

**2016 ECR Plan Status Update Report  
Quarterly Report – Update #11  
April 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 first quarter of 2019.

The overall 2016 ECR Plan safety performance through the first 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 0.59, compared to the industry average of 3.2.

The total 2016 ECR Plan projected cost remains \$892.1 million (net) 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 \$513.1 million (net) last quarter to \$549.3 million (net) through March 31, 2019.

**CCR Compliance (CCR Rule and State CCR Pond Closures)**

Safety performance through the first quarter is excellent with a year-to-date OSHA Recordable Incident Rate of 0.34 and an inception-to-date Recordable Incident Rate of 0.59, 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) reported last quarter. Total spend to date through March 31, 2019 has increased from \$495.8 million (net) last quarter to \$530.3 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 and Mill Creek 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 Request for Quotation (“RFQ”) and the E.W. Brown Diffuser installation proposals were received during the first quarter of 2019. The E.W. Brown Diffuser was awarded to W.B. Koester on January 17, 2019. The Mill Creek Main Ash Pond award was issued in April of 2019. 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”). A lawsuit was filed by the Sierra Club challenging the new

EPA Phase I, Part I Rule. The Companies have not made any design or construction changes to our compliance plan as a result of the EPA's Rule issuance or the challenge by the Sierra Club.

### 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. Construction of the cooling channel and liner installation for the North Cooling Pond has been completed. Installation of fabric form is ongoing and scheduled to be completed by the end of April. It is anticipated that the Phase I scope of work will achieve Substantial Completion by June 2019. Tetra Tech's Phase II scope (construction of the South Cooling Pond and closure of ATB #1) has been limited to preliminary investigations and management of process inflows. As previously reported, closure of ATB #2 will now be bid separately as a Phase III scope. Overall, Tetra Tech is progressing the Ghent projects well with no compliance issues forecasted.
- E.W. Brown – Thalle Construction Company ("Thalle") has completed development of the onsite soil borrow area that is providing soil for the closure and PWS projects. Construction of the berms of the new Process Pond was completed along with liner installation in March with an expected substantial completion by May 2019. The installation of the Process Pond discharge pipe and diffuser was awarded in January to W.B. Koester. The work is to be completed during the second quarter of 2019 prior to Herrington Lake's rise to summer pool. A pilot dewatering well test was completed on the Auxiliary Ash Pond with the collected data used to develop Thalle's dewatering and excavation plans.
- Green River – The CCR Impoundments Closure Project is progressing to plan by Trans-Ash. Trans-Ash previously completed installation of the Process Pond and the Main Ash Pond closure cap. The SO<sub>2</sub> pond CCR material has been fully relocated to ATB #2 as planned and work is ongoing to install the cap system and storm-water perimeter ditches. 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 second quarter of 2019. The Kentucky Division of Waste visited the site in December 2018 with very good reviews.
- 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. Bids were received for the Ash Pond closure project. The Ash Pond closure contract was awarded to Tetra Tech in April, 2019.
- Pineville – Thalle began the process of dewatering the impoundment and regrading of CCR at the north end. Thalle plans to complete the regrading of CCR and installation of the capping system during the second quarter of 2019.

- Tyrone – Thalle completed the installation of liner over the impoundment’s CCR. Work continues with the hauling and placement of soil to cover the liner. The new Storm-water Pond was lined with fabric-formed concrete and is complete. Thalle continues to focus on placing soil for the cap as well as completing the perimeter storm-water ditch piping and fabric-formed concrete liner in ditches. Work will be completed during the second quarter of 2019.

The CCR Impoundment Closure Program is on schedule to be completed on or before the CCR Rule regulatory deadlines.<sup>1</sup> 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 is winding down installation of equipment, continues painting tanks and installing electrical components, checkout of systems and is focused on identifying punch-list items. Initial commissioning activities commenced during the first quarter of 2019. Performance testing is expected to begin during April/May 2019.
- Mill Creek – AMEC achieved Mechanical Completion on the PWS in March 2019. Initial commissioning and performance testing is in progress. Testing is expected to be completed by May, with the system going commercial during the second quarter of 2019. MAC has completed the partial 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 installation of above ground piping and electrical systems. During the first quarter of 2019, B&McD started initial commissioning activities. Bowen Engineering, a local contractor and a subcontractor to B&McD, is performing most of the construction.
- E.W. Brown – For the ABS Maintenance Tank, Bowen completed relocation of underground utilities as well as the concrete foundation and wall pours. Concrete foundations were completed at the Toe Drain and Coal Pile Runoff (“TDCPR”) and Process Water System (“PWS”) treatment system locations. Building enclosure steel was erected at the TDCPR and PWS treatment systems. Underground utilities were also installed for each system. During the second quarter, work will

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<sup>1</sup> 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.

continue at the ABS Maintenance Tank with installation of support steel and the interior tank liner coating. At the TDCPR and PWS areas, tanks and equipment will begin to be set and enclosures will be covered with metal sheeting.

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 Completion<sup>3</sup></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 3Q 2019	December 2024
Ghent Gypsum Stack	KU Project 40	Amended Sept. 7, 2018	December 2020
Green River Main Pond	KU Project 39	Awarded July 28, 2017	2Q 2019
Green River ATB #2	KU Project 39	Awarded July 28, 2017	2Q 2019
Green River SO2 Pond	KU Project 39	Awarded July 28, 2017	2Q 2019
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	2Q 2019
Pineville Ash Pond	KU Project 39	Awarded December 7, 2017	2Q 2019
Trimble County Bottom Ash Pond	KU Project 41, LG&E Project 30	Issue RFQ 3Q 2019	December 2024
Trimble County Gypsum Storage Pond	KU Project 41, LG&E Project 30	Issue RFQ 3Q 2019	December 2021
Tyrone Ash Pond	KU Project 39	Awarded December 7, 2017	2Q 2019

Process Water Systems

<u>Project</u>	<u>Project #</u>	<u>EPC Status</u> <sup>2</sup>	<u>Planned In-Service Date</u> <sup>3</sup>
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	August 2019
Mill Creek Process Water System	LG&E Project 29	Awarded July 19, 2017	June 2019
Trimble County Process Water System	KU Project 41, LG&E Project 30	Awarded July 7, 2017	June 2019

**E.W. Brown Landfill Phase II**

Thalle has completed grading the subgrade of Phase II of the landfill and has begun installation of leachate liner system. The overall progress of the landfill Phase II has been delayed due to the record rainfalls in late 2018; however, no compliance or operational issues are forecasted as work will continue to progress towards completion in 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 as well as the main ash pond cap. Relocation of the SO2 pond material into ATB #2 has been completed and work is ongoing to install the cap system and storm-water perimeter ditches on the ATB #2. The Kentucky Division of Waste visited the site and performed a thorough review, including an agreement that the SO2 Pond has been clean closed and agreeing the berms could be removed and used in the closure plan for ATB #2 as designed. Associated Engineers, Inc. is providing Construction Quality Assurance (“CQA”) services while AMEC is providing OE services on the Green River project.

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

<sup>3</sup> 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*



Pineville: Thalle has begun dewatering and regrading of the CCR within the impoundment to support the construction of the cap and perimeter storm-water drainage ditches. Work continues to be impacted by adverse weather resulting in a forecasted completion late in the second quarter or early third quarter of 2019. AMEC is providing CQA and OE services.



*Pineville Ash Pond – January 2019*



*Pineville Ash Pond – April 2019*



Tyrone: Thalle completed the installation of liner over the CCR within the impoundment. Soil has been hauled from the onsite borrow area and placed over the impoundment liner as well as placed at the former CCR Stockpile for grading purposes. Work has begun installing the perimeter storm-water ditches and associated drainage piping. The new Storm-water Pond was lined with fabric-formed concrete and is discharging storm-water through the newly permitted KPDES outfall. AMEC is providing CQA and OE services.



*Tyrone Ash Pond – January 2019*



*Tyrone Ash Pond – April 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. Phase I scope has been impacted due to the record autumn rainfall during 2018; however, Tetra Tech continues to progress towards completion of the work. Construction of the cooling channel, liner installation in the North Cooling Pond, and the new Cooling Pond outlet structure has been completed. The current area of focus on the Phase I project is installation of underground piping and installation of fabric form concrete. Construction of Phase II scope (construction of the South Cooling Pond and closure of ATB #1) has been limited to preliminary investigations, management of process inflows, installation of dewatering wells, and dredging activities. 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 and Bowen Engineering continue to progress construction of the PWS with work focused on completing the mechanical and electrical subsystems. Initial startup and checkout activities commenced in December 2018 and will continue through the second quarter of 2019. Black & Veatch ("B&V") is providing OE services on the Ghent PWS project.



*Ghent Gypsum Stack – Looking South – January 2019*



*Ghent Gypsum Stack – Looking South – April 2019*





*Ghent ATB #1 Cooling Channel – Looking West – January 2019*



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





*Ghent PWS Facility – Site View – January 2019*



*Ghent PWS Facility – Site View – April 2019*



## **KU Project 41 and LG&E Project 30<sup>4</sup> – 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. These reports will be submitted to the EPA for their review in the second quarter of 2019 after an initial meeting with them in April in Washington D.C..

AMEC began initial PWS commissioning activities and is meeting regularly with Suez and the Companies to discuss system performance. AMEC is expected to conduct performance testing during April/May 2019. AMEC’s subcontractor, MAC Construction, is nearing completion on constructing pump structures, storm-water structures, and underground utilities that discharge into the future Knockout Pond. AMEC is focused on punch-list and commissioning activities to allow commencement of performance testing. Black & Veatch (“B&V”) is providing OE services on the Trimble County PWS project.

MAC completed lining the new Knockout Pond (“KOP”) and began fine grading around the perimeter. Construction of the Process Pond South Basin has been negatively impacted by the significant rainfall during the quarter and is expected to be completed during the second quarter of 2019.

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



*Trimble County PWS Facility – Site View Looking East – December 2018*



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

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

Bowen completed relocation of underground utilities as well as the concrete foundation and wall pours for the ABS Maintenance Tank. Concrete foundations were completed at the Toe Drain and Coal Pile Runoff (“TDCPR”) and Process Water System (“PWS”) treatment system locations. Building enclosure steel was erected at the TDCPR and PWS treatment systems. During the second quarter, work will continue at the ABS Maintenance Tank with installation of support steel and the interior tank liner coating. At the TDCPR and PWS areas, tanks and equipment will begin to be set and enclosures will be covered with metal sheeting. AMEC is providing CQA and OE services.





*E.W. Brown Aux Pond – January 2019*



*E.W. Brown Aux Pond – April 2019*





*E.W. Brown Landfill Phase II and Closure – January 2019*



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

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

The South Ponds' (Construction Runoff Pond, Clear-well Pond, and Dead Storage Pond) scope has been impacted due to the record autumn rainfall during 2018; however, MAC has continued to progress towards completion. MAC completed the closure activities and construction on the Construction Runoff and Clearwell Ponds. Both ponds have been fully cleaned of CCR, construction completed and placed back into service. Excavation of CCR material from the Dead Storage Pond has been completed and backfilling of the pond will start in the second quarter of 2019. MAC completed the initial Knockout Pond liner system. On the Ash Pond closure project, bids were received and evaluated by LG&E. A contract was issued to Tetra Tech for the Ash Pond closure in April, 2019. AMEC is performing CQA services while AECOM is providing OE services on the Mill Creek closure projects.



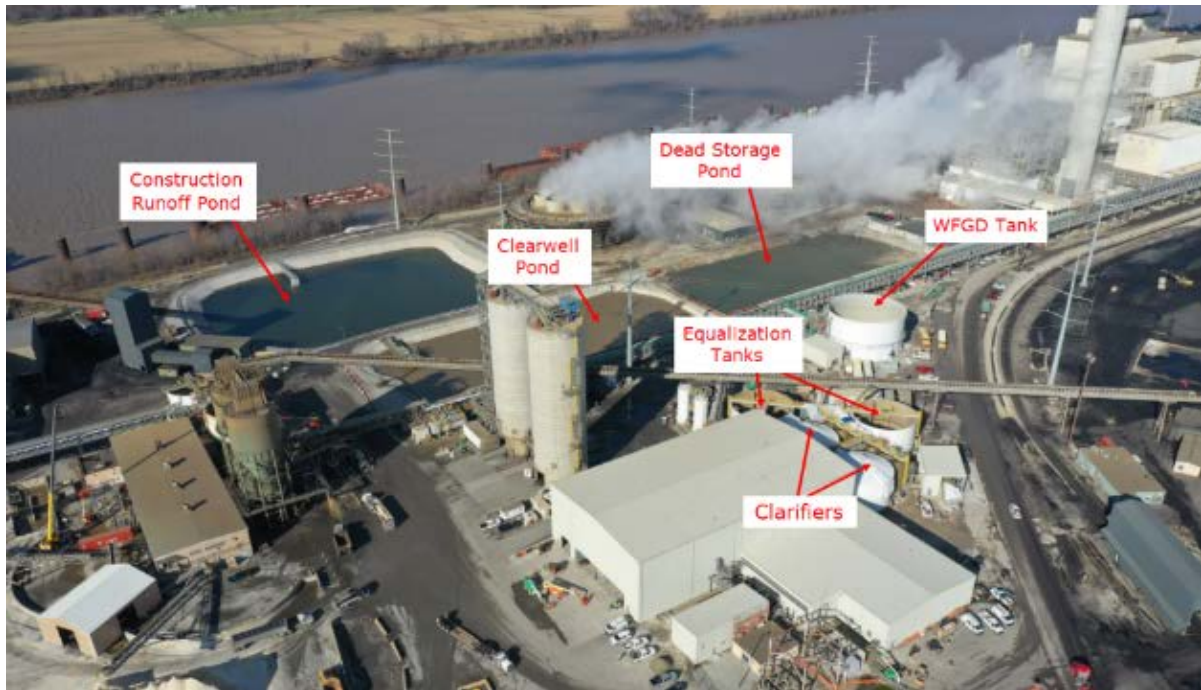
*Mill Creek South Ponds – January 2019*



*Mill Creek South Ponds – April 2019*



AMEC is approaching completion of engineering and procurement activities with engineering focused on picking up field corrections on the PWS project. AMEC is meeting regularly with Suez and the Companies on PWS pre-commissioning planning. AMEC’s focus is on completing the installation of the mechanical and electrical subsystems. Initial commissioning of the PWS systems began in January, 2019, slightly ahead of schedule, and is expected to complete performance testing in April, 2019. B&V is performing OE services on the MC PWS project.



*Mill Creek PWS Facility – Site View – January 2019*



*Mill Creek PWS Facility – Site View – April 2019*

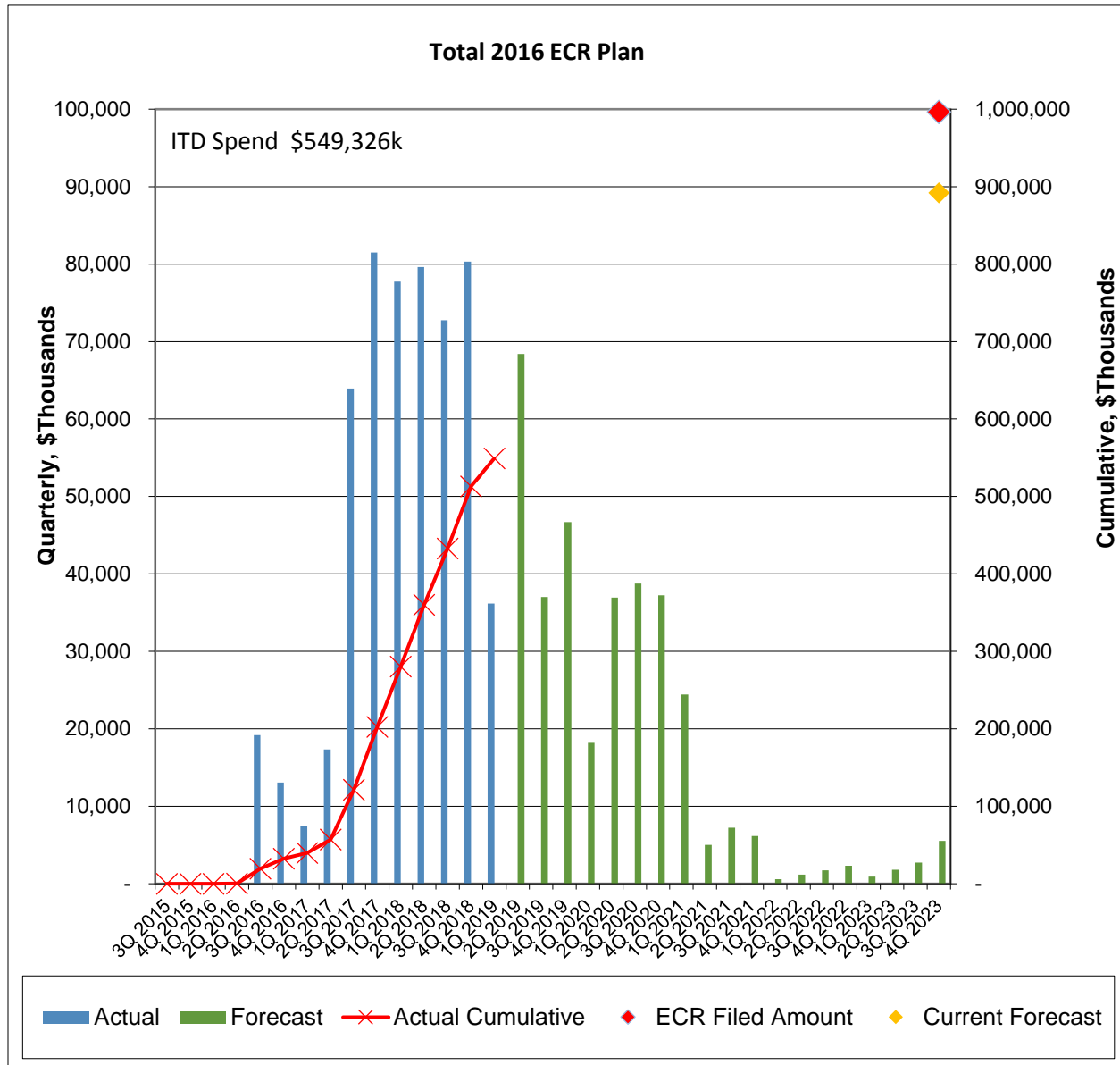




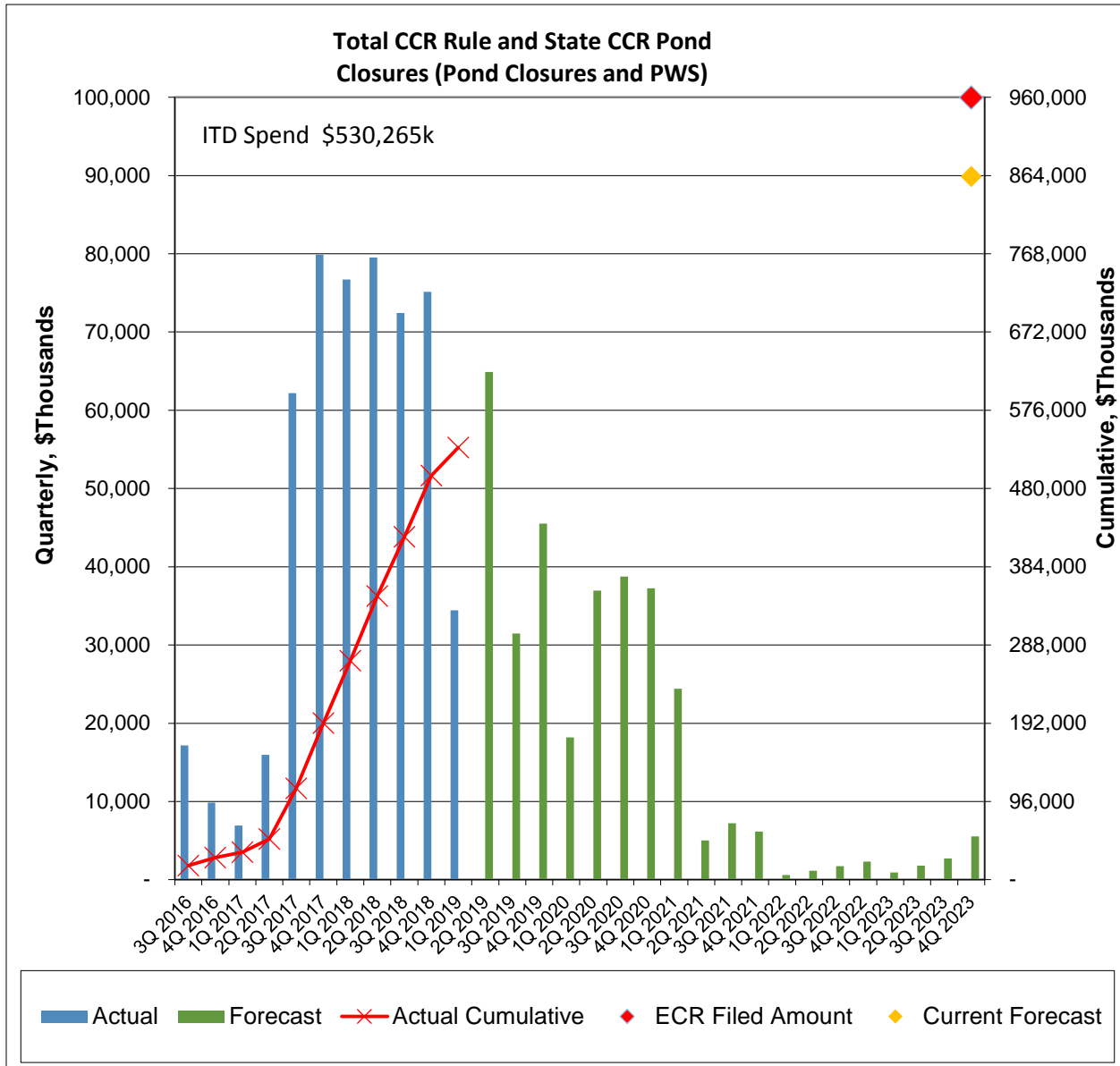
*Mill Creek Knock-Out Pond – October 2018 – No Change in April 2019*

**Financials:**

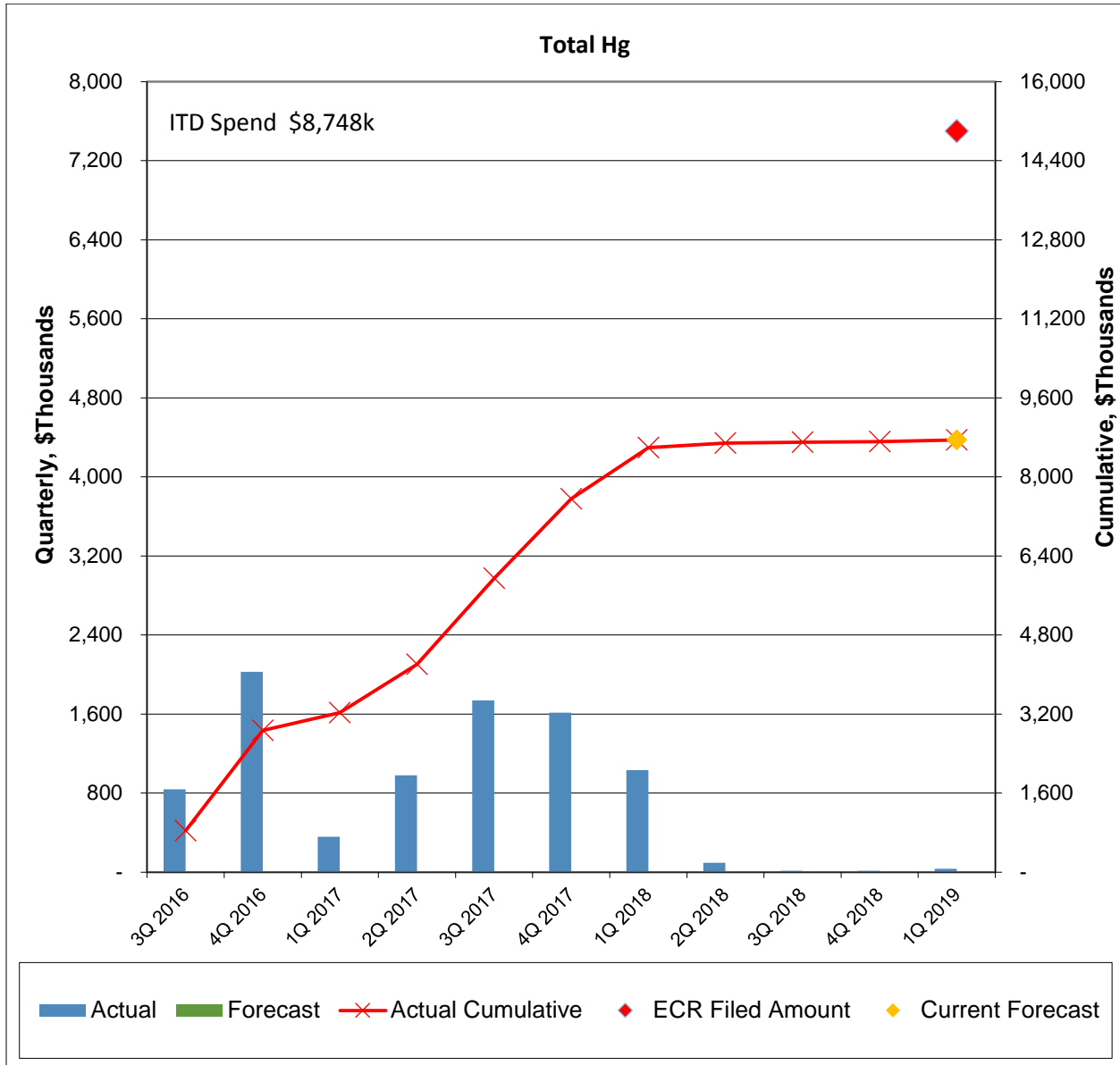
The total 2016 ECR Plan forecasted cost remains \$892.1 million (net), compared to the filed estimate of \$996.4 million (net). Total spend through March 31, 2019 has increased from \$513.1 million (net) last quarter to \$549.3 million (net). For the graph below: 1) the chart includes a symbol (◆) to 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 March 31, 2019 has increased from \$495.8 million (net) last quarter to \$530.3 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.

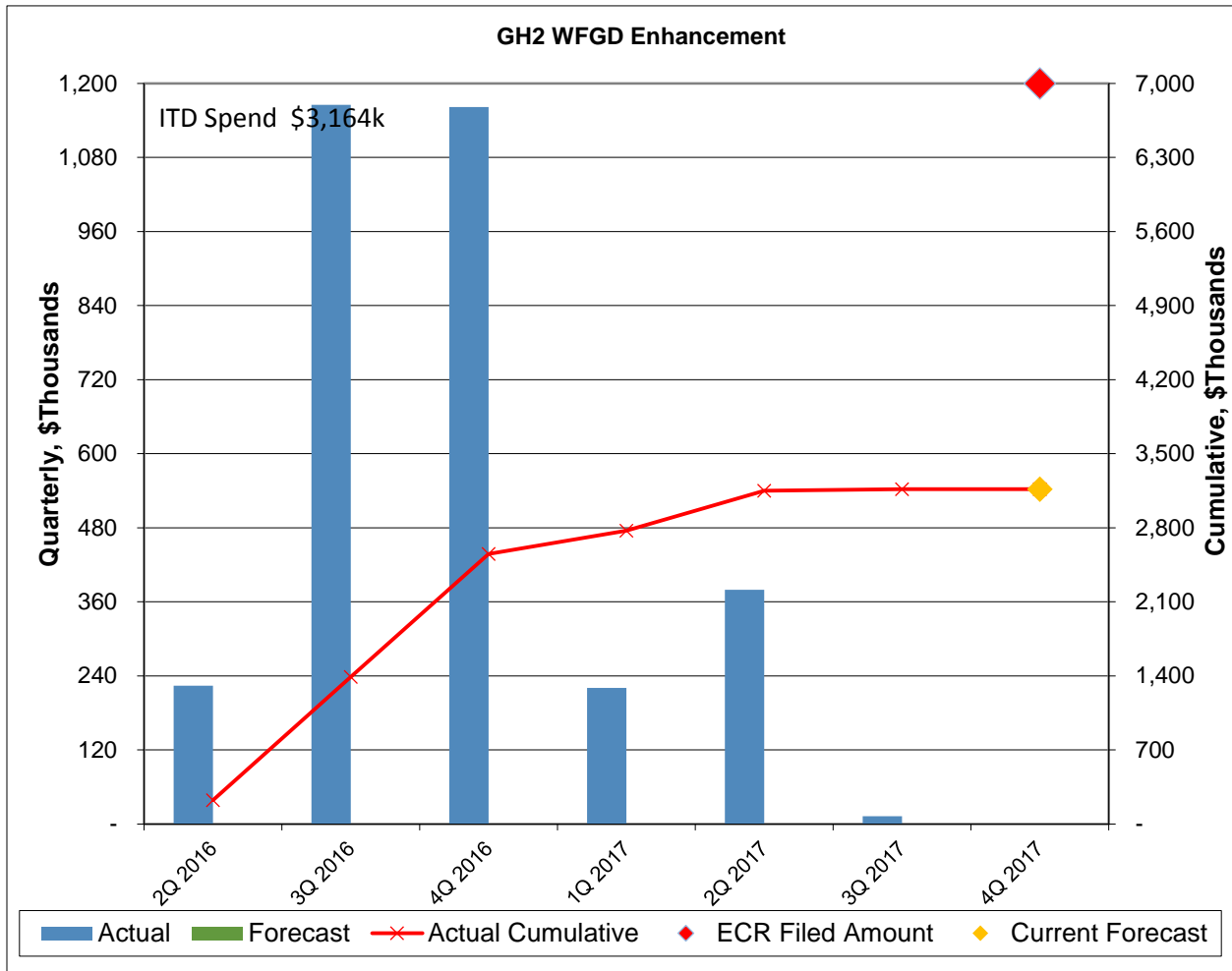


The Mercury Injection projects have been completed and commissioned. The project's total spend was \$8.7 million compared to the filed estimate of \$15.0 million.

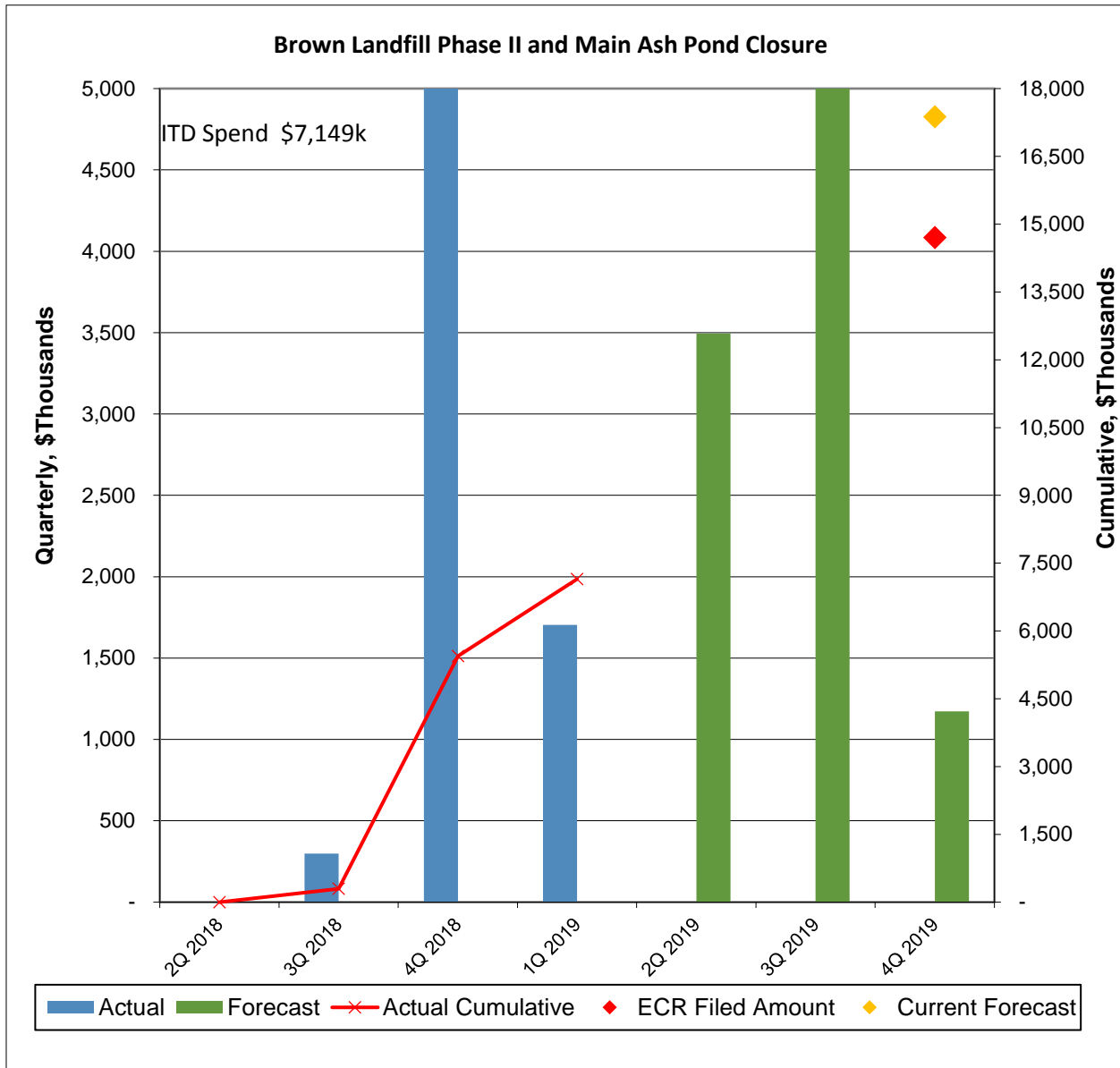




The Ghent Unit 2 WFGD Enhancement project has been completed. Total spend on the project was \$3.2 million compared to the filed estimate of \$7.0 million.



Total spend through March 31, 2019 on the E.W. Brown Landfill Phase II and Phase III Closure project was \$7.1 million. The forecasted cost remains at \$17.3 million. 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 CCR impoundments will continue as planned with completion expected in mid-2019. Thalle will also continue advancing the closure of the CCR impoundment at Pineville and Tyrone as planned with completion expected in mid-2019.

### **Federal CCR Rule Closure Projects**

#### CCR Closures:

Tetra Tech will approach completing the Phase I scope and continue with Phase II closure activities at Ghent, as well as continue engineering and execution activities associated with the recovery efforts. At Mill Creek, MAC will complete backfill of the Dead Storage Pond. The contract for the Mill Creek Main Ash Pond will be awarded to Tetra Tech. Construction will continue on 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 commissioning continuing into the second quarter of 2019. Both AMEC and B&McD, along with the Companies and the Companies' OE, will continue reviewing engineering designs, procurement activities, and the design and fabrication 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 ponds. Thalle will complete construction of the new Process Pond.

### **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.