



**2016 ECR Plan Status Update Report
Quarterly Report – Update #12
July 30, 2019**

Executive Summary:

General

This report covers LG&E and KU's ("Companies") progress on the 2016 Environmental Cost Recovery ("ECR") Plan through the second quarter of 2019.

The overall 2016 ECR Plan safety performance through the second quarter of 2019 remains excellent with a year-to-date OSHA Recordable Incident Rate of 0.34 and an inception-to-date OSHA Recordable Incident Rate of 0.57, compared to the industry average of 3.2. On June 24, 2019 the remains of Mr. Aaron Bunger were located and removed from ATB #2 at Ghent, and subsequently released by the Carroll County Coroner to Mr. Bunger's family.

The total 2016 ECR Plan projected cost is being lowered to \$890.2 million (net) due to less estimated contingency compared to the filed total of \$996.4 million as provided in Case Nos. 2016-00026, 2016-00027, and 2017-00483. Total spend to date increased from \$549.3 million (net) last quarter to \$603.2 million (net) through June 30, 2019.

CCR Compliance (CCR Rule and State CCR Pond Closures)

Safety performance through the second quarter is excellent with a year-to-date OSHA Recordable Incident Rate of 0.74 and an inception-to-date Recordable Incident Rate of 0.62, compared to an industry average Recordable Rate of 3.2.

The total projected costs for the Coal Combustion Residual ("CCR") Closure Program remains \$862.9 million (net). Total spend to date through June 30, 2019 has increased from \$530.3 million (net) last quarter to \$580.9 million (net).

The remaining engineering activities primarily consist of corrections for "as-built" field changes during construction on the projects completed or under construction, design engineering associated with the diffusers at Ghent for the Process Water System ("PWS") discharges, and final design engineering associated with the clean closure of the Trimble County Gypsum Storage Pond. The Mill Creek Main Ash Pond Closure agreement and the Diffuser Construction contract were awarded to Tetra Tech. Remaining procurement activities are associated with contract maintenance of all awarded contracts through completion of the work and warranty periods, the development of the remaining RFQ documents for the closure scopes for the Trimble County Bottom Ash and Gypsum Storage ponds, as well as Phase III of Ghent's Ash Treatment Basin ("ATB") #2.

The Company continues to monitor and evaluate changes to the CCR Rule proposed by the U.S. Environmental Protection Agency (“EPA”). Lawsuits filed by the Sierra Club challenging the EPA’s Phase I, Part I Rule have been settled. The Phase I, Part I has been remanded without vacatur of the October 31, 2020 requirement for CCR impoundment to cease operation if they fail a ground water protection standard, or if the bottom of the impoundment has less than 5-feet of separation from groundwater. The Companies have not made any design or construction changes to their compliance plan as a result of the EPA’s Rule and subsequent resolution of litigation related to the Phase I, Part I rule.

CCR Impoundment Closures

- Ghent – The Phase I scope construction was impacted by the record rainfalls in September through December of 2018, as well as the rain events during the first quarter of 2019. Substantial Completion for the Phase I scope of work was achieved on May 15, 2019. Tetra Tech’s Phase II scope (construction of the South Cooling Pond and closure of ATB #1) has been limited to management of process inflows, installation of dewatering wells, and dredging to address underwater elevation changes. Overall, Tetra Tech is progressing the Ghent projects well with no compliance issues forecasted. As previously reported, closure of ATB #2 will now be bid separately as a Phase III scope.
- E.W. Brown – Thalle Construction Company (“Thalle”) completed construction of the new Process Pond which was placed into service in May 2019. Thalle has created dewatering and excavation plans to support closure of the Auxiliary Ash Pond. CCR excavation and regrading work is to begin in August 2019 with dewatering beginning in August 2019 when the new KPDES permit is expected to be received. W.B. Koester reached substantial completion of the Process Pond discharge pipe and diffuser into Lake Herrington in June 2019.
- Green River – All work associated with closure of the Main Ash Pond and SO2 Pond have been completed. Weather has negatively impacted Trans-Ash’s ability to finish grading activities in ATB #2. It is anticipated the work will be completed during the third quarter of 2019.
- Mill Creek – South Ponds (Construction Runoff Pond, Clear-well Pond, and Dead Storage Pond) closure work is also progressing well by MAC Construction (“MAC”). MAC has completed closure and construction on the Construction Runoff and Clearwell Ponds with both ponds being fully closed, lined and placed into operation. Excavation of CCR material from the Dead Storage Pond was completed during the first quarter of 2019, while placement of soil backfill has been ongoing during the second quarter of 2019. The Ash Pond closure contract was awarded to Tetra Tech in April, 2019. Tetra Tech’s onsite activities have been limited to site mobilization, development of work plans, procurement of materials, and preliminary geotechnical investigations. Construction of the Diffuser was also awarded to Tetra Tech during the second quarter with activities being limited to procurement of materials and a site kickoff meeting.
- Pineville – Thalle has completed 75% of the regrading of the CCR within the impoundment. Work continues with the construction of perimeter drainage ditches prior to liners being deployed

throughout the third quarter. Work continues to be impacted by adverse weather resulting in a forecasted completion by the end of the third quarter of 2019.

- Tyrone – Thalle completed placement of cap and top soil across the impoundment’s synthetic liner system. Work continues with the placement of rip-rap armoring around the impoundment, completion of the impoundment perimeter access road, and seeding of the borrow area. Work is anticipated to be completed in the third quarter of 2019.

The CCR Impoundment Closure Program is on schedule to be completed on or before the CCR Rule regulatory deadlines.¹ To ensure the Companies’ CCR Compliance projects comply with the regulations and to share best-practices and lessons-learned, the Companies continue to hold program-wide meetings with internal project management teams and affected stations to provide opportunities for all parties to deliver updates and to ensure the contractors are providing similar deliverables across the projects.

Process Water Systems

- Trimble County – AMEC achieved Substantial Completion on the PWS in May 2019 and is now focused on punch-list items and testing activities. Performance testing began in June 2019.
- Mill Creek – AMEC achieved Mechanical Completion on the PWS in March 2019. Initial commissioning was completed during the quarter and performance testing was completed in July 2019. MAC completed the lining of the new Knockout Pond, which is a small pond that allows heavy solids to fall out prior to reaching the process water pond.
- Ghent – Burns & McDonnell (“B&McD”) continues to work on finalizing construction of mechanical/electrical systems, as well as addressing punch list items. During the second quarter of 2019, B&McD continued with cold commissioning activities in preparation of achieving Mechanical Completion. Bowen Engineering, a local contractor and a subcontractor to B&McD, is performing most of the civil/structural/mechanical construction. Mechanical Completion is anticipated to occur during the third quarter of 2019.
- E.W. Brown – Bowen completed the rerouting of selected Station process flows from the Auxiliary Ash Pond to the new Process Pond in May of 2019. The ABS Maintenance Drain System is nearing completion with the installation of tank coatings and associated mechanical and electrical systems in order to begin checkout and startup of the system in late July 2019. All seven tanks along with

¹ EPA has committed to revising various portions of the CCR Rule in the period between mid-2018 and the end of 2019. The revised regulatory language is expected to provide clarification to some portions of the Rule which are nebulous while effectively addressing other parts of the Rule which have had legal challenges upheld. An August 21, 2018 decision by the DC Circuit Court has potentially expanded the universe of facilities and units that are subject to the Rule and is expected to force EPA to revise portions of the Rule which it had not anticipated. While these conditions may suggest uncertainty, the Rule’s baseline requirements have not changed and the Companies’ plans were developed to meet those requirements, even at locations that were not previously subject to the Rule. The Companies are well-positioned to comply with the evolving CCR Rule and, as a result, have not significantly changed any of the efforts already underway to comply with the Rule’s basic requirements and deadlines. The Companies will continue to track actions related to the Rule and to ongoing litigation and will provide updates to the Commission as they relate to construction schedules and activities.

platform steel are set at the Toe Drain and Coal Pile Runoff (“TDCPR”) treatment system. Construction continues within the TDCPR enclosure building, which houses chemical treatment skids and the electrical room. Construction also continues at the Process Water System (“PWS”) treatment system with installation of the reaction tanks, clarifier tank, effluent tank and associated system pumps and filter equipment. The PWS enclosure is erected along with chemical skids and electrical equipment being set. Continued mechanical and electrical work will continue at the TDCPR and PWS treatment systems through the third quarter with system testing planned for the fourth quarter of 2019. Thalle completed the new process water pond and it was placed into service during the quarter.

Suez, the water treatment technology supplier for the Ghent, Mill Creek, and Trimble County PWS projects, is primarily focused on working in concert with both AMEC and B&McD on initial commissioning activities, as well as performance testing support. To ensure the Companies’ PWS projects share best-practices and lessons-learned across all projects, the Companies continue to hold program-wide meetings with the owner’s engineers (“OEs”), internal project management teams, and all affected stations. These meetings provide an opportunity for all parties to deliver updates and ensure the OEs and contractors are providing similar deliverables and lessons learned across the projects.

Schedules

CCR Rule and State CCR Impoundment Closures

<u>Project</u>	<u>Project #</u>	<u>EPC Status</u>	<u>Planned Construction Completion³</u>
E.W. Brown Aux Pond	KU Project 42	Awarded July 9, 2018	December 2020
E.W. Brown Main Ash Pond (Deleted Phase III of Landfill)	KU Project 36	Awarded July 9, 2018	December 2019
Ghent ATB #1	KU Project 40	Awarded September 7, 2018	December 2021
Ghent ATB #2	KU Project 40	Issue RFQ 3/4Q 2019	December 2024
Ghent Gypsum Stack	KU Project 40	Amended Sept. 7, 2018	December 2020
Green River Main Pond	KU Project 39	Completed	Cap and Closure Completed
Green River ATB #2	KU Project 39	Awarded July 28, 2017	3Q 2019
Green River SO2 Pond	KU Project 39	Completed	Clean Closure Completed
Mill Creek Ash Pond	LG&E Project 29	Awarded April 4, 2019	December 2021
Mill Creek Clearwell Pond	LG&E Project 29	Completed	Closure Completed & New Pond in Service
Mill Creek Construction Runoff Pond	LG&E Project 29	Completed	Closure Completed and New Pond in Service
Mill Creek Emergency Pond	LG&E Project 29	Completed	Closure Completed
Mill Creek Dead Storage Pond	LG&E Project 29	Awarded December 27, 2017	3Q 2019
Pineville Ash Pond	KU Project 39	Awarded December 7, 2017	3Q 2019
Trimble County Bottom Ash Pond	KU Project 41, LG&E Project 30	Issue RFQ 3/4Q 2019	December 2024
Trimble County Gypsum Storage Pond	KU Project 41, LG&E Project 30	Issue RFQ 3/4Q 2019	December 2021
Tyrone Ash Pond	KU Project 39	Awarded December 7, 2017	3Q 2019

Process Water Systems

<u>Project</u>	<u>Project #</u>	<u>EPC Status</u> ²	<u>Planned In-Service Date</u> ³
E.W. Brown Process Water System	KU Project 42	Awarded June 14, 2018	December 2019
Ghent Process Water System	KU Project 40	Awarded August 1, 2017	October 2019
Mill Creek Process Water System	LG&E Project 29	Awarded July 19, 2017	August 2019
Trimble County Process Water System	KU Project 41, LG&E Project 30	Awarded July 7, 2017	August 2019

E.W. Brown Landfill Phase II

Thalle has completed grading the subgrade of Phase II of the landfill and over 90% of the leachate liner system. Phase II work will be completed in the third quarter of 2019.

Quarterly Status Update:

State Division of Waste Closure Projects:

KU Project 39 – Green River (GR)/Pineville (PV)/Tyrone (TY) Impoundment Closure

Green River: Trans-Ash has completed the installation of the process pond, main ash pond cap and relocation of the SO2 pond material into ATB #2 as well as clean closure of the pond. Cap and closure of ATB #2 is ongoing and has been negatively impacted due to adverse weather conditions. Associated Engineers, Inc. is providing Construction Quality Assurance (“CQA”) services while AMEC is providing OE services on the Green River project.

² Engineering, Procurement, and Construction (“EPC”) Status - the red font signifies actuals.

³ The Planned In-Service Dates reflect the executed EPCs. Ghent ATB #2 and Trimble County BAP was changed to 2024 to reflect a mid-point between the original rule and the proposed rule changes being litigated. Trimble County GSP was accelerated to reflect the clean-closure plan being completed prior to the original plan of cap and closure.



Green River CCR Impoundments – Site View – January 2019



Green River CCR Impoundments – Site View – June 2019

Pineville: Thalle has completed 75% of the regrading of the CCR within the impoundment. Work continues with the construction of perimeter drainage ditches prior to liners being deployed through the 3rd quarter. Work continues to be impacted by adverse weather resulting in a forecasted completion by the end of the 3rd quarter of 2019. AMEC is providing CQA and OE services.



Pineville Ash Pond – April 2019



Pineville Ash Pond – June 2019

Tyrone: Thalle completed placement of cap and top soil across the impoundment's synthetic liner system. Work continues with the placement of rip-rap armoring around the impoundment, completion of the impoundment perimeter access road, and seeding of the borrow area. Work will be completed early in the third quarter of 2019. AMEC is providing CQA and OE services.



Tyrone Ash Pond – April 2019



Tyrone Ash Pond – June 2019

Federal CCR Rule Closure Projects:

KU Project 40 – Ghent (GH) Station CCR Rule Compliance Construction and New Process Water Systems

KU continues to hold weekly and monthly project update meetings. The Phase I scope construction was impacted by the record rainfalls in September through December of 2018, as well as the rain events during the first quarter of 2019. Substantial Completion for the Phase I scope of work was achieved on May 15, 2019. Tetra Tech’s Phase II scope (construction of the South Cooling Pond and closure of ATB #1) has been limited to management of process inflows, installation of dewatering wells, dredging to address underwater elevation changes. Overall, Tetra Tech is progressing the Ghent projects well with no compliance issues forecasted. As previously reported, closure of ATB #2 will now be bid separately as a Phase III scope. AMEC is providing CQA services while AECOM is providing OE services for KU.

B&McD’s engineering activities are focused on picking up field construction changes. B&McD continues to work on finalizing construction of mechanical/electrical systems, as well as addressing punch list items. During the second quarter of 2019, B&McD continued with cold commissioning activities in preparation of achieving Mechanical Completion. Bowen Engineering, a local contractor and a subcontractor to B&McD, is performing most of the civil/structural/mechanical construction. Mechanical Completion is anticipated to occur during the initial half of the third quarter of 2019. Black & Veatch (“B&V”) is providing OE services on the Ghent PWS project.



Ghent Gypsum Stack – Looking South – April 2019



Ghent Gypsum Stack – Looking East – June 2019



Ghent ATB #1 Cooling Channel – Looking North – April 2019



Ghent ATB #1 Cooling Channel – Looking West – June 2019



Ghent PWS Facility – Site View – April 2019



Ghent PWS Facility – Site View – June 2019

KU Project 41 and LG&E Project 30⁴ – Trimble County (TC) Station CCR Rule Compliance Construction and New Process Water Systems

The final report for the Bottom Ash Pond (“BAP”) dewatering pilot system was completed during the first quarter of 2019. The pilot system consisted of two FLASH units fueled by propane, which were used to evaporate BAP water and create a brine mixture. The Electric Power Research Institute (“EPRI”) used various grout mix designs to encapsulate the brine and pumped it into deposition cells within the footprint of the BAP to monitor its behavior when coming into contact with BAP water. The Companies have completed additional process water chemistry sampling and testing to support analyses on various dewatering options for the BAP. Reports were finalized for the BAP dewatering options and for the process water sampling program. The Companies met with the EPA in April 2019 in Washington D.C. to discuss the BAP dewatering options and review the aforementioned reports. The EPA requested additional test data from the PWS to review and to assist with their ruling.

AMEC achieved Substantial Completion of the PWS in May 2019 and began performance testing in June 2019. AMEC’s subcontractor, MAC Construction, completed constructing pump structures, storm-water structures, and underground utilities that discharge into the future Knockout Pond and will begin work on the Process Pond North Basin. AMEC is focused on punch-list, testing activities, and final surfacing of the site. Black & Veatch (“B&V”) is providing OE services on the Trimble County PWS project.

MAC achieved Substantial Completion of the Knockout Pond (“KOP”) and Process Pond South Basin during the reporting period.

⁴ KU and LG&E’s net costs are split 48%:52% respectively.



Trimble County PWS Facility – Site View Looking West – April 2019



Trimble County PWS Facility – Site View Looking Southwest – June 2019



Trimble County Process Water Ponds – Looking Northeast – June 2019

KU Project 42 – E.W. Brown (BR) Station CCR Rule Compliance Construction and New Process Water Systems

Thalle completed construction of the new Process Pond having been put into service in May 2019. Thalle created dewatering and excavation plans to support closure of the Auxiliary Ash Pond. Information gathered from the pilot dewatering test was used to develop both plans. Impoundment dewatering, as well as CCR excavation and regrading work is expected to begin in August 2019 when the new KPDES permit is received.

W.B. Koester reached substantial completion of the Process Pond discharge pipe and diffuser in June 2019.

Bowen completed the rerouting of selected Station process flows from the Auxiliary Ash Pond to the new Process Pond in May of 2019. The ABS Maintenance Drain System is nearing completion with the installation of tank coatings and associated mechanical and electrical systems in order to begin checkout and startup of the system in late July 2019. All seven tanks along with platform steel are set at the Toe Drain and Coal Pile Runoff (“TDCPR”) treatment system. Construction continues within the TDCPR enclosure building, which houses chemical treatment skids and the electrical room. Construction also continues at the Process Water System (“PWS”) treatment system with installation of the reaction tanks, clarifier tank, effluent tank and associated system pumps and filter equipment. The PWS enclosure is erected with chemical skids and electrical equipment being set. Continued mechanical and electrical work will continue at the TDCPR and PWS treatment systems through the third quarter with system testing occurring in the fourth quarter of 2019.



E.W. Brown Aux Pond – April 2019



E.W. Brown Aux Pond – June 2019



E.W. Brown Landfill Phase II and Closure – April 2019



E.W. Brown Landfill Phase II and Closure – June 2019



E.W. Brown ABS Maintenance Drain System – June 2019



E.W. Brown Toe Drain and Coal Pile Runoff Treatment System – June 2019



E. W. Brown PWS Treatment System – June 2019

LG&E Project 29 – Mill Creek (MC) Station CCR Rule Compliance Construction and New Process Water Systems

South Ponds (Construction Runoff Pond, Clear-well Pond, and Dead Storage Pond) closure work is also progressing well by MAC Construction (“MAC”). MAC has completed closure of the Construction Runoff and Clearwell Ponds. Both ponds are fully closed, lined and placed into operation. Excavation of CCR material from the Dead Storage Pond was completed during the first quarter of 2019, while placement of soil backfill has been ongoing during the second quarter of 2019. Weather has negatively impacted placement of soil backfill during the second quarter of 2019 and construction is expected in August 2019. The Ash Pond closure contract was awarded to Tetra Tech in April, 2019. Tetra Tech’s onsite activities have been limited to site mobilization, development of work plans, procurement of materials, and preliminary geotechnical investigations. Construction of the Diffuser installation in the Ohio River was also awarded to Tetra Tech during the second quarter of 2019. Onsite activities have been limited to procurement of materials and site kickoff meeting. AMEC is performing CQA services while AECOM is providing OE services on the Mill Creek closure projects.

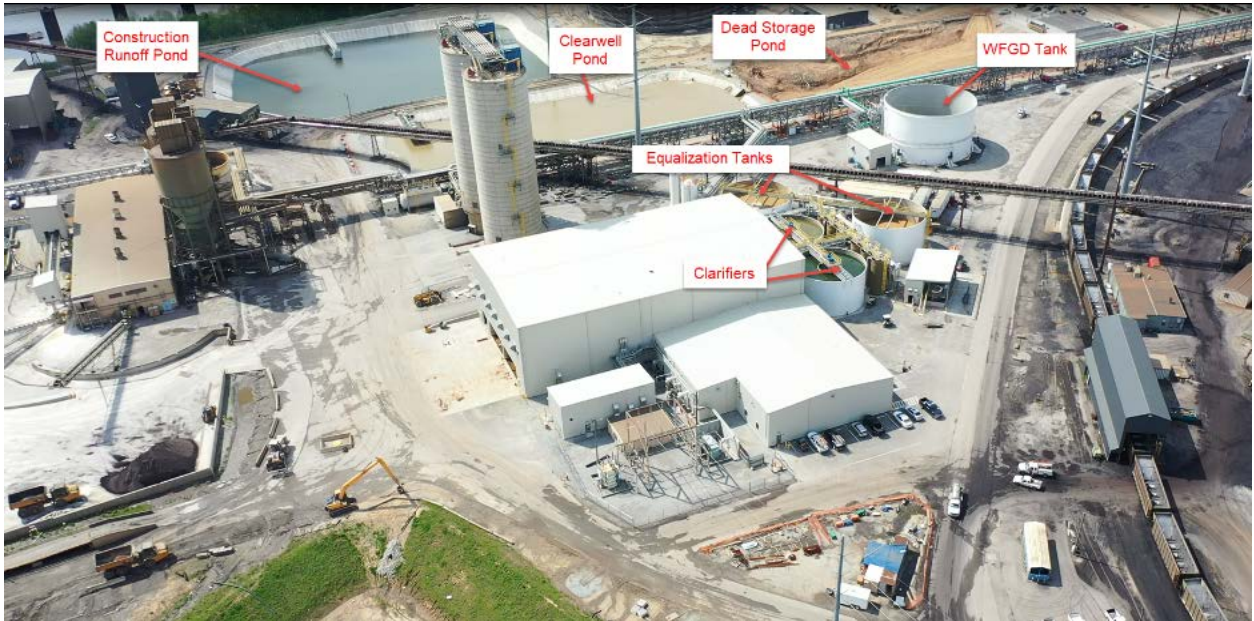


Mill Creek South Ponds – April 2019



Mill Creek South Ponds – June 2019

AMEC completed procurement activities with engineering focused on picking up field corrections on the PWS project. AMEC completed the installation of the mechanical and electrical subsystems. Performance testing of the PWS systems was completed in July 2019. B&V is performing OE services on the MC PWS project.



Mill Creek PWS Facility – Site View – April 2019



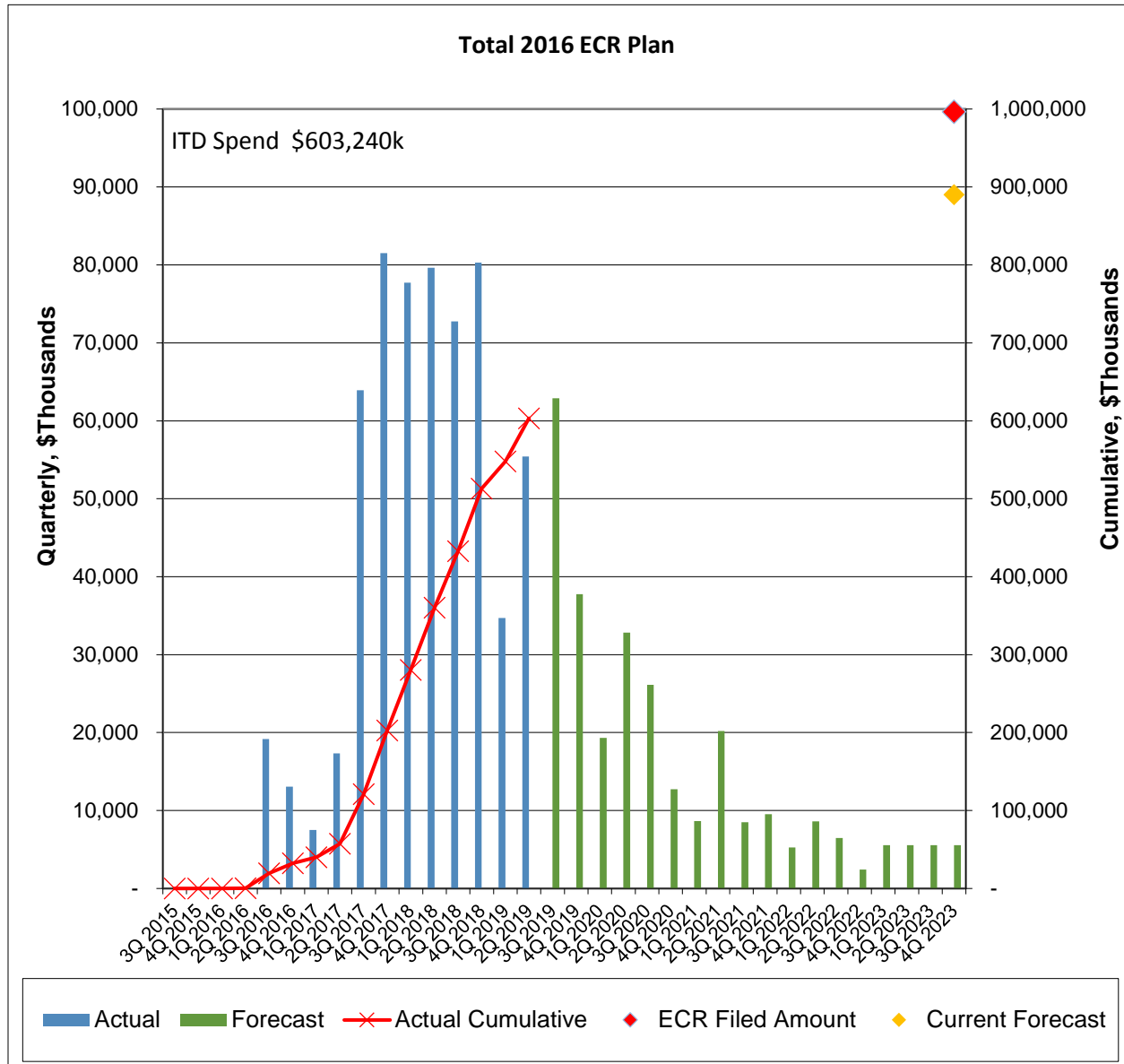
Mill Creek PWS Facility – Site View – June 2019



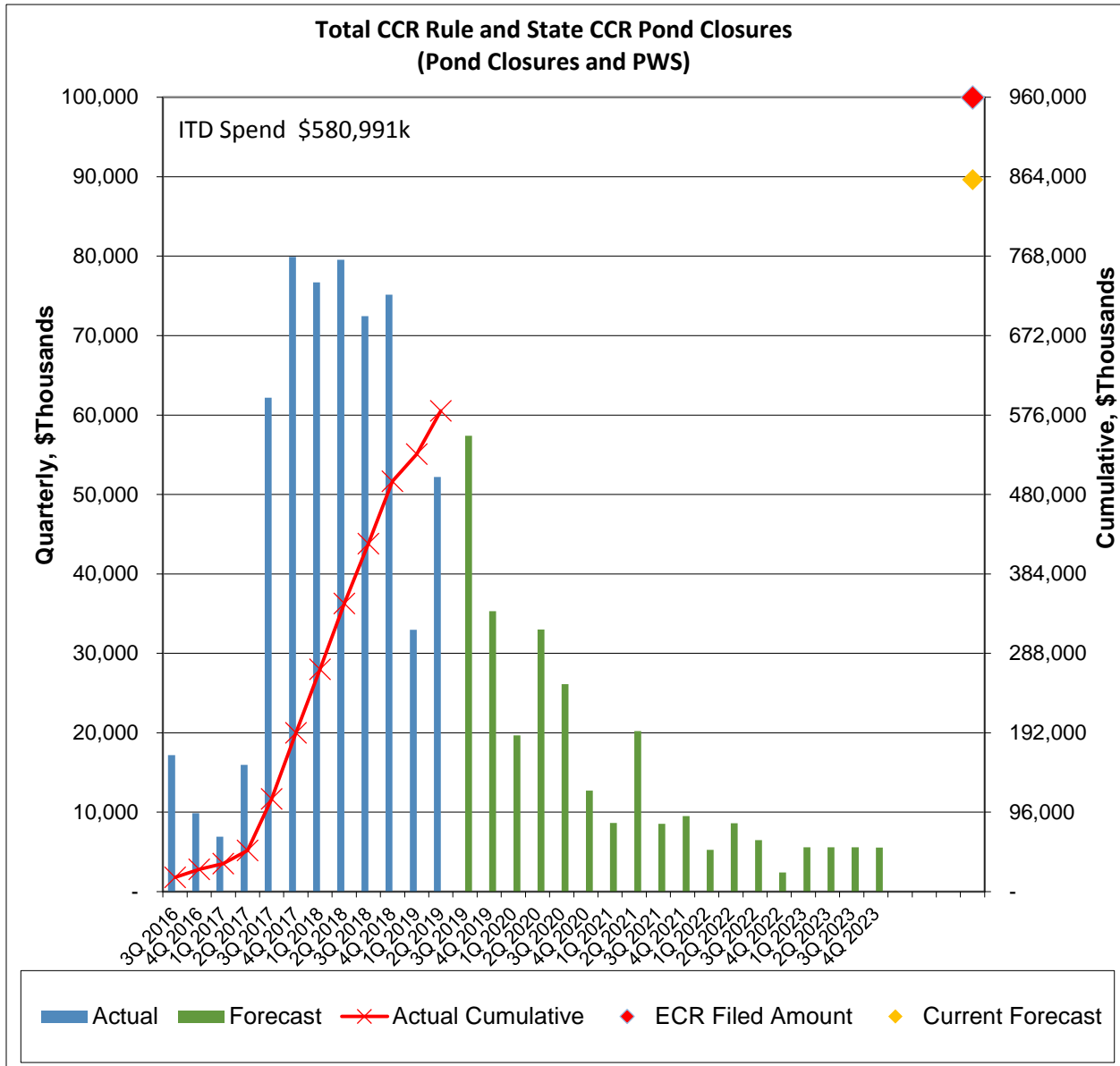
Mill Creek Knock-Out Pond – October 2018 – No Change in June 2019

Financials:

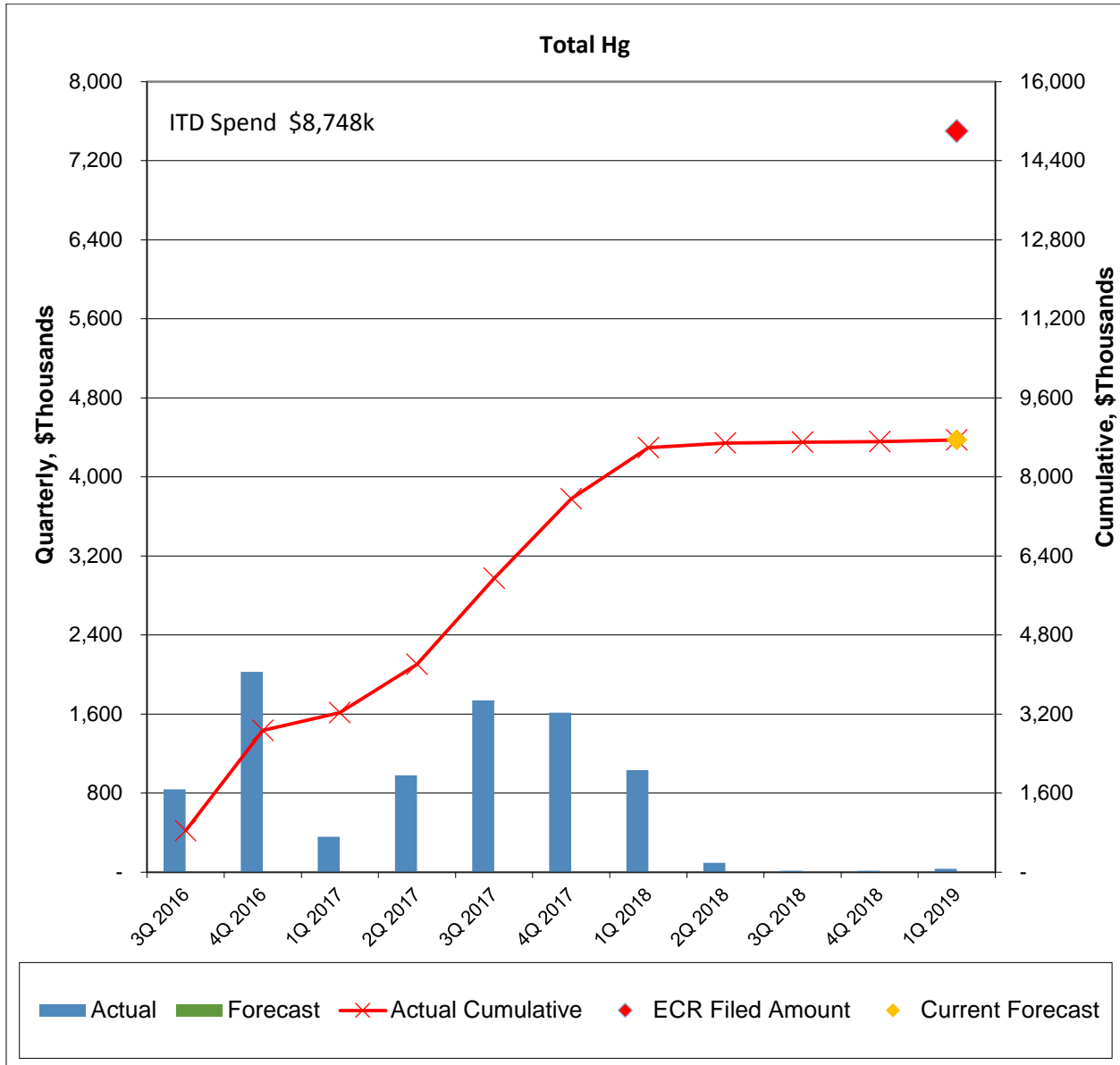
The total 2016 ECR Plan forecasted cost is being lowered to \$890.2 million (net) due to lower estimated contingency, compared to the filed estimate of \$996.4 million (net). Total spend through June 30, 2019 has increased from \$549.3 million (net) last quarter to \$603.2 million (net). For the graph below: 1) the chart includes a symbol (◆) to show the current forecast to completion; and an (2) inception-to-date (“ITD”) Spend shown in the upper left of the chart.



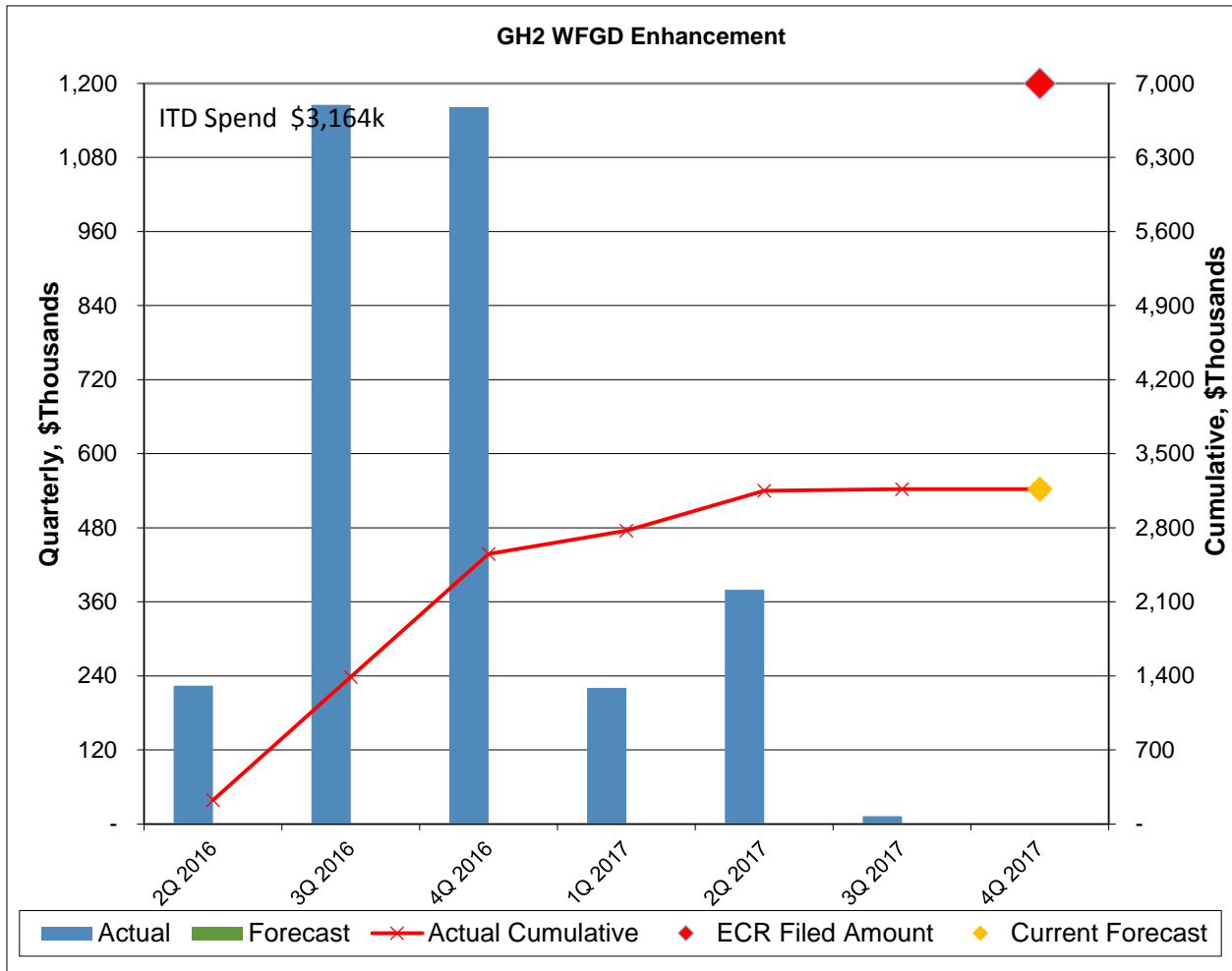
The CCR Impoundment Closure total forecasted cost remained \$862.9 million (net). Total spend through June 30, 2019 has increased from \$530.3 million (net) last quarter to \$580.9 million (net). Note for the graph below: (1) the chart includes a symbol (◆) to show the current forecast to completion; and (2) ITD Spend is shown in the upper left of the chart.



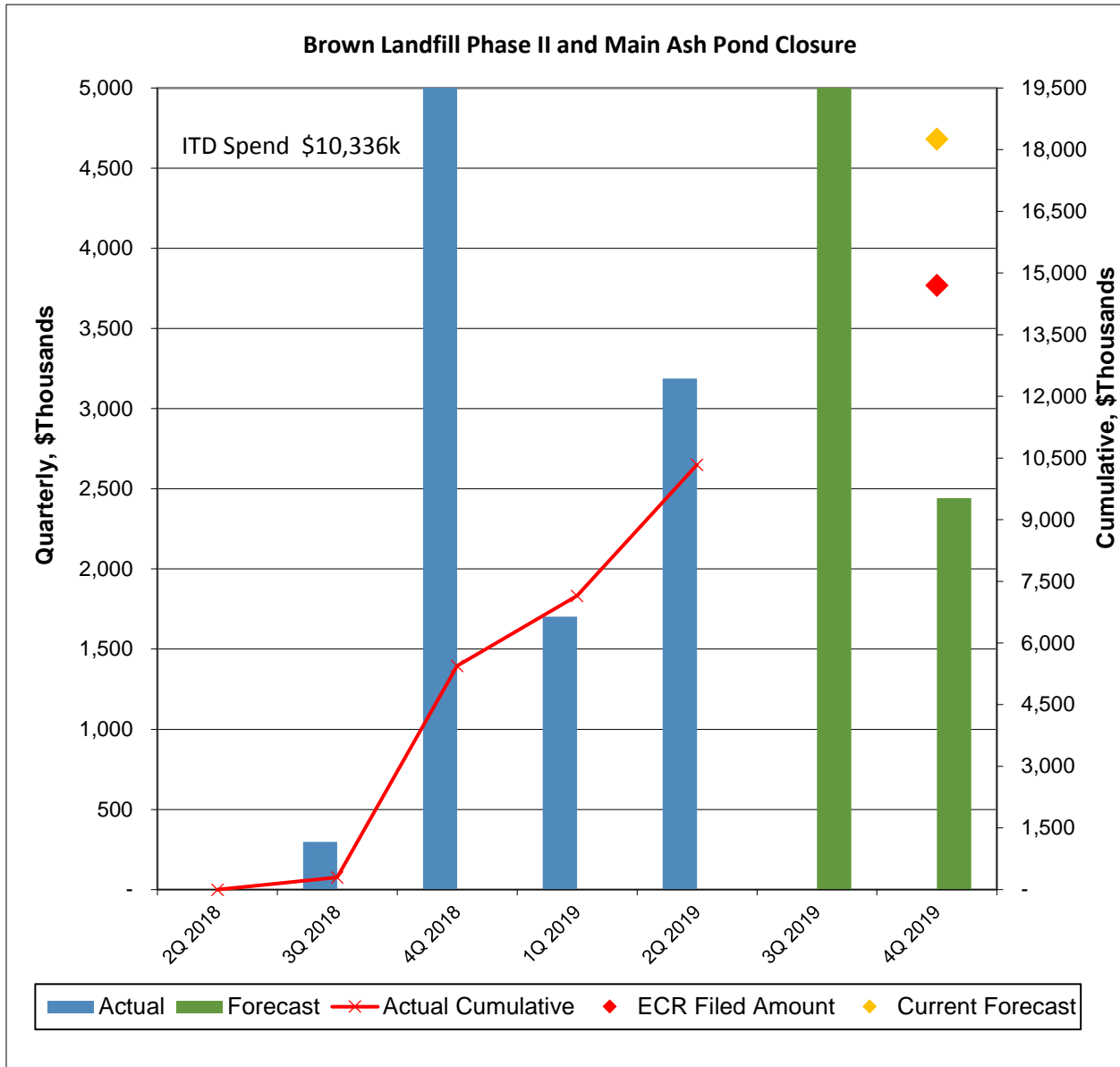
The Mercury Injection projects have been completed and commissioned. The project’s total spend was \$8.7 million compared to the filed estimate of \$15.0 million.



The Ghent Unit 2 WFGD Enhancement project has been completed. Total spend on the project was \$3.2 million compared to the filed estimate of \$7.0 million.



The E.W. Brown Landfill Phase II and Phase III Closure project forecasted cost remains \$17.3 million. Total spend through June 30, 2019 has increased from \$7.1 million (net) last quarter to \$10.3 million (net). Note for the graph below: (1) the chart includes a symbol (◆) to show the current forecast to completion; and (2) ITD Spend is shown in the upper left of the chart.



Planned Activities for Next Quarter:

State Division of Waste Closure Projects

Closure work on the Green River ATB #2 impoundment will continue as planned with completion expected in third quarter of 2019. Thalle will also continue advancing the closure of the CCR impoundment at Pineville and Tyrone as planned with completion expected in third quarter of 2019.

Federal CCR Rule Closure Projects

CCR Closures:

Tetra Tech will continue with Phase II closure activities at Ghent. At Mill Creek, MAC will complete backfill of the Dead Storage Pond. Tetra Tech will start closure activities on the Mill Creek Main Ash Pond. Construction will continue for the E.W. Brown CCR impoundment closure scope.

Process Water Systems:

AMEC will continue commissioning and performance testing activities on the Mill Creek and Trimble County PWS projects. B&McD will continue progressing their engineering, procurement and construction efforts on the Ghent PWS project with cold commissioning transitioning to hot commissioning during the third quarter of 2019. Both AMEC and B&McD, along with the Companies and the Companies' OE, will continue reviewing final engineering designs, procurement activities, and the operation of Suez's PWS equipment and process at all three stations (Ghent, Mill Creek, and Trimble County). MAC Construction will complete constructing the Trimble County PWS Process Pond North Basin.

E.W. Brown Landfill Phase II and Phase III Closure

Thalle will continue construction on the Landfill Phase II and Phase III Closure scope of work.