

Office of River Protection Consent Decree Monthly Report

Monthly Reporting Period December 1–December 31, 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 November 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
CV	cost variance
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)
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
PPR	Project Peer Review
PT	Pretreatment (Facility)
SV	schedule variance
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, and 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 lowering the remaining section of Tank A-101 R2 thermocouple to the tank bottom
- Completed A Tank Farm exhausters construction acceptance testing
- Completed Tank AX-103 long-length equipment removal

Ongoing Activities:

- Continue removal of long-length equipment at Tank AX-101
- Installation of A Tank Farm ventilation system:
 - Install control systems for the exhauster

- Remove cover blocks, clean pits, and thermocouple trees from risers (to connect the ventilation system)
- Continue installation of duct riser assemblies, air inlet stations, and testing
- Continue Tank AX-102 waste retrieval operations with sluicing and high pressure water (approximately 71 percent retrieved)
- Continue installation and testing of waste retrieval equipment in Tank AX-104
- Installation of electrical and support infrastructure at Tank AX-103.

Significant Planned Activities in the Next Month:

- Remove Tank A-103 03C saltwell screen
- Complete core drilling of Tank A-101 1C Pit stuck shield plug and install air inlet station
- Complete A Tank Farm ventilation system cold operational acceptance tests
- Install the AX-104 Pit B extended reach sluicer system and initiate testing
- Remove AX-101 Pit D Riser 24 pump
- Perform initial volume displacement measurement of Tank AX-102.

Issues:

- 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 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 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.
 - Removal of Tank A-103 R2 thermocouple required a duration of 209 days to complete. The lower section of the thermocouple was damaged and could not be removed. Unique tooling was required to lower the remaining section to the tank bottom.

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.

- Removal of Tank A-101 R2 thermocouple required the top sections to be removed in two sections and the remaining third section to be lowered to the tank bottom.
- Removal of Tank A-106 R2 thermocouple will require removal in sections, with the lower section left in the tank.
- A stuck shield plug in Tank A-101 01C Pit will require an alternative method (core drilling) to tie in the ventilation system.
- A stuck shield plug in Tank AX-102 02B Pit prevented the installation of the planned third extended reach sluicer.
- 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 standard cubic feet per minute. DOE will continue to assess 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 determination for the A and AX Tank Farms (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. ORP submitted a revised application on October 31, 2019 (19-ECD-0080), to provide supplemental information to address Ecology’s comments.

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:

- The AX-104 Tank Waste Retrieval Work Plan modification notice, 2019-02, was approved by Ecology on December 1, 2019.

Significant Planned Activities in the Next Month:

- None.

Issues:

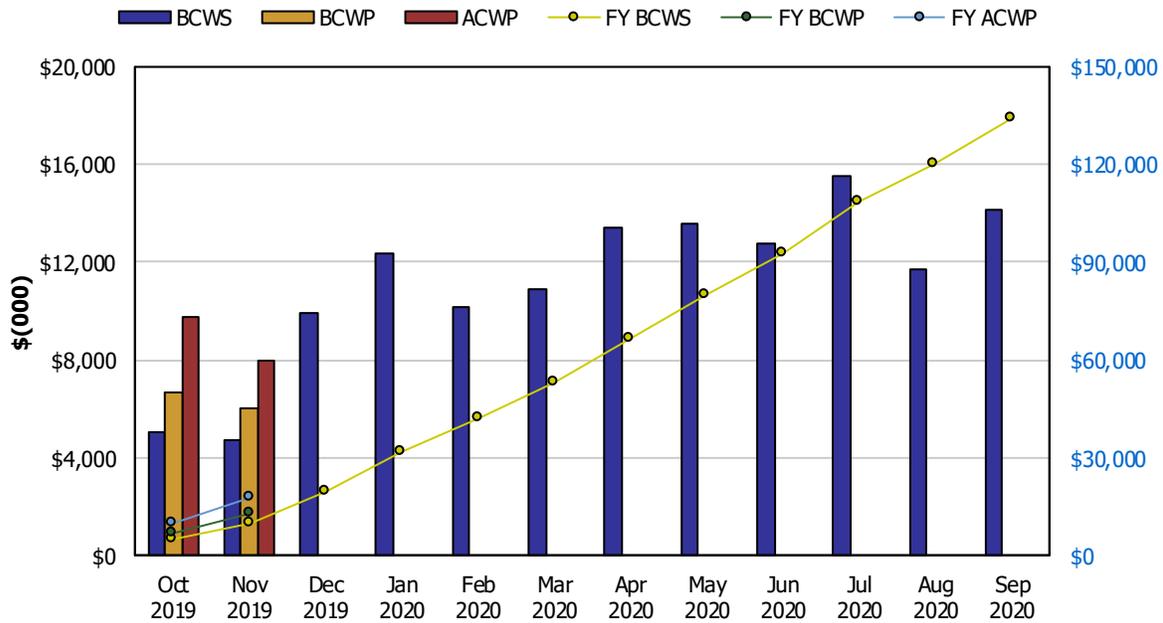
- None.

Earned Value Data: Fiscal Year 2020

November-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 2019	\$5,039	\$6,662	\$9,772	1.32	0.68	\$5,039	\$6,662	\$9,772	1.32	0.68
Nov 2019	\$4,722	\$6,050	\$7,940	1.28	0.76	\$9,761	\$12,712	\$17,711	1.30	0.72
Dec 2019	\$9,921			0.00	0.00	\$19,682			0.00	0.00
Jan 2020	\$12,359			0.00	0.00	\$32,041			0.00	0.00
Feb 2020	\$10,151			0.00	0.00	\$42,192			0.00	0.00
Mar 2020	\$10,855			0.00	0.00	\$53,047			0.00	0.00
Apr 2020	\$13,419			0.00	0.00	\$66,466			0.00	0.00
May 2020	\$13,592			0.00	0.00	\$80,057			0.00	0.00
Jun 2020	\$12,792			0.00	0.00	\$92,849			0.00	0.00
Jul 2020	\$15,495			0.00	0.00	\$108,344			0.00	0.00
Aug 2020	\$11,742			0.00	0.00	\$120,085			0.00	0.00
Sep 2020	\$14,127			0.00	0.00	\$134,212			0.00	0.00

CTD	\$1,094,023	\$1,074,053	\$1,136,494	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 November 2019 favorable schedule variance (SV) of \$1,328,100 was primarily due to:

- Schedule recovery from delays incurred in early 2019 related to the waste retrieval system installation, and the initial Tank AX-102 retrieval operations progressing faster than planned. Tank AX-102 retrieval operations continued with a limited extended reach sluicer system functionality to transfer tank waste.
- The favorable SV was partly offset by issues with the Tank AX-102 Purex connector waste leak. The issues with the Purex connector delayed the hose-in-hose transfer line connection at Tank AX-104 and installation of the freeze protection.

The November 2019 unfavorable cost variance (CV) of (\$1,889,500) was primarily due to:

- Rework activities on the A Tank Farm ventilation system and additional unplanned workscope. Rework activities included electrical tie-ins and breaker replacement, reinstalling the seal pot heat trace and reinsulating and replacing the pressure differential indicating transmitters in exhausters POR518/519. The initial design assumed that the exhauster controls would be wireless connections; however, software requirements led to installing fiber optic wires, which required the purchase of the fiber optic cable, controller Human Machine Interface, and steel plates to protect the wires.
- The unfavorable CV was partly offset by lower subcontractor and architectural and engineering costs due to prioritizing the architectural and engineering contractor to finalize the waste retrieval system design for A Tank Farm. Subcontractor labor costs were lower than estimated due to understaffing.
- Removal of existing degraded equipment requiring additional proof of concept mockups and tool development. Long-length equipment removals were difficult due to corroded and damaged condition (Tank A-101 and Tank A-103 thermocouples) and high radiation levels (Tank A-101 Riser 2 thermocouple). Additional shielding was required and unique tools for sectioning and lowering damaged sections to the tank bottom were required. These issues required unplanned mockups and training.

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 November 2019, DFLAW modifications for the WTP Project were 84 percent complete, engineering design was 96 percent complete, procurement was 98 percent complete, and construction was 75 percent complete. As of November 2019, total LBL facilities were 80 percent complete, engineering design was 97 percent complete, procurement was 97 percent complete, construction was 94 percent complete, and startup and commissioning was 48 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, *Program and Project Management for the Acquisition of Capital Assets*.

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.

ORP approved 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.

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

Pursuant to Section IV-C-3(b) of the Amended Consent Decree⁷, as requested by Ecology in a letter dated September 25, 2019, DOE staff met with Ecology on October 16, 2019, to answer questions Ecology had concerning the serious risk as well as to discuss mitigation options, cooperative solutions, and problem-solving opportunities.

The Office of Project Management conducted a Project Peer Review (PPR) of the WTP Project in late November 2019. The PPR focused on DFLAW programs and projects for delivering waste from tanks, pretreating the waste to remove radioactive cesium and solids, vitrifying the low-activity waste, treating effluent waste from the LAW Facility, and disposing of the treated

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.

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

effluent wastes. The PPR team also reviewed infrastructure projects needed to provide essential services to all facilities that will play a role in the DFLAW Program. The PPR team issued its final report to ORP in December 2019. ORP is in the process of reviewing the recommendations included in the final report.

Significant Accomplishments during the Prior Month:

- The AoA team held an onsite working session December 10 through 12, 2019. Topics included reviewing interim modeling results from various alternatives with unconstrained funding. An Ecology observer attended.
- The AoA team provided the DOE AoA Steering Committee Chair with updated alternative descriptions and corresponding flowsheets, along with interim modeling results from various alternatives with unconstrained funding and the associated threats and opportunities on December 16, 2019. The DOE AoA Steering Committee was briefed on the status of the various alternatives on January 15, 2020.
- ORP participated in Leadership Forum meetings with Ecology on December 6, 2019, and December 20, 2019, to discuss the tank waste mission and high-level waste treatment approaches.
- 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:

- The AoA team is planning an onsite working session January 14 through 16, 2020. Topics will include reviewing all primary modeling results, setting up the risk evaluation process, and reviewing the cost results from the modeling. An Ecology observer will be invited to participate in the onsite working session.
- ORP expects to continue the Leadership Forum meetings with Ecology and the U.S. Environmental Protection Agency to discuss the tank waste treatment mission and high-level waste treatment approaches.
- ORP expects to receive DOE Headquarters approval of 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.
- Other significant planned activities in the next month are noted in project reports for the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

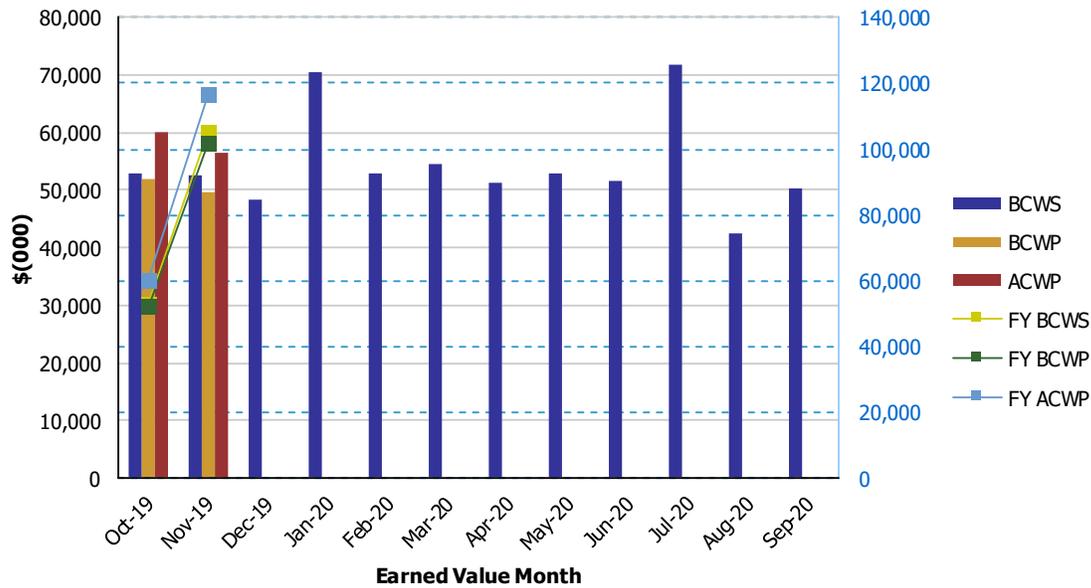
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2020 Earned Value Data

Data as of: November 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 2019	\$52,863	\$52,079	\$60,216	0.99	0.86	\$52,863	\$52,079	\$60,216	0.99	0.86
Nov 2019	\$52,457	\$49,780	\$56,387	0.95	0.88	\$105,320	\$101,859	\$116,603	0.97	0.87
Dec 2019	\$48,219									
Jan 2020	\$70,577									
Feb 2020	\$52,909									
Mar 2020	\$54,435									
Apr 2020	\$51,334									
May 2020	\$52,893									
Jun 2020	\$51,750									
Jul 2020	\$71,896									
Aug 2020	\$42,633									
Sep 2020	\$50,434									

PTD	\$11,983,548	\$11,879,920	\$11,866,334	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 (November 2019)	(\$2,677)	(\$6,607)
Fiscal Year 2020 to-date	(\$3,461)	(\$14,744)
Cumulative (through November 2019)	(\$103,628)	\$13,586

CV = cost variance.

SV = schedule variance.

For the November 2019 Earned Value Management System reporting period, a net unfavorable SV of approximately (\$2.7) million was reported, primarily due to the following:

- LAW Facility Plant Management reported an unfavorable SV due to delays in receipt of procurements and resequencing of engineering procurement deliverables. In addition, a change in execution strategy resulted in delays in training and documented safety analysis implementation.
- LAW Facility Startup reported an unfavorable SV due to system turnover delays affecting testing. The most notable examples include the LAW container finishing handling, plant cooling water, and primary offgas process systems.

For the November 2019 Earned Value Management System reporting period, a net unfavorable CV of approximately (\$6.6) million was reported, primarily due to the following:

- DFLAW / Effluent Management Facility (EMF) Construction continues to report an unfavorable CV due to overtime/weekend work to support construction completion, relocating temporary power lines above radioactive waste transfer lines, and material purchases for concrete/controlled density fill for waste transfer line backfill.
- LBL Facility Services reported an unfavorable CV due to increased craft labor overtime support and training.

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 Decrees⁸.

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 in 2005). ORP notified BNI in July 2019 that it concurred with BNI's determination that the PT Facility's technical issues have been resolved.⁹

⁸ *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016) (ECF-221).

⁹ 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.

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.

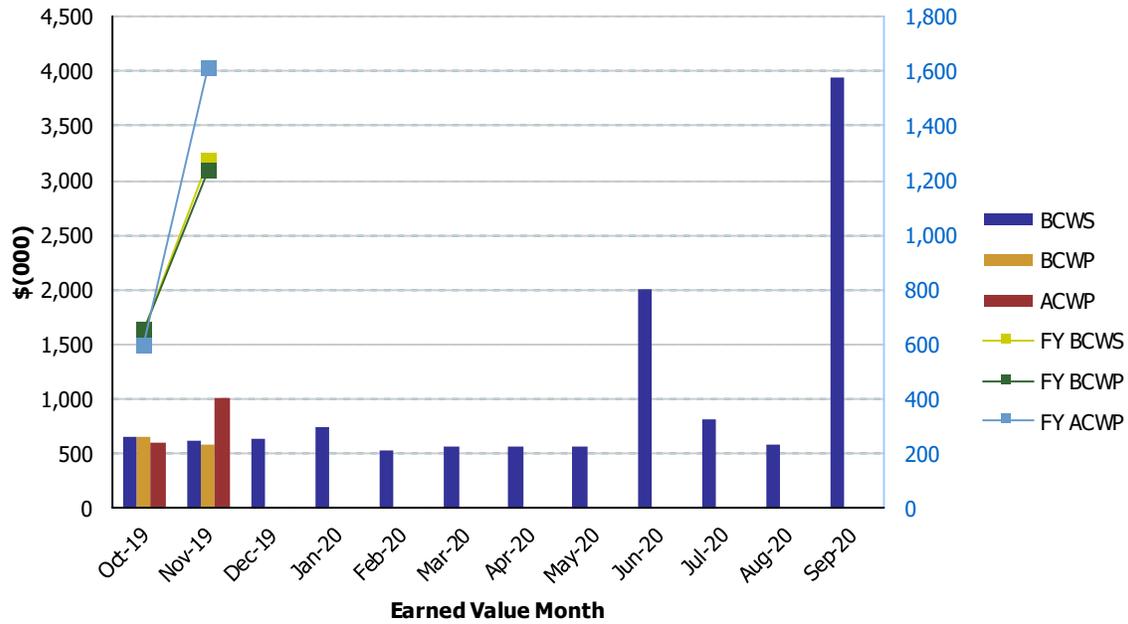
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2020 Earned Value Data

Data as of: November 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 2019	\$647	\$651	\$597	1.01	1.09	\$647	\$651	\$597	1.01	1.09
Nov 2019	\$622	\$584	\$1,015	0.94	0.58	\$1,270	\$1,235	\$1,612	0.97	0.77
Dec 2019	\$640									
Jan 2020	\$748									
Feb 2020	\$536									
Mar 2020	\$561									
Apr 2020	\$566									
May 2020	\$566									
Jun 2020	\$1,998									
Jul 2020	\$817									
Aug 2020	\$575									
Sep 2020	\$3,937									

PTD	\$3,514,350	\$3,512,375	\$3,449,517	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.

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 completed a 60-percent design review of the HLW Facility melter feed process system.
- 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.
- Fabrication is complete for radioactive liquid waste disposal system vessels 7 and 8 (i.e., RLD-7 and RLD-8). The vendor is finishing quality verification documents; delivery of the vessels to BNI is now expected to be completed in early calendar year 2020. 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.

Significant Planned Activities in the Next Month:

- 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 is expected to issue the 60-percent design review report for the HLW Facility melter feed process system.
- BNI will continue to manage suspended plant equipment purchase orders to reduce storage and suspension costs and evaluate ways to reduce project procurement liability.
- BNI will continue to implement ongoing asset maintenance at the HLW Facility to protect equipment and structures and ensure design documents are maintained.

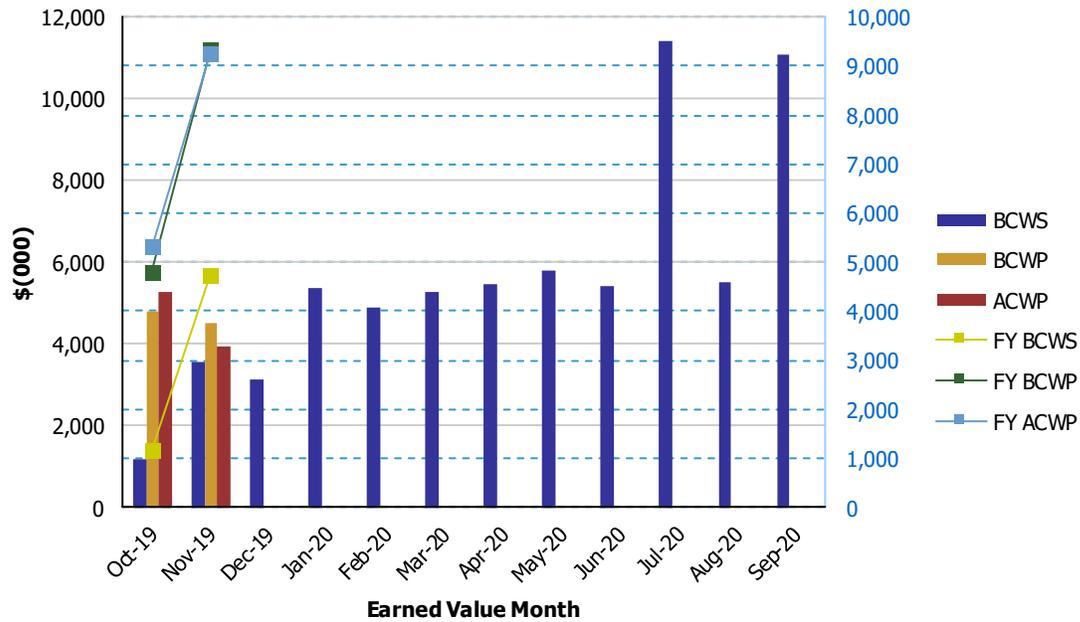
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2020 Earned Value Data

Data as of: November 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 2019	\$1,158	\$4,792	\$5,293	4.14	0.91	\$1,158	\$4,792	\$5,293	4.14	0.91
Nov 2019	\$3,569	\$4,519	\$3,943	1.27	1.15	\$4,727	\$9,311	\$9,236	1.97	1.01
Dec 2019	\$3,124									
Jan 2020	\$5,387									
Feb 2020	\$4,872									
Mar 2020	\$5,285									
Apr 2020	\$5,462									
May 2020	\$5,778									
Jun 2020	\$5,427									
Jul 2020	\$11,396									
Aug 2020	\$5,525									
Sep 2020	\$11,062									

PTD	\$2,508,477	\$2,507,733	\$2,457,037	1.00	1.02
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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. |

Low-Activity Waste Facility¹⁰

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 November 2019, the LAW Facility was 81 percent complete overall, engineering design was 97 percent complete, procurement was 100 percent complete, construction was 98 percent complete, and startup and commissioning was 32 percent complete.

Recent BNI efforts at the LAW Facility have focused on implementing 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 for testing and subsequent handover to the Plant Management organization for facility commissioning.

To date, 91 percent of LAW Facility systems have been turned over from Construction¹¹ to the Startup organization. In addition, Plant Management has accepted handover of 38 percent of the LAW Facility systems from the Startup organization.

¹⁰ 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.

¹¹ Bechtel National, Inc. Construction will direct transfer the communications electrical systems to Plant Management.

Significant Accomplishments during the Prior Month:

- BNI Construction completed turnover of the following LAW Facility systems to the Startup organization:
 - Melter process system (LMP-L-03)
 - Process control system (PCJ-L-03)
 - Vessel vent system (LVP-L-01)
 - Sodium hydroxide reagent system (SHR-L-01)
 - High-pressure steam system (HPS-L-02).
- BNI's Startup organization completed handover of the following LAW Facility demineralized water master system to Plant Management:
 - Chilled water system (CHW-L-02).

Significant Planned Activities in the Next Month:

- 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.

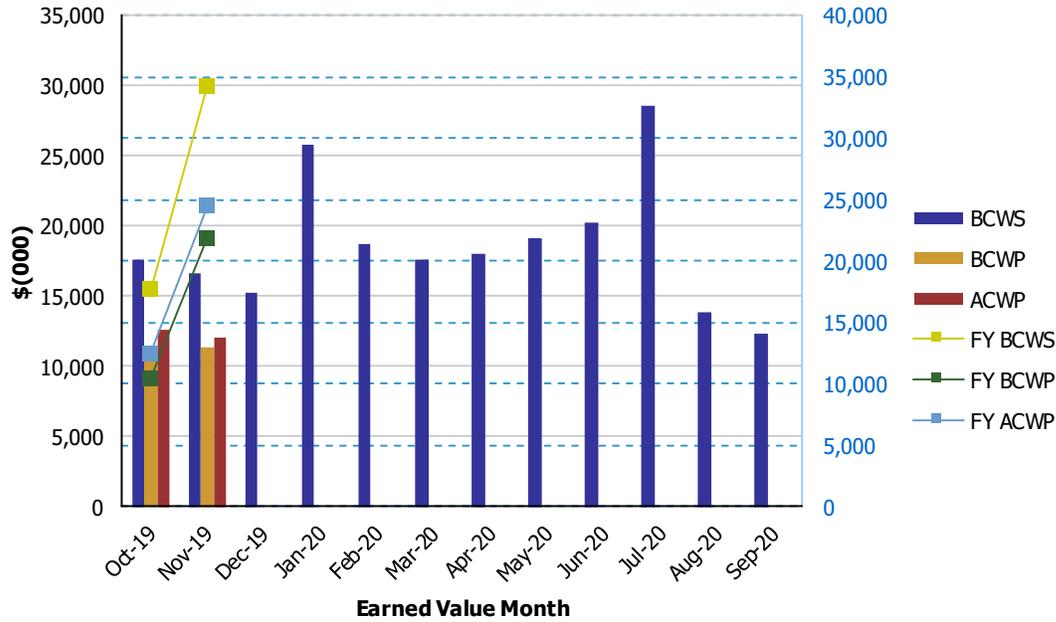
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2020 Earned Value Data

Data as of: November 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 2019	\$17,656	\$10,507	\$12,532	0.60	0.84	\$17,656	\$10,507	\$12,532	0.60	0.84
Nov 2019	\$16,594	\$11,356	\$11,977	0.68	0.95	\$34,250	\$21,863	\$24,509	0.64	0.89
Dec 2019	\$15,259									
Jan 2020	\$25,785									
Feb 2020	\$18,684									
Mar 2020	\$17,619									
Apr 2020	\$17,994									
May 2020	\$19,138									
Jun 2020	\$20,297									
Jul 2020	\$28,576									
Aug 2020	\$13,877									
Sep 2020	\$12,309									

PTD	\$2,318,916	\$2,263,679	\$2,267,542	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 November 2019, BOF was 87 percent complete overall, engineering design was 97 percent complete, procurement was 100 percent complete, construction was 93 percent complete, and startup and commissioning was 71 percent complete. Design of the EMF was 100 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 siding, piping, and electrical commodities. Startup testing continues for systems in the steam plant and the standby diesel generator.

All BOF utility and process systems, excluding EMF, have been turned over from Construction¹² to the Startup organization. In addition, 91 percent of the BOF systems have been handed over from the Startup organization to Plant Management. BNI is working to complete construction activities and turn over the scoped systems in EMF to support early startup testing activities.

Significant Accomplishments during the Prior Month:

- BNI's Startup organization completed handover of the following BOF systems to Plant Management:
 - Cooling tower facility systems (PCW-B-01, PCW-B-02, and PCW-B-03).
 - Chiller compressor plant chilled water system (CHW-B-01).
- BNI completed load testing for the standby diesel generator.
- BNI continued installation of siding, piping, and electrical commodities at EMF.
- BNI continued to pull the cables between the powerhouse and EMF.
- BNI continued excavating around EMF for installation of transfer piping.

Significant Planned Activities in the Next Month:

- BNI Construction will continue installation of process piping, electrical commodities, roofing, and siding for EMF.

¹² 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 is expected to complete the glass former system dry runs.
- BNI's Startup and Plant Management organizations will continue to focus on ensuring BOF air, water, and power systems are ready for operations.

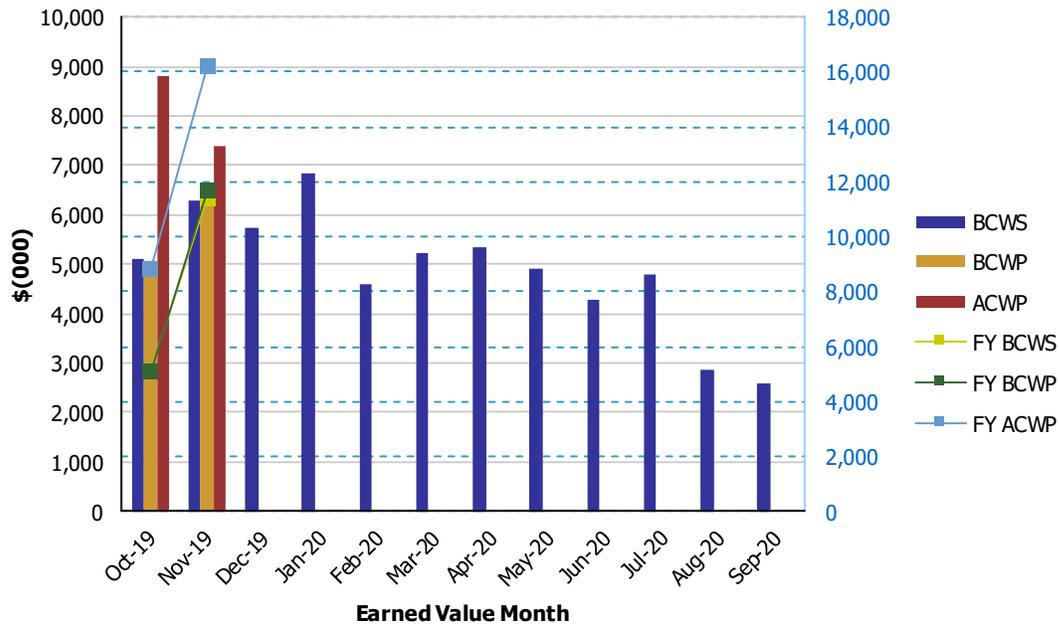
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2020 Earned Value Data

Data as of: November 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 2019	\$5,103	\$5,056	\$8,817	0.99	0.57	\$5,103	\$5,056	\$8,817	0.99	0.57
Nov 2019	\$6,296	\$6,582	\$7,383	1.05	0.89	\$11,399	\$11,638	\$16,200	1.02	0.72
Dec 2019	\$5,729									
Jan 2020	\$6,829									
Feb 2020	\$4,597									
Mar 2020	\$5,207									
Apr 2020	\$5,337									
May 2020	\$4,917									
Jun 2020	\$4,270									
Jul 2020	\$4,801									
Aug 2020	\$2,857									
Sep 2020	\$2,578									

PTD	\$926,388	\$914,571	\$952,713	0.99	0.96
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- ACWP = actual cost of work performed.
- BCWP = budgeted cost of work performed.
- BCWS = budgeted cost of work scheduled.
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- FY = fiscal year.
- PTD = project to date.
- 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 November 2019, the LAB was 83 percent complete overall, engineering design was 97 percent complete, procurement was 100 percent complete, construction was 99 percent complete, and startup and commissioning was 52 percent complete.

Activities in the LAB were focused on the completion of startup testing and handover of the remaining systems to Plant Management. To date, all of the LAB systems have been handed over from the Startup organization to Plant Management¹³. Procedure and methods development continues at the offsite laboratory facility, and BNI continues to install and tune analytical equipment in the LAB.

Significant Accomplishments during the Prior Month:

- BNI continued installation of analytical equipment and tuning of equipment enclosure ventilation systems.
- BNI's Startup organization completed handover of the following LAB system to Plant Management.
 - Stack discharge monitoring system (SDJ-A-01)
 - C2 ventilation (C2V) system (C2V-A-01)
 - C3V system (C3V-A-01)
 - C5V system (C5V-A-01)
 - Radiological liquid waste disposal system (RLD-A-01).
- BNI's Startup organization continued component and system startup testing for the remaining 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.

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

Significant Planned Activities in the Next Month:

- BNI's Startup organization expects to complete startup testing and handover of the remaining LAB systems to Plant Management.

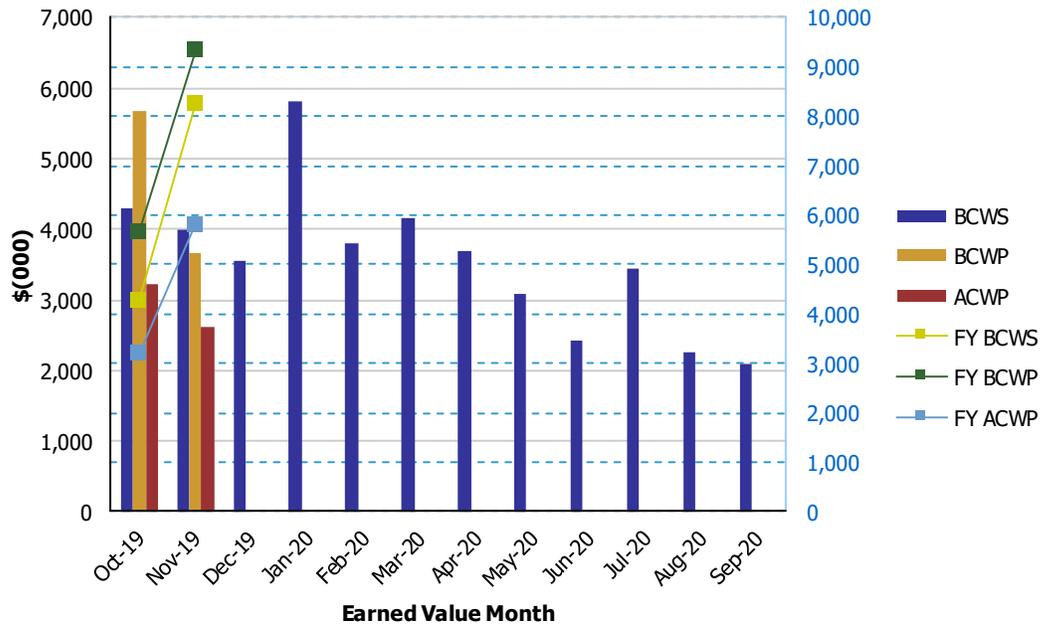
EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2020 Earned Value Data

Data as of: November 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 2019	\$4,297	\$5,683	\$3,222	1.32	1.76	\$4,297	\$5,683	\$3,222	1.32	1.76
Nov 2019	\$3,984	\$3,669	\$2,604	0.92	1.41	\$8,281	\$9,352	\$5,826	1.13	1.61
Dec 2019	\$3,549									
Jan 2020	\$5,821									
Feb 2020	\$3,805									
Mar 2020	\$4,157									
Apr 2020	\$3,702									
May 2020	\$3,072									
Jun 2020	\$2,417									
Jul 2020	\$3,453									
Aug 2020	\$2,263									
Sep 2020	\$2,078									

PTD	\$452,133	\$444,765	\$429,268	0.98	1.04
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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. |

Waste Treatment Plant Project Percent Complete Status (Table)

Waste Treatment Plant Project - (LBL/Project Services) Percent Complete Status
Through November 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	2,286.4	1,847.8	81%	589.9	572.5	97%	342.9	341.7	100%	753.0	740.7	98%	589.6	188.4	32%	11.1	4.5	40%
Balance of Facilities	785.9	683.2	87%	156.7	151.3	97%	60.8	60.8	100%	304.9	283.8	93%	263.0	186.8	71%	0.5	0.5	100%
Analytical Lab	482.1	400.3	83%	94.7	92.2	97%	60.5	60.4	100%	166.1	165.2	99%	157.9	81.7	52%	2.9	0.8	27%
Direct Feed LAW	432.7	363.4	84%	110.7	106.7	96%	72.4	70.9	98%	240.0	178.8	75%	0.0	0.0	0%	9.6	7.0	73%
LBL Facility Services	742.5	505.4	68%	0.0	0.0	0%	71.1	56.9	80%	106.1	104.5	99%	309.1	178.0	58%	256.2	165.9	65%
Total LBL	4,729.6	3,800.0	80%	952.0	922.7	97%	607.6	590.8	97%	1,570.0	1,473.0	94%	1,319.6	634.9	48%	280.4	178.7	64%
Project Services	909.0	702.5	77%	92.5	87.9	95%	65.6	53.4	82%	101.0	90.8	90%	7.5	3.6	49%	642.4	466.8	73%
Total Project Services	909.0	702.5	77%	92.5	87.9	95%	65.6	53.4	82%	101.0	90.8	90%	7.5	3.6	49%	642.4	466.8	73%
Total LBL, DFLAW & Project Services	5,638.6	4,502.5	80%	1,044.5	1,010.5	97%	673.2	644.2	96%	1,671.0	1,563.8	94%	1,327.1	638.5	48%	922.8	645.5	70%
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	14,361.4	10,467.7	73%	3,217.6	2,959.4	92%	2,238.7	1,769.0	79%	4,558.6	3,328.6	73%	2,085.6	781.7	37%	2,260.9	1,629.0	72%

Source: Preliminary WTP Contract Performance Report - Format 1, Data for November 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 PTHLW/SS Interim Work Plan was incorporated into the project OTB baseline resulting in decreases to the PTHLW/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 PTHLW/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.

Table 1 Administrative Record Metadata

Milestone Number or Facility Identification	Title
D-00A-07	LAW Facility Construction Substantially Complete
D-00A-08	Start LAW Facility Cold Commissioning
D-00A-09	LAW Facility Hot Commissioning Complete
D-00B-01D	C-105 Submit Retrieval Completion Certification
D-00B-00-01	Submit Revised TWRWP Prior to Initiating Installation of Equipment
D-00B-00-02	Submit TWRWP to Ecology
D-00C-02DG	Submit to Ecology & State of Oregon Monthly Summary Report
D-16B-03	Of the 12 SSTs Referred to in B-1 and B-2, Complete Retrieval of Tank Wastes in at Least 5
H-0-8	Waste Treatment and Immobilization Plant (WTP)
S-2-3	Double-Shell Tank System (DST) & 204-AR Waste Unloading Station
S-2-4	Single-Shell Tank System (SST)

LAW = Low-Activity Waste (Facility).

TWRWP = tank waste retrieval work plan.