

Office of River Protection Consent Decree Monthly Report

Monthly Reporting Period September 1–September 30, 2019¹

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)

Third Amended Consent Decree, *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (October 12, 2018)²

¹ The narrative descriptions of progress in this report cover the reporting period. Information outside the reporting period may also be included for purposes of providing continuity or useful context. Information may be repeated in multiple sections of this report for continuity and clarity. Earned Value Management System data and descriptions cover the period through August 2019.

² The consent decrees listed above are between the State of Washington and U.S. Department of Energy. For the first three of these decrees, there are similar separate decrees with the State of Oregon.

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Acronyms and Abbreviations

AoA	analysis of alternatives
BNI	Bechtel National, Inc.
BOF	Balance of Facilities
DFLAW	direct-feed low-activity waste
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EMF	Effluent Management Facility
FY	fiscal year
HLW	High-Level Waste (Facility)
HVAC	heating, ventilation, and air-conditioning
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
PT	Pretreatment (Facility)
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	06/30/2021 ¹		On Schedule
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
Fiscal Year 2026				
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	09/30/2026 ¹		Under Analysis ²
Fiscal Year 2031				
D-00A-02 Interim	HLW Facility Construction Substantially Complete	12/31/2030		At Risk ³
Fiscal Year 2032				
D-00A-13 Interim	Complete Installation of Pretreatment Feed Separation Vessels FEP-SEP-OOOO1A/1B	12/31/2031		At Risk ³
D-00A-14 Interim	PT Facility Construction Substantially Complete	12/31/2031		At Risk ³
D-00A-19 Interim	Complete Elevation 98 feet Concrete Floor Slab Placements in PT Facility	12/31/2031		At Risk ³
D-00A-03 Interim	Start HLW Facility Cold Commissioning	06/30/2032		At Risk ³

Milestone	Title	Due Date	Completion Date	Status
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		At Risk ³
Fiscal Year 2034				
D-00A-04 Interim	HLW Facility Hot Commissioning Complete	12/31/2033		At Risk ³
D-00A-16 Interim	PT Facility Hot Commissioning Complete	12/31/2033		At Risk ³
D-00A-17	Hot Start of WTP	12/31/2033		At Risk ³
Fiscal Year 2037				
D-00A-01	Achieve Initial Plant Operations for the WTP	12/31/2036		At Risk ³

¹ Third Amended Consent Decree, *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (October 12, 2018).

² As discussed in the joint motion to amend the Consent Decree filed on October 1, 2018, DOE is engaged in ongoing analysis of non-vapors-related retrieval challenges and tank condition issues associated with Tanks A-104 and A-105 (i.e., two of the nine tanks currently specified for retrieval under the B-2 Milestone). These issues are under analysis, and could require issuance of a “serious risk” notice or another request for amendment of the Consent Decree (including the B-2 Milestone). DOE met with Ecology and attorneys from the Washington State Office of the Attorney General on August 30, 2018, to discuss the retrieval challenges and issues with the condition of tanks A-104 and A-105. Since August 2018, DOE has had several discussions with Ecology on this topic.

³ 19-ORP-0007, 2019, “Discussion of Amended Consent Decree – State of Washington v. Perry (E.D. Wash. No. 2:08-CV-5085).”

DOE = U.S. Department of Energy.

PT = pretreatment.

Ecology = Washington State Department of Ecology.

SST = single-shell tank.

HLW = high-level waste.

WTP = Waste Treatment and Immobilization Plant.

LAW = low-activity waste.

Consent Decree Reports/Reviews

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

Due: Forty-five days following each calendar year quarter (February 14, May 15, August 14, November 14).

Status: On Schedule.

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

Due: End of each month.

Status: On Schedule.

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

Due: See below.

Status: On Schedule.

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

Due: Approximately 3 years from March 16, 2017.

Status: On Schedule.

D-16E-01, DOE must purchase by December 31, 2016 a spare E-A-1 reboiler for the 242-A Evaporator

Due: December 31, 2016.

Status: Complete (November 15, 2016).

D-16E-02, Have available spare E-A-1 reboiler for the 242-A Evaporator

Due: December 31, 2018.

Status: Complete (May 8, 2018).

Single-Shell Tank Retrieval Program

Tank Farms Assistant Manager: Rob Hastings

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 five	06/30/2021 ¹	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	Complete
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	09/30/2026 ¹	Under Analysis ²

¹ Third Amended Consent Decree, *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (October 12, 2018).

² As discussed in the joint motion to amend the Consent Decree filed on October 1, 2018, DOE is engaged in ongoing analysis of non-vapors-related retrieval challenges and tank condition issues associated with Tanks A-104 and A-105 (i.e., two of the nine tanks currently specified for retrieval under the B-2 Milestone). These issues are under analysis, and could require issuance of a “serious risk” notice or another request for amendment of the Consent Decree (including the B-2 Milestone). DOE met with Ecology and attorneys from the Washington State Office of the Attorney General on August 30, 2018, to discuss the retrieval challenges and issues with the condition of tanks A-104 and A-105. Since August 2018, DOE has had several discussions with Ecology on this topic.

DOE = U.S. Department of Energy.

SST = single-shell tank.

Ecology = Washington State Department of Ecology.

WMA-C = C Tank Farm waste management area.

Significant Accomplishments during the Prior Month:

Completed Accomplishments:

- Completed waste retrieval design for A Tank Farm (tanks 101, 102, 103, and 106)
- Completed A Tank Farm exhaust ducting installation (no connections to the tank risers)
- Completed Tank A-103 Pit C cleanout
- Completed Tank A-101 Pit C cleanout
- Removed AX-103 Pit B Riser 14 sluicer.

Ongoing Activities:

- Installation of the electrical infrastructure (power and control systems) in the A Tank Farm
- Continue removal of long-length equipment at Tank AX-103 and Tank AX-101
- Installation of A Tank Farm ventilation system:
 - Install power and control systems for the exhauster
 - Remove cover blocks, clean pits, and thermocouple trees from risers (to connect the ventilation system)
 - Continue installation of air inlet stations
- Continue Tank AX-102 waste retrieval operations (approximately 67 percent retrieved)
- Install waste retrieval equipment in Tank AX-104
- Re-video remaining waste volume in Tank C-106.

Significant Planned Activities in the Next Month:

- Install Tank A-101 air inlet station
- Remove Tank AX-103 R1B pump
- Remove Tank A-101 R2 thermocouple
- Remove A-101 1C Pit stuck shield plug
- Resume Tank AX-102 waste retrieval operations
- Lower the remaining damaged section of Tank A-103 R2 thermocouple into the tank.

Issues:

- On September 13, 2019, Tank AX-102 retrieval operations were suspended, due to issues associated with sluicer number 2 in the AX-102 C Pit and sluicer number 3 in the AX-102 D Pit. Operation of sluicer number 3 was suspended because one of the hydraulic pistons, located at the articulating elbow, was slightly bent. The initial investigation indicated that the sluicer contacted an in-tank obstruction. The sluicer is operable, with restrictions, until the engineering analysis is completed. Use of sluicer number 2 was stopped after a leak was observed. Liquid was observed flowing into the tank from the enclosed sluicer pit. The source of the leak was the waste transfer line connection at the top of the sluicer. The waste retrieval system was in recirculation mode at the time. Repairs are underway. After completion of the repairs, the system will be retested.
- Reduced worker efficiencies associated with mandatory use of supplied air continues to impact work in the tank farms. The use of full-face air purifying respirators has been approved for use in the AX Tank Farm during operation of the AX Tank Farm exhausters (POR126/POR127). Mandatory use of supplied air respirators is required when the AX Tank Farm exhausters are not operating or during retrieval operations.

- The U.S. Department of Energy (DOE) is engaged in ongoing analysis of non-vapors-related retrieval challenges and condition issues associated with Tanks A-104 and A-105 (i.e., two of the nine tanks currently specified for retrieval under the B-2 Milestone).³ These issues are under analysis and could require issuance of a “serious risk” notice or another request for amendment of the Consent Decree (including the B-2 Milestone).
- The as-found condition of existing abandoned equipment in AX and A Tank Farms has affected DOE’s ability to remove the equipment efficiently and is affecting the cost and schedule.
- On December 3, 2018, the Washington State Department of Ecology (Ecology) sent the DOE Office of River Protection (ORP) and Richland Operations Office a letter (18-NWP-177) regarding the Hanford Site ambient air boundary. Ecology expressed its concern that the ambient air boundary appears to have changed because of increased public access to parts of the Hanford Site. DOE, Ecology, and the Washington State Department of Health have met several times to attempt to develop a shared understanding of existing conditions and a path forward.
- On January 28, 2019, ORP received a Washington River Protection Solutions LLC letter (WRPS-1900243), outlining potential impacts to tank retrievals at A and AX Tank Farms, due to a lack of Ecology regulatory approval associated with exhausters in the 241-A and 241-AX Tank Farms. On March 4, 2019, DOE transmitted WRPS-1900243 to ensure Ecology was aware of potential impacts to A and AX Tank Farm retrievals and possibly associated Consent Decree milestones, if Ecology does not approve a pending notice of construction application in the near future. DOE is continuing to evaluate the information in the letter, as well as whether amendment of the Consent Decree (including potential invocation of “force majeure” provisions) or other actions may be necessary. Retrieval of Tank AX-102 began on August 31, 2019, with the exhausters running at 1,000 scfm. DOE is assessing retrieval performance at this airflow rate due to the potential for fogging at various stages of the retrieval process that may affect schedule.
- On April 18, 2019, Ecology provided a notice of incompleteness for the A and AX Tank Farms notice of construction letter (19-NWP-063). ORP provided a response on May 14, 2019 (19-ECD-0038), which justified that the original application met the regulations and asked Ecology to continue processing the application.

³ The U.S. Department of Energy met with the Washington State Department of Ecology and attorneys from the Washington State Office of the Attorney General on August 30, 2018, to discuss the retrieval challenges and issues with the condition of Tanks A-104 and A-105. The U.S. Department of Energy has had several discussions with the Washington State Department of Ecology on this topic since August 2018.

Tank Waste Retrieval Work Plan Status

Tank Farms Assistant Manager: Rob Hastings

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	–

ERSS = extended reach sluicer system.

TWRWP = tank waste retrieval work plan.

Significant Accomplishments during the Prior Month:

- None.

Significant Planned Activities in the Next Month:

- None.

Issues:

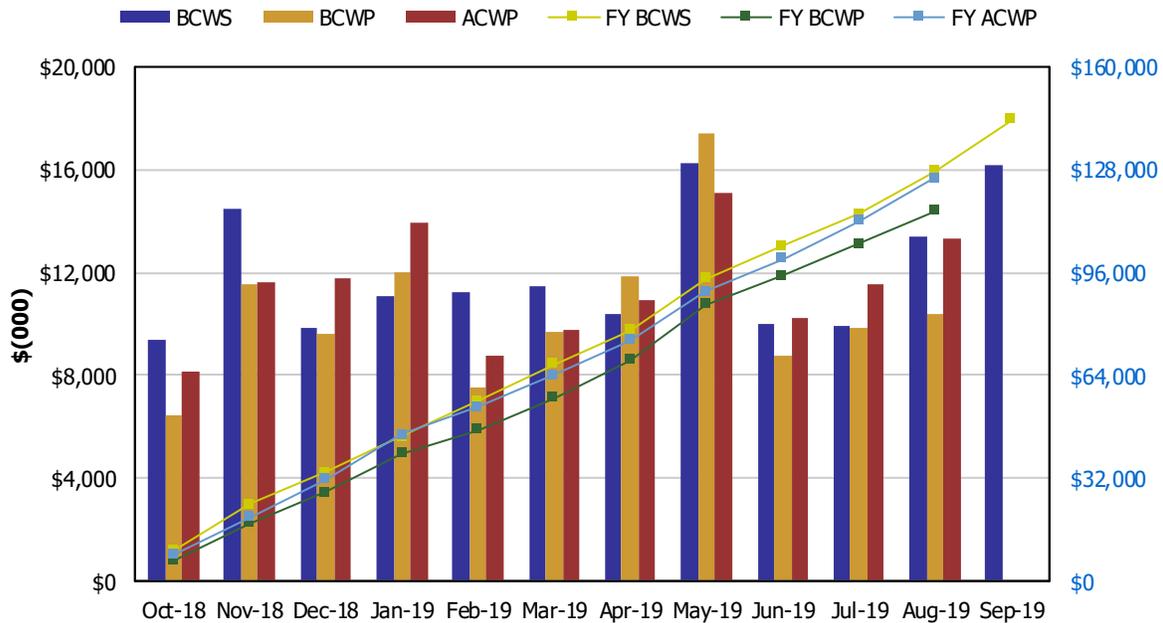
- None.

Earned Value Data: Fiscal Year 2019

August-19

Tank Farms ORP-0014
WBS 5.2 - Retrieve and Close SSTs

EVMS Monthly and Fiscal Year Values



Earned Value Month

Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2018	\$9,402	\$6,448	\$8,124	0.69	0.79	\$9,402	\$6,448	\$8,124	0.69	0.79
Nov 2018	\$14,501	\$11,516	\$11,634	0.79	0.99	\$23,902	\$17,964	\$19,757	0.75	0.91
Dec 2018	\$9,824	\$9,620	\$11,762	0.98	0.82	\$33,726	\$27,585	\$31,519	0.82	0.88
Jan 2019	\$11,060	\$12,034	\$13,959	1.09	0.86	\$44,786	\$39,618	\$45,479	0.88	0.87
Feb 2019	\$11,259	\$7,545	\$8,742	0.67	0.86	\$56,046	\$47,163	\$54,221	0.84	0.87
Mar 2019	\$11,437	\$9,672	\$9,801	0.85	0.99	\$67,483	\$56,836	\$64,022	0.84	0.89
Apr 2019	\$10,391	\$11,841	\$10,948	1.14	1.08	\$77,874	\$68,677	\$74,969	0.88	0.92
May 2019	\$16,243	\$17,411	\$15,108	1.07	1.15	\$94,117	\$86,088	\$90,077	0.91	0.96
Jun 2019	\$9,975	\$8,740	\$10,257	0.88	0.85	\$104,092	\$94,828	\$100,335	0.91	0.95
Jul 2019	\$9,931	\$9,859	\$11,507	0.99	0.86	\$114,023	\$104,687	\$111,841	0.92	0.94
Aug 2019	\$13,359	\$10,410	\$13,315	0.78	0.78	\$127,381	\$115,097	\$125,156	0.90	0.92
Sep 2019	\$16,142					\$143,523				

CTD	\$1,068,120	\$1,045,827	\$1,103,654	0.98	0.95
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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.
- CTD = contract to date.
- EVMS = earned value management system.
- FY = fiscal year.
- SPI = schedule performance index.

Retrieve and Close Single-Shell Tanks (5.02)⁴

The August 2019 unfavorable schedule variance of (\$2,949,000) was primarily due to:

- Postponement of the installation of Tank AX-104 in-tank equipment, such as the pump and sluicers, until retrieval operations at Tank AX-102 make sufficient progress. The installation of AX-104 equipment will be timed to manage exposure to the tank's high radiation levels, which can negatively affect longevity.
- Delays in the installation and turnover of the Tank AX-102 waste retrieval system moved the start of retrieval operations from mid-July to the end of August.

The August 2019 unfavorable cost variance of (\$2,905,310) was primarily due to:

- Rework and testing of components in the A-285 water and chemical building, the POR466 water system manifold, and other items found during startup and readiness activities requiring expenditure of additional labor and construction subcontractor resources.
- Inefficiencies during installation of the A Tank Farm ventilation system and delays in the excavation for the A Tank Farm electrical conduit installation. The excavation required coordination with the planned 242-A Evaporator electrical outage.

⁴ "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: Tom Fletcher

Deputy Federal Project Director: Mat Irwin

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	At Risk ¹
D-00A-01	Achieve Initial Plant Operations for WTP	12/31/2036	At Risk ¹

¹ 19-ORP-0007, 2019, “Discussion of Amended Consent Decree – State of Washington v. Perry (E.D. Wash. No. 2:08-CV-5085).”

WTP = Waste Treatment and Immobilization Plant.

The Waste Treatment and Immobilization Plant (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 low-activity waste [DFLAW] and LBL facility services).

As of August 2019, DFLAW modifications for the WTP Project were 78 percent complete, engineering design was 94 percent complete, procurement was 97 percent complete, and construction was 65 percent complete. As of August 2019, total LBL facilities were 78 percent complete, engineering design was 96 percent complete, procurement was 96 percent complete, construction was 92 percent complete, and startup and commissioning was 43 percent complete.

At the request of DOE, the U.S. Army Corps of Engineers conducted a parametric analysis of certain options and funding scenarios to evaluate the likelihood of achieving certain milestones established by the Amended Consent Decree for the High-Level Waste (HLW) and Pretreatment (PT) facilities. The analysis indicated there is a low probability that DOE can meet the milestones for constructing and commissioning these facilities established by the Amended Consent Decree under the current funding profile.

The DOE Office of Project Management conducted an independent assessment of the U.S. Army Corps of Engineers report. As noted previously, the Office of Project Management’s assessment concluded the U.S. Army Corps of Engineers’ analyses were generally accurate, although not sufficiently detailed for budget purposes, and they potentially understate the funding needed to complete the HLW and PT facilities on the schedule established by the Amended Consent Decree.

As previously noted, Ecology sent ORP and the Richland Operations Office a letter (18-NWP-177) on December 3, 2018, regarding the Hanford Site ambient air boundary. Ecology expressed its concern that the ambient air boundary appears to have changed because of increased public access to parts of the Hanford Site. DOE, Ecology, and the Washington State Department of Health have met several times to attempt to develop a shared understanding of existing conditions and a path forward.

ORP held initial meetings with the WTP HLW Treatment Analysis of Alternatives (AoA) contractor team in June 2019, with Ecology participation. The purpose of the AoA is to identify and evaluate a broad set of alternatives to meet the mission need; analyze the life-cycle cost, schedule, and risks associated with each alternative; and present the evaluation results to DOE leadership, pursuant to the requirements of DOE O 413.3B.

Membership on the DOE AoA Steering Committee was revised in July 2019 to include senior-level representation from DOE's Office of Project Management, Office of Cost Estimating and Program Evaluation, Office of the Chief Financial Officer, Office of Environmental Management, and Acquisition and Project Management for the National Nuclear Security Administration.

On September 4, 2019, DOE notified Ecology that there is a serious risk DOE may be unable to meet milestones for the HLW and PT facilities in the Amended Consent Decree.⁵ The notification stated:

...it is appropriate, out of an abundance of caution, to provide this notice of serious risk as described in the Amended Consent Decree ... Specifically, the Department is providing notice of a "serious risk ... that DOE may be unable to meet" Milestones A-1 and A-17 (Waste Treatment Plant), Milestones A-2 to A-4 (HLW Facility), and A-13 to A-16 and A-19 (PT Facility) of that Decree. With respect to the "preliminary recovery plan" required by the Amended Consent Decree, completion of the AoA is the first and most critical aspect of that plan. The steps that follow the completion of the AoA will be determined based on the final report's conclusions and the Department's consultations with Ecology.⁶

Significant Accomplishments during the Prior Month:

- ORP conducted a workshop for the DOE AoA Steering Committee in Washington, D.C., on September 13, 2019. Representatives from the Parsons AoA team, along with the ORP Steering Committee Chair attended. ORP staff in Richland provided technical support via video teleconference. The objective of the workshop was to provide a detailed briefing on revisions to the *Waste Treatment and Immobilization Plant High-Level Waste Treatment Analysis of Alternatives Study Plan*, which included updated alternatives for analysis and incorporated AoA Steering Committee comments from the video teleconference orientation held on August 16, 2019. Ecology was provided with detailed meeting notes summarizing the workshop.
- ORP participated in ongoing meetings with Ecology to discuss the tank waste mission and high-level waste treatment approaches.

⁵ 19-ORP-0007, 2019, "Discussion of Amended Consent Decree – State of Washington v. Perry (E.D. Wash. No. 2:08-CV-5085)."

⁶ Footnotes 3 and 4 were omitted from this quote.

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

Significant Planned Activities for the Next Month:

- Pursuant to Section IV-C-3(b) of the Amended Consent Decree⁷, in a letter dated September 25, 2019, Ecology requested a meeting with DOE staff to answer any questions Ecology may have concerning the serious risk as well as to discuss mitigation options, cooperative solutions, and problem-solving opportunities. The meeting is scheduled for October 16, 2019.
- The AoA team is planning an onsite working session the week of October 7, 2019. Topics will include modeling progress, continued development of detailed scope descriptions; process diagrams; facility sizing; pre-conceptual layouts incorporating input and comments resulting from the Steering Committee briefing on September 13, 2019; and detailing the path forward to complete the AoA. An Ecology observer will be invited to participate.
- ORP expects to approve the *Waste Treatment and Immobilization Plant High-Level Waste Treatment Analysis of Alternatives Study Plan* (Rev. 3). The study plan was updated to incorporate comments from new Steering Committee members to include the method, approach, and schedule to be used in conducting an independent AoA for the identified mission need.
- ORP expects to approve the DOE AoA *Steering Committee Charter* (Rev. 2), modified to reflect changes to the Steering Committee membership. The charter describes the functions, responsibilities, and authorities of committee members responsible for providing oversight of the performance of the AoA team.
- ORP expects to meet with Ecology on a regular basis to continue to discuss the tank waste treatment mission and high-level waste treatment approaches.
- Other significant planned activities in the next month are noted in project reports for the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

⁷ *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016).

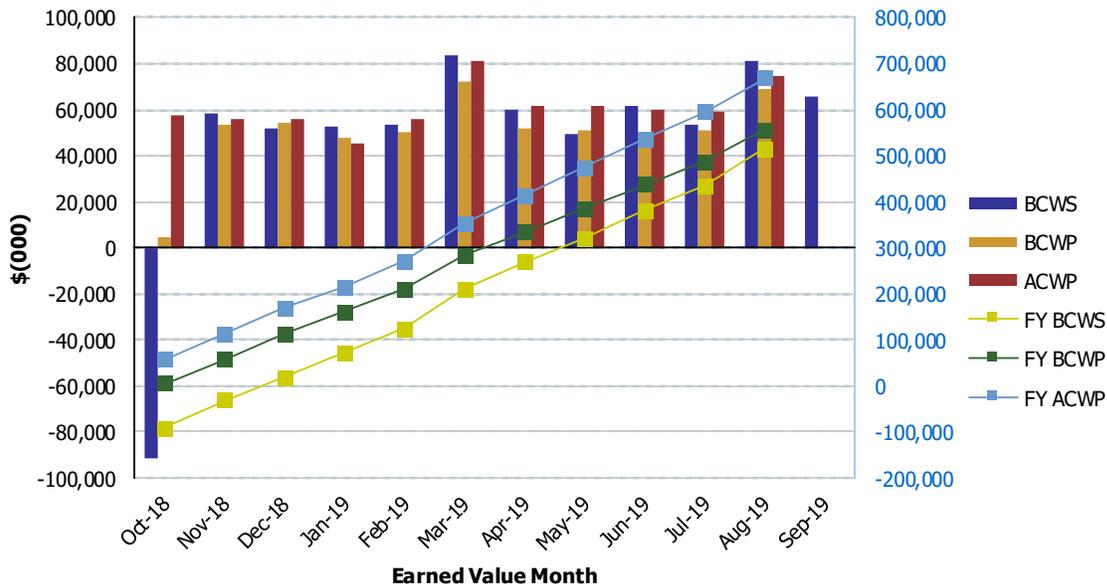
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: August 2019

**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 2018	(\$91,134)	\$4,875	\$57,739	-0.05	0.08	(\$91,134)	\$4,875	\$57,739	-0.05	0.08
Nov 2018	\$58,216	\$53,397	\$55,568	0.92	0.96	(\$32,918)	\$58,273	\$113,307	-1.77	0.51
Dec 2018	\$52,253	\$53,988	\$56,033	1.03	0.96	\$19,336	\$112,261	\$169,340	5.81	0.66
Jan 2019	\$52,627	\$47,946	\$45,129	0.91	1.06	\$71,963	\$160,207	\$214,469	2.23	0.75
Feb 2019	\$53,452	\$50,130	\$56,314	0.94	0.89	\$125,415	\$210,337	\$270,782	1.68	0.78
Mar 2019	\$84,017	\$72,378	\$81,190	0.86	0.89	\$209,432	\$282,715	\$351,972	1.35	0.80
Apr 2019	\$60,138	\$51,791	\$62,009	0.86	0.84	\$269,570	\$334,506	\$413,981	1.24	0.81
May 2019	\$49,760	\$51,378	\$61,299	1.03	0.84	\$319,329	\$385,884	\$475,280	1.21	0.81
Jun 2019	\$61,624	\$50,393	\$59,959	0.82	0.84	\$380,954	\$436,277	\$535,239	1.15	0.82
Jul 2019	\$53,706	\$51,148	\$59,407	0.95	0.86	\$434,660	\$487,425	\$594,646	1.12	0.82
Aug 2019	\$81,476	\$69,297	\$74,371	0.85	0.93	\$516,136	\$556,722	\$669,018	1.08	0.83
Sep 2019	\$65,534									

PTD	\$11,812,930	\$11,712,427	\$11,691,051	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.

Project Schedule and Cost Variance Performance (\$x1,000)

Performance Tracking	SV	CV
Current Period (August 2019)	(\$12,179)	(\$5,075)
Fiscal Year 2019 to-date	\$40,586	(\$112,296)
Cumulative (through August 2019)	(\$100,503)	\$21,375

CV = cost variance.

SV = schedule variance.

For the August 2019 Earned Value Management System reporting period, a net **unfavorable** schedule variance of approximately (\$12.2 million) was reported, primarily due to the following:

- LAW Facility construction is taking longer than planned to complete subcontract work focused on the following:
 - Penetration seals; heating, ventilation, and air-conditioning installation (HVAC); and coatings
 - Delays in procurement and cancellation of requests for proposals for testing material (i.e., glass-forming chemicals, immobilized low-activity waste containers, and startup frit⁸) due to price exceeding proposal
 - System turnover delays for HVAC, LAW Facility melter feed process, LAW Facility container pour handling, and radioactive liquid waste disposal systems being impacted by additional component testing.
- BOF construction had continued delays in final grading due to design challenges.
- Effluent Management Facility (EMF) construction was delayed due to ongoing procurement challenges with piping, electrical, and instrumentation equipment.
- Facility Services for DFLAW reported an administrative point adjustment correction of approximately \$5.9 million on a termination settlement and equipment buyback from the vendor, offsetting some of the overall unfavorable schedule variance.

For the August 2019 Earned Value Management System reporting period, a net **unfavorable** cost variance of approximately (\$5.1 million) was reported, primarily due to the following:

- LAW Facility Construction was unable to maximize bulk installations efficiently. Startup continued to have higher costs due to equipment/component failures and repairs and additional testing.
- BOF Construction had higher costs than planned for heat trace and special protective coatings and insulation subcontract work. Plant Management had higher costs than planned due to ongoing corrective maintenance needed to support system testing.

⁸ Frit is a startup material for melters. It is a mixture of chemicals melted in a furnace, cooled to form glass, and fragmented or formed into a specific shape and particle size.

- DFLAW Construction had higher costs than planned due to back-charge work for waste transfer line coating repairs, field nonmanual, and overtime work.

Pretreatment Facility

Federal Project Director: Tom Fletcher

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	At Risk ¹
D-00A-13	Complete Installation of Pretreatment Feed Separation Vessels FEP-SEP-OOOO1A/1B	12/31/2031	At Risk ¹
D-00A-14	PT Facility Construction Substantially Complete	12/31/2031	At Risk ¹
D-00A-15	Start PT Facility Cold Commissioning	12/31/2032	At Risk ¹
D-00A-16	PT Facility Hot Commissioning Complete	12/31/2033	At Risk ¹

¹ 19-ORP-0007, 2019, "Discussion of Amended Consent Decree – State of Washington v. Perry (E.D. Wash. No. 2:08-CV-5085)."

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 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 Bechtel National, Inc. (BNI) completed resolution of all the technical issues identified in the Third Order Regarding Motions to Modify Consent Decrees⁹ including:

- "Preventing Potential Hydrogen Build-Up" (i.e., T1 in relation to hydrogen gas events in vessels and T3 in relation to hydrogen in piping and ancillary vessels)
- "Preventing Criticality" (i.e., T2 in relation to criticality in pulse-jet mixer vessels)
- "Ensuring Control of the Pulse Jet Mixers" (i.e., T4 in relation to pulse-jet mixer vessel mixing and control)

⁹ State of Washington v. Dept. of Energy, No: 2:08-CV-5085-RMP (March 11, 2016).

- “Protecting Against Possible Erosion and Corrosion” (i.e., T5 in relation to erosion/corrosion in piping and ancillary vessels)
- “Ensuring Ventilation Balancing” (i.e., T8 in relation to facility ventilation/process offgas treatment).¹⁰

In addition, ORP and BNI completed resolution of technical issues not included in the Third Order Regarding Motions to Modify Consent Decrees (i.e., T6 in relation to design redundancy and in-service inspection, and T7 in relation to seismic ground motion criteria changes around 2005).

ORP notified BNI in July 2019 that it agreed with BNI’s determination that the PT Facility’s technical issues have been resolved.¹¹

Significant Accomplishments during the Prior Month:

- BNI continued to manage suspended plant equipment purchase orders to reduce storage and suspension cost and evaluate ways to reduce project procurement liability.
- BNI continued to implement ongoing asset maintenance at the PT Facility to protect equipment and structures and ensure design documents are maintained.

Significant Planned Activities for the Next Month:

- BNI will continue to manage suspended plant equipment purchase orders to reduce storage and suspension cost and evaluate ways to reduce project procurement liability.
- BNI will continue to implement ongoing asset maintenance at the PT Facility to protect equipment and structures and ensure design documents are maintained.

¹⁰ 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 may be both different by number and somewhat different by description.

¹¹ 19-WTP-0078, “Contract No. DE-AC27-01RV14136 – Concurrence on the Resolution of Technical Issues (T1 – T8) for the Waste Treatment and Immobilization Plant Pretreatment Facility,” July 16, 2019.

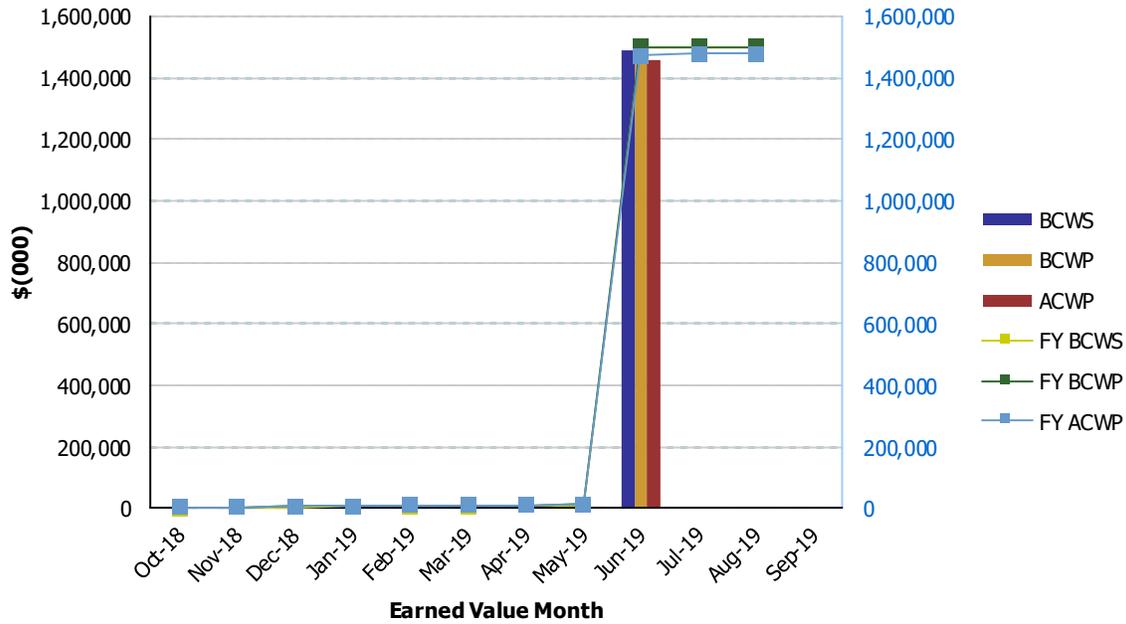
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: August 2019

**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 2018	\$1,479	\$1,704	\$1,873	1.15	0.91	\$1,479	\$1,704	\$1,873	1.15	0.91
Nov 2018	\$1,425	\$1,654	\$1,817	1.16	0.91	\$2,904	\$3,358	\$3,689	1.16	0.91
Dec 2018	\$1,332	\$2,678	\$2,714	2.01	0.99	\$4,236	\$6,036	\$6,403	1.42	0.94
Jan 2019	\$1,236	\$1,347	\$827	1.09	1.63	\$5,472	\$7,383	\$7,230	1.35	1.02
Feb 2019	\$1,033	\$796	\$932	0.77	0.85	\$6,505	\$8,178	\$8,161	1.26	1.00
Mar 2019	\$1,102	\$1,319	\$1,270	1.20	1.04	\$7,607	\$9,498	\$9,432	1.25	1.01
Apr 2019	\$1,050	\$1,017	\$1,272	0.97	0.80	\$8,658	\$10,514	\$10,704	1.21	0.98
May 2019	\$966	\$899	\$724	0.93	1.24	\$9,623	\$11,414	\$11,428	1.19	1.00
Jun 2019	\$1,489,327	\$1,489,576	\$1,461,232	1.00	1.02	\$1,498,951	\$1,500,990	\$1,472,660	1.00	1.02
Jul 2019	\$657	\$725	\$6,862	1.10	0.11	\$1,499,608	\$1,501,715	\$1,479,521	1.00	1.02
Aug 2019	\$1,013	\$1,000	\$714	0.99	1.40	\$1,500,621	\$1,502,715	\$1,480,236	1.00	1.02
Sep 2019	\$7,389									
PTD	\$3,502,882	\$3,500,899	\$3,444,736	1.00	1.02					

- 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.

Note: The significant increase in the BCWS, BCWP, and ACWP for June 2019 is due to a one-time allocation of past Shared Services (1.90) cost to the PT and HLW facilities' Work Breakdown Structure.

High-Level Waste Facility

Federal Project Director: Tom Fletcher

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	At Risk ¹
D-00A-03	Start HLW Facility Cold Commissioning	06/30/2032	At Risk ¹
D-00A-04	HLW Facility Hot Commissioning Complete	12/31/2033	At Risk ¹

¹ 19-ORP-0007, 2019, "Discussion of Amended Consent Decree – State of Washington v. Perry (E.D. Wash. No. 2:08-CV-5085)."

HLW = high-level waste.

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 fiscal year (FY) 2017 through FY 2021 Interim Work Plan, which initially was for work primarily associated with asset maintenance and key ongoing procurement activities. With the receipt of increased funding in FY 2018, additional engineering workscope was performed in FY 2019 and is expected to continue to ramp up in FY 2020 in anticipation of receiving engineering resources from DFLAW/LBL activities.

In March 2019, DOE awarded the AoA contract for the high-level waste treatment mission. The purpose of the AoA is to identify all viable options to meet mission needs and reduce risk, while providing decision-quality analysis and results to inform the acquisition authority and other stakeholders of all the alternatives to meet both Departmental and Environmental Management policy requirements. Additional information regarding the AoA process is included in the WTP section at the beginning of this report.

Significant Accomplishments during the Prior Month:

- BNI continued to manage suspended plant equipment purchase orders to reduce storage and suspension costs and evaluate ways to reduce project procurement liability.
- BNI continued to implement asset maintenance at the HLW Facility to protect equipment and structures and ensure design documents are maintained.
- ORP participated in ongoing meetings with Ecology to discuss the tank waste mission and high-level waste treatment approaches.
- Radioactive liquid waste disposal system vessels 7 and 8 (i.e., RLD-7 and RLD-8) are in the final stages of fabrication for expected delivery to BNI by the end of calendar year 2019. These vessels are to be installed in the wet process cell to allow concrete slab placement above the wet cell. This activity supports roof installation and building enclosure.
- BNI completed the 60-percent design review of the radioactive liquid waste disposal system.

Significant Planned Activities in the Next Month:

- BNI is expected to develop a work plan for FY 2020 and FY 2021 based on the available funding.
- BNI will continue to ramp-up engineering design activities on key mechanical and process systems for the HLW Facility. Priority systems for FY 2020 include the design of the HLW Facility melter feed process and the primary offgas process systems.
- BNI will continue to manage suspended plant equipment purchase orders to reduce storage and suspension costs and evaluate ways to reduce project procurement liability.
- ORP expects to meet with Ecology on a regular basis to continue to discuss the tank waste treatment mission and high-level waste treatment approaches.
- BNI will continue to implement ongoing asset maintenance at the HLW Facility to protect equipment and structures and ensure design documents are maintained.

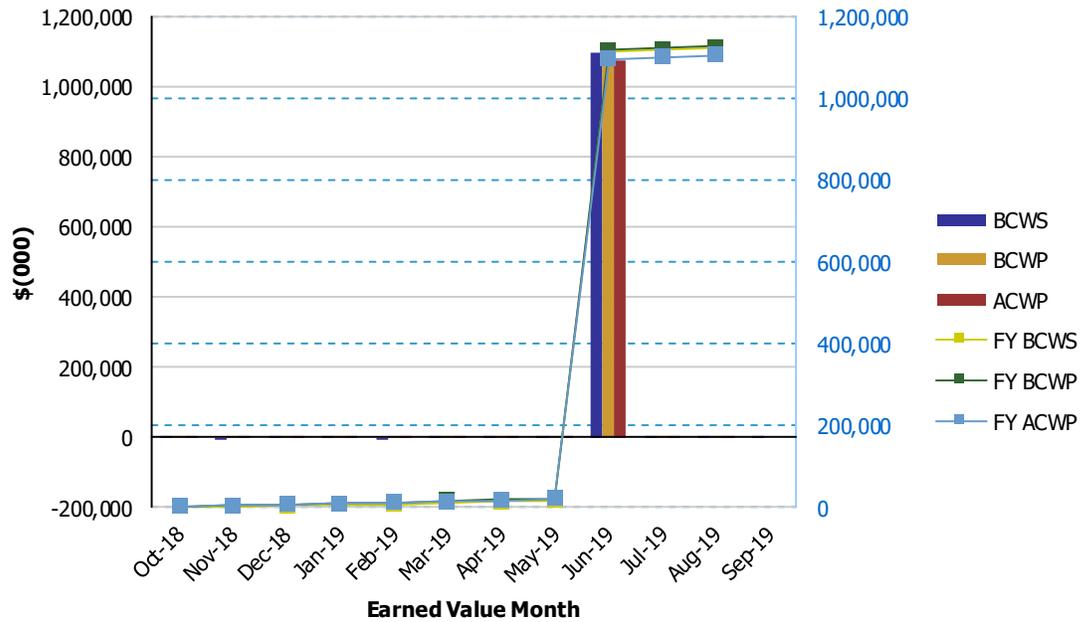
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: August 2019

**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 2018	\$2,104	\$2,048	\$1,746	0.97	1.17	\$2,104	\$2,048	\$1,746	0.97	1.17
Nov 2018	(\$672)	\$2,827	\$2,633	-4.20	1.07	\$1,432	\$4,874	\$4,379	3.40	1.11
Dec 2018	\$2,735	\$2,148	\$1,996	0.79	1.08	\$4,167	\$7,023	\$6,375	1.69	1.10
Jan 2019	\$3,945	\$3,248	\$2,386	0.82	1.36	\$8,111	\$10,270	\$8,762	1.27	1.17
Feb 2019	(\$452)	\$1,507	\$2,121	-3.33	0.71	\$7,659	\$11,777	\$10,883	1.54	1.08
Mar 2019	\$3,776	\$3,890	\$3,907	1.03	1.00	\$11,436	\$15,667	\$14,790	1.37	1.06
Apr 2019	\$3,196	\$2,951	\$2,990	0.92	0.99	\$14,631	\$18,618	\$17,781	1.27	1.05
May 2019	\$3,107	\$3,349	\$2,778	1.08	1.21	\$17,738	\$21,967	\$20,559	1.24	1.07
Jun 2019	\$1,097,651	\$1,097,646	\$1,076,640	1.00	1.02	\$1,115,389	\$1,119,612	\$1,097,199	1.00	1.02
Jul 2019	\$4,943	\$4,438	\$4,335	0.90	1.02	\$1,120,332	\$1,124,050	\$1,101,535	1.00	1.02
Aug 2019	\$6,412	\$4,693	\$4,983	0.73	0.94	\$1,126,744	\$1,128,743	\$1,106,517	1.00	1.02
Sep 2019	\$4,436									

PTD	\$2,494,204	\$2,488,464	\$2,438,218	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.

Note: Significant increase in the BCWS, BCWP, and ACWP for June 2019 is due to one-time allocation of past Shared Services (1.90) cost to the PT and HLW facilities' Work Breakdown Structure.

Low-Activity Waste Facility¹²

Federal Project Director: Tom Fletcher

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 August 2019, the LAW Facility was 79 percent complete overall, engineering design was 96 percent complete, procurement was 98 percent complete, construction was 98 percent complete, and startup and commissioning was 27 percent complete.

Recent BNI efforts at the LAW Facility have focused on evaluating design changes against the approved safety basis, and completion of procurement and construction activities. Additionally, Construction is walking down completed systems with the Startup organization in support of turnover to Startup for testing and subsequent handover to the Plant Management organization for facility commissioning.

To date, 78 percent of LAW Facility systems have been turned over from Construction¹³ to the Startup organization. In addition, Plant Management has accepted handover of 28 percent of the LAW Facility systems from the Startup organization. The active gas analyzer is the only piece of tagged equipment remaining to be delivered out of over 6,800 pieces of equipment.

¹² Discussions about the related Low-Activity Waste Pretreatment System and tank-side cesium removal 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.

¹³ Bechtel National, Inc. Construction will direct transfer the communications electrical systems to Plant Management.

Significant Accomplishments during the Prior Month:

- BNI initiated factory-acceptance testing of the active gas analyzer.
- BNI procurement received the following tagged equipment items:
 - Final LAW Facility melter power supply bus duct adapter.
 - Final LAW Facility pressure regulators to support the offgas exhauster.
- BNI Construction turned over the following system to the Startup organization:
 - Uninterruptible power electrical system (UPE-L-02).
- BNI's Startup organization submitted handover of the following system to Plant Management:
 - Process service water system (PSW-L-01).

Significant Planned Activities in the Next Month:

- BNI vendor expects to ship the active gas analyzer prior to the end of calendar year 2019.
- BNI Construction expects to continue completing walkdowns on various systems in support of turning those systems over to the Startup organization.
- BNI's Startup organization expects to continue handing over LAW Facility systems to Plant Management.

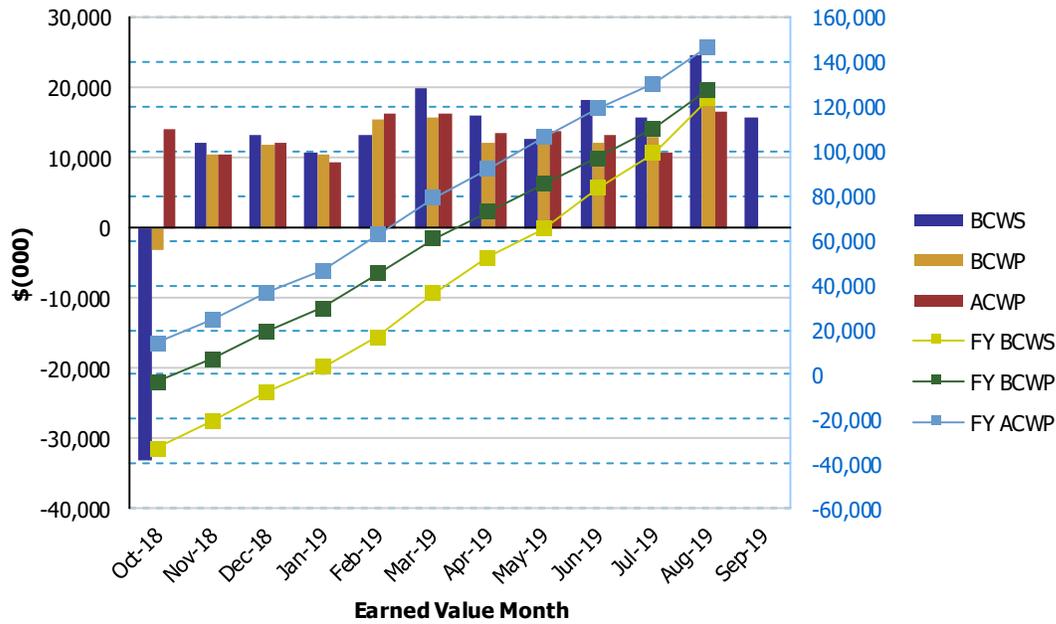
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: August 2019

**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 2018	(33,062)	(3,263)	14,198	0.10	-0.23	(33,062)	(3,263)	14,198	0.10	-0.23
Nov 2018	\$12,266	\$10,516	\$10,433	0.86	1.01	(\$20,795)	\$7,253	\$24,631	-0.35	0.29
Dec 2018	13,341	11,936	12,139	0.89	0.98	(\$7,455)	\$19,189	\$36,770	-2.57	0.52
Jan 2019	10,774	10,605	9,474	0.98	1.12	\$3,319	\$29,794	\$46,244	8.98	0.64
Feb 2019	13,255	15,506	16,366	1.17	0.95	\$16,575	\$45,300	\$62,610	2.73	0.72
Mar 2019	19,888	15,718	16,402	0.79	0.96	\$36,462	\$61,018	\$79,011	1.67	0.77
Apr 2019	16,109	12,036	13,438	0.75	0.90	\$52,572	\$73,054	\$92,449	1.39	0.79
May 2019	12,666	12,108	13,911	0.96	0.87	\$65,237	\$85,162	\$106,360	1.31	0.80
Jun 2019	18,175	12,016	13,156	0.66	0.91	\$83,412	\$97,178	\$119,516	1.17	0.81
Jul 2019	15,732	13,061	10,721	0.83	1.22	\$99,144	\$110,239	\$130,237	1.11	0.85
Aug 2019	24,633	17,491	16,714	0.71	1.05	\$123,777	\$127,730	\$146,951	1.03	0.87
Sep 2019	15,640									

PTD	\$2,196,167	\$2,151,980	\$2,146,297	0.98	1.00
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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. |

Balance of Facilities

Federal Project Director: Tom Fletcher

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 August 2019, BOF was 85 percent complete overall, engineering design was 96 percent complete, procurement was 100 percent complete, construction was 92 percent complete, and startup and commissioning was 67 percent complete. Design of EMF was 99 percent complete.

BNI engineering efforts are focused on supporting EMF construction and providing field support for BOF startup activities. Construction efforts are focused on the installation of EMF pipe racks, piping, and HVAC ductwork. Startup testing continues for systems in the steam plant and chiller compressor plant. To date, all BOF systems have been turned over from Construction¹⁴ to the Startup organization.

Significant Accomplishments during the Prior Month:

- BNI Construction completed preassembly of the EMF stack to support final placement.
- BNI Construction completed setting of process vessels DEP-VSL-00004A/B and DEP-VSL-00005A/B at EMF.
- BNI Construction turned the following EMF powerhouse systems over to the Startup organization:
 - EMF fire detection and alarm system (FDE-E-01)
 - EMF C1 ventilation system (C1V-E-01)
 - EMF lighting electrical system (LTE-E-01)
 - EMF uninterruptible power electrical system (UPE-E-01)
 - EMF grounding and lighting protection electric system (GRE-E-01)
 - EMF process control system (PCJ-E-01).
- BNI Construction installed platform steel, interior stairs, and bulk piping and hangers at EMF.
- BNI continued to pull the cables between the powerhouse and EMF.

¹⁴ Bechtel National, Inc. Construction will direct transfer the communications electrical systems to Plant Management. In addition, the sanitary disposal and lighting/electrical systems are now under the Island Completion team.

- BNI Construction continued installation of structural steel, piping, HVAC ductwork, roofing, and siding at EMF.
- BNI continued restoration of the high-pressure steam and steam condensate systems in preparation for upcoming testing.
- BNI continued preparations for receipt of the stand-by diesel generator in support of upcoming load testing.
- BNI Construction continued excavating around the EMF for installation of transfer piping.
- BNI Construction continued installation of bulk process piping, electrical commodities, roofing, and siding at the EMF utilities building.

Significant Planned Activities in the Next Month:

- BNI expects to begin testing for the high-pressure steam and steam condensate systems.
- BNI expects to begin load testing for the standby diesel generator.
- BNI's Startup organization and Plant Management will continue to focus on ensuring BOF air, water, and power systems are ready for operations.

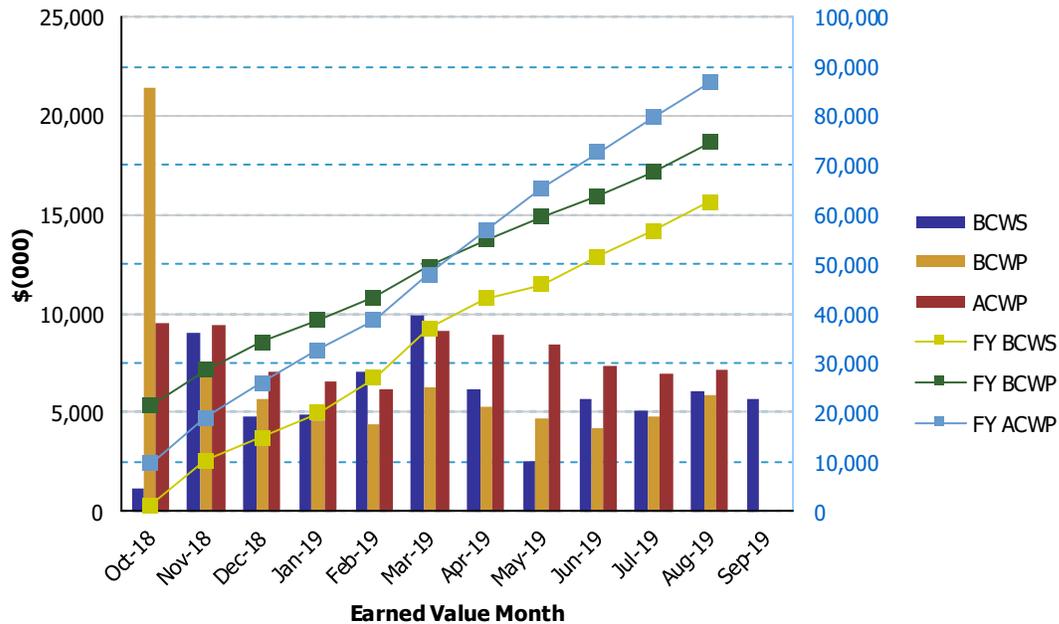
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: August 2019

**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 2018	\$1,198	\$21,463	\$9,553	17.92	2.25	\$1,198	\$21,463	\$9,553	17.92	2.25
Nov 2018	\$9,066	\$7,075	\$9,440	0.78	0.75	\$10,263	\$28,537	\$18,993	2.78	1.50
Dec 2018	\$4,764	\$5,729	\$7,031	1.20	0.81	\$15,028	\$34,266	\$26,024	2.28	1.32
Jan 2019	\$4,907	\$4,559	\$6,584	0.93	0.69	\$19,935	\$38,825	\$32,608	1.95	1.19
Feb 2019	\$7,101	\$4,445	\$6,222	0.63	0.71	\$27,036	\$43,269	\$38,830	1.60	1.11
Mar 2019	\$9,939	\$6,303	\$9,174	0.63	0.69	\$36,975	\$49,572	\$48,004	1.34	1.03
Apr 2019	\$6,214	\$5,317	\$8,882	0.86	0.60	\$43,189	\$54,889	\$56,885	1.27	0.96
May 2019	\$2,569	\$4,664	\$8,459	1.82	0.55	\$45,759	\$59,553	\$65,344	1.30	0.91
Jun 2019	\$5,704	\$4,256	\$7,347	0.75	0.58	\$51,463	\$63,808	\$72,691	1.24	0.88
Jul 2019	\$5,116	\$4,835	\$6,953	0.95	0.70	\$56,578	\$68,643	\$79,644	1.21	0.86
Aug 2019	\$6,042	\$5,869	\$7,131	0.97	0.82	\$62,621	\$74,512	\$86,775	1.19	0.86
Sep 2019	\$5,686									

PTD	\$867,028	\$855,338	\$882,324	0.99	0.97
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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: Tom Fletcher

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 August 2019, the LAB was 81 percent complete overall, engineering design was 96 percent complete, procurement was 100 percent complete, construction was 99 percent complete, and startup and commissioning was 45 percent complete.

Activities in the LAB are focused on startup testing and system handovers. To date, all LAB systems have been turned over from BNI Construction¹⁵ to the Startup organization. In addition, 78 percent of the LAB systems have been handed over from the Startup organization to Plant Management. Procedure and methods development continues at the offsite laboratory facility, and BNI is preparing to move a limited amount of analytical equipment onsite to the LAB.

Significant Accomplishments during the Prior Month:

- BNI completed testing and balancing for the C2, C3, and C5 cascading ventilation system design.
- BNI completed startup testing and handover of the following systems to Plant Management:
 - LAB closed circuit television (PTJ-A-01)
 - LAB domestic water (DOW-A-02)
 - LAB C1 ventilation (C1V-A-01)
 - LAB chilled water (CHW-A-01)
 - LAB bottled nitrogen gas (BNG-A-01).
- BNI's Startup organization continued component and system startup testing for multiple LAB systems.
- BNI Plant Management continued operational testing and refurbishment of multiple LAB systems.
- BNI continued offsite activities to progress LAB procedure development and analytical method validation.

¹⁵ Bechtel National, Inc. Construction will direct transfer the communications electrical systems to Plant Management.

Significant Planned Activities in the Next Month:

- BNI expects to continue startup testing of LAB systems and handover of systems to operations when startup testing of systems is complete.

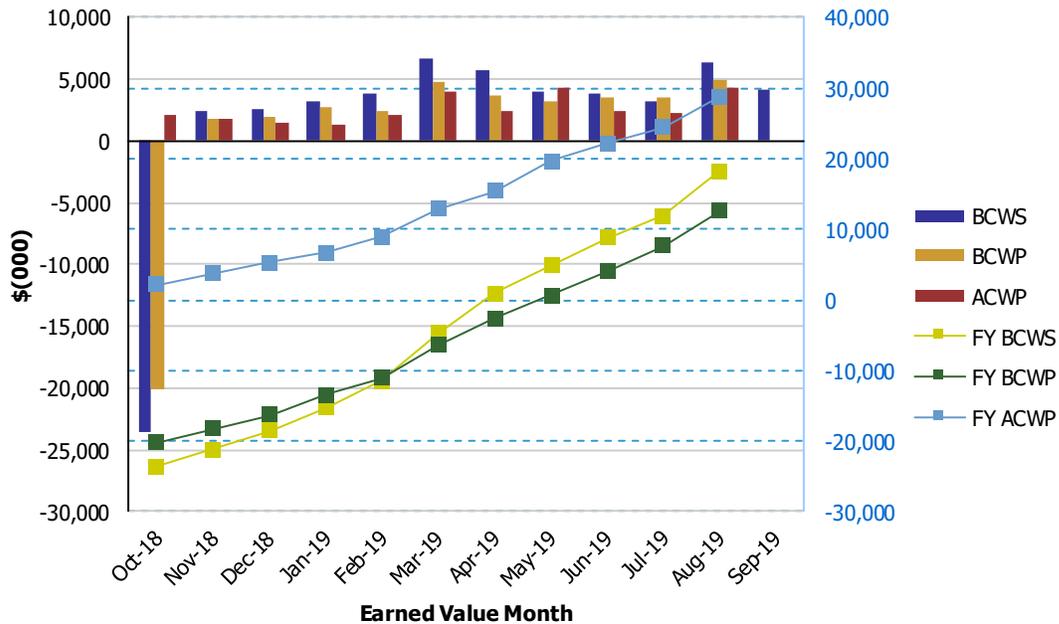
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: August 2019

**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 2018	(\$23,562)	(\$20,137)	\$2,098	0.85	-9.60	(\$23,562)	(\$20,137)	\$2,098	0.85	-9.60
Nov 2018	\$2,402	\$1,870	\$1,755	0.78	1.07	(\$21,161)	(\$18,268)	\$3,853	0.86	-4.74
Dec 2018	\$2,601	\$2,008	\$1,516	0.77	1.32	(\$18,560)	(\$16,260)	\$5,369	0.88	-3.03
Jan 2019	\$3,281	\$2,773	\$1,328	0.85	2.09	(\$15,279)	(\$13,486)	\$6,697	0.88	-2.01
Feb 2019	\$3,811	\$2,359	\$2,147	0.62	1.10	(\$11,468)	(\$11,128)	\$8,844	0.97	-1.26
Mar 2019	\$6,715	\$4,742	\$4,017	0.71	1.18	(\$4,752)	(\$6,386)	\$12,861	1.34	-0.50
Apr 2019	\$5,680	\$3,759	\$2,491	0.66	1.51	\$928	(\$2,627)	\$15,353	-2.83	-0.17
May 2019	\$3,936	\$3,253	\$4,282	0.83	0.76	\$4,863	\$627	\$19,635	0.13	0.03
Jun 2019	\$3,871	\$3,522	\$2,502	0.91	1.41	\$8,735	\$4,149	\$22,136	0.47	0.19
Jul 2019	\$3,179	\$3,459	\$2,341	1.09	1.48	\$11,913	\$7,608	\$24,477	0.64	0.31
Aug 2019	\$6,351	\$4,965	\$4,280	0.78	1.16	\$18,265	\$12,573	\$28,757	0.69	0.44
Sep 2019	\$4,116									

PTD	\$425,364	\$416,350	\$404,276	0.98	1.03
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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 August 2019

(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	2,294.0	1,809.1	79%	592.3	569.2	96%	342.9	336.6	98%	753.0	735.9	98%	594.7	163.1	27%	11.1	4.3	39%
Balance of Facilities	781.1	666.3	85%	157.1	150.4	96%	60.8	60.6	100%	304.4	281.1	92%	258.3	173.7	67%	0.5	0.5	100%
Analytical Lab	477.2	386.2	81%	95.5	91.7	96%	60.5	60.4	100%	166.0	164.8	99%	152.2	68.5	45%	3.0	0.7	24%
Direct Feed LAW	434.6	339.6	78%	111.2	105.0	94%	72.4	70.1	97%	241.4	157.8	65%	0.0	0.0	0%	9.6	6.7	70%
LBL Facility Services	746.9	476.0	64%	0.0	0.0	0%	71.3	54.5	76%	105.7	104.1	99%	314.6	162.5	52%	255.3	154.9	61%
Total LBL	4,733.9	3,677.2	78%	956.2	916.2	96%	607.9	582.3	96%	1,570.6	1,443.7	92%	1,319.8	567.9	43%	279.5	167.1	60%
Project Services	922.5	680.7	74%	91.8	86.7	94%	65.6	52.4	80%	101.0	89.9	89%	7.5	3.1	42%	656.6	448.6	68%
Total Project Services	922.5	680.7	74%	91.8	86.7	94%	65.6	52.4	80%	101.0	89.9	89%	7.5	3.1	42%	656.6	448.6	68%
Total LBL, DFLAW & Project Services																		
	5,656.4	4,357.9	77%	1,048.0	1,002.9	96%	673.4	634.7	94%	1,671.5	1,533.6	92%	1,327.3	571.0	43%	936.1	615.7	66%
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	14,379.2	10,323.1	72%	3,221.1	2,951.8	92%	2,238.9	1,759.5	79%	4,559.1	3,298.4	72%	2,085.8	714.2	34%	2,274.2	1,599.2	70%

Source: Preliminary WTP Contract Performance Report - Format 1, Data for August 2019

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 (zPSA), as shown on the CPR Format 1, is not added to LBL for percent complete purposes.