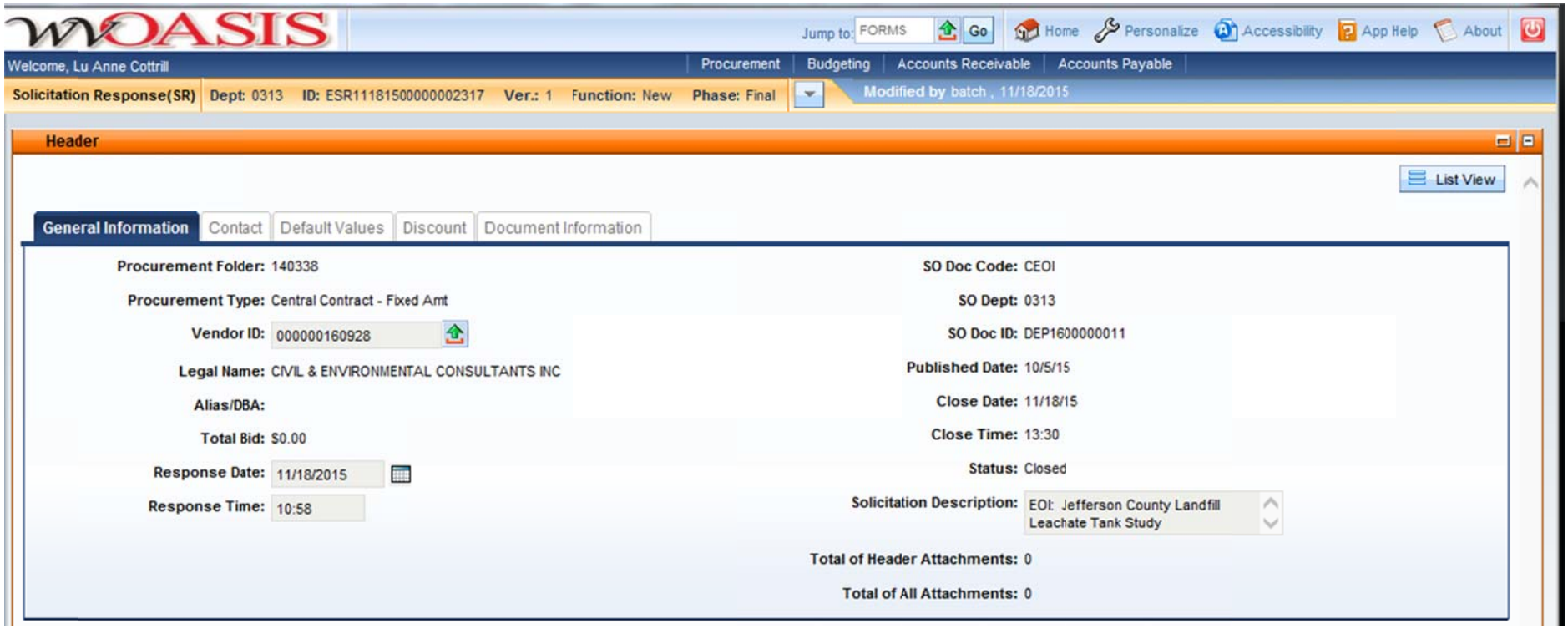
The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at ***wvOASIS.gov***. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at ***WVPurchasing.gov*** with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.


WVOASIS
Jump to: FORMS Go
Home
Personalize
Accessibility
App Help
About
Welcome, Lu Anne Cottrill
Procurement
Budgeting
Accounts Receivable
Accounts Payable
Solicitation Response(SR) Dept: 0313 ID: ESR11181500000002317 Ver.: 1 Function: New Phase: Final
Modified by batch , 11/18/2015
Header
List View
General Information
Contact
Default Values
Discount
Document Information
Procurement Folder: 140338
Procurement Type: Central Contract - Fixed Amt
Vendor ID: 000000160928
Legal Name: CIVIL & ENVIRONMENTAL CONSULTANTS INC
Alias/DBA:
Total Bid: $0.00
Response Date: 11/18/2015
Response Time: 10:58
SO Doc Code: CEOI
SO Dept: 0313
SO Doc ID: DEP1600000011
Published Date: 10/5/15
Close Date: 11/18/15
Close Time: 13:30
Status: Closed
Solicitation Description: EOI: Jefferson County Landfill Leachate Tank Study
Total of Header Attachments: 0
Total of All Attachments: 0

Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Solicitation Response

Proc Folder : 140338

Solicitation Description : EOI: Jefferson County Landfill Leachate Tank Study

Proc Type : Central Contract - Fixed Amt

Date issued	Solicitation Closes	Solicitation No	Version
	2015-11-18 13:30:00	SR 0313 ESR11181500000002317	1

VENDOR

000000160928

CIVIL & ENVIRONMENTAL CONSULTANTS INC

FOR INFORMATION CONTACT THE BUYER

Beth Collins

(304) 558-2157
beth.a.collins@wv.gov

Signature X **FEIN #** **DATE**

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Leachate Holding Tank Study,				

Comm Code	Manufacturer	Specification	Model #
81100000			

Extended Description :

Leachate Holding Tank Study, Recommendation and Construction QA/QC for the Jefferson County Landfill per the attached specifications, bid requirements, and terms and conditions, incorporated here by reference and made a part hereof.

Civil & Environmental Consultants, Inc.

Expression of Interest

Leachate Holding Tank Study, Recommendation and Construction QA/QC
Purchase Order No. DEP1600000011 | Jefferson County, West Virginia

A Leachate Holding Tank

Jefferson County Landfill

Internal Leachate Tank Corrosion

Submitted To:
WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEPARTMENT OF ADMINISTRATION, PURCHASING DIVISION
2019 Washington Street East
Charleston, West Virginia 25305

November 18, 2015

November 18, 2015

Ms. Beth A. Collins, Senior Buyer
Department of Administration, Purchasing Department
2019 Washington Street, East
Charleston, WV 25305

Dear Ms. Collins:

Subject: Expression of Interest
Leachate Holding Tank Study, Recommendation and Construction QA/QC
Jefferson County Landfill, P.O. No. DEP 1600000011
CEC Project 154-007

Please find attached an Expression of Interest (EOI) for Civil & Environmental Consultants, Inc. (CEC) to perform engineering services for the Leachate Holding Tank Study, Recommendation and Construction QA/QC for the Jefferson County Landfill, P.O. No. DEP 1600000011. CEC is a 779 member engineering company with regional offices located in Bridgeport, West Virginia, and Pittsburgh and Export, Pennsylvania. Please review the enclosed Landfill Closure Services Consultant Qualification Questionnaire (CQQ), and Purchasing Affidavit for CEC to perform engineering services for this project.

CEC personnel have successfully completed numerous landfill projects associated with leachate, including leachate capacity and storage assessment, design and permitting, preparation of construction documents including cost estimates, and providing construction quality assurance and certification of the project. Our landfill experience includes: subsurface investigations using traditional drilling techniques and geophysical methods to define soil, rock, waste and groundwater conditions; laboratory testing to develop physical, chemical and shear strength data; installation of groundwater wells and surface water points; sampling and analysis of groundwater and surface water; leachate storage and tank design, pumping and treating of groundwater; statistical analysis of monitoring data; investigation and design of borrow areas; construction-level grading plans for final contours and supporting stormwater controls; hydrologic and hydraulic modeling to size stormwater controls and erosion and sediment controls; static and seismic slope stability analysis of waste, geosynthetic materials and soils; design of compacted clay and geomembrane cap systems; hydraulic modeling and design of the final cover drainage system; revegetation plans; bid and construction documents; project calculation briefs; cost estimates; leading and participating in pre-bid meetings, construction meetings and regulatory agency meetings; construction quality assurance of soils, geosynthetics, aggregates; pipes and pumps; surveying for construction layout and as-built records; and certification reports. CEC has provided engineering services to the WVDEP previously and is very familiar with invoicing and project meeting requirements.

Our employees have successfully completed closure projects ranging from simple cap system installations to complex final cover systems with top soil substitute materials and grading plans designed to minimize

recharge of underlying waste and groundwater. EOI-specific site characterization, leachate management and closure cap design includes:

1. Route 356 Landfill

Subsurface Investigation	Cap System Details	400,000 S.F. Geomembrane
Groundwater Well Installation	Bid and Construction Documents	400,000 S.F. Drainage Composite
Statistical Analysis GW/SW	$1,000,000 Estimated Const. Cost	3,300 Ft. Stormwater Channels
Closure Permitting	Revegetation Plan	Sediment Basin
Topographic Surveying	Access Road Paving Plan	Fertilize, Seed and Mulch
Slope Stability Analysis	Truck Wash Design	Construction Layout Surveying
Hydrologic/Hydraulic Design	***Leachate Storage Tank & Const***.	Record Surveying
Borrow Area Investigation	Cap 10 Acres	Certification Report
Final Grading Plan	30,000 C.Y. Final Cover Soil	

2. Uwharrie Landfill

Pre-treatment upgrades	Flow Characterization	Alternative analysis
Ammonia concentration reduct.	Coordinate With Matl. Suppliers	Dev. Centralized Pre-Treatment
Slope Stability Analysis	Review Quality Control Data	***Leachate tank design***
$1,000,000 Est. Const. Cost		

3. Meadow Branch Landfill

Geophysical Testing for Karst	Slope Stability Analysis	Revegetation Plan
Subsurface Investigation	Hydrologic/Hydraulic Design	CQA Plan
Lab Testing of Soil	Final Cover System Design	Gas Collection and Control
Hydrogeologic Model	***Leachate Collection***	$600,000 Estimated Const. Cost

4. Sycamore Landfill (WV Experience)

Pretreatment evaluation	Evaluation of aerobic treatment	Statistical Analysis
Evaluation of jet mixing system	Bid and Construction Documents	$750,000 Estimated Const. Cost

We believe the above projects demonstrate the wide range of capabilities and experience that allow CEC to be a "one-stop shop" solution for the Jefferson County Landfill Leachate Holding Tank Study project. Projects outlined in our attached CQQ provide more details on the above projects and others completed by CEC.

CEC will allot one (1) design team to this project. The Design Team leader will be Mr. Ivan A. Cooper, P.E., BCEE, supplemented by support personnel including senior project engineers, staff engineers, CADD operators, survey crews and administrative support personnel to ensure the project is completed on budget and within WVDEP timeframes.

We are very excited to present our capabilities and would appreciate the opportunity to present them in person. Our Bridgeport and Pittsburgh offices are located within a few hours of the project site. If chosen CEC will respond quickly, efficiently, and in the most economical way to address the WVDEP needs.

Should any questions arise, or if we can supply additional information or be of further service, the Purchasing Division, or the West Virginia Department of Environmental Protection please contact us at 304-933-3119.

Sincerely,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

Dennis E. Miller, P.S.
Vice President
dmiller@cecinc.com

Steven A. Cain, P.E.
Principal
scain@cecinc.com

Enclosures:

cc: WV Oasis Electronic Submittal: Leachate Holding Tank Study, Recommendation and Construction QA/QC for Jefferson County Landfill.

TABLE OF CONTENTS

ATTACHMENTS:

Purchasing Divison
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Centralized Expression of Interest
02 — Architect/Engr

Proc Folder: 140338
Doc Description: EOI: Jefferson County Landfill Leachate Tank Study
Proc Type: Central Contract - Fixed Amt

Date Issued	Solicitation Closes	Solicitation No	Version
2015-10-05	2015-11-18 13:30:00	CEOI 0313 DEP1600000011	1

BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON WV 25305
US

VENDOR

Vendor Name, Address and Telephone Number:

Civil & Environmental Consultants, Inc.
600 Market Place, Suite 200
Bridgeport, WV 26330
(304) 933-3119

FOR INFORMATION CONTACT THE BUYER

Beth Collins
(304) 558-2157
beth.a.collins@wv.gov

Dennis E. Miller, Vice President

Signature X **FEIN #** 25-1599565 **DATE** 11/18/2015

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION:

The West Virginia Purchasing Division, for the Agency, the West Virginia Department of Environmental Protection, is soliciting Expressions of Interest for professional mapping and design services for the Jefferson County Landfill Leachate Tank Study project located in Jefferson County, West Virginia, per the attached bid requirements and specifications.

INVOICE TO	SHIP TO
ENVIRONMENTAL PROTECTION OFFICE OF ENVIRONMENTAL REMEDIATION 601 57TH ST SE CHARLESTON WV 25304 US	ENVIRONMENTAL PROTECTION 601 57TH ST CHARLESTON WV 25304 US

Line	Comm Ln Desc	Qty	Unit Issue
1	Leachate Holding Tank Study,		

Comm Code	Manufacturer	Specification	Model #
81100000			

Extended Description :

Leachate Holding Tank Study, Recommendation and Construction QA/QC for the Jefferson County Landfill per the attached specifications, bid requirements, and terms and conditions, incorporated here by reference and made a part hereof.

SCHEDULE OF EVENTS

Line	Event	Event Date
1	Tech Question Deadline Submittal at 5:00 PM EST	2015-10-26

ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions

EXPRESSION OF INTEREST

Leachate Holding Tank Study, Recommendation and Construction QA/QC
for
Jefferson County Landfill.

TABLE OF CONTENTS:

SECTION ONE: GENERAL INFORMATION

1. **PURPOSE:** The Acquisition and Contract Administration Section of the Purchasing Division ("Purchasing Division") is soliciting Expression(s) of Interest ("EOI" or "Bids") for the West Virginia Department of Environmental Protection ("Agency"), from qualified firms to provide architectural/engineering services ("Vendors") as defined herein.

2. **PROJECT:** The mission or purpose of the project for which bids are being solicited is to provide services for the West Virginia Department of Environmental Protection's Landfill Closure Assistance Program (LCAP). Project titled Leachate Holding Tank Study, Recommendation and Construction QA/QC for Jefferson County Landfill ("Project").

3. **SCHEDULE OF EVENTS:**

Release of the EOI.....	10/05/2015
Firm's Written Questions Submission Deadline.	10/26/2015
Addendum Issued	?
Expressions of Interest Opening Date.....	11/18/2015
Estimated Date for Interviews (wk of ?).....	?

EXPRESSION OF INTEREST

Leachate Holding Tank Study, Recommendation and Construction QA/QC
for
Jefferson County Landfill.

SECTION TWO: INSTRUCTIONS TO VENDORS SUBMITTING BIDS

Instructions begin on the next page.

INSTRUCTIONS TO VENDORS SUBMITTING BIDS

1. **REVIEW DOCUMENTS THOROUGHLY:** The attached documents contain a solicitation for bids. Please read these instructions and all documents attached in their entirety. These instructions provide critical information about requirements that if overlooked could lead to disqualification of a Vendor's bid. All bids must be submitted in accordance with the provisions contained in these instructions and the Solicitation. Failure to do so may result in disqualification of Vendor's bid.

2. **MANDATORY TERMS:** The Solicitation may contain mandatory provisions identified by the use of the words "must," "will," and "shall." Failure to comply with a mandatory term in the Solicitation will result in bid disqualification.

3. **PREBID MEETING:** The item identified below shall apply to this Solicitation.

   ☑ A pre-bid meeting will not be held prior to bid opening.

   ☐ A **NON-MANDATORY PRE-BID** meeting will be held at the following place and time:

   ☐ A **MANDATORY PRE-BID** meeting will be held at the following place and time:

   All Vendors submitting a bid must attend the mandatory pre-bid meeting. Failure to attend the mandatory pre-bid meeting shall result in disqualification of the Vendor's bid. No one person attending the pre-bid meeting may represent more than one Vendor.

   An attendance sheet provided at the pre-bid meeting shall serve as the official document verifying attendance. The State will not accept any other form of proof or documentation to verify attendance. Any person attending the pre-bid meeting on behalf of a Vendor must list on the attendance sheet his or her name and the name of the Vendor he or she is representing. Additionally, the person attending the pre-bid meeting should include the Vendor's E-Mail address, phone number, and Fax number on the attendance sheet. It is the Vendor's responsibility to locate the attendance sheet and provide the required information. Failure to complete the attendance sheet as required may result in disqualification of Vendor's bid.

All Vendors should arrive prior to the starting time for the pre-bid. Vendors who arrive after the starting time but prior to the end of the pre-bid will be permitted to sign in, but are charged with knowing all matters discussed at the pre-bid.

Questions submitted at least five business days prior to a scheduled pre-bid will be discussed at the pre-bid meeting if possible. Any discussions or answers to questions at the pre-bid meeting are preliminary in nature and are non-binding. Official and binding answers to questions will be published in a written addendum to the Solicitation prior to bid opening.

4. **VENDOR QUESTION DEADLINE:** Vendors may submit questions relating to this Solicitation to the Purchasing Division. Questions must be submitted in writing. All questions must be submitted on or before the date listed below and to the address listed below in order to be considered. A written response will be published in a Solicitation addendum if a response is possible and appropriate. Non-written discussions, conversations, or questions and answers regarding this Solicitation are preliminary in nature and are non-binding. Submitted e-mails should have solicitation number in the subject line.

   Question Submission Deadline: October 26, 2015 at 5:00 PM, EST

   Submit Questions to: Beth A. Collins, Senior Buyer
   2019 Washington Street, East
   Charleston, WV 25305
   Fax: (304) 558-4115 (Vendors should not use this fax number for bid submission)
   Email: beth.a.collins@wv.gov

5. **VERBAL COMMUNICATION:** Any verbal communication between the Vendor and any State personnel is not binding, including verbal communication at the mandatory pre-bid conference. Only information issued in writing and added to the Solicitation by an official written addendum by the Purchasing Division is binding.

6. **BID SUBMISSION:** All bids must be submitted electronically through wvOASIS or signed and delivered by the Vendor to the Purchasing Division at the address listed below on or before the date and time of the bid opening. Any bid received by the Purchasing Division staff is considered to be in the possession of the Purchasing Division and will not be returned for any reason. The Purchasing Division will not accept bids, modification of bids, or addendum acknowledgment forms via e-mail. Acceptable delivery methods include electronic submission via wvOASIS, hand delivery, delivery by courier, or facsimile. The bid delivery address is:

   Department of Administration, Purchasing Division
   2019 Washington Street East
   Charleston, WV 25305-0130

A bid that is not submitted electronically through wvOASIS should contain the information listed below on the face of the envelope or the bid may be rejected by the Purchasing Division.:

SEALED BID:
BUYER:
SOLICITATION NO.:
BID OPENING DATE:
BID OPENING TIME:
FAX NUMBER:

In the event that Vendor is responding to a request for proposal, and choses to respond in a manner other than by electronic submission through wvOASIS, the Vendor shall submit one original technical and one original cost proposal plus convenience copies of each to the Purchasing Division at the address shown above. Additionally, if Vendor does not submit its bid through wvOASIS, the Vendor should identify the bid type as either a technical or cost proposal on the face of each bid envelope submitted in response to a request for proposal as follows:

BID TYPE: (This only applies to CRFP)

☐ Technical

☐ Cost

7. **BID OPENING:** Bids submitted in response to this Solicitation will be opened at the location identified below on the date and time listed below. Delivery of a bid after the bid opening date and time will result in bid disqualification. For purposes of this Solicitation, a bid is considered delivered when confirmation of delivery is provided by wvOASIS (in the case of electronic submission) or when the bid is time stamped by the official Purchasing Division time clock (in the case of hand delivery).

   Bid Opening Date and Time: November 18, 2015 at 1:30 PM, EST
   Bid Opening Location: Department of Administration, Purchasing Division
   2019 Washington Street East
   Charleston, WV 25305-0130

8. **ADDENDUM ACKNOWLEDGEMENT:** Changes or revisions to this Solicitation will be made by an official written addendum issued by the Purchasing Division. Vendor should acknowledge receipt of all addenda issued with this Solicitation by completing an Addendum Acknowledgment Form, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

9. **BID FORMATTING:** Vendor should type or electronically enter the information onto its bid to prevent errors in the evaluation. Failure to type or electronically enter the information may result in bid disqualification.

10. **ALTERNATES:** Any model, brand, or specification listed in this Solicitation establishes the acceptable level of quality only and is not intended to reflect a preference for, or in any way favor, a particular brand or vendor. Vendors may bid alternates to a listed model or brand provided that the alternate is at least equal to the model or brand and complies with the required specifications. The equality of any alternate being bid shall be determined by the State at its sole discretion. Any Vendor bidding an alternate model or brand should clearly identify the alternate items in its bid and should include manufacturer's specifications, industry literature, and/or any other relevant documentation demonstrating the equality of the alternate items. Failure to provide information for alternate items may be grounds for rejection of a Vendor's bid.

11. **EXCEPTIONS AND CLARIFICATIONS:** The Solicitation contains the specifications that shall form the basis of a contractual agreement. Vendor shall clearly mark any exceptions, clarifications, or other proposed modifications in its bid. Exceptions to, clarifications of, or modifications of a requirement or term and condition of the Solicitation may result in bid disqualification.

12. **COMMUNICATION LIMITATIONS:** In accordance with West Virginia Code of State Rules §148-1-6.6, communication with the State of West Virginia or any of its employees regarding this Solicitation during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited without prior Purchasing Division approval. Purchasing Division approval for such communication is implied for all agency delegated and exempt purchases.

13. **REGISTRATION:** Prior to Contract award, the apparent successful Vendor must be properly registered with the West Virginia Purchasing Division and must have paid the $125 fee, if applicable.

14. **UNIT PRICE:** Unit prices shall prevail in cases of a discrepancy in the Vendor's bid.

15. **PREFERENCE:** Vendor Preference may only be granted upon written request and only in accordance with the West Virginia Code § 5A-3-37 and the West Virginia Code of State Rules. A Vendor Preference Certificate form has been attached hereto to allow Vendor to apply for the preference. Vendor's failure to submit the Vendor Preference Certificate form with its bid will result in denial of Vendor Preference. Vendor Preference does not apply to construction projects.

16. **SMALL, WOMEN-OWNED, OR MINORITY-OWNED BUSINESSES:** For any solicitations publicly advertised for bid, in accordance with West Virginia Code §5A-3-37(a)(7) and W. Va. CSR § 148-22-9, any non-resident vendor certified as a small, women-owned, or minority-owned business under W. Va. CSR § 148-22-9 shall be provided the

same preference made available to any resident vendor. Any non-resident small, women-owned, or minority-owned business must identify itself as such in writing, must submit that writing to the Purchasing Division with its bid, and must be properly certified under W. Va. CSR § 148-22-9 prior to contract award to receive the preferences made available to resident vendors. Preference for a non-resident small, women-owned, or minority owned business shall be applied in accordance with W. Va. CSR § 148-22-9.

17. **WAIVER OF MINOR IRREGULARITIES:** The Director reserves the right to waive minor irregularities in bids or specifications in accordance with West Virginia Code of State Rules § 148-1-4.6.

18. **ELECTRONIC FILE ACCESS RESTRICTIONS:** Vendor must ensure that its submission in wvOASIS can be accessed by the Purchasing Division staff immediately upon bid opening. The Purchasing Division will consider any file that cannot be immediately opened and/or viewed at the time of the bid opening (such as, encrypted files, password protected files, or incompatible files) to be blank or incomplete as context requires, and are therefore unacceptable. A vendor will not be permitted to unencrypt files, remove password protections, or resubmit documents after bid opening if those documents are required with the bid.

EXPRESSION OF INTEREST

Leachate Holding Tank Study, Recommendation and Construction QA/QC
for
Jefferson County Landfill.

SECTION THREE: PROJECT SPECIFICATIONS

1. **Location:** Agency is located at 601 57th Street, SE, Charleston WV, 25304 and the Project will be completed at the Jefferson County Landfill. The site is located in Jefferson County, WV, East of Leetown. From Rt.9, take the Shepardstown Exit (Rt. 1), travel South 2.1 miles, turn left onto Hite Road 1 mile, turn right onto Jefferson Orchard Road, travel 0.5 miles to entrance gate on left.

2. **Background:** This work involves the study of the existing leachate holding tanks to see if they meet the requirements of applicable rules. If not, make recommendations for improvement or replacement. Once DEP selects the best course of action, prepare engineering design drawings and specifications for the purpose of bidding the selected course of action. During construction activity, provide QA/QC oversight.

3. **Qualifications and Experience:** Vendors should provide information regarding its employees, such as staff qualifications and experience in completing similar projects; references; copies of any staff certifications or degrees applicable to this project; proposed staffing plan; descriptions of past projects completed entailing the location of the project, project manager name and contact information, type of project, and what the project goals and objectives where and how they were met.

   Firms must submit a completed Consultant Qualification Questionnaire

4. **Project and Goals:** The project goals and objectives are:

   The scope of work shall include site investigation of existing features, surveying and mapping, subsurface investigations to determine effort needed for corrective action, sediment and erosion control plans, preparation of construction contract drawings and specifications suitable for letting of construction bids and the bidding process. All applicable permit applications, right-of-ways, right-of entries, and approvals shall also be a part of the work to be performed. The Bidder shall furnish all personnel, facilities, equipment, material, supplies, and services for all of the scope of work required by this contract. The contractor shall review and reference all work to insure compliance with 33CSR1 and all other applicable rules including under-ground and above-ground storage tanks.

5. **Oral Presentations (Agency Option):** The Agency has the option of requiring oral presentations of all Vendors participating in the EOI process. If this option is exercised, it would be listed in the Schedule of Events (Section 1.3) of this EOI. During oral presentations, Vendors may not alter or add to their submitted proposal, but only clarify information. A description of the materials and information to be presented is provided below:

5.1. Materials and Information Required at Oral Presentation:

Interviews will be conducted with the three firms selected as the most qualified by the WV DEP Selection Committee. The committee will schedule the interviews.

The format for the interviews will be a 15-30 minute PowerPoint presentation consisting, at a minimum, of the following:

- Corporate/personnel experience summary as it relates to this project or projects.
- Provide particular information or examples that uniquely qualify your firm for this project.
- Proposed project management plan
- Key personnel available for the work proposed on this project.
- Proposed subcontractors (mapping, geotechnical, etc.).
- Product quality & cost control.

EXPRESSION OF INTEREST

Leachate Holding Tank Study, Recommendation and Construction QA/QC
for
Jefferson County Landfill.

SECTION FOUR: VENDOR PROPOSAL, EVALUATION, & AWARD

1. **Economy of Preparation:** EOI's should be prepared simply and economically, providing a straightforward, concise description of firm's abilities to satisfy the requirements and goals and objectives of the EOI. Emphasis should be placed on completeness and clarity of content. The response sections should be labeled for ease of evaluation.

2. **BIDS MUST NOT CONTAIN PRICE QUOTATIONS:** The State shall select the best value solution according to §5G-1-3 of the West Virginia State Code. In accordance with the Code requirements, no "price" or "fee" information is requested or permitted in the bid response.

3. **Evaluation and Award Process:** Expressions of Interest for projects estimated to cost $250,000 or more will be evaluated and awarded in accordance with West Virginia Code §5G-1-3. That Code section requires the following:

   3.1. **Required Elements of EOI Response**: The director of purchasing shall encourage such firms engaged in the lawful practice of the profession to submit an expression of interest, which shall include a statement of qualifications, and performance data and may include anticipated concepts and proposed methods of approach to the project.

   3.2. **Public Advertisement:** All EOI requests shall be announced by public notice published as a Class II legal advertisement in compliance with the provisions of West Virginia Code §59-3-1 et seq.

   3.3. **Selection Committee Evaluation & Negotiation:** A committee comprised of three to five representatives of the agency initiating the request shall:

      3.3.1. evaluate the statements of qualifications and performance data and other material submitted by the interested firms and select three firms which in their opinion are the best qualified to perform the desired service.

      3.3.2. conduct interviews with each firm selected and the conduct discussions regarding anticipated concepts and the proposed methods of approach to the assignment.

      3.3.3. rank in order of preference no less than three professional firms deemed to be

the most highly qualified to provide the services required, and shall commence scope of service and price negotiations with the highest qualified professional firm.

3.3.4. Should the agency be unable to negotiate a satisfactory contract with the professional firm considered to be the most qualified, at a fee determined to be fair and reasonable, price negotiations with the firm of second choice shall commence. Failing accord with the second most qualified professional firm, the committee shall undertake price negotiations with the third most qualified professional firm.

3.3.5. Should the agency be unable to negotiate a satisfactory contract with any of the selected professional firms, it shall select additional professional firms in order of their competence and qualifications and it shall continue negotiations in accordance with this section until an agreement is reached.

3.4. **Vendor Ranking:** All evaluation criteria is defined in the Procurement Specifications section and based on a 100 point total score. Points shall be assigned based upon the Vendor's response to the evaluation criteria as follows:

• Qualifications and experience	80 Points Possible
• Oral interview	20 Points Possible
Total	100

EXPRESSION OF INTEREST

Leachate Holding Tank Study, Recommendation and Construction QA/QC
for
Jefferson County Landfill.

SECTION FIVE: TERMS AND CONDITIONS

Terms and conditions begin on the next page.

GENERAL TERMS AND CONDITIONS:

1. **CONTRACTUAL AGREEMENT:** Issuance of a Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.

2. **DEFINITIONS:** As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.

   2.1. **"Agency"** or **"Agencies"** means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.

   2.2. **"Contract"** means the binding agreement that is entered into between the State and the Vendor to provide the goods or services requested in the Solicitation.

   2.3. **"Director"** means the Director of the West Virginia Department of Administration, Purchasing Division.

   2.4. **"Purchasing Division"** means the West Virginia Department of Administration, Purchasing Division.

   2.5. **"Award Document"** means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the contract holder.

   2.6. **"Solicitation"** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

   2.7. **"State"** means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.

   2.8. **"Vendor"** or **"Vendors"** means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.

3. **CONTRACT TERM; RENEWAL; EXTENSION:** The term of this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below:

☐ **Term Contract**

Initial Contract Term: This Contract becomes effective on _____ and extends for a period of _____ year(s).

Renewal Term: This Contract may be renewed upon the mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any request for renewal should be submitted to the Purchasing Division thirty (30) days prior to the expiration date of the initial contract term or appropriate renewal term. A Contract renewal shall be in accordance with the terms and conditions of the original contract. Renewal of this Contract is limited to _____ successive one (1) year periods or multiple renewal periods of less than one year, provided that the multiple renewal periods do not exceed _____ months in total. Automatic renewal of this Contract is prohibited. Notwithstanding the foregoing, Purchasing Division approval is not required on agency delegated or exempt purchases. Attorney General approval may be required for vendor terms and conditions.

Delivery Order Limitations: In the event that this contract permits delivery orders, a delivery order may only be issued during the time this Contract is in effect. Any delivery order issued within one year of the expiration of this Contract shall be effective for one year from the date the delivery order is issued. No delivery order may be extended beyond one year after this Contract has expired.

☑ **Fixed Period Contract:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and must be completed within 1095 calendar _____ days.

☐ **Fixed Period Contract with Renewals:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and part of the Contract more fully described in the attached specifications must be completed within _____ days. Upon completion, the vendor agrees that maintenance, monitoring, or warranty services will be provided for one year thereafter with an additional _____ successive one year renewal periods or multiple renewal periods of less than one year provided that the multiple renewal periods do not exceed _____ months in total. Automatic renewal of this Contract is prohibited.

☐ **One Time Purchase:** The term of this Contract shall run from the issuance of the Award Document until all of the goods contracted for have been delivered, but in no event will this Contract extend for more than one fiscal year.

☐ **Other:** See attached.

4. **NOTICE TO PROCEED:** Vendor shall begin performance of this Contract immediately upon receiving notice to proceed unless otherwise instructed by the Agency. Unless otherwise specified, the fully executed Award Document will be considered notice to proceed.

5. **QUANTITIES:** The quantities required under this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below.

   ☐ **Open End Contract:** Quantities listed in this Solicitation are approximations only, based on estimates supplied by the Agency. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery during the term of the Contract, whether more or less than the quantities shown.

   ☐ **Service:** The scope of the service to be provided will be more clearly defined in the specifications included herewith.

   ☑ **Combined Service and Goods:** The scope of the service and deliverable goods to be provided will be more clearly defined in the specifications included herewith.

   ☐ **One Time Purchase:** This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General's office.

6. **PRICING:** The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification.

7. **EMERGENCY PURCHASES:** The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute of breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One Time Purchase contract.

8. **REQUIRED DOCUMENTS:** All of the items checked below must be provided to the Purchasing Division by the Vendor as specified below.

☐ **BID BOND:** All Vendors shall furnish a bid bond in the amount of five percent (5%) of the total amount of the bid protecting the State of West Virginia. The bid bond must be submitted with the bid.

☐ **PERFORMANCE BOND:** The apparent successful Vendor shall provide a performance bond in the amount of _____. The performance bond must be received by the Purchasing Division prior to Contract award. On construction contracts, the performance bond must be 100% of the Contract value.

☐ **LABOR/MATERIAL PAYMENT BOND:** The apparent successful Vendor shall provide a labor/material payment bond in the amount of 100% of the Contract value. The labor/material payment bond must be delivered to the Purchasing Division prior to Contract award.

In lieu of the Bid Bond, Performance Bond, and Labor/Material Payment Bond, the Vendor may provide certified checks, cashier's checks, or irrevocable letters of credit. Any certified check, cashier's check, or irrevocable letter of credit provided in lieu of a bond must be of the same amount and delivered on the same schedule as the bond it replaces. A letter of credit submitted in lieu of a performance and labor/material payment bond will only be allowed for projects under $100,000. Personal or business checks are not acceptable.

☐ **MAINTENANCE BOND:** The apparent successful Vendor shall provide a two (2) year maintenance bond covering the roofing system. The maintenance bond must be issued and delivered to the Purchasing Division prior to Contract award.

☑ **INSURANCE:** The apparent successful Vendor shall furnish proof of the following insurance prior to Contract award and shall list the state as a certificate holder:

☑ **Commercial General Liability Insurance:** In the amount of $1,000,000.00 _____ or more.

☐ **Builders Risk Insurance:** In an amount equal to 100% of the amount of the Contract.

☑ Aggregate, $1,000,000.00

☑ Automobile, $1,000,000.00

☑ Professional Liability, $1,000,000.00

☐

☐

The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether or not that insurance requirement is listed above.

☐ **LICENSE(S) / CERTIFICATIONS / PERMITS:** In addition to anything required under the Section entitled Licensing, of the General Terms and Conditions, the apparent successful Vendor shall furnish proof of the following licenses, certifications, and/or permits prior to Contract award, in a form acceptable to the Purchasing Division.

☐

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☐

☐

The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications prior to Contract award regardless of whether or not that requirement is listed above.

9. **WORKERS' COMPENSATION INSURANCE:** The apparent successful Vendor shall comply with laws relating to workers compensation, shall maintain workers' compensation insurance when required, and shall furnish proof of workers' compensation insurance upon request.

10. **LITIGATION BOND:** The Director reserves the right to require any Vendor that files a protest of an award to submit a litigation bond in the amount equal to one percent of the lowest bid submitted or $5,000, whichever is greater. The entire amount of the bond shall be forfeited if the hearing officer determines that the protest was filed for frivolous or improper purpose, including but not limited to, the purpose of harassing, causing unnecessary delay, or needless expense for the Agency. All litigation bonds shall be made payable to the Purchasing Division. In lieu of a bond, the protester may submit a cashier's check or certified check payable to the Purchasing Division. Cashier's or certified checks will be deposited with and held by the State Treasurer's office. If it is determined that the protest has not been filed for frivolous or improper purpose, the bond or deposit shall be returned in its entirety.

11. **LIQUIDATED DAMAGES:** Vendor shall pay liquidated damages in the amount of _____ for _____.
This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy.

12. **ACCEPTANCE/REJECTION:** The State may accept or reject any bid in whole, or in part. Vendor's signature on its bid signifies acceptance of the terms and conditions contained in the Solicitation and Vendor agrees to be bound by the terms of the Contract, as reflected in the Award Document, upon receipt.

13. **FUNDING:** This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available.

14. **PAYMENT:** Payment in advance is prohibited under this Contract. Payment may only be made after the delivery and acceptance of goods or services. The Vendor shall submit invoices, in arrears.

15. **TAXES:** The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

16. **CANCELLATION:** The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. The Purchasing Division Director may also cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules § 148-1-7.16.2.

17. **TIME:** Time is of the essence with regard to all matters of time and performance in this Contract.

18. **APPLICABLE LAW:** This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code or West Virginia Code of State Rules is void and of no effect.

19. **COMPLIANCE:** Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendor acknowledges that it has reviewed, understands, and will comply with all applicable law.

20. **PREVAILING WAGE:** Vendor shall be responsible for ensuring compliance with prevailing wage requirements and determining when prevailing wage requirements are applicable.

21. **ARBITRATION:** Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.

22. **MODIFICATIONS:** This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary, no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). No Change shall be implemented by the Vendor until such time as the Vendor receives an approved written change order from the Purchasing Division.

23. **WAIVER:** The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.

24. **SUBSEQUENT FORMS:** The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.

25. **ASSIGNMENT:** Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments. Notwithstanding the foregoing, Purchasing Division approval may or may not be required on certain agency delegated or exempt purchases.

26. **WARRANTY:** The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defect in material and workmanship.

27. **STATE EMPLOYEES:** State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.

28. **BANKRUPTCY:** In the event the Vendor files for bankruptcy protection, the State of West Virginia may deem this Contract null and void, and terminate this Contract without notice.

29. **CONFIDENTIALITY:** The Vendor agrees that it will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the Agency, unless the individual who is the subject of the information consents

to the disclosure in writing or the disclosure is made pursuant to the Agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in http://www.state.wv.us/admin/purchase/privacy/default.html.

30. **DISCLOSURE:** Vendor's response to the Solicitation and the resulting Contract are considered public documents and will be disclosed to the public in accordance with the laws, rules, and policies governing the West Virginia Purchasing Division. Those laws include, but are not limited to, the Freedom of Information Act found in West Virginia Code §§ 29B-1-1 et seq. and the competitive bidding laws found West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq.

    If a Vendor considers any part of its bid to be exempt from public disclosure, Vendor must so indicate by specifically identifying the exempt information, identifying the exemption that applies, providing a detailed justification for the exemption, segregating the exempt information from the general bid information, and submitting the exempt information as part of its bid but in a segregated and clearly identifiable format. Failure to comply with the foregoing requirements will result in public disclosure of the Vendor's bid without further notice. A Vendor's act of marking all or nearly all of its bid as exempt is not sufficient to avoid disclosure and WILL NOT BE HONORED. Vendor's act of marking a bid or any part thereof as "confidential" or "proprietary" is not sufficient to avoid disclosure and WILL NOT BE HONORED. A legend or other statement indicating that all or substantially all of the bid is exempt from disclosure is not sufficient to avoid disclosure and WILL NOT BE HONORED. Additionally, pricing or cost information will not be considered exempt from disclosure and requests to withhold publication of pricing or cost information WILL NOT BE HONORED.

    Vendor will be required to defend any claimed exemption for nondisclosure in the event of an administrative or judicial challenge to the State's nondisclosure. Vendor must indemnify the State for any costs incurred related to any exemptions claimed by Vendor. Any questions regarding the applicability of the various public records laws should be addressed to your own legal counsel prior to bid submission.

31. **LICENSING:** In accordance with West Virginia Code of State Rules §148-1-6.1.7, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

32. **ANTITRUST:** In submitting a bid to, signing a contract with, or accepting a Award Document from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States

and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.

33. **VENDOR CERTIFICATIONS:** By signing its bid or entering into this Contract, Vendor certifies (1) that its bid or offer was made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership, person or entity submitting a bid or offer for the same material, supplies, equipment or services; (2) that its bid or offer is in all respects fair and without collusion or fraud; (3) that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; and (4) that it has reviewed this Solicitation in its entirety; understands the requirements, terms and conditions, and other information contained herein. Vendor's signature on its bid or offer also affirms that neither it nor its representatives have any interest, nor shall acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency. The individual signing this bid or offer on behalf of Vendor certifies that he or she is authorized by the Vendor to execute this bid or offer or any documents related thereto on Vendor's behalf; that he or she is authorized to bind the Vendor in a contractual relationship; and that, to the best of his or her knowledge, the Vendor has properly registered with any State agency that may require registration.

34. **PURCHASING CARD ACCEPTANCE:** The State of West Virginia currently utilizes a Purchasing Card program, administered under contract by a banking institution, to process payment for goods and services. The Vendor must accept the State of West Virginia's Purchasing Card for payment of all orders under this Contract unless the box below is checked.

    ☑ Vendor is not required to accept the State of West Virginia's Purchasing Card as payment for all goods and services.

35. **VENDOR RELATIONSHIP:** The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, etc. and the filing of all necessary documents, forms, and returns pertinent to all of the foregoing. Vendor shall hold harmless the State, and shall provide the State and Agency with a defense

against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

36. **INDEMNIFICATION:** The Vendor agrees to indemnify, defend, and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.

37. **PURCHASING AFFIDAVIT:** In accordance with West Virginia Code § 5A-3-10a, all Vendors are required to sign, notarize, and submit the Purchasing Affidavit stating that neither the Vendor nor a related party owe a debt to the State in excess of $1,000. The affidavit must be submitted prior to award, but should be submitted with the Vendor's bid. A copy of the Purchasing Affidavit is included herewith.

38. **ADDITIONAL AGENCY AND LOCAL GOVERNMENT USE:** This Contract may be utilized by and extends to other agencies, spending units, and political subdivisions of the State of West Virginia; county, municipal, and other local government bodies; and school districts ("Other Government Entities"). This Contract shall be extended to the aforementioned Other Government Entities on the same prices, terms, and conditions as those offered and agreed to in this Contract. If the Vendor does not wish to extend the prices, terms, and conditions of its bid and subsequent contract to the Other Government Entities, the Vendor must clearly indicate such refusal in its bid. A refusal to extend this Contract to the Other Government Entities shall not impact or influence the award of this Contract in any manner.

39. **CONFLICT OF INTEREST:** Vendor, its officers or members or employees, shall not presently have or acquire an interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.

40. **REPORTS:** Vendor shall provide the Agency and/or the Purchasing Division with the following reports identified by a checked box below:

    ☑ Such reports as the Agency and/or the Purchasing Division may request. Requested reports may include, but are not limited to, quantities purchased, agencies utilizing the contract, total contract expenditures by agency, etc.

☐ Quarterly reports detailing the total quantity of purchases in units and dollars, along with a listing of purchases by agency. Quarterly reports should be delivered to the Purchasing Division via email at purchasing.requisitions@wv.gov.

41. **BACKGROUND CHECK:** In accordance with W. Va. Code § 15-2D-3, the Director of the Division of Protective Services shall require any service provider whose employees are regularly employed on the grounds or in the buildings of the Capitol complex or who have access to sensitive or critical information to submit to a fingerprint-based state and federal background inquiry through the state repository. The service provider is responsible for any costs associated with the fingerprint-based state and federal background inquiry.

After the contract for such services has been approved, but before any such employees are permitted to be on the grounds or in the buildings of the Capitol complex or have access to sensitive or critical information, the service provider shall submit a list of all persons who will be physically present and working at the Capitol complex to the Director of the Division of Protective Services for purposes of verifying compliance with this provision.

The State reserves the right to prohibit a service provider's employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check.

Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.

42. **PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS:** Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:

a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.

b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open heath, basic oxygen, electric furnace, Bessemer or other steel making process. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:

c. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars ($2,500.00), whichever is greater.

For the purposes of this section, the cost is the value of the steel product as delivered to the project; or

d. The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

43. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL: In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars ($50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a "substantial labor surplus area", as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products.

This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

ADDITIONAL TERMS AND CONDITIONS (Architectural and Engineering Contracts Only)

1. **PLAN AND DRAWING DISTRIBUTION:** All plans and drawings must be completed and available for distribution at least five business days prior to a scheduled pre-bid meeting for the construction or other work related to the plans and drawings.

2. **PROJECT ADDENDA REQUIREMENTS:** The Architect/Engineer and/or Agency shall be required to abide by the following schedule in issuing construction project addenda. The Architect/Engineer shall prepare any addendum materials for which it is responsible, and a list of all vendors that have obtained drawings and specifications for the project. The Architect/Engineer shall then send a copy of the addendum materials and the list of vendors to the State Agency for which the contract is issued to allow the Agency to make any necessary modifications. The addendum and list shall then be forwarded to the Purchasing Division buyer by the Agency. The Purchasing Division buyer shall send the addendum to all interested vendors and, if necessary, extend the bid opening date. Any addendum should be received by the Purchasing Division at least fourteen (14) days prior to the bid opening date.

3. **PRE-BID MEETING RESPONSIBILITIES:** The Architect/Engineer shall be available to attend any pre-bid meeting for the construction or other work resulting from the plans, drawings, or specifications prepared by the Architect/Engineer.

4. **AIA DOCUMENTS:** Contracts for architectural and engineering services will be governed by the AIA document B101-2007, as amended by the Supplementary Conditions for the State of West Virginia, in addition to the terms and conditions contained herein when procured under Chapter 5G of the West Virginia Code.

5. **GREEN BUILDINGS MINIMUM ENERGY STANDARDS:** In accordance with West Virginia Code § 22-29-4, all new building construction projects of public agencies that have not entered the schematic design phase prior to July 1, 2012, or any building construction project receiving state grant funds and appropriations, including public schools, that have not entered the schematic design phase prior to July1, 2012, shall be designed and constructed complying with the ICC International Energy Conservation Code, adopted by the State Fire Commission, and the ANSI/ASHRAE/IESNA Standard 90.1-2007: Provided, That if any construction project has a commitment of federal funds to pay for a portion of such project, this provision shall only apply to the extent such standards are consistent with the federal standards.

CERTIFICATIONAND SIGNATURE PAGE

By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Civil & Environmental Consultants, Inc.

(Company)

Dennis E. Miller, Vice President

(Authorized Signature) (Representative Name, Title)

PH: (304)-933-3119 Fax: (304)-933-3327 11/18/2015

(Phone Number) (Fax Number) (Date)

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.:

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:
(Check the box next to each addendum received)

☐ Addendum No. 1	☐ Addendum No. 6
☐ Addendum No. 2	☐ Addendum No. 7
☐ Addendum No. 3	☐ Addendum No. 8
☐ Addendum No. 4	☐ Addendum No. 9
☐ Addendum No. 5	☐ Addendum No. 10

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Civil & Environmental Consultants, Inc.

Company

Dennis E. Miller, Vice President

Authorized Signature

11/18/2015

Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

Revised 08/01/2015

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
CONSULTANT CONFIDENTIAL QUALIFICATION QUESTIONNAIRE

Attachment "A"

PROJECT NAME: **CEOI 0313 DEP1600000011 Jefferson County Landfill Leachate Holding Tank Study, Recommendation & Construction QA/QC**	DATE (DAY, MONTH, YEAR) 18 November 2015	FEIN 25-1599565
1. FIRM NAME Civil & Environmental Consultants, Inc.	2. HOME OFFICE BUSINESS ADDRESS 333 Baldwin Road Pittsburgh, PA 15205-4751	3. FORMER FIRM NAME

4. REGIONAL OFFICE TELEPHONE	5. ESTABLISHED (YEAR)	6. TYPE OWNERSHIP	6a. WV REGISTERED DBE
304-933-3119 855-488-9539	1989	_ Individual X Corporation _ Partnership _ Joint-Venture	_ YES X NO

7. PRESENT OFFICES: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. PERSONNEL EACH OFFICE

7a. Total Personnel 779 as of 11/05/2015:

Austin, TX	206 Basin Road – Wild Basin A, Suite 240 Austin, TX 78746	(512)329-0006	Greg Lewis	6
Boston, MA	31 Bellows Road, Raynham, MA 02767	(774)501-2176	Barry VanLaarhoven	21
Bridgeport, WV	600 Marketplace Avenue, Suite 200, Bridgeport, WV 26330	(304)933-3119	Dennis Miller	62
Charlotte, NC	2030 S. Tryon Street, Suite 3E, Charlotte, NC 28203	(980)224-8104	Scott Brown	28
Chicago, IL	555 Butterfield Road, Suite 300, Lombard, IL 60148	(630)963-6026	John Hock	20
Cincinnati, OH	4274 Glendale Milford Road, Cincinnati, OH 45242	(513)985-0226	John Imbus	35
Columbus, OH	8740 Orion Place Suite 100, Columbus, OH 43240	(614)540-6633	John DiNunzio	59
Detroit, MI	28373 Beck Road Suite H-10, Wixom, MI 48393	(248)374-8600	Ryan Dunning	15
Export, PA	4000 Triangle Lane Suite 200, Export, PA 15632	(724)327-5200	Dave Olson	44
Indianapolis, IN	530 E. Ohio Street Suite G, Indianapolis, IN 46204	(317)655-7777	Aaron Hurt	51
Knoxville, TN	308 Cates Street, Maryville, TN, 37801	(865)977-9997	James Tomiczek	24
Nashville, TN	405 Duke Drive Suite 270, Franklin, TN 37067	(615)333-7797	Greg Kugler	49
Philadelphia, PA	370 East Maple Avenue, Suite 304, Langhorne, PA, 19047	(267)568-2300	Tony Eith	11
Phoenix, AZ	11811 North Tatum Boulevard Suite 3057, Phoenix, AZ	(602)760-2324	Randy Bodnar	15
Pittsburgh, PA	**333 Baldwin Road, Pittsburgh, PA 15205**	**(412)429-2324**	**Angelo Masullo**	**273**
Sayre, PA	703 South Elmer Avenue, Suite 125, Sayre, PA, 18840	(570)886-2007	Matt Hourihan	18
Sevierville, TN	229 Prince Street, Sevierville, TN, 37862	(865)774-7771	James Tomiczek	5
St. Louis, MO	4848 Park 370 Boulevard Suite F, Hazelwood, MO 63042	(314)656-4566	Kevin Brown	43
Toledo, OH	3232 Executive Parkway Suite 105, Toledo, OH 43606	(419)724-5281	Tom Covrett	8
			CEC TOTAL:	**779**

8. NAMES OF PRINCIPAL OFFICIALS OR MEMBERS OF FIRM

Ken Miller – President & CEO
Dan Szwed – COO
Henry Soose – CFO
Jim Nairn – Senior Vice President
David Olsen – Vice President
Geff Bottomley – Vice President
Greg Quatchak – Vice President
Gerry Salontai – Board of Directors
Jim Roberts – Board of Directors

8a. NAME, TITLE & TELEPHONE NUMBER - OTHER PRINCIPALS

Dennis Miller – Vice President – 304-933-3119

9. Personnel by Discipline: (List each person only once, by primary function.) **Bold Lettering Indicates Design Team Members**

68	Administrative	67	Ecologist	0	Hydraulic Engineer	0	Project Manager
4	Archeologist	0	Economist	0	Hydrologist	62	Sanitary Engineer
1	Architect	0	Electrical Engineer	0	Interior Designer	**1**	**Soils Engineer**
30	**Biologist**	**29**	**Environmental Engineer**	10	Landscape Architect	**1**	Structural Engineer
48	**CADD Technician**	58	**Environmental Scientist**	0	Mechanical Engineer	**28**	**Surveyor**
2	**Chemical Engineer**	See below	Foundation/Geotechnical Engineer	0	Mining Engineer	4	Technician / Analyst
157	**Civil Engineer**	10	Geographic Info. System Specialist	0	Planner: Urban / Regional	0	Transportation Engineer
34	**Construction Inspector**	40	Geologist	0	Process Engineer / Designer	**23**	**Water Resources Engineer**
1	Construction Manager	31	Geotechnical Engineer	13	Professional Land Surveyor	57	Other
						779	*TOTAL PERSONNEL*

Civil & Environmental Consultants, Inc. (CEC) has key staff members in the Bridgeport, WV Office and in the Pittsburgh and Export, PA offices that will be assigned to this project. The Design Team will be comprised of: Biologists, CADD technicians, Engineers, Scientists, Surveyors, and other necessary support personnel to ensure project goals are achieved and the project is completed within WVDEP established timeframes. The Bridgeport, WV Office Design Team leader is Mr. Steven Cain, P.E.

10 HAS THIS JOINT-VENTURE WORKED TOGETHER BEFORE? ☐ YES ☐ NO

11.	**OUTSIDE KEY CONSULTANTS / SUB-CONSULTANTS ANTICIPATED TO BE USED. Attach "AML Consultant Confidential Qualification Questionnaire".**		
NAME AND ADDRESS:		**SPECIALTY:**	**WORKED WITH BEFORE:**
Novel Geo-Environmental, PLLC 806 B Street St. Albans, West Virginia 25177		Subsurface drilling investigation-geotechnical engineering – soil, rock, coal physical property testing	[X] YES [ ] NO
NAME AND ADDRESS:		**SPECIALTY:**	**WORKED WITH BEFORE:**
Geotechnics 544 Braddock Avenue East Pittsburgh, PA 15112		Laboratory testing of soils, aggregate and geosynthetics	[X] YES [ ] NO
NAME AND ADDRESS:		**SPECIALTY:**	**WORKED WITH BEFORE:**
Keddal Aerial Mapping 1121 Boyce Road - Suite 3100 Pittsburgh, PA 15241		Aerial photography and developing topographic maps from aerial photographs	[X] YES [ ] NO
NAME AND ADDRESS:		**SPECIALTY:**	**WORKED WITH BEFORE:**
Geochemical Testing 2005 N. Center Avenue Somerset, PA 15501		Chemical analysis of environmental samples (groundwater, surface water, soil, wastes)	[X] YES [ ] NO
NAME AND ADDRESS:		**SPECIALTY:**	**WORKED WITH BEFORE:**
The Hutchinson Group, Ltd. 4280 Old William Penn Highway Murrysville, PA 15668		Geophysical subsurface investigation	[X] YES [ ] NO
NAME AND ADDRESS:		**SPECIALTY:**	**WORKED WITH BEFORE:**
			[ ] YES [ ] NO

12. A. Is your firm experienced in solid waste landfill leachate storage design?

X	**Yes**
	No

Description and Number of Projects: **Corporate and Employee Experience: Twenty One (21) Projects**

Civil & Environmental Consultants (CEC) has completed landfill leachate storage related designs, ranging in size and complexity that encompassed leachate storage tank new designs or rehabilitation of existing leachate storage facilities. A detailed listing of the projects, including the tasks involved with each project are listed in the following sections.

B. Is your firm experienced in solid waste landfill leachate capacity assessment?

X	**Yes**
	No

Description and Number of Projects: **Corporate and Employee Experience: Eighty Four (84) Projects at Sixty Three (63) Landfills**

CEC has completed numerous site characterize evaluations and assessments at 63 solid waste landfills. These include 47 projects to characterize site hydrogeology; 26 geotechnical projects to characterize soil, bedrock, and waste conditions; and 11 ecologic projects to characterize wetlands, streams and other resources. A detailed listing of the projects, including the tasks involved with each project are listed in the following sections.

C. Is your firm experienced in solid waste landfill closure construction inspection?

X	**Yes**
	No

Description and Number of Projects: **Corporate and Employee Experience: Forty Five (45) Projects**

CEC has provided construction quality assurance (CQA) and certification services at 45 solid waste landfills. Services included inspection of soil, stone, geosynthetic and pipe materials. A detailed listing of the projects, including the tasks involved with each project are listed in the following sections.

D. Is your firm experienced in aerial photography and the development of contour mapping?

X	**Yes**
	No

Description and Number of Projects: **Corporate and Experience: Numerous Projects including over 263 WVDEP Related Projects**

CEC sub-contracts development of aerial photography to Keddal Aerial Mapping for large-coverage area topographic mapping. CEC has also developed topographic maps using GPS and conventional surveying techniques developed by CEC surveyors and third-party surveyors. CEC has successfully set aerial photographic control points on numerous engineering projects by GPS and Conventional Surveying techniques. CEC has also developed topographic and planimetric maps from GPS and Conventional Surveying techniques and supplemented topographic and planimetric features on mapping developed by aerial mapping firms. In addition, CEC personnel have completed over 263 WVDEP related mapping projects.

E. Is your firm familiar with the requirements of 33CSR1, the ground-water protection act, under-ground and above-ground storage tank rules?

X	**Yes**
	No

Description and Number of Projects: **Corporate Experience: Seventeen (17) Projects**

CEC has performed evaluations of groundwater contamination at 17 landfills, ranging in size, complexity and frequency. A detailed listing of the projects, including the tasks involved with each project are listed in the following sections.

F. Is your firm experienced in solid waste landfill closure cost estimating?

X	**Yes**
	No

Description and Number of Projects: **Corporate Experience: Thirteen (13) Projects**

CEC has prepared detailed cost estimates for 13 projects, to include estimates for grading, excavation, compacted clay, geosynthetic materials, pipe and pump systems. A detailed listing of the projects, including the tasks involved with each project are listed in the following sections.

12. A.	Is your firm experienced in solid waste landfill leachate storage design?
X Yes	Description and Number of Projects: **Corporate Experience: Twenty One (21) Projects**
No	6 Example Projects Follow

CORPORATE AND EMPLOYEE EXPERIENCE:	
1. Short Creek Landfill	Wheeling, West Virginia – CEC provided evaluation of treatment technology for landfill leachate, including impact of metals in leachate reducing treatment efficiency. Design recommendations included initial process to remove inhibitory metal concentration by chemical precipitation.
2. Newton County Landfill	Brook, Indiana - CEC provided a leachate treatment report titled "Leachate Management Alternatives Evaluations, Phase 2 for the Newton County Landfill". This effort enhanced the detail in the previous technical and economic evaluation of several leachate management alternatives and concluded that leachate evaporation and phytoremediation were alternatives that appeared most economically feasible. CEC's report included detailed technical and economic factors for the evaporation and phytoremediation options.
3. Pine Avenue Landfill	Niagara Falls, New York - CEC provided an evaluation of the option of accepting large quantities of drywall scrap with the considerations of the generation or prevention of generation of sulfide air emissions. Technical considerations included gas generation and transport, as well as management alternatives for geographical placement of wastes and acceptance rates impact on hydrogen sulfide on storage tanks and equipment.
4. Uwharrie Landfill	Mt. Gilead, North Carolina - The Uwharrie landfill generates approximately 8,000 gallons per day (gpd) of leachate that is stored at the site in two 226,000 gallon tanks prior to discharge to the Town of Troy, NC. The leachate contains a number of constituents that may exceed pretreatment limits, with current emphasis on ammonia concentrations. This ammonia concentration is in the range of 1,000 to 1,300 mg/l. As a result, the Town of Troy limited discharge to approximately 1 hour per day. The landfill wishes to reduce the ammonia concentration to 800 mg/l or less to remove this time based discharge limit. CEC evaluated current discharge flow and quality characteristics and provided alternative, including an on-site pretreatment facility; developing an centralized wastewater pretreatment system with other industries before discharge to the city; and upgrading the city's wastewater treatment plant to allow the landfill to discharge greater volumes directly to the city's sewer system.
5. Short Creek Landfill	Short Creek landfill - WV - Evaluation of leachate treatment technologies for a large landfill incorporating chemical precipitation for metals removal, anaerobic and aerobic biological wastewater treatment
6. Lee County Landfill	Bishopville, South Carolina - CEC provided an evaluation to modifications to the membrane bioreactor leachate treatment system (MBR) to increase the capacity of the system to treat wastewater at a higher strength than the original design parameters. The MBR at the Lee County Landfill SC, LLC (Lee County Landfill), Bishopville, South Carolina was designed to treat landfill leachate to pretreatment standards for acceptance at the Bishopville Wastewater Treatment Plant. CEC reviewed the background conditions, potential resolution, and formulated a detailed review of the current recommendations to save operating costs and improve treatment performance.

12.	**B.**	**Is your firm experienced in solid waste landfill leachate capacity assessment?**
X	**Yes**	Description and Number of Projects: **Corporate Experience: Eighty Four (84) Projects. See Examples Below.**
	No	

CORPORATE AND EMPLOYEE EXPERIENCE:

1. Route 356 Landfill Closure	Groundwater Assessment for Landfill Closure Plan: Subsurface investigation to evaluate groundwater chemistry and potential impact from landfilled wastes. Air rotary drilled 10 boreholes with construction of groundwater monitoring wells. Sampling of wells on routine basis, with laboratory chemical analysis for suite of inorganic and organic parameters. Performed statistical analyses using inter-well methods to determine if downgradient well parameter concentrations were statically significantly higher than those of upgradient wells. Performed hydrogeologic modeling to evaluate positive influence geosynthetic capping would have on long-term groundwater chemistry. Prepared permit application to allow continued waste filling to improve final grade slopes, subsequently approved by regulatory agencies based on demonstration of minimal impact of landfill on geochemistry.
2. Harmony Landfill (See Photo#3)	Groundwater Assessment for Greenfield Landfill: Subsurface investigation to evaluate groundwater chemistry and potential impact from former strip mining of coal reserves, and to evaluate groundwater flow patterns on adjacent wetlands. Air rotary drilled 8 boreholes with construction of groundwater monitoring wells. Sampling of wells on routine basis, with laboratory chemical analysis for suite of inorganic and organic parameters, including acid mine drainage indicator parameters. Assessment showed minimal impact to groundwater chemistry from mine drainage, and that upgradient and downgradient groundwater chemistry were statistically similar. Prepared hydrogeologic model to evaluate groundwater flow patterns, which demonstrated the wetlands adjacent to proposed landfill footprint were largely dependent on surface water flow and not groundwater.
3. Multiple Municipal Solid Waste Landfills	Groundwater Assessment for Permit Compliance: Perform quarterly evaluations of groundwater and surface water chemistry from samples obtained at approximately 20 municipal solid waste landfills. Analyses performed to demonstrate compliance with permit limits set for groundwater quality at each landfill. Analyses include inter-well and/or intra-well statistical analysis of parameter concentrations, comparison to maximum abatement trigger levels, preparation of stiff diagrams and tri-linear diagrams. Prepare and submit quarterly reports describing results of analyses to regulatory agencies. Coordinate communication with regulators and prepare alternative contaminant source demonstrations as appropriate.
4. Big Run Landfill Waste Condition Characterization (See Photo#4)	Subsurface Investigation for Waste Mass Instability and Remediation: Developed plan for investigating in-place shear strength and moisture conditions of large municipal solid waste mass that had become unstable. Conducted cone penetrometer testing on waste throughout slide zone, to develop shear strength profile of waste with depth at approximately 35 test locations. Performed pore pressure dissipation tests throughout waste mass to provide information on water levels/pressures within waste mass. Prepared detailed slope stability model of pre-slide and post-slide conditions to evaluate potential impact of low strength wastes and high internal water pressures. Designed remediation plan for restoring approximately 400,000 cy of waste mass to stable condition, including constructing 50,000 cy soil toe buttress.
5. Shade Landfill Deep Mine Characterization (See Photo#5&#6)	Subsurface Investigation for Deep Mine Workings and Remediation: Performed subsurface investigation of proposed 65-acre municipal solid waste landfill footprint to prepare hydrogeologic model and evaluate condition of deep mine workings. Air rotary drilled approximately 15 boreholes with construction of groundwater piezometers, with logging of conditions indicative of open mine workings (drill rod drop and chatter). Researched historic deep mine working maps and these were used in conjunction with boring information to develop conceptual map of mine workings beneath proposed landfill footprint. Used map to perform mine subsidence evaluation to estimate stress/strain on liner/cap system components. Developed mine subsidence remediation plan to include overexcavation and backfilling of mine workings within 25 vertical feet of landfill subgrade, and grouting of deeper mine workings. Prepared bid and construction documents, developed detailed mine grouting plan with grout mix designs, assisted with pre-bid meeting, observed and documented grouting of initial 10-acre area, performed follow-up rock coring to verify adequacy of grouting program. Submitted certification report to regulatory agency.

12.	B.	Is your firm experienced in solid waste landfill leachate capacity assessment? (Cont.)
X	Yes	Description and Number of Projects: **Corporate Experience: Eighty Four (84) Projects. See Examples Below. (Cont.)**
	No	

Photo # 3

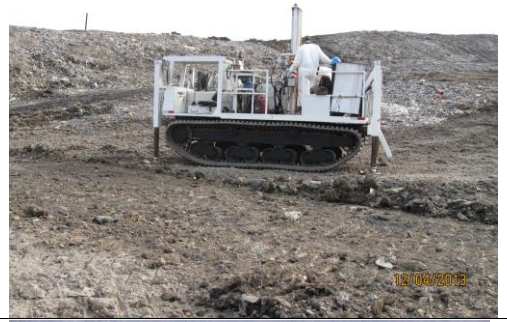


Photo # 4

Photo # 5

Photo # 6

12. C.	Is your firm experienced in solid waste landfill closure construction inspection?
X Yes No	Description and Number of Projects: **Corporate Experience: Forty Five (45) Projects. See Example Projects Below.**

CORPORATE AND EMPLOYEE EXPERIENCE:

1. Southern Alleghenies Landfill 2015 Closure *(See Photo#7)*	Construction Quality Assurance of Final Cover System: Provided CQA of 5-acre cap system. Coordinated receipt and review of manufacturer's QC data for geosynthetic materials, and owner's conformance test data for compliance with CQA Plan. Sampled and tested pre-construction samples of soil/aggregate materials for compliance with CQA Plan. Conducted pre-bid meeting with owner, contractors and regulators. Observed and documented construction of 8,000 cy cap subgrade soil layer. Observed and documented installation of 220,000 s.f. each of: 6 oz/sy nonwoven geotextile, 40-mil textured HDPE geomembrane, and double-sided drainage composite. Observed and documented construction of 16,000 cy of final cover soil, and placement of fertilizer, seed and mulch for 7-acre disturbed area. Sampled and tested in-place samples of final cover soil for compliance with CQA Plan. Routinely contacted regulatory agency to provide status updates and interim certifications. Prepared certification report, submitted to regulatory agency.
2. Yukon Impoundment Nos. 1-3 Phase 2 Closure *(See Photo#8&#9)*	Construction Quality Assurance of Final Cover System: Provided CQA of 7.5-acre cap system. Coordinated receipt and review of manufacturer's QC data for geosynthetic materials, and owner's conformance test data for compliance with CQA Plan. Sampled and tested pre-construction samples of soil/aggregate materials for compliance with CQA Plan. Observed and documented construction of 12,000 cy cap support zone layer. Observed and documented installation of 325,000 s.f. each of: 6 oz/sy nonwoven geotextile, 40-mil textured HDPE geomembrane, and single-sided drainage composite. Observed and documented construction of 25,000 cy of final cover soil, and placement of fertilizer, seed and mulch for 9-acre disturbed area. Sampled and tested in-place samples of final cover soil for compliance with CQA Plan. Performed surveys for construction layout, as-built geomembrane seams and verification of final cover thickness and elevation for compliance with permitted design. Routinely contacted regulatory agency to provide status updates and interim certifications. Prepared certification report, submitted to regulatory agency.
3. Laurel Highlands Landfill 2013Closure *(See Photo#10)*	Construction Quality Assurance of Final Cover System: Provided CQA of 4-acre cap system. Coordinated receipt and review of manufacturer's QC data for geosynthetic materials, and owner's conformance test data for compliance with CQA Plan. Sampled and tested pre-construction samples of soil/aggregate materials for compliance with CQA Plan. Conducted pre-bid meeting with owner, contractors and regulators. Observed and documented construction of 6,500 cy cap subgrade soil layer. Observed and documented installation of 160,000 s.f. each of: 6 oz/sy nonwoven geotextile, 40-mil textured HDPE geomembrane, and double-sided drainage composite. Observed and documented construction of 13,000 cy of final cover soil, and placement of fertilizer, seed and mulch for 5-acre disturbed area. Sampled and tested in-place samples of final cover soil for compliance with CQA Plan. Observed and documented relocation of landfill gas piping, observed and documented construction of 300 feet of rip-rap lined stormwater drainage channel. Routinely contacted regulatory agency to provide status updates and interim certifications. Prepared certification report, submitted to regulatory agency.
4. Route 356 Landfill Stage 4 Closure	Construction Quality Assurance of Final Cover System: Provided CQA of 3-acre cap system. Provided construction layout survey for grading and stormwater channel. Coordinated receipt and review of manufacturer's QC data for geosynthetic materials, and owner's conformance test data for compliance with CQA Plan. Sampled and tested pre-construction samples of soil/aggregate materials for compliance with CQA Plan. Observed soil borrow area for erosion and sediment controls. Observed excavation of formally closed areas along tie-in with Stage 4 area for cap system damage. Observed and documented construction of 5,000 cy cap support zone layer. Observed and documented installation of 125,000 s.f. each of: 6 oz/sy nonwoven geotextile, 40-mil textured HDPE geomembrane, and double-sided drainage composite. Observed and documented construction of 10,000 cy of final cover soil, and placement of fertilizer, seed and mulch for 5-acre disturbed area, including borrow area. Sampled and tested in-place samples of final cover soil for compliance with CQA Plan. Performed surveys for as-built geomembrane seams and verification of final cover thickness and elevation for compliance with permitted design. Monitored construction of 300 feet of rip-rap lined stormwater channel. Routinely contacted regulatory agency to provide status updates and interim certifications. Prepared certification report, submitted to regulatory agency.

12.	C.	Is your firm experienced in Landfill Closure Construction Projects? (Cont.)
X	Yes	Description and Number of Projects: **Corporate Experience: Forty Five (45) Projects. See Example Projects Below. (Cont.)**
	No	

5. Shade Landfill Gas Well Installation (See Photo#11)	Construction Quality Assurance of Landfill Gas System in Closure Areas: Provided CQA of drilling and construction of 10 landfill gas extraction wells. Verified drill depth of each well prior to start of drilling. Observed bucket auger drilling of 3-foot diameter boreholes, observed condition and temperature of municipal solid waste removed. Verified drill cutting wastes disposed in active portion of landfill. Observed and documented construction of gas extraction wells, verified pipe diameter and materials of construction, verified pipe perforation sizing and spacing, verified solid pipe lengths, observed backfill of granular material around pipe/borehole annular space, observed construction of bentonite plugs, prepared log for each well. Observed installation of solid-wall above-ground gas pipe, observed and documented air pressure testing of pipe for compliance with CQA Plan. Prepared certification report, submitted to regulatory agency.

Photo # 7

Photo # 8

Photo # 9

Photo # 10

Photo #11

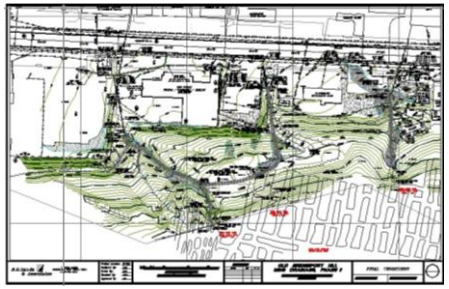
12. D. Does your firm produce its own aerial photography and develop contour mapping?

X	**Yes**
	No

Description and Number of Projects: **Numerous Projects Developing Contour Mapping from Conventional and GPS Surveying. Aerial Photography and Associated Mapping Subcontracted to Keddal Aerial Mapping.**

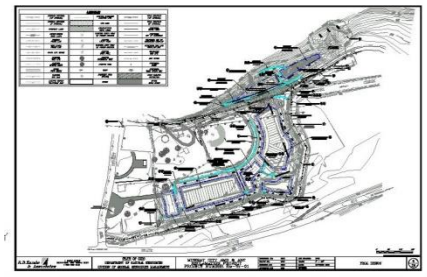
CORPORATE AND EMPLOYEE EXPERIENCE:

1. Large-Scale Contour Mapping	For large-scale areas with varying topography CEC sub-contracts aerial photography and subsequent development of contour mapping to Keddal Aerial Mapping.
2. Yukon Impoundment Nos. 1-3 Phase 2 Closure	As-Built Soil Subgrade and Final Cover Soil Contour Maps: Performed ground survey of soil subgrade over 7.5-acre area, surveyed certification points on 100-foot grid and at all breaks in grade. Used Civil 3D software to download survey data and prepare as-built contour map of soil subgrade on 2-foot contour interval, grades checked against permitted design for compliance with vertical and horizontal tolerances. Performed additional ground survey of final cover soil over same area, surveyed on 100-foot grid, verified final cover soil thickness was equal to or greater than thickness required by permit design. Used Civil 3D software to download survey data and prepare as-built contour map of final cover soil on 2-foot contour interval. As-built contour maps submitted with certification report to regulatory agency.
3.Contour Mapping from Aerial Photography	WVDEP South Mapping Contract (2011-2012), 17 Sites Totaling 1,800 Acres; WVDEP North Mapping Contract (2008-2011), 34 Sites Totaling 4,800 Acres, WVDEP South Mapping Contract (2008-2011), 51 Sites Totaling 4,100 Acres.
4.Contour Mapping from GPS and Conventional Surveying Techniques	WVDEP - McAlpin Portals and Drainage; Hodgesville (Wright) Mine Blowout; Arlington (Gain) Highwall; Camden (Hartley) Dangerous Landslide; Shinns Run Portals; Special Rec. Multiple Projects; Norton Highwall #1; Tub Run Highwall and Refuse Phase I and II; Greenbrier Hollow Refuse; Pageton (Lambert) Portals; Birds Creek Number Four; Church Creek/Manown Highwall; Racine (Bradshaw) Portals; Howesville Sites, Sandy Run Portals; Hampton Number Four Maintenance; Howesville Sites; Sandy Run Highwall and Portals; Laurel Valley (Daniels) Landslide; Price Hill Airshaft/Buildings; Weaver Portals and Highwall, Phase I & II; Nixon Run AMD; Tunnleton (Dillsworth) Landslide; Arlington (Cox) Drainage; Sauls Run Strip and Landslide; Fairmont (Hendrickson) Subsidence; Old Bridgeport Hill Mine Drainage, Phase II; Flint Run East Acid Mine Drainage Reclamation; Murray City AMD and Art Project; Flint Run Acid Mine Drainage Reclamation; Danehart Acid Mine Drainage; Nutters Tipple D-716; Lake Milton Investigation; Midvale Coal Number 7; Linden Acid Mine Drainage Bioremediation; Glen Castle Reclamation; Misco Burning Gob; Ferris Forfeiture; Brown Subsidence. SPEC REC – Glady Fork Mining, Permit D-35-82. WVCA – Fisher-Mill Creek Bank Stabilization, Laurel Lake Sediment Removal, Kraut Creek H&H Investigation, Harmons Creek Bank Stabilization, Parchment Valley Bank Stabilization, North Fork Hughes River Bank Stabilization, Spencer Flood Plain Improvement Study, Logan County Flood Plain Improvement Project.



OLD BRIDGEPORT HILL MINE DRAINAGE

Mapping generated from conventional surveying.



MURRAY CITY AMD AND ART PROJECT

Mapping generated from conventional and GPS survey techniques.

12. E. Is your firm familiar with the requirements of 33CSR1, the ground-water protection act, under-ground and above-ground storage tank rules?

X	**Yes**	Description and Number of projects: **Corporate Experience: Seventeen (17) Projects**
	No	**5 Example Projects Follow**

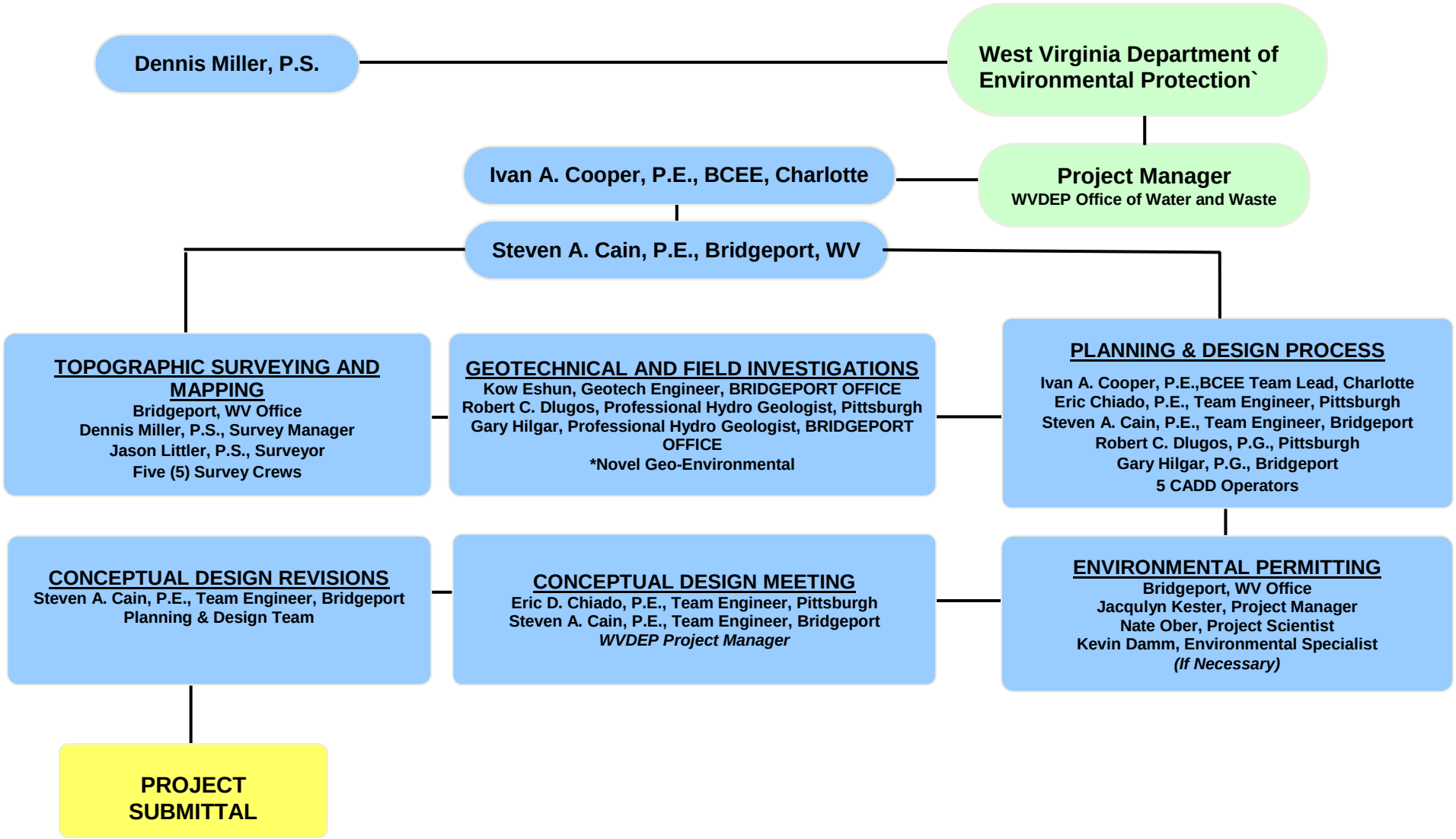
CORPORATE AND EMPLOYEE EXPERIENCE:

1. Chrin Brothers Sanitary Landfill	Evaluation of Groundwater Contamination: Perform periodic evaluation of groundwater chemistry from samples obtained at groundwater monitoring wells adjacent to unlined landfill containing Subtitle C landfills. Groundwater contaminated with volatile organic compounds (VOC). Site possesses pumping wells with treatment. Inter-well statistical analyses performed to evaluate VOC parameter concentrations in downgradient wells monitoring areas outside zone of pumping influence to wells inside zone of influence. Prepare report with laboratory results and conclusions, and submit to EPA Region 3.
2. Confidential Client - Radiologic Impacts	Evaluation of Groundwater Contamination: Performed subsurface characterization program to assess the potential radiological impacts to subsurface soil and groundwater. Developed drilling program with installation of groundwater monitoring wells to characterize hydrogeology. Used site's hydrogeologic conditions for subsequent design of a permanent groundwater monitoring program. Wells sampled and analyzed for several potential radiological contaminant source areas. Evaluation indicated no radiologic impact, but recommended continued sampling and analysis. The permanent monitoring well network and sampling program was accepted by regulatory agency.
3. Multiple Municipal Solid Waste Landfills	Groundwater Assessment for Permit Compliance: Perform quarterly evaluations of groundwater and surface water chemistry from samples obtained at approximately 20 municipal solid waste landfills. Analyses performed to demonstrate compliance with permit limits set for groundwater quality at each landfill. Analyses include inter-well and/or intra-well statistical analysis of parameter concentrations, comparison to maximum abatement trigger levels, preparation of stiff diagrams and tri-linear diagrams. Prepare and submit quarterly reports describing results of analyses to regulatory agencies. Coordinate communication with regulators and prepare alternative contaminant source demonstrations as appropriate.
4. Dauphin Meadows Landfill	Evaluation of Groundwater Contamination: Routine quarterly groundwater monitoring indicated presence of a specific VOC in groundwater at one monitoring well. Performed evaluation of VOC detected in this well relative to historic data for the impacted well and other wells in the vicinity. Review suggested source of VOC was not the landfill. Conducted evaluation of aerial maps and site visit to determine possible alternative sources of VOC. Identified off-site junk yard as potential source. Sampled surface water flowing off the junk yard property onto landfill property, analysis showed VOC of interest was present in surface water. Prepared report, provided alternative source for VOC, recommended regulatory agency investigation of neighboring property, accepted by agency.
5. Montour Basin 1	Evaluation of Groundwater Contamination: Prepared Hydrogeologic and Risk Assessment Work Plan for investigating impact of CCR basin on groundwater beneath and adjacent to basin. Installed numerous piezometers with groundwater sampling. Prepared groundwater flow model and performed receptor evaluation for human health risk assessment. Data was compared to maximum contaminant levels, and medium specific concentration for inorganic substances. Evaluation indicated several constituents of interest were present in groundwater and basin identified as potential source. Based on results CEC recommended an abatement/closure option analysis be developed.

12. F.	Is your firm experienced in solid waste landfill closure cost estimating?
X Yes	Description and Number of Projects: **Corporate Experience: Thirteen (13) Projects**
No	**5 Example Projects Follow**

CORPORATE AND EMPLOYEE EXPERIENCE:	
1. Riders Site No. 4 Closure	Closure Cost Estimate: Prepared quantity takeoffs from construction drawings for a 9-acre landfill closure. Developed cost estimates for bulk excavation; grading and compaction of subgrade; fine grading of final cover soil; supplying and installing nonwoven geotextile, geomembrane and drainage composite; supply and placement of fertilizer, seed and mulch; supplying and installing rock rip-rap, and surveying.
2. Harmony Landfill Closure	Bonding Cost Estimate: Developed cost estimates for a 20-acre landfill closure, to include: supplying and installing temporary erosion/sediment controls, bulk excavation of borrow area; loading and transport of structural fill soil; grading and compaction of subgrade; fine grading of final cover soil; supplying and installing nonwoven geotextile, geomembrane and drainage composite; drilling of landfill gas extraction wells, supplying and installing gas well piping, annular space rock and bentonite seals; supply and placement of fertilizer, seed and mulch; supplying and installing rock rip-rap, and surveying.
3. HCRL Phase 2 LFG CCS Installation	Closure Cost Estimate: Prepared cost estimates for the second phase of a landfill gas collection and control system installation associated with a 5-acre landfill closure. Estimates prepared for drilling of landfill gas extraction wells; supplying and installing gas well piping, annular space rock and bentonite seals; supplying and installing wellheads; supplying and installing edge drain; supplying and installing gas condensate knockout manhole; and supplying and installing road crossing header pipes.
4. Yukon Impoundment No. 6 Closure	Bonding Cost Estimate: Developed cost estimates for a 16-acre landfill closure, to include: supplying and installing temporary erosion/sediment controls, bulk excavation of borrow area; loading and transport of soil; grading and compaction of cap support layer; fine grading of final cover soil; supplying and installing nonwoven geotextile, geomembrane and drainage composite; supply and placement of fertilizer, seed and mulch; and surveying. Developed cost estimates for long-term monitoring and maintenance of closed facility, to include: groundwater and surface water sampling, analysis and reporting; leachate collection and treatment; maintenance and repair of cap system; and maintenance of site access roads and security features.
5. Newton County Landfill, Cap System Replacement	Replacement Cost Estimate: Developed cost estimates for replacing a closure cap system over an approximate 20-acre area experiencing excessive settlement. Developed cost estimates for supplying and installing temporary erosion/sediment controls; removing existing final cover soil and compacted clay layer; removing existing geosynthetic components, installing trench drains beneath cap; relocating landfill gas piping, placing and compacting new compacted clay layer; supplying and installing geomembrane and drainage composite; placing and grading final cover soil; supplying and installing prefabricated downchute channels; and surveying

WORK FLOW CHART WITH KEY PERSONNEL



*Drilling Sub-consultant (if Required)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	**YEARS OF EXPERIENCE - 21**		
Cooper, Ivan A. ,P.E.;BCEE	**YEARS OF EOI RELATED DESIGN EXPERIENCE:** 42	**YEARS OF (type) EXPERIENCE:**	**YEARS OF CONST. QUALITY ASSURANCE EXPERIENCE:** 30

Brief Explanation of Responsibilities: TEAM LEADER, Mr. Cooper is the National Practice Leader for Water and Wastewater. He oversees environmental consulting activities in landfill leachate, municipal and industrial water and wastewater, power, regulatory compliance issues. He has detailed experience in wastewater permitting, treatability, preliminary and detailed studies and design, construction observation, operation and maintenance manuals, start-up, and operational assistance for municipal and industrial wastewater treatment facilities. Mr. Cooper has detailed biological and physical chemical treatment experience, including both aerobic and anaerobic digestion of residuals, including gas collection, purification, and CHP (Combined Heat and Power projects) . He prepared technical manuals for US EPA Technology Transfer program in Alternative Collection and Wastewater Treatment. He delivered over 50 seminars for US EPA on wastewater treatment issues. He testified in environmental litigations, including residuals and sludge management, domestic wastewater reuse, metals in public water supplies and corrosion in municipal systems. With over 43 years of technical and management experience, he has evaluated sites, performed and reviewed historical and cost evaluations for over 100 landfills and National Priority List (NPL) Superfund sites and has conducted the preliminary and detailed design of over 100 leachate, industrial, and municipal waste treatment systems.

Education (Degree, Year, Specialization): B.S. Civil Engineering - Union College - 1971; M.S. in Environmental Engineering – Northwestern University - 1975

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:	**Registration (Type, Year, State):**
American Academy of Environmental Engineers · American Water Works Association - National · NC AWWA WEA · Solid Waste Association of North America · Water Environment Federation	P.E., West Virginia 15537 P.E., Pennsylvania PE062629 P.E., Georgia, PE024813 P.E., Tennessee 91505 P.E., South Carolina, 13489 P.E., North Carolina, 16562 P.E., Florida, 46243 P.E., New Jersey, 24GEO3810100

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	**YEARS OF EXPERIENCE - 21**		
Chiado Eric D. ,P.E.	**YEARS OF EOI RELATED DESIGN EXPERIENCE:** 21	**YEARS OF (type) EXPERIENCE:**	**YEARS OF CONST. QUALITY ASSURANCE EXPERIENCE:** 21

Brief Explanation of Responsibilities: TEAM LEADER, Designer and assistant project manager. Mr. Chiado is a Vice President and a professional engineer with CEC who has 26 years of experience in solid waste engineering. Mr. Chiado is CEC's Waste Practice Lead, responsible for the technical career development of approximately 75 people within the company, and for enhancing and promoting the quality of CEC's work products. He has extensive engineering and management experience associated with the design, permitting, and construction of municipal and residual waste disposal and transfer facilities. He has provided comprehensive design, permitting, and management services to the waste industry to include preparing detailed landfill grading/filling plans and details, static and seismic analyses and design of landfill liner/cap systems, leachate collection, transmission, storage and pumping systems, gas extraction and destruction/utilization systems, and sediment and stormwater management systems. Mr. Chiado has also prepared numerous closure and post-closure plans for these facilities, to include developing cost estimates for closure, operation, and maintenance of these facilities.

Education (Degree, Year, Specialization): B.S. Civil Engineering - West Virginia University - 1986; M.S. in Civil Engineering - West Virginia University - 1989

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:	**Registration (Type, Year, State):** P.E., West Virginia 020256, Exp 12/31/16 P.E., Pennsylvania PE044972E, 9/30/17 P.E., Indiana PE11500065, 7/31/16 P.E. Tennessee 00110581, 4/30/16 P.E. Maryland 21653, 7/15/17 P.E. Kentucky 26652, 6/30/17

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	**YEARS OF EXPERIENCE: 22**		
Cain, Steven A., P.E.	**YEARS OF EOI RELATED DESIGN EXPERIENCE:** 0	**YEARS OF (type) EXPERIENCE:**	**YEARS OF CONST. QUALITY ASSURANCE EXPERIENCE:** 21

Brief Explanation of Responsibilities: Mr. Cain, a professional engineer with CEC, has more than 22 years of experience in civil engineering design and project management. Mr. Cain's experience in civil engineering design encompasses many aspects of civil engineering design including land surveying, mapping, site development, sanitary sewer system design, storm sewer system design, potable water distribution system design and hydraulic modeling. Additionally, Mr. Cain also has experience in water treatment system design and rehabilitation as well as wastewater treatment design. Mr. Cain has also spent a large part of his career in managing projects from conception to completion. As a project manager Mr. Cain has assisted clients in identifying potential project needs, assisting the client in securing project funds, performed and directed detail design, and participated in and managed construction activities.

Education (Degree, Year, Specialization): B.S. Civil Engineering Technology, Fairmont State College, 1992

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:	**Registration (Type, Year, State):**
American Society of Highway Engineers, Municipal Water Quality Association	Registered Professional Engineer, 2002, West Virginia Registered Professional Engineer, 2001, Pennsylvania Registered Professional Engineer, 2006, Maryland

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	**YEARS OF EXPERIENCE**	
Hilgar, Gary M., P.G., C.P.G	**YEARS OF EOI RELATED DESIGN EXPERIENCE:** 37	**YEARS OF RELATED DESIGN EXPERIENCE:** 37

Brief Explanation of Responsibilities: PROJECT GEOLOGIST – Responsibilities include field supervision of drilling, surface and groundwater sampling, groundwater investigation and reporting

Mr. Hilgar primary responsibilities have included development, implementation, management, and performance of environmental and hydrogeological projects and environmental/hydrogeological components of engineering and multi-disciplinary projects. His technical work has encompassed assessment of the Probable Hydrolgic Consequences (PHC) of mining; support work in the preparation of coal mine permit applications and landfill closurres; Phase I/II Environmental Site Assessments; stream delineation studies; soil and groundwater assessments; vegetation productivity assessments; asbestos inspections; aquifer testing; coal resource evaluation; environmental impact evaluations; spill prevention, control and countermeasures (SPCC) plans; and pre-drill water supply inventories for oil/gas well sites. Mr. Hilgar has performed groundwater contamination investigations, hydrologic and soil contamination studies, leachate fate investigations, hydrologic investigations for proposed landfill sites, environmental impacts of fly ash disposal areas, site assessments on superfund sites, Phase I and II on brownfield sites, high-capacity industrial well investigations, aquifer yield investigations, brine disposal groundwater investigations, aquifer testing and sampling, acid mine drainage investigations and mitigation alternatives, mining effects on streams and groundwater investigations, monitoring well installation and abandonment, vegetative productivity studies, constructed wetland mitigation inspections, jurisdictional stream delineations, ground-penetrating radar investigations, and NEPA feasibility studies.

Education (Degree, Year, Specialization):
West Virginia University, B.S. Geology
Slippery Rock University, M.S. Geology
MSHA – Part 46 24-Hour Training
OSHA – HAZWOPR Refresher
OSHA – 10-Hour Construction Training

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:	**Registrations:**
American Institute of Professional Geologists National Groundwater Association Pennsylvania Council of Professional Geologists	LRS, West Virginia · P.G., Kentucky · P.G., Pennsylvania · P.G., Tennessee · Certified Professional Geologist, C.P.G. · Certified Monitoring Well Driller, WV/CMWD · Licensed Asbestos Inspector, WVOEHS/LAI

13. **PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	**YEARS OF EXPERIENCE -**		
Dlugos, Robert, C.,P.G.	**YEARS OF EOI RELATED DESIGN EXPERIENCE:** 17	**YEARS OF (type) EXPERIENCE:**	**YEARS OF CONST. QUALITY ASSURANCE EXPERIENCE:** 19

Brief Explanation of Responsibilities: Brief Explanation of Responsibilities: PROJECT GEOLOGIST
Mr. Dlugos, a Project Manager with CEC, has 19 years of experience in the environmental industry. He has managed a diverse range of projects including site investigation/remediation, solid waste landfill characterization/permitting, Phase I and II environmental site assessments, and environmental compliance reviews. Mr. Dlugos has provided comprehensive environmental services to the waste industry including permitting, environmental compliance, alternative contaminant source demonstrations, and special waste handling plans.

Education (Degree, Year, Specialization): B.A in Earth Science - Harvard University – 1996 ; Doctor of Jurisprudence - Duquesne University - 2004

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:	**Registration (Type, Year, State):** P.G., Pennsylvania 003937, 9/30/17

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	**YEARS OF EXPERIENCE: 27**		
Miller, Dennis, E., P.S.	**YEARS OF EOI RELATED DESIGN EXPERIENCE:** 13	**YEARS OF (type) EXPERIENCE:**	**YEARS OF CONST. QUALITY ASSURANCE EXPERIENCE:** 20

Brief Explanation of Responsibilities: Survey Manager – ALL FIELD RELATED WORK, including field survey of topographic and planimetric project information. Generate or supplement mapping for the Project area. Designer - AutoCAD, SurvCAD, and Haestads Operator. Specification Writer, Calculation Brief, Bid Estimate, Microsoft Word and Excel Operator.

WVDEP Experience: S&S Landfill, Clarksburg, WV; Norton Highwall #1; Tub Run Highwall and Refuse Phase I and II; Greenbrier Hollow Refuse; Pageton (Lambert) Portals; Birds Creek Number 4; Bergoo Waterline Extension Feasibility Study, I.D. No. 351; Lewis County EDA Waterline Extension Feasibility Study, I. D. No. 374; Scott Road and Findley Road Waterline Extension Feasibility Study, I.D. No. 356; WVDEP North Mapping Contract; WVDEP South Mapping Contract; Church Creek/Manown Highwall; Racine (Bradshaw) Portals; Hampton Number Four Maintenance; Howesville Sites, Sandy Run Highwall and Portals; Laurel Valley (Daniels) Landslide; Price Hill Airshaft/buildings; Weaver Portals and Highwall, Phase I and II; Old Bridgeport Hill Mine Drainage, Phase II; Nixon Run AMD; Arlington (Cox) Drainage; Fairmont (Hendrickson) Subsidence; Tunnelton (Dillsworth) Landslide; Sauls Run Strip and Landslide; Adaland Tipple and Refuse; Bismark Strip Drainage and Refuse; Brownton School Refuse; Burdock Highwall; Clarksburg (Ryder) Avenue Drainage; Conners Highwall; Francis Drainage and Refuse; Muddy Creek Tipple Complex; Pringle Drainage; Superior Hydraulics; Thomas (Euclid Avenue) Subsidence; Zebs Creek Highwall; Bridge Run, Camp Run, Philip Thorn Highwall, Rainelle AML, SCS Reclamation, Shegon Refuse Pile, Taylor Creek Tipple Complex, Tibbs Run Portal, Masontown.

Related WVDEP Design: SPEC REC: Glady Fork Mining Permit D-35-82; WVCA: Fisher-Mill Creek Bank Stabilization, Laurel Lake Sediment Removal, Kraut Creek H&H Investigation, Harmons Creek Bank Stabilization, Parchment Valley Bank Stabilization, North Fork Hughes River Bank Stabilization, Spencer Flood Plain Improvement Study, Logan County Flood Plain Improvement Project. WV Bond Forfeiture Program (438 sites), various waste permits for Corridor H (15 permits), Clarksburg U.S. Postal Facility, Grant Town Power Plant, U.S. Route 19 Bridge Layout, Salem Bridge Layout, Webster Bridge Layout, Corridor H (4 Sections), Project Impact Bench Marks, numerous property and topographic mapping projects.

Education (Degree, Year, Specialization): A.S., 1989, Surveying

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:	**Registration (Type, Year, State):**
West Virginia Contractor's Association West Virginia Association of Land Surveyors West Virginia Associated Builders Upshur County Chamber of Commerce	Registered Professional Surveyor, 1994, West Virginia

13. **PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	**YEARS OF EXPERIENCE: 12**		
Littler, Jason, D., P.S.	**YEARS OF EOI RELATED DESIGN EXPERIENCE:** 5	**YEARS OF (type) EXPERIENCE:**	**YEARS OF CONST. QUALITY ASSURANCE EXPERIENCE:** 0

Brief Explanation of Responsibilities: Survey Manager – **ALL FIELD RELATED WORK,** including field survey of topographic and planimetric project information. Generate or supplement mapping for the Project area. Designer - AutoCAD, SurvCAD, and Haestads Operator. Specification Writer, Calculation Brief, Bid Estimate, Microsoft Word and Excel Operator.

WVDEP Experience: Camden (Hartley) Dangerous Landslide; Shinns Run Portals; Special Rec. Multiple Projects; Norton Highwall #1; Tub Run Highwall and Refuse Phase I and II; Greenbrier Hollow Refuse; Pageton (Lambert) Portals; Birds Creek Number 4; Bergoo Waterline Extension Feasibility Study, I.D. No. 351; Lewis County EDA Waterline Extension Feasibility Study, I. D. No. 374; Scott Road and Findley Road Waterline Extension Feasibility Study, I.D. No. 356; WVDEP North Mapping Contract; WVDEP South Mapping Contract; Church Creek/Manown Highwall; Racine (Bradshaw) Portals; Hampton Number Four Maintenance; Howesville Sites, Sandy Run Highwall and Portals; Laurel Valley (Daniels) Landslide; Price Hill Airshaft/buildings; Weaver Portals and Highwall, Phase I and II; Old Bridgeport Hill Mine Drainage, Phase II; Nixon Run AMD; Arlington (Cox) Drainage; Fairmont (Hendrickson) Subsidence; Tunnelton (Dillsworth) Landslide; Sauls Run Strip and Landslide; Adaland Tipple and Refuse; Bismark Strip Drainage and Refuse; Brownton School Refuse; Burdock Highwall; Clarksburg (Ryder) Avenue Drainage; Conners Highwall; Francis Drainage and Refuse; Muddy Creek Tipple Complex; Pringle Drainage; Superior Hydraulics; Thomas (Euclid Avenue) Subsidence; Zebs Creek Highwall; Bridge Run, Camp Run, Philip Thorn Highwall, Rainelle AML, SCS Reclamation, Shegon Refuse Pile, Taylor Creek Tipple Complex, Tibbs Run Portal, Masontown.

Related WVDEP Design: SPEC REC: Glady Fork Mining Permit D-35-82; WVCA: Fisher-Mill Creek Bank Stabilization, Laurel Lake Sediment Removal, Kraut Creek H&H Investigation, Harmons Creek Bank Stabilization, Parchment Valley Bank Stabilization, North Fork Hughes River Bank Stabilization, Spencer Flood Plain Improvement Study, Logan County Flood Plain Improvement Project, various waste permits for Corridor H (15 permits), Clarksburg U.S. Postal Facility, Grant Town Power Plant, U.S. Route 19 Bridge Layout, Salem Bridge Layout, Webster Bridge Layout, Corridor H (4 Sections), Project Impact Bench Marks, numerous property and topographic mapping projects.

Education (Degree, Year, Specialization): B.S., 1996, Engineering Technology/Surveying

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:	**Registration (Type, Year, State):** Registered Professional Surveyor, 2006, West Virginia

13. **PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	**YEARS OF EXPERIENCE: 34**		
Calkins, Randolph, M., P.S.	**YEARS OF EOI RELATED DESIGN EXPERIENCE:** 0	**YEARS OF (type) EXPERIENCE:**	**YEARS OF CONST. QUALITY ASSURANCE EXPERIENCE:** 20

Brief Explanation of Responsibilities: Project Advisor/Designer - AutoCAD, SurvCAD, and Haestads Operator. Specification Writer, Calculation Brief, Bid Estimate, Microsoft Word and Excel Operator.

WVDEP experience: *PROJECTS COMPLETED* – Camden (Hartley) Dangerous Landslide; Shinns Run Portals; Special Rec. Multiple Projects; Cadd Services Open-End Contract; Norton Highwall #1; Tub Run Highwall and Refuse Phase I and II; Greenbrier Hollow Refuse; Pageton (Lambert) Portals; Birds Creek Number 4; Church Creek/Manown Highwall; Racine (Bradshaw) Portals; Hampton Number Four Maintenance; Howesville Sites, Sandy Run Highwall and Portals; Wilsie-Rosedale Waterline Extension Feasibility Study – I.D. No. 324; Laurel Valley (Daniels) Landslide; Price Hill Airshaft/Buildings; Weaver Portals and Highwall, Phase I and II; Old Bridgeport Hill Mine Drainage, Phase II; Nixon Run AMD; Arlington (Cox) Drainage; Fairmont (Hendrickson) Subsidence; Tunnelton (Dillsworth) Landslide; Sauls Run Strip and Landslide; Taylor Waterline Extension Feasibility Study-I.D. No. 309; Poplar Ridge Waterline Extension Feasibility Study-I.D. No. 298; Summit Park Waterline Extension Feasibility Study-I.D. No. 288: Hodgesville PSD Waterline Extension Feasibility Study-I.D. No. 275; McElwain Waterline Feasibility Study-I.D. No. 271; Adaland Tipple and Refuse; Bismark Strip Drainage and Refuse; Brownton School Refuse; Burdock Highwall; Clarksburg (Ryder) Avenue Drainage; Conners Highwall; Francis Drainage and Refuse; Muddy Creek Tipple Complex; Pringle Drainage; Superior Hydraulics; Thomas (Euclid Avenue) Subsidence; Zebs Creek Highwall; *PRELIMINARY DESIGN WORK* – Amigo Smokeless Refuse; Austin Highwall; Slab Fork Mine Dump.

Other WVDEP Design Experience: Private Client – Deep Mine Application; SPEC REC: Glady Fork Mining Permit D-35-82; WVCA: Fisher-Mill Creek Bank Stabilization, Laurel Lake Sediment Removal, Harmons Creek Bank Stabilization, Parchment Valley Bank Stabilization, North Fork Hughes River Bank Stabilization; WV Small Operators Assistance Program (31 applications), Maryland Small Operators Assistance Program (1 application), WV Bond Forfeiture Program (438 sites), various waste permits for Corridor H (15 permits), Grafton Coal Company (12 years of experience with surface and deep mines)

Education (Degree, Year, Specialization):
A.S. Surveying Technology, 1970, Surveying
Level One Natural Stream Design, September 2002
Level Two Natural Stream Design, May 2003
401 / 404 Permit Training, WVDOH, January 2003

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:	**Registration (Type, Year, State):** Registered Professional Surveyor, 1979, West Virginia

1998 Associated Builders and Contractors Award of Excellence for Zebs Creek Highwall AML Design.

13. **PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	**YEARS OF EXPERIENCE**		
	YEARS OF EOI RELATED DESIGN EXPERIENCE:	**YEARS OF RELATED CADD DESIGN EXPERIENCE:**	**YEARS OF CONSTRUCTION PLAN PRODUCTION EXPERIENCE:**
5 CADD Operators	10	Varies	Varies

Brief Explanation of Responsibilities: CADD Draftsperson including generation of topographic mapping or supplementation of existing mapping, cross sections, detail sheets, tax map overlays, Project Manager or Staff Engineer design compilation. AutoCAD, SurvCAD, and Haestads Operator. Calculation Brief Details and Drawings, Microsoft Word and Excel Operator.

WVDEP experience: Camden (Hartley) Dangerous Landslide; Shinns Run Portals; Special Rec. Multiple Projects; CADD Services Contract, Norton Highwall #1; Tub Run Highwall and Refuse Phase I and II, Town of Newburg Waterline Extension Feasibility Study, I.D. No. 392; Webster County Point Mountain Waterline feasibility Study, I.D. No. 384; Greenbrier Hollow Refuse; Sauls Run (Carpenter) Landslide; Pageton (Lambert) Portals; WVDEP Mapping Contract - South Region (2001-2012); Birds Creek #4; Bergoo Waterline Extension Feasibility Study, I.D. No. 351; Lewis County EDA Waterline Extension Feasibility Study, I.D. No. 374; Scott Road and Findley Road Waterline Extension Feasibility Study, I.D. No. 356; Birds Creek Number 4; WVDEP Mapping Contract – South Region (2008-2011); WVDEP Mapping Contract – North Region (2008-2011); Church Creek/Manown Highwall; Racine (Bradshaw) Portals; Hampton Number Four Maintenance; Howesville Sites, Sandy Run Highwall and Portals; Wilsie-Rosedale Waterline Extesion Feasibility Study – I.D. No. 324; Laurel Valley (Daniels) Landslide; Price Hill Airshaft/Buildings; Weaver Portals and Highwall, Phase I and II; Old Bridgeport Hill Mine Drainage, Phase II; Nixon Run AMD; Arlington (Cox) Drainage; Fairmont (Hendrickson) Subsidence; Tunnelton (Dillsworth) Landslide; Sauls Run Strip and Landslide; Taylor Waterline Extension Feasibility Study-I.D. No. 309; Poplar Ridge Waterline Extension Feasibility Study-I.D. No. 298; Summit Park Waterline Extension Feasibility Study-I.D. No. 288: Hodgesville PSD Waterline Extension Feasibility Study-I.D. No. 275; McElwain Waterline Feasibility Study-I.D. No. 271; Bridge Run; Camp Run; Philip Thorn Highwall; Rainelle AML; SCS Reclamation; Shegon Refuse Pile; Taylor Creek Tipple Complex; Tibbs Run Portal; Masontown AML.

Related WVDEP Design: SPEC REC: Glady Fork Mining Permit D-35-82; WVCA: Fisher-Mill Creek Bank Stabilization, Laurel Lake Sediment Removal, Kraut Creek H&H Investigation, Harmons Creek Bank Stabilization, Parchment Valley Bank Stabilization, North Fork Hughes River Bank Stabilization, Spencer Flood Plain Improvement Study, Logan County Flood Plain Improvement Project. Various waste permits for Corridor H (15 permits), numerous topographic and property surveys, Pope Properties Waterline and Wastewater Extension, Nitro, WV

Education (Degree, Year, Specialization): CADD Operators – varies

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:	**Registration (Type, Year, State):** N/A

14.	**PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE SITE CHARACTERIZATION STUDY, LEACHATE MANAGEMENT AND CLOSURE CAP.**
35 Computer Workstations, Numerous HP, Kyocera and Toshiba Plotters and Printers	
Microsoft Office	
Microsoft Project Scheduling Software	
AutoCAD Version 2016	
Civil 3D Version 2015	
ESRI ArcView GIS (Version 3.2) and Mapping Software (Version 8.3)	
SLIDE (Version 6.0) Slope Stability Software	
HydroCAD - Hydrology and Hydraulic Software	
DumpSTAT - Landfill Groundwater Statistical Analysis Software	
Hydrologic Evaluation of Landfill Performance (Version 3.2) - Leachate Modeling Software	
LandGEM - Landfill Gas Emission Model Software	
MODFLOW-2000 - Groundwater Modeling Software	
1 Robotic Total Station; One (1) Survey Grade Scanner; and Four (4) Surveying Electronic Total Stations	
5 Survey Grade GPS Survey Instruments (complete with base and 2 rovers each)	
1 –UAV photogrammetry system	

15. CURRENT ACTIVITIES ON WHICH YOUR FIRM OR EMPLOYEES ARE THE DESIGNATED ENGINEER OF RECORD.				
PROJECT NAME , TYPE, AND LOCATION	**NAME AND ADDRESS OF OWNER**	**NATURE OF YOUR FIRM'S RESPONSIBILITY**	**ESTIMATED CONSTRUCTION COST**	**PERCENT COMPLETE**
AES Beaver Valley Ash Landfill, Landfill Closure, Burgettstown, PA	AES Beaver Valley, Inc. 394 Frankfort Road, Monaca, PA 15061 Mr. Jon Reimann	Closure plan for 40-acre coal flyash landfill. Design services include preparing a grading plan for closure and final cover system over a 40-acre area; evaluating alternatives for final cover system; upgrading of 2 sedimentation basins and 1 leachate impoundment; evaluating groundwater monitoring system to eliminate non-detect/minimal concentration parameters; preparing Engineer's cost estimate for all earthworks, geosynthetics, and piping associated with closure; and developing post-closure care monitoring and maintenance costs.	$1,000,000 Est.	Design 10% Constr. 0%
MAX Environmental, Inc., Yukon Landfill No. 6 Expansion, Yukon, PA	MAX Environmental, Inc., 233 MAX Lane, Yukon, PA 15698 Mr. Carl Spadaro	Closure plan for 16-acre industrial waste landfill. Design services include preparing a grading plan for closure and final cover system over a 16-acre area; performing a geotechnical subsurface investigation of in-place sludges and solid wastes; laboratory analysis to develop geotechnical properties; evaluating slope stability of in-place sludges and solid wastes; and preparing details for final cover system and perimeter leachate collection system. Engineer's cost estimate for all earthworks, geosynthetics, and revegetation associated with closure; and developing post-closure care monitoring and maintenance costs.	$2,500,000 Est.	Design 75% Constr. 0%
Waste Connections, Inc., Meadow Branch Landfill Expansion, Athens, TN	Waste Connections, Inc., 265 Brookview Center Way, Suite 205 Knoxville, TN 37919, Mr. Nelson Breeden, P.E.	Closure plan for 54-acre municipal solid waste landfill. Design services include conducting subsurface drilling program to develop hydrogeologic model beneath the landfill, preparing a grading plan for closure and final cover system over a 54-acre area; evaluating slope stability of wastes and liner/final cover systems; preparing details for final cover system; and preparing revegetation plan.	$5,000,000 Est.	Design 90% Constr. 0%
Southern Alleghenies Landfill, 2015 Cap, Landfill Closure, Davidsville, PA	Waste Management, Inc. 843 Miller Picking Road, Davidsville, PA 15928. Mr. Brian Stewart, P.E.	Construction Quality Assurance (CQA) services for construction of a 5-acre soil and geosynthetic cap system. Construction includes 8,000 cy of subgrade soil, 16,000 cy final cover soil, 220,000 square feet each of textured HDPE geomembrane, nonwoven geotextile, and double-sided drainage, and 7 acres of revegetation. composite. Services include observing soils to verify permitted thickness and gradation; proper operation of earthmoving equipment on cap; observing and documenting that deployment, seaming and testing of geosynthetic components are performed in accordance with CQA Plan requirements; preparing interim certification letters and final certification report to regulatory agency, and project management and invoicing	$550,000	Design 100% Constr. 90%

15. CURRENT ACTIVITIES ON WHICH YOUR FIRM OR EMPLOYEES ARE THE DESIGNATED ENGINEER OF RECORD.				
PROJECT NAME , TYPE, AND LOCATION	**NAME AND ADDRESS OF OWNER**	**NATURE OF YOUR FIRM'S RESPONSIBILITY**	**ESTIMATED CONSTRUCTION COST**	**PERCENT COMPLETE**
Evergreen Landfill, Stage 5 Closure, Landfill Closure, Homer City, PA	Waste Management, Inc. 1310 Luciusboro Road Blairsville, PA 15717. Mr. Brian Stewart, P.E.	Construction Quality Assurance (CQA) services for construction of a 4-acre soil and geosynthetic cap system. Construction includes 5,000 cy of subgrade soil, 10,000 cy final cover soil, 175,000 square feet each of textured HDPE geomembrane, nonwoven geotextile, and double-sided drainage composite. Services include observing soils to verify permitted thickness and gradation; proper operation of earthmoving equipment on cap; observing and documenting that deployment, seaming and testing of geosynthetic components are performed in accordance with CQA Plan requirements; preparing interim certification letters and final certification report to regulatory agency, and project management and invoicing	$400,000	Design 100% Constr. 10%
Laurel Highlands Landfill, Stage 8 Closure, Landfill Closure, Vintondale, PA	Waste Management, Inc. 260 Laurel Ridge Road, Johnstown, PA 15909. Mr. Brian Stewart, P.E.	Construction Quality Assurance (CQA) services for construction of a 7.5-acre soil and geosynthetic cap system. Construction includes 12,000 cy of subgrade soil, 24,000 cy final cover soil, 325,000 square feet each of textured HDPE geomembrane, nonwoven geotextile, and double-sided drainage composite. Services include observing soils to verify permitted thickness and gradation; proper operation of earthmoving equipment on cap; observing and documenting that deployment, seaming and testing of geosynthetic components are performed in accordance with CQA Plan requirements; preparing interim certification letters and final certification report to regulatory agency, and project management and invoicing	$800,000	Design 100% Constr. 0%
Shade Landfill, 2015 Landfill Gas Well Installation, Cairnbrook, PA	Montauk Energy Capital Foster Plaza 10, 5th Floor, Pittsburgh, PA 15220 Mr. Marshall Morris, P.E.	Construction Quality Assurance (CQA) services for installation of 10 landfill gas extraction wells and gas transmission pipe. Construction includes drilling 10 boreholes into waste, constructing gas extraction wells in the boreholes, and connecting new wells to existing landfill gas collection piping. Services include observing drilling to verify design depths are not exceeded; observing and documenting gas well construction to verify adherence to permitted design; observing and documenting air pressure testing of new sections of gas collection piping; preparing final certification report to regulatory agency, and project management and invoicing	$180,000	Design 100% Constr. 90%

15.	CURRENT ACTIVITIES ON WHICH YOUR FIRM OR EMPLOYEES ARE THE DESIGNATED ENGINEER OF RECORD.			
PROJECT NAME , TYPE, AND LOCATION	**NAME AND ADDRESS OF OWNER**	**NATURE OF YOUR FIRM'S RESPONSIBILITY**	**ESTIMATED CONSTRUCTION COST**	**PERCENT COMPLETE**
Southern Alleghenies Landfill, 2015 Landfill Gas Well Installation, Davidsville, PA	Montauk Energy Capital Foster Plaza 10, 5th Floor, Pittsburgh, PA 15220 Mr. Marshall Morris, P.E.	Construction Quality Assurance (CQA) services for installation of 9 landfill gas extraction wells and gas transmission pipe. Construction includes drilling 9 boreholes into waste, constructing gas extraction wells in the boreholes, and connecting new wells to existing landfill gas collection piping. Services include observing drilling to verify design depths are not exceeded; observing and documenting gas well construction to verify adherence to permitted design; observing and documenting air pressure testing of new sections of gas collection piping; preparing final certification report to regulatory agency, and project management and invoicing	$162,000	Design 100% Constr. 5%
Laurel Highlands Landfill, 2015 Landfill Gas Well Installation, Homer City, PA	Montauk Energy Capital Foster Plaza 10, 5th Floor, Pittsburgh, PA 15220 Mr. Marshall Morris, P.E.	Construction Quality Assurance (CQA) services for installation of 10 landfill gas extraction wells and gas transmission pipe. Construction includes drilling 9 boreholes into waste, constructing gas extraction wells in the boreholes, and connecting new wells to existing landfill gas collection piping. Services include observing drilling to verify design depths are not exceeded; observing and documenting gas well construction to verify adherence to permitted design; observing and documenting air pressure testing of new sections of gas collection piping; preparing final certification report to regulatory agency, and project management and invoicing	$180,000	Design 100% Constr. 0%

16. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS SERVING AS A SUB-CONSULTANT TO OTHERS.					
PROJECT NAME , TYPE, AND LOCATION	**NATURE OF YOUR FIRM'S RESPONSIBILITY**	**NAME AND ADDRESS OF OWNER**	**ESTIMATED COMPLETION DATE**	**ESTIMATED CONSTRUCTION COST**	
				ENTIRE PROJECT	**YOUR FIRM'S RESPONSIBILITY**

17. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM OR EMPLOYEES WERE DESIGNATED THE ENGINEER OF RECORD.

PROJECT NAME & TYPE	LOCATION	NAME & ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
Hopkins County Regional Landfill Phase 2 Final Cover Landfill Gas System Construction Documents, Athens, KY	Athens, KY	Waste Connections, Inc., 265 Brookview Center Way, Suite 205 Knoxville, TN 37919, Mr. Nelson Breeden, P.E.	$150,000	2014	Yes
Sycamore Landfill, Phase B Construction Documents, Hurricane, WV	Hurricane, WV	Republic Services, Inc. 2157 Highway 151 Frankfort, KY 40601, Mr. Bill Chlebowy, P.E.	$480,000	2013	Yes
Southern Alleghenies Landfill, 2013 Final Cover Landfill Gas System, Davidsville, PA	Davidsville, PA	Waste Management, Inc. 843 Miller Picking Road, Davidsville, PA 15928. Mr. Brian Stewart, P.E.	$75,000	2013	Yes
MAX Environmental, Inc., Yukon Impoundment Nos. 1-3 Phase 2 Closure, Yukon, PA	Yukon, PA	MAX Environmental, Inc., 233 MAX Lane, Yukon, PA 15698 Mr. Carl Spadaro	$450,000	2013	Yes
Laurel Highlands Landfill, 2013 Final Cover Landfill Gas System, Vintondale, PA	Vintondale, PA	Waste Management, Inc. 260 Laurel Ridge Road, Johnstown, PA 15909. Mr. Brian Stewart, P.E.	$200,000	2013	Yes
Laurel Highlands Landfill, Stage 7 Closure, Landfill Closure, Vintondale, PA	Vintondale, PA	Waste Management, Inc. 260 Laurel Ridge Road, Johnstown, PA 15909. Mr. Brian Stewart, P.E.	$400,000	2012	Yes
MAX Environmental, Inc., Yukon Impoundments 1-2 Phase 1 Closure, Yukon, PA	Yukon, PA	MAX Environmental, Inc., 233 MAX Lane, Yukon, PA 15698 Mr. Carl Spadaro	$350,000	2013	Yes

18. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM HAS BEEN A SUB-CONTRACTOR TO OTHER FIRMS (INDICATE PHASE OF WORK FOR WHICH YOUR FIRM WAS RESPONSIBLE).

PROJECT NAME , TYPE, AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST OF YOUR FIRM'S PORTION	YEAR	CONTRUCTED (YES OR NO)	FIRM ASSOCIATED WITH
N/A					

19. *Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the WV Department of Environmental Protection.*

Civil & Environmental Consultants, Inc. (CEC) provides complete engineering services for the design, permitting and construction of landfill leachate storage tanks, with EOI-specific experience with respect to the following:

- **Site investigations to develop hydrogeologic and geotechnical subsurface information using traditional drilling and laboratory techniques, and also using geophysical investigation techniques as needed to evaluate unknown subsurface conditions.**
- **Ecologic evaluations of protected waters, flora and fauna, and design of mitigation plans.**
- **Ground-based surveying with ability to subcontract aerial photography for developing topographic maps as needed.**
- **Physical and chemical analyses of soil, groundwater and surface water samples, and waste.**
- **Designing final tank improvements or replacement, closure plans if necessary, erosion and sediment control features, stormwater drainage control structures, landfill gas collection and transmission controls, and revegetation.**
- **Obtaining regulatory agency permit approval of improvements or closure plans.**
- **Preparing final construction documents including grading plans, details, and construction quantity estimates.**
- **Leading and/or assisting with bid meetings, and selecting contractors.**
- **Providing construction management and construction quality assurance services for the construction or rehabilitation of leachate storage tanks, the installation of soil, stone and geosynthetic components of a final cover system (if applicable), installation of landfill gas collection systems (if applicable)**
- **Coordinating with regulatory agencies and preparing certification reports.**

CEC has successfully worked extensively with all of the sub-contractors listed in this EOI, to assist in characterizing site hydrogeologic conditions, obtaining soil and rock samples for laboratory testing, locating extents of waste outside lined areas; performing physical and chemical testing of soil, water and geosynthetics, and preparing topographic maps from aerial photographs.

In the past several years CEC personnel have completed leachate tank related designs for approximately 21 landfills; estimated construction costs for approximately one dozen closure projects; assessed and characterized hydrogeology, soil, bedrock and waste conditions at several dozen landfills; and provided construction quality assurance and certification services on approximately 45 closure projects.

The principals and associates proposed for this project are all registered professional engineers or geologists, and possess 10 to over 25 years of engineering and geology experience with the design, permitting, and construction of solid waste facilities, including closure projects. They are experienced working in a regulated environment, and routinely interact with local, state and federal environmental agencies and personnel. They are all members in good standing with recognized national and state professional organizations, are members and leaders of various technical committees in these organizations, and routinely participate in conferences and meetings to include making presentations on various issues related to waste management. As professional engineers and geologists they pursue continuing education through technical conferences, trade shows and webinars to stay current with solid waste technology.

20. The foregoing is a statement of facts.

The foregoing is a statement of facts.

Signature: 

TITLE: Vice President **DATE:** 11-18-15

Printed Name: **Dennis E. Miller, Vice President**

Rev. 04/14

State of West Virginia
VENDOR PREFERENCE CERTIFICATE

Certification and application* is hereby made for Preference in accordance with ***West Virginia Code***, §5A-3-37. (Does not apply to construction contracts). ***West Virginia Code***, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the ***West Virginia Code***. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Vendor Preference, if applicable.

1. **Application is made for 2.5% vendor preference for the reason checked:**
____ Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; **or,**
____ Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; **or,**
____ Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; **or,**

2. **Application is made for 2.5% vendor preference for the reason checked:**
✓ Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or,**

3. **Application is made for 2.5% vendor preference for the reason checked:**
____ Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or,**

4. **Application is made for 5% vendor preference for the reason checked:**
____ Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; **or,**

5. **Application is made for 3.5% vendor preference who is a veteran for the reason checked:**
____ Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; **or,**

6. **Application is made for 3.5% vendor preference who is a veteran for the reason checked:**
✓ Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

7. **Application is made for preference as a non-resident small, women- and minority-owned business, in accordance with *West Virginia Code* §5A-3-59 and *West Virginia Code of State Rules*.**
____ Bidder has been or expects to be approved prior to contract award by the Purchasing Division as a certified small, women- and minority-owned business.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: Civil & Environmental Consultants, Inc. **Signed:** Dennis E. Miller

Date: 11/18/2015 **Title:** Vice President

RFQ No. DEP 1600000011

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

MANDATE: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (*W. Va. Code* §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Civil & Environmental Consultants, Inc.

Authorized Signature: _____ Date: 11-17-2015

State of West Virginia

County of Harrison, to-wit:

Taken, subscribed, and sworn to before me this 17th day of November, 2015

My Commission expires May 10, 2017.

AFFIX SEAL HERE

OFFICIAL SEAL
NOTARY PUBLIC
State of West Virginia
SHERRY B. FLESHER
Genesis Partners
P. O. Box 1000
Bridgeport, WV 26330
My Commission Expires May 10, 2017

NOTARY PUBLIC Sherry B Flesher

CEC - RELATED PROJECT EXPERIENCE MATRIX

Facility	City/County	State	Owner/Operator	Site Selection Pre-Permitting Characterization	Merger & Acquisition Due Diligence Services	Hydrogeologic Site Investigations	Geotechnical Engineering	Landfill Design & Permitting	Transfer Station & MRF Design & Permitting	Environmental Monitoring/Compliance	Air Compliance & Permitting	Landfill Gas Management	Leachate Management and Treatment	LFGTE and Renewables	Operation & Maintenance of Control Systems	Waste Characterization	Solid Waste Facility Operations Audits and Consulting	Construction Services & CQA	Design/Build Services	Ecological Services	CCR and Industrial Waste Management	GIS and Database Management	Other (List the service(s), if you don't think they fit in the other categories	CEC Staff
Morris Farm Landfill		AL	Republic Services							X							X							WCM
Chilton County Landfill		AL	Republic Services							X														WCM
Pineview Landfill		AL	Republic Services							X														WCM
Sand valley Landfill		AL	Republic Services							X							X							WCM
Sand Valley LFGTE Power Station		AL	Energy Development, Inc.								X			X										WCM, WMH
Stone's Throw Landfill		AL	Advanced Disposal																					
Three Corners Landfill		AL	EC Waste		X						X	X			X		X							WCM
Timberlands Landfill		AL	Republic Services							X							X							
Veolia ES Cedar Hill		AL	Advanced Disposal																					
Veolia ES Star Ridge Landfill		AL	Advanced Disposal																					
Banksia Road Landfill		Australia								X		X	X				X							RFB
Brooklyn Landfill	Victoria	Australia								X		X	X				X							RFB
Carroll Road Landfill	Victoria	Australia								X		X	X				X							RFB
Clayton Road Landfill	Victoria	Australia								X		X	X				X							RFB
Deals Road Landfill	Victoria	Australia								X		X	X				X							RFB
Erskine Park Landfill	New South Wales	Australia								X		X	X	X			X							RFB, KRK
Fraser Road Landfill	Victoria	Australia							X	X		X	X				X							RFB
Henry Street Landfill	Victoria	Australia								X		X	X				X							RFB
Inkerman Landfill		Australia								X		X	X				X							RFB
Market Road Landfill	Victoria	Australia								X		X	X				X						Odor Control	RFB, KRK
New Chum Landfill	Queensland	Australia								X		X	X				X							RFB
Ryans Road Landfill	Victoria	Australia								X		X	X				X							RFB
Tullamarine Landfill	Victoria	Australia			X					X		X	X				X							RFB
Victory Road Landfill	Victoria	Australia								X		X	X				X							RFB
Southwest Regional Landfill		AZ				X				X		X					X							RFB
Pine Ridge Landfill		Bahamas																						
El Centro Landfill		CA			X																			
Place County Landfill		CA																						
Sonoma Landfill		CA			X																			
Sunshine Canyon Landfill		CA						X					X										Peer review of Odor	AWM, KRK
Delaware Recyclable Products, Inc. (DRPI) LF	New Castle	DE	Waste Management, Inc.			X	X	X									X							AWE
Cedar Trail Landfill		FL																						
Gator Landfill		FL			X																			
JEDS Landfill		FL																						
Broadhurst Landfill	Screven	GA	Republic Services			X	X			X							X			X				DSS, WCM
Eagle Point Landfill		GA	Advanced Disposal																					
East DeKalb Landfill		GA	Republic Services							X														WCM
Hickory Ridge		GA	Republic Services							X														WCM
Highway 78 Landfill		GA	Republic Services							X														WCM
Oak Grove Landfill		GA	Republic Services							X														WCM
Pine Grove Landfill		GA																						

Pine Ridge Landfill		GA	Republic Services							X													WCM
Richland Creek Landfill		GA	Republic Services							X													WCM
Savannah Regional	Chatham County	GA	Republic Services							X													DSS, WCM
Swift Creek Landfill		GA	Republic Services							X													WCM
Roberts Road Landfill		GA	Republic Services							X													WCM
Taylor County Landfill LFGTE Power Station		GA	Energy Development, Inc.								X			X									WCM, WMH
Veolia ES Pecan Row Landfill		GA	Advanced Disposal																				
Wolf Creek Landfill		GA	Advanced Disposal																				
34th Street Transfer Station	Chicago	IL	Lakeshore Recycling Systems		X																		
Bond County Landfill	Bond County	IL	Republic Services							X													DSS
Brickyard Landfill	Danville	IL	Republic Services					X		X													BRH, JEH
CID Landfill	Chicago	IL	Waste Management										X		X								KPO
Congress Development Company Landfill	Hillside	IL	Republic Services									X	X										BRH
Davis Junction Landfill	Davis Junction	IL	Republic Services									X											BRH
Environtech Landfill	Morris	IL	Republic Services			X	X	X		X		X	X				X	X					BRH, JEH
Harbor View Landfill	Chicago	IL	Land and Lakes Co.									X											BRH
Indian Creek Landfill	Hopedale	IL	PDC									X											KRK
Indian Creek No. 1 Landfill	Hopedale	IL	Lafarge-Holcim							X													BRH, DAB
LandComp Landfill	Ottawa	IL	Republic Services					X				X											BRH, JEH
Laraway Landfill	Joliet	IL	Waste Management										X										BRH, KPO
Lee County Landfill	Dixon	IL	Republic Services					X		X		X											BRH
Litchfield Landfill	Lichfield	IL	Republic Services																				
Livingston Landfill	Pontiac	IL	Republic Services			X		X	X	X	X	X	X	X	X		X	X					BRH, JEH
LRS California Avenue Transfer Station	Chicago	IL	Lakeshore Recycling Systems						X														JEH
Mallard Lake Landfill	Hanover Park	IL	Republic Services			X				X		X											BRH
Moen Transfer Station	Rockdale	IL	Environmental Recycling and Disposal Facility						X														JEH
Newport Landfill	Zion	IL	Lafarge-Holcim							X													BRH, DAB
Nine Mile Transfer Station	Virden	IL	Flowers Sanitation, Inc.						X														JEH
Orchard Hills Landfill	Davis Junction	IL	Advanced Disposal																				
Renwick Landfill	Lockport	IL	Lafarge-Holcim					X		X											X		BRH, DAB
River Bend Prairie Landfill	Dolton/Chicago	IL	Land and Lakes Co.					X		X	X	X											BRH, KRK, JEH
Sangamon Valley Landfill	Springfield	IL	Republic Services					X				X											KRK
Settler's Hill Landfill	Batavia	IL	Waste Management			X																	BRH
South Barrington Landfill	South Barrington	IL	Republic Services								X	X	X										BRH, KRK
Spoon Ridge Landfill	Fairview	IL	Republic Services				X	X		X			X					X						BRH, JEH
Streator Arean No. 2 Landfill	Streator	IL	Republic Services									X	X										BRH
Upper Rock Island County Landfill	Moline	IL	Republic Services				X	X			X												BRH, JEH
Valley View Landfill		IL																					
West Cook Transfer Station	Forest View	IL	Lakeshore Recycling Systems		X				X														JEH
Willow Ranch Landfill	Romeoville	IL	Land and Lakes Co.									X											BRH
Yeoman Creek Landfill	Waukegan	IL	Yeoman Creek Remediation Group (Republic)							X		X											BRH
Zion Landfill LFGTE Power Station	Zion	IL	Energy Development, Inc.								X			X									AMK, WMH
Zion Landfill - Site 1A and 1B	Zion	IL	Republic Services							X		X	X										BRH
Clarkco Sanitary Landfill		IN	Clarkco Landfill Company																				
County Line Landfill	Argos	IN	Republic Services					X					X							X				TRC
Gary Sanitary Landfill	Gary	IN	Mid-American Waste Systems																				
Newton County Landfill	Rensselaer	IN	Republic Services				X	X					X					X					EDC, BRH, KPO, KRK, JEH
ServAll Landfill		IN	Republic Services										X							X				TRC
Shelby County Landfill		IN	Shelby Sand & Gravel, Inc.																				
Twin Bridges Landfill		IN																					
Veolia ES Blackfoot Landfill		IN	Advanced Disposal																				
Veolia ES Hoosier Landfill		IN	Advanced Disposal																				

Wabash Valley Landfill	Wabash	IN	Republic Services							X	X		X				X							TRC, RFB
Big Run Landfill		KY	ESI				X																	EDC, AWE
Blue Ridge Landfill		KY																						
Blue Ridge Recycling & Disposal Facility		KY	Advanced Disposal			X				X							X							KLW
Epperson Landfill		KY																						
Hopkins County Regional Landfill		KY	Waste Connections, Inc.				X	X				X						X							EDC
Veolia ES Morehead Landfill		KY	Advanced Disposal																					
Baton Rouge Landfill		LA																						
Barre Landfill		MA						X																AMK, BG
Chicopee Landfill		MA																						
City of Brockton Landfill		MA																						
CMW Landfill		MA																						
Fall River Landfill		MA		X																				RFB
Fitchburg Landfill		MA																						
Martone Landfill		MA																						
Middleborough Landfill		MA																						
Peabody Ash Landfill		MA																						
South Hadley Landfill		MA																						
Taunton Landfill		MA																						
Brown Station Road Landfill	Marlboro	MD	Prince George's County, Maryland					X				X	X				X							AWE
Mountain View		MD	Waste Management, Inc.																					
Sandy Hill Landfill		MD																						
Arbor Hills Landfill		MI	Republic Services							X							X							RFB, KLW
C&C Landfill		MI																						
Veolia ES Arbor Hills Landfill		MI	Advanced Disposal			X		X		X														KLW
Vienna Junction Landfill	Erie/Monroe	MI	Republic Services							X														TRC
Rolling Hills Landfill		MN	Advanced Disposal																					
Backridge Landfill	LaGrange	MO	Republic Services							X														DSS
Bridgeton Landfill		MO				X	X	X		X	X	X	X		X				X					RFB, KRK
Butler County Landfill	Poplar Bluff	MO	Republic Services							X														DSS
Champ Landfill		MO										X												KRK
Lemons East Landfill	Dexter	MO	Republic Services							X			X											DSS
Maple Hill Landfill		MO	Advanced Disposal																					
Oak Ridge Landfill		MO																						
Redbird Landfill	Arnold	MO	BFI (Republic Services)							X														DSS
Big River Landfill		MS	Republic Services							X														WCM
Little Dixie Landfill		MS	Republic Services							X								X						WCM
Anson County Landfill		NC	Waste Connections, Inc.				X	X		X		X	X				X	X		X				SLB
East Carolina Landfill		NC																						
Foothills Landfill		NC																						
Greenway Waste of Apex	Apex	NC	Greenway Waste Solutions					X		X							X	X						SLB
Greenway Waste of Harrisburg	Harrisburg	NC	Greenway Waste Solutions					X	X	X							X	X						SLB
Greenway Waste of North Meck	Huntersville	NC	Greenway Waste Solutions					X		X	X	X					X	X						SLB
Old Brick Landfill	Badin	NC	Alcoa							X														NTB
Upper Piedmont Landfill		NC																						
Sandy Run Landfill		NE																						
Manchester Landfill		NH																						
North Country Environmental Landfill		NH																						
South Hadley Landfill, LLC		NH	Advanced Disposal																					
City of Fallon		NV									X	X					X							RFB
R. A. Dunn Landfill		NY																						
Apex Landfill		OH				X	X	X		X	X	X	X			X	X	X		X				JMD, TRC, KRK, AMK

Aber Road Landfill	Williamsburg	OH	Republic Services							X														TRC
Beech Hollow Landfill	Wellston	OH	Rumpke Waste, Inc.					X																TRC
Bigfoot Run Landfill	Morrow	OH	Republic Services			X		X		X		X												TRC, DSS, JMD
Bobmeyer Road Landfill	Fairfield	OH	Republic Services			X		X		X														TRC, DSS, JMD
Brown County Landfill	Georgetown	OH	Rumpke Waste, Inc.					X																TRC
Burger C&DD Landfill	Newton	OH	Burger Environmental, Inc.					X		X							X							JMD, TRC
Carbon Limestone Landfill	Lowellville	OH	Republic Services					X		X	X													TRC
Carbon Limestone LFGTE Power Station		OH	Energy Development, Inc.											X										WMH
Cardington Road Landfill Superfund Site	Dayton	OH	PRP Group																					
Carroll County Landfill	Carrollton	OH	Carroll County Commissioners			X	X	X		X							X	X		X				JMD, TRC
Celina Sanitary Landfill	Celina	OH	Republic Services			X		X	X	X														TRC
Center Township	Lisbon	OH	Columbiana County Commissioners					X		X														TRC
Central Waste Landfill	Alliance	OH	Transload America, Inc.					X		X														TRC
Cherokee Run Landfill	Bellefontaine	OH	Republic Services			X		X		X														TRC, JMD
City of Brooklyn Landfill	Brooklyn	OH	City of Brooklyn			X		X		X					X		X							JMD, TRC
City of Marion Landfill		OH				X				X							X							JMD
City of Middletown Landfill	Middleton	OH	City Of Middletown																					
City of St. Bernard Landfill	St. Bernard	OH	City Of St. Bernard					X		X	X													TRC
City of Wilmington Landfill	Wilmington	OH	City Of Wilmington																					
CLD Landfill	Salem	OH	Republic Services					X		X														JMD, TRC
Columbus Hauling and Transfer Station	Columbus	OH	Republic Services						X															TRC
Coshocton Landfill	Coshocton	OH	Waste Management, Inc.					X		X														TRC
County Environmental of Wyandot Landfill	Carey	OH	Allied Waste Industries, Inc.		X	X		X		X					X		X							TRC, JMD
Crawford County Landfill	Bucyrus	OH	Santek Environmental					X		X														TRC
Cuyahoga Regional Landfill	Solon	OH	Mid-American Waste Systems							X														TRC, JMD
Duck Creek Landfill	Marietta	OH	Republic Services			X				X		X												TRC, DSS, JMD
Erie County Landfill		OH	Erie County								X													TRC
E-Town C&DD Landfill	North Bend	OH	E-Town C&DD	X	X	X	X	X		X														JMD, TRC
Elk Run C&DD Landfill	Lisbon	OH	Elk Run Industries, LLC					X		X														TRC
Evergreen Landfill		OH	Waste Management, Inc.	X		X				X														KLW
Franklin County Sanitary Landfill	Grove City	OH	Solid Waste Authority of Central Ohio	X		X	X	X	X	X	X	X	X	X	X		X	X		X		X		JMD, TRC
Geneva Landfill	Geneva	OH	Waste Management, Inc.					X		X														TRC
Georgesville Road Transfer Station	Columbus	OH	Solid Waste Authority of Central Ohio						X															TRC
Georgetown Landfill		OH																						
Glenwillow Landfill	Glenwillow	OH	REpublic Services					X																TRC
Hafner C&DD Landfill	Cincinnati	OH	H. Hafner & Sons							X														TRC
Hardin County Landfill	Kenton	OH	Hardin County			X		X		X	X													TRC
Hardy Road Landfill	Akron	OH	Waste Management, Inc.																					
Harrison County Landfill	Cadiz	OH	Waste Management, Inc.							X														TRC
Hughes Road Landfill	Cincinnati	OH	Rumpke Waste, Inc.					X																TRC
Huron County Landfill		OH	Huron County							X														TRC
Jackson Pike Transfer Station	Columbus	OH	Solid Waste Authority of Central Ohio						X															TRC
JEHM Landfill	Bowling Green	OH	D&R Demlition		X	X		X		X					X									TRC, JMD
Kimble Sanitary Landfill	Dover	OH	Kimble Companies, Inc.					X		X														TRC, JMD
Lawrence County Transfer Station	Hanging Rock	OH	Rumpke Waste, Inc.						X															TRC
Liberty Environmental Storage Facility	Mercer Co.	OH	LESF C&DD	X		X			X	X														JMD, TRC
Lorain County Landfill	Oberlin	OH	Republic Services					X		X	X	X												TRC, KRK
Lorain County Regional Matls. Rec. Facility	Oberlin	OH	republic Services							X														TRC
Lorain I and Lorain II LFGTE Power Station	Oberlin	OH	Energy Development, Inc.								X			X										KRK, WMH
Lucas County C&D Landfill	Toledo/Lucas	OH	Republic Services							X														TRC
Mahoning Landfill		OH																						
Marion Landfill	Columbus	OH	Solid Waste Authority of Central Ohio					X		X														TRC

Marion Transfer Station	Marion	OH	Republic Services						X															TRC
Model Landfill (Phoenix Golf Course)	Grove City	OH	Solid Waste Authority of Central Ohio							X		X												JMD, TRC
Model Landfill Limestone LFGTE Power Station		OH	Energy Development, Inc.											X										WMH
Morse Road Transfer Station	Columbus	OH	Solid Waste Authority of Central Ohio						X															TRC
Mt. Eaton C&DD Landfill	Wayne Co.	OH	Norton Environmental, Inc.					X		X														TRC
Mt. Vernon Transfer Station	Mt. Vernon	OH	republic Services						X															TRC
Muskingum Landfill	Zanesville	OH	Republic Services			X				X		X												TRC, DSS
Muskingum Transfer Station	Zanesville	OH	Republic Services						X															TRC
Noble Road Landfill	Richland Co.	OH	Rumpke Waste, Inc.					X																TRC
Ottawa Landfill LFGTE Power Station		OH	Energy Development, Inc.								X			X										WCM
Pine Grove Landfill	Amanda	OH	Republic Services					X		X														TRC
Plygem Landfill	Columbus	OH	Plygem Landfill							X														TRC
Port Clinton Landfill	Port Clinton	OH	Republic Services			X		X		X														TRC
Reynolds Avenue Transfer Station	Columbus	OH	Republic Services						X															TRC
Richland County Landfill	Mansfield	OH	Richland County Comm. Ohio			X				X														JMD
Roberts C&DD Landfill	Newark	OH	Brenda Roberts							X														TRC
Rumpke Hughes Road Landfill		OH	Rumpke Waste, Inc.								X	X												AMK, RH
Salem Hauling Company	Salem	OH	Republic Services						X															TRC
Sandusky Hauling and Transfer Station	Sandusky	OH	Republic Services							X														TRC
Sheby County Hauling and Trasfer Station	Sidney	OH	Republic Services						X															TRC
Stickney/Tyler Landfills	Toledo/Lucas	OH	City of Toledo							X	X													TRC
Suburban Landfill	Glenford	OH	Waste Management, Inc.	X		X		X		X							X							TRC, KLW
Sunny Farms Landfill	Fostoria	OH	Tunnel Hill			X		X		X	X													TRC, JMD
Total Waste Logistics PA-OH C&DD LF	Neglev	OH	Total Waste Logistics					X	X	X														TRC
Total Waste Logistics LAS C&DD LF	Girard	OH	Total Waste Logistics					X	X	X														TRC
Tremont Sanitary Landfill	Tremont City	OH	Tremont Landfill Company					X		X	X													TRC
Tunnel Hill Landfill		OH																						
US Ceramic Tile Landfill	East Sparta	OH	US Ceramic Tile							X														TRC
Valleycrest Landfill Superfund Site	Dayton	OH	PRP Group																					
Van Wert Transfer Station	Van Wert	OH	Republic Services						X															TRC
Vance C&DD Landfill	Dayton	OH	Vance Landfill							X														TRC
Williams County Landfill,	Bryan	OH	Republic Services			X		X		X	X		X						X					TRC
Wyandot Landfill		OH																						
Xenia C&DD Landfill	Xenia	OH	Scott Filson							X														JMD
XXKem	Toledo/Lucas	OH	City of Toledo							X														TRC
Alliance Landfill	Taylor	PA	Waste Management, Inc.					X																AWE
Arden Landfill	Washington	PA	Waste Management, Inc.			X		X		X								X		X				EDC, RCD
Bulger Facility	Bulger	PA	MAX Environmental Technologies, Inc.					X										X						TDM
Chestnut Valley Landfill	Germantown	PA	Advanced Disposal					X		X	X	X	X					X						EMB
Chrin Brothers Sanitary Landfill	Easton	PA	Chrin Brothers, Inc.			X	X	X		X			X					X						EMB
Clarion Landfill		PA																						
Conestoga Landfill		PA																						
Cumberland County Landfill	Shippensburg	PA	Advanced Disposal																					
Dauphin Meadows Landfill	Millersburg	PA	Waste Management, Inc.			X		X				X	X					X						EDC
Deep Valley Landfill		PA	Waste Management, Inc.							X														RCD
Evergreen Landfill	Homer City	PA	Waste Management, Inc.							X		X	X					X						EDC, RCD, TDM
Greenridge Landfill	Scottdale	PA	Republic Services																					
Greentree Landfill	Brockport	PA	Advanced Disposal					X										X						EDC
GROWS North Landfill		PA	Waste Management, Inc.																					
Harmony Landfill	Westover	PA	Advanced Disposal	X		X	X	X				X	X							X				EDC, TDM
Imperial Landfill	Imperial	PA	Republic Services																					
J. J. Brunner Landfill	Zelienople	PA	J. J. Brunner	X		X		X																EDC

Kelly Run	Elizabeth	PA	Waste Management, Inc.					X		X		X						X						RCD, EDC
Lake View Landfill	Erie	PA	Waste Management, Inc.																					
Lanchester Landfill	Narvon	PA	Chester County Solid Waste Authority					X																EDC
Latrobe Landfill	Latrobe	PA	Allegheny Ludlum					X		X	X							X						EDC
Laurel Highlands Landfill	Vintondale	PA	Waste Management, Inc.					X		X		X	X	X				X						EDC, RCD, TDM
McKean County Landfill	Kane	PA	Casella Waste Systems					X					X					X						EDC
Modern Landfill		PA																						
Monroeville Landfill	Monroeville	PA	Waste Management, Inc.			X		X		X								X						EDC. RCD
Moretown Landfill, Inc.		PA	Advanced Disposal																					
Mostoller Landfill	Somerset	PA	Advanced Disposal																					
Mountain View Landfill	Letzburg	PA	Waste Management, Inc.					X																EDC
Northwest Sanitary Landfill	West Sunbury	PA	Waste Management, Inc.																					
Phoenix Resources Landfill	Wellsboro	PA	Waste Management, Inc.					X																EDC
Pine Grove Landfill		PA	Waste Management, Inc.																					
Route 356 Landfill	Freeport	PA	Allegheny Ludlum			X	X	X		X	X							X						EDC, TDM
Tervita Sanitary Landfill	Belle Vernon	PA	Tervita		X																			EDC, TDM
Seneca Landfill	Zelienople	PA	Vogel Disposal																					
Shade Landfill	Central City	PA	Waste Management, Inc.			X	X	X		X		X		X				X						EDC, RCD, TDM
South Hills Landfill	South Park Twp.	PA	Waste Management, Inc.					X		X		X						X						EDC, RCD, TDM, EMB
Southern Alleghenies	Davidsville	PA	Waste Management, Inc.	X		X	X	X		X		X		X				X		X				EDC, RCD, TDM, EMB
TRRF Landfill		PA	Waste Management, Inc.																					
Tullytown Landfill		PA	Waste Management, Inc.																					
Valley Landfill	Murrysville	PA	Waste Management, Inc.					X		X		X						X						EDC, RCD
Western Berks Comm Landfill & Recycling Center	Birdsboro	PA	Advanced Disposal																					
Western Berks Landfill	Birdsboro	PA	Advanced Disposal																					
WSI Sandy Run Landfill, Inc.		PA	Advanced Disposal																					
Yukon Facility	Yukon	PA	MAX Environmental Technologies, Inc.				X	X									X		X					TDM, EDC
El Coqui Landfill		PR		X								X												AMK, AJK
Mayagu z Landfill		PR		X																				WCM
Pe uelas Valley Landfill		PR		X																				WCM
Rhode island Resource Recovery Corporation Landfill		RI						X																AMK, WCG
Anderson Regional Landfill	Anderson County	SC	Waste Connections, Inc.					X		X		X					X	X						SLB
Highway 908 Landfill	Marion County	SC	908 C&D LLC							X								X						SLB
Marion County C&D Landfill	Marion County	SC	Greenway Waste Solutions					X		X								X						SLB
Mining Road Landfill	Lancaster County	SC								X								X						SLB
Northeast Landfill		SC																						
Wellford Landfill	Spartanburg County	SC						X		X	X	X	X				X	X	X	X			Solid Waste Master Plan	SLB
Advanced Disposal Oak Ridge Landfill		TN	Advanced Disposal																					
Bull Run Dry Fly Ash Disposal Facility		TN	TVA				X	X										X			X			WCM
Carter Valley Landfill		TN	Republic Services				X	X		X							X	X						WCM
Cedar Ridge Landfill		TN	Waste Management, Inc.										X											WCM
ECMof Ridgely, LLC		TN	ECM of Ridgely			X	X	X										X						WCM
EWS Camden		TN	EWS			X	X	X										X						WCM
Jackson-Madison Development Corp.		TN	Republic Services							X							X							WCM
Hickman County Landfill		TN	Hickman County							X														WCM
Humphreys County Landfill		TN	Humphreys County							X								X						WCM
Lincoln County Landfill		TN	Lincoln County							X														WCM
Marion County Landfill		TN	Marion County							X								X						WCM
Meadow Branch Landfill	Athens	TN	Waste Connections, Inc.			X		X				X		X				X						TDM, EDC
Middle Point Landfill		TN				X	X	X		X	X	X	X	X			X	X						AMK, RFB, WCM
North Shelby Landfill	Millington	TN	Republic Services							X							X							DSS, WCM
Robertson County Landfill		TN	Robertson County							X														WCM

South Shelby Landfill	Memphis	TN	Republic Services							X							X						DSS, WCM
Twin Oaks Landfill		TN	Republic Services							X													WCM
Williamson County Landfill		TN	Williamson County			X	X	X		X						X	X						WCM
Wilson County Landfill		TN	Wilson County							X													WCM
Arlington Landfill	Arlington	TX	Republic Services, Inc.										X										AWM
Blue Ridge Landfill	Fresno	TX	Republic Services, Inc.					X										X					AWM
C & T Landfill	Hidalgo	TX	Republic Services, Inc.					X															AWM
Camelot Landfill	Farmers Branch	TX	Republic Services, Inc.										X										AWM
City of Kerrville Landfill	Kerrville/Kerr	TX	Republic Services, Inc.					X									X						AWM
City of Kerrville Transfer Station	Kerrville/Kerr	TX	Republic Services, Inc.	X					X								X						AWM
City of Victoria	Victoria	TX	Republic Services, Inc.					X															AWM
CDC Landfill		TX																					
Charter Landfill	Odessa	TX	Republic Services, Inc.																			Oil and Gas Waste	AWM
Covel Landfill LFGTE Power Station		TX	Energy Development, Inc.											X									WMH
El Centro Landfill	Robstown	TX	Republic Services, Inc.					X									X						AWM
Galveston County Landfill	Galveston	TX	Republic Services, Inc.					X										X					AWM
Gulf Pines Landill		TX																					
Gulf West Landfill	Anhuac/Chambers	TX	Republic Services, Inc.					X					X				X	X					AWM
La Gloria Landfill	Mission/Hidalgo	TX	Republic Services, Inc.	X				X					X				X	X					AWM
Mesquite Creek Landfill	San Marcos	TX	Waste Management, Inc.																			Peer review of drainage	AWM
Rio Grande Valley Landfill	Donna/Hidalgo	TX	Republic Services, Inc.					X									X	X					AWM
Sunset Farms Landfill	Austin, Travis	TX	Republic Services, Inc.					X					X				X	X					AWM
Tessman Road Landfill	San Antonio/Bexar	TX	Republic Services, Inc.	X				X									X						AWM
Tessman Road Landfill LFGTE Power Station	San Antonio/Bexar	TX	Energy Development, Inc.											X									AWM, WMH
Williamson County Landfill	Hutto/Williamson	TX	Waste Management, Inc.																			Peer review of drainage	AWM
Zapata Landfill	Zapata	TX	Waste Connections, Inc.					X					X										AWM
Atlantic Landfill		VA																					
Moretown Landfill		VT																					
Cranberry Creek Landfill		WI	Advanced Disposal																				
Emerald Park Landfill		WI	Advanced Disposal																				
Glacier Ridge Landfill		WI	Advanced Disposal																				
Hickory Meadows Landfill		WI	Advanced Disposal																				
Mallard Ridge Landfill		WI	Advanced Disposal																				
Seven Mile Creek Landfill		WI	Advanced Disposal																				
Cranberry Creek Landfill		WI																					
Emerald Park Landfill		WI																					
Glacier Ridge Landfill		WI																					
Greidanus Landfill		WI																					
Hickory Meadows Landfill		WI																					
Kestrel Hawk Landfill		WI																					
Mallard Ridge Landfill		WI																					
Seven Mile Creek Landfill		WI																					
Tork Landfill		WI																					
Troy Area Landfill		WI																					
Valley Meadows Landfill		WI																					
Short Creek Landfill		WV	Republic Services													X							TDM, EDC
Sycamore Landfill		WV	Republic Services					X										X					EDC, TDM

STATEMENT OF
QUALIFICATIONS

Rethinking Waste®

everything from waste management to resource recovery

Professional Engineering and Consulting Services
for Comprehensive Solid Waste Management

Statement of Qualifications

CEC | HEADQUARTERS
333 BALDWIN ROAD
PITTSBURGH, PA 15205
P. 412.429.2324
www.cecinc.com

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Appendices

1.0 Firm Overview

Civil & Environmental Consultants, Inc. (CEC) is a company of professionals who provide comprehensive industry-focused consulting services that advance our clients' strategic business objectives. CEC is recognized for providing knowledge, innovative design solutions and integrated expertise in the primary practice areas of civil engineering, ecological sciences, environmental engineering and sciences, waste management and water resources.

Safety First — CEC believes that all accidents are preventable and is committed to creating an accident and incident free workplace for employees and subcontractors through training, safe work practices, and processes for assessing project hazards. CEC strives for safety excellence throughout our entire organization and holds employees and subcontractors accountable for the safe performance of their work. Safety is a key element of CEC's Strategic Plan and is represented by our Accident and Incident Free℠ program.

Industry Oriented — Multi-disciplined Industry Consulting Groups (ICGs) are derived from our primary practice areas to strategically focus on the business challenges and drivers of the manufacturing, mining, natural gas, power, public sector, real estate and solid waste industries. Each of these diverse teams of engineers, scientists and professionals is our conduit to the latest thinking and advancements in the industries we serve, allowing CEC to provide clients with concise, timely information and regulatory updates to facilitate informed decision-making.

Employee Owned — CEC's employee-owners are highly motivated by the link between our success and that of our clients. Our continuing growth reflects client confidence in the work of our employees, who are guided by three core business principles:

- Senior Leadership
- Integrated Services
- Personal Business Relationships

CEC OVERVIEW

CEC Corporate Headquarters
333 Baldwin Road
Pittsburgh, PA 15205
P: 800-365-2324
www.cecinc.com

FOUNDED: 1989

EMPLOYEES: 650+

LOCATIONS:

- *Austin, TX*
- *Boston, MA*
- *Bridgeport, WV*
- *Charlotte, NC*
- *Chicago, IL*
- *Cincinnati, OH*
- *Columbus, OH*
- *Detroit, MI*
- *Export, PA*
- *Indianapolis, IN*
- *Knoxville, TN*
- *Nashville, TN*
- *Philadelphia, PA*
- *Phoenix, AZ*
- *Pittsburgh, PA*
- *Sayre, PA*
- *Sevierville, TN*
- *St. Louis, MO*
- *Toledo, OH*

Multi-Disciplined — CEC is an expanding company with:

- Civil Engineers
- Geotechnical Engineers
- Environmental Engineers
- Forensic Engineers
- Sanitary Engineers
- Professional Geologists
- Hydrogeologists
- Hydrologists
- Ecologists
- Biologists
- Wetland Scientists
- Threatened & Endangered Species Experts
- Agronomist/Soil Scientists
- Certified Hazardous Materials Managers
- Cultural Resources Managers
- Archaeologists
- Construction Inspectors
- Environmental Technicians
- CAD Designers & Technicians
- Registered Land Surveyors
- Registered Landscape Architects
- GIS Analysts & Programmers

Firm Capabilities

CIVIL ENGINEERING

- Erosion & Sedimentation Control / NPDES Permitting Predevelopment Site Investigations
- GPS / GIS Services
- Landscape Architecture / Land Planning
- Geotechnical Engineering
- Site Grading / Earthwork Analysis
- Expert Witness Testimony
- Roadway Design and DOT Permitting
- Stormwater Management / BMP Design
- Utility Design
- Sustainability Planning / Design
- Construction Services
- Integrated Project Delivery
- Site Infrastructure Maintenance / Rehabilitation
- Topographic Surveys
- ALTA ACSM Land Title Surveys
- Boundary Retracement Surveys
- Horizontal & Vertical Control Surveys
- Volumetric Surveys
- Construction Surveys
- Oil and Gas Pipeline Surveys
- Highway R/W Surveys
- As-built Surveys
- LiDAR Surveys

ECOLOGICAL SCIENCES

- Wetlands and Waters Delineations
- Clean Water Act, Section 401/404 Permitting
- Wetland & Stream Impact Mitigation Design
- Ecosystem Restoration
- Wetland AMD Treatment
- Fish & Macroinvertebrate Surveys
- Bathymetric/Hydrographic Surveys
- Expert Witness Testimony
- Water Quality & Sediment Surveys
- Threatened & Endangered Species Surveys/ Wildlife Surveys
- Clean Water Act, 316 (a) & (b) Permitting
- Aquatic & Terrestrial Habitat Surveys
- Ecological Risk Assessment & Land Restoration
- Soil Science & Phytoremediation

ENVIRONMENTAL ENGINEERING AND SCIENCES

- Air Emissions Testing & Permitting
- Greenhouse Gas Reporting
- Air Dispersion Modeling
- Phase I & II Assessments
- Site Characterization
- Property Condition Assessments
- Risk Assessments
- Auditing & Compliance Plans
- RCRA/CERCLA
- Soil/Groundwater Remediation Systems
- Brownfield Redevelopment Services
- Hydrogeology & Groundwater Modeling
- Storm Water Sampling & Permitting
- NPDES Permitting Support
- Expert Witness Testimony
- Cultural Resource Management
- Architectural History (Above-ground) Resource Investigations
- Archaeological Investigations
- FERC Applications/Certification

WASTE MANAGEMENT

- Site Selection and Characterization
- Merger & Acquisition Due Diligence
- Hydrogeologic Site Investigations
- Geotechnical Engineering
- Landfill Design & Permitting
- Transfer Station & MRF Design & Permitting
- Environmental Monitoring/Compliance
- Air Compliance & Permitting
- Landfill Gas Management
- Leachate Management and Treatment
- Renewable Energy
- O & M of Control Systems
- Waste Characterization
- Solid Waste Facility Operations Audits and Consulting
- Construction Services
- Design/Build Services
- Ecological Services
- Coal Combustion Residual & Industrial Waste Management
- Expert Witness Testimony

WATER RESOURCES

- Stormwater BMP Design & Inspections
- Compliance Audits
- NPDES Permit Negotiation
- Watershed Planning & Restoration
- Flood Routing and FEMA Map Revisions
- TMDL Modeling & Monitoring
- Stream Assessments & Restoration
- Expert Witness Testimony
- Water Quality & Quantity Modeling
- Low Impact Development Design
- Erosion & Sediment Control Design and Inspection
- Water Quality BMP Testing
- Waste Water and Leachate Treatment
- Stormwater Piping & Culvert Inspections

Locations

ARIZONA

PHOENIX
11811 North Tatum Blvd., Suite 3057
Phoenix, AZ 85028
Toll Free: 877-231-2324

INDIANA

INDIANAPOLIS
530 E. Ohio Street, Suite G
Indianapolis, IN 46204
Toll Free: 877-746-0749

ILLINOIS

CHICAGO
555 Butterfield Road, Suite 300
Lombard, IL 60148
Toll Free: 877-963-6026

MASSACHUSETTS

BOSTON
31 Bellows Road
Raynham, MA 02767
Toll Free: 866-312-2024

MICHIGAN

DETROIT
44725 Grand River Avenue, Suite 104
Novi, MI 48375
Toll Free: 866-380-2324

MISSOURI

ST. LOUIS
4848 Park 370 Blvd., Suite F
Hazelwood, MO 63042
Toll Free: 866-250-3679

NORTH CAROLINA

CHARLOTTE
1900 Center Park Drive, Suite A
Charlotte, NC 28217
Toll Free: 855-859-9932

OHIO

CINCINNATI
5899 Montclair Blvd
Cincinnati, OH 45150
Toll Free: 800-759-5614

COLUMBUS
250 Old Wilson Bridge Road, Suite 250
Worthington, OH 43085
Toll Free: 888-598-6808

TOLEDO
4841 Monroe Street, Suite 103
Toledo, OH 43623
Toll Free: 855-274-2324

PENNSYLVANIA

EXPORT
4000 Triangle Lane, Suite 200
Export, PA 15632
Toll Free: 800-899-3610

PHILADELPHIA
370 East Maple Avenue, Suite 304
Langhorne, PA 19047
Toll Free: 888-267-7891

PITTSBURGH
333 Baldwin Road
Pittsburgh, PA 15205
Toll Free: 800-365-2324

SAYRE
703 S. Elmer Avenue, Suite 125
Sayre, PA 18840
Toll Free: 877-389-1852

TENNESSEE

KNOXVILLE
308 Cates Street
Maryville, TN 37801
Phone: 865-977-9997

NASHVILLE
325 Seaboard Lane, Suite 170
Franklin, TN 37067
Toll Free: 800-763-2326

SEVIERVILLE
229 Prince Street
Sevierville, TN 37862
Phone: 865-774-7771

TEXAS

AUSTIN
206 Wild Basin Road
Bldg. A, Suite 240
Austin, TX 78746
Toll Free: 855-365-2324

WEST VIRGINIA

BRIDGEPORT
600 Market Place, Suite 200
Bridgeport, WV 26330
Toll Free: 855-488-9539

2.0 Resources for the Solid Waste Industry

CEC provides consulting and engineering services for the management and disposal of a broad range of wastes, including municipal, industrial, residual, hazardous, construction demolition and utility wastes. CEC provides waste management services to private industries, as well as public sector authorities and agencies.

Senior-level personnel recognize the regulatory aspects, as well as the financial influences on a project assignment. CEC's staff is composed of professionals of various technical disciplines, including:

- Civil, Geotechnical, Environmental, Chemical, Sanitary & Mining Engineers
- Geologists, Hydrogeologists & Hydrologists
- Environmental Scientists, Ecologists, Biologists & Wildlife Scientists
- Solid Waste Industry Environmental, Engineering and Operations Professionals
- Certified Hazardous Materials Managers
- Agronomist/Soil Scientists
- Construction Inspectors & Environmental Technicians
- CAD Designers and Operators
- Land Surveyors
- Landscape Architects & Master Planners
- GIS / Data Management / Information Analysts

The technical, analytical, and field experience of staff; a disciplined project organization; effective quality assurance and health and safety programs; combined with a commitment to client satisfaction, enables CEC to successfully complete challenging and complex programs in a cost-effective and timely manner.

CEC's experience working within all regulatory environments (local, state, federal) assures clients of fully compliant initiatives, and the appropriate negotiating skills required to maneuver through a regulatory maze that frequently deters progress. CEC's capabilities are extensive, to include experience with industrial, commercial and municipal facilities.

2.1 Site Selection Pre-Permitting Characterization

CEC performs site characterization studies for waste facilities to identify potential conflicts with regulatory siting and setback criteria, as well as existing environmental liabilities. Reviews include evaluation of existing conditions that affect permitting, construction, and operating costs, in addition to local issues such as access routes, zoning, public opposition, and leachate disposal options. Siting criteria evaluated during this phase can include wetlands, streams, flood plains, hydrogeology, soil prequalification, unstable property, fault areas, seismic impact zones, and the locations of airports, residences, domestic and public water supplies, parks, and other relevant criteria. Possible waste facilities to be purchased are evaluated for

environmental liabilities and historical compliance with regulatory programs. We evaluate previous owners and property uses, perform value engineering of the existing design, evaluate environmental monitoring results, and other aspects, which may affect financial risks and identify fatal flaws in the project site.

2.2 Merger & Acquisition Due Diligence Services

CEC performs environmental due diligence and liability characterization studies for the acquisition and divestiture of solid and hazardous waste facilities. These studies identify permitting conflicts and permit transfer issues, and also quantify environmental liabilities. The review includes evaluating conditions that could potentially affect permitted airspace, environmental compliance, operating costs, potential conflicts that could lead to consent decrees, fines/or penalties or any other variables that might have a significant effect on operations and long-term viability and profitability of the facility.

To determine available constructed capacity, CEC evaluates permitted airspace and prepares projections that account for future cell development costs and the timing of those capital projects based on incoming waste volume. CEC evaluates the constructability of airspace to establish development cost and looks at the permitted airspace to determine its availability for disposal through the expected life of the site. This includes a look at site density, whether that density will be achievable through the life of the site, and how it can be improved to allow the disposal of additional tons in the long term.

Waste facilities are evaluated for environmental liabilities, which are quantified for use in setting up environmental reserves. There may be old, pre-Subtitle D facilities or liner perforations that could have an effect on groundwater quality, and the site may have managed disposal operations improperly, which might lead to long-term stability issues. CEC reviews past permitting and operations practices that may, at some point, lead to compliance-related conditions. All of these costs are quantified.

CEC works closely with clients to enhance their return on investment. Services include evaluating the potential for expansion, suitability of additional property purchases, and preparing financial performas to quantify the economics of various site operations and decisions to expand the facility.

2.3 Hydrogeologic Site Investigations

Hydrogeologic and soils characterizations are performed to support the permitting and design of a facility. Investigations include reviewing published data; monitoring well and piezometer installation; and aquifer testing, evaluation and identification. Data are used to define hydrogeologic conditions including aquifer extent, water levels, and flow characteristics. When necessary, simple or complex groundwater flow models are created to predict groundwater movement and assist with monitoring well placement scenarios. During this phase of investigation, on-site soils are collected and evaluated for use in the liner and final cover systems as well as site operations.

2.4 Geotechnical Engineering

CEC provides a complete range of geotechnical engineering, soils analysis, and field testing services. We perform geotechnical investigations to determine foundation design parameters, investigate mine subsidence, develop site grading requirements, and design pavements and push walls at waste transfer stations. CEC also analyzes the stability of embankments and slopes, and designs methods to retain earth and rock materials. Additionally, CEC evaluates groundwater flow conditions and designs systems to collect or divert subsurface flows. CEC's professionals are knowledgeable and have experience in various drilling and core sampling methods in different geologic strata, including such investigative techniques as cone penetrometer testing in municipal solid waste, borehole photography and down-hole and surficial geophysical logging.

2.5 Landfill Design & Permitting

CEC works closely with owners and operators during the permitting process through final receipt of a permit to install, permit to operate or closure certification. Designs are prepared that satisfy both regulatory requirements and owner/operator preferences. Our experience in the design and construction of numerous facilities provides clients with designs that are constructible and minimize capital development expenditures and closure costs.

CEC maintains open, productive relationships with regulatory agencies to facilitate communication and streamline the permitting process. Based on specific circumstances, CEC can act as an advocate on behalf of owners or support interaction with regulatory agencies.

CEC employs highly automated and accurate computer design tools for design projects. These tools are utilized by our experienced staff of engineers and designers to prepare accurate, cost effective and constructible designs. CEC's design staff has extensive field construction experience that augments their design capabilities. This combination of experience and productive computer usage results in highly efficient designs.

2.6 Transfer Station and Material Recovery Facility Design & Permitting

CEC understands the economic, environmental and operational requirements and their impacts on the planning process around permitting and construction of transfer and recycling facilities. We take into consideration the equipment and site logistics, including equipment management, facility operations, personnel management, community relations and awareness and interpretation of state and local government policy decisions and developments.

CEC works to develop waste transfer and recycling facilities that achieve operational, regulatory and financial goals and provide short- and long-term operational flexibility with the capability to respond to changes in population, behavior patterns and economic growth.

CEC designs and permits transfer and recycling facilities capable of sustaining operations that are in compliance within a changing regulatory landscape and that produce the intended operational and financial benefits by providing:

- Feasibility Study & Site Selection
- Geotechnical Engineering
- Transportation Planning
- Conceptual Design and Preliminary Engineering
- Utility Coordination and Approvals
- Zoning, Local Municipal and County Planning
- State Environmental Permitting
- Detailed Design & Construction Plans
- Contracting and Material Procurement
- Equipment Selection
- Security and Monitoring Systems
- Scale Systems
- CQA & Construction Management
- Production Recordkeeping and Tracking
- Facility Staffing, Personnel Training
- Operational Support Services

2.7 Environmental Monitoring/Compliance Support

CEC's expertise provides comprehensive environmental monitoring services during the operation, closure and post-closure phases of waste facilities. Professionals are experienced in the completion of groundwater, surface water, leachate and explosive gas monitoring programs consistent with applicable local, state and federal regulations. From sample collection through report development, we realize the importance of maintaining compliance with the regulations to avoid violations.

CEC's environmental monitoring program professionals are experienced in providing:

- Plan Development
- Hydrogeologic Investigations
- Monitoring Network Installation/Maintenance
- Subcontractor Coordination
- Field Sample Collection
- Statistical Analyses
- Data Interpretation
- Potentiometric Surface Maps
- Report Development
- Alternate Source Demonstrations
- Monitoring Network Adequacy Demonstrations
- Regulatory Interaction

2.8 Air Compliance & Permitting

With the implementation of stricter air pollution regulations governing waste disposal and transportation services, CEC has evolved as one of the leaders in providing air permitting and environmental compliance capabilities. Air quality services offered by CEC include:

- Landfill Gas Migration and Control Systems
- State Operating Permit Applications
- Source Testing Protocol, Performance and Reporting
- Emission Source Identification
- Emission Reduction Strategies
- Potential and Actual Emission Calculations
- Federal (Title V) Operating Permit Applications
- Operating Permit Negotiations
- Annual Emission Inventories
- New Source Performance Standards (NSPS) Tier 2 and 3 Sampling
- Dispersion Modeling
- Beneficial Use Investigations and Permitting
- Expert Testimony

CEC maintains relationships with numerous state and federal air quality regulatory agencies, providing a cost effective and timely permitting process while utilizing state-of-the-art computer models to fulfill design, permitting, and compliance requirements.

2.9 Landfill Gas Management

CEC maintains open, productive relationships with regulatory agencies to facilitate communication and streamline the permitting process and has prepared and received approvals for landfill gas extraction system designs reviewed by a wide range of local, state and federal regulatory agencies. Extraction system design and permitting services include:

- Air Quality Dispersion Modeling
- Air Quality Monitoring and Sampling
- Gas Management System Design and Permitting
- Construction Drawings and Specifications
- Landfill Gas to Energy (LFGTE) Systems Investigation, Design and Permitting
- Landfill Gas Beneficial Reuse Studies

2.10 Leachate Management and Treatment

CEC's leachate and industrial wastewater engineers understand the complex and variable challenges that landfill operators experience due to troublesome constituents such as elevated BOD, ammonia, volatile chemicals, metals, and PCBs in the waste streams and how the characteristics vary. More importantly, CEC understands how to design treatment systems to account for the variations in wastewater quality.

Investigation & Treatment Technologies

CEC's experience with designing, building and operating treatment plants and in-depth knowledge of the complex processes and critical details provide the basis for the resultant impact on treatment solutions for new and retrofitted treatment facilities. Mechanical treatment systems typically fall into one of three treatment systems, but can often require any combination for complete treatment. CEC provides treatment design services for the following options:

Chemical Treatment

- Air Stripping
- Chemical Precipitation
- Chemical Oxidation
- Ion Exchange and Electrodialysis Reversal
- Reverse Osmosis and Membrane Systems
- Evaporation
- Deep Well Injection
- Zero Liquid Discharge

Biological Treatment

- Activated Sludge Continuous Flow Systems
- Sequencing Batch Reactors (SBR)
- Membrane Biological Reactors (MBR)
- Fixed Film/Media Systems/Biotowers
- Aerated Lagoon
- Trickling Filter
- Moving Bed Bioreactor (MBBR)
- Fixed Film
- Immobilized Cell Bioreactor

Passive Treatment Systems

- Lagoon
- Constructed Wetlands
- Vertical Biochemical Reactors

CEC has provided these services for new treatment facilities, as well as for retrofits of existing ones. Leachate treatment projects have ranged from simple permitting to complex design engineering, and have been delivered using a CEC-led design/build approach that saves clients time and money, or by using a more standard engineer-contractor-owner relationship. CEC services include the following:

Construction/Operation/Consultation

- Permitting
- Construction Observation and Commissioning
- Design/Build Services
- Operation and Maintenance Manual Preparation
- Sampling
- Process Operations Consulting
- Controls Improvements
- Management Assistance
- Contract Operations

2.11 Renewables

Renewable Energy in the United States is expected to grow from 13% of total U.S. power generation to anywhere from 16% to as high as 31%, depending on economic growth and governmental policies. Renewable natural gas (RNG) use, from sources such as landfills and anaerobic digestion, also continues to rise and is a viable, advantageous substitute for natural gas in any application where natural gas is currently used, particularly in transportation fuel and the generation of renewable electricity.

CEC engineers and scientists are experienced in understanding and applying the entire value proposition of renewables including:

- Technologies – both existing and new/experimental
- Project alternatives and development
- Policy and regulatory drivers
- Renewable energy economics
- Project permitting, design, construction and operation

CEC focuses on renewable energy in the primary areas of Landfill Gas and Anaerobic Digestion.

Anaerobic Digestion (AD)

AD is a biologic process that runs organic waste into a raw gas stream composed primarily of methane. It can be cleaned to pipeline quality and then used as a substitute for natural gas. AD processes are applicable to food waste, agricultural waste, and wastewater treatment plant sludge.

CEC helps clients evaluate AD alternatives and technologies, and provide engineering services for the design, construction and operations of AD facilities.

Landfill Gas to Energy (LFGTE)

CEC provides a variety of services related to LFGTE that explore three primary components: what is the market for the gas; what are the technologies to use the gas; and what is the nature and structure of the LFGTE transaction.

LFGTE Market

CEC's professionals have direct market knowledge and understand pricing and the economics of various markets. Key to navigating the LFGTE market is:

- Understanding market trends and drivers
- Understanding incentives for renewables
- Experience in establishing the value of the LFG and the economics of a LFGTE project

LFGTE Technologies

LFGTE technologies are constantly changing and improving, and it's important to completely evaluate the various technologies for each LFGTE type and have experience in the research and development behind these new technologies.

LFGTE Transactions

CEC provides support and evaluation for LFGTE transactions including:

- Project feasibility analysis
- Request for proposal and bid preparation and management
- Proforma preparation
- Contract negotiation assistance
- Existing project issues and conflicts assistance

CEC brings unique industry-based experience and knowledge to each of these three components to explore the potential use of gas for electric generation, medium BTU, or high BTU pipeline.

Natural Gas and RNG Transportation Fuels

CEC personnel have experience in the development of infrastructure for the use of natural gas and RNG as a vehicle fuel, and CEC has regional partnerships with multiple engineering design and construction companies to pursue opportunities involving both Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) utilization.

2.12 Operation & Maintenance of Control Systems

CEC has established field services to expand operation and maintenance (O&M) capabilities and better serve waste management clients. Services include:

- Routine O&M of landfill leachate collection (LCS) and gas collection and control systems (GCCS)
- Re-construction and/or repair of LCS and GCCS components (header pipes, laterals, wellheads, heating systems, etc.)

CEC field services provide installation, troubleshooting and O&M services for landfill gas and leachate systems including:

- Flare Skids (including blowers and electronic controls)
- Leachate Pumps (electric and pneumatic), Pumping Stations, and Storage (including controls, electric, and heating systems)
- Leachate Pretreatment Systems
- Remediation Systems
- Routine wellfield tuning for NSPS compliance and gas to energy operations
- Preventative maintenance programs on GCCS flare skids and equipment

CEC also has the technology to perform down-hole camera investigations to better evaluate the condition of gas extraction wells and conveyance systems prior to initiating repairs and a full suite of equipment to handle GCCS extraction well and piping repairs including butt fusion and electrofusion welding (up to twelve inches), and capacity to repair base grade and cap liner via extrusion welding.

2.13 Waste Characterization

CEC has extensive experience in hazardous, industrial, special and municipal waste characterization. From waste generation and minimization audits to pre-disposal fingerprint tests, CEC personnel conduct sample collection, description, preservation, analysis, interpretation and determination of conformance with RCRA, TSCA, state and local disposal criteria.

CEC can prepare Waste Acceptance Plans (WAP) and review generator submittals for compliance with federal, state and site-specific requirements. We work closely with sales and operations personnel so that wastes are approved prior to acceptance at the client's facilities and maintain a data base of generators who require annual submittals of representative results.

2.14 Solid Waste Facility Operations Audits and Consulting

The ongoing operations support and management (OS&M) of a landfill or transfer facility is just as important as the engineering, design and permitting. CEC provides OS&M assistance in areas that are critical to operating a profitable, yet efficient and environmentally-compliant site that maintains a good working relationship with surrounding municipalities and their residents.

Density and Airspace Management

CEC works with landfill owner/operators to review current achieved density, identify opportunities for improvement and implement corrective action plans. This is achieved by focusing on equipment selection, operating techniques and cover soil consumption for daily and intermediate cover. Excavation, hauling and spreading practices are also evaluated to ensure maximum productivity while minimizing the amount of soil cover required.

Heavy Equipment Repair and Maintenance

CEC develops practical, quality preventive maintenance programs that include identifying any gaps that exist in current procedures. Corrective action plans include equipment maintenance checklists for scheduled services, mechanic and operator maintenance training, implementation of cost-tracking and repair history software, contamination control practices and an undercarriage management program. Additionally, CEC can implement advanced fleet management technology that may minimize the cost of operations and maximize availability. If major repair is necessary, CEC will review repair quotes and invoices to ensure that recommended repairs are required and of fair value.

Facility Access

CEC evaluates haul roads and turn- around areas throughout the site to ensure all-weather safe accessibility. Recommendations for improvement generally result in improved turn times for operator's vehicles, ultimately providing additional capacity for each route vehicle. This added capacity adds up quickly and can ultimately reduce the number of trucks required. Reductions in driver overtime, fuel consumption and maintenance expense are just some of the benefits that can be achieved by both the collection and landfill fleet.

Fill Sequencing and Lift Progression Planning

CEC performs a complete fill sequencing review and then works with and trains site managers and staff on proper lift management and the risks of poor planning. Our training covers such subjects as using a hand level or more advanced laser levels for maintaining grades, how to stake areas to provide visual references to an operator inside the tractor, and how to direct surface water away from the working area. The training results in maximum density and quality site access, as well as minimized re-work, leachate treatment and disposal costs for the landfill operator.

Operator Training

CEC has skilled operator trainers that provide training for heavy equipment operators, focusing on maintenance, safe operating practices and machine limitations. The training, which includes an operator training manual, covers most all types of machinery operated at a waste management facility including

compactors, bulldozers, excavators, articulated dump trucks, loaders, scrapers, and motor graders.

Good Neighbor Review

CEC performs a complete review of nuisance-related areas like litter control, dust and mud tracking, site aesthetics, noise impact, odor and storm water run-off. Recommendations for improvement and implementation assistance are provided to maintain the highest quality standards.

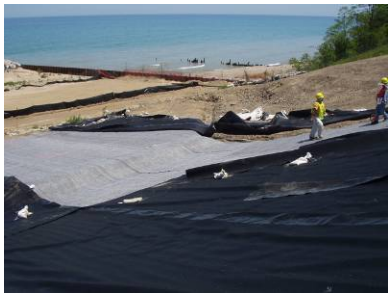
Temporary Site Management

A solid waste facility must have an experienced site manager able to react quickly and appropriately to the unique issues each site presents. Attracting and retaining that talent can be a challenge. CEC can provide temporary site management to an owner/operator of a solid waste facility when a qualified site manager is otherwise not available.

Facility Development Modeling

A Facility Development Model (FDM) includes detailed cost input projections for each operation. Operating assumptions also can include costs to maintain interior road infrastructure, comply with daily and intermediate cover soil needs, or provide efficient methods for nuisance controls and other vector controls. The costs for upkeep, repair and replacement of each asset are included, and the remaining life costs of operation predict future major expenditures at the facility and conclude with a total cost of operations and projected rates necessary to maintain the cost structure of operations.

2.15 Construction Services



CEC provides construction management and construction quality assurance (CQA) services for waste facilities. Construction management services include augmentation of services performed by the client through full oversight of contractor(s) performance, schedule and pay applications. CQA services include monitoring the installation of geosynthetics, soils, piping & pumping systems, storage tanks, gas management systems, and sedimentation basins and support facilities. Field CQA services include monitoring of construction activities to determine compliance with permitted, facility-specific, CQA requirements. Field monitoring can include compaction testing, soil laboratory tests, monitoring placement of soil components, field testing of geosynthetic seaming, and retrieval and oversight of geosynthetic coupon testing. Following construction, field and laboratory testing and monitoring reports are summarized into construction documentation reports which are sealed by registered professional engineers and submitted to regulatory agencies.

CEC has CQA experience with the monitoring of:

- Compacted Soil Liner Construction
- Drainage Layer Placement
- Erosion & Sedimentation Control & Stormwater Plans
- Gas Management System Installation
- Geosynthetics Installation

- Installation of Piping & Pumping Systems
- Installation of Storage Tanks
- Installation of Water Treatment Systems
- Monitoring Well Installation
- Slurry Wall Construction
- Structural Fill Placement

CEC can also prepare designs, permits, and construction management services that dewater wastes in order to maximize the amount of unsaturated waste thickness and enhance methane recovery.

2.16 CEC-Led Design/Build Services

CEC offers engineer-led design/build services, which means CEC is responsible for, and in control of, the successful completion of both the design and construction phases of a project. Our commitment then continues through construction. CEC-led design/build places CEC in direct control of the subcontractors and the project.

Another option is using sequential design/build. Sequential design/build breaks the project into two parts: the design phase and the construction phase, allowing for the opportunity to work with an expanded design/build team during the design phase. At the completion of the design, there is the option to proceed with CEC managing the construction or bidding the construction phase. Sequential design/build also avoids the development of a comprehensive and potentially costly design/build proposal package. With this approach, the project can proceed similar to a typical design/build project with a cost estimate for construction provided by the team at or near completion of the design.

2.17 Ecological Services

CEC addresses and solves ecologic issues associated with land development and environmental projects by working with the regulatory agencies on wetlands and threatened/endangered species identifications, delineations, state/federal permitting, and in designing successful programs for wetlands and threatened/endangered species avoidance or mitigation.

The ecological services offered to landfills include evaluating potential bird hazards. Birds have the potential to present a hazard to aircraft safety in the form of bird strikes and/or engine interaction. In addition, the birds may transmit waste and/or associated diseases and cause a nuisance to local neighborhoods. When a landfill or proposed expansion of a landfill occurs in close proximity to an airport, these issues may need to be investigated to satisfy regulatory requirements from state and federal agencies (Federal Aviation Administration).

CEC staff includes professional wetland specialists, biologists, ecologists, environmental scientists, agronomists, GIS analysts, and wildlife scientists and can provide:

- Bird and Bat Surveys
- Habitat Assessments
- Terrestrial Surveys
- Wildlife Surveys
- Threatened and Endangered Species Surveys
- Wetlands Delineation and Mitigation
- Permitting and Regulatory Liaison
- Expert Witness Testimony

2.18 Coal Combustion Residual & Industrial Waste Management

CEC has significant experience with coal combustion residuals (CCR) disposal and beneficial use. CEC develops industry-leading solutions that balance environmental regulations and manage risk. CEC provides expertise for the management of CCRs, which include bottom ash, fly ash, slag, and FGD by-products, in order to meet the demands of a changing energy industry. CEC services include:

- Disposal alternatives / feasibility and fatal flaw analysis
- Economic analysis
- Facility siting studies
- Landfill conceptual and detailed engineering design and permitting
- Dams / impoundments and ash pond design, closures and permitting
- CCR leachate management
- Surface water management / Permitting / NPDES
- CCR characterization
- CCR and FGD by-product beneficial use strategies, planning and design
- CCR mine reclamation and disposal strategies
- Environmental permitting
- Hydrogeologic / geotechnical site investigations
- Groundwater modeling and human health risk evaluation
- Ecological / cultural resource assessments and mitigation
- Construction / operation support services for CCR facilities
- Public involvement / awareness issues
- Direct (soil-less) and combined soil and CCR revegetation for stabilization

Appendix A

Representative Project Experience

Bridgeton Sanitary Landfill

Bridgeton, Missouri

Owner Objective

The 52-acre Bridgeton Sanitary Landfill began operations in 1985 and stopped accepting waste in 2004 with a total waste thickness of 320 feet. Detected elevated temperatures on some gas extraction wells in 2012 were caused by a significant subsurface reaction (SSR) that adversely affected the landfills leachate composition. In January 2013, the Metropolitan St. Louis Sewer District (MSD) prohibited Bridgeton landfill leachate from entering their plant due to elevated concentrations of certain constituents.

CEC Approach

CEC was engaged to help address the subsurface reaction at the facility and to return the leachate disposal back to the MSD. Significant odor controls and immediate management and disposal of leachate generated at the site began with design and construction management of four one-million-gallon onsite storage tanks. This process led to a CEC design-build project that incorporated the tanks into an onsite leachate pretreatment plant with the goal of having the MSD accept Bridgeton's leachate once again and return the landfill back to an acceptable financial model.

Analytical tests, bench-scale tests conducted at CEC's laboratory in Charlotte, North Carolina, and pilot tests at the site helped create the basis of CEC's design. An existing 316,000-gallon aerated tank is now utilized as an equalization tank, and leachate will be pumped to a treatment building for pH adjustment, metals removal and clarification before entering the four separate one-million-gallon aeration tanks.

The solids from the clarifier will enter a sludge thickener and then be pumped to a primary sludge storage tank and a screw dewatering press. The liquid flow from the four aeration tanks will be pumped to an ultrafilter system to separate the solids from a relatively clear effluent. As the treated leachate interfered with the MSD's recently installed UV disinfection, technologies to remove the UV interference were incorporated in the pretreatment plant design. The effluent will then be pumped to an existing storage tank before discharge to the MSD's Missouri River Treatment facility. The dewatered solids from the press will be placed in trailers for transport to the Roxana Landfill.

OWNER

Bridgeton Landfill LLC (A Subsidiary of Republic Services Inc.)

CLIENT

Republic Services

CEC SERVICES

- *Leachate Management, Monitoring and Analysis*
- *Design/Build*
- *Operations and Maintenance Support*

Inside of newly constructed tank

BFI Middle Point Landfill

Murfreesboro, Tennessee

Owner Objective

BFI/Republic Services planned a landfill expansion for a 70-acre site that had been stripped of soil to the top of the limestone bedrock formation at the Middle Point Landfill near Murfreesboro, Tennessee.

CEC Approach

CEC was retained by BFI to perform the hydrogeologic investigation and subsequent major permit modification of the landfill expansion. The investigation required characterization of the integrity of the limestone and location of the uppermost Karst aquifer beneath the site. The major permit modification included:

- Design drawings of an expansion over previously lined areas and sideslope riser sumps.
- Design of a subsurface leak detection system.
- Engineering Calculations including settlement, slope stability, leachate generation and collection, hydrology, hydraulic and pipe strength and sizing.
- Preparation of a groundwater monitoring plan in a karst aquifer.
- Preparation of a construction quality assurance plan.
- Preparation of a closure/post-closure plan.

The leachate generated by this site is typically much stronger than a "normal" landfill leachate, with ammonia concentrations upward of 2,200 mg/L, COD values above 5,000 mg/L, and very high total dissolved solids. The leachate is stronger because of the large volumes of aluminum dross (salt cake) disposed over the years. To replace the existing Breakpoint Chlorination (BPC) treatment system, CEC was retained to provide engineering to design a new leachate pretreatment plant.

Prior to commencing the design project, a pilot/treatability study was completed by the on-site plant operations group/consultant, and it was determined that biological treatment could consistently reduce the ammonia concentrations below 10 mg/L, however, the required long sludge ages can cause settling problems with the biomass. Therefore, CEC selected a membrane biological reactor (MBR) treatment system to prevent solids loss while allowing the system to carry a larger solids concentration, thereby reducing the reactor volume.

The leachate pretreatment facility consists of four 185,000-gallon storage tanks, two 450,000-gallon bioreactor tanks, two membrane tanks, and a volute sludge press. Designed to treat an average leachate volume of 100,000 gpd, with a maximum peak flow of 150,000 gpd, the new facility is incorporated with the existing leachate storage facility and BPC system. The previously existing BPC system remains available for operation should the need present itself. A complete SCADA system was designed to automate the MBR and allow everything to be controlled from the new office/laboratory. Upon commencing MBR operations, it met treatment expectations.

In addition, CEC provided Construction Quality Assurance (CQA) oversight for the construction of the liner and leachate collection system within Section 6, an 11-acre cell, and provided construction drawings, bid specifications and CQA oversight for the construction of the liner and leachate collection system within Section 4, an approximately 13-acre waste disposal cell. CEC prepared a CQA report summarizing the inspection and testing of the liner system to the Tennessee Division of Solid Waste Management for final certification. A sinkhole was discovered during construction within Section 4, and CEC formulated a design for plugging the sinkhole.

OWNER/CLIENT

BFI/Republic Services

CEC SERVICES

- *Hydrogeology*
- *Hydrology & Groundwater Monitoring*
- *Engineering Design*
- *CQA*

Leachate Pretreatment Facility

City of Kerrville Landfill and Transfer Station

Kerr County, Texas

Owner Objective

The City of Kerrville provides solid waste management services to its citizens and much of Kerr County, Texas presently serving a population of about 49,860. The City offers waste disposal, transfer and recycling services. With the exception of the City's Community Recycling Center the solid waste management services are operated under contracts with Republic Services (RSI) and has a long standing relationship with RSI dating back to its predecessor companies, BFI and Allied Waste. The CEC Austin office has worked at the City's solid waste management facilities since 1997 and continues to this day to provide engineering, environmental and regulatory assistance on City solid waste management projects.

CEC Approach

The CEC Austin office has prepared TCEQ permit modifications and a permit amendment to expand the City's landfill in 1999. The modification involved the engineering design for drainage revisions to the landfill cap, and included preparation of the modification submittal documents, and processing through the then TNRCC. The major amendment project included the complete engineering of a new cap and height design along with the required assessments of the environmental effects of the height increase. Included in these engineering evaluations was an analysis of: adjacent land uses, property ownership, floodplain delineation, wetlands determinations, endangered species, and historical and archeological resources. Specific engineering analysis included a traffic impacts study, airport safety, seismic faulting, regional and site specific geology and lithology, hydrogeology for interpolation of the potentiometric groundwater surface and flow gradient, site drainage/ detention/erosion controls, geotechnical engineering/slope stability/settlement, wastewater and leachate treatment/controls, facility design and construction plans, and operations procedures. The permit amendment (MSW 1506-A) was approved by the TCEQ in 2001.

In 2004 the City was looking for long term assurance for managing its solid wastes and the CEC Austin office prepared an assessment of the potential expansion alternatives near the currently permitted operations. In 2007 the City again undertook the development of a major expansion of the landfill to provide in excess of 50-years of capacity for its citizens and the CEC Austin office began the investigations and studies to expand the facility. In 2008 Republic Services (then Allied Waste) while continuing to operate the landfill approached the City to develop a transfer station at the site and operate the facility for a 20-year period and reserve the remaining capacity in the landfill for disposal of special wastes. The CEC Austin office was able to secure a Registration Permit for the new transfer station and the facility began operations in September 2010.

CEC completed a detailed "cost of service" analysis for the City and an overall solid waste master plan to evaluate its waste projections, the effects of recycling opportunities, and the economics of operating a transfer station or an expanded landfill, for the period after the 20-year contract with Republic Services concludes.

OWNER

City of Kerrville

CLIENT

Republic Services, Inc.

CEC SERVICES

- *Landfill Design & Permitting*
- *Transfer Station Design & Permitting*
- *Geotechnical Engineering*
- *Leachate Treatment & Control*
- *Hydrogeologic Site Investigation*
- *Wetland and Waters Delineation*
- *Environmental Monitoring / Compliance Support*
- *Construction Services*

Transfer Station

Geneva Landfill Expansion – Permit-to-Install Application

Geneva, Ohio

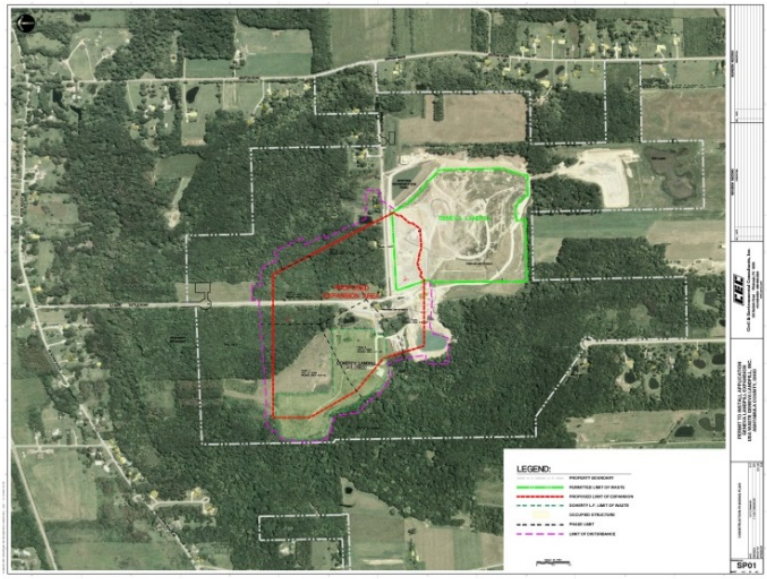
Client Objective
USA Waste Geneva Landfill, Inc. (Geneva), a subsidiary of Waste Management, the largest environmental solutions provider in North America, operates a municipal solid waste landfill in Geneva, Ohio. The landfill accepts municipal solid waste from Ashtabula and several surrounding Ohio counties.

When the landfill was nearing the end of its permitted available capacity, Geneva sought to expand capacity with goals to maximize the excavation so that no off-site soil borrow would be required and to maximize capacity so that an existing unlined landfill partially located within the proposed expansion limits could be relocated into the expansion.

The expansion of the existing landfill was both vertical and lateral. The surface terrain was relatively flat; however, the western portion of the existing landfill was a steep slope to an existing tributary. Challenges included the mitigation of several acres of wetlands, the relocation of approximately one million cubic yards of waste, and the designation of the underlying ground water aquifer system to allow for the maximization of excavated soils.

CEC Approach
Geneva engaged CEC to assist with the permitting process. CEC provided several conceptual designs based on wetland disturbance, property owner concerns, and potential designation of the ground water aquifer system. CEC assisted the client's hydrogeological consultant with the interpretation and presentation of information related to the aquifer system, and assisted the ecological consultant with wetland mapping, limit of disturbance comparisons, permitting and bat surveys.

The Permit-to-Install Application was approved for the 75-acre lateral and vertical expansion, which incorporated 14.3 million cubic yards and a 59-year life expectancy for the site.



CLIENT
USA Waste Geneva Landfill, Inc., a subsidiary of Waste Management

CEC SERVICES
- *Erosion & Sedimentation Control / NPDES Permitting*
- *Stormwater Management / BMP Design*
- *Aquatic & Terrestrial Habitat Surveys*
- *Landfill Design & Permitting*
- *Landfill Gas Management*
- *Geotechnical Engineering*
- *Leachate Treatment & Control*
- *Site Selection and Characterization*
- *Environmental Monitoring / Compliance Support*

La Gloria Ranch Landfill

Hidalgo County, Texas

Client Objective

Republic Services, Inc. (Republic) is a national leader in solid waste management, primarily serving the municipal markets with collections, recycling, transfer and landfill disposal operations. The company also provides waste management services for various industrial non-hazardous waste customers and those in the exploration and production of oil and gas.

When an existing facility near Donna, Texas, was nearing the end of its permitted available capacity, Republic sought to develop replacement capacity via a new facility with long-term capacity. However, the relatively flat and semi-arid plains of the lower Rio Grande Valley present unique challenges for siting a new (greenfield) facility with a large sustainable landfill footprint. Fresh water in the region is a critical resource that is heavily regulated and managed through drainage and irrigation districts. These districts wield a significant technical and political influence. Avoiding potential conflict with these districts (as well as other political jurisdictions) was a primary concern.

CEC Approach

CEC was engaged by Republic to address the engineering aspects of flat terrain and slow-to-drain stormwater conditions, and also to help locate a site for Republic that would provide adequate space and buffering. Considering the political and technical complexities, CEC developed a set of screening criteria to apply to a constraints map. In addition to the regulatory siting constraints, such as proximity to airports, avoiding areas of faulting, floodplains, wetlands and cultural resources, a preference for political jurisdictions was established. The resulting constraints map was then used to focus the property search into preferred zones. From these preferred zones, about 20 properties were evaluated in detail, and one site was selected for preliminary and then full phase site and subsurface investigations.

Due to the intense initial planning efforts to recognize the constraints and values of the regional setting, the permit was issued without request for a public hearing by any political jurisdiction, potentially affected land owner or other interested party. CEC's upfront efforts also resulted in a prompt review and approval by the regulatory entities as well as time and cost savings by avoiding a protracted legal process. CEC efforts continued after the award of the permit to include detailed design of entrance facilities, landfill cell designs, and design of the associated supporting infrastructure. CEC oversaw and provided construction management of the new facilities, and continues to support operations through compliance monitoring and construction assistance.

CLIENT

Desarrollo Del Rancho La Gloria LP (An Allied Waste Corporation)

CEC SERVICES

- *Landfill Design & Permitting*
- *Geotechnical Engineering*
- *Hydrogeologic Site Investigations*
- *Wetland and Streams Delineation*
- *Environmental Monitoring / Compliance Support*
- *Construction Services*

Scalehouse

Access Road

Cell Construction – March 2013

Ohio Valley District Transfer and Recycling Facility

Ironton, Ohio

Owner Objective
The landfill operator required design engineering and permitting assistance to construct a 500-ton per day solid waste transfer station in Lawrence County Ohio. The facility design also included the ability to process recyclables as needed.

CEC Approach
CEC was awarded this project primarily due to the unique project team experience and proven track record of adapting to challenging project needs, including those of several public entities associated with the funding of this facility.

CEC prepared a solid waste transfer station permit application and assisted Rumpke with the permitting associated with air and NPDES discharge ancillary permits for an operating facility.

CEC developed the conceptual design, conducted the geotechnical investigation, and provided detailed engineering, and limited construction management (CM). CEC design services included structural design of the building foundations drive through transfer tunnel for pushing waste into 53 foot tractor trailers for final disposal at Rumpke-owned landfills. The building for the transfer facility is a pre-engineered metal building with fire suppression, mechanical doors, dust control/misting, and a reinforced push wall system.

The site civil engineering included overall site layout, grading, drainage, scale location, and utilities. CEC prepared Contract Documents for prospective bidders to perform the work and assisted our client with the procurement of the contractor to complete the construction. Technical Specifications were developed and included general construction requirements, site work, concrete testing, mechanical and electrical needs to operate the facility and the recycling machinery. Construction (as-built) drawings were prepared and provided to the occupant and included all required information to successfully operate the facility. Building permits were obtained for septic system use and building construction through the Ohio Department of Commerce.

Recycling Building

OWNER/CLIENT

Rumpke Sanitary Landfill, Inc.

CEC SERVICES

- *Geotechnical Engineering*
- *Structural Engineering*
- *Transfer Station Design & Permitting*
- *Site Grading / Earthwork Analysis*
- *Erosion & Sedimentation Control / NPDES Permitting*
- *Stormwater Management / BMP Design*
- *Utility Design*
- *Construction Services*
- *Integrated Project Delivery*

Cardboard Bailer

Carver Marion Wareham Landfill Phase VII Final Cover

Carver, Massachusetts

Owner Objective

Covanta Energy is a national Waste-to-Energy (WTE) company that incinerates trash to generate electricity. The company utilizes municipal solid waste as the primary fuel source; therefore, the two Massachusetts WTE plants are situated near Covanta-operated landfills for placement of the resultant ash. The Carver Marion Wareham (CMW) Landfill is located in a rural area surrounded primarily by undeveloped land and active cranberry farming operations. The CMW Landfill is associated with the Covanta SEMASS WTE Plant, which has been in operation since around 1990. The ash from the plant is received at the CMW Landfill. The Phase VII landfill was nearing completion of its lifespan and required a final cover system.

CEC Approach

CEC provided design, permitting, and construction oversight services for the Phase VII landfill cap. The landfill cap design implements a new alternative final cover system on the top four acres. The ClosureTurf Final Cover System is a three-component system comprised of an impermeable geomembrane barrier, a high-strength polyethylene yard synthetic turf on the surface, and a sand ballast infill layer over the turf. The ClosureTurf final cap provided increased air capacity at the landfill.

OWNER/CLIENT

Covanta Energy

CEC SERVICES

- *Landfill Design & Permitting*
- *Landfill Gas Management*
- *Construction Services*

Installation of the ClosureTurf Final Cover System on the top deck.

City of Brooklyn Landfill Closure and Cap Construction

Brooklyn, Ohio

Owner Objective

The City of Brooklyn, Ohio (City) operated a 40-acre municipal solid waste (MSW) landfill from 1989 to 2009 and was being required to close the landfill by Ohio EPA Director's Final Findings and Orders (DFFO) for regulatory violations, including an outstanding violation for overfilling a portion of the landfill. The landfill is unlined with a 12-foot wide compacted clay and geomembrane cut-off wall setting the limits of waste. A leachate collection trench is constructed inside the cut-off wall to direct leachate to a collection sump which discharges to the City's wastewater treatment plant. The Ohio EPA wanted the closure to be completed per the current Ohio EPA regulations, which was above the closure/post-closure funds available to the City, so the City sought a closure solution which was within the available funds.

CEC Approach

CEC was already performing the semi-annual groundwater sampling for the facility, when we were engaged by the City to assist in negotiations with the Ohio EPA to achieve an acceptable closure plan for the site and to provide technical guidance to address the overfill violation. CEC was challenged to review historical documents and surveys, develop a cap design within a restricted budget, and to present the results to the Ohio EPA for approval of the DFFO.

CEC submitted responses to the Ohio EPA DFFO including verification of the permitted limit of waste, volume of potential overfilled waste, and inspection of the leachate collection piping. The approval of these items provided the basis for the preparation of the Final Closure/Post-Closure Plan.

CEC developed the closure plan which utilized the existing cover soils and an off-site borrow source for construction. The closure plan included placement of 3-feet of recompacted clay cap system, passive gas venting system, surface water control features and perimeter access road. The DFFO required a minimum slope of 5% and relocated waste to be placed below the permitted final waste grades. Based on existing conditions, these requirements could not be maintained and provide a balance cut/fill volume for the waste relocation; therefore with Ohio EPA approval, the existing waste grades were revised to maintain a minimum slope of 2% and allowed to exceed the permitted final waste grades in isolated areas of the landfill. The proposed cap system did not include geosynthetics. Surface water channels were revised to allow a perimeter access road for the facility and drain towards existing sediment ponds, and CEC prepared an Individual NPDES Permit Application to permit discharge from the sedimentation ponds.

The Final Closure/Post-Closure Plan was approved in January 2015. CEC then prepared construction bidding documents for qualified contractors – and all bids received were significantly below the final closure estimated costs in the Closure Plan. CEC will continue to provide services for this project including Construction Quality Assurance (CQA) services, surveys to prepare on-site benchmarks and certification surveys, coordination with the Ohio EPA, and preparation of the certification report for Ohio EPA approval.

OWNER/CLIENT

City of Brooklyn (Ohio)

CEC SERVICES

- *Predevelopment Site Investigations*
- *Survey / GPS / GIS Services*
- *Site Grading / Earthwork Analysis*
- *Erosion & Sedimentation Control / NPDES Permitting*
- *Stormwater Management / BMP Design*
- *Landfill Design & Permitting*
- *Landfill Gas Management*
- *Geotechnical Engineering*
- *Construction Services*
- *Hydrogeologic Site Investigations*
- *Environmental Monitoring / Compliance Support*

Crapo Hill Landfill Anaerobic Digester Pilot Project

Dartmouth, Massachusetts

Owner Objective

The Crapo Hill Landfill is a 39-acre state-of-the-art lined landfill that serves the solid waste management needs of the Town of Dartmouth and the City of New Bedford. The landfill is owned and operated by the Greater New Bedford Regional Refuse Management District (the District) and the Landfill Gas to Energy (LFGTE) Facility is owned and operated by CommonWealth New Bedford Energy LLC (CNBE). CNBE sought to construct an anaerobic digester at the LFGTE Facility to provide infrastructure for organic waste management, increase on-site power generation, and demonstrate beneficial uses of the digestate as alternatives to traditional disposal.

CEC Approach

CEC provided engineering services for the permit plans for the proposed Anaerobic Digester Pilot Project. The proposed anaerobic digester (AD) will be located adjacent to the existing landfill gas to energy facility. CEC's scope of services included preparation of the site civil drawings for the AD layout, preparation of a solid waste management facility permit modification, and developing the engineering design for the end uses for the AD liquid by-product (digestate) and associated permit applications which included beneficial use determinations and a research, design and development project. In addition, CEC prepared the detailed supporting engineering report, operations and maintenance plan, and contingency plan.

Three alternatives were identified to traditional disposal of the digestate:

- to include the use of the digestate as an inoculant to rejuvenate gas generation in the closed and capped areas of the landfill to accelerate bio-degradation of organic waste and biogas production,
- as a substitute for water in the alternative daily cover material product called Posi-Shell® at the landfill, and
- as a low-nutrient liquid material added to the existing leaf and yard waste operations at the landfill to improve the composting of this material.

During the initial two-year pilot study, the AD facility was designed to provide approximately 100,000 gallons of digester capacity, and is expected to generate approximately 30 standard cubic feet per minute ("scfm") or more of biogas fuel, which will generate at least 650,000 kWh per year of incremental power output. At the contemplated full-scale implementation, the Bioenergy Facility would be expanded to 900,000 to 1.2 million gallons of digester capacity, and would be expected to generate sufficient additional biogas fuel to support the expansion of the generating capacity of the existing LFGTE Facility, from 3.3 MW to approximately 4.2 MW, the permitted capacity of the LFGTE Facility.

CLIENT/OWNER

Commonwealth New Bedford Energy, LLC

CEC SERVICES

- *Anaerobic Digester Permitting and Site Layout*
- *Air Compliance and Permitting*
- *Site Grading / Earthwork Analysis*

The Green Energy Center©
Innovative Landfill Gas Utilization

Franklin County, Ohio

A landfill gas utilization project, The Green Energy Center© is a fully integrated renewable energy project developed by CEC in cooperation with FirmGreen™ Energy, Inc., and the Solid Waste Authority of Central Ohio (SWACO) at the Franklin County Sanitary Landfill. The Green Energy Center design includes the following components:

- A modular methane/CO^2 purification plant, capable of scale-up to approximately 5,000 MM Btu per day;
- A compressed natural gas station used to support an on-road CNG-diesel conversion study of refuse transfer trucks operated by SWACO;
- A 250 kW microturbine used to power all SWACO infrastructure;
- An IC-engine electrical generating station with a maximum capacity of approximately 6.5 MW;
- A 20-acre greenhouse complex which will utilize purified CO^2 as well as waste heat from both the IC-engine unit and microturbine facilities;
- A methanol synthesis plant; methanol production represented a critical component of the Green Energy Center business model. Methanol will be produced via a conventional steam reforming/catalytic unit.
- A biodiesel production facility.

CEC assisted in this project by providing the public/private partner coordination, project feasibility analysis, all required environmental permitting, infrastructure planning and design, construction management, surveying and construction QA, and vendor (technology) coordination. CEC continues to provide O&M and compliance assistance for the facility operations

The Green Energy Center concept focused on the utilization of a host landfill as a renewable energy "fuel cell," with specific emphasis placed on the maximum utilization of available energy. The unique business model facilitated production of a wide variety of energy sources from landfill gas that include compressed natural gas (CNG), methanol and biodiesel fuel. These products were in addition to the conventional gas-to-electric and pipeline gas commodities.

Unlike typical gas-to-energy projects, the Green Energy Center utilized a hub-and-spoke project model, with the patented CO^2 Wash™ technology serving as the hub for a variety of energy development possibilities.

The hub-and-spoke model provided diversification critical to success of landfill gas-to-energy projects which rely on variable energy market price points. In today's volatile energy market, such diversification can determine the success or failure of typical landfill gas projects. More importantly, this model also provides the host site with a multitude of opportunities for unique energy projects and interaction with host communities, local school districts or governmental entities through supply or price support of renewable energy resources.

OWNER

Solid Waste Authority of Central Ohio (SWACO)

CLIENT

Firm Green Fuels of Ohio, LLC

CEC SERVICES

- *Site Layout, Grading and Earthwork*
- *E&S Plans & Post-Construction Stormwater Plans and Permits*
- *Construction Services*
- *Gas to Energy Services*

Ron Mills fuels vehicle at the new Green Energy Center facility

Mahoning Landfill Renewable Energy Facility

New Springfield, Ohio

Owner Objective
Waste Management planned to construct a new 6,700-s.f. gas-to-energy facility at the Mahoning Landfill and sell the electricity generated by the plant to the city of Oberlin, Ohio. The five-engine power plant is anticipated to produce enough electricity to serve more than 3,500 homes in the community.

CEC Approach
CEC provided civil & site development for the plant, as well as its associated gravel drive aisles, concrete pads and sidewalks, sanitary sewers, site utilities, and a stormwater detention pond. The structure, a steel-framed building with single-story concrete masonry unit walls, would be supported on shallow spread foundations. The project began with a geotechnical investigation to provide recommendations regarding site earthwork, foundations, pavements and floor slabs.

CEC prepared construction documents for layout, site grading, stormwater management facilities and utilities. Subsequent to the design phase, CEC provided construction quality assurance (CQA) and International Building Code (IBC) mandated Special Inspections. CEC technicians verified the use of proper materials, compaction and lift thickness during earthwork and backfilling at the building site. Technicians also performed density and moisture testing using a nuclear density gauge to compare results to the applicable laboratory moisture/density test results. CEC technicians performed observations, testing, and inspections during deep foundation installation, reinforced concrete and masonry construction, and structural steel erection and detailing.

OWNER/CLIENT

Waste Management Renewable Energy

CEC SERVICES

- *Survey*
- *Geotechnical Engineering*
- *Site Grading / Earthwork Analysis*
- *Erosion & Sedimentation Control / NPDES Permitting*
- *Stormwater Management / BMP Design*
- *Utility Design*
- *Construction Services*

Condensate sump of gas collection and control system

Little Blue Run Impoundment

Georgetown, Pennsylvania

Owner Objective

The Little Blue Run (LBR) facility is a 965-acre impoundment above a 400-foot high earth and rock dam within a 1,600-acre permit area. LBR has been used for slurry-placed disposal of flue gas desulfurization (FGD) scrubber sludges for the 2,490 MW Bruce Mansfield coal-fired power station.

CEC Approach

CEC staff were involved with LBR construction since 1975, and since 1992 CEC has provided on-going services to FirstEnergy relating to the assessment, permitting, design and operation of the impoundment, impoundment life extension, and negotiation of a Consent Decree for 2017 site closure. CEC staff provided the entire range of expertise necessary to manage the LBR site in its original (below-water) and life-extended (above-water) configurations. CEC developed detailed management plans for the extraordinary volumes of coal combustion residuals (CCR) involved, designed the extension of site volume and disposal life using terracing with CCR filled geotubes, investigated and mitigated environmental concerns, and was active in Consent Decree negotiation for site closure. CEC designed and began the permitting process for a replacement dry CCR site adjacent to and overlapping the LBR impoundment (FirstEnergy changed the post-2016 CCR management plan to barge handling of CCRs for off-site beneficial use or disposal).

Hydrogeologic considerations have been a major driver in the design of the final site configuration and closure plan. CEC is monitoring 51 groundwater monitoring wells, 36 surface water monitoring points, 148 spring/seep locations, and 33 domestic wells. CEC developed and calibrated a nine-layer (five aquifers, four aquatards), groundwater flow model covering five square miles to predict the impact various closure scenarios would have on groundwater levels and seep discharge in and around the impoundment. Information collected during hydrogeologic investigations were used to build, calibrate, and improve the accuracy of the model. Dewatering of the FGD and influence on local aquifers and springs were modeled to 250 years after closure. Results from modeling informed choices of a final closure option and capping program. The model will be continually used to monitor changes to the impoundment during closure.

CEC has provided strategic planning and operational support, developed and implemented plans for direct (soil-less) seeding of hundreds of acres of CCR for interim erosion and dust control, conducted dustfall monitoring and modeling, developed and managed an extensive database, and provided construction support. As rulemaking changes and legal considerations accelerated the closure schedule, CEC evaluated, designed, and field tested various cap designs and helped negotiate the Consent Decree terms. Closure design and permitting included evaluation of 15 capping scenarios, followed by field testing the constructability of the most promising cap alternatives on the wet, soft CCR surface. The cap evaluation process included water balance monitoring and soil and CCR pore water sampling in several capping test plots to assess the differences in stormwater quality likely under various capping scenarios. The closure cap under the Consent Decree will use only 12 inches of final cover soil placed over an HDPE membrane, with closure completed within a 15 year schedule. The selected remedy will give FirstEnergy, regulators, and the public a high level of confidence in the closure and will dramatically reduce the economic and environmental costs of borrow area development.

CLIENT

FirstEnergy Generation Corporation

CEC SERVICES

- *Agronomy/Soil Science*
- *Environmental Monitoring / Compliance Support*
- *Groundwater Modeling & Monitoring*
- *Ecological Studies*
- *Geotechnical Engineering*
- *Data Management*
- *Design and Permitting*
- *Construction Services*
- *Hydrogeologic Site Investigations*
- *Bathymetric Surveys*
- *Erosion & Sedimentation Control*
- *Closure Evaluations*
- *GPS Services*

The 965-acre CCR disposal impoundment is contained behind a rock-fill dam measuring 2,200 feet wide at the crest and 400 feet tall.

Montour SES Alternative Soil Capping and CCR Beneficial Use Studies

Washingtonville, Pennsylvania

Beginning in 1994 CEC evaluated the agronomic properties of soils and at-grade CCRs to see whether the properties of the soils plus those of the underlying CCRs could support plant growth and meet the performance for final cover soils at the Montour Steam Electric Station (SES) and other PPL stations. CEC identified and provided permitting support to reduce soil requirements for closure of coal combustion residual (CCR) sites, beneficially use CCRs as a soil amendment and soil extender, and evaluated alternative capping systems to reduce infiltration into the CCR below the cap.

Beginning in 2001, CEC demonstrated that bottom ash fines ("Sand Fines") could be mixed with fine textured soils to improve the plant-available water holding capacity (PAW) and permeability of soils and reduce borrow soil requirements and subsequently successfully prepared a notification of Beneficial Use to PADEP.The Sand Fines beneficial use notification included soil agronomic testing and human health risk screening. A 1:1 mixture of Sand Fines and soil were approved and used for construction of a high performance sports turf near Brunner Island, and for interim closure of Montour Basin 1, as well as the Montour Recreation Area soccer fields. Follow-up field performance of soils, and mixtures were quantitatively evaluated in mesocosms equipped with soil moisture monitoring sensors (published details are presented at: http://www.flyash.info/2005/201buc.pdf). When beneficial uses of Sand Fines were demonstrated, approved, and implemented, PPL achieved 100% beneficial use of coal ash at the Brunner Island and Montour facilities, and won USEPA's 2008 C2P2 award in recognition of this CCR reuse milestone.

CEC explored opportunities to shift the water balance of PPL CCR sites to reduce infiltration of percolate water in the growing media of soil caps without clay or membrane barriers such that infiltration rates were comparable to, or lower than, sites capped with conventional earthen soil barrier "clay" caps. Laboratory analyses and modeling (HELP and Hydrus) indicated that infiltration reduction using evapotranspiration alone was not adequate under Montour climatic conditions, but that modification of the permeability of existing surface soils, to increase runoff and reduce infiltration, could meet or exceed the performance of the soil barrier clay cap. PPL and CEC reviewed the enhanced runoff alternative capping approach with PADEP and gained approval of the concept, establishing an infiltration reduction target of about 1 inch per year net infiltration below the cap (about an 11-fold decrease over unamended conventional soils). In 2010 CEC established soil test plots where infiltration rates and soil moisture were monitored between control soils (1:1 mixtures of Sand Fines and soil) and the same soils amended in the upper 3 inches with bentonite. Early results showed decreases in infiltration in the bentonite amended soils, but the permeability of the bentonite amended soils increased over time to levels similar to unamended soils. Follow-up chemical testing and comparison of unweathered bentonite amended soils and weathered bentonite treated soils indicated that the permeability increase resulted from chemical reactions (calcium-for-sodium ion exchange) that took place after the soil amendments were incorporated.

CLIENT

PPL Generation, LLC

CEC SERVICES

- *Beneficial Use Permitting*
- *Agronomy/Soil Science*

Mitchell Landfill

Cresap, West Virginia

The Ohio Power Company needed to develop a landfill facility that would accept flyash produced at its Mitchell Power Plant in Marshall County, West Virginia. The landfill site is a deeply-incised, steeply-sloped valley situated above an abandoned underground coal mine and adjacent to a large impoundment for coal combustion by-products (CCB) and coal mine refuse.

CEC performed preliminary engineering design which included several conceptual design options, each of which evaluated airspace, anticipated life, lined area, and soil balance. The selected landfill design included an impermeable composite liner system comprised of a geosynthetic clay liner (GCL) overlain by a PVC membrane; a groundwater interceptor drainage system; a leachate collection and conveyance system; a lined leachate storage basin; storm water collection and conveyance systems, including three stormwater management/sediment control basins; a compacted clay cover system; and associated haul roads, stockpile areas and operational facilities.

CEC staff also coordinated, managed and performed hydrogeologic and geotechnical subsurface investigations, cultural resource studies, stream and wetland delineations, endangered species evaluations, groundwater sampling, site survey, and laboratory testing programs in support of EPA permit requirements for construction of a landfill. For the EPA Solid Waste permitting, CEC prepared engineering design drawings and the accompanying Class F Industrial Landfill Facility Solid Waste Permit Application narratives, including a Hydrogeologic Subsurface Report, Mine Subsidence Report, Operating Record, Groundwater Monitoring Plan, Groundwater Protection Plan, Erosion and Sediment Control Plan, and Construction Quality Assurance Plan. With respect to the Individual Clean Water Act (CWA) Section 401/404 Permit Application, CEC conducted jurisdictional waters delineations, stream quality assessment surveys, stream mitigation plan preparation, Endangered Species Act compliance services (including Indiana bat mist net surveys and habitat assessment surveys), and associated agency coordination activities. CEC utilized the West Virginia Stream and Wetland Valuation Metric protocol to determine stream and wetland impact debits associated with construction of the landfill, and stream mitigation credits for activities identified in the prepared mitigation plan. CEC also prepared construction drawings and technical specification for the landfill phases.

The new 100-acre landfill facility contains a 58-acre waste footprint facility that has the capacity to store 10 million cubic yards of CCB, providing 24 years of CCB disposal life for the Mitchell Power Plant.

CLIENT

Ohio Power Company (AEP)

CEC SERVICES

- *NPDES and PTI Permitting*
- *Landfill Design*
- *Ecological Studies*
- *Archaeological Studies*
- *Clean Water Act Permitting*
- *Waste Characterization*
- *Stream Mitigation*
- *Leachate Force Main Design*
- *Haul Road Design*
- *Hydrologic and Hydraulic Analyses*
- *Geotechnical Engineering & Slope Stability Analysis*
- *Seepage Analysis*
- *Cost Estimates and Construction Administration*
- *Aggressive Schedule*