

# Section D

## Soil and Groundwater Remediation Project (RL-0030)



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Deliverable C.3.1.3.1 - 1

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## PROJECT SUMMARY

Work included pump-and-treat operations, Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) remedial processes, and documentation for the River Corridor and Central Plateau. Sampling and groundwater treatment completed in December includes the following:

- Collected 1,375 samples, resulting in 100 analyses.
- 16.3M gallons groundwater treated by ZP-1 treatment facility
- 21.4M gallons groundwater treated by KX treatment facility
- 8.9M gallons groundwater treated by KW treatment facility
- 7.2M gallons groundwater treated by KR-4 treatment facility
- 27.2M gallons groundwater treated by HX treatment facility
- 22M gallons groundwater treated by DX treatment facility
- 1M gallon groundwater treated by TX/TY well pumps
- 104M gallons of groundwater treated total

## EMS Objectives and Target Status

Objective#	Objective	Target	Due Date	Status
12-EMS-SGWR-OB1-T1	Reduce the release of toxic and/or hazardous material	Treat 1 billion gallons of groundwater from all pump & treat systems during FY2012. This assumes that existing P&T facilities continue to operate at or near current production /through put levels.	9/30/12	On Schedule
		Review and tally total number of gallons treated	Monthly	303M Gallons through 12/31/11

## TARGET ZERO PERFORMANCE

	CM Quantity	Rolling 12 Month	Comment
Days Away, Restricted or Transferred	0	0	N/A
Total Recordable Injuries	0	12	N/A
First Aid Cases	1	90	<b>12/1</b> – Employee felt a twinge and heard a pop in their right calf while moving two chairs between two buildings. 22533 (EPC)
Near-Misses	0	2	N/A

## KEY ACCOMPLISHMENTS

### Base - RL-0030.C1 –GW Remedy Implementation

#### Engineering Projects and Construction (EPC) Projects in Support of Soil and Groundwater Remediation Project (S&GRP) - Base

- 200WP&T: Completed KPP related construction punch-list items. Continued Acceptance Test Procedures. Met the TPA milestone begin Phase I operation of the new 200 West Pump and Treat (M-016-122). Odor Control System vessel and chemical meter pumps undergoing receipt inspection.

### Base - RL-0030.01 RL 30 Operations

#### EPC Projects in Support of S&GRP - Base

- 100-HX Groundwater Treatment Facility - Continued working project closeout activities.

#### Technical Integration

- “Regulatory Basis and Implementation of a Graded Approach to Evaluation of Groundwater Protection”, DOE/RL-2011-50 was completed and submitted for a 90 day public review. No public comments were received on the document. DOE-RL, DOE-ORP, the EPA and Ecology signed the document on January 17, 2012.
- The River Corridor Vadose Zone Model Package Report (SGW-50776 Rev. 0) was completed and cleared.
- The Composite Analysis and Performance Assessment annual status reports were completed and transmitted to DOE-RL.

#### Systematic Planning Integration

- Completed 12 cost estimates for the following areas: 300 Area, 100-BC, 200-UP-1 and a supplemental estimate for presentations to RL.
- Completed coordination and submittal of document reviews and consolidated responses for four environmental documents.

### Environmental Databases

- Implemented Version 2.1 of the Sample Data Tracking application which improved forms and reports based on customer input/feedback.

### River Corridor

#### 100-HR-3 Operable Unit - Base

- Completed HX OTP on December 13, 2011; system is now approved for unrestricted operations.

#### 300-FF-5 Operable Unit – Base

- Delivered the Draft A RI/FS Report & Draft A Proposed Plan to RL on December 21, 2011; RL transmitted these documents to EPA on December 27, 2011 (TPA M-015-72-T01 due December 31, 2011).

### Central Plateau

#### 200-UP-1 Operable Unit – Base

- Construction of the S-SX extraction system continued. Transfer building ATP was completed. Mechanical and electrical rack CAT/ATP was initiated. All three extraction wells are complete. The construction subcontractor demobilized from the site.
- An EPA briefing on updates to the FS/PP remediation alternatives was held on December 8, 2011. A revised table of remediation alternatives was provided to DOE on December 20, 2011 based on the EPA input and subsequent DOE feedback.

#### 200-ZP-1 Operable Unit - Base

- Loading of water and carbon media to the first fluidized bed reactor (FBR) was initiated on December 14, 2011, and completed on December 19, 2011. The water addition to the first FBR completes the Tri-Party Agreement Milestone M-016-122 initiate Phase 1 Operations.
- The interim action P&T system is currently operating at 379 gpm.
- Drilling/sampling of 23 permanent extraction and/or injection wells is complete. Wells C8068, C8069, and C8386 have all reached total depth and are in various stages of construction.

#### 200-WA-1 Operable Unit – Base

- Delivered the Draft A RI/FS Report & Draft A Proposed Plan to RL on December 21, 2011; RL transmitted these documents to EPA on December 27, 2011 (TPA M-015-91A due December 31, 2011).

## MAJOR ISSUES

**Issue** - Due to the shut-down of the WSCF laboratory during October and November, S&GRP was forced to pull NCO samplers out of the field early afternoon and divert all samples to off-site laboratories. The additional effort required to execute the sample diversion process reduced the projects ability to conduct field sampling activities and has resulted in a backlog of groundwater and aquifer-tube sampling events that will need to be rescheduled.

### Corrective Action -

- The project has brought back two qualified NCO samplers on temporary assignment to provide additional sampling support.
- The sampling schedule has been level loaded to better align with the available sampling resources and provide greater flexibility.
- Sampling schedules have been extended to include Friday on overtime.

- The Routine Groundwater sampling schedule has been arranged geographically to increase productivity and minimize drive times.
- The well maintenance process has been significantly streamlined and improved to reduce turnaround time and improve sampling success rates.
- The overall population of wells to be sampled was reduced based on a review of historical information. Wells were removed from the schedule for various reasons such as wells being dry, reevaluation by project scientist as to necessity of sampling, etc.
- NCOs and exempt staff worked closely together to redo all the paperwork to accommodate the shipping diversions to keep the work moving.

**Issue** - The number of comments on CERCLA document comments and the need for technical decisions is impacting contractual delivery due dates and decreasing float on major TPA Milestone M-015-005 “DOE shall complete the RI/FS process through the submittal of a Proposed Plan for all 100 and 300 Area operable units”.

**Corrective Action** -

- Development of detailed Field Execution Schedules
- Engagement of AMCP Management for technical decisions
- Identified additional resources necessary to meet schedule
- Partnering sessions between DOE and CHPRC

**Issue** - The 200 West Groundwater Treatment Facility Project has experienced an increase in several work activities due to realization of risks previously established, resulting in an increased ETC and therefore an increased VAC. The changes in work activities have cost and schedule impacts beyond the cost of the mitigating action itself and in some cases compounding effects (e.g., changes in work activities caused delay to construction completion, which in turn results in weather issues during testing that were not previously expected). Another common cost impact is retaining staff beyond the project’s ramp down/closeout plan to manage work that was delayed. The impacts occur in the following areas:

- Equipment Impacts due to Weather
- Well capacity
- Fiber Optic Cable in place of wireless
- Touch-up Painting/Trade Damage
- Recirculation loop on MBR
- Sludge Stabilization System (Lime)
- Programming/Software Scope
- Tank Repairs
- Piping Supports/Repairs
- Procedure/As-Building Development

**Corrective Action** - The Project will work with SGW Ops to mitigate the impact of realized risks by:

- Developing and Implementing a BCR to utilize MR
- Re-evaluate cost savings efforts across the project
- Evaluate viability of Credits and Back Charges against subcontractors who own some of the

responsibilities.

- Evaluate need for potential deferral of SGW FY2012 scope

### RISK MANAGEMENT STATUS

Unassigned Risk  
Risk Passed  
New Risk

Working - No Concerns    Increased Confidence  
 Working - Concern    No Change  
 Working - Critical    Decreased Confidence

Risk Title	Risk Strategy/Handling	Assessment		Comments
		Month	Trend	
<b>SGW-002: RL or Regulator Personnel Changes</b>	Work with RL to document agreements and to obtain appropriate formal approvals (RL and regulators) for the agreements that could result in a schedule delay of greater than 3 months or a cost impact of more than \$500K in the event the agreements were to change.			Currently experiencing this issue with turnover of RL and Regulator staff. Training was conducted with S&GRP management team to reinforce documentation of meetings and agreements to minimize this risk. Training was conducted with S&GRP management team to reinforce documentation of meetings and agreements to minimize this risk.
<b>SGW-080: 100-BC-5 Pump and Treat Required</b>	This risk is accepted as written and will be monitored throughout work execution.			EPA concurred that need for pump and treat will be evaluated as part of RI/FS process; existing sample data and the draft feasibility study indicate a treatment system may be required as part of a final action under the future Record of Decision.
<b>SGW-081: 100-FR-3 Pump and Treat Required</b>	This risk is accepted as written and will be monitored throughout work execution.			EPA concurred that need for pump and treat will be evaluated as part of RI/FS process but based upon current sample data and the draft feasibility study, the need for treatment is not considered likely.
SGW-001: 100-D Treatment Technology Selection Change	Review draft RD/RAWP with regulators; maintain close interface to minimize impact of changes. Risk accepted; no additional mitigation is feasible.			This risk is has a low probability but will still be a risk until the final remedy is approved.
SGW-008A: Significant Regulatory Comments - 100-KR-4	Routine meetings are already held with the regulators and RL during document development. No additional mitigation is feasible. Risk is accepted.			EPA has policy related comments that are being evaluated and considered for impacts to not only K, but other related projects. Example include the addition of irrigation within the unrestricted land use which has overarching impacts on other projects.
SGW-008B: Regulatory Document Comments for 100-HR-3	Routine meetings are being held with regulators during document development; no additional mitigation is feasible.			DOE completed their review and set expectations that we also address resolutions from the 100-K EPA comments.
SGW-008D: Regulatory Document Comments - 100-NR-2	Coordinating with RL to conduct routine meetings with Ecology during document development. No additional mitigation is feasible at this time. Risk is accepted with monitoring.			No issues are expected this month.
SGW-008J: Regulatory Document Comments - 300-FF-5	Routine meetings were held with the regulators and RL during document development. Additional meetings are being held during document review. No additional mitigation is feasible. Risk is accepted.			No issues are expected this month.
SGW-017 - Groundwater Flow Less Than Planned - 200 West P&T (Phase I)	Project is in the process of completing the drilling of 6 injection wells to ensure adequate injection capacity.			Hydraulic analysis was performed and as a result, project is revising pump header configuration to accommodate startup and operations at ITB #1 and ITB #2.
SGW-031A: P&T Design Changes - 200 West	Identify required design changes early in the process to minimize schedule impact. Work closely with the client and regulators to minimize impact to schedule. Incorporate design changes quickly to minimize cost impacts and avoid rework. Supplement Eng/QA/QC support and contracts for special inspection so as to finalize engineering requirements.			The baseline has incorporated the realized risk from the final issuance of the "issued for construction" drawings. Construction is complete and project is entering acceptance testing phase. As these tests complete, risk associated with design will diminish.

### RISK MANAGEMENT STATUS– Cont.

Unassigned Risk  
Risk Passed  
New Risk

 Working - No Concerns     Increased Confidence  
 Working - Concern         No Change  
 Working - Critical                 Decreased Confidence

Risk Title	Risk Strategy/Handling	Assessment		Comments
		Month	Trend	
SGW-041, Maintenance on the groundwater pump and treat systems is higher than planned due to reduced system reliability.	Continue to maintain equipment in accordance with baseline PM/CM schedule. Shutdown of the older facilities as new facilities are brought on line.			No impacts at this time.
SGW-043A: P&T System Relocation - 100-KR-4	The 100-KR-4 Operable Unit Lead will work closely with the 100 K Area waste site remediation manager to minimize the impact to the groundwater pump and treat system. No additional mitigation is feasible. Risk is accepted.			No issues are expected this month.
SGW-069: 100-HR-3 ISRM Barrier Amendment - Hexavalent Chromium Continues to Move Through Barrier	Monitor zero valence iron injection; add four wells to P&T.			DOE and Ecology have agreed to the strategy and signed a memorandum documenting the changes as insignificant. For wells will be used to supplement the barrier and capture down-gradient chromium. DX system is on line with extraction wells down gradient of the ISRM barrier.
SGW-083, River Corridor Characterization	Additional characterization wells are required to support the development of an RI/FS and Proposed Plan for the River Corridor groundwater operable units or to investigate findings from WCH data gathering.			WCH is gathering data in and along the river. This data could result in the need to install additional characterization wells in the River Corridor operable units. Information and conclusions from WCH risk assessments is raising questions regarding the Riparian Zone and Columbia River component human health risk assessment.
SGW-086: 200 W P&T Startup	Operations and engineering input has been obtained on the operating system controls to standardize the controls to those used for other pump and treat systems to the extent possible. Corporate design team and technologists experienced in bioremediation have been deployed to support the design effort and system startup. Resident engineer from corporate will also be supplied to support startup and testing of the new process equipment. Initiate preparation of CAT/ATP/OTP early. Early integration with contractors for incremental testing (e.g. isolate transfer buildings for a more efficient CAT/ATP). Notify vendors of necessary reconfigurations as early as possible so as to minimize schedule and cost impact.			No issues at this time.
SGW-092: 200 West P&T Operating Requirements	As preventative maintenance packages proceed through the development process, staffing levels will be evaluated to ensure continuous P&T operation.			No issues at this time. As preventative maintenance packages proceed through the development process, staffing levels will be evaluated to ensure continuous P&T operation.
SGW-095: Well Relocation or Acceleration - 200 West P&T	Wells will be installed as necessary to support system startup, with design changes incorporated as they are identified. Risk is accepted without further mitigation.			No issues at this time.
SGW-098: 200-W P&T - Schedule Impacts Due to Scope Increases	As these issues are identified, they will be listed with other emerging issues. At this point, further mitigation tactics will be determined.			OT and additional shifts have been utilized in certain areas to ensure schedule requirements are met. Work continues to support acceptance testing procedure.

### RISK MANAGEMENT STATUS– Cont.

Unassigned Risk  
Risk Passed  
New Risk

 Working - No Concerns     Increased Confidence  
 Working - Concern     No Change  
 Working - Critical     Decreased Confidence

Risk Title	Risk Strategy/Handling	Assessment		Comments
		Month	Trend	
SGW-101, 100-NR-2 Strontium Downstream From Barrier	If strontium contaminants downstream of the barrier require mitigation, an evaluation of barrier expansion will be conducted.			The 100-NR-2 apatite barrier is designed to control and treat the strontium in the soil and groundwater to prevent migration to the river. There is a very low probability risk that strontium that is downstream from the barrier will require additional treatment.
SGW-107: Unplanned New Wells Required	Annual well drilling plans reflect current knowledge. Risk is accepted without mitigation.			Wells in FY2012 can only be added if funds are approved by DOE/Sr. Management. BCR would be initiated to incorporate any new wells that have approved funds.
SGW-119: Integration of Lime system Vendor Package Equipment into Facility Construction	Send representatives to fabrication facilities to inspect processes. PRC is actively managing subcontractors by holding schedule accountability meetings twice per week. Project will retrofit as required to facilitate progress.			The design changes have been completed, and structural modifications have been installed for the lime sludge conveying system with structural steel. The contractor is adding resources/working overtime to perform rework on odor control, (e.g. chemical system skids).
SGW-120: 200 West Safety Considerations	CHPRC oversight including site safety, IH, and construction management will work with the contractor on a daily basis to reduce this risk potential.			Successful completion of the project is contingent upon ongoing implementation of safety and health practices. Project is proceeding with required training for CHPRC staff and its subcontractors, including those that have not previously been trained on the Hanford Reservation.
SGW-121: 200 West P&T Work - Software Development & Verification/Validation	Monitor progress of software development and apply additional resources as necessary. Visit vendors or coordinate vendors' visits to the site as necessary to facilitate integration testing.			Main issue is difficulty experienced while integrating the vendors' package system controls (FBR/MBR) with CHPRC's SCADA system. Probability of occurrence remains until system is fully operational.
SGW-124: 200 W P&T Long-Lead Equipment Fabrication to Site Standards & Requirements	Facilitate and encourage vendors to provide guidance and support when dealing with equipment.			Project completed inspection at vendor facilities to ensure compliance with standards. Project also ensures compliance via submittal review. Lack of coordination between contractor and vendor has produced a requirement for rework in the field. Project is managing the situation, including field oversight, BTR, and engineering support.
SGW-131: 200 W P&T - Readiness Review and Turnover	Project strategy has been to include design authority resources early in development of processes/design. Once issues are identified, expedite design changes to support startup.			As found conditions have affected ATP and subsequent turnover of facility. (E.g. automation of actuator adjustments to provide back pulse of effluent water to MBR has caused rework and delays. Stepped approach to acceptance testing has created this issue as the original plan only required manual adjustments. Phase approach has also required glycerin flush bypass to be added).

## PROJECT BASELINE PERFORMANCE

### Current Month

### (\$M)

WBS 030/RL-0030 Soil and Groundwater Remediation	Budgeted Cost of Work Scheduled	Budgeted Cost of Work Performed	Actual Cost of Work Performed	Schedule Variance (\$)	Schedule Variance (%)	Cost Variance (\$)	Cost Variance (%)
Base RL-0030.C1 GW Remedy Implement	3.3	4.4	7.2	1.1	33.7	(2.7)	-62.6
ARRA RL-0030.R1.1 Cleanup Operations	0.0	0.0	0.2	0.0	0.0	(0.2)	0.0
ARRA RL-0030.R1.2 Well Drilling Operations	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	0.0	<u>(0.0)</u>	0.0
<b>Subtotal RL-0030.C</b>	<b>3.3</b>	<b>4.4</b>	<b>7.4</b>	<b>1.1</b>	<b>33.7</b>	<b>(3.0)</b>	<b>-67.7</b>
Base RL-0030.O1 RL 30 (Operations)	8.5	8.1	6.9	(0.4)	-4.5	1.2	15.1
ARRA RL-0030.R1.3 Support Operations	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	0.0	<u>0.0</u>	0.0
<b>Total</b>	<b>11.8</b>	<b>12.5</b>	<b>14.3</b>	<b>0.7</b>	<b>6.1</b>	<b>(1.8)</b>	<b>-14.0</b>

Numbers are rounded to the nearest \$0.1M.

#### CM Schedule Performance

Current month schedule variances that exceed thresholds are as follows:

#### **RL-0030.C (+\$1.1M/+33.7%)**

##### **Base RL-0030.C1 GW Remedy Implementation (+\$1.1M)**

##### 200 ZP-1 Operable Unit (+\$1.1M)

The overall Sludge Stabilization System is behind schedule. However, performance taken in December was for BCWS planned in prior months therefore resulting in a current month positive schedule variance. As additional work is completed the overall contract to date behind schedule position will improve.

##### **ARRA RL-0030.R1.1 Cleanup Operations (\$0.0M)**

There is no current month schedule variance.

##### **ARRA RL-0030.R1.2 Well Drilling Operations (\$0.0M)**

There is no current month schedule variance.

#### **RL-0030.O1**

##### **Base RL-0030.O1 RL 30 (Operations) (-\$0.4M/-4.5%)**

##### 100 HR-3 Operable Unit (-\$0.3M)

HX pump & treat Operational Test Procedure (OTP) was completed in December ahead of schedule. Performance for December BCWS was taken early in the month of November. There is a negative current month schedule variance in December, as the performance was taken in November.

#### **RL-0030.R1.3**

##### **ARRA RL-0030.R1.3 Support Operations (\$0.0M/0.0%)**

There is no current month schedule variance.

#### CM Cost Performance

Current month schedule variances that exceed thresholds are as follows:

#### **RL-0030.C (\$-3.0M/-67.7%)**

##### **Base RL-0030.C1 GW Remedy Implementation (-\$2.7M)**

##### 200 ZP-1 Operable Unit (-\$2.7M)

Sludge Stabilization System installation is costing more than budgeted. There have been significant delays in long lead equipment, field installation issues, design changes and schedule extensions.

#### ARRA RL-0030.R1.1 Cleanup Operations (-\$0.2M)

All current month variances are within reporting thresholds.

#### ARRA RL-0030.R1.2 Well Drilling Operations (-\$0.0M)

All current month variances are within reporting thresholds.

#### RL-0030.O1

#### Base RL-0030.O1 RL 30 (Operations) (+\$1.2M/+15.1%)

All variances are within reporting thresholds except as listed below.

#### 100 KR-4 Operable Unit (+\$0.3M)

The current month positive cost variance resulted from efficiencies obtained in operations and maintenance activities. Resources were diverted from the Level of Effort O&M accounts.

#### RL-0030.R1.3

#### ARRA RL-0030.R1.3 Support Operations (\$0.0M/0.0%)

All current month variances are within reporting thresholds.

### Contract-to-Date (\$M)

WBS 030/ RL-0030 Soil and Groundwater Remediation	Budgeted Cost of Work Scheduled	Budgeted Cost of Work Performed	Actual Cost of Work Performed	Schedule Variance (\$)	Schedule Variance (%)	Cost Variance (\$)	Cost Variance (%)	Budget at Completion (BAC)	Estimate at Completion (EAC)	Variance at Completion (VAC)
Base RL-0030.C1 GW Remedy Implement	52.9	51.4	58.8	(1.6)	-3.0	(7.4)	-14.4	60.4	69.1	(8.6)
ARRA RL-0030.R1.1 Cleanup Operations	175.0	175.0	174.6	0.0	0.0	0.4	0.2	175.0	174.6	0.4
ARRA RL-0030.R1.2 Well Drilling Operations	<u>40.7</u>	<u>40.7</u>	<u>38.4</u>	<u>0.0</u>	0.0	<u>2.4</u>	5.8	<u>40.7</u>	<u>38.4</u>	<u>2.4</u>
<b>Subtotal RL-0030.C</b>	<b>268.7</b>	<b>267.1</b>	<b>271.7</b>	<b>(1.6)</b>	<b>-0.6</b>	<b>(4.6)</b>	<b>-1.7</b>	<b>276.2</b>	<b>282.0</b>	<b>(5.8)</b>
Base RL-0030.O1 RL 30 (Operations)	396.1	397.6	400.5	1.5	0.4	(2.9)	-0.7	1,170.8	1,174.2	(3.4)
ARRA RL-0030.R1.3 Support Operations	<u>51.4</u>	<u>51.4</u>	<u>50.9</u>	<u>0.0</u>	0.0	<u>0.5</u>	0.9	<u>51.4</u>	<u>51.0</u>	<u>0.5</u>
<b>Total</b>	<b><u>716.2</u></b>	<b><u>716.1</u></b>	<b><u>723.2</u></b>	<b><u>(0.1)</u></b>	<b>-0.0</b>	<b><u>(7.0)</u></b>	<b>-1.0</b>	<b><u>1,498.4</u></b>	<b><u>1,507.2</u></b>	<b><u>(8.8)</u></b>

Numbers are rounded to the nearest \$0.1M.

#### CTD Schedule Performance

The primary contributors to the schedule variances that exceed the reporting thresholds are discussed below:

#### RL-0030.C (-\$1.6/-0.6%)

#### Base RL-0030.C1 GW Remedy Implementation (-\$1.6M)

#### 200 ZP-1 Operable Unit (-\$1.6M)

Negative schedule variance is due to delays associated with Sludge Stabilization System subcontractor submittals, fair cost estimates, award of contracts and design changes.

**ARRA RL-0030.R1.1 Cleanup Operations (\$0.0M)**

Scope is complete. There is no contract to date schedule variance.

**ARRA RL-0030.R1.2 Well Drilling Operations (\$0.0M)**

Scope is complete. There is no contract to date schedule variance.

**RL-0030.O1****Base RL-0030.O1 RL 30 (Operations) (+\$1.5M/+0.4%)****100 NR-2 Operable Unit (+\$2.5M)**

Positive schedule variance has resulted from performing barrier expansion and sampling support that was planned in FY13 and performed in FY11 and FY12.

**RL-0030.R1.3****ARRA RL-0030.R1.3 Support Operations (\$0.0M/0.0%)**

Scope is complete. There is no contract to date schedule variance.

**CTD Cost Performance**

The primary contributors to the cost variances that exceed the reporting thresholds are discussed below:

**RL-0030.C (-\$4.6/-1.7%)****Base RL-0030.C1 GW Remedy Implementation (-\$7.4M)****200-ZP-1 Operable Unit (-\$7.4M)**

Major contributors to the variance are as follows:

- 200W P&T construction negative CV is associated with the CHPRC accrued costs for Construction Contractor's completed work scope defined in Change Notifications which are in the process of definitization. The costs are associated with the resources expended to complete the P&T facility by the end of FY2011 including added shifts, overtime, and logistics of working parallel activities.
- Sludge Stabilization System installation is costing more than budgeted. There have been significant delays in long lead equipment, field installation issues, design changes and schedule extensions that have resulted in cost overruns.
- Interim Operations reflects significant progress and cost underruns achieved to date for System Calibration
- Design of the permanent hookup of well EW-1 was lower than planned as only minor changes were needed to an existing design
- Cost for performing general operating and maintenance and minor modification activities have been lower than planned as the system has been running smoothly
- Cost for collecting depth-discrete groundwater and soil samples during the installation of new wells was less than planned
- 200W Pump-and-Treat Remedial Design/Remedial Action work plan and preliminary design activities were completed with fewer resources than planned

**ARRA RL-0030.R1.1 Cleanup Operations (+\$0.4M)**

Contract to Date variances are within threshold.

**ARRA RL-0030.R1.2 Well Drilling Operations (+\$2.4M)****Drilling (+\$2.4M)**

The positive cost variance is due to efficiencies and savings obtained in drilling for 100-NR-2 and 200-BP-5 wells. Cost efficiencies have been obtained through an aggressive drilling schedule with savings in

support personnel and faster drilling methods. Well decommissioning has also been completed for less than planned.

### **RL-0030.O1**

#### **Base RL-0030.O1 RL 30 (Operations) (-\$2.9M/-0.7%)**

##### Integration & Assessments (+\$4.0M)

Primary drivers for this positive cost variance are as follows:

- Less subcontractor support required for Central Plateau strategy development and integration
- Sample Management and Reporting has performed work scope more efficiently than planned
- Less cleanup document reviews were required than originally planned, requiring less contract support. Also efficiencies/savings were realized in establishing document templates, reviewing procedures, and software procurements.

##### Drilling (-\$2.4M)

Radiological contamination encountered on five NR-2 wells has caused additional supporting resource requirements (Health Physics Technicians). In order to recover schedule additional well drilling rigs were used, resulting in additional overruns to the project. Also, cost for remaining casing at the completion of the project was accrued as it cannot be released to the contractor.

##### 100-NR-2 OU (+\$3.0M)

Barrier expansion and sampling scope, chemical treatment and maintenance scope, jet grouting pilot test work, RI/FS work plan and interim proposed plan reporting were performed more efficiently than planned leading to the positive cost variance.

##### 100 HR-3 Operable Unit (-\$3.6M)

Primary contributors to the negative cost variance are as follows:

- 100 DX- Extensive effort required to design the pH adjustment system, cost overruns in completing the OU Remedial Process Optimization studies.
- 100 DX -Higher than expected cost to complete acceptance test plan and the operational test plan
- Cost of realigning wells from DR-5 to 100 DX
- 100 HX- Construction Material procurement costs were high and ATP resources to complete exceeded the plan.
- Additional time and resources being spent on internal CERCLA (RI/FS) document development that will be recovered in completed Draft A document

##### 200 PW-1 OU (+\$1.0M)

Labor and subcontract cost for general operations and minor modifications support is less than planned. In addition, efficiencies and savings experienced with the Soil Vapor Extraction (SVE) system testing prior to March 2010 as well as the removal of two old SVE units.

##### Usage Based Services (-\$1.4M)

Increased cost associated with training due to the additional ARRA work in FY2010 and fleet services costs that occurred in FY2009 and FY2010. Overruns will continue to be funds-managed within the S&GRP project.

### **RL-0030.R1.3**

#### **ARRA RL-0030.R1.3 Support Operations (+\$0.5M/+0.9%)**

##### Regulatory Decision and Closure Integration (+\$1.7M)

The positive cost variance is primarily due to completing work scope more efficiently than planned, primarily in the areas of multi-incremental sampling (using existing documentation and direct haul rather

than staging), and borehole drilling and landfill characterization (competitive subcontracting of drilling support and efficient field support).

#### Ramp-up and Transition (-\$1.8M)

The negative cost variance was driven by increased Project Services Distribution to RL-0030.

#### **Estimate at Completion (EAC)**

ARRA – The projected variance at completion is +1.2%.

Base – The projected variance at completion of -1.0% is spread among several operational areas and is not considered significant.

ARRA – The EAC change from the previous month is within reporting thresholds.

Base – The EAC change from the previous month is within reporting thresholds.

## **FUNDS vs. SPEND FORECAST (\$M)**

WBS 030/ RL-0030 Soil and Groundwater Remediation	FY2012		
	Projected Funding	Spending Forecast	Spend Variance
<b>ARRA</b>	0.6	0.6	0.0
<b>Base</b>	121.1	119.3	1.8

Numbers are rounded to the nearest \$0.1M.

#### **Funds/Variance Analysis**

Funding includes FY2011 carryover and FY2012 new Budget Authority.

#### **Critical Path Schedule**

Critical path analysis can be provided upon request.

#### **Baseline Change Requests**

BCRA -030-12-004R0 – December Administrative BCR

#### **FY2012 Management Reserve (Funded):**

ARRA = \$0.0M

Base = \$2.8M

No MR was used in December, see Management Reserve table in the CHPRC Overview.

## MILESTONE STATUS

Tri-Party Agreement (TPA) milestones represent significant events in project execution. DOE Enforceable Agreement milestones were established to provide high-level visibility to critical deliverables and specific status on the accomplishment of these key events. The PMB Revision 3, implemented in November 2011, and subsequent approved BCRs define CHPRC planning with respect to TPA milestones. The following table is a one year look ahead of commitments and TPA enforceable milestones and non-enforceable target due dates.

Number	Title	Type	Due Date	Actual Date	Forecast Date	Status/ Comment
M-015-90	Submit RCRA Facility Investigation /Corrective Measures Study (RFI/CMS) and RI/FS work plan for 200-IS-1 OU to Ecology	TPA	12/31/11	12/6/11		Complete per RL transmittal letter 12-AMCP-0032 (12/6/11)
M-015-93A	Submit Rev'd RFI/CMS & RI/FS Work Plan for SW-2 to Ecology	TPA	12/31/11	12/6/11		Complete per RL transmittal letter 12-AMCP-0031 (12/6/11)
M-091-40L-032	Submittal Jul-Sep 4th Qtr FY11 Burial Ground Sample Results	TPA	12/15/11	12/5/11		Complete
M-015-72-T01	Submit RI/FS Report and PP for 300-FF-2/5 OUs for GW and Soil	TPA	12/31/11	12/27/11		Complete per RL transmittal letter 12-AMCP-0042

Number	Title	Type	Due Date	Actual Date	Forecast Date	Status/ Comment
M-015-91A	Submit RI/FS Work Plan for the 200-WA-1 OU to U.S. Environmental Protection Agency (EPA)	TPA	12/31/11	12/28/11		Complete per RL transmittal letter 12-AMCP-0039
M-016-122	Begin Phase 1 Operation of 200W Pump-and-Treat System	TPA	12/31/11	12/14/11		Complete
M-015-70-T01	Submit Feasibility Study Report and Proposed Plan for 100-HR-1/2/3 and 100-DR-1/2 OUs	TPA	1/12/12		1/12/12	Working with DOE regarding a recovery schedule and path forward
M-015-68-T01	Submit CERCLA RI/FS Report and Proposed Plan for the 100-BC-1, 100-BC-2 and 100-BC-5 Operable Units for groundwater and soil.	TPA	3/15/12		3/15/12	On Schedule

Number	Title	Type	Due Date	Actual Date	Forecast Date	Status/ Comment
M-091-40L-033	Submit Oct-Dec 1 <sup>st</sup> Quarter Burial Ground Sample Results	TPA	3/15/12		3/15/12	On Schedule
M-037-03	Submit revised closure plans to support TSD closure of two TSD Units: 216-B-3 Main Pond system and 216-S-10 Pond and Ditch	TPA	4/30/12		4/30/12	Currently DOE is working with Ecology to adjust milestone date
M-015-64-T01	Submit RI/FS Report and PP for 100-FR-1/2/3 and 100-IU-2/6	TPA	5/14/12		5/14/12	On Schedule
M-024-58E	Initiate Discussions of Well Commitments.	TPA	6/1/12		6/1/12	On Schedule
M-091-40L-034	Submit January to March 2nd Quarter FY-12 Burial Ground Sample Results.	TPA	6/15/12		5/31/12	On Schedule

Number	Title	Type	Due Date	Actual Date	Forecast Date	Status/ Comment
M-015-110D	Submit Technicum-99 Pilot-scale Treatment Study Test Report as an element of the Remedial Investigation for the 200-WA-1 OU to EPA.	TPA	6/30/12		6/30/12	On Schedule
M-016-120	GW Treatment System <50 gpm for Tc-99 Plume at S/SX Tank Farm	TPA	8/31/12		4/31/12	On Schedule
M-024-63-T01	Conclude Discussions of Well Commitments Initiated Under M-024-058 and Add a New Interim M-024 Milestone Commitment for 12/31/15	TPA	8/1/12		8/1/12	On Schedule

Number	Title	Type	Due Date	Actual Date	Forecast Date	Status/ Comment
M-015-62-T01	Submit a FS/PP for the 100 NR-1 and 100-NR-2 Operable Units including groundwater and soil.	TPA	9/17/12		9/17/12	On Schedule
M-091-40L-035	Submit April to June 3 <sup>rd</sup> Quarter FY-12 Burial Ground Sample Results	TPA	9/15/12		8/31/12	On Schedule

### SELF-PERFORMED WORK

The Section H. clause entitled “Self-Performed Work” is addressed in the Overview.

### GOVERNMENT FURNISHED SERVICES AND INFORMATION (GFS/I)

None currently identified.