

**2016 ECR Plan Status Update Report  
Quarterly Report – Update #7  
April 30, 2018**

**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 2018. This report does not include updated financials for the amended scope to the E.W. Brown Landfill Phase II (smaller Landfill Phase II and CCR Rule Closure of the remaining Ash Pond) that is currently filed with the Commission.

The overall 2016 ECR Plan safety performance through the first quarter of 2018 has improved to a very good year-to-date OSHA Recordable Incident Rate of 0.43 and an inception-to-date Recordable Incident Rate of 0.91 compared to the industry average of 3.20. KOSHA concluded their investigation on the Ghent fatality that occurred in October 2017 on the impoundment closure work by Tetra Tech with no citations being issued against the Companies.

The total 2016 ECR Plan projected costs decreased from \$877.7 million (net) as reported last quarter to \$871.2 million (net), compared to the filed estimate of \$993.6 million (net).<sup>1</sup> Total spend to date increased from \$202.5 million (net) last quarter to \$279.8 million (net) through March 31, 2018.

At Ghent, Coal Combustion Residual (“CCR”) impoundment closure work has been focused on Tetra Tech’s work on the Ghent Phase I scope, which consist of hauling gypsum from the gypsum stack to Ash Treatment Basin (“ATB”) #2, constructing a cooling channel in ATB #1, and construction of the North Cooling Pond. Tetra Tech resumed work on the Phase I project in December and continues to focus on receiving materials and hauling of gypsum from the north end of the Gypsum Stack to the south end of the Gypsum Stack and Ash Treatment Basin ATB #2. Tetra Tech has also begun constructing the Cooling Channel in ATB #1 and is progressing to the contracted completion date. The Companies received the revised bids in March for the Phase II work scope. Since receipt of the bids, the Companies have revised the remaining sequence of work on the CCR pond closures to account for lessons-learned from the closure work to date in ATB #2. The original Phase II work has been divided into a smaller Phase II and a new Phase III. Phase II will now include the original Phase II scope of constructing the South Cooling Pond and closure of ATB #1; however, the closure of ATB #2 will now be bid separately as a Phase III scope. The resequencing of work incorporates a safer approach to closure of ATB #2, while preserving the scope on ATB #1 and the South Cooling Pond. The resequencing will not impact the Company’s ability to meet the CCR Rule compliance dates.

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<sup>1</sup> The total 2016 ECR Plan projected costs were provided in Case No. 2016-00026 and Case No. 2016-00027 on a net basis. Co-Owners of the Trimble County plant: Illinois Municipal Electric Agency (IMEA) and Indiana Municipal Power Agency (IMPA) are responsible for 25%. IMEA owns 12.12% and IMPA owns 12.88%. Co-owner share is not included in the costs provided in this report where “net” is shown.

At E.W. Brown, an RFQ was issued on March 19<sup>th</sup> for the construction of a new Process Pond, closure of the Auxiliary Pond, and expansion of the existing landfill. Bids are due at the end of April 2018. The Mill Creek South Ponds closure work also continues to plan by MAC Construction. MAC Construction is currently working on clean closure of the Construction Runoff Pond.

The Green River CCR impoundments closure project is progressing to plan by Trans-Ash. Trans-Ash continues to construct the new storm-water perimeter ditches, dewater the CCR ponds, and regrade and haul CCR material within and between the CCR impoundment facilities. The Pineville and Tyrone closure projects were awarded to Thalle Construction Company (“Thalle”). Thalle mobilized to Tyrone in January and has focused on the construction of water diversion ditches, as well as a new storm-water pond.

With regards to the Process Water System (“PWS”) scopes, AMEC continues engineering, contracting and procurement activities on the Mill Creek and Trimble County PWS projects. At Trimble County, AMEC has completed the piling and foundations for the Wet Flue Gas Desulfurization (“WFGD”) storage tank as well as for two equalization tanks. AMEC has completed underground utility work (electrical duct bank, fire protection, potable water) and begun foundations for the PWS building. AMEC has started receiving pipe rack steel and fiberglass reaction/chemical tanks. At Mill Creek, AMEC continues to work on engineering activities, procurement of major equipment, underground utilities, constructing tank and building foundations, construction of tanks, and has completed installation of deep foundation piles. AMEC is currently installing the dry bottom ash conveyance system on Mill Creek Unit 2 as planned during the scheduled outage. At Ghent, Burns & McDonnell (“B&McD”) continues to work on engineering activities, procurement of major equipment, underground utilities, construction of tank and building foundations, construction of tanks, and has completed installation of deep foundation piles. Suez, the water treatment technology supplier for the Ghent, Mill Creek, and Trimble County PWS projects, continues their engineering and procurement activities working in concert with both AMEC and B&McD. An RFQ was issued in January for the engineering, procurement, and construction (EPC) of a new PWS at E.W. Brown. Bids were received on March 26<sup>th</sup>. The Companies plan to award the PWS work at E.W. Brown in June 2018.

The Fleet Mercury Injection Control projects have been completed with final control tuning being completed at Trimble County and Ghent. These injection control projects will not be reported on going forward, except for being included in the financials, due to them all being completed and in operation.

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

Safety performance through the first quarter is very good with a year-to-date OSHA Recordable Incident Rate of 0.43 and an inception-to-date Recordable Incident Rate of 0.91 compared to an industry average Recordable Rate that exceeds 3.20.

The total projected costs for the CCR Closure Program remains \$859.4 million as reported last quarter. An error was identified in last quarter’s report on the forecasted cost. The text in this section of the report stated \$839.0 million when it should have stated \$859.4 million. The graph in the last quarterly report was correct. The increase from the third quarter 2017 report is attributed to changes in the PWS projects to account for changes in scope associated with refinements in design with AMEC, B&McD, and the common

water treatment technology supplier Suez. Total spend to date through March 31, 2018 has increased from \$191.4 million (net) in the last report, to \$268.1 million (net).

Relative to the Companies' progress during this reporting period on the CCR impoundment closures, the detailed design for the CCR Rule and State Impoundment Closure programs throughout the Companies' fleet are essentially complete with only corrections for field construction impacts remaining. The remaining design activities are associated with supporting the development of the remaining RFQ packages and updating the Ghent Phase II and Phase III plans. Construction activities by Tetra Tech are ongoing for Ghent Phase I's scope on ATB #1's cooling channel, the hauling of gypsum to ATB #2, and the construction of the North Cooling Pond. The Companies received bids for the construction of Ghent Phase II (ATB #1 Closure, ATB #2 Closure, Secondary Pond Clean Closure, and South Cooling Pond) and subsequently placed the work on hold while the sequence of work is modified to address lessons-learned during the Ghent Phase I work. Green River Impoundments and Mill Creek South Ponds closure activities continue to progress well to plan by Trans-Ash and MAC Construction, respectively. A contract was awarded to Thalle for the closure of the impoundments at Pineville and Tyrone, with closure work having begun at Tyrone in January. Thalle will move to Pineville upon completing the closure work at Tyrone. At E.W. Brown, an RFQ package for the Closure and Phase II Landfill Expansion was issued in late March 2018. Communications with the Owner's Engineers ("OE") of AMEC and AECOM for the CCR impoundment closure design and permitting continues through scheduled meetings. The CCR Impoundment Closure Program is on schedule to be completed on or before the CCR Rule regulatory deadlines.<sup>2</sup> The initial eight rounds of ground water sampling have been completed, and the first annual Ground Water assessment report has been placed on the Companies' external CCR Rule Website.

All PWS projects continue to progress well to plan. AMEC at Mill Creek and Trimble County, and B&McD at Ghent, are progressing well with engineering activities, procurement of major equipment, underground utilities, foundations, and tank construction. Suez, the PWS technology supplier, continues to work well with both EPC contractors and the Companies to ensure consistency across the three stations. During the first quarter, detailed engineering designs were ongoing for the Ghent, Mill Creek, and Trimble County PWS projects by each project's EPC contractor. Black and Veatch continues to serve as the fleet OE for the PWS projects to provide consistency in engineering design reviews across the three stations and provide consistent support to the Companies in overseeing the PWS construction phases being performed by the two EPC firms (AMEC and B&McD). An RFQ was issued for the E.W. Brown PWS project in January 2018 and bid proposals were received on March 26<sup>th</sup>. Black and Veatch, under contract as the Owner's Engineer, provided engineering support during the development of the RFQ package and is currently supporting with the review of bid proposals.

To ensure the Companies' projects will comply with the EPA's CCR Rule requirements and to share best-practices and lessons-learned across all PWS projects, the Companies continue to hold program-wide meetings with the OEs, internal project management teams, and all affected stations. These meetings provide an opportunity for all parties to deliver updates on their work and to ensure the OEs are providing

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<sup>2</sup> The EPA Administrator is expected to reconsider the provisions of the final rule addressed in pending petitions requesting the EPA to initiate rulemaking to reconsider certain provisions of final CCR Rule. If the EPA decides to begin the process of potentially revising provisions of the final rule, the EPA will provide an opportunity for notice and comment. The final CCR Rule is also subject to a legal challenge in the District of Columbia Circuit (DC Circuit No. 15-1219). The Companies will continue to track EPA's actions and the litigation, provide updates to the Commission through future reports and, if appropriate, adjust their construction schedules and activities.

similar deliverables and that lessons-learned are applied across the projects. In addition to the program-wide meetings, the Companies are holding weekly meetings with the individual OEs and the affected plants. The contracted completion dates for each facility are currently as follows:

### Schedule - CCR Rule and State CCR Impoundment Closures

<u>Project</u>	<u>Project #</u>	<u>EPC Status<sup>3</sup></u>	<u>Planned Construction Completion<sup>3</sup></u>
E.W. Brown Aux Pond	KU Project 42	Issued RFQ 1Q 2018	December 2020
Ghent ATB #1	KU Project 40	Issue Amended RFQ 2Q 2018	December 2021 <sup>4</sup>
Ghent ATB #2	KU Project 40	Issue Amended RFQ 2Q 2018	December 2023 <sup>4</sup>
Ghent Gypsum Stack	KU Project 40	Awarded 2Q 2017	December 2020
Green River Main Pond	KU Project 39	Awarded 2Q 2017	2Q 2019
Green River ATB #2	KU Project 39	Awarded 2Q 2017	2Q 2019
Green River SO2 Pond	KU Project 39	Awarded 2Q 2017	2Q 2019
Mill Creek Ash Pond	LG&E Project 29	Issue RFQ in 3Q 2018	December 2021
Mill Creek Clearwell Pond	LG&E Project 29	Awarded 4Q 2017	December 2018
Mill Creek Construction Runoff Pond	LG&E Project 29	Awarded 4Q 2017	2Q 2018
Mill Creek Emergency Pond	LG&E Project 29	Construction Completed	Construction Completed
Mill Creek Dead Storage Pond	LG&E Project 29	Awarded 4Q 2017	2Q 2019
Pineville Ash Pond	KU Project 39	Awarded 4Q 2017	2Q 2019
Trimble County Bottom Ash Pond	KU Project 41, LG&E Project 30	Issue RFQ 3Q 2018	December 2023
Trimble County Gypsum Storage Pond	KU Project 41, LG&E Project 30	Issue RFQ 3Q 2018	December 2023
Tyrone Ash Pond	KU Project 39	Awarded 4Q 2017	2Q 2019

### Process Water Systems

<u>Project</u>	<u>Project #</u>	<u>EPC Status<sup>3</sup></u>	<u>Planned Construction Completion</u>
E.W. Brown Process Water System	KU Project 42	Award 2Q 2018	December 2019
Ghent Process Water System	KU Project 40	Awarded 3Q 2017	2Q 2019
Mill Creek Process Water System	LG&E Project 29	Awarded 2Q 2017	December 2019
Trimble County Process Water System	KU Project 41, LG&E Project 30	Awarded 2Q 2017	2Q 2019

<sup>3</sup> The red font signifies actuals.

<sup>4</sup> The planned completion date has changed to reflect current forecast of CCR produced for beneficial use.

## Fleet Mercury Control Injection Systems Project

Safety performance through the first quarter remains excellent with a year-to-date OSHA Recordable Incident Rate of 0.00 and an inception-to-date Recordable Incident Rate of 0.00. The total forecasted costs has increased to \$8.6 million as compared to the file estimate of \$15.0 million. Total spend to date has increased from \$7.9 million to \$8.59 million through March 31, 2018. The Trimble County and Ghent injection systems were placed into operation in January. These injection projects will not be reported on going forward, except for being included in the financials, due to them all being completed and in operation.

### Schedule - Fleet Mercury Control Injection Systems

<b>Project</b>	<b>Actual/Expected Completion</b>
Mill Creek Unit 3	June 2016
Mill Creek Unit 4 Organo-sulfide System	July 2017
Mill Creek Units 1&2 Organo-sulfide System	July 2017
Mill Creek Unit 1 Halogenated Liquid System	August 2017
Mill Creek Unit 2 Halogenated Liquid System	August 2017
Trimble County Unit 1 Organo-sulfide System	January 2018
Ghent Unit 4 Organo-sulfide System	January 2018
Ghent Unit 2 Halogenated Liquid System	January 2018
Ghent Unit 1 Organo-sulfide System	January 2018
Ghent Unit 2 Organo-sulfide System	January 2018
Ghent Unit 3 Organo-sulfide System	January 2018

## E.W. Brown Landfill Phase II

The Companies announced the planned retirement of E.W. Brown’s Units 1 and 2 in early 2019. The Companies have also filed an amended 2016 ECR Plan<sup>5</sup> to amend the Landfill Phase II work at the station, which will incorporate a modified Phase II of the landfill, elimination of the need for a future Phase III of the landfill, and the need to cap and close the remaining portion of the Main Ash Pond not covered by Phase I, the amended Phase II, or the CCRT areas. An RFQ was issued on March 19<sup>th</sup> for the construction of a new Process Pond, closure of the Auxiliary Pond, and expansion of the existing landfill. Bids are due at the end of April 2018. The aforementioned landfill modifications were captured in a minor modification permit application which was submitted to the Kentucky Division of Waste Management (“KYDWM”) on March 21<sup>st</sup>.

<sup>5</sup> The amended 2016 ECR Plan was filed on January 26, 2018.

## **Quarterly Status Update:**

### **State Division of Waste Closure Projects:**

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

Green River: KU continues to hold weekly and monthly update meetings to review the current status of the project. The impoundment closure work continues to progress to plan by Trans-Ash. Trans-Ash has fully mobilized to the site and has progressed well with the construction of the new storm-water ponds, installation of perimeter ditches, dewatering of the CCR ponds, and regrading/hauling of CCR material within and between the CCR impoundment facilities. KU has contracted with Associated Engineers, Inc. to perform Construction Quality Assurance (“CQA”) services and AMEC to provide OE services on the Green River project.

Pineville: KU is holding weekly and monthly update meetings to review the current status of the project. AMEC started development of the KYDWM permit application, however based on discussions with KYDWM, a permit under the current regulations is not required for the facility. The Impoundment Closure project was awarded to Thalle in December 2017. Closure work at Pineville will follow the completion of work at Tyrone Station. KU has contracted with AMEC to provide CQA and OE services on the Pineville project.

Tyrone: KU is holding weekly and monthly update meetings to review the current status of the project. As with Pineville, conceptual design was completed on September 30, 2016 and the final design was completed in the third quarter of 2017. AMEC started development of the KYDWM permit application, however based on discussions with KYDWM, a permit under the current regulations is not required for the facility. The Impoundment Closure project was awarded to Thalle in December 2017 with mobilization taking place in January 2018. Work has begun on the construction of water diversion ditches and berms as well as a new storm-water pond. KU has contracted with AMEC to provide CQA and OE services on the Tyrone project.

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

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

KU is holding weekly and monthly update meetings to review the current status of the project. A revised RFQ for Phase II was issued in the fourth quarter of 2017 and bids were received in March. Upon receipt of the bids and based on lessons-learned on the Ghent Phase I work, the Company has re-sequenced the execution of the closure scope of work. As a result, Phase II work has been split into Phase II and Phase III. Phase II will include the previous closing of ATB #1 and the construction of the South Cooling Pond; however, the new Phase III will include the closure of ATB #2 that was originally in Phase II. Delaying the work on ATB #2 will not impact the Company’s ability to meet the CCR Rule compliance dates. To date, Tetra Tech has deployed the erosion and sediment control facilities, constructed a haul road, continues hauling gypsum from the Gypsum Stack to ATB #2,



continues to receive construction materials and has started construction of the Cooling Channel inside ATB #1. KU has contracted with AMEC to perform CQA services and AECOM to provide OE services on the Ghent closure projects.

Burns & McDonnell (“B&McD”) continues to progress the Ghent PWS scope to plan. B&McD has completed installation of deep pile foundations and is currently working on underground utilities, foundations, and tank fabrication. B&McD is progressing well with their engineering and procurement activities. KU has contracted with Black & Veatch to provide OE services on the Ghent PWS project.

### **KU Project 41 and LG&E Project 30<sup>6</sup> – Trimble County (TC) Station CCR Rule Compliance Construction and New Process Water Systems**

The Companies are holding weekly and monthly update meetings to review the current status of the project. It is anticipated that the RFQ package for the closure of the Bottom Ash Pond and Gypsum Storage Pond will be issued to the market in the third quarter of 2018. To date, onsite activities have been limited to site visits by the OE, geotechnical explorations, and installation of groundwater monitoring wells. KU has contracted with AMEC to provide CQA and OE services on the Trimble County project.

AMEC is progressing well with engineering, procurement and construction activities on the PWS scope and is meeting regularly with Suez and the Companies on PWS detailed design and integration into the existing station facilities. AMEC has completed installation of the deep pile foundation for the WFGD maintenance storage tank and is currently working on underground utilities, building foundations, and equalization tank fabrication. KU has contracted with Black & Veatch to provide OE services on the TC PWS project.

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

The RFQ for closure of the auxiliary CCR pond was issued to the market in March of 2018 with bids to be received in May. The RFQ for the new PWS was issued to the market in January 2018 with bids received in late March. The PWS EPC execution is planned for June 2018. To date, onsite activities have been limited to site visits by the OE, geotechnical explorations, process water testing and installation of groundwater monitoring wells. KU has contracted with AMEC to provide CQA and OE services on the Brown project.

The retirement of Units 1 and 2 in February 2019 has resulted in a reduction in the size of the PWS for Brown, resulting in a decrease in the estimated cost from the filed \$71.7 million to \$25.1 million. The cost reductions are primarily driven by a much smaller PWS without redundancy for the WFGD system discharge and separate, smaller PWS systems for the non-CCR process waters at the station. The overall amount of water requiring treatment has decreased from approximately 280 gallons per minute (“gpm”) to less than 60 gpm.

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<sup>6</sup> KU and LG&E’s net costs are split 48%/52% respectively.



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

LG&E is holding weekly and monthly update meetings to review the current status of the project. The South Ponds closure project was awarded to MAC Construction on January 2, 2018. MAC Construction is currently working on clean closure of the Construction Runoff Pond. LG&E has contracted with AMEC to perform CQA services and AECOM to provide OE services on the Mill Creek closure projects.

AMEC is progressing well with engineering, and procurement and construction activities on the PWS scope and is meeting regularly with Suez and the Companies on PWS detailed design and integration into the existing station facilities. Construction is progressing to plan. LG&E has contracted with Black & Veatch to provide OE services on the MC PWS project.

### **Fleet Mercury Control Injection Systems Project**

Mill Creek – All injection systems were completed and placed into operation in 2017.

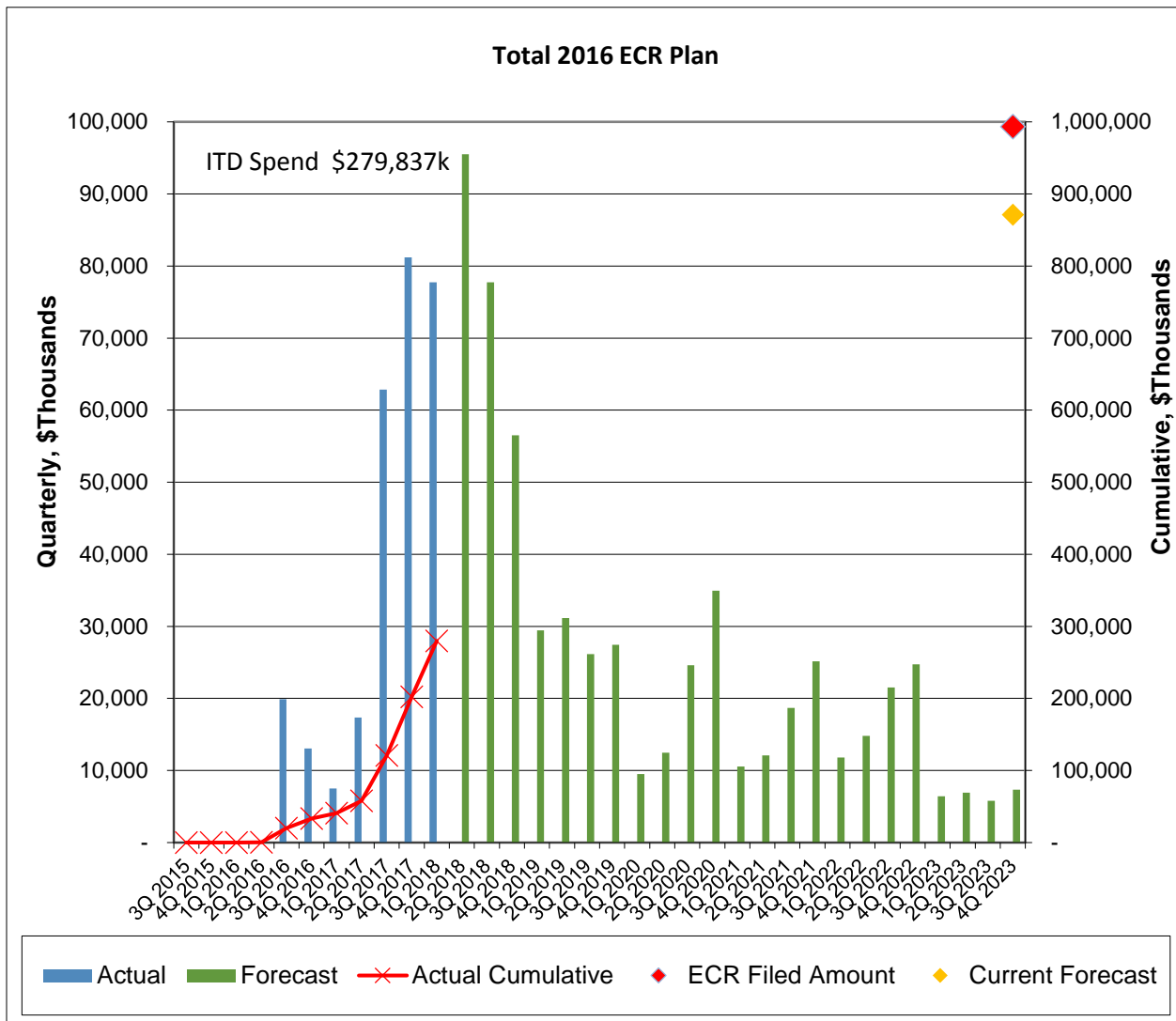
Ghent – All of the Ghent systems were placed into operation the week of January 8, 2018.

Trimble County – The Trimble County system was placed into operation the week of January 8, 2018.

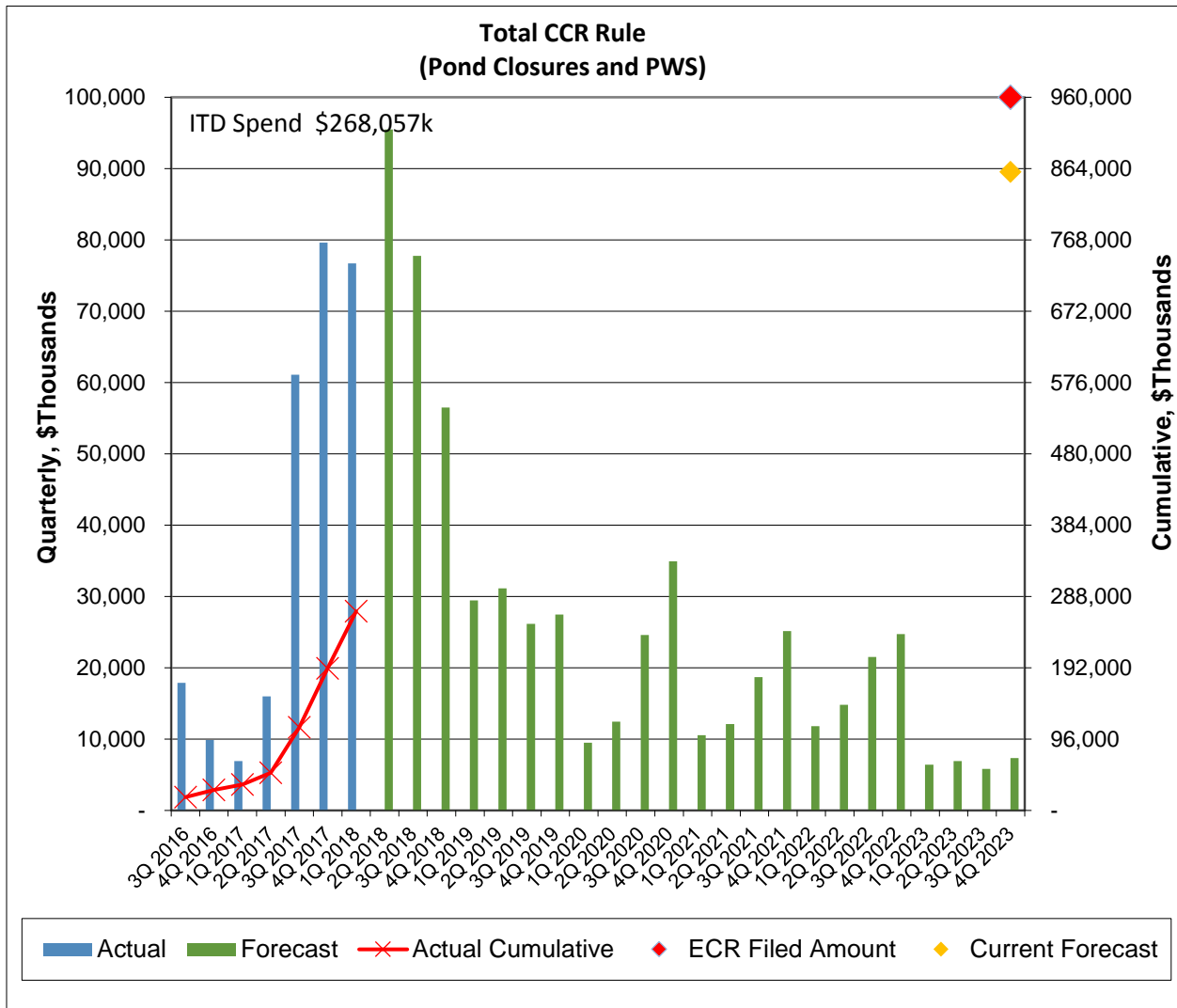


**Financials:**

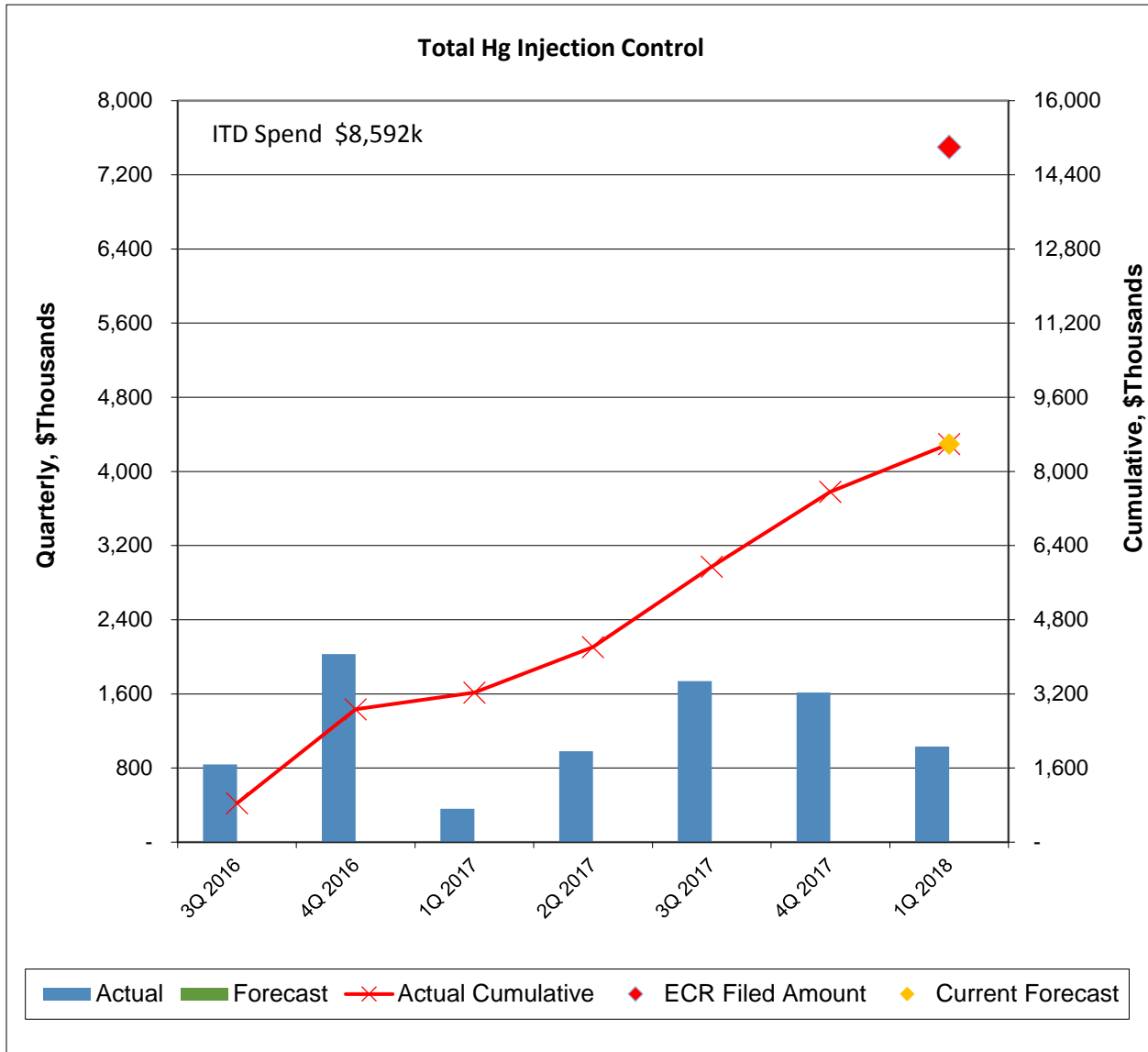
The total ECR Plan forecasted cost decreased from \$877.7 million (net) as reported last quarter to \$871.2 million (net), compared to the filed estimate of \$993.6 million. Total spend through March 31, 2018 has increased to \$279.8 million (net). For the graph below: 1) the chart includes a symbol (◆) to show the current forecast to completion; and an (2) inception-to-date (ITD) Spend shown in the upper left of the chart.



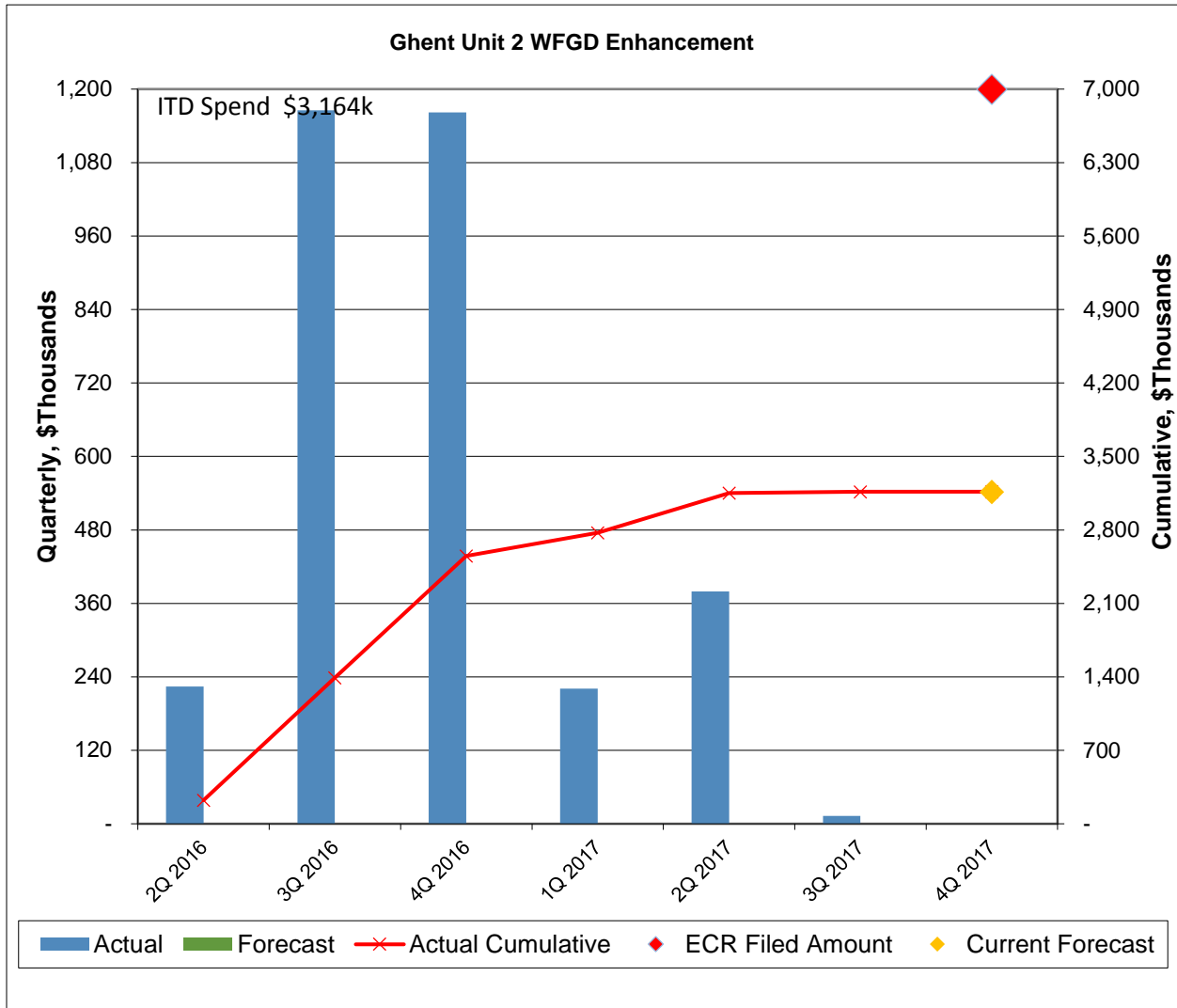
No change in CCR Impoundment Closure total forecasted cost occurred during this reporting period. Total spend through March 31, 2018 has increased to \$268.1 million (net). Note for the graph below: (1) the chart includes a symbol (◆) to show the current forecast to completion; and (2) ITD Spend is shown in the upper left of the chart.



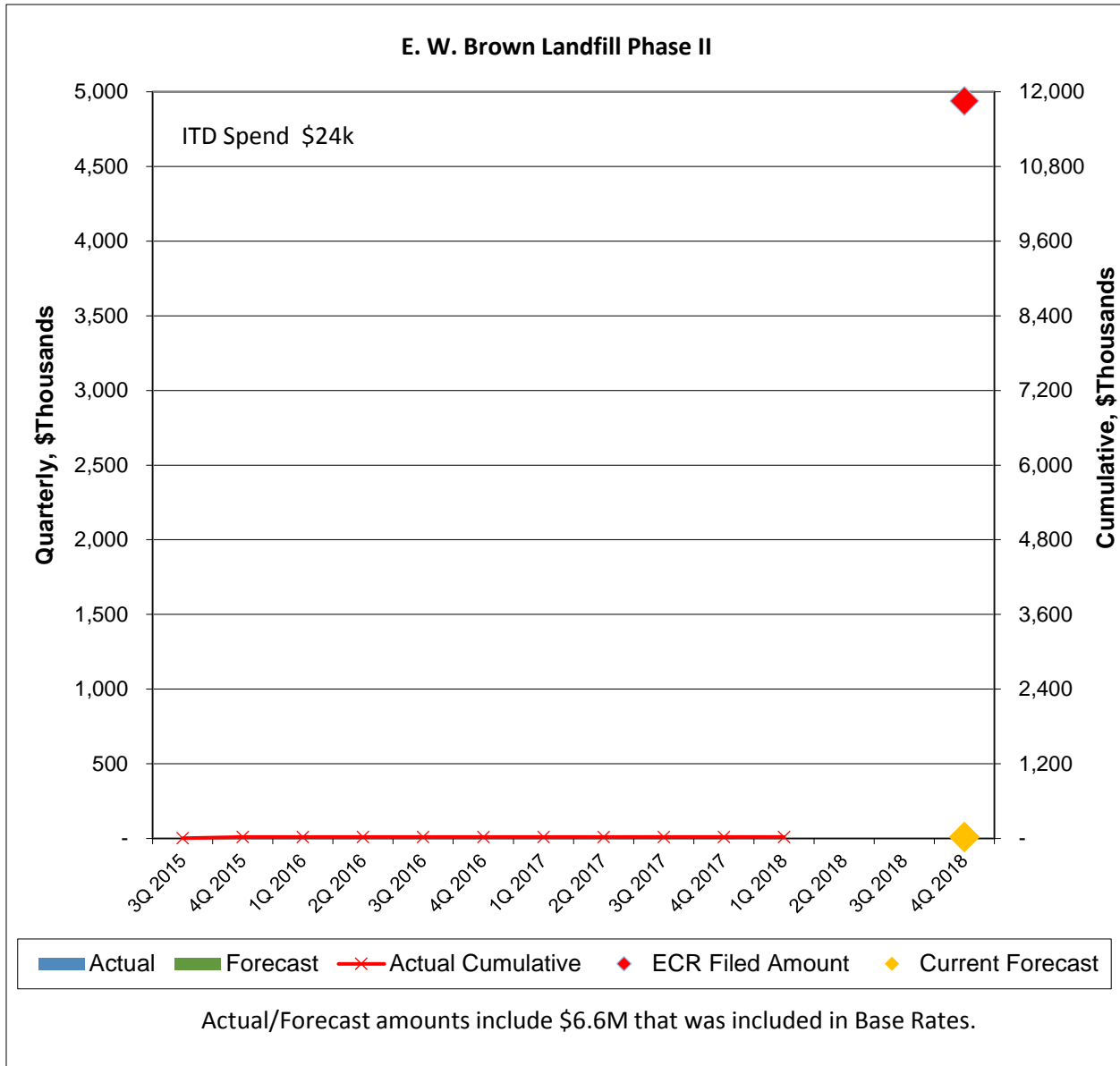
The Mercury Injection projects’ total forecasted cost has increased to \$8.6 million (net) in this reporting period compared to the filed estimate of \$15.0 million. Total spend through March 31, 2018 increased to \$8.59 million. Given the projects are in service, only minor expenses are planned in the next quarter to pay remaining invoices and close the projects. 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 Ghent Unit 2 WFGD Enhancement project has been completed. No change in the total forecasted cost occurred during this reporting period. Total spend on the project was \$3.16 million compared to the filed estimate of \$7.0 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.



The chart below for E. W. Brown’s Landfill Phase II did not change from the last report. This chart will be revised after the amended filing for a smaller Phase II and closure of the remaining ash pond is finalized with the Commission. Total spend through March 31, 2018 is \$0.024 million. Note for the graph below: (1) 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. Thalle will continue progressing the closure of the CCR impoundment at the Tyrone Station.

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

CCR Closures:

Tetra Tech will continue with Phase I closure activities at Ghent, as well as continue engineering and execution activities associated with the recovery efforts. An RFQ package for the revised Ghent Phase II project will be issued. At Mill Creek, MAC will continue closure activities on the Construction Runoff pond as part of the overall South Ponds closure work. Bid proposals for the E.W. Brown Impoundment closure will be reviewed with an expected contract agreement to be in place by June 2018.

PWS:

AMEC will continue engineering, procurement and construction 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. 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 (the treatment technology supplier) at all three stations (Ghent, Mill Creek, and Trimble County). At E.W. Brown, bid proposals will be reviewed and a contract is expected by early June 2018.

### **Fleet Mercury Control Injection Systems Project**

Only the processing of minor invoices will occur in the quarter as all of the Mercury Injection Control projects have been completed.

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

Kentucky Utilities will continue to support the amended 2016 ECR Plan for the smaller Phase II Landfill construction, along with closure of the Main Ash Pond for those areas that will not have the landfill or hard scape covering (i.e., Phase III and portions of the original Phase II). The minor modification permit application will continue to be reviewed by KYDWM. Proposals for the expansion of the landfill and capping of Phase 3 will be reviewed with a contract expected in June 2018.