 HIHTLs between C Tank Farm and AN Tank Farm
- Begin disconnecting 12 HIHTLs between C Tank Farm and AN Tank Farm
- Complete removing plates and hose barns for 8 HIHTLs between the POR104 valve box and Tank C-105
- Start disconnecting 8 HIHTLs between the POR104 valve box and Tank C-105
- Complete Tank C-105 Computer/CAD Measuring System Waste Volume video
- Complete Tank C-105 residual waste Computer/CAD Measuring System calculation
- Remove long-length in-tank equipment to support Tank C-105 post-retrieval sampling.

Issues:

- Reduced worker efficiencies associated with mandatory use of supplied air continues to impact work in the tank farms.
- Two stop works were issued concerning use of self-contained breathing apparatus face masks, which resulted in lost work days in the A, AX, and C tank farms. One stop work resulted from a foreign object in a face mask and the other one from skin irritations. In the C Tank Farm, the activities impacted by the stop works included disconnecting excess retrieval equipment, removal of shield plates on the HIHTLs, and removal of the HIHTLs. In AX Tank Farm, removal of legacy long-length equipment and pit cleanout were impacted. At A Tank Farm, in-tank video inspections were delayed.

Tank Waste Retrieval Work Plan Status*Tank Farms Assistant Manager:* Glyn Trenchard*Federal Program Manager:* Jeff Rambo

Tank	TWRWP	Expected Revisions	Retrieval Technology		
			First	Second	Third
AX-101	RPP-RPT-58932, Rev. 1	Complete	Sluicing with ERSS	High-Pressure Water deployed with ERSS	—
AX-102	RPP-RPT-58933, Rev. 1	Complete	Sluicing with ERSS	High-Pressure Water deployed with ERSS	—
AX-103	RPP-RPT-58934, Rev. 1	Complete	Sluicing with ERSS	High-Pressure Water deployed with ERSS	—
AX-104	RPP-RPT-58935, Rev. 1	Complete	Sluicing with ERSS	High-Pressure Water deployed with ERSS	—
C-105	RPP-22520, Rev. 8	Complete	MARS-V	MARS-V High-Pressure Water Spray	Chemical Dissolution Process with ERSS

ERSS = extended reach sluicer system.

MARS-V = Mobile Arm Retrieval System-Vacuum.

TWRWP = tank waste retrieval work plan.

Significant Accomplishments During the Prior Three Months (Nov-Dec-Jan):

- None.

Significant Planned Activities in the Next Three Months (Feb-Mar-Apr):

- None.

Issues:

- None.

Earned Value Data: Fiscal Year 2018

December-17

Tank Farms ORP-0014
Retrieve and Close SST's 5.02

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$8,053	\$7,119	\$7,127	0.88	1.00	\$8,053	\$7,119	\$7,127	0.88	1.00
Nov 2017	\$13,058	\$11,996	\$10,119	0.92	1.19	\$21,111	\$19,115	\$17,245	0.91	1.11
Dec 2017	\$9,964	\$8,572	\$10,318	0.86	0.83	\$31,075	\$27,686	\$27,563	0.89	1.00
Jan 2018	\$9,972					\$41,048				
Feb 2018	\$11,518					\$52,566				
Mar 2018	\$13,264					\$65,830				
Apr 2018	\$14,185					\$80,015				
May 2018	\$15,566					\$95,581				
Jun 2018	\$9,734					\$105,315				
Jul 2018	\$11,902					\$117,217				
Aug 2018	\$16,257					\$133,474				
Sep 2018	\$11,820					\$145,295				
CTD	\$834,647	\$832,349	\$866,115	1.00	0.96					

ACWP = actual cost of work performed.
 BCWP = budgeted cost of work performed.
 BCWS = budgeted cost of work scheduled.
 CPI = cost performance index.

CTD = contract to date.
 EVMS = earned value management system.
 FY = fiscal year.
 SPI = schedule performance index.

Retrieve and Close Single-Shell Tanks (5.02)³

The December 2017 **unfavorable** schedule variance (SV) of (\$1,393,000) is due to:

Work completed ahead of the planned schedule is reported as a favorable SV for the month in which it is completed, but results in an unfavorable SV in the month the work was planned. Two activities listed below completed earlier than the planned scheduled work for December, resulting in an unfavorable SV for December 2017:

- Tank C-105 third technology retrieval operations scheduled to be performed from December 2017 through February 2018 were completed ahead of schedule in November 2017. This unfavorable SV will show in the months of December 2017 through February 2018.
- Installation of the HIHTL at the A Tank Farm and the AX Tank Farm double-shell tank receiver Tank 1 was completed in November 2017, ahead of schedule. This work was scheduled to be performed in December 2017.

The December 2017 **unfavorable** cost variance (CV) of (\$1,746,000) is due to:

- Excavation costs continued to increase for the north area of the SX Tank Farm interim barrier because much of the area must be excavated by hand, by personnel wearing self-contained breathing apparatus. Minimal machine excavation is allowed due to unknown ground interferences inside SX Tank Farm.
- Costs increased because of training for the three additional A Tank Farm and AX Tank Farm retrieval construction crews and support staff hired to support FY 2018 retrieval construction work scope.

³ "Closure" activities are expressly excluded from the Consent Decree. See 2010 Consent Decree, Appendix C, first paragraph: "Processes not covered by a TWRWP (e.g., tank closure) are not established under this Consent Decree."

Waste Treatment and Immobilization Plant Project

Federal Project Director: Bill Hamel

Deputy Federal Project Director: Joni Grindstaff

Milestone	Title	Due Date	Status
D-00A-06	Complete Methods Validations	06/30/2032	On Schedule
D-00A-17	Hot Start of Waste Treatment Plant	12/31/2033	Under Analysis ¹
D-00A-01	Achieve Initial Plant Operations for WTP	12/31/2036	Under Analysis ¹

¹ As described in "Significant Planned Activities in the Next Three Months" in the PT Facility and HLW Facility sections, DOE is considering an option to continue preservation and maintenance of the PT and HLW facilities for a period of 3 to 5 years, while DOE is focusing its efforts on bringing direct-feed low-activity waste into operation. Accordingly, certain milestones in this table are marked as "Under Analysis." As discussed in the PT Facility section below, DOE has asked the U.S. Army Corps of Engineers to perform a parametric analysis of certain options and funding scenarios to evaluate the likelihood of achieving certain PT- and HLW-related milestones. DOE is considering Milestones A-1 and A-17 as being "Under Analysis" because the definition of Section IV-A-2 states, "Hot Start of Waste Treatment Plant" means the initiation of simultaneous operation of the Pretreatment (PT) Facility, High-level Waste (HLW) Facility and Low-activity Waste (LAW) Facility (including as needed the operations of the Analytical Laboratory (LAB) and the Balance of Facilities) treating Hanford tank wastes and producing a waste glass product." Hence, if one of the five facilities is "Under Analysis," DOE is conservatively considering the WTP milestone as "Under Analysis."

DOE = U.S. Department of Energy.
 HLW = high-level waste.
 PT = pretreatment.
 WTP = Waste Treatment and Immobilization Plant.

The Waste Treatment and Immobilization Plant (WTP) Project currently employs approximately 2,899 full-time equivalent contractor, Bechtel National, Inc. (BNI), and subcontractor personnel. This includes 710 craft, 725 non-manual, and 171 subcontractor full-time equivalent personnel working at the WTP construction site (all facilities).

The WTP Project continues to focus on completion of the Low-Activity Waste (LAW) Facility, Balance of Facilities (BOF), and Analytical Laboratory (LAB) (collectively known as LBL, including direct-feed LAW [DFLAW] and LBL facility services).

As of December 2017, DFLAW was 37 percent complete, engineering design was 74 percent complete, procurement was 20 percent complete, construction was 23 percent complete, and startup and commissioning was 0 percent complete. As of December 2017, total LBL facilities were 61 percent complete, engineering design was 87 percent complete, procurement was 71 percent complete, construction was 77 percent complete, and startup and commissioning was 24 percent complete.

The WTP Project has complied with milestones already come due as of the date of this report. There are no missed milestones that may affect compliance with other milestones.

Significant Accomplishments During the Prior Three Months (Nov-Dec-Jan):

- Principal Deputy Assistant Secretary for Environmental Management James Owendoff met with Ecology Director Maia Bellon on November 9, 2017, to discuss potential

initiatives to accelerate cleanup of the Hanford Site. Several of these potential initiatives were discussed at that meeting, including but not limited to, keeping the Pretreatment (PT) and High-Level Waste (HLW) facilities' in preservation mode to allow the DOE Office of River Protection (ORP) to focus on bringing DFLAW into operation.

Director Bellon responded by letter dated November 17, 2017, indicating Ecology's willingness to participate in further discussions. DOE provided a response to Ecology on December 1, 2017, which summarized DOE's key takeaways from the November meeting, highlighted numerous ideas under consideration including exploring extension of PT and HLW facilities preservation, and provided additional information.

- Other significant accomplishments during the prior three months are noted in project reports for the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

Significant Planned Activities in the Next Three Months (Feb-Mar-Apr):

- Following up on a meeting between ORP Manager Brian Vance and Ecology Nuclear Waste Program Manager Alex Smith, ORP will continue to meet with Ecology about the matters discussed in this report and will update Ecology as circumstances develop.
- As a result of the Project Performance Review (PPR), and ensuing letter 17-WTP-0208 REISSUE, "Programmatic Actions Needed to Ensure Certainty of Completion of Waste Treatment and Immobilization Plant Facilities Needed for Direct Feed Low-Activity Waste," to BNI dated October 31, 2017, ORP will continue to provide oversight of BNI progress on near-term actions identified in the letter to, "improve confidence in the timely completion of design, procurement, construction, startup, and commissioning of the WTP facilities needed for DFLAW," as recommended by the PPR.
- The status of specific near-term actions recommended by the PPR are discussed throughout this report, and other significant planned activities in the next three months are noted in project reports for the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

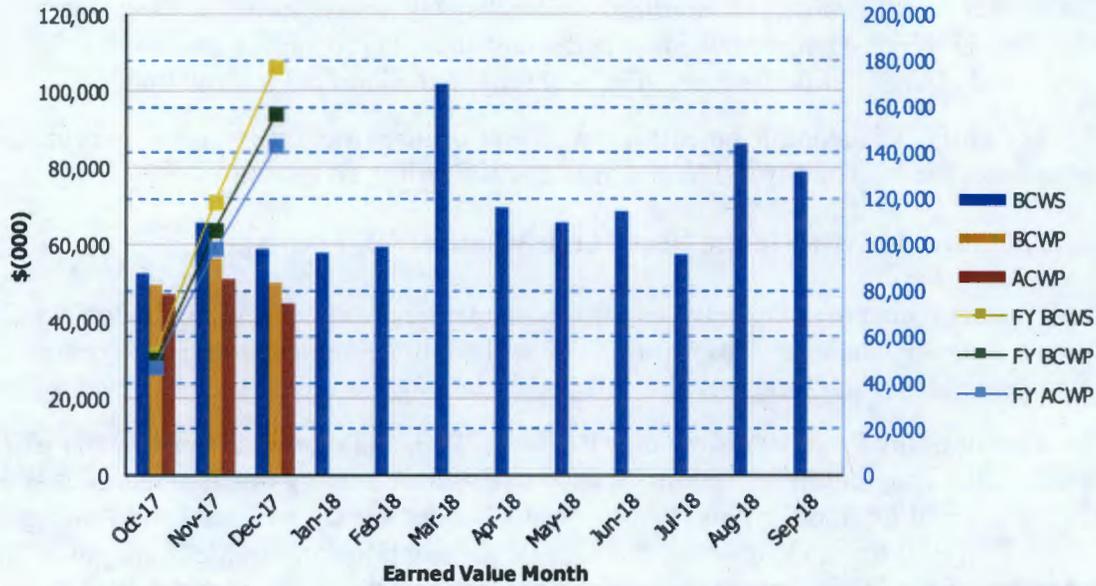
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2018 Earned Value Data

Data as of: December 2017

**River Protection Project
Waste Treatment Plant (WTP) Project**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$52,662	\$49,804	\$46,894	0.95	1.06	\$52,662	\$49,804	\$46,894	0.95	1.06
Nov 2017	\$65,935	\$56,513	\$51,026	0.86	1.11	\$118,597	\$106,317	\$97,920	0.90	1.09
Dec 2017	\$58,797	\$50,134	\$44,924	0.85	1.12	\$177,394	\$156,452	\$142,844	0.88	1.10
Jan 2018	\$57,859									
Feb 2018	\$59,421									
Mar 2018	\$101,940									
Apr 2018	\$69,476									
May 2018	\$65,923									
Jun 2018	\$68,553									
Jul 2018	\$57,270									
Aug 2018	\$86,054									
Sep 2018	\$79,054									
PTD	\$10,688,989	\$10,614,348	\$10,526,258	0.99	1.01					

- ACWP = actual cost of work performed.
- BCWP = budgeted cost of work performed.
- BCWS = budgeted cost of work scheduled.
- CPI = cost performance index.
- EVMS = earned value management system.
- FY = fiscal year.
- PTD = project to date.
- SPI = schedule performance index.

Project Schedule and Cost Variance Performance

(\$x1,000)

Performance Tracking	SV	CV
Current Period (December 2017)	(\$8,663)	\$5,211
Fiscal Year 2018 to-date	(\$20,943)	\$13,608
Cumulative (through December 2017)	(\$74,640)	\$88,091

CV = cost variance.

SV = schedule variance.

Earned Value Management System Analysis

The Earned Value Management System (EVMS) is intended to provide a status of how the contractor is progressing against its planned work (i.e., schedule), and whether it is costing more or less to complete the work than planned. The project plan is measured by expressing the schedule in terms of dollars spread over the anticipated project duration, and then for each month, determining how much of the planned work was accomplished or “earned,” as measured in equivalent dollars. If more work is accomplished than planned, then the project is ahead of schedule and has a favorable SV. Similarly, if less work is accomplished, the project is behind schedule and has an unfavorable SV. Accomplished work is reported in the month it was completed, which may not be when it was planned. For example, work completed in a month earlier than planned would be reported as a favorable SV for the month in which it was completed, but would be reported as an unfavorable SV in the month it was planned. The end result would be the overall cumulative SV netting out to zero over these months. Likewise, work completed late will recover an earlier reported unfavorable SV.

The CV measures the actual cost of work performed against the earned dollar value of that performed work. As an example, assume \$10,000 of work was planned to-date, \$8,000 was reported as being performed (earned), at an actual cost of \$9,000. This work would be reported as being \$2,000 behind schedule [a negative or unfavorable SV: $\$8,000 - \$10,000 = (\$2,000)$], and has cost \$1,000 more [a negative or unfavorable CV: $\$8,000 - \$9,000 = (\$1,000)$] than was planned for completing that work scope. Likewise, a favorable or positive CV would be reported if it cost less to complete the work than the performed dollar value of the work.

The SV and CV are reported for each monthly period, fiscal year to-date, as well as for the project-to-date value. The monthly variances can fluctuate significantly (for reasons noted earlier), so the fiscal year or cumulative-to-date report provides a better indicator of the overall project completion status, and can give a reasonable projection of how the project will finish, based on the progress-to-date.

For the December EVMS reporting period, a net **unfavorable** SV of approximately (\$8.6 million) was reported (meaning that a net of \$8.6 million of December scheduled work did not get completed in December), primarily due to the following:

- LBL Commissioning reported an unfavorable SV because current spending priorities are different than the existing plan. Revised plans are currently being developed for implementation so that commissioning activities are aligned with the available spend plan.
- DFLAW Plant Material reported an unfavorable SV because of delays in procurement of steel platforms.
- DFLAW Construction reported an unfavorable SV because of planned delays in a construction subcontract change process for liner plate work scope. In addition, Construction craft reported an unfavorable SV because of site work deferment resulting from a change in FY 2018 project execution priorities.
- LBL Construction, Startup, and Commissioning reported an unfavorable SV because work planned for this month was performed ahead of schedule, and prior to formation of the Waste Treatment Completion Company accounts. The work scope planned for this reporting period has been previously earned.
- PT Facility Plant Equipment reported an unfavorable SV because of delays of the shipment of stored equipment, and work performed ahead of schedule associated with the fabricated equipment and plugs. In addition, Plant Material reported an unfavorable SV because of delays in steel and pipe deliveries.
- HLW Facility Plant Equipment reported an unfavorable SV because vendor delivery of cranes and cable reeling equipment is behind schedule, and Plant Material is unfavorable because of vendor delays in completing fabrication of the remaining pipe spools. In addition, HLW Facility Engineering is reporting an unfavorable SV because resources are supporting higher WTP priorities.

For the December EVMS reporting period, a net **favorable** CV of approximately \$5.2 million was reported (meaning that it cost a net \$5.2 million less to perform the work completed in December than estimated), primarily due to the following:

- LBL Commissioning reported a favorable CV because current spending priorities are different than the existing plan. Revised plans are currently being developed for implementation so that commissioning activities are aligned with the available spend plan.
- LBL Startup reported a favorable CV because of efficiencies in procedure development and level-of-effort positions not being staffed up as anticipated due to system turnovers not occurring as planned.
- DFLAW Construction craft, however, reported an unfavorable CV because of increased efforts to complete punch list items associated with the LAW Facility pipe, electrical, and

melter work scope. In addition, LAW Facility Construction subcontracts reported an unfavorable CV due to greater than estimated repairs on the ventilation system for potential contamination zone C5 (C5V) high-efficiency particulate air duct, as well as delays due to scaffolding modifications/setup and required weekend overtime.

- The PT Facility also reported an unfavorable CV because technical team reviews and comment resolutions are taking longer than expected regarding T4 in relation to pulse-jet mixer (PJM) vessel mixing and control, T5 in relation to erosion/corrosion in piping and ancillary vessels, and T7 in relation to evaluating vessel and equipment structural integrity.

Through the current monthly reporting period, there are no SVs or CVs impacting existing Consent Decree milestones.

Project Performance Review

As a result of recommendations from the PPR, BNI is expected to complete the listed near-term actions to effect a step-wise change in the execution of the WTP Project elements needed for DFLAW. Completion of the following actions will immediately improve confidence in the timely completion of design, procurement, construction, startup, and commissioning of the WTP facilities needed for DFLAW:

- BNI delivered the 85 percent draft of the LAW Facility Documented Safety Analysis (DSA) on January 29, 2018, to ORP for review.
- BNI completed and froze the design of the LAW Facility.
- BNI completed the requirements verification matrices and development of all BOF system draft test matrices. BNI completed and froze the design for BOF.
- BNI completed the requirements verification matrices and development of all LAB system test matrices. BNI completed and froze the design for LAB.
- BNI awarded the contract for the LAW Facility programmable protection system software (December) and hardware (January) procurements.
- BNI completed its plan to restructure its procurement processes to improve efficiency in support of startup and commissioning.
- BNI completed an implementation plan to transition its engineering resources to field operations.
- BNI and ORP completed evaluation of the efficacy of the One System organization with Washington River Protection Solutions LLC with the goal to achieve efficiencies in management and interface control processes.
- BNI completed the first phase of its plan to reduce project services and facility services infrastructure to achieve a more efficient skill mix.
- BNI and ORP have continued ongoing discussions with Ecology to optimize the permitting process. Ecology has issued several temporary authorizations. BNI has submitted several Effluent Management Facility (EMF) equipment package permit modifications for review.
- BNI is expected to implement its plan to accelerate identification of equipment affected by aging and obsolescence by the end of February 2018.
- BNI is expected to resolve and close all “low-significance” and “find and fix” level C condition reports to eliminate the backlog of these condition reports by the end of April 2018.
- BNI is expected to begin evaluating a strategy to complete an operational readiness review prior to the start of cold commissioning.
- BNI is expected to streamline WTP baseline change management processes (i.e., frequency and efficiency) to achieve baseline execution objectives.

Pretreatment Facility

Federal Project Director: Bill Hamel

Facility Federal Project Director: Wahed Abdul

Milestone	Title	Due Date	Status
D-00A-18	Complete Structural Steel Erection Below Elevation 56' in PT Facility	12/31/2009	Complete
D-00A-19	Complete Elevation 98' Concrete Floor Slab Placements in PT Facility	12/31/2031	On Schedule
D-00A-13	Complete Installation of Pretreatment Feed Separation Vessels FEP-SEP-OOOO1A/1B	12/31/2031	On Schedule
D-00A-14	PT Facility Construction Substantially Complete	12/31/2031	Under Analysis ¹
D-00A-15	Start PT Facility Cold Commissioning	12/31/2032	Under Analysis ¹
D-00A-16	PT Facility Hot Commissioning Complete	12/31/2033	Under Analysis ¹

¹ As described in "Significant Planned Activities in the Next Three Months" in the PT Facility and HLW Facility sections, DOE is considering an option to continue preservation and maintenance of the PT and HLW facilities for a period of 3 to 5 years, while DOE is focusing its efforts on bringing direct-feed low-activity waste into operation. Accordingly, certain milestones in this table are marked as "Under Analysis." As discussed in the main text, DOE has asked the U.S. Army Corps of Engineers to perform a parametric analysis of certain options and funding scenarios to evaluate the likelihood of achieving certain PT- and HLW-related milestones.

DOE = U.S. Department of Energy.

HLW = high-level waste.

PT = pretreatment.

The PT Facility will separate radioactive tank waste into high-level waste and low-activity waste fractions and transfer each waste type to the respective vitrification facility for immobilization. As of September 2012, the PT Facility was 56 percent complete overall, engineering design was 85 percent complete, procurement was 56 percent complete, construction was 43 percent complete, and startup and commissioning was 3 percent complete. The physical percent complete analysis for the PT Facility was frozen in September 2012, pending development of a revised baseline to address technical and design issues.

ORP and BNI continue to work on resolving the remaining technical issues identified in the "Third Order Regarding Motions to Modify Consent Decrees"⁴, which includes⁵, "Ensuring Control of the Pulse Jet Mixers" (i.e., T4 in relation to PJM vessel mixing and control); "Protecting Against Possible Erosion and Corrosion" (i.e., T5 in relation to erosion/corrosion in

⁴ *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016) (EDF-221).

⁵ At the outset of U.S. Department of Energy's identification of the technical issues, the issues were grouped into eight issues. During the litigation, some issues were combined with others into five groups of issues. Consequently, the descriptions of the issues listed above may be both different by number and somewhat different by description.

pipng and ancillary vessels); and “Ensuring Ventilation Balancing” (i.e., T8 in relation to facility ventilation/process offgas treatment).

Work is also being performed to evaluate the facility design using the standard high-solids vessel (SHSV) test design prototype (i.e., T6 in relation to design redundancy and in-service inspection), and evaluating vessel and equipment structural integrity (i.e., T7 in relation to seismic ground motion criteria changes around 2005).

ORP and BNI completed final stage testing of the PJM SHSV design to replace a number of vessel designs in the PT Facility to resolve concerns over PJM vessel mixing and control (i.e., T4). A prototype of the 16-foot-diameter SHSV was commissioned in December 2016. Testing results will provide the required design and operations information to support PT Facility design. Full-scale PJM controls testing was completed in April 2017. Final mixing testing was completed in September 2017. This testing substantiated PJM control parameters and the control approach to be used for the qualification of the design for the SHSV.

Significant Accomplishments During the Prior Three Months (Nov-Dec-Jan):

- In November, BNI completed engineering study 24590-PTF-ES-ENG-17-001, *PT Facility Standard High-Solids Vessel Concept Design Alternative Study*, documenting SHSV conceptual design functions and requirements that will provide support for resolving issues related to design redundancy and in-service inspection (i.e., T6).
- In November, BNI completed engineering study 24590-PTF-ES-ENG-16-002, *Evaluation of SHSV Concept Design Alternative on PT Facility PVP-PVV System*. The document provides technical support for a determination that the PT Facility vessel vent process system can support normal and post-design basis event operations of the SHSV concept design alternative (i.e., T8).
- In November, ORP issued letter 17-CPM-0168 REISSUE, “Reissue Contract No. DE-AC27-01RV14136 – Request Information for a Potential Option to Place the High-Level Waste and Pretreatment Facilities in an Asset Preservation and Maintenance State.” The letter informed BNI that DOE is considering keeping the PT and HLW facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on completing and commissioning the LAW Facility with a DFLAW configuration. The letter listed a number of activities BNI would be expected to undertake if the PT and HLW facilities were kept in preservation mode. ORP requested BNI provide information about contractual actions, which would be required in order for BNI to implement this option.
- In December, BNI issued letter CCN: 301986, “BNI Response to ORP Request for Information for a Potential Option to Place the High-Level Waste Facility and the Pretreatment Facility in an Asset Preservation and Maintenance State.” BNI responded to ORP letter 17-CPM-0168 REISSUE and provided recommendations for potential actions and contract modifications required in the event ORP directs BNI to keep the PT and HLW facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on completing and commissioning the LAW Facility with a DFLAW configuration. The recommendations included adding the preservation and maintenance

scope to the WTP contract, revising certain contract provisions, and completing the technical decision resolution and other work required for conditional release of the PT Facility and completing active procurements for the PT and HLW facilities.

- ORP asked the U.S. Army Corps of Engineers (USACE) to perform a parametric analysis of certain options and funding scenarios to evaluate the likelihood of achieving certain PT- and HLW-related milestones in the event a decision is made to keep those facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on the completion of DFLAW commissioning. ORP entered into Interagency Agreement 89304018SEM000002/P00001 with the USACE on January 16, 2018, to perform this assessment.
- In mid-November, DOE directed BNI to create a study of the necessary elements of any continued preservation and maintenance plan for the PT and HLW facilities. BNI issued study *Evaluation of Potential Continued Preservation and Maintenance, and Restart of Facilities*, on February 13, 2018.
- Final stage testing of the PJM system to verify mixing parameters applicable to PT Facility vessels with high-solids concentrations and non-Newtonian slurries is complete. Data analysis from the PJM mixing systems testing of the SHSV design prototype, along with confirmation of instrument calibration and a basis for technical issue resolution, is underway. Preliminary test results indicate the mixing system performed better than expected.

Significant Planned Activities in the Next Three Months (Feb-Mar-Apr):

- The PT Facility will continue to be maintained in preservation mode while the emphasis is placed on DFLAW/LBL activities. Work is continuing on technical issue resolution related to erosion/corrosion in piping and vessels and progression of the conceptual design incorporating the SHSV test design prototype.
- ORP is analyzing the impacts of delayed resolution of technical issues and necessary funding on the WTP Project. During the next reporting period, ORP expects to receive from the USACE (noted above) an initial parametric analysis of certain options and funding scenarios evaluating the likelihood of achieving certain PT- and HLW-related milestones in the event a decision is made to keep those facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on the completion of DFLAW commissioning. The USACE work commenced on February 21, 2018.
- As noted above, ORP and BNI continue to work on resolving the remaining technical issues described as T4, T5, T6, T7, and T8. Resolution of the remaining technical issues, with notification to the Defense Nuclear Facilities Safety Board, is expected in the May/June 2018 timeframe.
- As previously reported, BNI will continue to focus on ongoing facility preservation and preventative maintenance to protect equipment and structures and ensure that design documents are maintained.

- A workshop is being planned for March 2018 to strategize and develop options regarding the PT Facility.
- During the second quarter of FY 2018, BNI is expected to complete data analysis and documentation for the recently completed full-scale PJM mixing systems testing of the SHSV design prototype.
- BNI is expected to issue the methodology for the vessel structural integrity verification.
- BNI is expected to issue an update to the localized corrosion test basis document.

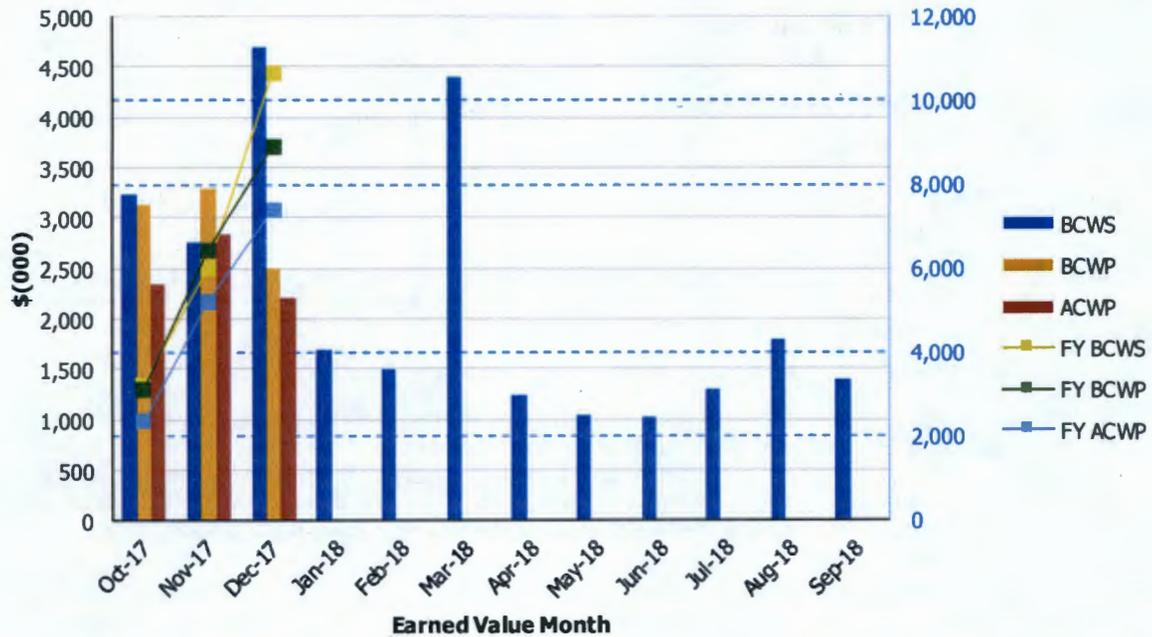
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2018 Earned Value Data

Data as of: December 2017

**River Protection Project
Pretreatment Facility (WBS 1.01)**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$3,230	\$3,129	\$2,345	0.97	1.33	\$3,230	\$3,129	\$2,345	0.97	1.33
Nov 2017	\$2,757	\$3,293	\$2,838	1.19	1.16	\$5,987	\$6,422	\$5,184	1.07	1.24
Dec 2017	\$4,691	\$2,502	\$2,204	0.53	1.14	\$10,678	\$8,924	\$7,387	0.84	1.21
Jan 2018	\$1,686									
Feb 2018	\$1,500									
Mar 2018	\$4,410									
Apr 2018	\$1,230									
May 2018	\$1,043									
Jun 2018	\$1,026									
Jul 2018	\$1,293									
Aug 2018	\$1,800									
Sep 2018	\$1,406									

ACWP = actual cost of work performed.
 BCWP = budgeted cost of work performed.
 BCWS = budgeted cost of work scheduled.
 CPI = cost performance index.

EVMS = earned value management system.
 FY = fiscal year.
 PTD = project to date.
 SPI = schedule performance index.

High-Level Waste Facility

Federal Project Director: Bill Hamel

Facility Federal Project Director: Wahed Abdul

Milestone	Title	Due Date	Status
D-00A-20	Complete Construction of Structural Steel to Elevation 14' in HLW Facility	12/31/2010	Complete
D-00A-21	Complete Construction of Structural Steel to Elevation 37' in HLW Facility	12/31/2012	Complete
D-00A-02	HLW Facility Construction Substantially Complete	12/31/2030	Under Analysis ¹
D-00A-03	Start HLW Facility Cold Commissioning	06/30/2032	Under Analysis ¹
D-00A-04	HLW Facility Hot Commissioning Complete	12/31/2033	Under Analysis ¹

¹ As described in "Significant Planned Activities in the Next Three Months" in the PT Facility and HLW Facility sections, DOE is considering an option to continue preservation and maintenance of the PT and HLW facilities for a period of 3 to 5 years, while DOE is focusing its efforts on bringing DFLAW into operation. Accordingly, certain milestones in this table are marked as "Under Analysis." As discussed in the main text, DOE has asked the U.S. Army Corps of Engineers to perform a parametric analysis of certain options and funding scenarios to evaluate the likelihood of achieving certain PT- and HLW-related milestones.

DOE = U.S. Department of Energy.
 HLW = high-level waste.
 PT = pretreatment.

The HLW Facility will receive the separated high-level waste concentrate from the PT Facility. This concentrate will be blended with glass formers, converted into molten glass in one of the two HLW Facility melters and then poured into cylindrical stainless steel canisters. After cooling, the canisters will be sealed and decontaminated before shipping to interim storage.

As of September 2012, the HLW Facility was 62 percent complete overall, engineering design was 89 percent complete, procurement was 81 percent complete, construction was 43 percent complete, and startup and commissioning was 4 percent complete. The physical percent complete analysis for the HLW Facility was frozen in September 2012, pending development of a revised baseline to address technical and design issues.

Work on the HLW Facility is being performed in accordance with the FY 2017 through FY 2021 Interim Work Plan. Through FY 2017, BNI was working under a limited construction and procurement authorization, and BNI's efforts were focused on completing activities required to resume full-production engineering, procurement, and construction of the HLW Facility (i.e., DOE Decision 2A, "Authorization to Resume HLW Procurement and Construction"). To support the DOE Decision 2A objective, BNI submitted a facility completion plan identifying the strategy for obtaining full-production authorization, which was approved by ORP.

As previously reported, BNI provided the final Design and Operability Disposition Report to ORP, summarizing the issue resolutions path forward. ORP reviewed all disposition comments

for adequacy. Based on completion of the Design and Operability Disposition Report, BNI notified ORP it had completed the required criteria for DOE Decision 2A pending ORP approval of the updated HLW Preliminary DSA to align facility design with the nuclear safety basis. This was a primary focus of the ORP-chartered Safety Basis Review Team in FY 2017.

Upon resolution of all comments from the Safety Basis Review Team, ORP approved Rev. 7 of the updated HLW Facility Preliminary DSA and issued a letter to BNI indicating DOE Decision 2A criteria for authorization to resume HLW Facility procurement and construction activities have been met.

All testing at Mississippi State University of the redesigned high-efficiency particulate air filter for the safe-change and remote-change housings was completed successfully.

Significant Accomplishments During the Prior Three Months (Nov-Dec-Jan):

- In November, ORP issued letter 17-CPM-0168 REISSUE. The letter informed BNI that DOE is considering keeping the PT and HLW facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on completing and commissioning the LAW Facility with a DFLAW configuration. The letter listed a number of activities BNI would be expected to undertake if the PT and HLW facilities were kept in preservation mode. ORP requested BNI provide information about contractual actions, which would be required in order for BNI to implement this option.
- In December, BNI issued letter CCN: 301986, "BNI Response to ORP Request for Information for a Potential Option to Place the High-Level Waste Facility and the Pretreatment Facility in an Asset Preservation and Maintenance State," responding to ORP letter 17-CPM-0168 REISSUE. BNI provided recommendations for potential actions and contract modifications required in the event ORP directs BNI to keep the PT and HLW facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on completing and commissioning the LAW Facility with a DFLAW configuration. The recommendations included adding the preservation and maintenance scope to the WTP contract, revising certain contract provisions, and completing the technical decision resolution and other work required for conditional release of the PT Facility and completing active procurements for the PT and HLW facilities.
- ORP asked the USACE to perform a parametric analysis of certain options and funding scenarios to evaluate the likelihood of achieving certain PT- and HLW-related milestones in the event a decision is made to keep those facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on the completion of DFLAW commissioning. ORP entered into Interagency Agreement 89304018SEM000002/P00001 with the USACE on January 16, 2018, to perform this assessment.
- In mid-November, DOE directed BNI to create a study of the necessary elements of any continued preservation and maintenance plan for the PT and HLW facilities. BNI issued study *Evaluation of Potential Continued Preservation and Maintenance, and Restart of Facilities*, on February 13, 2018.

- BNI is continuing to design the remaining portions of the radioactive liquid waste disposal system.
- BNI is continuing fabrication of RLD-7 and RLD-8 vessels. These vessels are located in the wet process cell and must be installed prior to concrete slab placement, which will support roof installation and building enclosure.

Significant Planned Activities in the Next Three Months (Feb-Mar-Apr):

- The HLW Facility will continue to be maintained in a preservation mode while the emphasis is placed on DFLAW/LBL activities. This has resulted in limited engineering assets to perform production work and has resulted in construction curtailment. Reprioritizing work activities impacted design and construction such that installation of roofing and siding on the facility is not expected in the near term.
- ORP is analyzing the impacts of delayed resolution of technical issues and necessary funding on the WTP Project. During the next reporting period, ORP expects to receive from the USACE (noted above) an initial parametric analysis of certain options and funding scenarios evaluating the likelihood of achieving certain PT- and HLW-related milestones in the event a decision is made to keep those facilities in preservation mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on the completion of DFLAW commissioning. The USACE work commenced on February 21, 2018.
- A workshop is being planned for March 2018 to strategize and develop options regarding the HLW Facility.
- ORP will continue discussions with DOE Office of Environmental Management staff about the direction to provide BNI regarding engineering, procurement, and construction activities at the HLW Facility.
- As previously reported, BNI will continue to focus on ongoing facility preservation and preventative maintenance to protect equipment and structures, and ensure design documents are maintained.
- BNI will continue to update its long-range planning documents to support a future rebaseline effort as resources become available.

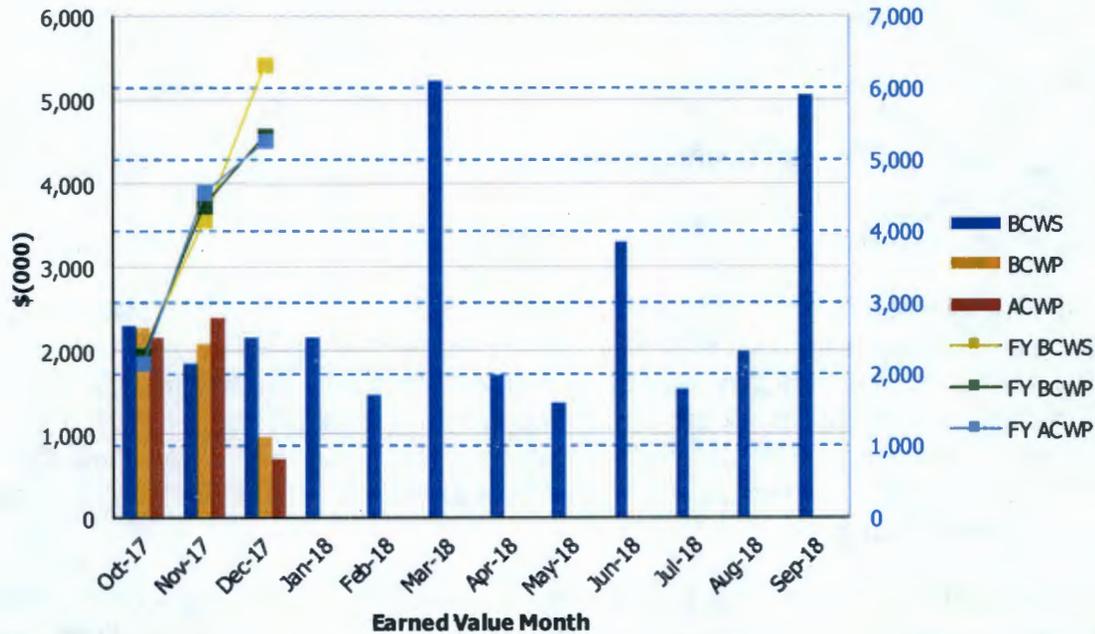
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2018 Earned Value Data

Data as of: December 2017

**River Protection Project
High-Level Waste Facility (WBS 1.03)**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$2,303	\$2,268	\$2,151	0.98	1.05	\$2,303	\$2,268	\$2,151	0.98	1.05
Nov 2017	\$1,848	\$2,091	\$2,396	1.13	0.87	\$4,151	\$4,360	\$4,547	1.05	0.96
Dec 2017	\$2,160	\$976	\$714	0.45	1.37	\$6,311	\$5,336	\$5,261	0.85	1.01
Jan 2018	\$2,168									
Feb 2018	\$1,459									
Mar 2018	\$5,228									
Apr 2018	\$1,713									
May 2018	\$1,368									
Jun 2018	\$3,294									
Jul 2018	\$1,532									
Aug 2018	\$1,992									
Sep 2018	\$5,060									

PTD	\$1,338,982	\$1,337,470	\$1,313,653	1.00	1.02
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- ACWP = actual cost of work performed.
- BCWP = budgeted cost of work performed.
- BCWS = budgeted cost of work scheduled.
- CPI = cost performance index.
- EVMS = earned value management system.
- FY = fiscal year.
- PTD = project to date.
- SPI = schedule performance index.

Low-Activity Waste Facility⁶

Federal Project Director: Bill Hamel

Facility Federal Project Director: Wahed Abdul

Milestone	Title	Due Date	Status
D-00A-07	LAW Facility Construction Substantially Complete	12/31/2020	On Schedule
D-00A-08	Start LAW Facility Cold Commissioning	12/31/2022	On Schedule
D-00A-09	LAW Facility Hot Commissioning Complete	12/31/2023	On Schedule

LAW = low-activity waste.

The LAW Facility will process concentrated low-activity waste, which will be mixed with silica and other glass-forming materials. The mixture will be fed into the LAW Facility's two melters at a design capacity of 30 metric tons per day, heated to 2,100°F, and vitrified into glass. The 300-ton melters are approximately 20 feet by 30 feet and 16 feet high. The glass mixture will then be poured into stainless steel containers, which are 4 feet in diameter, 7 feet tall, and weigh more than 7 tons. These containers are anticipated to be disposed of on the Hanford Site in the Integrated Disposal Facility.

As of December 2017, the LAW Facility was 67 percent complete overall, engineering design was 88 percent complete, procurement was 80 percent complete, construction was 90 percent complete, and startup and commissioning was 14 percent complete.

Significant Accomplishments During the Prior Three Months (Nov-Dec-Jan):

- BNI delivered the 85 percent draft of the LAW Facility DSA on January 29, 2018, to ORP for review.
- BNI completed and froze the design of the LAW Facility.
- BNI awarded the contract for the LAW Facility programmable protection system software (December) and hardware (January) procurements.
- BNI has completed initial system walkdowns for the following:
 - Instrument air system.
 - Demineralized water system.

⁶ Please note that discussions about the related Low-Activity Waste Pretreatment System are included in the monthly reports submitted under the *Hanford Federal Facility Agreement and Consent Order* (also known as the Tri-Party Agreement or TPA). Prior discussions are in reports archived in the Administrative Record.

- BNI construction turned the following LAW Facility systems over to the startup organization:
 - Plant service air system.
 - Process service water system.
 - Direct current electrical system.
- BNI completed the requirements verification matrix for the following systems:
 - Programmable protection system.
 - Demineralized water system.
 - Domestic potable water system.
 - Glass formers reagent system.
- BNI installed direct current electrical system batteries on El +03.
 - (Note: El +3 equals greater than the 3-foot elevation.)
- BNI installed the LAW Facility melter feed process cooling jackets on El +03.
- BNI completed C3V hydro testing.
- BNI completed initial, 8-week system walkdown for plant service water system.
- BNI completed final, 3-week system walkdowns for the C1V-L-01 and C1V-L-02 ventilation systems.
- BNI started assembly of the truck bay canopy steel.

Significant Planned Activities in the Next Three Months (Feb-Mar-Apr):

- ORP is expected to complete its review of the 85 percent draft of the LAW Facility DSA.
- BNI is expected to reevaluate the DFLAW/LBL completion schedule to build a high confidence schedule that accelerates LAW Facility DSA approval, construction, startup, and commissioning to achieve glass by December 2021 (see ORP letter 17-WTP-0208 REISSUE), with a contractual deadline of January 2022. The Amended Consent Decree milestone date for LAW Facility hot commissioning complete is December 31, 2023.
- As noted above, BNI is expected to provide the optimized DFLAW/LBL completion schedule. BNI's initial review shows its completion schedule is beyond the contract date, which BNI is working to improve. The effect of this action is not anticipated to affect DOE's ability to achieve Amended Consent Decree milestones at this time.
- BNI is expected to begin evaluating a strategy to complete an operational readiness review prior to the start of cold commissioning.
- BNI is expected to perform initial system walkdowns for the following:
 - Facility network infrastructure system.
 - Low-voltage electrical system.
- BNI is expected to complete installation of remaining melter system support equipment for melter No. 1 and melter No. 2.

- BNI is expected to complete installation of the seismic conduit supports.
- BNI is expected to install primary offgas spool fittings (Hiltap fittings).
- BNI is expected to continue work on glass pour seal head assembly for melter No. 1.
- BNI is expected to continue work on installation of seismic restraint assemblies for melter No. 1 and melter No. 2.

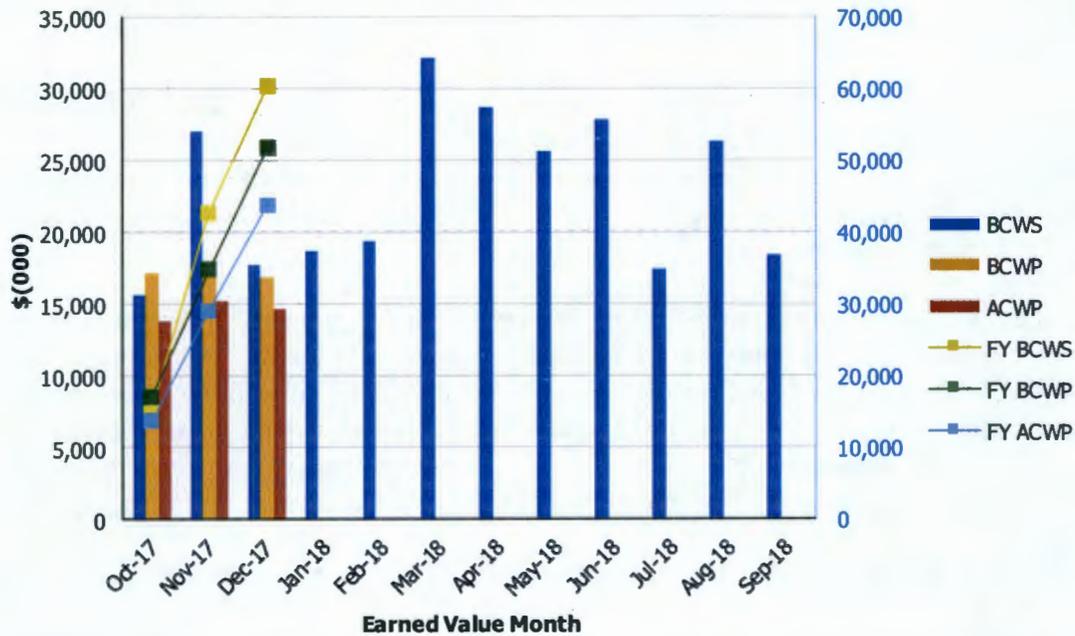
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2018 Earned Value Data

Data as of: December 2017

**River Protection Project
Low-Activity Waste Facility (WBS 1.02)**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$15,716	\$17,201	\$13,802	1.09	1.25	\$15,716	\$17,201	\$13,802	1.09	1.25
Nov 2017	\$27,014	\$17,698	\$15,292	0.66	1.16	\$42,730	\$34,898	\$29,095	0.82	1.20
Dec 2017	\$17,686	\$16,865	\$14,665	0.95	1.15	\$60,416	\$51,763	\$43,760	0.86	1.18
Jan 2018	\$18,660									
Feb 2018	\$19,339									
Mar 2018	\$32,211									
Apr 2018	\$28,747									
May 2018	\$25,649									
Jun 2018	\$27,882									
Jul 2018	\$17,445									
Aug 2018	\$26,301									
Sep 2018	\$18,490									

PTD	\$1,788,640	\$1,778,198	\$1,774,367	0.99	1.00
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- ACWP = actual cost of work performed.
- BCWP = budgeted cost of work performed.
- BCWS = budgeted cost of work scheduled.
- CPI = cost performance index.
- EVMS = earned value management system.
- FY = fiscal year.
- PTD = project to date.
- SPI = schedule performance index.

Balance of Facilities

Federal Project Director: Bill Hamel

Facility Federal Project Director: Jason Young

Milestone	Title	Due Date	Status
D-00A-12	Steam Plant Construction Complete	12/31/2012	Complete

BOF will provide services and utilities to support operation of the main production facilities: PT, HLW, LAW, and LAB. As of December 2017, BOF was 71 percent complete overall, engineering design was 92 percent complete, procurement was 84 percent complete, construction was 92 percent complete, and startup and commissioning was 35 percent complete. Design of the EMF was 77 percent complete.

BNI Engineering efforts continue to focus on completing the design for EMF, supporting the EMF dangerous waste permit, supporting EMF procurement activities, and providing field support for BOF startup activities. Construction efforts are focused on formwork and rebar installation to support placement of the EMF second lift walls and installation of secondary steel to support continued topping slab placement. Startup testing continues for systems in the cooling tower facility, water treatment facility, and chiller compressor plant.

Significant Accomplishments During the Prior Three Months (Nov-Dec-Jan):

- ORP formally submitted the EMF equipment package No. 2 permit modification to Ecology.
- Ecology approved the EMF equipment package No. 1 permit modification.
- BNI completed installation of medium-voltage motor-starter kits for the cooling towers.
- BNI continued placement of the EMF topping slabs.
- BNI completed the requirements verification matrices and development of all BOF system draft test matrices. BNI completed and froze the design for BOF.
- BNI completed placement of the EMF first-lift walls.
- BNI completed placement of the rebar curtains for the EMF second-lift walls.
- BNI continued functional testing of the water treatment facility potable water, process service water, and deionized water systems.
- BNI initiated placement of EMF low-point drain walls.
- BNI continued installation of ring beams and secondary steel to support topping slab placement in EMF.

Significant Planned Activities in the Next Three Months (Feb-Mar-Apr):

- BNI is expected to complete placement of the EMF topping slabs.

- BNI is expected to place the second level of walls at EMF.
- BNI is expected to complete balancing of the cathodic protection system.

EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2018 Earned Value Data

Data as of: December 2017

**River Protection Project
Balance of Facilities (WBS 1.05)**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$6,686	\$4,211	\$5,450	0.63	0.77	\$6,686	\$4,211	\$5,450	0.63	0.77
Nov 2017	\$6,823	\$7,436	\$7,658	1.09	0.97	\$13,509	\$11,647	\$13,108	0.86	0.89
Dec 2017	\$6,146	\$5,033	\$4,931	0.82	1.02	\$19,655	\$16,679	\$18,039	0.85	0.92
Jan 2018	\$8,998									
Feb 2018	\$7,243									
Mar 2018	\$10,820									
Apr 2018	\$7,596									
May 2018	\$7,555									
Jun 2018	\$6,708									
Jul 2018	\$7,109									
Aug 2018	\$12,158									
Sep 2018	\$7,600									
PTD	\$691,999	\$682,188	\$692,783	0.99	0.98					

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|---|--|
| ACWP = actual cost of work performed. | EVMS = earned value management system. |
| BCWP = budgeted cost of work performed. | FY = fiscal year. |
| BCWS = budgeted cost of work scheduled. | PTD = project to date. |
| CPI = cost performance index. | SPI = schedule performance index. |

Analytical Laboratory

Federal Project Director: Bill Hamel

Facility Federal Project Director: Jason Young

Milestone	Title	Due Date	Status
D-00A-05	LAB Construction Substantially Complete	12/31/2012	Complete

LAB = analytical laboratory.

The LAB will support WTP operations by analyzing feed, vitrified waste, and effluent streams. As of December 2017, the LAB was 69 percent complete overall, engineering design was 88 percent complete, procurement was 89 percent complete, construction was 97 percent complete, and startup and commissioning was 24 percent complete.

Startup efforts are focused on scheduling the appropriate turnover sequence for LAB systems for startup testing. Personnel and equipment are moving into the temporary offsite laboratory space. This will allow methods development to occur in parallel with system startup testing.

Significant Accomplishments During the Prior Three Months (Nov-Dec-Jan):

- BNI completed the requirements verification matrices and development of all LAB system test matrices. BNI completed and froze the design for LAB.
- BNI completed the initial walkdowns for all LAB systems to support punch list development and scheduling for system turnover to startup.
- BNI completed contracting activities for the temporary offsite laboratory lease in support of the development of laboratory methods and training activities.
- BNI completed turnover of the low-voltage electrical system to the Startup organization.
- BNI continued monitoring systems from the test engineer's workstation in support of turnover and testing activities by the Startup organization.
- BNI continued work in progress to install a replacement air-conditioning condenser to support the test engineer's work station.
- BNI completed final wall and floor coatings.

Significant Planned Activities in the Next Three Months (Feb-Mar-Apr):

- As a result of completing contracting activities noted above, BNI is expected to begin development of LAB methods and training in the temporary offsite laboratory space to ensure LAB staff are ready at the start of commissioning.
- BNI is expected to install a toxicity refrigerant monitor needed for beneficial occupancy.
- BNI is expected to complete 90 percent design review of ventilation systems (C1V, C2V, C3V, and C5V).

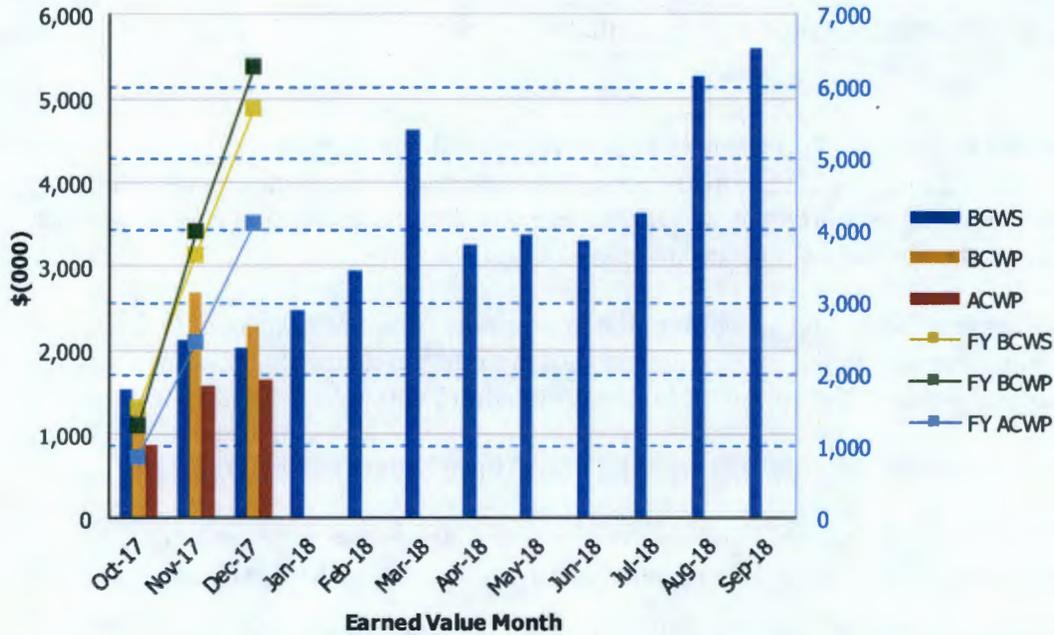
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2018 Earned Value Data

Data as of: December 2017

**River Protection Project
Analytical Laboratory (WBS 1.06)**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$1,538	\$1,298	\$861	0.84	1.51	\$1,538	\$1,298	\$861	0.84	1.51
Nov 2017	\$2,135	\$2,694	\$1,578	1.26	1.71	\$3,673	\$3,992	\$2,438	1.09	1.64
Dec 2017	\$2,029	\$2,286	\$1,660	1.13	1.38	\$5,702	\$6,278	\$4,098	1.10	1.53
Jan 2018	\$2,485									
Feb 2018	\$2,950									
Mar 2018	\$4,621									
Apr 2018	\$3,267									
May 2018	\$3,379									
Jun 2018	\$3,301									
Jul 2018	\$3,643									
Aug 2018	\$5,275									
Sep 2018	\$5,601									

PTD	\$366,910	\$364,135	\$348,216	0.99	1.05
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- ACWP = actual cost of work performed.
- BCWP = budgeted cost of work performed.
- BCWS = budgeted cost of work scheduled.
- CPI = cost performance index.
- EVMS = earned value management system.
- FY = fiscal year.
- PTD = project to date.
- SPI = schedule performance index.

Waste Treatment Plant Project Percent Complete Status (Table)

Waste Treatment Plant Project - (LBL/Project Services) Percent Complete Status
Through December 2017

(Dollars - Millions)	Overall Facility Percent Complete Unallocated Dollars			Design/Engineering Unallocated Dollars			Procurement Unallocated Dollars			Construction Unallocated Dollars			Startup & Plant Operations Unallocated Dollars			Project Management & Shared Services Unallocated Dollars		
	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete
Facilities																		
Low-Activity Waste	2,305.1	1,535.6	67%	557.0	490.9	88%	377.5	300.7	80%	715.8	645.9	90%	650.8	94.1	14%	4.0	4.0	100%
Balance of Facilities	755.9	538.2	71%	147.1	134.7	92%	72.2	60.8	84%	273.1	250.5	92%	263.1	91.7	35%	0.5	0.5	100%
Analytical Lab	498.1	345.7	69%	103.6	91.4	88%	66.4	58.8	89%	161.1	155.7	97%	166.5	39.3	24%	0.5	0.5	100%
Direct Feed LAW	410.6	150.0	37%	103.2	76.4	74%	65.3	13.3	20%	232.6	54.1	23%	0.0	0.0	0%	9.4	6.2	66%
LBL Facility Services	680.9	275.4	40%	0.0	0.0	0%	79.0	36.4	46%	135.9	70.4	52%	203.6	84.8	42%	262.4	83.9	32%
Total LBL	4,650.7	2,845.0	61%	910.9	793.4	87%	660.5	470.1	71%	1,518.5	1,176.5	77%	1,284.1	309.9	24%	276.8	95.0	34%
Project Services	1,013.2	522.3	52%	129.4	73.6	57%	71.4	43.9	61%	107.4	79.5	74%	1.7	1.7	100%	703.3	323.7	46%
Total Project Services	1,013.2	522.3	52%	129.4	73.6	57%	71.4	43.9	61%	107.4	79.5	74%	1.7	1.7	100%	703.3	323.7	46%
Total LBL, DFLAW & Project Services	5,663.9	3,367.3	59%	1,040.2	867.0	83%	731.9	513.9	70%	1,625.9	1,256.1	77%	1,285.8	311.6	24%	980.1	418.7	43%
PT/HLW/SS Percent Complete Status Frozen as of September 2012 (due to project rebaselining efforts)																		
High-Level Waste	1,478.6	922.1	62%	364.4	325.2	89%	433.9	349.4	81%	561.1	243.2	43%	119.2	4.4	4%	n/a	n/a	n/a
Pretreatment	2,517.3	1,410.5	56%	761.7	645.8	85%	679.9	380.4	56%	890.0	378.6	43%	185.8	5.6	3%	n/a	n/a	n/a
Shared Services	4,726.9	3,632.6	77%	1,047.0	977.9	93%	451.7	395.0	87%	1,436.5	1,143.0	80%	453.5	133.2	29%	1,338.1	983.5	73%
Total HLW/PT/SS	8,722.8	5,965.2	68%	2,173.1	1,948.9	90%	1,565.5	1,124.8	72%	2,887.6	1,764.8	61%	758.5	143.2	19%	1,338.1	983.5	73%
Undistributed Budget	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total WTP	14,386.7	9,332.5	65%	3,213.3	2,815.9	88%	2,297.4	1,638.7	71%	4,513.5	3,020.9	67%	2,044.3	454.8	22%	2,318.2	1,402.2	60%

Source: Preliminary WTP Contract Performance Report - Format 1, Data for December 2017

Note: In September 2012, the LBL Replan was incorporated into the project OTB baseline resulting in increases/decreases to the LBL facility budgets, which correspondingly increased/decreased the facility/function to-date percent complete values. In October 2012, the PT/HLW/SS Interim Work Plan was incorporated into the project OTB baseline resulting in decreases to the PT/HLW/SS facility budgets, this was due to a work scope shift from the Distributed budget to UB. Percent Complete Values shown for PT, HLW and SS have been frozen with the September 2012 values due to the Interim Work Plan and budgets being moved into UB. UB value for the project for PT/HLW/SS is \$2,014M. The percent complete values for the Total WTP are the current total LBL BCWP added to the frozen HLW/PT/SS BCWP values. In March 2014, Project Controls and Project Management work scope was moved out of Shared Services control accounts into the facilities with new control accounts being set up in the facilities. These will now be seen under Project Management/Shared Services by facility. The Shared Services PMB value has not been changed to reflect this change due to the freeze on HLW/PT and SS and the budgets remaining in UB. October 2014 data reflects the incorporation of Direct Feed LAW and the split of Shared Services into LBL Facility Services and Project Services. March 2016 LBL percent complete data is a total of LAW-BOF-LAB-DFLAW and LBL Facility Services. The Project Services Allocation account (xPSA), as shown on the CPR Format 1, is not added to LBL for percent complete purposes.