COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

INVESTIGATION OF KENTUCKY UTILITIES COMPANY'S AND LOUISVILLE GAS & ELECTRIC COMPANY'S RESPECTIVE NEED FOR AND COST OF MULTIPHASE LANDFILLS AT THE TRIMBLE COUNTY AND GHENT GENERATING STATIONS	**)**	**CASE NO. 2015-00194**

SUPPLEMENTAL DATA REQUEST OF STERLING VENTURES, LLC TO KENTUCKY UTILITIES COMPANY AND LOUISVILLE GAS AND ELECTRIC COMPANY

REDACTED

Sterling Ventures, LLC requests Kentucky Utilities Company and Louisville Gas and Electric Company to respond the Supplemental Data Request in accordance with the Commission's Order of Procedure entered in this matter.

Respectfully submitted,

Sterling Ventures, LLC

By: _____

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Dated: August 20, 2015

DEFINITIONS

1. "Document" means the original and all copies (regardless of origin and whether or not including additional writing thereon or attached thereto) of any memoranda, reports, books, manuals, instructions, directives, records, forms, e-mail, notes, letters, or notices, in whatever form, stored or contained in or on whatever medium, including digital media.

2. "Study" means any written, recorded, transcribed, taped, filmed, or graphic matter, however produced or reproduced, either formally or informally, a particular issue or situation, in whatever detail, whether or not the consideration of the issue or situation is in a preliminary stage, and whether or not the consideration was discontinued prior to completion.

3. "Person" means any natural person, corporation, professional corporation, partnership, association, joint venture, proprietorship, firm, or the other business enterprise or legal entity.

4. A request to identify a natural person means to state his or her full name and business address, and last known position and business affiliation at the time in question.

5. A request to identify a document means to state the date or dates, author or originator, subject matter, all addressees and recipients, type of document (e.g., letter, memorandum, telegram, chart, etc.), identifying number, and its present location and custodian. If any such document was, but is no longer in the Company's possession or subject to its control, state what disposition was made of it and why it was so disposed.

6. A request to identify a person other than a natural person means to state its full name, the address of its principal office, and the type of entity.

7. "And" and "or" should be considered to be both conjunctive and disjunctive, unless specifically stated otherwise.

8. "Each" and "any" should be considered to be both singular and plural, unless specifically stated otherwise.

9. Words in the past tense should be considered to include the present, and words in the present tense include the past, unless specifically stated otherwise.

10. "You" or "your" means the person whose filed testimony is the subject of these data requests and, to the extent relevant and necessary to provide full and complete answers to any request, "you" or "your" may be deemed to include any other person with information relevant to any interrogatory who is or was employed by or otherwise associated with the witness or who assisted, in any way, in the preparation of the witness' testimony.

11. "Companies" means Kentucky Utilities Company, Louisville Gas and Electric Company and/or any of their officers, directors, employees or agents who may have knowledge of the particular matter addressed, and affiliates including PPL Corporation.

INSTRUCTIONS

1. If any matter is evidenced by, referenced to, reflected by, represented by, or recorded in any document, please identify and produce for discovery and inspection each such document.

2. These requests for information are continuing in nature, and information which the responding party later becomes aware of, or has access to, and which is responsive to any request is to be made available to Metropolitan Housing Coalition. Any studies, documents, or other subject matter not yet completed that will be relied upon during the course of this case should be so identified and provided as soon as they are completed. The Respondent is obliged to change, supplement and correct all answers to interrogatories to conform to available information, including such information as it first becomes available to the Respondent after the answers hereto are served.

3. Unless otherwise expressly provided, each data request should be construed independently and not with reference to any other interrogatory herein for purpose of limitation.

4. The answers provided should first restate the question asked and also identify the person(s) supplying the information.

5. Please answer each designated part of each information request separately. If you do not have complete information with respect to any interrogatory, so state and give as much information as you do have with respect to the matter inquired about, and identify each person whom you believe may have additional information with respect thereto.

6. In the case of multiple witnesses, each interrogatory should be considered to apply to each witness who will testify to the information requested. Where copies of testimony, transcripts or depositions are requested, each witness should respond individually to the information request.

7. The interrogatories are to be answered under oath by the witness(es) responsible for the answer.

8. If any document requested herein was at one time in existence, but has been lost, discarded or destroyed, identify such document as completely as possible, including the type of document, its date, the date or approximate date it was lost, discarded or destroyed, the identity of the person (s) who last had possession of the document and the identity of all persons having knowledge of the contents thereof.

9. In connection with any request for a working electronic spreadsheet or model which has supporting documentation on the use/operation of the spreadsheet or model, please include the use/operation documentation with the response.

Supplemental Data Request of Sterling Ventures, LLC to
Kentucky Utilities Company and Louisville Gas and Electric Company

1. Please see Attachment A to this Supplemental Data Request, and Exhibit T of Sterling's Complaint, in reference to the following question.

   a. Please confirm that the Companies have not requested Confidentiality with respect to any of the information set forth in Attachment A.

2. Is the position of the Companies that any of the cost information in the "[redacted]" Worksheet or the "[redacted]" Worksheet of any of the following Workbooks is confidential? (See Attachment B to this Supplemental Data Request for example of information on "[redacted]" and "Capex" Worksheet - [redacted])

   a. Attachment to PSC 1-18_UpdatedSVAnalysis_REDACTED.xlsx.
   b. Attachment to SV 1-14_TCOffsiteStorage_REDACTED.xlsx.

3. If the answer is yes to 2.a. or 2.b. above, please identify specifically by Row and Column identifier of the Workbook the specific cost information that the Companies are claiming is confidential, and explain in detail the following:

   a. the difference between (i) the cost information in the "[redacted]" and "[redacted]" and (ii) the publically disclosed costs of the Trimble Landfill in this proceeding and in the Companies' 2014 Rate Cases.

   b. how the detailed cost disclosures in the referenced "[redacted]" Worksheets is a different type of cost information from the detailed cost items in Attachment A and requires confidentiality.

4. With respect to Attachment B to this Supplemental Data Request, are the O&M costs of the CCR Treatment Facility (distinct from the CCR transport infrastructure and landfill related costs) included in the "[redacted]" Worksheet? If yes, please explain and identify those cost in the "[redacted]" Worksheet.

5. Please refer to Attachment C to this Supplemental Data Request.

   a. Please provide the source and documentation for the costs detailed in the "Additional O&M" section.

   b. Are the costs listed in the "Additional O&M" section still accurate with respect to the costs listed therein as of the referenced date (December 2014), or has subsequent review of costs resulted in those costs now being inaccurate or incomplete?

c. If the cost assumptions as reflected in the "Additional O&M" section have changed or been revised, please provide all documentation supporting thet changes or revisions.

d. If the cost assumptions as reflected in the "Additional O&M" section have changed or been revised, will the Companies be revising the Supplement to Alternative Analysis to reflect the changed or updated costs?

e. Did the Companies provide the cost information on Attachment C to GAI, or were the costs developed by GAI independently of the Companies?

f. Did the Companies review the cost assumption as reflected in the "Additional O&M" section of Attachment C? If yes, who at the Companies were involved in that review?

g. Please specifically identify any cost included in the "[redacted]" and "[redacted]" sections of the "[redacted]" Worksheet in the Workbook identified in question 2 above that are or were excluded from the costs identified in the "Additional O& M" section of Attachment C.

h. Please reconcile the costs included in the "[redacted]" and "[redacted]" sections of the "[redacted]" Worksheet in the Workbook identified in question 2 above to the costs identified in the "Additional O&M" section of Attachment C.

i. Provide copies of all reports, materials, spreadsheets, calculations, and analyses provided by the Companies to GAI related to the "[redacted]" and "[redacted]" sections of the "[redacted]" Worksheet in the Workbook identified in question 2 above.

6. The Companies have stated or suggested that there is cost data that would be considered by the Commission in this proceeding that should not be considered by, or is irrelevant to, the Corps of Engineers' consideration of the economic portion of a LEDPA 404 comparative alternatives analysis. Is there any cost data the Companies believe should or would be considered by the Corps that should not be considered by the Commission in determining the least cost comparative alternative in a CPCN determination?

7. Please identify the source on which the Companies are basing their decision on which costs of the Trimble Landfill should and should not be considered by the Corps of Engineers' consideration of the economic portion of a LEDPA 404 comparative alternatives analysis.

8. Please identify which cost information detailed in the "[redacted]" Worksheet or the "[redacted]" Worksheet that should not be considered by, or is irrelevant to the economic portion of a LEDPA 404 comparative alternatives analysis. Provide support and documentation for your answer.

9. Please see Attachment D to this Supplemental Data Request in reference to the following question.

   a. Is it the position of the Companies that any of the information or projections in Attachment D for any future year would be confidential? If so, please explain in detail the basis of the Companies' claim for confidentiality by description and/or year. By way of example, would the Companies' claim the same information as listed in Attachment B for the year 2020 would be confidential?

   b. Was each year's calculation of the projected annual revenue requirement ("Projected E(m))" based on the following formula?

      E(m)=[(RB) (ROR+(ROR-DR)(TR/1-TR)))]+OE, where

      E(m) = Projected Total Revenue Requirement
      RB = Projected Environmental Compliance Rate Base
      ROR = Projected Rate of Return on Environmental Compliance Rate Base
      DR = Projected Debit Rate
      TR = Projected Federal & State Income Tax Rate
      OE = Projected Operating & Maintenance Expenses

   c. Will using the above formula result in an appropriate and/or accepted method of calculating the annual Projected E(m) of a project? If not, please explain in detail your answer.

   d. Was Attachment D an appropriate calculation and/or method of calculating the Projected E(m) of the project? If not, please explain in detail your answer.

   e. Assuming KU wanted a projected present value of the annual revenue requirements (PVRR) of Phase I of the Ghent Landfill project limited to years 2009 through 2018, would applying a present value calculation to the E(m) for the years 2009 through 2018 in Attachment D result in a PVRR determination for Phase I of the Ghent Landfill? If not, please explain in detail your answer.

   f. If the Companies' answer to e. above is yes, would the calculated PVRR be confidential? If yes, please explain in detail your answer.

   g. If the Companies' answer to e. above is yes, and assuming the Companies had extended Attachment C to project the E(m) of all years and/or all phases of the

Ghent Landfill project, would applying a present value calculation to the E(m) for all of the years of the project provide a projected PVRR for all phases of the Ghent Landfill? If not, please explain in detail your answer.

h. If the Companies' answer to g. above is yes, would the calculated PVRR be confidential? If yes, please explain in detail your answer.

i. Do the Companies have the ability to calculate or determine the information on Attachment D for all projected phases of the Ghent and Trimble County landfills from the start of each project through the period that ratepayers would be billed under the ECR surcharge for each project?

   i. If yes, please provide the information in the format of Attachment D in an Excel Workbook with all cell formulas and linkages intact, with the information as set forth in Attachment C for the period that ratepayers would be billed under the ECR surcharge for the Ghent and Trimble County landfills, assuming Base Generation and Beneficial Use will occur as set forth in Attachment to SV 1-14_TCOffsiteStorage.xlsx.

   ii. If no, please explain why the Companies do not have the ability to calculate or determine the information on Attachment D for all projected phases of the Ghent and Trimble County landfills from the start of each project through the period that ratepayers would be billed under the ECR surcharge for each project.

10. Please provide the source formula, inputs, and/or assumptions that were used to calculate the amounts in [redacted]" Worksheet in Attachment to SV 1-17d (2012SVAnalysis).xlsx, and explain the use of the indicated book life periods as compared to the 2.79% book depreciation rate used in Attachment D to this Supplemental Data Request.

11. Please refer to pages 7 and 8 of John Walters's pre-filed testimony and explain in detail the cause of the differences between the referenced attachments of his testimony for the years in question.

12. Are the Companies planning to generate revenues by selling space in the Trimble County or Ghent Landfills to any non-affiliated party, or will the Companies in any way be competing with a non-affiliated commercial landfill company for CCR or other waste disposal?

    a. If no, please explain how public disclosure of any cost component of the Ghent or Trimble County landfills, or the public disclosure of the projected PVRR

calculation for the Ghent or Trimble County landfill projects, would result in an unfair commercial advantage to the Companies' competitors.

b. If yes, please describe the Companies plans for selling space in the landfills and/or competing with third party commercial landfills.

13. Attachment E to this Supplemental Data Request is the Coal Combustion Residuals Plan for E.W. Brown dated May 2011 and disclosed to the Commission in Case No. 2011-00161.

a. If known to the Companies, please provide details of specific instances of the Companies' competitors gaining an unfair competitive advantage because of the Companies' decision not to claim confidentiality with respect to projected costs and PVRR analysis for the Brown landfill alternatives considered.

b. If there are no known specific instances of competitors gaining an unfair advantage, please explain, and discuss in detail how the information disclosed in Attachment D could be used by a competitor of the Companies to gain an unfair advantage over the Companies with respect to operations, earnings, pricing or sales.

14. Please provide the assumed tax and book depreciation rates/percentages for the Trimble Landfill used in each of the Workbooks listed in question 2 above.

15. In Attachment to PSC 1-18_UpdatedSVAnalysis_REDACTED.xlsx, please explain the amounts entered into cells [redacted] Worksheet. Please provide copies of all calculations, work papers, spreadsheets and any other documents supporting the change in your answer. Please specifically explain why this cost should be included as a cost of the Sterling alternative ([redacted]).

16. Please explain the reason for [redacted] between the three fuel burn toggles on the "Summary" Worksheets in SV 1-14_TCOffsiteStorage_REDACTED.xlsx [redacted] and the three toggles for fuel burn in SV 1-14_ TCOffsiteStorage_ REDACTED.xlsx ([redacted]). Please provide copies of all calculations, work papers, spreadsheets and any other documents supporting the change in your answer.

17. Please explain the reasons for the differences between the amounts entered into Rows 14 through 17 and 19 through 20 in the "[redacted]" of Worksheets of SV 1-14_TCOffsiteStorage_ REDACTED.xlsx and PSC 1-18_Updated SVAnalysis_

REDACTED.xlsx. Please provide copies of all calculations, work papers, spreadsheets and any other documents supporting the change in your answer.

a. Please provide the source formulas, inputs and/or assumptions that were used to calculate the amounts in the cells of the above [redacted] Worksheets.

18. Did the Companies solicit any bids or issue any requests for proposals to third parties for alternatives to building the Trimble County Landfill?

a. If yes, please confirm that Sterling Ventures was not included in the list of bidders for alternatives to building the Trimble County Landfill.

b. If no, please explain why the Companies did not solicit any bids or issue any requests for proposals to third parties soliciting alternatives to building the Trimble Landfill.

19. Please refer to the Companies' response to Question 1 of the Commission Staff Initial Request for Information.

a. The Companies have estimated one year of litigation following the issuance of permits necessary to build the Trimble Landfill. Please explain and provide the source and all documentation on which a one year litigation period is based.

b. If the permit applications necessary to build the Trimble Landfill are denied by the Corps of Engineers, or applicable state agency approvals are denied or delayed, what is the volume of CCR that would or could be placed in the Ghent Landfill before the Companies would be required to seek other offsite alternatives or alternative energy sources?

c. Please provide all contingency costing analysis done by the Companies in preparation for the possibility that permits necessary to build the Trimble Landfill are denied or delayed.

d. Please specifically describe the process by which CCR would be excavated from the BAP and/or GSP for transportation to another permitted landfill.

i. Would the transportation be by truck or have the Companies considered transportation by barge?

ii. What would be the moisture content of CCR excavated and transported from the BAP and/or GSP?

iii. Do the Companies remain liable for, and subject to penalties, under the CCR Final Rule if a non-affiliated commercial land improperly stores, uses, disposes or claims a beneficial use of the Companies' CCR?

e. What is the anticipated cost to transport CCR from Trimble County to the Ghent Landfill in the event that permitting necessary to build the Trimble Landfill are denied by the Corps of Engineers, or applicable state agency approvals are denied or delayed?

f. Have the Companies considered placing FGD gypsum from Ghent into Sterling's mine using Sterling's existing beneficial use permit prior to the effective date of the CCR Final Rule in order to keep Sterling's facility as an option in the event Sterling obtains a modified beneficial use permit for Trimble County's CCR, and the permits for the Trimble Landfill are denied or delayed? If not please explain why the Companies, given the cost of transporting CCR offsite to another landfill, have not considered this alternative. Please provide support and documentation for your answer.

20. Would the Companies' use of CCR to fill or close ponds and existing surface impoundments be considered beneficial use under the CCR Final Rule?

a. If yes, do the Companies currently have, or will they be required to get a beneficial use permit from the Kentucky Division of Waste Management for that beneficial use after the effective date of the CCR Final Rule?

b. Is it the position of the Companies that the Kentucky Division of Waste Management does not have the authority under the CCR Final Rule to require a beneficial use permit prior to beneficially using CCR?

c. Is it the Companies position that the current permit from the Kentucky Division of Waste Management to beneficially use CCR at Cane Run will no longer be valid after the effective date of the CCR Final Rule?

d. If the Companies do have, or will be required to obtain, beneficial use permits from the Kentucky Division of Waste Management, to use CCR in connection with closing or remediating existing ponds or surface impoundments, please explain the Companies position as to whether the beneficial use permit should or should not be relevant to a legal determination in a citizen's suit claiming the use of CCR to close ponds or surface impoundment is not a beneficial use under the CCR Final Rule.

e. What is the regulatory or statutory basis for recovery of penalties in a citizen's suit for violation of the CCR Final Rule?

21. Do the Companies remain liable for, and subject to penalties, under the CCR Final Rule if Holcim, CertainTeed or any other third party beneficial user improperly stores, uses, disposes of or claims a beneficial use of the Companies' CCR? Please explain and document your answer.

22. Provide the date, location, and time of all discussions or conversations between the Companies' personnel and any representative of any federal or state agency, including, but not limited to, the Kentucky Division of Waste Management ("DWM") and the U.S. Environmental Protection Agency ("EPA"), and any other participants related to CCR disposal or beneficial use at any of Sterling's mines.

    a. Provide the names of all people involved in those discussions, their employment positions or titles, and any notes of those discussions, and describe the substance of those discussions.

    b. Provide copies of all correspondence between the Companies' personnel and any representative of any federal or state agency, including, but not limited to, DWM and EPA, and any other parties related to CCR disposal or beneficial use at any of Sterling's mines.

23. Please provide an analysis and discussion of any logistical hurdles that would prevent the Companies from using the Ghent Landfill, the new Trimble County GSP or the Trimble County BAP in the event of a temporary interruption in access to Sterling's mine. Please include in the analysis the number of years, including allowed extension, that the Trimble County BAP would be available to receive CCR under the CCR Final Rule.

24. Have the Companies considered in-place stabilization a section of the BAP and developing a CCR compliant landfill in that section of the BAP that could temporarily handle CCR, or could be used to stage CCR for beneficial use?

    a. If the answer is yes, is in-place stabilization of the BAP currently being considered or have the Companies determined that in-place impoundment stabilization is unfeasible. Please detail, document and explain your answer.

    b. If the answer is no, please explain why in-place stabilization of a section of the BAP has not been considered.

25. Please refer to the Fenner Dunlop report. (See Attachment F to this Supplemental Data Request)

a. This Report proposes building a bridge style continuous unloading barge off-loading facility of handling 3,000 tons per hour, which would provide the ability to unload 6,000,000 tons per year of CCR based on a 40 hour work week (4,500,000 tons per year at 75% efficiency). Please explain and provide all supporting documentation on the decision to construct a bridge style continuous unloading barge off-loading facility versus an excavator/clamshell bucket barge unloading facility.

b. Please provide the original cost, and year of construction, of the Companies' current excavator/clamshell bucket barge unloading facilities at its river plants, and the tons per hour capacity of each.

c. The Report indicates the cost of the required 8 barges and a tug at $3,133,000. In the Workbooks referenced in question 2 above, the assumed cost for barges in calculating the Sterling alternative was $[redacted] (Attachment to PSC 1-18_UpdatedSVAnalysis_REDACTED.xlsx., Worksheet cell at [redacted]. Please provide all documentation supporting your answer.

26. Please provide the calculation, assumptions and basis for the $[redacted] in [redacted] of the Sterling Option in Attachment to PSC 1-18_UpdatedSVAnalysis_REDACTED.xlsx. (See Worksheet cell at [redacted]).

27. Have the Companies prepared a comparative PVRR analysis of the Trimble Landfill versus the Sterling alternative using the barge site proposed by Sterling in Warsaw?

    a. If the answer is yes, please provide a copy of that PVRR analysis, and explain all cost assumptions used in that analysis.

    b. If the answer is no, please explain why the Companies have not further considered the Warsaw site as a possible alternative location to the location assumed in the Supplement to Alternatives Analysis.

28. What will be the assumed moisture content percentage of CCR after treatment in the Trimble County CCRT facility?

29. Reference the testimony of Mr. Voyles at page 13, lines 16 -17. Provide copies of all documents in the Companies' possession that pertain to these discussions with Sterling. These documents should include any communications, analyses, reports, etc. created or obtained from the Companies as well as any of their affiliated companies.

30. Reference the testimony of Mr. Voyles at page 1 whereat the witness states that he is an employee of LG&E and KU Services Company.

    a. Provide Mr. Voyles' title or position with LG&E and KU Services Company.

    b. Provide Mr. Voyles' job description as it relates to LG&E and KU Services Company.

    c. Provide a comprehensive corporate chart showing the full relationship, including ownership, whether the companies are regulated, and the affiliation between KU, LG&E, LG&E and KU Services Company, and LG&E and KU Energy LLC.

31. With regard to LG&E and KU Services Company, provide the following:

    a. The services provided by LG&E and KU Services Company to KU,
    b. The total financial contribution KU pays, allocates or books to LG&E and KU Service Company,

    c. The services provided by LG&E and KU Services Company to LG&E,

    d. The total financial contribution LG&E pays, allocates or books to LG&E and KU Service Company, and

    e. The names and titles of all officers of LG&E and KU Services Company.

32. Did LG&E and KU Services Company participate in the decision of KU and LG&E in the underlying CPCN case? If so, provide the following:

    a. The names and titles of the officers who participated,

    b. The exact nature of the participation, as in whether the company provided any calculations, analysis(es), data or information, etc., and

    c. Describe in detail whether the company had any role in making the final decision.

33. Reference the testimony of Mr. Voyles at page 13, line 18 through page 14, line 2. Please describe in detail the basis for the assertions made therein.

34. Reference the testimony of Mr. Voyles at page 17, lines 13 – 18. Please explain the "disparate points of interest between the Kentucky Public Service Commission and the U. S. Army Corps of Engineers with respect to CCR storage."

35. Reference the testimony of Mr. Voyles at page 18, line 11 - 12. Explain in detail the following statement: “Costs are treated differently in a LEDPA analysis than in a CPCN analysis.”

36. Reference the testimony of Mr. Voyles at page 20, lines 22 - 24. Provide a copy of all documents related to the testimony wherein the witness states: “The Companies expressed concern by speaking at a public meeting about the proposed rule, its effect on beneficial reuse applications and the treatment, as well as through formal comments to the EPA.”

37. Reference the testimony of Mr. Voyles at page 28, lines 1 - 12. Describe in detail the “experience” that the Companies have in operating a mine.

38. Reference the testimony of Mr. Revlett at page 1 whereat the witness states that he is an employee of LG&E and KU Services Company.

    a. Provide Mr. Revlett’s title or position with LG&E and KU Services Company.

    b. Provide Mr. Revlett’s job description as it relates to LG&E and KU Services Company.

    c. Provide a comprehensive corporate chart showing the full relationship, including ownership, whether the companies are regulated, and the affiliation between KU, LG&E, LG&E and KU Services Company, and LG&E and KU Energy LLC.

39. Reference the testimony of Mr. Sinclair at page 1 whereat the witness states that he is an employee of KU and LG&E Energy LLC.

    a. Provide Mr. Sinclair’s title or position with LG&E and KU Energy LLC.

    b. Provide Mr. Sinclair’s job description as it relates to LG&E and KU Energy LLC.

    c. Provide a comprehensive corporate chart showing the full relationship, including ownership, whether the companies are regulated, and the affiliation between KU, LG&E, LG&E and KU Services Company, and LG&E and KU Energy LLC.

40. With regard to LG&E and KU Energy LLC, provide the following:

    a. The services provided by LG&E and KU Energy LLC to KU,

    b. The total financial contribution KU pays, allocates or books to LG&E and KU Energy LLC,

c. The services provided by LG&E and KU Energy LLC to LG&E,

d. The total financial contribution LG&E pays, allocates or books to LG&E and KU Energy LLC, and

e. The names and titles of all officers of LG&E and KU Energy LLC.

41. Did LG&E and KU Energy LLC participate in the decision of KU and LG&E in the underlying CPCN case? If so, provide the following:

a. The names and titles of the officers who participated.

b. The exact nature of the participation, as in whether the company provided any calculations, analysis(es), data or information, etc.

c. Describe in detail whether the company had any role in making the final decision.

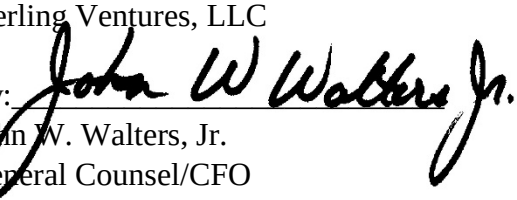
42. Reference the testimony of Mr. Conroy at page 1 whereat the witness states that he is an employee of LG&E and KU Services Company.

a. Provide Mr. Conroy's title or position with LG&E and KU Services Company.

b. Provide Mr. Conroy's job description as it relates to LG&E and KU Services Company.

c. Provide a comprehensive corporate chart showing the full relationship, including ownership, whether the companies are regulated, and the affiliation between KU, LG&E, LG&E and KU Services Company, and LG&E and KU Energy LLC.

Respectfully submitted,
Sterling Ventures, LLC

By: 

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Dated: August 20, 2015

CERTIFICATE OF COMPLIANCE

This is to certify that Sterling Ventures, LLC's August 20, 2015 electronic filing of the Supplemental Data Request is a true and accurate copy of the same document being filed in paper medium; that the electronic filing has been transmitted to the Commission on August 20, 2015; that there are currently no parties that the Commission has excused from participation by electronic means in this proceeding; and that an original paper copy of the Data Requests is being mailed, by first class United States mail, postage prepaid, to the Commission on August 21, 2015.

John W. Walters, Jr
General Counsel, Sterling Ventures, LLC

GHENT LANDFILL (PHASE I)

Capital Expenditures ($ million)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Property Acquisition											
Disposal Site(s)	-	-	4.66	-	-	-	-	-	-	-	4.66
Overhead Electric Line(s)	-	-	0.03	-	-	-	-	-	-	-	0.03
Buffer Zones	-	-	-	-	2.37	-	-	-	-	-	2.37
Higher End House Acquisition	-	-	1.40	-	-	-	-	-	-	-	1.40
Engineering, Permits and Fees, and Construction Documents	0.46	2.00	-	-	-	-	-	-	-	-	2.46
Stream and Wetland Mitigation	-	-	4.14	-	-	-	-	-	-	-	4.14
Ground Water Monitoring System	-	0.27	-	-	-	-	-	-	-	-	0.27
Transmission Line Relocation Design, Engineering, and Construction	-	-	-	-	0.82	-	-	-	-	-	0.82
CCWD Relocation	-	-	0.12	-	-	-	-	-	-	-	0.12
Pump House Fly Ash and Bottom Ash Segregation	-	0.72	-	-	-	-	-	-	-	-	0.72
Dry Ash/Pyrites Handling System - Conveyor	-	-	16.29	27.08	38.93	-	-	-	-	-	82.31
Dry Gypsum Handling System	-	-	7.79	15.96	13.05	-	-	-	-	-	36.80
Gypsum Fines Project	-	0.74	6.30	6.30	-	-	-	-	-	-	13.34
Initial Site Preparation											
Clearing, Grubbing, and Site Preparation	-	-	-	0.62	0.65	0.69	-	-	-	-	1.96
Stripping and Stockpiling Soil	-	-	-	0.50	0.53	0.56	-	-	-	-	1.58
Hauling Topsoil - Phase 1 - 1.0 Mile Round Trip	-	-	-	0.19	0.20	0.21	-	-	-	-	0.59
Erosion and Sedimentation Controls	-	-	-	0.06	0.06	0.06	-	-	-	-	0.18
Sedimentation Pond	-	-	-	0.33	-	-	-	-	-	-	0.33
Collection Channels (Fabriform)	-	-	-	0.36	0.38	0.40	-	-	-	-	1.15
Diversion Channels (Riprap)	-	-	-	0.11	0.12	0.12	-	-	-	-	0.35
Liner Subgrade Preparation											
Scraping and Hauling - 0.25 Mile Round Trip	-	-	-	0.32	0.33	0.35	-	-	-	-	1.01
Excavating	-	-	-	0.15	0.16	0.17	-	-	-	-	0.49
Hauling Subgrade - Phase 1 - 1.0 Mile Round Trip	-	-	-	0.31	0.33	0.35	-	-	-	-	0.99
Spreading and Compacting Subgrade	-	-	-	0.49	0.52	0.55	-	-	-	-	1.57
Subgrade QA/QC	-	-	-	0.24	0.25	0.27	-	-	-	-	0.76
Gypsum Dewatering Facility Earthwork											
Excavating	-	-	-	0.73	-	-	-	-	-	-	0.73
Hauling Earth - 1.0 Mile Round Trip	-	-	-	1.53	-	-	-	-	-	-	1.53
Spreading and Compacting	-	-	-	1.21	-	-	-	-	-	-	1.21
Earthwork QA/QC	-	-	-	0.24	-	-	-	-	-	-	0.24

GHENT LANDFILL (PHASE I)

Capital Expenditures ($ million)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Haul Roads											
CCP Disposal On-Landfill Haul Road (60 Feet Wide)	-	-	-	-	0.61	0.05	0.05	0.05	0.05	0.06	0.87
CCP Disposal Off-Landfill Haul Road (60 Feet Wide)	-	-	-	0.30	1.03	-	-	-	-	-	1.33
Liner											
Landfill - Single Liner System	-	-	-	-	7.00	7.43	7.87	-	-	-	22.30
Liner System QA/QC	-	-	-	-	1.23	1.30	1.38	-	-	-	3.90
Leachate Collector Line	-	-	-	-	0.19	0.20	0.21	-	-	-	0.60
On-Landfill Leachate Trunk Line	-	-	-	-	0.08	0.08	0.09	-	-	-	0.25
Off-Landfill Leachate Trunk Line	-	-	-	-	0.07	-	-	-	-	-	0.07
Leachate Storage Pond	-	-	-	-	0.29	-	-	-	-	-	0.29
Leachate Pump House	-	-	-	-	0.09	-	-	-	-	-	0.09
Leachate Pipe Line	-	-	-	-	0.08	-	-	-	-	-	0.08
Underdrains - Trunk	-	-	-	-	0.17	0.18	0.19	-	-	-	0.54
Underdrains - Collector	-	-	-	-	0.11	0.12	0.12	-	-	-	0.35
Cap											
Intermediate Soil Cover	-	-	-	-	-	-	0.28	0.30	0.32	0.34	1.24
Cap System	-	-	-	-	-	-	0.22	0.23	0.25	0.26	0.96
Cap System QA/QC	-	-	-	-	-	-	0.03	0.03	0.03	0.03	0.12
Total	0.46	3.72	40.73	57.01	69.65	13.10	10.44	0.62	0.65	0.69	197.07
E.ON-US Overheads	0.02	0.13	1.43	2.00	2.44	0.46	0.37	0.02	0.02	0.02	6.90
Total with Overheads	0.47	3.85	42.16	59.01	72.09	13.56	10.81	0.64	0.68	0.72	203.97

GHENT LANDFILL (PHASE I)

Operating & Maintenance Costs ($)	2010	2011	2012	2013	2014	2015	2016	2017
Ground Water Sampling and Testing	14,045	14,888	15,781	16,728	17,731	18,795	19,923	21,118
Leachate Management	-	-	-	83,639	88,657	93,977	99,616	105,592
Surveying (As-builts)	16,292	17,270	18,306	19,404	20,569	21,803	23,111	24,497
Pump House Fly Ash and Bottom Ash Segregation	75,843	80,394	85,217	-	-	-	-	-
Dry Ash/Pyrites Handling System - Conveyor	-	-	-	2,161,234	2,290,908	2,428,363	2,574,065	2,728,509
Dry Gypsum Handling System	-	-	-	682,495	723,445	766,851	812,863	861,634
Leachate Pump House	15,169	16,079	17,043	18,066	19,150	20,299	21,517	22,808
Hauling Fly Ash and Bottom Ash to Landfill								
Loading	-	-	-	1,338,226	1,418,519	1,503,630	1,593,848	1,689,479
Phase 1 - 2.25 Mile Round Trip	-	-	-	2,822,723	2,992,087	3,171,612	3,361,909	3,563,623
Hauling Gypsum to Landfill								
Loading	-	-	-	1,746,384	1,851,167	1,962,237	2,079,972	2,204,770
Phase 1 - 2.25 Mile Round Trip	-	-	-	3,997,156	4,236,986	4,491,205	4,760,677	5,046,318
Landfilling Fly Ash and Bottom Ash	-	-	-	2,408,806	2,553,334	2,706,534	2,868,927	3,041,062
Landfilling Gypsum	-	-	-	3,143,492	3,332,101	3,532,027	3,743,949	3,968,586
Ash/Gypsum Placement QA/QC	-	-	-	54,198	57,450	60,897	64,551	68,424
Maintenance								
Landfills	-	-	-	301,101	319,167	338,317	358,616	380,133
Haul Roads	-	-	-	53,529	56,741	60,145	63,754	67,579
Dust Control	-	-	-	156,126	165,494	175,424	185,949	197,106
TOTAL	121,349	128,630	136,348	19,003,308	20,143,507	21,352,117	22,633,244	23,991,239

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91		18 Leachate System and Underdrain System Cleanout	0	0	93,014	98,482	101,436	104,480	107,614	110,842	114,168	117,593	121,121	124,754

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Cost Comparison Summary of
Ravine B Alternative [1,2,3]

		Unit Costs	Unit	Ravine B Quantity	Ravine B Cost
CAPITAL COSTS					
	General Project / Permitting / Infrastructure Cost Impacts				
1	Property Acquisition	$ 12,000	Acre	0	$ -
2	Clearing, Grubbing, and Site Preparation	$ 17,000	Acre	521	$ 8,857,000
3	Large Utility Line Relocation (345 kV Single Circuit)	$ 880	LF	8,400	$ 7,392,000
4	Fencing	$ 50	LF	65,045	$ 3,252,250
5	Environmental Wetland Mitigation (cost based on adjusted mitigation units)	$ 72,000	Acre	2.58	$ 185,760
6	Environmental Stream Mitigation (cost based on adjusted mitigation units)	Varies	LF	87,253	$ 18,466,825
7	Cultural Resources	Varies	EA	1	$ 2,000,000
8	Indiana Bat Mitigation[4]	$ 5,338	Acre	521	$ 2,781,098
9	Road Relocation (County Road)	$ 350	LF	0	$ -
10	Road Relocation (State Road)	$ 400	LF	0	$ -
				Subtotal	**$ 42,934,933**
	CCR Transportation				
11	Pipe Conveyor Transport (North Ridge Top)	$ 2,150	LF	0	$ -
12	Pipe Conveyor Transport (Ogden Ridge Road Path)	$ 2,425	LF	5,236	$ 12,697,300
13	Pipe Conveyor Transport (South Ridge Top)	$ 3,125	LF	0	$ -
14	Transfer Station	$ 250,000	EA	0	$ -
15	Haul Road - Off Landfill	$ 1,600	LF	5,308	$ 8,492,800
16	Bridge - Large (36 FT high, 440 FT long, 60 FT wide)	$ 4,000,000	EA	0	$ -
17	Bridge - Medium (200 FT long, 60 FT wide)	$ 1,750,000	EA	1	$ 1,750,000
				Subtotal	**$ 22,940,100**
	Landfill Preparation				
18	Perimeter Collection Channel - Fabric Form, 6-10' Bottom Width	$ 75.00	LF	15,073	$ 1,130,475
19	Upslope Drainage Diversion Channel - Fabric Form, 1-5' Bottom Width	$ 50.00	LF	18,105	$ 905,250
20	Subgrade Preparation - General Earthwork - Soil Inside Footprint (3000 ft R.T.)	$ 5.65	CY	1,414,591	$ 7,992,439
21	Subgrade Preparation - General Earthwork - Rock Blasting (3000 ft R.T.)	$ 21.72	CY	1,300,410	$ 28,244,905
22	Subgrade Preparation - Borrow or Spoiling Excess Material - Soil - 1/2 Mile	$ 5.65	CY	311,364	$ 1,759,207
23	Subgrade Preparation - Borrow or Spoiling Excess Material - Soil - 1 Mile	$ 5.94	CY	311,364	$ 1,849,502
24	Subgrade Preparation - Borrow or Spoiling Excess Material - Soil - 2 Miles	$ 6.84	CY	1,377,839	$ 9,424,419
25	Subgrade Preparation - Borrow or Spoiling Excess Material - Soil - 4 Miles	$ 8.36	CY	0	$ -
26	Landfill Composite Liner System - 0.5 mi RT Protective Cover/4 mi RT Drainage Layer	$ 91,000	Acre	0	$ -
27	Landfill Composite Liner System - 1.5 mi RT Protective Cover/4 mi RT Drainage Layer	$ 93,000	Acre	0	$ -
28	Landfill Composite Liner System - 0.5 mi RT Protective Cover/2 mi RT Drainage Layer	$ 88,000	Acre	194	$ 17,072,000
29	Groundwater Underdrain Drainage Pipes	$ 6,000	Acre	194	$ 1,164,000
30	Leachate Collection System Drainage Pipes	$ 15,000	Acre	194	$ 2,910,000
				Subtotal	**$ 72,452,197**
	ES/SWM Pond and Leachate Pond[5]				
31	Large ES/SWM Pond and Leachate Pond - Earthwork and Liner System (~35 acre-ft)	$ 3,000,000	EA	1	$ 3,000,000
32	Medium ES/SWM Pond and Leachate Pond - Earthwork and Liner System (~20 acre-ft)	$ 2,000,000	EA	0	$ -
				Subtotal	**$ 3,000,000**
	Landfill Cap Cover System				
33	Final Cover System - 2 Mile RT (12 Inches Clay; 12 Inches Topsoil)	$ 29,000	Acre	0	$ -
34	Final Cover System - 4 Mile RT (12 Inches Clay; 12 Inches Topsoil)	$ 33,000	Acre	194	$ 6,402,000
				Subtotal	**$ 6,402,000**
	Barge Transport				
35	Barge Loading Facility	$ 14,200,000	EA	0	$ -
36	Barge Unloading Facility	$ 16,100,000	EA	0	$ -
37	Ancillary Costs (Critical Spares and Office/Warehouse Space)	$ 1,600,000	EA	0	$ -
				Subtotal	**$ -**
	Additional Capital Costs				
38	Additional Capital Costs[6]				
	LG&E Overheads and Engineering Support	$ 10,250,000	LUMP	1	$ 10,250,000
	Intermediate Cover and Benches	$ 8,090,000	LUMP	1	$ 8,090,000
	QA/QC (Subgrade, Liner, Final Cover System)	$ 5,940,000	LUMP	1	$ 5,940,000
	Borrow Area Roads and On-Landfill Haul Roads	$ 7,730,000	LUMP	1	$ 7,730,000
				Subtotal	**$ 32,010,000**
				Capital Total	**$ 179,739,230**
OPERATION AND MAINTENANCE (O&M) COSTS					
	Landfill / Pipe Conveyor Operating Costs				
39	Hauling - 1 Mile Round Trip (22 CY on landfill/private road)	$ 2.56	CY	34,162,019	$ 87,454,769
40	Hauling - 2 Mile Round Trip (22 CY on landfill/private road)	$ 3.46	CY	0	$ -
41	Hauling - 3 Mile Round Trip (22 CY on landfill/private road)	$ 4.19	CY	0	$ -
42	Hauling - 30 Mile Round Trip (18 CY, 35 MPH avg)	$ 11.55	CY	0	$ -
43	Offsite CCR Disposal - Tipping Fee	$ 21.20	TON	0	$ -
44	Pipe Conveyor Cost of Operation	$ 0.20	CY	34,162,019	$ 6,832,404
				Subtotal	**$ 94,287,172**
	Barge Transport				
45	Barge Loading and Unloading Operation Cost	$ 1,100,000	YR	0	$ -
46	Barge Transportation Costs	Varies	TON	0	$ -
				Subtotal	**$ -**
	Additional O&M Costs				
47	Additional O&M Costs[6]				
	CCR Placement, Compaction, Survey, and QA/QC	$ 95,080,000	LUMP	1	$ 95,080,000
	Cleanout / Maintenance (Haul Roads, Ponds, LCS, Underdrain, and Landfill)	$ 20,240,000	LUMP	1	$ 20,240,000
	Dust Control	$ 11,500,000	LUMP	1	$ 11,500,000
				Subtotal	**$ 126,820,000**
				O&M Total	**$ 221,107,172**

CASE STUDY:	Ravine B
STORAGE CAPACITY (MCY):	34.2
CAPITAL COST ($1 MILLION):	$180
O&M COST ($1 MILLION):	$221
TOTAL CAPITAL AND O&M COST ($1 MILLION):	$401
($/CY):	$11.73

NOTES:

1. Costs are for comparison of case studies only as described in Section III of report. Contingencies were not applied except as noted in Appendix III.D-1.
2. Costs were developed including only line items which are anticipated to be significantly different between case studies. "Common cost" items anticipated to be similar in cost for all case studies are not included (e.g. project management, or the conditioning and treatment of CCR prior to transit from TC Station). Minor construction and operations costs are not included due to the conceptual nature of the design. Examples of these cost items include: minor utility line relocations, minor erosion and sedimentation/stormwater management controls, surface and groundwater testing, mowing.
3. Costs are calculated on 2012 dollar basis (except as noted in Appendix III.D-1). No inflation or discount rates included.
4. Assumes average cost ($5,338 per acre) for Indiana Bat mitigation as described in Support Document III.D-1-4.
5. Does not include costs for leachate treatment or transport system. See Appendix III.D-1 for more information.
6. Additional Capital and O&M costs include costs previously omitted from (GAI 2014) cost analysis but added to the Case Study analysis due to comparison of landfill vs. non-landfill (e.g. mine) Site Alternatives. See Appendix III.D-1 for more information.

Revenue Requirements
Project 30 - KU

	2009	2010	2011	2012	January 2013	2014	2015	2016	2017	2018
In-Service					1	2	3	4	5	6
Ghent 4										
Capital Expenditures - Project 30 - Ghent Landfill - Phase I	$ 4,321,671	$ 42,157,177	$ 59,006,955	$ 72,091,553	$ 13,556,562	$ 10,808,035	$ 637,023	$ 675,244	$ 715,759	$ -
Accumulated Expenditures	$ 4,321,671	$ 46,478,848	$ 105,485,803	$ 177,577,356	$ 191,133,918	$ 201,941,953	$ 202,578,976	$ 203,254,220	$ 203,969,979	$ 203,969,979
Book Depreciation rate, per year	0.000%	0.000%	0.000%	0.000%	2.790%	2.790%	2.790%	2.790%	2.790%	2.790%
Tax Depreciation rate, per year	0.000%	0.000%	0.000%	0.000%	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%
Income tax rate	36.70%	35.59%	35.59%	35.59%	35.59%	35.59%	35.59%	35.59%	35.59%	35.59%
Deferred Tax Balance	-	-	-	-	732,114	3,915,287	6,717,731	9,167,825	11,289,716	13,100,909
Book Accumulated Depreciation Balance	-	-	-	-	5,110,443	10,744,624	16,396,577	22,067,370	27,758,132	33,448,895
Unrecovered Investment -- Book	4,321,671	46,478,848	105,485,803	177,577,356	191,133,918	201,941,953	202,578,976	203,254,220	203,969,979	203,969,979
Book Depreciation	-	-	-	-	5,110,443	5,634,180	5,651,953	5,670,793	5,690,762	5,690,762
Unrecovered Investment -- Tax total	4,321,671	46,478,848	105,485,803	177,577,356	191,133,918	201,941,953	202,578,976	203,254,220	203,969,979	203,969,979
Tax Depreciation	-	-	-	-	7,167,522	14,578,190	13,526,198	12,555,013	11,652,805	10,779,813
Allowed Rate of Return	11.12%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%
Book Depreciation expense total	-	-	-	-	5,110,443	5,634,180	5,651,953	5,670,793	5,690,762	5,690,762
Tax Depreciation expense total	-	-	-	-	7,167,522	14,578,190	13,526,198	12,555,013	11,652,805	10,779,813
Annual Property Tax Rate	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%
Deferred Tax Balance	-	-	-	-	732,114	3,183,173	2,802,444	2,450,094	2,121,891	1,811,193
Revenue Recovery on Capital Expenditure to date										
Eligible Plant, cumulative capital expenditures	4,321,671	46,478,848	105,485,803	177,577,356	191,133,918	201,941,953	202,578,976	203,254,220	203,969,979	203,969,979
Less: Retired Plant	-	-	-	-	-	-	-	-	-	-
Less: Accumulated Depreciation	-	-	-	-	(5,110,443)	(10,744,624)	(16,396,577)	(22,067,370)	(27,758,132)	(33,448,895)
Plus: Accumulated Depreciation on Retired Plant	-	-	-	-	-	-	-	-	-	-
Less: Deferred Tax Balance	-	-	-	-	(732,114)	(3,915,287)	(6,717,731)	(9,167,825)	(11,289,716)	(13,100,909)
Plus: Deferred Tax Balance on Retired Plant	-	-	-	-	-	-	-	-	-	-
Environmental Compliance Rate Base	4,321,671	46,478,848	105,485,803	177,577,356	185,291,361	187,282,042	179,464,668	172,019,025	164,922,131	157,420,175
Rate of return	11.12%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%
Return on Environmental Compliance Rate Base	$ 480,509	$ 5,098,393	$ 11,571,030	$ 19,478,952	$ 20,325,122	$ 20,543,486	$ 19,685,976	$ 18,869,243	$ 18,090,765	$ 17,267,855
Operating Expenses	84,800	121,349	128,630	136,348	19,003,308	20,143,507	21,352,117	22,633,244	23,991,239	25,430,713
Annual Depreciation expense	-	-	-	-	5,110,443	5,634,180	5,651,953	5,670,793	5,690,762	5,690,762
Less depreciation on retired plant	-	-	-	-	-	-	-	-	-	-
Annual Property Tax expense	-	6,483	69,718	158,229	266,366	279,035	286,796	279,274	271,780	264,318
Total OE	$ 84,800	$ 127,832	$ 198,348	$ 294,577	$ 24,380,117	$ 26,056,723	$ 27,290,866	$ 28,583,310	$ 29,953,782	$ 31,385,793
Total E(m) - Project	565,309	5,226,225	11,769,378	19,773,528	44,705,239	46,600,208	46,976,843	47,452,553	48,044,547	48,653,648

Attachment_to_SV_1-2a_and_g_(ECR_Bill_Impact_FINAL) (Print Version)KU - Project 32

Revenue Requirements
Project 32 - KU

	2009	2010	2011	2012	January 2013	2014	2015	2016	2017	2018
In-Service					1	2	3	4	5	6
TrimbleNPC Capital Expenditures - Project 32 - TC CCP Storage (Landfill) (Proportional Ownership)	$ 205,835	$ -	$ 16,342,683	$ 17,306,506	$ -	$ -	$ -	$ -	$ -	$ -
Accumulated Expenditures	$ 205,835	$ 205,835	$ 16,548,518	$ 33,855,024	$ 33,855,024	$ 33,855,024	$ 33,855,024	$ 33,855,024	$ 33,855,024	$ 33,855,024
Book Depreciation rate, per year	0.000%	0.000%	0.000%	0.000%	3.620%	3.620%	3.620%	3.620%	3.620%	3.620%
Tax Depreciation rate, per year	0.000%	0.000%	0.000%	0.000%	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%
Income tax rate	36.70%	35.59%	35.59%	35.59%	35.59%	35.59%	35.59%	35.59%	35.59%	35.59%
Deferred Tax Balance	-	-	-	-	33,838	467,481	835,819	1,143,912	1,396,098	1,596,714
Book Accumulated Depreciation Balance	-	-	-	-	1,174,487	2,400,039	3,625,591	4,851,143	6,076,695	7,302,247
Unrecovered Investment -- Book	205,835	205,835	16,548,518	33,855,024	33,855,024	33,855,024	33,855,024	33,855,024	33,855,024	33,855,024
Book Depreciation	-	-	-	-	1,174,487	1,225,552	1,225,552	1,225,552	1,225,552	1,225,552
Unrecovered Investment -- Tax total	205,835	205,835	16,548,518	33,855,024	33,855,024	33,855,024	33,855,024	33,855,024	33,855,024	33,855,024
Tax Depreciation	-	-	-	-	1,269,563	2,443,994	2,260,500	2,091,225	1,934,138	1,789,238
Allowed Rate of Return	11.12%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%
Book Depreciation expense total	-	-	-	-	1,174,487	1,225,552	1,225,552	1,225,552	1,225,552	1,225,552
Tax Depreciation expense total	-	-	-	-	1,269,563	2,443,994	2,260,500	2,091,225	1,934,138	1,789,238
Annual Property Tax Rate	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%
Deferred Tax Balance	-	-	-	-	33,838	433,644	368,338	308,093	252,186	200,616
Revenue Recovery on Capital Expenditure to date										
Eligible Plant, cumulative capital expenditures	205,835	205,835	16,548,518	33,855,024	33,855,024	33,855,024	33,855,024	33,855,024	33,855,024	33,855,024
Less: Retired Plant	-	-	-	-	-	-	-	-	-	-
Less: Accumulated Depreciation	-	-	-	-	(1,174,487)	(2,400,039)	(3,625,591)	(4,851,143)	(6,076,695)	(7,302,247)
Plus: Accumulated Depreciation on Retired Plant	-	-	-	-	-	-	-	-	-	-
Less: Deferred Tax Balance	-	-	-	-	(33,838)	(467,481)	(835,819)	(1,143,912)	(1,396,098)	(1,596,714)
Plus: Deferred Tax Balance on Retired Plant	-	-	-	-	-	-	-	-	-	-
Environmental Compliance Rate Base	205,835	205,835	16,548,518	33,855,024	32,646,699	30,987,504	29,393,614	27,859,969	26,382,231	24,956,064
Rate of return	11.12%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%	10.97%
Return on Environmental Compliance Rate Base	$ 22,886	$ 22,579	$ 1,815,253	$ 3,713,651	$ 3,581,107	$ 3,399,105	$ 3,224,267	$ 3,056,037	$ 2,893,940	$ 2,737,500
Operating Expenses	-	-	-	-	892,889	946,462	1,003,249	1,063,444	1,127,251	1,194,886
Annual Depreciation expense	-	-	-	-	1,174,487	1,225,552	1,225,552	1,225,552	1,225,552	1,225,552
Less depreciation on retired plant	-	-	-	-	-	-	-	-	-	-
Annual Property Tax expense	-	309	309	24,823	50,783	49,021	47,182	45,344	43,506	41,667
Total OE	$ -	$ 309	$ 309	$ 24,823	$ 2,118,158	$ 2,221,035	$ 2,275,984	$ 2,334,340	$ 2,396,309	$ 2,462,105
Total E(m) - Project	22,886	22,887	1,815,561	3,738,474	5,699,265	5,620,140	5,500,251	5,390,377	5,290,249	5,199,605

Attachment_to_SV_1-2a_and_g_(ECR_Bill_Impact_FINAL) (Print Version)Cash Flows-KU

Summary Cash Flow
Cash Flow for 2009 thru 2018
2009 KU Amended ECR Plan

1

Date	TC2 AQS O&M (Project 23)	BR3 SCR (Project 28)	BR Ash Pond Phase II (Project 29)	Ghent Landfill Phase I (Project 30)	TC BAP/Gypsum Storage (Project 31)	TC CCP Storage (Landfill) (Project 32)	Beneficial Reuse (Project 33)	Total
2009	$ -	$ 348,805	$ 120,681	$ 4,321,671	$ 4,728,491	$ 205,835	$ 996,705	$ 10,722,188
2010	$ -	$ 34,500,000	$ 8,019,610	$ 42,157,177	$ 7,107,408	$ -	$ 3,169,522	$ 94,953,717
2011	$ -	$ 74,100,000	$ 10,168,204	$ 59,006,955	$ -	$ 16,342,683	$ -	$ 159,617,842
2012	$ -	$ 69,900,000	$ 6,549,852	$ 72,091,553	$ -	$ 17,306,506	$ -	$ 165,847,911
2013	$ -	$ 5,000,000	$ -	$ 13,556,562	$ -	$ -	$ -	$ 18,556,562
2014	$ -	$ -	$ -	$ 10,808,035	$ -	$ -	$ -	$ 10,808,035
2015	$ -	$ -	$ -	$ 637,023	$ -	$ -	$ -	$ 637,023
2016	$ -	$ -	$ -	$ 675,244	$ -	$ -	$ -	$ 675,244
2017	$ -	$ -	$ -	$ 715,759	$ -	$ -	$ -	$ 715,759
2018	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	$ -	$ 183,848,805	$ 24,858,347	$ 203,969,979	$ 11,835,899	$ 33,855,024	$ 4,166,227	$ 462,534,281

2008	$ 348,805	$ 472,583	$ 191,000	$ 571,764	$ -
2009			$ 12,943,697	$ -	$ 2,768,625
2010			$ 19,742,801	$ -	$ 8,804,228
2011			$ -	$ 45,396,341	$ -
2012			$ -	$ 48,073,628	$ -
2013			$ -	$ -	$ -
2014			$ -	$ -	$ -
2015			$ -	$ -	$ -
2016			$ -	$ -	$ -
2017			$ -	$ -	$ -
2018			$ -	$ -	$ -

LG&E Proportional Share - TC Shared Facilities	75%
LG&E	52%
KU	48%

Coal Combustion Residuals Plan for E.W. Brown Station

PPL companies

Generation Planning & Analysis
May 2011

Table of Contents

1.0 Executive Summary

Kentucky Utilities Company's ("KU's") E.W. Brown Generating Station ("Brown") produces three primary coal combustion residuals ("CCR"): bottom ash, fly ash, and gypsum. The ash is currently stored in Brown's Auxiliary Pond ("Aux Pond"). The gypsum is currently being used in the expansion of the Aux Pond but will start being stored in the Aux Pond in 2012. The Aux Pond is expected to reach full capacity in 2015, creating a need for additional CCR management solutions.

On June 21, 2010, the EPA issued a proposed ruling to establish federal guidelines for CCR storage. It is expected that the Main Pond will not meet the proposed regulations. Therefore, KU has stopped construction of the Main Pond and is proposing to construct a landfill in its place to be in service in 2014.

In developing Brown's revised CCR storage plan, five options were reviewed. Two options were determined to be infeasible under the anticipated environmental regulations. The three remaining options were further evaluated to determine the least cost plan. These options are summarized as follows:

- **Case A:** The first landfill option stops construction of the Main Pond Starter Dike immediately, completes the expansion of the Aux Pond to 900 feet by 2012, and converts the Main Pond to a dry landfill by 2014.
- **Case B:** The second landfill option continues the construction of the Main Pond Starter Dike, continues the expansion of the Aux Pond by 2014, and converts the Main Pond to a landfill by 2016.
- **Offsite Landfill:** The third option is for stopping all construction of onsite storage facilities immediately and for a contractor to haul away all CCR for storage in an offsite commercial landfill.

The least cost option for the long-term storage needs at Brown is the first landfill option (Case A) with an onsite landfill in service in 2014. The present value of revenue requirement ("PVRR") of this case is $23 million lower than the second onsite landfill option (Case B) and is $80 million lower than the offsite disposal option.

2.0 Background

The Brown station is located in Mercer County, Kentucky and comprises three coal-fired generating units and seven gas-fired combustion turbines. The total net summer capacity for the three coal units is 683 MW. A flue gas desulfurization ("FGD") system was commissioned in 2010 to control SO_2 emissions from the three coal units. Bottom ash and fly ash are produced as byproducts of burning coal and are currently stored in the Aux Pond. Gypsum is produced as a chemical byproduct of using limestone reagent to remove sulfur dioxide from flue gas with the FGD system. Brown's gypsum is currently being used in the Aux Pond expansion and will be stored in the Aux Pond until a new long-term option is available.

The original CCR storage plan at Brown included

- a phased expansion of the Main Pond and
- a phased construction of the Aux Pond for interim storage of CCR during the Main Pond expansion and for storage of bottom ash once the Main Pond was to be available.

Environmental cost recovery ("ECR") treatment for the first phase of Brown's on-site storage plan was approved by the Kentucky Public Service Commission ("Commission") on June 20, 2005, as Project 20 in Case No. 2004-00426. This phase included raising the elevation of Brown's Main Pond to 902 feet and raising the elevation of the Aux Pond to 880 feet. The second phase was approved on December 23, 2009, as Project 29 in Case No. 2009-00197, and included expanding the Aux Pond to an elevation of 900 feet and expanding the Main Pond to 912 feet.

The Main Pond was removed from service in September 2008 to facilitate construction of the approved Phase I elevation of 902 feet which was scheduled for completion in 2010. The Aux Pond was completed to the approved Phase I elevation of 880 feet in 2008 and has been accepting fly ash and bottom ash since its completion. The second phase of construction, designated Aux Pond elevation 900', is currently ongoing and will expand the Aux Pond to the final design elevation. This second phase commenced in June 2010 and was originally planned to reach completion in mid-2013.

On June 21, 2010, the EPA issued a proposed CCR ruling to establish federal guidelines for CCR storage. These new regulations are expected to result in the possible need to either discontinue the current plans for the Main Pond or to modify its design to comply with the proposed regulations. The specific impacts of the proposed regulations to Brown's CCR plan are detailed in Exhibit JNV-4. Given the potential new requirements, new alternatives for dry landfill disposal of Brown's CCR were developed. The evaluation of these options is discussed herein.

3.0 Process and Methodology

KU and Louisville Gas and Electric Company (collectively "the Companies") develop a least-reasonable-cost plan for meeting the CCR storage needs at each generating station based on the information available at the time of the planning, including information concerning applicable environmental requirements. The process of identifying the plan consists of the three following primary tasks which are performed by several departments within the Companies.

- Needs assessment
- Development of alternatives
- Comparison of alternatives

CCR storage needs are defined by comparing the available storage capacity to the forecast of CCR production. The Project Engineering department and the applicable generating station are responsible for providing an estimate of remaining capacity.

The planned life of the storage facilities is based on CCR production forecast, which is developed by Generation Planning for all stations as a function of the expected coal usage for each unit. The Companies compile information regarding the cost of generation for each unit (e.g., fuel, variable operating and maintenance ("O&M") expenses, and emission costs), a description of the generation capabilities of each unit (e.g., capacity, heat rate curve, commitment parameters, emission rates, availability schedules), a load forecast, the market price of electricity, and the volumetric ability (transfer capability) to access the market. All of this information is brought together in the PROSYM software, which is used to model the economic operation of the Companies' generating system.[1] The projected coal usage data provided by this model is checked for reasonableness by comparing the results to historical data.

The Project Engineering department develops alternatives for onsite CCR storage solutions and their associated costs. Any alternatives for offsite disposal such as beneficial reuse or offsite landfill disposal are provided by each generating station's staff and a CCR team focused on exploring alternatives for byproduct storage. The cash flows for selected options are summarized and provided to Generation Planning for evaluation.

The Generation Planning department evaluates the storage and disposal options received from Project Engineering to determine the PVRR associated with the capital expenditures and O&M expenses of each option. This analysis is performed using the Capital Expenditure Recovery module of the Strategist software model.[2]

4.0 Needs Assessment

As of April 2010, the remaining available capacity of the Aux Pond is 272 thousand cubic yards ("KCY").[3] Completion of the second phase of the Aux Pond is expected to increase its capacity by 1,095 KCY in December 2011. The Aux Pond's remaining capacity was estimated by forecasting the CCR production of ash and gypsum at Brown. The quantity of ash produced at Brown is estimated at a coal specification of 12% ash by weight of the total quantity of coal

[1] The PROSYM model has formed the foundation of prior analyses involving certificates of convenience and necessity for new generating plants, environmental cost recovery for pollution control equipment, and the fuel adjustment clause.

[2] Strategist is a proprietary resource planning computer model. The Capital Expenditure Recovery module is used to quantify the revenue requirements impact associated with capital projects.

[3] Current storage capacities are provided to Generation Planning by Project Engineering based on bathymetric surveys. Based on expected coal burn, Generation Planning forecasts that by the end of 2011, the remaining capacity of the Aux Pond will be 176 KCY, excluding the Phase II expansion.

used, or approximately 12 tons of ash per 100 tons of coal. Converting to volumetric measurement, assuming ash production consists of 80% fly ash and 20% bottom ash, approximately 11 cubic yards ("CY") of total ash is produced per 100 tons of coal. These values are based on Brown's switch to high-sulfur coal in 2011.

The chemical reaction by which gypsum is produced results in a net gypsum production of approximately 18% by weight of the total quantity of coal used,[4] or approximately 18 tons of gypsum per 100 tons of coal. Converting to volumetric measurement, approximately 15 CY of dry-stored gypsum is produced per 100 tons of coal.

Table 1 shows the forecasted CCR production for Brown. The relatively low gypsum production in 2011 is due to the expectation to burn low-sulfur coal through 2011 to conclude a low-sulfur fuel contract. The lower sulfur content results in less gypsum produced.

Table 2 shows the associated quantities of coal forecasted to be burned at Brown, and contains the historical quantities of coal burned as a comparison to the forecast. The forecasted generation and the resulting coal usage at Brown correspond to an average capacity factor of approximately 40 - 45% before the anticipated retirements in 2016 of the coal units at the Cane Run, Green River, and Tyrone stations. After these retirements, Brown's capacity factor is forecasted to increase to approximately 60 - 70%. Variances in load or unexpected outages could result in future CCR production variances and changes to the long-term CCR storage plan at Brown.

Table 1: CCR Production Forecast

CCR Production Forecast (KCY – wet storage)			
	Bottom Ash	**Fly Ash**	**Gypsum**
2011	26	106	87
2012	32	127	226
2013	35	139	248
2014	34	135	240
2015	35	138	246
2016	43	172	307
2017	46	184	327
2018	46	186	330
2019	45	180	320
2020	48	192	341

[4] Fuel specification assumptions include SO_2 content of approximately 5.85 lb/MMBtu and heat content of 22.4 MMBtu/ton.

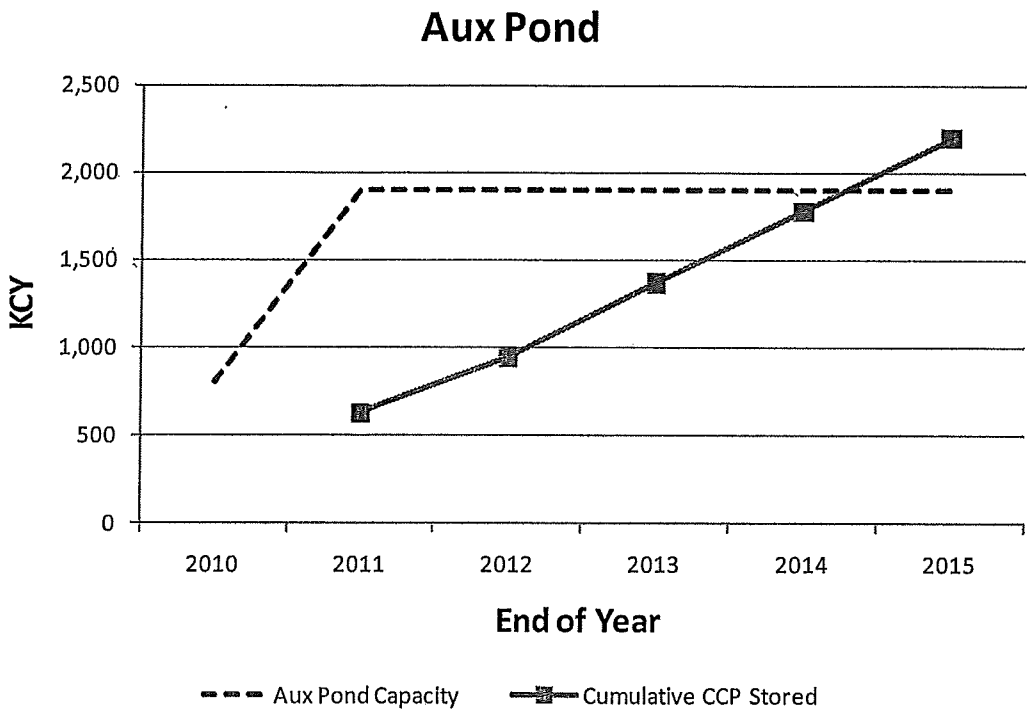
Table 2: Brown Coal Usage (Million Tons)

Brown Coal Usage *(M Tons)*	
Historical	
2006	1.5
2007	1.7
2008	1.8
2009	1.1
2010	1.3
Forecast	
2011	1.1
2012	1.3
2013	1.4
2014	1.3
2015	1.4
2016	1.7
2017	1.8
2018	1.8
2019	1.8
2020	1.9

Figure 1 demonstrates that the Aux Pond is expected to reach full capacity in 2015, with the following assumptions:

- The April 2011 forecast for CCR production
- Onsite beneficial reuse of all gypsum produced until May 2012
- No additional onsite capacity available at the Main Pond site
- No offsite CCR storage or reuse
- The Aux Pond Phase II expansion to 900' is completed in 2011

Figure 1: Aux Pond Capacity



5.0 Development of Alternatives

As a result of the EPA's proposed CCR Ruling, Project Engineering reevaluated long-term onsite CCR storage at Brown as discussed in Exhibit JNV-2. Of the four onsite options considered, two options were determined to be infeasible. Plans for the two remaining options for onsite landfills to replace the main pond were developed for further financial evaluation. In addition, an offsite alternative was compared to the onsite options. These three options are summarized as follows:

- **Case A** – Discontinue construction of the Main Pond Starter Dike, complete construction of the Aux Pond 900', and construct a dry landfill to be in service in 2014.
- **Case B** – Continue construction of the Main Pond Starter Dike and Aux Pond 900' per the original design. Once the CCR Ruling becomes effective, take the Main Pond out of service to construct a landfill over the Main Pond Starter Dike to be in service in 2016.
- **Off-Site Storage** - As an alternative to constructing onsite storage facilities, the offsite storage option represents the projected costs ($28/ton) of hiring a third-party contactor to haul all CCR produced offsite for disposal in a landfill.

6.0 Comparison of Alternatives

The Brown station has three viable alternatives for CCR disposal: Landfill Case A, Landfill Case B, and Offsite Storage. A PVRR evaluation of each of these alternatives was completed.

The capital and O&M costs for Cases A and B were provided by the Project Engineering group as detailed in Exhibit JNV-2. The O&M expenses for Offsite Storage are based on estimated costs for CCR disposal in an offsite landfill as shown in Table 3. Appendix 1 shows detailed assumptions for financial inputs and CCR characteristics. Appendix 2 shows the capital and O&M costs for each alternative.

Table 3: Off-site Disposal Cost

	$ per ton (2011)
Excavating and Loading	$1.82
Tipping Fee	$20.01
Hauling	$6.06
Total	$27.88

Table 4 shows that the PVRR for Case A is the least cost. The PVRR for Case B is $23 million greater than that of Case A. The PVRR for offsite storage is $80 million greater than that of the Case A. Appendix 3 shows the annual revenue requirements associated with each alternative.

Table 4: PVRR Comparison

2010 million $	Case A	Case B	Offsite Disposal
PVRR	130	153	250
Delta to Least Cost Case	Least Cost	23	80

7.0 Recommendation

The needs assessment demonstrates a need for additional CCR storage capacity at the Brown station by 2015. Analysis of the onsite and offsite storage options demonstrates that a completion of the Aux Pond expansion to elevation 900 feet that was part of the original 2005 ECR plan is advisable. And it is recommended to immediately begin converting the Main Pond to an onsite landfill to begin service in 2014 to allow for long-term CCR storage at Brown while complying with anticipated environmental regulations in a least cost manner.

The entire phased landfill Case A is more cost-effective than the delayed Main Pond conversion of Case B and offsite disposal. This plan will provide Brown with sufficient capacity to store CCR through 2031, with the potential to modify the future phases to accommodate changes in the CCR production forecast.

8.0 Appendices

8.1 Appendix 1 - Analysis Assumptions

Study Period: 2010-2031 for O&M costs impacts; 2010 through the book life of final project phase for capital costs

The revenue requirements associated with capital costs are determined via the Capital Expenditure and Recovery module of the Strategist production and capital costing software. To completely account for capital projects costs over their lifetime, the revenue requirements associated with new capital projects were extended through the end of their book life beyond the study period as needed.

Capital and O&M costs associated with the addition of new environmental projects will be recovered through the ECR mechanism.

Financial data

- Discount rate: 6.70%
- Income tax rate: 38.9%
- Insurance rate: 0.07%
- Property tax rate: 0.15 %
- Percentage of debt in capital structure: 47.13%
- Debt interest rate/weighted cost of debt: 3.76%
- Return on equity: 10.63%
- Aux Pond 900' capital book life: 17-20 years
- Landfill phase average book life, Case A: 11 years
- Landfill phase average book life, Case B: 9 years
- All CCR storage projects tax life: 20 years
- Annual capital escalation rate: 6%
- Annual O&M escalation rate: 3%
- Overhead: 3.5%

CCR Specifications Assumptions

- Coal % ash: 12%
- Bottom ash % of total ash: 20%
- CCR % moisture for hauling: 15%
- Density

Tons/CY	**Bottom Ash**	**Fly Ash**	**Gypsum**
Wet Storage	0.945	0.945	1.0125
Dry Storage	1.215	1.080	1.242

8.2 Appendix 2 - Annual Cash Flows

E.W. Brown Landfill - Case A

	Annual Cash Flows ($ thousands)									
	Capital						O&M			Total Cash Flows
	Aux Pond	Landfill				Total Capital	Gypsum Dewatering	Landfill	Total O&M	
		Phase 1	Phase 2	Phase 3	Final Cap					
2010	2,743	2,018	-	-	-	4,761	250	-	250	5,011
2011	8,393	5,869	-	-	-	14,262	515	-	515	14,777
2012	-	26,722	-	-	-	26,722	-	-	-	26,722
2013	-	24,064	-	-	-	24,064	-	-	-	24,064
2014	-	-	-	-	-	-	563	2,251	2,814	2,814
2015	-	-	-	-	-	-	580	2,319	2,898	2,898
2016	-	-	-	-	-	-	597	2,388	2,985	2,985
2017	-	-	-	-	-	-	615	2,460	3,075	3,075
2018	-	-	9,321	-	-	9,321	633	2,534	3,167	12,488
2019	-	-	899	-	-	899	652	2,610	3,262	4,161
2020	-	-	-	-	-	-	672	2,688	3,360	3,360
2021	-	-	-	-	-	-	692	2,768	3,461	3,461
2022	-	-	-	-	-	-	713	2,852	3,564	3,564
2023	-	-	-	18,434	-	18,434	734	2,937	3,671	22,105
2024	-	-	-	1,203	-	1,203	756	3,025	3,781	4,985
2025	-	-	-	-	-	-	779	3,116	3,895	3,895
2026	-	-	-	-	-	-	802	3,209	4,012	4,012
2027	-	-	-	-	-	-	826	3,306	4,132	4,132
2028	-	-	-	-	-	-	851	3,405	4,256	4,256
2029	-	-	-	-	-	-	877	3,507	4,384	4,384
2030	-	-	-	-	-	-	903	3,612	4,515	4,515
2031	-	-	-	-	2,714	2,714	930	3,721	4,651	7,365
Total	11,136	58,674	10,220	19,637	2,714	102,382	13,942	52,706	66,648	169,029

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E.W. Brown Landfill - Case B

	Annual Cash Flows ($ thousands)									
	Capital						O&M			Total Cash Flows
	Aux Pond	Landfill				Total Capital	Gypsum Dewatering	Landfill	Total O&M	
		Phase 1	Phase 2	Phase 3	Final Cap					
2010	1,708	13,352	-	-	-	15,059	250	-	250	15,309
2011	2,907	-	-	-	-	2,907	515	-	515	3,422
2012	3,082	523	-	-	-	3,605	530	-	530	4,136
2013	4,499	6,287	-	-	-	10,786	546	-	546	11,333
2014	-	31,135	-	-	-	31,135	-	-	-	31,135
2015	-	31,387	-	-	-	31,387	-	-	-	31,387
2016	-	-	-	-	-	-	597	2,388	2,985	2,985
2017	-	-	-	-	-	-	615	2,460	3,075	3,075
2018	-	-	-	-	-	-	633	2,534	3,167	3,167
2019	-	-	-	-	-	-	652	2,610	3,262	3,262
2020	-	-	16,476	-	-	16,476	672	2,688	3,360	19,836
2021	-	-	1,132	-	-	1,132	692	2,768	3,461	4,592
2022	-	-	-	-	-	-	713	2,852	3,564	3,564
2023	-	-	-	-	-	-	734	2,937	3,671	3,671
2024	-	-	-	-	-	-	756	3,025	3,781	3,781
2025	-	-	-	24,727	-	24,727	779	3,116	3,895	28,622
2026	-	-	-	1,514	-	1,514	802	3,209	4,012	5,526
2027	-	-	-	-	-	-	826	3,306	4,132	4,132
2028	-	-	-	-	-	-	851	3,405	4,256	4,256
2029	-	-	-	-	-	-	877	3,507	4,384	4,384
2030	-	-	-	-	-	-	903	3,612	4,515	4,515
2031	-	-	-	-	2,280	2,280	930	3,721	4,651	6,931
Total	12,196	82,684	17,608	26,242	2,280	141,009	13,876	48,137	62,013	203,022

Off-Site Landfill Option

	Annual Cash Flows ($ thousands)	
	Capital	O&M
2010	-	3,960
2011	-	6,974
2012	-	12,750
2013	-	14,417
2014	-	14,385
2015	-	15,156
2016	-	19,487
2017	-	21,399
2018	-	22,261
2019	-	22,218
2020	-	24,363
2021	-	26,387
2022	-	27,047
2023	-	28,549
2024	-	30,280
2025	-	32,787
2026	-	32,151
2027	-	35,381
2028	-	36,194
2029	-	38,842
2030	-	38,218
2031	-	41,942
Total	-	**545,148**

8.3 Appendix 3 - Revenue Requirements

E.W. Brown Landfill - Case A

	Annual Revenue Requirements ($ thousands)									
	Capital						O&M			Total
	Aux	Landfill				Total	Gypsum	Landfill	Total	Revenue
	Pond	Phase 1	Phase 2	Phase 3	Final Cap	Capital	Dewatering		O&M	Requirements
2010	244	179	-	-	-	423	250	-	250	673
2011	1,158	701	-	-	-	1,859	515	-	515	2,374
2012	1,680	3,076	-	-	-	4,755	-	-	-	4,755
2013	1,611	5,214	-	-	-	6,825	-	-	-	6,825
2014	1,544	11,226	-	-	-	12,771	563	2,251	2,814	15,584
2015	1,480	10,712	-	-	-	12,192	580	2,319	2,898	15,090
2016	1,418	10,210	-	-	-	11,628	597	2,388	2,985	14,613
2017	1,357	9,721	-	-	-	11,078	615	2,460	3,075	14,152
2018	1,298	9,242	828	-	-	11,368	633	2,534	3,167	14,535
2019	1,240	8,773	908	-	-	10,922	652	2,610	3,262	14,183
2020	1,183	8,313	1,960	-	-	11,456	672	2,688	3,360	14,816
2021	1,126	7,863	1,870	-	-	10,858	692	2,768	3,461	14,319
2022	1,068	7,413	1,782	-	-	10,264	713	2,852	3,564	13,828
2023	1,011	6,964	1,697	1,638	-	11,309	734	2,937	3,671	14,981
2024	953	6,432	1,613	1,745	-	10,743	756	3,025	3,781	14,525
2025	896	892	1,531	3,767	-	7,087	779	3,116	3,895	10,982
2026	839	787	1,451	3,594	-	6,671	802	3,209	4,012	10,683
2027	781	682	1,372	3,426	-	6,262	826	3,306	4,132	10,394
2028	724	577	1,294	3,261	-	5,856	851	3,405	4,256	10,113
2029	666	472	1,215	3,101	-	5,455	877	3,507	4,384	9,839
2030	582	367	1,123	2,943	-	5,015	903	3,612	4,515	9,530
2031	7	262	156	2,789	241	3,456	930	3,721	4,651	8,107
2032	0	158	138	2,638	513	3,446	-	-	-	3,446
2033	0	52	120	2,487	490	3,149	-	-	-	3,149
2034	-	-	101	2,336	467	2,904	-	-	-	2,904
2035	-	-	83	2,158	445	2,685	-	-	-	2,685
2036	-	-	64	301	423	788	-	-	-	788
2037	-	-	46	265	401	713	-	-	-	713
2038	-	-	28	230	380	638	-	-	-	638
2039	-	-	9	194	360	563	-	-	-	563
2040	-	-	-	159	339	498	-	-	-	498
2041	-	-	-	124	319	442	-	-	-	442
2042	-	-	-	88	294	383	-	-	-	383
2043	-	-	-	53	40	93	-	-	-	93
2044	-	-	-	18	35	53	-	-	-	53
2045	-	-	-	-	31	31	-	-	-	31
2046	-	-	-	-	26	26	-	-	-	26
2047	-	-	-	-	21	21	-	-	-	21
2048	-	-	-	-	17	17	-	-	-	17
2049	-	-	-	-	12	12	-	-	-	12
2050	-	-	-	-	7	7	-	-	-	7
2051	-	-	-	-	2	2	-	-	-	2
2010 PVRR	13,635	66,297	7,916	11,022	894	99,763	6,620	23,549	30,169	129,932

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E.W. Brown Landfill - Case B

	Annual Revenue Requirements ($ thousands)									
	Capital						O&M			Total
	Aux	Landfill				Total	Gypsum		Total	Revenue
	Pond	Phase 1	Phase 2	Phase 3	Final Cap	Capital	Dewatering	Landfill	O&M	Requirements
2010	152	1,186	-	-	-	1,338	250	-	250	1,588
2011	515	1,186	-	-	-	1,702	515	-	515	2,217
2012	965	1,233	-	-	-	2,198	530	-	530	2,728
2013	1,543	1,792	-	-	-	3,334	546	-	546	3,881
2014	1,810	4,558	-	-	-	6,368	-	-	-	6,368
2015	1,734	7,347	-	-	-	9,082	-	-	-	9,082
2016	1,661	17,585	-	-	-	19,246	597	2,388	2,985	22,231
2017	1,590	16,746	-	-	-	18,336	615	2,460	3,075	21,410
2018	1,521	15,925	-	-	-	17,446	633	2,534	3,167	20,613
2019	1,453	15,122	-	-	-	16,575	652	2,610	3,262	19,837
2020	1,387	14,334	1,464	-	-	17,186	672	2,688	3,360	20,545
2021	1,322	13,561	1,565	-	-	16,448	692	2,768	3,461	19,908
2022	1,256	12,802	3,717	-	-	17,775	713	2,852	3,564	21,339
2023	1,191	12,054	3,539	-	-	16,785	734	2,937	3,671	20,456
2024	1,126	11,214	3,366	-	-	15,706	756	3,025	3,781	19,487
2025	1,060	1,591	3,197	2,197	-	8,045	779	3,116	3,895	11,940
2026	995	1,439	3,030	2,332	-	7,796	802	3,209	4,012	11,808
2027	929	1,288	2,867	5,539	-	10,624	826	3,306	4,132	14,756
2028	864	1,136	2,706	5,276	-	9,982	851	3,405	4,256	14,239
2029	799	985	2,549	5,017	-	9,349	877	3,507	4,384	13,733
2030	705	833	2,371	4,765	-	8,674	903	3,612	4,515	13,189
2031	30	682	333	4,517	203	5,764	930	3,721	4,651	10,415
2032	14	530	301	4,273	475	5,594	-	-	-	5,594
2033	4	379	269	4,034	452	5,138	-	-	-	5,138
2034	-	227	238	3,799	430	4,694	-	-	-	4,694
2035	-	76	206	3,534	408	4,224	-	-	-	4,224
2036	-	-	174	496	387	1,058	-	-	-	1,058
2037	-	-	143	449	366	958	-	-	-	958
2038	-	-	111	402	346	859	-	-	-	859
2039	-	-	79	354	326	759	-	-	-	759
2040	-	-	48	307	303	658	-	-	-	658
2041	-	-	16	260	42	317	-	-	-	317
2042	-	-	-	213	38	250	-	-	-	250
2043	-	-	-	165	34	199	-	-	-	199
2044	-	-	-	118	30	148	-	-	-	148
2045	-	-	-	71	26	97	-	-	-	97
2046	-	-	-	24	22	45	-	-	-	45
2047	-	-	-	-	18	18	-	-	-	18
2048	-	-	-	-	14	14	-	-	-	14
2049	-	-	-	-	10	10	-	-	-	10
2050	-	-	-	-	6	6	-	-	-	6
2051	-	-	-	-	2	2	-	-	-	2
2010 PVRR	13,939	86,740	11,993	12,931	750	126,353	6,682	20,136	26,818	153,171

Off-Site Landfill Option

	Annual Revenue Requirements($ thousands)	
	Capital	O&M
2010	-	3,960
2011	-	6,974
2012	-	12,750
2013	-	14,417
2014	-	14,385
2015	-	15,156
2016	-	19,487
2017	-	21,399
2018	-	22,261
2019	-	22,218
2020	-	24,363
2021	-	26,387
2022	-	27,047
2023	-	28,549
2024	-	30,280
2025	-	32,787
2026	-	32,151
2027	-	35,381
2028	-	36,194
2029	-	38,842
2030	-	38,218
2031	-	41,942
PVRR	-	249,968

SUPPORT DOCUMENT III.D-1-16

Fenner Dunlop Project Cost Report Dated October 24, 2014 – River Loading/Transport/Unloading Operations

gai consultants

Support Document III.D-1-16:

All costs are taken from the Fenner Dunlop Project Cost Report (October 24, 2014) regarding river loading, transport, and unloading operations costs. Listed below is a summary of the line items and their assumptions, followed by the full report.

Line Item 46 – Barge Loading Facility: A continuous drive conveyor system to transfer materials from a load out hopper to an open hopper barge. The facility would cost approximately $8,300,000 and does not include construction costs. It also assumes existing infrastructure is sufficient.

Line Item 47 – Barge Unloading Facility: A bridge style continuous unloader to remove material from barges. The facility would cost approximately $16,100,000 and includes facility and construction costs of ~$9.97 million and ~$6.15 million, respectively.

Line Item 48 – Barge Transportation Capital Costs: Material will be transported using four barges at once along with a push boat. Utilizing two sets of four barges and a push boat, the approximate cost is $3,100,000.

Line Item 49 – Ancillary Costs: Factors in support facilities for employees consisting of office space, warehouse space, and/or maintenance supplies storage space, as well as spares for critical components in case of failures. Approximate cost is $1,600,000.

Line Item 50 – Barge Loading and Unloading Operations Cost: The total of labor, utilities, and maintenance and supplies costs for barge loading operation, barge unloading, and barge transport operations. Will cost approximately $2,100,000 per year.

FENNER DUNLOP
ENGINEERED CONVEYOR SOLUTIONS

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GAI Consultants
385 East Waterfront Drive
Homestead, Pa 15120

Project Cost Report
October 24, 2014

Attn: Kevin P. Resnik

From: John Harvey

River Loading/Transport/Unloading Operations

This report has been developed in order to provide an order of magnitude cost estimation to load coal combustible residuals (CCRs) from a processing point along the river, transport, and unload to an offsite landfill area elsewhere along the river. This report is not intended to be used as a quote for services or a proposal to perform such activity. Rather, it is intended solely as a frame of reference to be used in assisting with capital expenditure decisions.

Conceptual Design

Design would incorporate a conveyor and truss loading structure with the capability to transport 800 tons of material per hour at 75% efficiency for 8 hours per day and 250 days per year. The loading structure would disperse material into one of eight open hopper barges with a minimum capacity of 1200 ton. A tug or push boat is utilized to transport four loaded barges to the offsite unloading facility. The unloading facility consists of a bridge style continuous unloader with the capability to remove 800 tons per hour at 75% efficiency for 8 hours per day and 250 days per year. This design does not consider material processing/transport **to** the loading facility or material processing /transport **from** the unloading facility. This design does consider support facilities, construction, operating costs, and critical spares.

FENNER DUNLOP
ENGINEERED CONVEYOR SOLUTIONS

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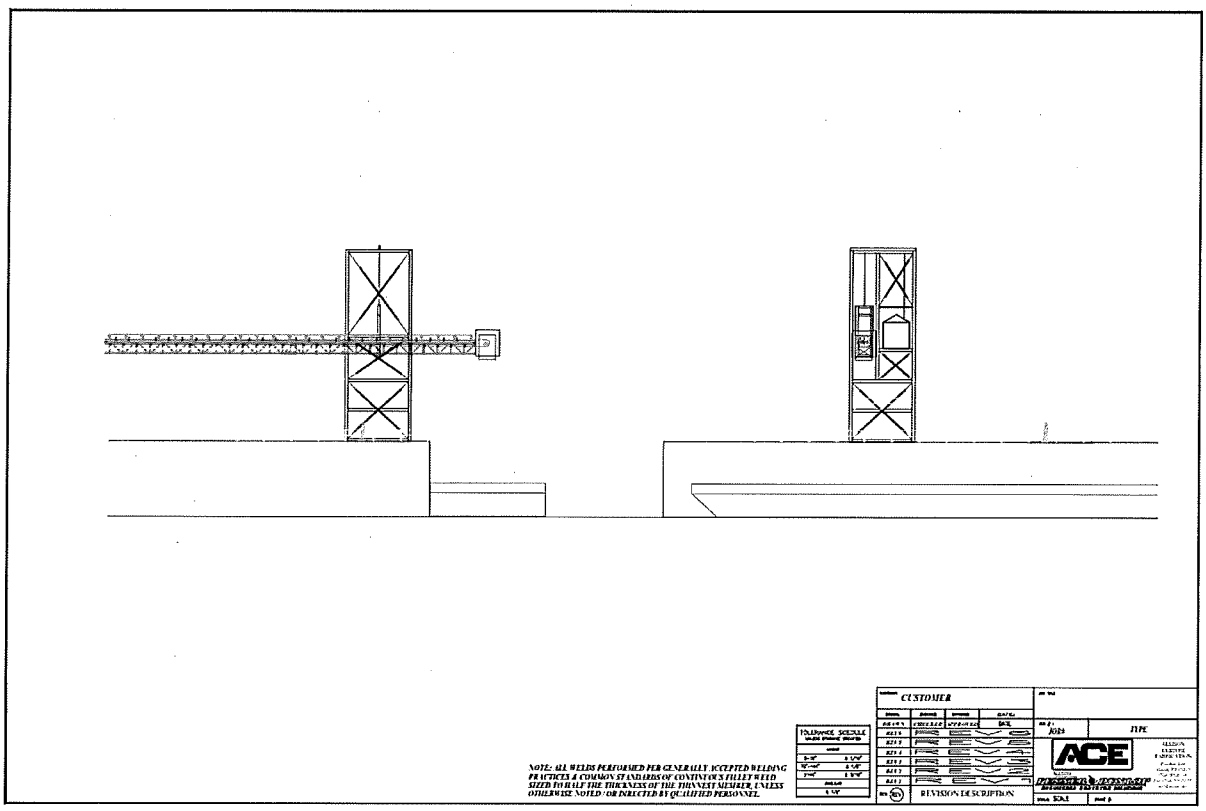
FENNER DUNLOP
ENGINEERED CONVEYOR SOLUTIONS

A. Barge Loading Facility

Description

A minimum 100ft continuous drive transfer conveyor system would be utilized to transfer material at up to 1400TPH from an integrated materials load out hopper to a minimum 1200ton open hopper barge. The 36" wide transfer conveyor would consist of a 600HP continuous drive motor with drive frame and pulley, gravity take up with frame and pulleys, tail pulley and frame, CEMA C flat/trough/return idlers, hinged conveyor covers, and walkways with handrail and estops. The conveyor support superstructure would incorporate a reinforced, seamlessly welded truss and bend design and be fabricated from heavy structural angles, tubes, and beams. Articulation would be designed into the load out chute and superstructure in order to compensate for varying river water levels.

Schematic



FENNER DUNLOP
ENGINEERED CONVEYOR SOLUTIONS

Cost Breakdown

Barge Load Out

Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	Truss and Bent Structure	32589	LB	$3.00	$97,767.00
2	Shipping - EX Works	6	Loads	$3,300.00	$19,800.00
3	Drive Pulley	1	Ea	$93,742.00	$93,742.00
4	Take-up Pulley	2	Ea	$12,538.00	$25,076.00
5	Tail Pulley	1	Ea	$12,538.00	$12,538.00
6	Drive Frame	1	EA	$172,000.00	$172,000.00
7	Motor 600 HP	1	EA	$153,000.00	$153,000.00
8	Gearboxes (Falk 585A3-C-39.900:1) - Inquiry 15797	2	EA	$398,636.41	$797,272.82
9	Backstop (Falk 1185 nrt) - Inquiry 15797	2	EA	$186,778.31	$373,556.62
10	Tail A-Frame	1	EA	$16,054.00	$16,054.00
11	Take-up	22000	LB	$3.00	$66,000.00
12	Feeder Hopper	12000	LB	$3.00	$36,000.00
13	Drive frame	20000	LB	$3.00	$60,000.00
14	Overland Frame Section A-a	100	LF	$75.00	$7,500.00
15	Hinged Conveyor Covers	100	LF	$116.95	$11,695.00
16	Walkway (30 sheets @ 12 ft @ $564.36) + 25% hardware	1	LS	$21,163.50	$21,163.50
17	Stair Treads ($25.00 + 25% hardware)	10	EA	$35.00	$350.00
18	Hand Rail	100	LF	$60.00	$6,000.00
19	E-stops (conveyor components company)	1	EA	$27,972.00	$27,972.00
20	Motor Controls	1	EA	$990,000.00	$990,000.00
21	Guarding (take-up, Drive, Tail)	1	EA	$24,000.00	$24,000.00
22	Manuals and Signage	80	HRS	$75.00	$6,000.00
23	Structural Engineering	270	HRS	$85.00	$22,950.00
24	Design and Documentation Services	222	HRS	$75.00	$16,650.00
25	Engineering - PE Stamp	120	HRS	$73.00	$8,760.00
27	Installation	1	LS	$450,000.00	$450,000.00
28	Classic Idlers	0.295	LF	$3,117,979.00	$919,803.81
29	DynaFlight ST3150 CSA-FF Type	1	LS	$984,524.00	$984,524.00
					$5,420,174.75
			25%	Margin	$1,806,724.92
	Total Items 1 Through 29				$7,226,899.66
					$7,226,899.66
			15%	Contingency	$1,084,034.95
					$8,310,934.61

FENNER DUNLOP
ENGINEERED CONVEYOR SOLUTIONS

B. Barge Transport

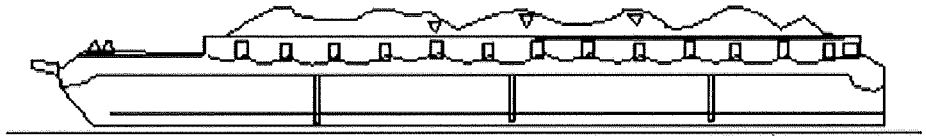
Description

Material would be loaded into Jumbo Open Hopper Barges with a minimum capacity of 1200ton. Four barges at once would be transported via a tug or push boat from the loading facility to the unloading facility.

Time to load one barge = 2 hours (1200ton /600TPH)
Time to load four barges = 8 hours
Time to unload one barge = 2 hours (1200ton/600TPH)
Time to unload four barges = 8 hours

Continuous operations example:
Day shift loads and unloads four barges (8 hours).
Full barges are taken to unload and empty barges returned during night shift. (8 hours)

Common Barge Types



OPEN HOPPER BARGES

TYPE	LENGTH FEET	BREADTH FEET	DRAFT FEET	CAPACITY TONS
Standard	175	26	9	1000
Jumbo	195-200	35	9	1600
Super Jumbo	250-290	40-52	9	2100-3300

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ENGINEERED CONVEYOR SOLUTIONS

Cost

Open Hopper Barge = $301,000 (average of 5 bids) X 8 = $2,408,000
Tug/Push Boat = $725,000 (average of 2 bids)

Supporting Information

HB 140 Inland River Hopper Barges (14 Rakes) $265,000

Type: Inland River Hopper Barge
Dimensions (LxWxD): 195'x35'x12'
Year Built: 1998
Hull Type: Steel
Flag: US
Listed: January 14, 2014 4:26 pm

HB 209 Inland Open Hopper Barge (Rake) $265,000

Hopper Barges Bamco Marine

Dimensions (LxWxD): 195'x35'x12'
Year Built: 1991
Location: Gulf of Mexico
Listed: January 14, 2014 1:23 pm

4 Main Compartments 1 Bow Rake Compartment 1 Stern Transom Compartment 6 Manhole Covers

Hopper Barge

US $25000-45000 /
2 Units
20 Unit/Units per Month

Barge Floating Barge Platform Barge

View 2 similar products

Brownsville Marine Products - New Open Hopper Barge $275,000

FENNER DUNLOP
ENGINEERED CONVEYOR SOLUTIONS

Price: U.S. $ 685,000.00 FIRM

DIMENSIONS		
	Feet	Meters
Length	52	15.8
Width	20	6.1
Depth	7'6"	2.28
Draft	5'3"	1.6
Eye Height	Feet	
Speed	7.5 Knots	
Consumption	20 GPH	

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ENGINEERED CONVEYOR SOLUTIONS

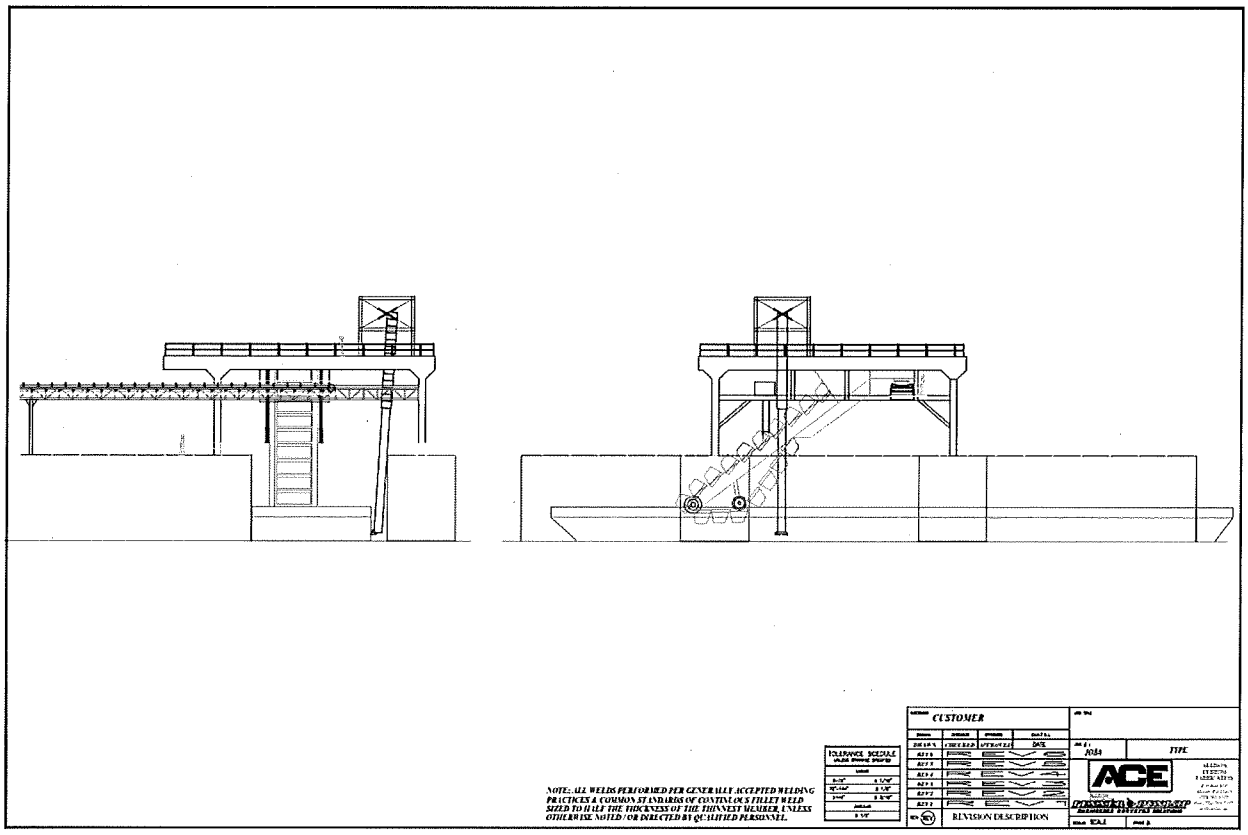
Price: U.S. $ 765,000.00 FIRM

DIMENSIONS		
	Feet	Meters
Length	114.5	34.9
Width	30	9.15
Depth	11	3.35
Draft	7.5	2.29
Eye Level of Bridge	27 Feet	
Speed		
Consumption		

C. Barge Unload Facility

A bridge style continuous unloader would be utilized to remove material from barges at up to 3000TPH. Barges are manipulated into and through the unloader by use of an integrated, semiautomatic tow spar system that dramatically reduces barge change out time. Material is removed from the barges via the hinged boom bucket elevator system that feeds a 36" cross transfer conveyor system. Structural design is box girder type with seamless weld, heavy duty beam construction. An overhead crane and barge breasting stem are incorporated along with walkways, estops, and lighting.

Schematic



FENNER DUNLOP
ENGINEERED CONVEYOR SOLUTIONS

Cost Breakdown

Item	Description	Barge Unload Quantity	Unit	Unit Cost	Total Cost
1	Structure	127898	LB	$3.00	$383,694.00
2	Shipping	8	Loads	$3,300.00	$26,400.00
3	Drive Pulley	1	Ea	$93,742.00	$93,742.00
4	Take-up Pulley	2	Ea	$12,538.00	$25,076.00
5	Tail Pulley	1	Ea	$12,538.00	$12,538.00
6	Drive Frame	1	EA	$172,000.00	$172,000.00
7	Motor 600 HP	1	EA	$153,000.00	$153,000.00
8	Gearboxes (Falk 585A3-C-39.900:1) - Inquiry 15797	2	EA	$398,636.41	$797,272.82
9	Tail A-Frame	1	EA	$16,054.00	$16,054.00
10	Take-up	15000	LB	$3.00	$45,000.00
11	Drive frame	20000	LB	$3.00	$60,000.00
12	Conveyor Frame Section A-a	100	LF	$75.00	$7,500.00
13	Hinged Conveyor Covers	100	LF	$116.95	$11,695.00
14	Walkway (30 sheets @ 12 ft @ $564.36) + 25% hardware	1	LS	$21,163.50	$21,163.50
15	Stair Treads ($25.00 + 25% hardware)	100	EA	$35.00	$3,500.00
16	Hand Rail	1000	LF	$60.00	$60,000.00
17	E-stops (conveyor components company)	1	EA	$27,972.00	$27,972.00
18	Motor Controls	1	EA	$990,000.00	$990,000.00
19	Electronics	1	LS	$350,000.00	$350,000.00
20	Guarding (take-up, Drive, Tail)	1	EA	$24,000.00	$24,000.00
21	Manuals and Signage	80	HRS	$75.00	$6,000.00
22	Structural Engineering	270	HRS	$85.00	$22,950.00
23	Design and Documentation Services	222	HRS	$75.00	$16,650.00
24	Engineering - PE Stamp	120	HRS	$73.00	$8,760.00
25	Bucket conveyor	1	LS	$389,660.00	$389,660.00
26	Barge haul system	1	LS	$222,000.00	$222,000.00
27	Installation	1	LS	$650,000.00	$650,000.00
28	Classic Idlers	0.295	LF	$3,117,979.00	$919,803.81
29	DynaFlight ST3150 CSA-FF Type	1	LS	$984,524.00	$984,524.00
					$6,500,955.13
			25%	Margin	$2,166,985.04
	Total Items 1 Through 29				$8,667,940.17
					$8,667,940.17
			15%	Contingency	$1,300,191.03
					$9,968,131.19

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ENGINEERED CONVEYOR SOLUTIONS

D. Support Facilities

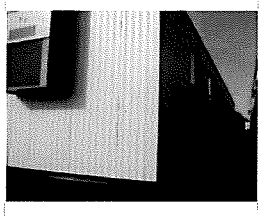
Description

It is anticipated that a minimum of four employees working 8 hours shifts for 250 days per year will be necessary at both the load and unload facility to properly operate each facility. This does not include operators needed for transport operations (tugboat captain, engineer, and two deck hands). Sufficient support facilities will be required for these employees consisting of office space, warehouse space and/or maintenance/supplies storage space.

Cost Breakdown

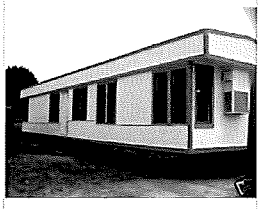
Min 12'X40' office space - $23,909 (avg of 3 bids)X 2 (1 at each site) = $47,818
Min 24'X30 warehouse/maint space - $12,317 (avg of 3 bids) X 2 (1 at each site) = $26,634

Supporting information



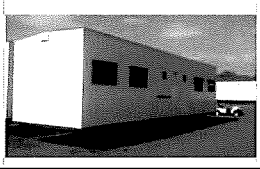
New Mobile Modular Office Trailer 12'X 56'

$27,895.00
0 bids



12x56 Modular Building General/Sales/Bus.Office Trailer

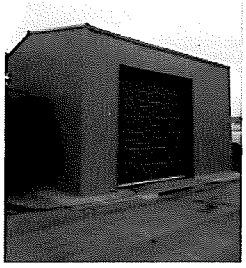
$26,536.00
Buy It Now
or Best Offer



New Mobile Modular Office Trailer 12'X 40'

$17,295.00
0 bids

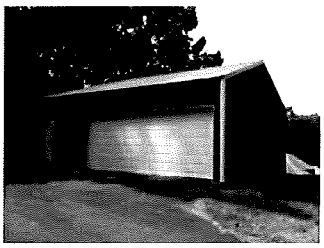
FENNER DUNLOP
ENGINEERED CONVEYOR SOLUTIONS



36' X 40'GARAGE SHOP STEEL BUILDING METAL KIT

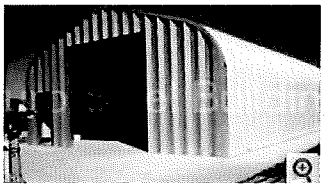
$16,800.00
or Best Offer
Free shipping

FAST 'N FREE
Get it on or before **Thu, Oct. 30**



Metal Building 24x30x10 Garage Shop, all galvanized steel

$10,173.00
or Best Offer
Free shipping



NEW LISTING DuroSPAN Steel 30x70x14 Metal Building Kits Factory DiRECT Garage Shop Structure

$9,979.00
Buy It Now

FENNER DUNLOP
ENGINEERED CONVEYOR SOLUTIONS

E. Construction

It is anticipated that certain site preparation construction activities will be required prior to installation of both the barge load and unload facilities. These preparations include, but may not be limited to, river walls, abutments, pilings, fill, and utilities. An estimated cost of each of these items is listed as follows and is based on historical data from previous projects and consultation with construction firms.

Barge Load Out - Construction

Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	**River Wall (600'X20')**				
1.1	Backfill (crushed stone - 2700lbs per CY - 3 CY required)	8100	lb	$42.80	$346,680.00
1.2	Concrete (600'X20'X24" = 890CY)	890	CY	$80.00	$71,200.00
1.3	Lining (600'X40')	24000	SF	$6.50	$156,000.00
1.4	Hand Rail	660	LF	$60.00	$39,600.00
2	**Pilings**				
2.1	Material (PZ27)	800	Ton	$950.00	$760,000.00
2.2	Pile driver	1000	LF	$1,500.00	$1,500,000.00
3	**Misc Fill** (access roads, foundations, berms, etc)				
3.1	Backfill (crushed stone - 2700lbs per CY - 3 CY required)	12000	lb	$42.80	$513,600.00
4	**Utilities**				
4.1	Lighting (8 poles)	8	EA	$6,200.00	$49,600.00
4.2	Stormwater (channels and collection pond)	5500	CY	$15.00	$82,500.00
4.3	Plumbing	1	EA	$21,163.50	$21,163.50
4.4	Electrical	1	EA	$27,455.00	$27,455.00
5	Engineering	400	HRS	$85.00	$34,000.00
6	Construction manager	280	HRS	$120.00	$33,600.00
7	Labor	2400	HRS	$100.00	$240,000.00
					$3,875,398.50
			25%	Margin	$1,291,799.50
	Total Items 1 Through 8				$5,167,198.00
					$5,167,198.00
			15%	Contingency	$775,079.70
					$5,942,277.70

FENNER DUNLOP
ENGINEERED CONVEYOR SOLUTIONS

Barge UnLoad - Construction

Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	**River Wall (600'X20')**				
1.1	Backfill (crushed stone - 2700lbs per CY - 3 CY required)	8100	lb	$42.80	$346,680.00
1.2	Concrete (600'X20'X24" = 890CY)	890	CY	$80.00	$71,200.00
1.3	Lining (600'X40')	24000	SF	$6.50	$156,000.00
1.4	Hand Rail	660	LF	$60.00	$39,600.00
2	**Abutments**				
2.1	Concrete	550	CY	$80.00	$44,000.00
2.2	Lining	14000	SF	$6.50	$91,000.00
3	**Pilings**				
3.1	Material (PZ27)	800	Ton	$950.00	$760,000.00
3.2	Pile driver	1000	LF	$1,500.00	$1,500,000.00
4	**Misc Fill** (access roads, foundations, berms, etc)				
4.1	Backfill (crushed stone - 2700lbs per CY - 3 CY required)	12000	lb	$42.80	$513,600.00
5	**Utilities**				
5.1	Lighting (8 poles)	8	EA	$6,200.00	$49,600.00
5.2	Stormwater (channels and collection pond)	5500	CY	$15.00	$82,500.00
5.3	Plumbing	1	EA	$21,163.50	$21,163.50
5.3	Electrical	1	EA	$27,455.00	$27,455.00
6	Engineering	400	HRS	$85.00	$34,000.00
7	Construction manager	280	HRS	$120.00	$33,600.00
8	Labor	2400	HRS	$100.00	$240,000.00
					$4,010,398.50
			25%	Margin	$1,336,799.50
	Total Items 1 Through 8				$5,347,198.00
					$5,347,198.00
			15%	Contingency	$802,079.70
					$6,149,277.70

F. Operating Costs

Operating costs for the Load facility, Transport operations, and Unload facility have been conservatively calculated by adding labor rates with utility consumption with consumable maintenance and supply items for one year. An estimated cost of each of these items is listed as follows and is based on historical data from previous projects, internet research, and consultation with facility operators.

Barge Unload - Operating					
Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	Labor (4 laborers @$40/hr X 2080hr)	8320	HRS	$40.00	$332,800.00
2	Utilities (Avg Yearly Consumption)	1	EA	$67,200.00	$67,200.00
3	Maintenance and supplies	1	EA	$7,200.00	$7,200.00
Barge Load - Operating					
Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	Labor (4 laborers @$40/hr X 2080hr)	8320	HRS	$40.00	$332,800.00
2	Utilities (Avg Yearly Consumption)	1	EA	$67,200.00	$67,200.00
3	Maintenance and supplies	1	EA	$7,200.00	$7,200.00
Barge Transport - Operating					
Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	Labor (4 personnel @Avg $70/hr X 2080hr)	8320	HRS	$70.00	$582,400.00
2	Tug Boat ($85.18X 2400HP) *See source D	85.18	HP	$2,400.00	$204,432.00
3	Maintenance and supplies	1	EA	$5,600.00	$5,600.00
					$1,606,832.00
			25%	Contingency	$535,610.67
					$2,142,442.67
					$2,142,442.67

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G. Critical Spares

In order to maintain continuous operation, it is anticipated that certain components be deemed critical in maintaining on site for expedited replacement in the case of failure. A list of these critical spares and associated cost is as follows.

Critical Spares					
Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	Drive Pulley	1	Ea	$93,742.00	$93,742.00
2	Take-up Pulley	1	Ea	$12,538.00	$12,538.00
3	Tail Pulley	1	Ea	$12,538.00	$12,538.00
4	Barge	1	Ea	$301,000.00	$301,000.00
5	Motor 600 HP	1	EA	$153,000.00	$153,000.00
6	Hydraulic hoses and fittings	1	LS	$5,500.00	$5,500.00
7	Conveyor rollers and idlers	1	LS	$9,750.00	$9,750.00
8	Conveyor belting	1	LS	$17,000.00	$17,000.00
9	Gearbox (Falk 585A3-C-39.900:1)	1	EA	$398,636.41	$398,636.41
10	Electrical switches, relays, breakers	1	LS	$1,500.00	$1,500.00
					$1,005,204.41
			25%	Margin	$335,068.14
	Total Items 1 Through 10				$1,340,272.55
					$1,340,272.55
			15%	Contingency	$201,040.88
					$1,541,313.43

H. Sources

a) ACE Project 17475 (Kinder Morgan River T Barge Unload facility project)
b) ACE Project 15797 (Kiewit Mining Coal Spur Project)
c) [redacted]
d) US Army Corp of Engineers
e) Federal Interagency Vessel and Shipping Costs Workshop
f) IWR – Institute for Water Resources
g) [redacted]
h) Heyl&Patterson Inc
i) Coosa-Alabama River Improvement Association
j) Miscellaneous internet research

I. Summary

It is anticipated that full scope cost, including operations for one year, to load coal combustible residuals (CCRs) from a processing point along the river, transport, and unload to an offsite landfill area elsewhere along the river to be $37,261,829.30. It is reiterated that this report is not intended to be used as a quote for services or a proposal to perform such activity. Rather, it is intended solely as a frame of reference to be used in assisting with capital expenditure decisions. A list of summary costs is as follows.

Summary					
Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	Load facility	1	LS	$8,310,934.61	$8,310,934.61
2	Load facility construction	1	LS	$5,942,277.70	$5,942,277.70
3	Unload Facility	1	LS	$9,968,131.19	$9,968,131.19
4	Unload facility construction	1	LS	$6,149,277.70	$6,149,277.70
5	Barges	8	EA	$301,000.00	$2,408,000.00
6	Push Boat	1	EA	$725,000.00	$725,000.00
7	Operating cost	1	LS	$2,142,442.67	$2,142,442.67
8	Critical spares	1	LS	$1,541,313.43	$1,541,313.43
9	Office/Warehouse space	1	LS	$74,452.00	$74,452.00
					$37,261,829.30