

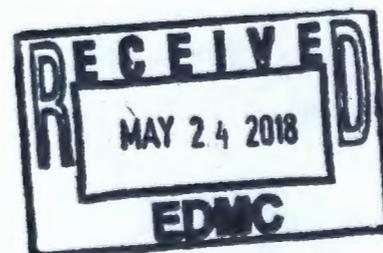
FINAL

Office of River Protection  
Consent Decree  
Monthly Report  
May<sup>1</sup> 2018

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

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

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



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<sup>1</sup> Except where otherwise expressly stated, the narrative descriptions of progress in this report cover the period through April 30, 2018. Earned Value Management System data and descriptions cover the period through March 31, 2018; this includes the facility completion percentage estimates included at various locations in the Waste Treatment and Immobilization Plant section.

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

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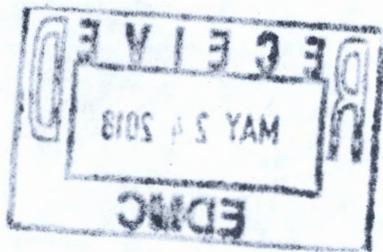
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## Acronyms and Abbreviations

BNI	Bechtel National, Inc.
BOF	Balance of Facilities
CV	cost variance
DFLAW	direct-feed low-activity waste
DOE	U.S. Department of Energy
DSA	documented safety analysis
Ecology	Washington State Department of Ecology
EMF	Effluent Management Facility
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
LLE	long-length equipment
ORP	U.S. Department of Energy, Office of River Protection
PT	Pretreatment (Facility)
SCBA	self-contained breathing apparatus
SV	schedule variance
USACE	U.S. Army Corps of Engineers
WTP	Waste Treatment and Immobilization Plant

**Consent Decree Milestone Statistics/Status**

<b>Milestone</b>	<b>Title</b>	<b>Due Date</b>	<b>Completion Date</b>	<b>Status</b>
<b>Fiscal Year 2021</b>				
D-00A-07 Interim	LAW Facility Construction Substantially Complete	12/31/2020		On Schedule
D-16B-03	Of the 12 SSTs referred to in B-1 and B-2, complete retrieval of tank waste in at least 5	12/31/2020		Notice given that a serious risk has arisen. See letter 16-ORP-0097 <sup>1</sup> .
<b>Fiscal Year 2023</b>				
D-00A-08 Interim	Start LAW Facility Cold Commissioning	12/31/2022		On Schedule
<b>Fiscal Year 2024</b>				
D-00A-09 Interim	LAW Facility Hot Commissioning Complete	12/31/2023		On Schedule
D-16B-01	Complete Retrieval of Tank Waste from the following remaining SSTs in WMA-C: C-102, C-105, and C-111	03/31/2024		On Schedule
D-16B-02	Complete retrieval of tank wastes from the following SSTs in Tank Farms A and AX: A-101, A-102, A-104, A-105, A-106. AX-101, AX-102, AX-103, and AX-104. Subject to the requirements of Section IV-B-3 DOE may substitute any of the identified 9 SSTs and advise Ecology accordingly	03/31/2024		Notice given that a serious risk has arisen. See letter 16-ORP-0097 <sup>1</sup> .
<b>Fiscal Year 2031</b>				
D-00A-02 Interim	HLW Facility Construction Substantially Complete	12/31/2030		Under Analysis <sup>2</sup>
<b>Fiscal Year 2032</b>				
D-00A-13 Interim	Complete Installation of Pretreatment Feed Separation Vessels FEP-SEP-O0001A/1B	12/31/2031		On Schedule

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

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

<sup>2</sup> As discussed in the PT Facility and HLW Facility sections, DOE asked the U.S. Army Corps of Engineers (USACE) to perform an initial parametric analysis of certain options and funding scenarios to evaluate the likelihood of achieving PT- and HLW-related milestones. DOE is considering milestones A-1 and A-17 as being "Under Analysis" because the definition of Section IV-A-2 states, "'Hot Start of Waste Treatment Plant' means the initiation of simultaneous operation of the Pretreatment (PT) Facility, High-Level Waste (HLW) Facility and Low-Activity Waste (LAW) Facility (including as needed the operations of the Analytical Laboratory (LAB) and the Balance of Facilities) treating Hanford tank wastes and producing a waste glass product." Hence, if one of the five facilities is "Under Analysis," DOE is conservatively considering the WTP milestone as "Under Analysis."

DOE = U.S. Department of Energy.  
 DFLAW = direct-feed low-activity waste.  
 Ecology = Washington State Department of Ecology.  
 HLW = high-level waste.  
 LAW = low-activity waste.

PT = pretreatment.  
 SST = single-shell tank.  
 WMA-C = C Tank Farm waste management area.  
 WTP = Waste Treatment and Immobilization Plant.

## **Consent Decree Reports/Reviews**

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

Due: 45 days following after each calendar year quarter (due May 15, 2018).

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.

## Spare Reboiler Requirement Status

**Tank Farms Assistant Manager:** Glyn Trenchard

**Federal Program Manager:** Paul Hernandez

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

<sup>1</sup> The Consent Decrees referred to the 242-A reboiler as "A-E-1"; the correct designation is "E-A-1."

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

- Washington River Protection Solutions LLC awarded a not-to-exceed design/build contract to ABW Technologies in the amount of \$461,000 for fabrication of a spare reboiler, with delivery prior to December 31, 2018. Total estimate at completion is \$776,000.
- Fabrication of the spare 242-A Evaporator reboiler is complete. The reboiler shell, tubes and tube sheet have been successfully hydro tested. ABW Technologies is currently completing the final document package required for delivery. Washington River Protection Solutions LLC remains on schedule to have a spare E-A-1 reboiler available for the 242-A Evaporator by December 31, 2018, as required by the Second Amended Consent Decree.

## Single-Shell Tank Retrieval Program

**Tank Farms Assistant Manager:** Glyn Trenchard

**Federal Program Manager:** Jeff Rambo

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

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

DOE = U.S. Department of Energy.  
 Ecology = Washington State Department of Ecology.  
 SST = single-shell tank.  
 WMA-C = C Tank Farm waste management area.

### Significant Accomplishments during the Prior Month:

#### Completed Accomplishments:

- Grouted and shipped the removed long-length equipment (LLE) from AX Tank Farm for disposal.
  - AX02 Pit D R1C saltwell screen.
  - AX04 Pit A R5A sluicer.
- Initiated procurement of replacement self-contained breathing apparatus assemblies (SCBA).
- Completed the Tank C-105 post-retrieval sampling for the retrieval data report.

- Completed excavations for the pad installations for A Tank Farm exhausters (POR518.519).
- Completed two of four Tank C-105 well No. 30 post-retrieval gamma scans.
- AX Tank Farm control trailers were delivered and installed on the foundations.
- The A Tank Farm exhausters (POR518/POR519) were delivered to the site from the vender.

Ongoing Activities:

- Continue installation of the caustic and water system piping and conduit from A-285 Building to the AX Tank Farm
- Continue installation of the electrical infrastructure inside AX Tank Farm to support waste retrieval activities
- Continue fieldwork (reinforcing steel, concrete formwork, and placement) for the installation of the pads for A Tank Farm exhausters (POR518/519)
- Continue installation activities (e.g., electrical power; heating, ventilation, and air-conditioning; anchoring and skirting; underground conduit) for AX Tank Farm control trailers
- Continue to disconnect and remove hose-in-hose transfer lines in C Tank Farm and AN Tank Farm
- Continue AX-101 Pit cleanout of AX01D, AX01C, and AX01A (as resources allow)
- Continue the isolation of ventilation ducts at A Tank Farm.

**Significant Planned Activities in the Next Month:**

- Remove LLE from Tank AX-102 and Tank AX-104:
  - AX04 Pit B-R14 pump
  - AX02 Pit C-R1A P200 pump
  - AX04 Pit A-R5B pump
- Initiate Tank AX-103 Pit 03A cleanout
- Complete the isolation of one of six ventilation ducts at A Tank Farm
- Complete installation of caustic and water piping system and conduit from A-285 Building to A Tank Farm fence
- Complete the remaining 2 Tank C-105 well No. 30 post-retrieval gamma scans
- Complete Tank C-105 Retrieval Completion Certification report
- Drain and dispose of 23 retrieval hydraulic power units (C Tank Farm layout)

- Disconnect power from raw water skids (C Tank Farm layup)
- Disconnect 27 tank electrical skids (C Tank Farm layup).

**Issues:**

- Reduced worker efficiencies associated with mandatory use of supplied air continues to impact work in the tank farms.
- Replacement of older SCBA assemblies is underway, but due to limited vendor inventory, there are shortages of replacement assemblies. Impacts to tank farm work are occurring due to the shortages of assemblies.
- Efforts to remove LLE from Tank AX-102 and Tank AX-104 have been impacted by equipment conditions not matching existing design media. This requires additional field investigation and analysis by engineering to ensure the LLE is safe to remove from the tank. Efforts to remove the stuck thermocouple (AX-102 R7A) were terminated, an alternate riser will be used for a camera installation.
- Weather delays (winds) have been impacting the removal of LLE.

## Tank Waste Retrieval Work Plan Status

*Tank Farms Assistant Manager:* Glyn Trenchard

*Federal Program Manager:* Jeff Rambo

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

ERSS = extended reach sluicer system.

MARS-V = Mobile Arm Retrieval System-Vacuum.

TWRWP = tank waste retrieval work plan.

### Significant Accomplishments during the Prior Month:

- None.

### Significant Planned Activities in the Next Month:

- None.

### Issues:

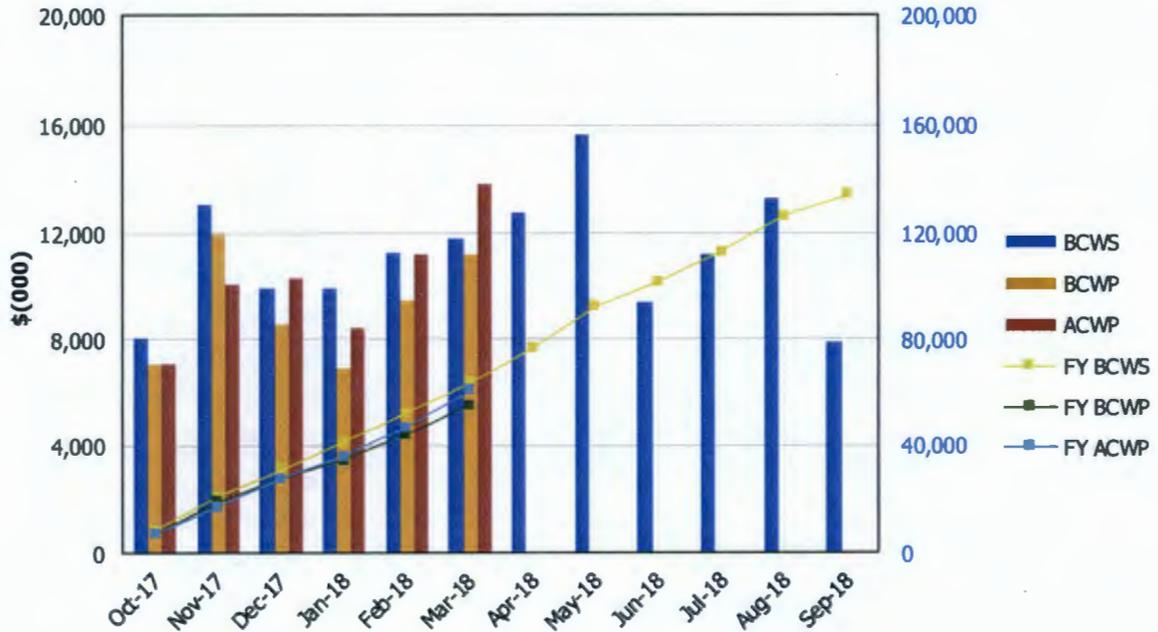
- None.

Earned Value Data: Fiscal Year 2018

March-18

**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 2017	\$8,053	\$7,119	\$7,127	0.88	1.00	\$8,053	\$7,119	\$7,127	0.88	1.00
Nov 2017	\$13,058	\$11,996	\$10,119	0.92	1.19	\$21,111	\$19,115	\$17,246	0.91	1.11
Dec 2017	\$9,964	\$8,572	\$10,318	0.86	0.83	\$31,075	\$27,686	\$27,563	0.89	1.00
Jan 2018	\$9,940	\$6,911	\$8,464	0.70	0.82	\$41,015	\$34,597	\$36,027	0.84	0.96
Feb 2018	\$11,310	\$9,456	\$11,225	0.84	0.84	\$52,326	\$44,053	\$47,252	0.84	0.93
Mar 2018	\$11,787	\$11,248	\$13,799	0.95	0.82	\$64,113	\$55,301	\$61,051	0.86	0.91
Apr 2018	\$12,802					\$76,915				
May 2018	\$15,627					\$92,542				
Jun 2018	\$9,436					\$101,979				
Jul 2018	\$11,221					\$113,199				
Aug 2018	\$13,290					\$126,489				
Sep 2018	\$7,924					\$134,413				
<b>CTD</b>	<b>\$867,684</b>	<b>\$859,964</b>	<b>\$899,603</b>	<b>0.99</b>	<b>0.96</b>					

- 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)<sup>3</sup>**

The March 2018 **unfavorable** schedule variance (SV) of (\$539,000) was due to:

- The lack of enough sample crews available due to other priorities (e.g., Tank AZ-102 and Tank AY-101 sampling) delayed Tank C-105 sampling and analysis.
- Relocation of the exhausters required rerouting of the existing A Tank Farm access road. Changing the existing road was unscheduled rework and also impacted the work schedule for the A Tank Farm ventilation duct isolation.
- Changes in the contracting strategy for the construction subcontracts in the A Tank Farm delayed contract award and impacted scheduled fieldwork.

The March 2018 **unfavorable** cost variance (CV) of (\$2,551,000) was due to:

- Vapor and beryllium controls, which require specific personal protective equipment (e.g., SCBA and gloves), and additional monitoring, sampling, and work package development, continue to impact the efficiency of personnel working in the tank farms.
- Excavation costs continued to increase for the north area of the SX Tank Farm interim barrier because much of the area must be excavated by hand, by personnel wearing SCBA. Minimal machine excavation is allowed due to unknown ground interferences inside SX Tank Farm. Discovery of old utility lines required additional engineering evaluation to determine the condition of the lines and requirements for cutting and capping the lines.
- Increased cost for retrieval operations training and qualifications due to additional health physics technicians, industrial health technicians, and construction crews hired to support acceleration of Tank AX-102 and Tank AX-104 waste retrieval.
- Degradation of the existing pump in Tank AX-104 Pit 04B Riser 14 necessitated additional field preparation activities, including videos of current pump status, and engineering evaluation of lifting techniques to provide a path forward for safe removal.
- A flange on the existing pump in Tank AX-102 Pit 02C Riser 1A is smaller than shown on design drawings and required additional engineering evaluation to determine how best to modify the interface between the pump flange and a spray ring used during removal of the pump.

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<sup>3</sup> “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:** Joni Grindstaff

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

<sup>1</sup> As discussed in this report, DOE asked the U.S. Army Corps of Engineers to perform an initial parametric evaluation of certain options and funding scenarios to evaluate the likelihood of achieving PT- and HLW-related milestones. DOE is considering milestones A-1 and A-17 as being "Under Analysis" because the definition of Section IV-A-2: "Hot Start of Waste Treatment Plant" means the initiation of simultaneous operation of the Pretreatment (PT) Facility, High-Level Waste (HLW) Facility and Low-Activity Waste (LAW) Facility (including as needed the operations of the Analytical Laboratory (LAB) and the Balance of Facilities) treating Hanford tank wastes and producing a waste glass product." Hence, if one of the five facilities is "Under Analysis," DOE is conservatively considering the WTP milestone as "Under Analysis."

DOE = U.S. Department of Energy.

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 LAW [DFLAW] and LBL facility services).

As of March 2018, DFLAW modifications for the WTP Project were 41 percent complete, engineering design was 79 percent complete, procurement was 28 percent complete, and construction was 27 percent complete. As of March 2018, total LBL facilities were 64 percent complete, engineering design was 89 percent complete, procurement was 74 percent complete, construction was 80 percent complete, and startup and commissioning was 28 percent complete.

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

**Significant Accomplishments during the Prior Month**

- In accordance with the additional funding received for the HLW Facility in the *Consolidated Appropriations Act, 2018*<sup>4</sup>, enacted on March 23, 2018, the U.S. Department of Energy (DOE), Office of River Protection (ORP) and Bechtel National, Inc. (BNI) began the process to determine which additional activities could be initiated at the High-Level Waste (HLW) Facility in fiscal year (FY) 2018. ORP continued discussions with DOE's Office of Environmental Management about the direction to provide BNI regarding engineering, procurement, and construction activities for the HLW Facility.
- Other significant accomplishments during the prior month are noted in project reports for the Pretreatment (PT) Facility, HLW Facility, LAW Facility, BOF, and LAB.

**Significant Planned Activities for the Next Month**

- In accordance with the additional funding received for the HLW Facility in the *Consolidated Appropriations Act, 2018*, enacted on March 23, 2018, ORP and BNI will continue to evaluate which additional activities could be initiated at the HLW Facility in FY 2018. ORP will continue discussions with DOE's Office of Environmental Management about the direction to provide BNI regarding engineering, procurement, and construction activities for the HLW Facility.
- Other significant planned activities in the next month, are noted in project reports for the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

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<sup>4</sup> The "Explanatory Statement" accompanying the *Consolidated Appropriations Act, 2018*, contained the following provision:

*Office of River Protection.* – The agreement includes funding above the budget request to resume design and engineering work on the High-Level Waste Treatment Facility, to resolve the five remaining technical issues on the Pretreatment facility, to ensure compliance with 2016 Consent Decree and Tri-Party Agreement milestones, ... Not less than 90 days prior to the implementation of any changes to the current program of record for ... the Waste Treatment Plant, the Department shall submit to the Committee on Appropriations of both Houses of Congress a report that includes the technical justification and business case, any impact of such changes on the 2016 Consent Decree and Tri-Party Agreement, any necessary regulatory or permit changes by Washington or any other state, any necessary National Environmental Policy Act analysis, and any impact of such changes on site infrastructure.

Explanatory Statement at 47.

**Project Performance Review**

Nearly all of the Project Performance Review actions discussed in previous reports have been completed and implemented, or are in the process of implementation. The only actions pending an ORP decision are listed below:

- BNI and ORP continue to develop a strategy to complete an operational readiness review prior to the start of cold commissioning. Discussions to finalize the operational readiness review strategy are ongoing, with an ORP decision expected in the late May/June 2018 timeframe.
- BNI is expected to streamline WTP baseline change management processes (i.e., frequency and efficiency) to achieve baseline execution objectives. Discussions between ORP and BNI about how to streamline the baseline change management process are ongoing.

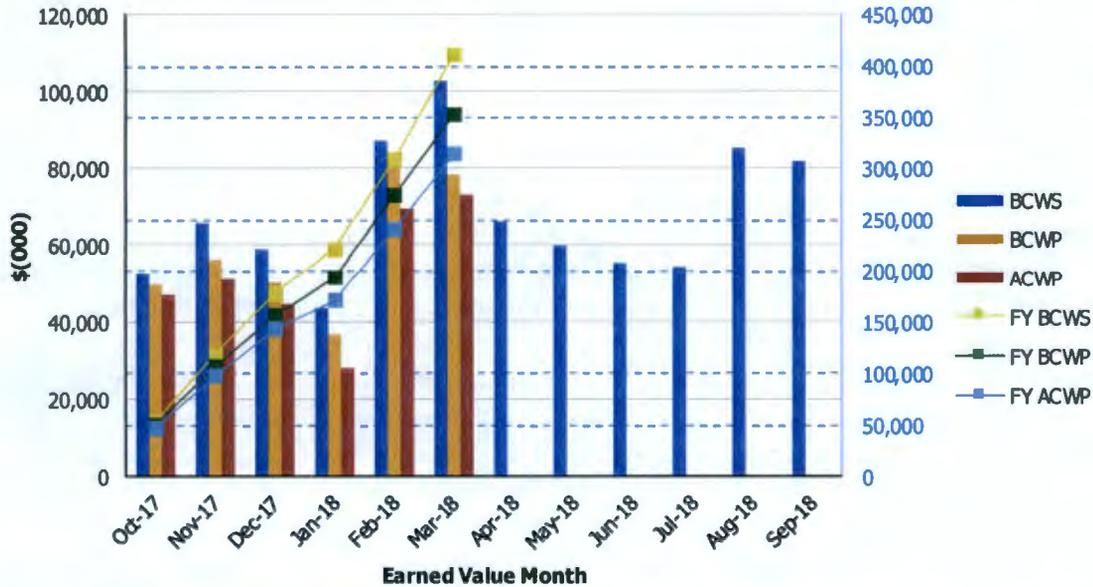
**EXC-01a: Fiscal Year Cost and Schedule Report**

Data Set: FY 2018 Earned Value Data

Data as of: March 2018

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

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$52,662	\$49,804	\$46,894	0.95	1.06	\$52,662	\$49,804	\$46,894	0.95	1.06
Nov 2017	\$65,935	\$56,513	\$51,026	0.86	1.11	\$118,597	\$106,317	\$97,920	0.90	1.09
Dec 2017	\$58,797	\$50,134	\$44,924	0.85	1.12	\$177,394	\$156,452	\$142,844	0.88	1.10
Jan 2018	\$43,622	\$36,665	\$28,076	0.84	1.31	\$221,016	\$193,117	\$170,920	0.87	1.13
Feb 2018	\$86,995	\$80,565	\$69,775	0.93	1.15	\$308,011	\$273,683	\$240,695	0.89	1.14
Mar 2018	\$102,749	\$78,481	\$72,880	0.76	1.08	\$410,760	\$352,163	\$313,575	0.86	1.12
Apr 2018	\$65,995									
May 2018	\$59,697									
Jun 2018	\$55,356									
Jul 2018	\$54,607									
Aug 2018	\$85,167									
Sep 2018	\$81,667									

PTD	\$10,922,354	\$10,810,060	\$10,696,989	0.99	1.01
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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)

<b>Performance Tracking</b>	<b>SV</b>	<b>CV</b>
Current Period (March 2018)	(\$24,268)	\$5,601
Fiscal Year 2018 to-date	(\$58,596)	\$38,589
Cumulative (through March 2018)	(\$112,294)	\$113,071

CV = cost variance.

SV = schedule variance.

**Earned Value Management System Analysis**

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

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

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

For the March 2018 Earned Value Management System reporting period, a net **unfavorable** SV of approximately (\$24.3 million) was reported (meaning that a net of \$24.3 million of March scheduled work did not get completed in March), primarily due to the following:

- DFLAW Plant Equipment and Material reported an unfavorable SV due to late delivery or delays in fabrication for the following plant equipment orders:
  - Effluent Management Facility (EMF) process vessels delayed due to vendor welds that had to be repaired after testing.
  - Additional scope for insulation of EMF vessels.
  - EMF centrifugal pumps delayed as a result of supplier qualification and engineering issues, which are being addressed/resolved with forecast recovery in May.
  - Late delivery of steel and pipe commodities.

BNI continues a focused effort to expedite deliveries, which includes multiple vendor visits and placing BNI personnel in vendor shops to improve communications and minimize delays.

- DFLAW Construction Craft reported an unfavorable SV due to a planned delay of installation for waste transfer line piping. Installation of the waste transfer line piping at this time would interfere with critical path construction activities at the EMF processing building. Installation of the waste transfer line piping will occur following the completion of the bulk of EMF construction.
- The LAW Facility Plant Equipment reported an unfavorable SV primarily due to delays in working through compliance issues for the melter power supply and vendor workload.
- The LAW Facility Construction Craft reported an unfavorable SV due to the scope for already complete field work, but performance cannot be taken until the record closure documentation (forecast mid-May) has been completed.
- BOF Startup reported an unfavorable SV due to significantly less diesel fuel oil needed for the steam plant and standby diesel generator facilities during DFLAW startup operations. Diesel fuel cost in the current budget represents full WTP startup fuel requirements. A baseline change proposal is being processed to give back the extra budget. Additional BOF unfavorable SV is tied to discrete labor associated with component testing, which is being delayed due to late turnovers from construction.
- LBL Commissioning continues to show an unfavorable SV due to a planned delay of staff increases. The LBL staffing needs to support commissioning are being evaluated. The future staffing level of commissioning personnel will be based on the outcomes of the evaluation. This control account will continue to show an unfavorable SV until staffing levels in the budgeting tools are realigned with the commissioning execution plan via the baseline change control process.

For the March 2018 Earned Value Management System reporting period, a net **favorable** CV of approximately \$5.6 million was reported (meaning that it cost a net \$5.6 million less to perform the work completed in March than estimated), primarily due to the following:

- LBL Commissioning reported a significant favorable CV because current spending priorities are different than the existing plan. Revised plans are currently being developed for implementation so commissioning activities are aligned with the available spend plan.
- General/Other Services reported a favorable CV because of labor attrition and reduced labor costs due to positions not being filled as anticipated. Also contributing to a current period favorable CV is a delay in the delivery of IT (Information Technology) equipment, which will arrive in future reporting periods.
- The LAW Facility Engineering reported an unfavorable CV due to labor expended in support of approved work not yet in the baseline, in addition to higher than anticipated support needed to accelerate closure of construction activities and system turnover reports. Nuclear Safety Engineering reported an unfavorable CV due to overtime in support of the closure of 24590-LAW-DSA-NS-18-0001, *Documented Safety Analysis for the Low-Activity Waste Facility* (DSA).
- BOF Engineering Site Support reported an unfavorable CV due to greater than anticipated resource needs to support startup, commissioning, and construction activities.
- The LAW Facility Construction Craft reported an unfavorable CV primarily due to overtime efforts needed to support punch-list items supporting physical plant completion and associated record closure scope.
- The LAW Facility Construction Craft Distributable reported an unfavorable CV due to the removal/relocation of temporary construction commodities and ongoing scaffold builds/removals to support final facility punch-list scope. Also contributing to the unfavorable CV was higher than anticipated employee training, material movement, and tool purchases.
- BOF Startup reported an unfavorable CV driven by component testing, system testing, system flushing, and post turnover modifications. This is the result of a greater than expected number of initial component/system test failures and design modifications. During the startup testing phase, component and procedure-driven test delays are a normal occurrence. However, this typically-expected challenge is increased with BOF due to the age of the equipment going through the first-time startup process.

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

## 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	On Schedule
D-00A-13	Complete Installation of Pretreatment Feed Separation Vessels FEP-SEP-OOOO1A/1B	12/31/2031	On Schedule
D-00A-14	PT Facility Construction Substantially Complete	12/31/2031	Under Analysis <sup>1</sup>
D-00A-15	Start PT Facility Cold Commissioning	12/31/2032	Under Analysis <sup>1</sup>
D-00A-16	PT Facility Hot Commissioning Complete	12/31/2033	Under Analysis <sup>1</sup>

1. As discussed in this report, DOE asked the U.S. Army Corps of Engineers to perform an initial parametric evaluation of certain options and funding scenarios to evaluate the likelihood of achieving PT- and HLW-related milestones. DOE is considering milestones A-1 and A-17 as being "Under Analysis" because the definition of Section IV-A-2: "Hot Start of Waste Treatment Plant" means the initiation of simultaneous operation of the Pretreatment (PT) Facility, High-Level Waste (HLW) Facility and Low-Activity Waste (LAW) Facility (including as needed the operations of the Analytical Laboratory (LAB) and the Balance of Facilities) treating Hanford tank wastes and producing a waste glass product." Hence, if one of the five facilities is "Under Analysis," DOE is conservatively considering the WTP milestone as "Under Analysis."

DOE = U.S. Department of Energy.

WTP = Waste Treatment and Immobilization Plant.

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

ORP and BNI continue to work on resolving the remaining technical issues identified in the Third Order Regarding Motions to Modify Consent Decrees<sup>5</sup>, which includes<sup>6</sup>, "Ensuring Control of the Pulse Jet Mixers" (i.e., T4 in relation to pulse-jet mixer vessel mixing and

<sup>5</sup> *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016) (EDF-221).

<sup>6</sup> At the outset of U.S. Department of Energy's identification of the technical issues, the issues were grouped into eight issues. During the litigation, some issues were combined with others into five groups of issues. Consequently, the descriptions of the issues listed above may be both different by number and somewhat different by description.

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

Preliminary engineering work, documented previously in a BNI and ORP study, was completed and demonstrates how the standard high-solids vessel design can be implemented in the PT Facility (i.e., T6 in relation to design redundancy and in-service inspection). The engineering study showed that 16 standard high-solids vessels can be incorporated into the PT Facility, while meeting the PT Facility throughput contract requirements. The Washington State Department of Ecology (Ecology) was briefed on the design concept in February 2018.

### **Significant Accomplishments during the Prior Month**

- At the request of ORP, the U.S. Army Corps of Engineers (USACE) has been conducting a parametric evaluation of certain options and funding scenarios to evaluate the likelihood of achieving both PT- and HLW-related Consent Decree milestones in the event a decision is made to keep those facilities in preventive maintenance mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on the completion of DFLAW commissioning<sup>7</sup>. Results from the USACE parametric evaluation, the BNI workshop discussions, and other inputs as appropriate, will be considered by ORP to support long-range planning options.
- ORP and BNI staff participated in a PT Facility workshop on April 11, 2018, to strategize and develop options related to the PT Facility. The workshop focused on documenting scope changes resulting from technical issue resolution and design and nuclear safety updates, funding required to implement continued preventive maintenance activities, and retaining core competencies.
- ORP continued to work with BNI on completing documentation for the remaining technical issues described as T4, T5, T6, T7 (i.e., T7 in relation to seismic ground motion criteria changes around 2005), and T8.

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<sup>7</sup> The “Explanatory Statement” accompanying the *Consolidated Appropriations Act, 2018*, contained the following provision:

*Office of River Protection.* – The agreement includes funding above the budget request to resume design and engineering work on the High-Level Waste Treatment Facility, to resolve the five remaining technical issues on the Pretreatment facility, to ensure compliance with 2016 Consent Decree and Tri-Party Agreement milestones, ... Not less than 90 days prior to the implementation of any changes to the current program of record for ... the Waste Treatment Plant, the Department shall submit to the Committee on Appropriations of both Houses of Congress a report that includes the technical justification and business case, any impact of such changes on the 2016 Consent Decree and Tri-Party Agreement, any necessary regulatory or permit changes by Washington or any other state, any necessary National Environmental Policy Act analysis, and any impact of such changes on site infrastructure.

Explanatory Statement at 47.

**Significant Planned Activities for the Next Month**

- ORP expects to receive a report from the USACE (noted above) after it completes its parametric evaluation of certain options and funding scenarios evaluating the likelihood of achieving both PT- and HLW-related Consent Decree milestones in the event a decision is made to keep those facilities in preventive maintenance mode for another 3 to 5 years.
- BNI is expected to issue an update to the localized corrosion test basis document supporting closure of technical issue T5 and closure of the T5 corrective action plan during the third quarter of FY 2018 (originally planned for April 2018). Comment resolution on the T5 corrosion test report has taken longer than expected.
- BNI is expected to issue the methodology for the vessel structural integrity verification supporting final resolution of technical issue T7 during the third quarter of FY 2018 (originally planned for April 2018). Comment resolution has taken longer than expected.
- BNI will continue to focus on ongoing preventive maintenance at the PT Facility to protect equipment and structures and ensure design documents are maintained, while the emphasis is placed on DFLAW/LBL activities. Work will continue on technical issue resolution related to the remaining technical issues.
- ORP anticipates resolution of the remaining technical issues (noted above) with notification to the Defense Nuclear Facilities Safety Board in the July/August 2018 timeframe.

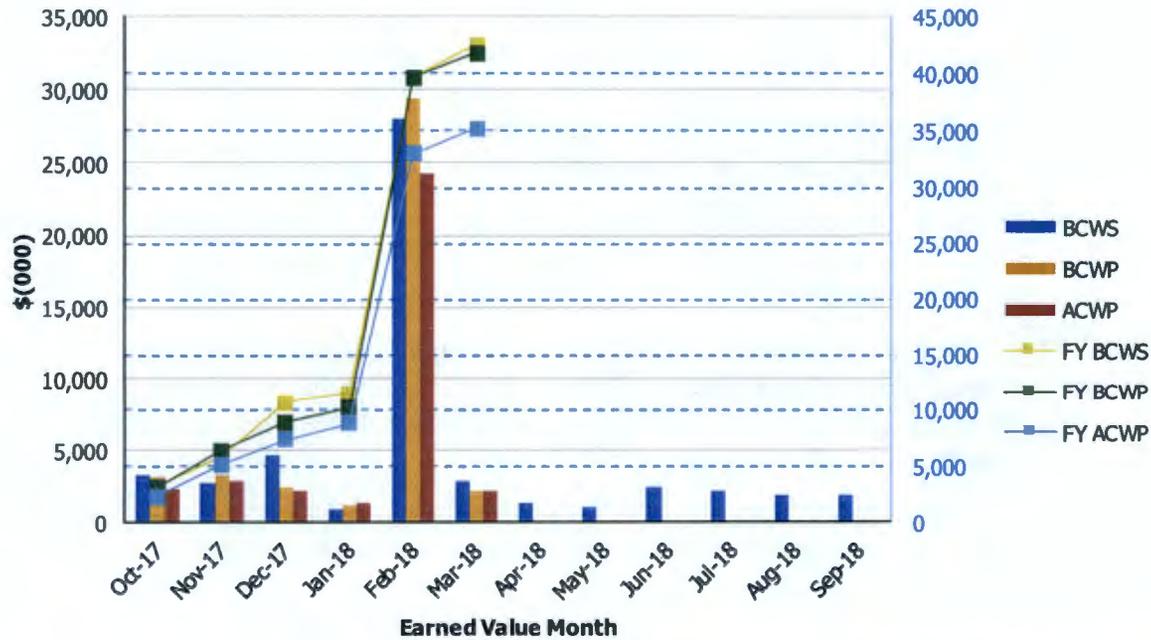
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2018 Earned Value Data

Data as of: March 2018

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

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$3,230	\$3,129	\$2,345	0.97	1.33	\$3,230	\$3,129	\$2,345	0.97	1.33
Nov 2017	\$2,757	\$3,293	\$2,838	1.19	1.16	\$5,987	\$6,422	\$5,184	1.07	1.24
Dec 2017	\$4,691	\$2,502	\$2,204	0.53	1.14	\$10,678	\$8,924	\$7,387	0.84	1.21
Jan 2018	\$896	\$1,272	\$1,371	1.42	0.93	\$11,574	\$10,196	\$8,758	0.88	1.16
Feb 2018	\$28,072	\$29,440	\$24,268	1.05	1.21	\$39,647	\$39,635	\$33,026	1.00	1.20
Mar 2018	\$2,819	\$2,143	\$2,222	0.76	0.96	\$42,466	\$41,778	\$35,248	0.98	1.19
Apr 2018	\$1,308									
May 2018	\$1,122									
Jun 2018	\$2,514									
Jul 2018	\$2,124									
Aug 2018	\$1,921									
Sep 2018	\$1,863									

PTD	\$1,983,574	\$1,979,363	\$1,948,609	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	Under Analysis <sup>1</sup>
D-00A-03	Start HLW Facility Cold Commissioning	06/30/2032	Under Analysis <sup>1</sup>
D-00A-04	HLW Facility Hot Commissioning Complete	12/31/2033	Under Analysis <sup>1</sup>

<sup>1</sup> As discussed in this report, DOE asked the U.S. Army Corps of Engineers to perform an initial parametric evaluation of certain options and funding scenarios to evaluate the likelihood of achieving PT- and HLW-related milestones. DOE is considering milestones A-1 and A-17 as being "Under Analysis" because the definition of Section IV-A-2: "Hot Start of Waste Treatment Plant" means the initiation of simultaneous operation of the Pretreatment (PT) Facility, High-Level Waste (HLW) Facility and Low-Activity Waste (LAW) Facility (including as needed the operations of the Analytical Laboratory (LAB) and the Balance of Facilities) treating Hanford tank wastes and producing a waste glass product." Hence, if one of the five facilities is "Under Analysis," DOE is conservatively considering the WTP milestone as "Under Analysis."

DOE = U.S. Department of Energy.

WTP = Waste Treatment and Immobilization Plant.

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

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

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

As previously reported, BNI provided the final *Design and Operability Disposition Report* to ORP, summarizing the path forward for issue resolution. ORP reviewed all disposition comments for adequacy. Based on completion of the *Design and Operability Disposition Report*, BNI notified ORP it had completed the required criteria for DOE Decision 2A pending ORP approval of the updated HLW Facility Preliminary DSA to align facility design with the nuclear safety basis. This was a primary focus of the ORP-chartered Safety Basis Review Team in FY 2017.

ORP approved Rev. 7 of the updated HLW Facility Preliminary DSA and issued a letter to BNI in FY 2017 indicating DOE Decision 2A criteria for authorization to resume HLW Facility procurement and construction activities have been met.

### **Significant Accomplishments during the Prior Month**

- In accordance with the additional funding received for the HLW Facility in the *Consolidated Appropriations Act, 2018*, enacted on March 23, 2018<sup>8</sup>, ORP and BNI began the process to determine which additional activities could be initiated at the HLW Facility in FY 2018. ORP continued discussions with DOE's Office of Environmental Management about the direction to provide BNI regarding engineering, procurement, and construction activities at the HLW Facility.
- At the request of ORP, the USACE has been conducting a parametric evaluation of certain options and funding scenarios to evaluate the likelihood of achieving both PT- and HLW-related Consent Decree milestones in the event a decision is made to keep those facilities in preventive maintenance mode for another 3 to 5 years so as to allow DOE to focus funding and efforts on the completion of DFLAW commissioning. Results from the USACE parametric evaluation, the BNI workshop discussions, and other inputs as appropriate will be considered by ORP to support near-term work plans and long-range planning options.
- BNI continued fabrication of RLD-7 and RLD-8 vessels. These vessels are located in the wet process cell and must be installed prior to concrete slab placement, which will support roof installation and building enclosure.

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<sup>8</sup> The "Explanatory Statement" accompanying the *Consolidated Appropriations Act, 2018*, contained the following provision:

*Office of River Protection.* – The agreement includes funding above the budget request to resume design and engineering work on the High-Level Waste Treatment Facility, to resolve the five remaining technical issues on the Pretreatment facility, to ensure compliance with 2016 Consent Decree and Tri-Party Agreement milestones, ... Not less than 90 days prior to the implementation of any changes to the current program of record for ... the Waste Treatment Plant, the Department shall submit to the Committee on Appropriations of both Houses of Congress a report that includes the technical justification and business case, any impact of such changes on the 2016 Consent Decree and Tri-Party Agreement, any necessary regulatory or permit changes by Washington or any other state, any necessary National Environmental Policy Act analysis, and any impact of such changes on site infrastructure.

Explanatory Statement at 47.

**Significant Planned Activities in the Next Month**

- ORP expects to receive a report from the USACE (noted above) after it completes its parametric evaluation of certain options and funding scenarios evaluating the likelihood of achieving both PT- and HLW-related Consent Decree milestones in the event a decision is made to keep those facilities in preventive maintenance mode for another 3 to 5 years.
- In accordance with the additional funding received for the HLW Facility in the *Consolidated Appropriations Act, 2018*, enacted on March 23, 2018, ORP and BNI will continue to evaluate which additional activities could be initiated at the HLW Facility in FY 2018. ORP will continue discussions with DOE's Office of Environmental Management about the direction to provide BNI regarding engineering, procurement, and construction activities at the HLW Facility.
- BNI will continue to focus on ongoing preventive maintenance at the HLW Facility to protect equipment and structures and ensure design documents are maintained, while emphasis is placed on DFLAW/LBL activities. This has resulted in limited engineering resources to perform production work and in construction curtailment.

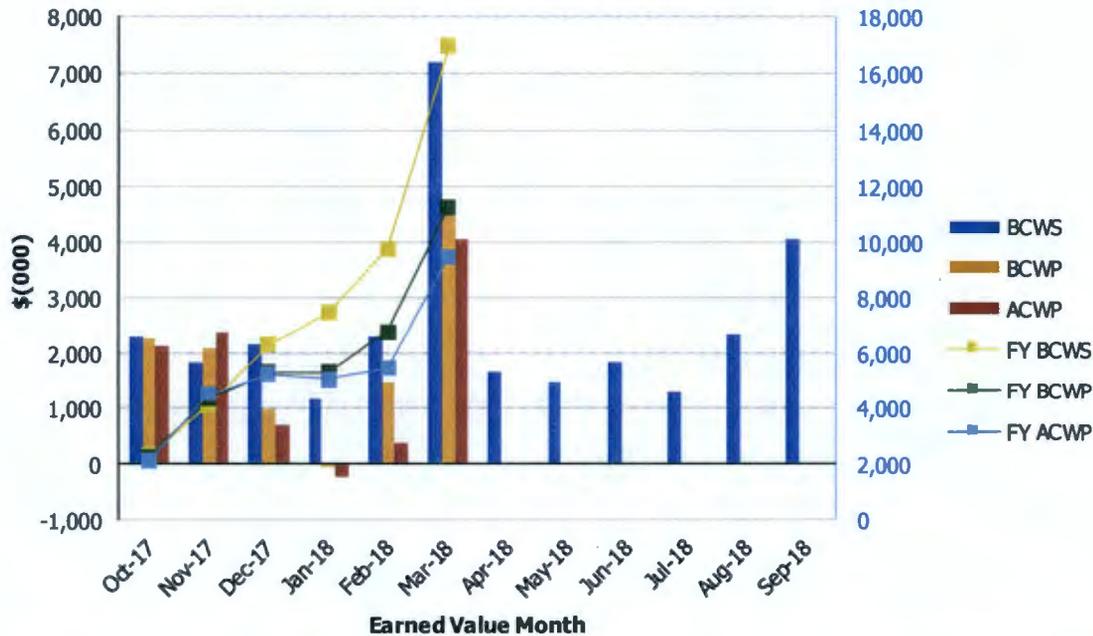
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2018 Earned Value Data

Data as of: March 2018

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

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$2,303	\$2,268	\$2,151	0.98	1.05	\$2,303	\$2,268	\$2,151	0.98	1.05
Nov 2017	\$1,848	\$2,091	\$2,396	1.13	0.87	\$4,151	\$4,360	\$4,547	1.05	0.96
Dec 2017	\$2,160	\$976	\$714	0.45	1.37	\$6,311	\$5,336	\$5,261	0.85	1.01
Jan 2018	\$1,164	(\$32)	(\$209)	-0.03	0.16	\$7,475	\$5,304	\$5,053	0.71	1.05
Feb 2018	\$2,310	\$1,477	\$396	0.64	3.72	\$9,785	\$6,780	\$5,449	0.69	1.24
Mar 2018	\$7,188	\$4,514	\$4,061	0.63	1.11	\$16,974	\$11,294	\$9,510	0.67	1.19
Apr 2018	\$1,684									
May 2018	\$1,486									
Jun 2018	\$1,858									
Jul 2018	\$1,314									
Aug 2018	\$2,330									
Sep 2018	\$4,055									
<b>PTD</b>	<b>\$1,349,645</b>	<b>\$1,343,428</b>	<b>\$1,317,902</b>	<b>1.00</b>	<b>1.02</b>					

- |   |  |
|---|--|
| 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 Facility<sup>9</sup>

**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 March 2018, the LAW Facility was 69 percent complete overall, engineering design was 90 percent complete, procurement was 82 percent complete, construction was 93 percent complete, and startup and commissioning was 18 percent complete.

### Significant Accomplishments during the Prior Month

- BNI construction completed the follow-on, 3-week walkdowns before turning the following systems over to the Startup organization:
  - Fire detection and alarm system 1
  - Fire protection water system 1
  - Heat trace electrical system
  - LAW Facility container finishing handling system 1 and 2.
- BNI construction turned the following LAW Facility systems over to the Startup organization:
  - Domestic (potable) water system.

<sup>9</sup> Please note that 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.

- BNI construction completed Underwriters Laboratories certification for the electrical thermal catalytic oxidizer scope at El +48. (Note: El +48 equals great than the 48-foot elevation.)
- BNI construction completed installation of permanent door slabs (all elevations).

### Significant Planned Activities in the Next Month

- ORP is expected to approve the LAW Facility DSA with the *Safety Evaluation Report of Documented Safety Analysis and Technical Safety Requirements for the Low-Activity Waste Facility: 24590-LAW-DSA-NS-18-0001*, Documented Safety Analysis for the Low-Activity Waste Facility, Rev. 0, and *24590-LAW-TSR-NS-18-0001*, Low-Activity Waste Facility Technical Safety Requirements, Rev. 0, by the end of May 2018.
- BNI is expected to complete the requirements of contract milestone A-5, "Final LBL Physical Plant Complete," and submit the documentation to ORP for review by the end of May 2018, which is ahead of the contract milestone date of June 28, 2018.
- BNI construction is expected to turn the following systems over to the Startup organization:
  - Direct current electrical system – DCE-L-01
  - Uninterruptible power electrical system 1
  - Low-voltage electrical (480/208/120 V) system 2
  - Chilled water system 1
  - Domestic (potable) water system.
  - Facility network infrastructure system
  - Demineralized water system 1
  - High pressure steam system
  - Instrument air system 3
  - Process control system 4
  - Fire detection and alarm system 1
  - Fire protection water system 1
  - Heat trace electrical system
  - LAW container finishing handling system 1 and 2
  - Process control system 2.
- BNI is expected to issue the procurement award for the flow instruments purchase order.
- BNI is expected to issue the procurement award for the low-voltage power offgas vacuum breaker.
- BNI is expected to complete installation of the carbon bed absorber.

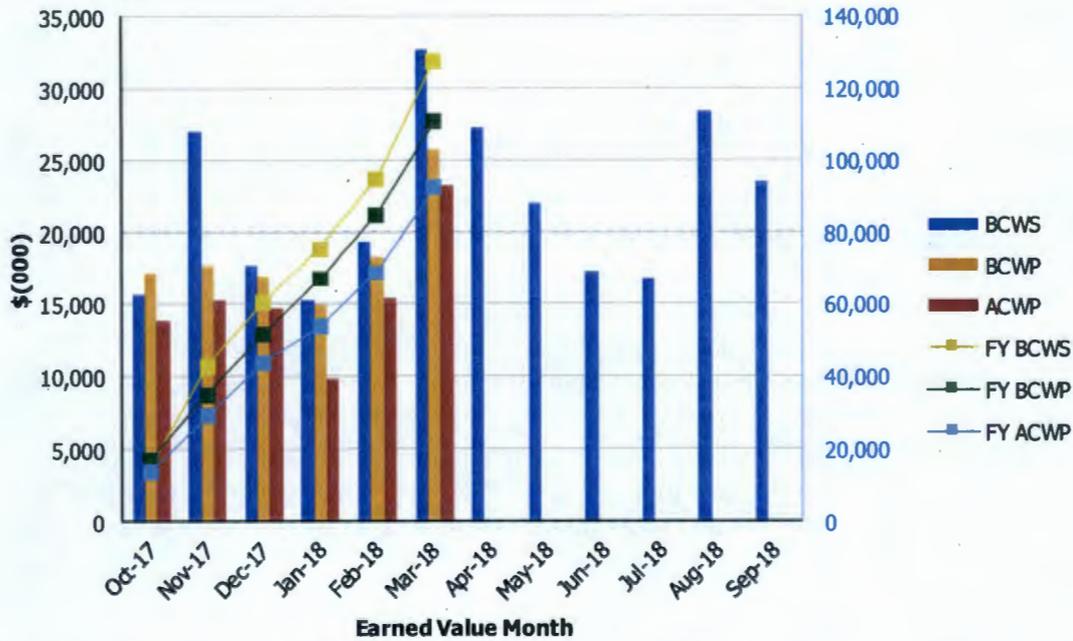
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2018 Earned Value Data

Data as of: March 2018

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

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$15,716	\$17,201	\$13,802	1.09	1.25	\$15,716	\$17,201	\$13,802	1.09	1.25
Nov 2017	\$27,014	\$17,698	\$15,292	0.66	1.16	\$42,730	\$34,898	\$29,095	0.82	1.20
Dec 2017	\$17,686	\$16,865	\$14,665	0.95	1.15	\$60,416	\$51,763	\$43,760	0.86	1.18
Jan 2018	\$15,226	\$15,023	\$9,821	0.99	1.53	\$75,641	\$66,786	\$53,580	0.88	1.25
Feb 2018	\$19,349	\$18,243	\$15,413	0.94	1.18	\$94,990	\$85,029	\$68,993	0.90	1.23
Mar 2018	\$32,761	\$25,728	\$23,335	0.79	1.10	\$127,750	\$110,757	\$92,328	0.87	1.20
Apr 2018	\$27,269									
May 2018	\$22,034									
Jun 2018	\$17,306									
Jul 2018	\$16,696									
Aug 2018	\$28,497									
Sep 2018	\$23,570									

PTD	\$1,855,974	\$1,837,192	\$1,822,935	0.99	1.01
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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 March 2018, BOF was 73 percent complete overall, engineering design was 91 percent complete, procurement was 85 percent complete, construction was 93 percent complete, and startup and commissioning was 39 percent complete. Design of the EMF was 81 percent complete.

BNI Engineering efforts are focused on completion of the EMF design, supporting EMF procurement activities, and providing field support for BOF startup activities. Construction is focused on ring beam installation, topping slab completion, and utility rack placement. Startup testing continues for BOF systems. Functional testing is complete for the water treatment facility. The cooling tower facility continues testing of the medium-voltage system and large cooling water pumps. The chiller compressor plant is preparing for upcoming testing of the chill water pumps and rotary screw air compressors.

### Significant Accomplishments during the Prior Month

- Public comment period for the EMF equipment package No. 2 permit modification ended on April 18, 2018. BNI and Ecology are preparing final dispositions to public comments in support of permit approval.
- BNI completed placement of the EMF low-point drain second-lift walls.
- BNI completed placement of the EMF processing building second-lift walls.
- BNI received the EMF evaporator and the structural steel required for assembly of the evaporator tower.
- BNI continued stanchion and ring beam installation activities in preparation for placement of the remaining EMF topping slabs.
- BNI completed functional testing for the water treatment building potable water system.
- BNI completed initial rotation checks for the medium-voltage cooling tower pump motors.
- BNI initiated uncoupled testing for the medium-voltage cooling tower pump motors.
- ORP and BNI submitted the EMF equipment permit modification package No. 3 to Ecology for formal review.

**Significant Planned Activities in the Next Month**

- BNI is expected to receive the EMF low-point drain vessel.
- ORP and BNI expect to receive Ecology's approval of the EMF equipment package No. 2 permit modification by the end of May 2018.
- BNI is expected to continue placement of stanchions, ring beams, and topping slabs in the EMF process building.
- BNI is expected to transfer operational custody of the WTP main switchgear building to the Plant Management organization.
- BNI is expected to transfer operational custody of the BOF switchgear building to the Plant Management organization.
- BNI is expected to transfer operational custody of the water treatment building to the Plant Management organization.

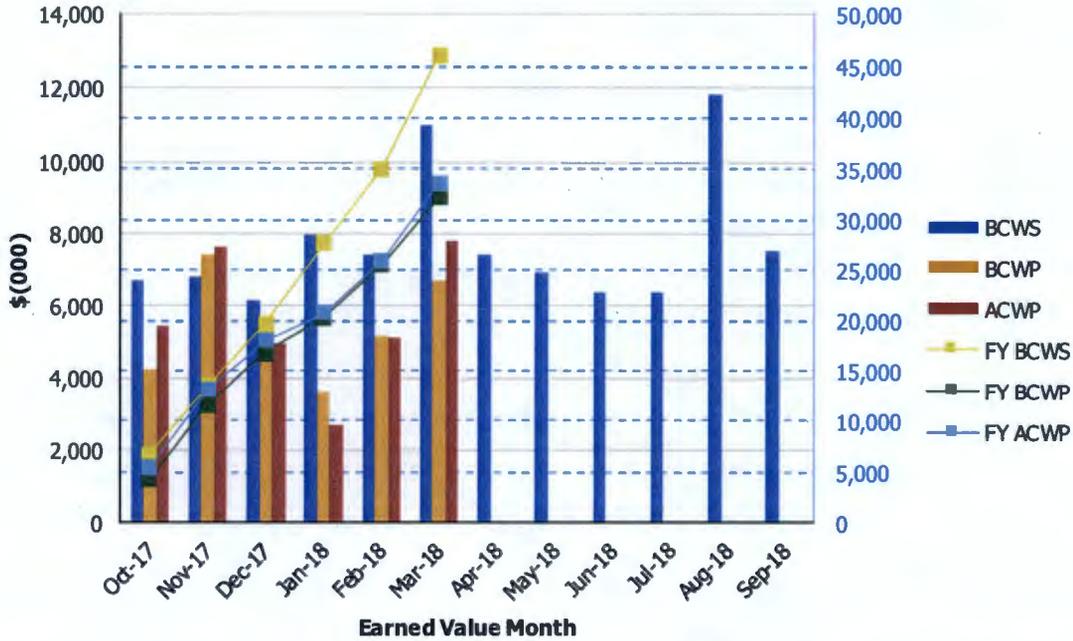
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2018 Earned Value Data

Data as of: March 2018

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

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$6,686	\$4,211	\$5,450	0.63	0.77	\$6,686	\$4,211	\$5,450	0.63	0.77
Nov 2017	\$6,823	\$7,436	\$7,658	1.09	0.97	\$13,509	\$11,647	\$13,108	0.86	0.89
Dec 2017	\$6,146	\$5,033	\$4,931	0.82	1.02	\$19,655	\$16,679	\$18,039	0.85	0.92
Jan 2018	\$7,999	\$3,629	\$2,707	0.45	1.34	\$27,654	\$20,308	\$20,746	0.73	0.98
Feb 2018	\$7,399	\$5,164	\$5,092	0.70	1.01	\$35,052	\$25,472	\$25,838	0.73	0.99
Mar 2018	\$10,993	\$6,722	\$7,817	0.61	0.86	\$46,045	\$32,195	\$33,655	0.70	0.96
Apr 2018	\$7,447									
May 2018	\$6,951									
Jun 2018	\$6,394									
Jul 2018	\$6,404									
Aug 2018	\$11,824									
Sep 2018	\$7,515									

PTD	\$718,390	\$697,703	\$708,399	0.97	0.98
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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.

## 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 March 2018, the LAB was 72 percent complete overall, engineering design was 91 percent complete, procurement was 89 percent complete, construction was 97 percent complete, and startup and commissioning was 28 percent complete.

Startup efforts are focused on turnover of LAB systems for startup testing. BNI has completed the turnover of 15 LAB systems for startup testing. Personnel and equipment are moving into the temporary offsite laboratory space. This will allow methods development to occur in parallel with system startup testing.

### Significant Accomplishments during the Prior Month

- BNI completed functional testing of the low-voltage electrical switchgear.
- BNI completed blowdowns of the plant service air system piping.
- BNI completed the 3-week walkdown of LAB lighting system.
- BNI completed the 3-week walkdown of the LAB C5 ventilation system.
- BNI completed turnover of the potable water system for startup testing.
- BNI continued installation of analytical equipment in the offsite laboratory (vendors assisting with setup and installation of key analytical equipment components).

### Significant Planned Activities in the Next Month

- BNI is expected to complete installation of the analytical equipment in the offsite laboratory.
- BNI is expected to continue turnover of LAB systems and startup testing of systems as they become available.
- BNI is expected to energize the two remaining motor control centers.

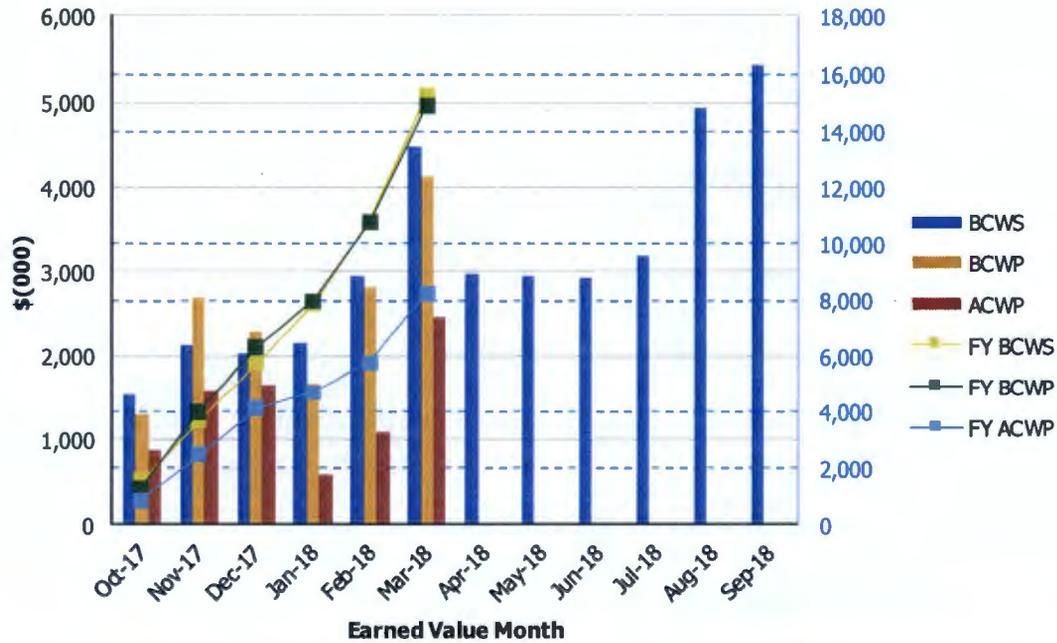
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2018 Earned Value Data

Data as of: March 2018

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

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2017	\$1,538	\$1,298	\$861	0.84	1.51	\$1,538	\$1,298	\$861	0.84	1.51
Nov 2017	\$2,135	\$2,694	\$1,578	1.26	1.71	\$3,673	\$3,992	\$2,438	1.09	1.64
Dec 2017	\$2,029	\$2,286	\$1,660	1.13	1.38	\$5,702	\$6,278	\$4,098	1.10	1.53
Jan 2018	\$2,139	\$1,678	\$586	0.78	2.86	\$7,841	\$7,956	\$4,684	1.01	1.70
Feb 2018	\$2,950	\$2,806	\$1,082	0.95	2.59	\$10,791	\$10,762	\$5,766	1.00	1.87
Mar 2018	\$4,477	\$4,134	\$2,463	0.92	1.68	\$15,268	\$14,896	\$8,229	0.98	1.81
Apr 2018	\$2,966									
May 2018	\$2,951									
Jun 2018	\$2,935									
Jul 2018	\$3,199									
Aug 2018	\$4,941									
Sep 2018	\$5,430									
<b>PTD</b>	<b>\$376,476</b>	<b>\$372,752</b>	<b>\$352,347</b>	<b>0.99</b>	<b>1.06</b>					

- 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 March 2018**

(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
<b>Facilities</b>																		
Low-Activity Waste	2,298.8	1,594.6	69%	555.8	502.9	90%	374.4	307.3	82%	714.2	661.8	93%	650.3	118.6	18%	4.0	4.0	100%
Balance of Facilities	758.7	553.7	73%	149.9	135.8	91%	72.1	60.9	85%	272.6	254.3	93%	263.7	102.3	39%	0.5	0.5	100%
Analytical Lab	495.3	354.3	72%	101.0	92.1	91%	66.4	59.2	89%	160.9	156.2	97%	166.5	46.4	28%	0.5	0.5	100%
Direct Feed LAW	409.0	167.9	41%	101.5	80.1	79%	66.1	18.7	28%	232.0	62.6	27%	0.0	0.0	0%	9.4	6.6	70%
LBL Facility Services	662.0	304.3	45%	0.0	0.0	0%	79.9	40.2	50%	135.8	75.8	56%	203.5	94.3	46%	262.8	94.0	36%
<b>Total LBL</b>	<b>4,643.7</b>	<b>2,975.0</b>	<b>64%</b>	<b>908.1</b>	<b>810.9</b>	<b>89%</b>	<b>658.9</b>	<b>486.3</b>	<b>74%</b>	<b>1,515.5</b>	<b>1,210.6</b>	<b>80%</b>	<b>1,284.1</b>	<b>361.5</b>	<b>28%</b>	<b>277.2</b>	<b>105.6</b>	<b>38%</b>
<b>Project Services</b>	<b>947.7</b>	<b>552.4</b>	<b>58%</b>	<b>92.0</b>	<b>76.9</b>	<b>84%</b>	<b>72.7</b>	<b>45.5</b>	<b>63%</b>	<b>107.7</b>	<b>81.5</b>	<b>76%</b>	<b>1.7</b>	<b>1.7</b>	<b>100%</b>	<b>673.7</b>	<b>346.8</b>	<b>51%</b>
<b>Total Project Services</b>	<b>947.7</b>	<b>552.4</b>	<b>58%</b>	<b>92.0</b>	<b>76.9</b>	<b>84%</b>	<b>72.7</b>	<b>45.5</b>	<b>63%</b>	<b>107.7</b>	<b>81.5</b>	<b>76%</b>	<b>1.7</b>	<b>1.7</b>	<b>100%</b>	<b>673.7</b>	<b>346.8</b>	<b>51%</b>
<b>Total LBL, DFLAW &amp; Project Services</b>	<b>5,591.4</b>	<b>3,527.3</b>	<b>63%</b>	<b>1,000.1</b>	<b>887.8</b>	<b>89%</b>	<b>731.5</b>	<b>531.8</b>	<b>73%</b>	<b>1,623.1</b>	<b>1,292.2</b>	<b>80%</b>	<b>1,285.8</b>	<b>363.3</b>	<b>28%</b>	<b>950.9</b>	<b>452.3</b>	<b>48%</b>
<b>PT/HLW/SS Percent Complete Status Frozen as of September 2012 (due to project rebaselining efforts)</b>																		
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%
<b>Total HLW/PT/SS</b>	<b>8,722.8</b>	<b>5,965.2</b>	<b>68%</b>	<b>2,173.1</b>	<b>1,948.9</b>	<b>90%</b>	<b>1,565.5</b>	<b>1,124.8</b>	<b>72%</b>	<b>2,887.6</b>	<b>1,764.8</b>	<b>61%</b>	<b>758.5</b>	<b>143.2</b>	<b>19%</b>	<b>1,338.1</b>	<b>983.5</b>	<b>73%</b>
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
<b>Total WTP</b>	<b>14,314.2</b>	<b>9,492.5</b>	<b>66%</b>	<b>3,173.2</b>	<b>2,836.7</b>	<b>89%</b>	<b>2,297.0</b>	<b>1,656.6</b>	<b>72%</b>	<b>4,510.7</b>	<b>3,057.0</b>	<b>68%</b>	<b>2,044.3</b>	<b>506.5</b>	<b>25%</b>	<b>2,289.0</b>	<b>1,435.8</b>	<b>63%</b>

Source: Preliminary WTP Contract Performance Report - Format 1, Data for March 2018

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 date reflects the incorporation of Direct Feed LAW and the split of Shared Services into LBL Facility Services and Project Services. March 2018 LBL percent complete data is a total of LAW-BOF-LAB-DFLAW and LBL Facility Services. The Project Services Allocation account (xPSA), as shown on the CPR Format 1, is not added to LBL for percent complete purposes.

CD Reports Metadata Sharing

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Milestone or TSD
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D-00C-02
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D-00A-17
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D-16B-02
D-16B-03
D-16E-02
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T-2-6

Updated June 2017

POC: ORP, TRS-ECD, R.Evans or B. Trimberger