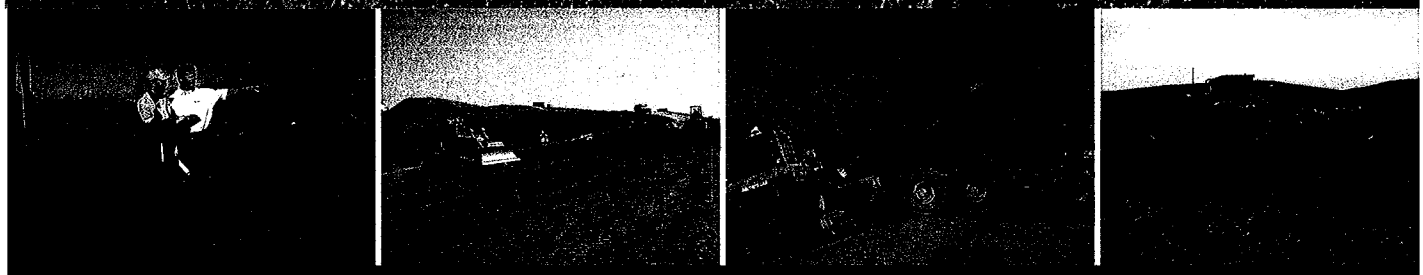
Expression of Interest
South Charleston Landfill
Closure Design and QA/QC
Kanawha County, West Virginia

Prepared For
West Virginia Department of
Environmental Protection
Office of Waste Management
601 57th Street, SE
Charleston, West Virginia 25304

May 5, 2009



DELIVERING SUCCESS FOR CLIENTS AND EMPLOYEES

H. C. NUTTING

A Terracon COMPANY

Employee-Owned

EXPRESSION OF INTEREST
SOUTH CHARLESTON LANDFILL CLOSURE DESIGN AND QA/QC
KANAWHA COUNTY, WEST VIRGINIA

INTRODUCTION

H. C. Nutting, a Terracon Company (HCN) is providing this Expression of Interest (EOI) to present our experience and qualifications for the South Charleston Landfill Closure and Design QA/QC project. Work for the project will include the following components:

1. Site characterization study,
2. Engineering design for leachate management and closure cap,
3. Closure plan and construction specification document preparation, and
4. Construction quality assurance / quality control (QA/QC) activities.

In 2008, HCN completed studies on two closed landfills to determine the environmental site setting, landfill boundaries, waste characterizations, and proposed action plans for either waste removal or improved landfill closure. HCN also completed construction QA/QC activities at five landfill sites. These projects, along with the 30 to 40 years of landfill experience of our environmental/landfill staff, provide the qualifications to successfully complete the proposed project. This EOI presents the following information:

- Company history,
- HCN's approach to completing the necessary work,
- Consultant Qualification Questionnaire (Attachment 1),
- Conceptual Work Plan (Attachment 2),
- Project Summaries (Attachment 3), and
- Personnel Resumes (Attachment 4).

COMPANY HISTORY

HCN is a multi-disciplinary engineering firm with expertise in geotechnical, environmental, mining, geologic, hydrogeologic, and materials engineering. Because of the variety of services we provide, we serve an average of 1,800 assignments annually. Since 1921, HCN has served approximately 20,000 local, regional and national clients including Architects, Consulting Firms, Manufacturing Firms, Oil Companies, Developers, Contractors, Attorneys, Financial Institutions, Public Utilities and Governmental Agencies. The company's landfill-related work dates back to

the 1970s. The Charleston, West Virginia office is supported by other regional offices in Cincinnati and Columbus, Ohio; and Lexington, Kentucky providing approximately 180 professional and graduate engineers, geologists, hydrogeologists, scientists, technicians and support personnel.

In January 2007, HCN joined Terracon, one of the nation's largest employee-owned engineering consulting firms providing geotechnical, environmental, construction materials engineering and testing, and facilities services with over 3,000 employees and 100 offices nationwide. HCN services clients throughout the Midwest and Eastern United States. HCN also serves clients on international project sites, most recently in Taiwan and Europe.

PROJECT SCOPE

As mentioned in the Introduction, the work for the project will include the following components:

1. Site characterization study,
2. Engineering design for leachate management and closure cap,
3. Closure plan and construction specification document preparation, and
4. Construction quality assurance / quality control (QA/QC) activities.

HCN will take a phased approach in completing this work dividing the project into milestone tasks. The first action, site characterization study, is further divided into subtasks to develop a current assessment of the landfill site. As described in more detail in the Conceptual Scope of Work attached behind Tab 2, the site characterization study will include a Field Exploration phase, an Environmental Monitoring phase, and a Site Assessment phase providing a step by step progression to establish an understanding of the landfill project.

Based on this information, the engineering design task can begin. This task will also have a series of tasks that step the design process through conceptual, preliminary, and final design phases of the site improvements to achieve a cost effective and viable closure. Once the final design is complete and approved, the engineering plans can get upgraded to construction detail level along with construction specifications, quality assurance plan, and bidding documents.

During the construction phase, HCN will maintain full-time QA/QC representation to monitor, inspect, test, and certify the environmental improvements needed to complete site closure. A construction record report completes the construction activities; however, there is a need to have continued site maintenance and long-term care of the site after closure. A Post-Closure Care plan will provide direction for the responsible parties to continue site environmental monitoring, operate and maintain any active environmental controls (i.e. leachate pumping system and landfill gas controls), and perform regular site inspections of the landfill cap with repair of cap and cover layers as necessary.

CLOSING REMARKS

Why use HCN?

- We have direct design and CQA experience on landfill closure and post-closure sites.
- We are located within 20 miles of the site.

HCN appreciates the opportunity for submitting this Expression of Interest to the State of West Virginia, Department of Environmental Protection, Office of Waste Management. We look forward to the opportunity to further discuss this project and our experience with you.

Please do not hesitate to contact us if any questions arise during the review of this information.

Respectfully submitted,

H.C. NUTTING / A TERRACON COMPANY

Bruce E. Rome, P.E.
Sr. Project Environmental Engineer

Ronald J. Ebelhar, P.E.
Sr. Principal

H. C. NUTTING

A Terracon COMPANY

ATTACHMENT 1

CONSULTANT QUALIFICATION QUESTIONAIRE

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
LANDFILL CLOSURE CONSULTANT QUALIFICATION QUESTIONAIRE

PROJECT NAME	DATE (DAY, MONTH, YEAR)	FEIN
South Charleston Landfill Closure Design and QA/QC	**May 5, 2009**	

1. FIRM NAME	2. HOME OFFICE BUSINESS ADDRESS	3. FORMER FIRM NAME
H. C. Nutting, A Terracon Company	**912 Morris Street, Charleston, WV 25301**	

4. HOME OFFICE TELEPHONE	5. ESTABLISHED (YEAR)	6. TYPE OWNERSHIP INDIVIDUAL, **CORPORATION**, PARTNERSHIP, JOINT-VENTURE	6A. WV REGISTERED DBE (DISAVANTAGED BUSINESS ENTERPRISE)
513-321-5816	**1921**		YES **NO**

7. PRIMARY OFFICE: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. (name particular type) PERSONNEL EACH OFFICE

912 Morris Street, Charleston, WV 25301 / 302.344.0821 / John Blair / 32
611 Lunken Park Drive, Cincinnati, OH 45226 / 513.321.5816 / Jess A. Schroeder / 130
790 Morrison Road, Columbus, OH 43230 / 614.863.4399 / Prasad Rege / 34
470-B Conway Court, Suite B-8 / Lexington, KY 40511 / 859.455.8530 / Will Beckwith / 8
1414 East Schaaf Road / Brooklyn Heights, OH 44131 / 216.459.8378 / Tom McDonnell / 16

8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM	8a. NAME, TITLE, & TELEPHONE NUMBER-OTHER PRINCIPALS
R. Jackson Scott, Sr. Vice President	**Jess A. Schroeder, Sr. Principal**
James P. Cahill, Vice President	**John Blair, Principal**

9. NUMBER OF PERSONNEL BY DISPLINE **(Bold Lettering Indicates Minimum Design Team Members) Detailed information On Team To Be Included**

40	**ADMINISTRATIVE**	___	ECOLOGISTS	___	LANDSCAPE ARCHITECTS	___	STRUCTURAL ENGINEERS
___	ARCHITECTS	___	ECONOMISTS	___	MECHANICAL ENGINEERS	___	**SURVEYORS**
___	**BIOLOGIST**	___	ELECTRICAL ENGINEERS	1	MINING ENGINEERS	52	OTHER
2	**CADD OPERATORS**	___	ENVIRONMENTALISTS	___	PHOTOGRAMMETRISTS		
___	CHEMICAL ENGINEER	1	**ESTIMATORS**	___	PLANNERS	220	TOTAL PERSONNEL
8	**CIVIL ENGINEERS**	8	**GEOLOGIST**	___	URBAN/REGIONAL		
60	**CONSTRUCTION INSPECTORS**	___	HISTORIANS	___	SANITARY ENGINEERS		
4	**DESIGNERS**	2	**HYDROLOGISTS**	40	**SOILS ENGINEERS**		
1	DRAFTSMEN			1	SPECIFICATION WRITERS		

TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: 13

***RPEs other than Civil must provide supporting documentation that qualifies them to supervise and perform this type of work.**

10. If submittal is by joint venture, list participating firms & outline specific areas of responsibility (including administrative, technical, & financial) for each firm. Each participating firm must complete a "Consultant Confidential Qualification Questionnaire" **N/A.**

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

11. OUTSIDE KEY CONSULTANTS/ SUB-CONSULTANTS ANTICIPATED TO BE USED.		
NAME AND ADDRESS: **Grumman Exploration Inc.** **2309 Dorset Road** **Columbus, Ohio 43221**	SPECIALTY: **Geophysical Survey (Electromagnetic Terrain Conductivity Profiling)**	WORKED WITH BEFORE **X YES** ☐NO
NAME AND ADDRESS: **Fox Engineering** **101 Court Street, North** **Ripley, WV 25271**	SPECIALTY: **Surveying**	WORKED WITH BEFORE **X YES** ☐NO
NAME AND ADDRESS: **REIC** **225 Industrial Road** **Beaver, WV 25813**	SPECIALTY: **Analytical Laboratory**	WORKED WITH BEFORE **X YES** ☐NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐YES ☐NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐YES ☐NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐YES ☐NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐YES ☐NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐YES ☐NO
NAMEAND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐YES ☐NO

12. ***Note: *Personnel* refers to those who will be working directly on the project:*

A. Are your firm's personnel experienced in Solid Waste Landfill Closure Design?

YES Description and Number of Projects:

Our staff has worked on landfill projects dating back to the early 1980s. These projects include engineering on approximately 40 landfill closure or closed landfill projects. Most recently, our staff has performed engineering related services on six (6) landfill closure situations.

NO

B. Are your firm's personnel experienced in Solid Waste landfill site characterization assessment and evaluation?

YES Description and Number of Projects:

As noted above, our staff has worked on landfill projects dating back to the early 1980s. These projects include engineering on approximately 50 landfills or waste disposal facilities requiring site characterization assessments. Most recently, our staff has performed site characterization related services on three (3) landfill/waste disposal situations.

NO

C. Are your firm's personnel experienced in landfill closure construction inspection?

YES Description and Number of Projects:

HCN personnel have been involved in landfill closure inspections since the early 1990s through out the United States. It is estimated they have been involved in over 20 landfill closure construction inspection projects; plus over 75 landfill cell construction projects.

NO

D. Is your firm experienced in Aerial Photography and the Development of Contour Mapping?

YES Description and Number of Projects:

_____

_____

_____

NO **But we have worked with firms all over the country who specialize in this service.**

E. Are your firm's personnel experienced in evaluating ground water contamination, such as may be associated with landfills?

YES Description and Number of Projects:

The HCN personnel have been involved in evaluating ground water contamination of landfills and waste disposal locations for twenty years. They have been involved in an estimated 25 landfill, waste impoundment, and unlicensed disposal locations.

NO

F. Are your firm's personnel experienced in Landfill Closure cost estimating?

YES Description and Number of Projects:

As part of our landfill and civil design related services, we are required to complete cost estimating with respect to design alternatives and final design engineer's estimates. This includes completing estimates for landfill closure. It is estimated that we have completed approximately 10 cost estimates for landfill closure related work in the past five years.

NO

13. PERSONAL HISTORY STATMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR LANDFILL CLOSURE DESIGN** (Furnish Complete data but keep to essentials)

NAME& TITLE (Last, first, Middle Int.)	YEARS OR EXPERIENCE		
	YEARS OF EXPERIENCE:	YEARS OF EXPERIENCE:	YEARS OF EXPERIENCE:
Ebelhar, Ronald J.	**Geotechnical Analysis 33**	**Landfill Design 22**	**Landfill CQA 20**

Brief Explanation of Responsibilities:
Principal-in-Charge, Project Management, Geotechnical / Seismic Analyses, Peer Review, Construction Quality Assurance

EDUCATION (DEGREE, YEAR, SPECIALIZATION)
BSCE/1975/Civil Engineering, MSCE/1976/Civil Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:	REGISTRATION (Type, Year, State)	
American Society of Civil Engineers, ASTM International, Society of American Military Engineers, International Society of Soils Mechanics and Foundation Engineers	**PE, 1988, West Virginia** **PE, 1991, Pennsylvania** **PE, 1987, Kentucky** **PE, 1999, Illinois**	**PE, 1987, Ohio** **PE, 1980, Texas** **PE, 1988, Indiana** **PE, 1991, Utah**

13a.PERSONAL HISTORY STATMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR LANDFILL CLOSURE DESIGN (name type of design or work)** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF EXPERIENCE:	YEARS OF EXPERIENCE:	YEARS OF EXPERIENCE:
Rome, Bruce E.	**Landfill Design 35**	**Landfill CQA 25**	**Bidding Documents, Construction Plans & Specifications 25**

Brief Explanation of Responsibilities:

Manages the site characterization tasks overseeing the work of geologist and hydrogeologists, performs and directs the landfill design work, works with Auto CAD personnel in drawings preparation, performs drainage calculations, writes specification documents, assembles bidding documents, participates in pre-bid and pre-construction meetings, reviews shop drawings and material submittals, oversees landfill construction quality assurance, manages project budgets and schedules.

EDUCATION (Degree, Year, Specialization)
BSCEE/1979/Civil and Environmental Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)	
American Society of Civil Engineers **Solid Waste Association of North America**	**PE, 1982, Wisconsin** **PE, 1991, Indiana** **PE, 1995, Kentucky**	**PE, 1988, Ohio** **PE, 1988, Michigan**

13b. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR LANDFILL CLOSURE QA/QC** (Furnish complete data but keep to essentials)			
NAME & TITLE (last, first, middle Int.) **Rome, Bruce E.**	YEARS OF EXPEIRENCE		
	YEARS OF EXPERIENCE (name type):	YEARS OF EXPEIRENCE (name type):	YEARS OR EXPEIRENCE (name type):
Brief Explanation of Responsibilities:			
EDUCATION (Degree, Year, Specialization)			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS		REGISTRATION (Type, Year, State)	

13c. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR HEAVY EARTH WORK CONSTRUCTION PROJECTS** (Furnish complete data but keep to essentials)			
NAME & TITLE (last, first, middle Int.) **Ebelhar, Ronald J.**	YEARS OF EXPERIENCE		
	YEARS OF EXPERIENCE (name type)	YEARS OF EXPERIENCE (name type)	YEARS OF EXPERIENCE (name type)
Brief Explanation of Responsibilities			
EDUCATION (Degree, Year, Specialization)			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS		REGISTRATION (Type, Year, State)	

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE THIS PROJECT (name project)
Auto CAD 2007
Microstation Version 8
Microsoft Office Suite (Word, Excel, Access, PowerPoint, Publisher)
Haestad Methods - PondPack™ for storm water drainage analysis as needed
STABL and ReSLOPE for slope stability analysis
Shake2000 – Seismic Site Response Analyses
Plaxis – Finite Element Analysis software
AutoCAD Workstations (4)
Desktop Computers (84)
Laptop Computers (19)
Laser Printers (31)
Plotters – HP750C (1)

15. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS THE DESIGNATED ENGINEER OF RECORD ASSOCIATED WITH OR RELATING TO LANDFILL CLOSURE OR CONSTRUCTION.				
PROJECT NAME,TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	NATURE OF YOUR FIRM'S RESPONSIBILITY	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETE
Historic Waste Area Investigation Village of Milan, Ohio	Village of Milan 11 South Main St P.O. Box 1450 Milan, Ohio 44846 Bruce A. Bowie, City Manager	Investigate an old fill area located adjacent to a farm field. Prepared Site Assessment Report	Investigation Study $55,400 No construction cost developed at this time	Investigation Study 95% Complete Waiting for agency review.
Drainage Improvements Seneca East Landfill Republic, Seneca County, Ohio	Waste Management Closed Sites Group 4010 Powell Road Dayton, Ohio 45424 Robin Jones	Address increase in leachate generation by improving surface water drainage off landfill site. Prepare permit and construction documents	Design, Construction Plans, and CQA $25,000 Construction Estimate $100,000	Design 100% Complete Construction 0% (pending Ohio EPA approval)
Ottawa River Bank Stabilization Seriff Road Landfill Lima, Ohio	Waste Management Closed Sites Group 4010 Powell Road Dayton, Ohio 45424 Robin Jones	Design bank stabilization to protect old waste fill at the existing landfill. Prepared design plans, permits, and performed CQA.	Design, Permitting, Construction, CQA, and Post-Construction Monitoring $55,000 Construction $200,000	Project 100% Complete Post Construction Monitoring 20% Complete
North Site Compost Facility Amberley Village, Ohio	Amberley Village 7149 Ridge Road Amberley Village, Ohio 45237 Bernard Boraten, City Manager	Prepare construction plans, bidding documents, and permits for compost waste excavation to restore area to clean site condition Perform CQA Post Construction Monitoring	Engineering Fees through CQA $50,000 Construction fees $600,000 Monitoring $7,000	Project 100% Complete through construction Monitoring 40% complete
TOTAL NUMBER OF PROJECTS: Five (5)			TOTAL ESTIMATED CONSTRUCTION COSTS: $ 2,900,000	

16. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS SERVING AS A SUB-CONSULTANT TO OTHERS RELATING TO LANDFILL CLOSURE AND CONSTRUCTION.					
PROJECT NAME, TYPE, AND LOCATION	NATURE OF FIRMS RESPONSIBILITY	NAME AND ADDRESS OF OWNER	ESTIMATED COMPLETION DATE	ESTIMATED CONSTRUCTION COST:	
None				ENTIRE PROJECT	YOUR FIRMS RESPONSIBILITY

17. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM WAS THE DESIGNATED ENGINEER OF RECORD (List 5 to 7)				
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
Historic Waste Disposal Area Characterization and Removal John E. Amos Power Plant Winfield, WV	American Electric Power 700 Morrison Road Gahanna, Ohio 43230 Attn: Tommy Antil	$2,000,000	2008	NO, currently on hold
Slope Reconstruction ELDA Landfill Cincinnati, Ohio	Waste Management Closed Sites Group 4010 Powell Road Dayton, Ohio 45424 Robin Jones	$250,000	2007	Yes
Unit 3, Cell 1 Construction CQA Pendleton County Landfill Butler, Kentucky	Rumpke of Kentucky 10795 Hughes Road Cincinnati, Ohio 45251 William Fairchild	2,000,000	2008	Yes
Unit 3, Cell 1 Construction Plans Montgomery County Landfill Montgomery County, Kentucky	Rumpke of Kentucky 10795 Hughes Road Cincinnati, Ohio 45251 William Fairchild	$800,000	2008	Yes
Bank Stabilization Design and Construction Seriff Road Landfill Lima, Ohio	Waste Management Closed Sites Group 4010 Powell Road Dayton, Ohio 45424 Robin Jones	$200,000	2007	Yes
Rockport Plant Fly Ash Landfill Cell Construction and Landfill Closure Rockport, Indiana	American Electric Power 1 Riverside Plaza Columbus, Ohio Kent Adkins	$750,000	2008	Yes

18. COMPLETED WORK WITHIN LAST 5 YEARS IN WHICH YOUR FIRM HAS BEEN A SUBCONSULTANT TO OTHER FIRMS (INDICATE PHASE OF WORK WHICH YOUR FIRM WAS RESPONSIBLE) LIST 5 TO 7.					
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST OF YOUR FIRM'S PORTION	YEAR	CONSTRUCTED (YES OR NO)	FIRM ASSOCIATED WITH
NONE					

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.

H.C. Nutting maintains a complete drilling department with truck-mounted and all-terrain auger drilling rigs for soil boring and monitoring well installations. We also have a full-service material testing laboratory for soil and construction material testing. HCN has performed multiple geotechnical analyses for landfills including a seismic design study for a landfill in Western Kentucky and our staff was involved in the development of geotechnical design standards for the State of Ohio. Our staff has completed design and construction plans for licensed and unlicensed waste disposal landfills/areas including Superfund Sites that were under the review of the U.S. EPA.

20. The foregoing is a statement of facts

Signature: Ronald J. Ebelhar

Title: Senior Principal

Printed Name: Ronald J. Ebelhar

Date: May 1, 2009

H. C. NUTTING

A Terracon COMPANY

ATTACHMENT 2

CONCEPTUAL WORK PLAN

CONCEPTUAL WORK PLAN
SOUTH CHARLESTON LANDFILL CLOSURE

HCN proposes to approach the South Charleston Landfill Closure Design and CQ/QC project in seven task steps as described below:

1. Project Startup
2. Field Exploration
3. Environmental Monitoring
4. Data Assessment and Conceptual Engineering
5. Engineering Design
6. Construction Documents
7. Construction QA/QC and Oversight

PROJECT STARTUP

Start of the project will involve file reviews and site reconnaissance to gather data for specific planning of the field exploration and design task. The file review will look for information regarding past filling practices, construction activities, environmental (groundwater) monitoring, correspondence, etc. Some site preparation work may be required, such as clearing brush for access to complete the field work.

FIELD EXPLORATION

The field exploration task will first consist of a geophysical survey using electromagnetic (EM) terrain conductivity mapping. This will be followed by test pit excavation. A topographic survey of the waste disposal area will complete the field work. Before this field exploration work begins, an Environmental, Health and Safety Plan (HASP) and Field Exploration Work Plan will be prepared to guide the field crews. These Plans will be completed in-house by the HCN Industrial Hygiene staff.

Geophysical Exploration

The geophysical exploration survey will use electromagnetic (EM) terrain conductivity mapping to delineate the lateral extent of filling. This survey will help to characterize the fill, and locate various buried targets. This step is desirable to start with as it is non-invasive and can cover a large area in a short period of time. This work will be performed by a subcontractor and it may take one day to cover the landfill area.

Potential limitations with regard to the performance of the EM survey include: 1) fences, vehicles, building walls, electronic transmission lines, railroad tracks, reinforced pavement and

other nearby conductive metallic objects that may interfere with the EM measurements and limit or preclude interpretation of the data in the vicinity of these features; 2) densely overgrown, wooded areas may be difficult to survey; and 3) the detection or extent of buried man-made targets and waste fill depends on the presence of a detectable contrast in bulk electrical properties between the targets or conditions of interest and the surrounding undisturbed or native soil.

Test Pit Exploration

After we receive the results of the EM survey, we will perform test pit excavations to further delineate the limits of waste and to verify the cover soil texture and thickness. The EM survey should help to delineate specific locations where a test pit should be excavated. We plan to dig test pits on an approximate spacing of 50 to 100 feet along the limits of the disposal areas as well as some test pits in the interior of the landfill to check existing cover depth.

The test pits will be documented on a test pit log along with depths and soil type. No samples of the waste or soil will be collected. Photographs of the test pits will be taken to document the encountered waste materials. All field personnel will use, at a minimum, Level D personal protection (PPE). Test pit exploration work will not occur during precipitation events where storm water runoff could occur.

The excavated material will be placed back into the test pit in a controlled manner and the cover soil replaced.

At the completion of the test pit excavations, the backhoe bucket will be cleaned with brushes.

Topographic Survey

For purposes of illustrating the configuration of the landfill, a topographic survey will be completed the end of field exploration work. This survey effort will define the shape of the landfill topography, locate the test pits, and locate the identified limits of waste. This survey data will then be used to generate a site map that will be included used the Site Assessment Report and for the Engineering Design.

Health and Safety Measures

We will conduct daily Job Hazard Analysis meetings every morning before starting work. A meeting log will be completed.

ENVIRONMENTAL MONITORING

Once the limits of the waste disposal areas are known, the environmental monitoring phase will begin. This phase involves assessing the surrounding environment for impacts from the waste through monitoring groundwater quality and explosive gas production.

Groundwater Monitoring

For groundwater monitoring, soil borings and groundwater monitoring wells will be completed around the waste disposal area in a phased sequence. The soil borings will define the geologic and hydrogeologic conditions. This will provide information to aid installing groundwater monitoring wells around the waste disposal area. The intention is to have one well to serve as an upgradient well for background water quality and have down-gradient wells for detection of leaching contaminates from the waste area. The goal is to compare the down-gradient groundwater quality to the upgradient groundwater quality. Wells will be set into the uppermost aquifer, which could be within the waste itself.

Soil borings will be drilled using an all-terrain-mounted auger drilling rig. Split-spoon sampling will be performed and the soil profile will be logged as the drilling progresses. The temporarily-cased boreholes may be left open for 24-hours to check for water levels; this will help with decision on installing monitoring wells. The bore hole may be instrumented for groundwater monitoring or it may be backfilled with the drill cuttings after the 24-hour water level measurement is taken.

The collected soil samples will be taken to our Charleston Office Geotechnical Laboratory for classification and testing. Some soil characterization testing may be performed on selected samples to aid classification. Soil testing may include moisture content, liquid limit, and plastic limit. A final soil boring log will be prepared for inclusion into a Site Assessment Report.

Installing groundwater monitoring wells will involve a review of the soil boring information. Since this needs to be completed while the drilling rigs are onsite, a geologist or qualified professional may be present during drilling to monitor and record the soil boring data. The wells will consist of a 2-inch-diameter PVC well screen and riser pipe. The well screen will be 10-ft-long with the annular space around the well screen backfilled with sand. Above the well screen, the well pipe will be backfilled with soil and a bentonite seal. There will be a 2- to 3-ft stickup of the well pipe above ground surface. The well pipe will be protected with a steel casing and lock.

The location and elevation of the soil borings and monitoring wells will be recorded by a surveyor for presentation on a final site drawing.

Once the wells are installed, the groundwater monitoring program may begin. The program involves measuring groundwater levels to define groundwater flow direction, purging the wells to remove any residual sediment from the well as result of the installation, groundwater sampling, analytical laboratory analysis, and review of the results. If the upper geologic formation consists of low permeability soil that yield very little water, it may require several trips to purge the wells and collect groundwater samples. Groundwater samples will be collected and shipped to an analytical laboratory for analysis. The testing will follow the West Virginia DEP regulations and will include the following possible list of parameters.

Alkalinity	Calcium	Conductivity	Magnesium	Sodium	Turbidity
Aluminum*	Chloride	Copper	Manganese	Sulfate	Vanadium
Arsenic*	Chromium	Iron	Nickel	TDS	Zinc
Barium	Cobalt	Lead	Nitrate-Nitrite	Temperature	

Landfill Gas Monitoring

The presence of explosive landfill gas will be checked around and with in the landfill with the installation of gas monitoring probes. This requires installing gas monitoring probes adjacent to the waste limits to detect for the presence of landfill gases. The soil borings completed for the groundwater monitoring wells will aid the decision making for installing the gas monitoring probes with respect to migration pathways. The gas probes should go to the same depth as the deposited waste. Since this may not be known, we suggest doing one boring into the waste (trash) deposit area to check for waste depth. This will also give us an opportunity to check explosive gas production in the waste itself.

The gas monitoring probes will consist of a 2-inch-diameter (nominal) polyvinyl chloride (PVC) riser pipe with a 10-foot-long well-screen section. The well-screen section will be backfilled with sand. Bentonite mixed with compacted clay will be placed around the pipe from the sand to ground surface. The riser pipe will be extended above the ground surface by about 3 feet with a friction-fit cap to cover the riser pipe. The gas probe assembly will be secured inside of a steel protective outer casing, equipped with a padlock.

Landfill gas monitoring may be combined with the groundwater monitoring wells that are screened above and below the water table.

DATA ASSESSMENT AND CONCEPTUAL ENGINEERING

The data assessment task will bring together the field data collected for characterizing the landfill area that will be presented in a Site Assessment Report. This report will describe the field exploration efforts including the geophysical survey, test pit excavations, groundwater monitoring wells, gas probes, and monitoring data. The topographic survey drawing will support the field data with illustration of the identified waste boundary and location of the test pits, wells and probes. Geologic cross sections through the waste area may be included to illustrate the relationship of the waste to the geologic formation and groundwater flow. The encountered waste characteristics will be described. Supporting the narrative will be appendix data to include reports on the geophysical survey, test pit logs, boring logs, monitoring results and analytical laboratory test results.

Having an understanding of the site conditions, conceptual engineering will begin the process of establishing environmental site improvements to properly close the landfill. Concepts could include the following:

- site grading to promote surface water drainage,
- surface water drainage channels and sediment basin(s),
- landfill gas control measures,
- additional groundwater monitoring controls,
- leachate collection and treatment measures, and
- final cover system.

The conceptual engineering report will likely consist of a set of drawings showing grading and environmental improvement plan concepts along with details. A brief narrative will describe the improvements. The conceptual design will consider options for the improvements and engineering cost estimates for implementation to aide the decision of how best to achieve the project objectives.

The Site Assessment Report and Conceptual Engineering Design will then be submitted to the WV DEP for review. The conceptual design will be a 30% submittal for review and comment. A meeting to discuss the site assessment and 30% submittal is desired to explain the work completed and to hear initial comments on the conceptual design. This meeting to discuss the results and proposed environmental improvements will then put the project into the detail engineering design phase.

ENGINEERING DESIGN

HCN understands that a landfill closure design must include close interaction with WV DEP's staff that will be considering the future management, operation, and construction the landfill. We want to make sure they are a part of the design team and that their concerns, facility understanding, and knowledge are incorporated into the design. A phased approach provides the opportunity to present the plans and engineered concepts to and get feedback during the design process. The engineering design will continue in two task steps as described below:

1. Design, Analysis, and Drawings (70% Submittal)
2. Final Design (90% and 100% Submittals)

Design, Analysis, and Drawings (70% Submittal)

Task 1 takes the conceptual design toward a final design by refining the final grades and the proposed site improvements along with completing design calculations. The expected design calculation includes geotechnical analysis for slope stability, storm water drainage, soil erosion per the Universal Soil Lose Equation, sediment pond design, leachate generation (HELP Model), and earthwork estimates. The task includes the start of drawings for the site closure. Potentially the following drawings would be prepared, which are focused on Storage Area 1A, will present the landfill redesign for the permit modification:

1. **Existing Site Topography** – showings pre-construction site conditions
2. **Leachate System** – as necessary, this drawing will detail leachate collection system features with reference to construction details.
3. **Final Cover Subbase Grades** – shows proposed regrading of the site for improved surface water drainage.
4. **Final Grades** – takes the Subbase Grades drawing and raises the grades to show top of the placed final cover layer.
5. **Surface Water Drainage** – using the Final Grades drawing illustrate and label surface water drainage features planned for the closure including sediment control measures.
6. **Landfill Gas Control Measures** – as necessary, this drawing will detail gas control measures with reference to construction details.
7. **Cross Sections** – sections will illustrated the existing landfill topography, leachate collection system features, final cover subbase grade, final grade, and surface water drainage improvements.
8. **Details** – as necessary, construction details will illustrate various environmental improvement features such as final cover layer, leachate collection system, gas control measures, etc.

The 70% submittal will be this series of drawings and design calculations. A letter report will explain the analysis completed and include calculations as an appendix.

Final Design (90% and 100% Submittals)

The final design effort with 90% and 100% submittals will be adding notes and support information to the drawings, writing up a formal report for submittal, and refining and finalizing calculations. This step will include HCN senior staff final reviews to the landfill closure design work effort. Also completed during this task will be construction quality assurance and control work plan for use during the construction process.

Post-closure long-term care of the closed landfill will be addressed in a Post-Closure Care Plan document that will describe site inspections, environmental monitoring, maintenance procedures, and contingency action plans if problems are found.

CONSTRUCTION DOCUMENTS

To move the landfill closure process into the construction phase involves taking the Engineering Design drawings and incorporating information to facility the construction effort. This will mainly consist of adding construction layout information to the grading drawings. The layout information is will consist of certification point data at 50-ft to 100-ft spacing intervals and at key grade changes. The point data will have point number, grid coordinates, and elevation. For cover system, the point data is developed for each layer of the cover system.

Along with drawings, the construction documents will consist of a construction manual that has construction specifications for the closure components. The specifications cover specific construction items providing general information, material details, and execution for construction installation. The specification will cover earthwork, drainage, piping, cover soils, topsoil, seeding, etc. Included in the construction manual will be the construction QA/QC Plan.

To facilitate the bidding process, a bid package is assembled that includes bidding instructions, bid form, and construction contract language. Contract language should consist of WV DEP contract materials including general conditions and wage rate requirements. The bidding process will include holding pre-bid meetings at the site and submittal of addenda as the bidding process occurs. After the close of bidding, the bids will be reviewed and recommendation made for selection of the contractor.

CONSTRUCTION QA/QC AND OVERSITE

Once the construction project gets started, construction QA/QC will require having a full-time onsite representative to monitor, test, inspect and record the construction effort. This can involve one to two specifically trained technicians and engineers to complete the QA/QC task. Further oversight is performed by engineer review of "shop drawing" submittals and approval of construction materials. As construction proceeds, the engineer will also participate in site visits, construction progress meetings, review of payment requests, and communication with the WV DEP representative. At the completion of the construction, a Construction Record document will be assembled that provides confirmation of the construction to design requirements. At the completion of the construction effort, the post-closure long-term care process will begin.

ATTACHMENT 3

PROJECT SUMMARIES

Historic Waste Site Characterization
John E. Amos Power Plant
Winfield, West Virginia

Project:
Historic Waste Site Characterization

Client:
American Electric Power

Client Contact:
Mr. Tommy Antill
700 Morrison Rd.
Gahanna, Ohio 43230
P 614.552.1415

Project Manager:
Mr. Bruce Rome

Date:
2007-2008

Fee:
$95,000

Highlights:
Geophysical Survey
Test Pits and Waste Sampling
Waste Removal Plan
Construction Plans and Specifications

H. C. Nutting Company (HCN) was contracted to perform a characterization of a historic waste facility located at the American Electric Power (AEP), John E. Amos Power Plant in Winfield, West Virginia. Proposed plant expansion will occur in the area of the historic solid waste disposal area. The waste disposal area must be removed and the area cleaned up for the proposed expansion. The study area covered a footprint of approximately 1,100 feet by 300 feet.

A geophysical survey was initially performed to identify waste limits and areas of interest for further study. Then a backhoe was used to excavate test pits into and through the waste. Test pit logs were prepared and samples of the waste and underlying soil were collected and tested for hazardous waste. The study determined the horizontal and vertical waste boundaries and waste characteristics. From here a Waste Removal plan was developed and construction documents were prepared for Contractors to excavate and disposal of the waste. The area would then be backfilled with clean soil and leveled to enable the planned expansion.

H. C. NUTTING
A Terracon COMPANY

Historic Waste Site Assessment
Village of Milan, Ohio

Project:
Historic Waste Site Assessment

Client:
Village of Milan, Ohio

Client Contact:
Mr. Bruce Bowie
11 South Main St
Milan, Ohio 44846
P 419.499.2944

Project Manager:
Mr. Bruce Rome

Date:
2008

Fee:
$55,000

Highlights:
Geophysical Survey
Test Pit Exploration
Groundwater Monitoring Wells
Landfill Gas Monitoring Probes
Environmental Site Monitoring
Site Assessment Report

H. C. Nutting Company (HCN) was contracted to perform a characterization of a historic waste facility located in a farm field in the Village of Milan, Ohio. The site was active from approximately 1957 to 1972. After the site was no longer used for waste disposal, a soil cap of unknown thickness, consisting of brown silty sand, was spread over the waste and graded. A portion of the dump site had since been incorporated into a surrounding agricultural field. The dump was used primarily for the disposal of domestic waste, which was then burned or buried. A local company reportedly contributed rubber wastes from its manufacturing processes.

Before the site work could begin a Site Investigation Plan was prepared and provided to Ohio EPA for authorization to proceed with the study. A non-evasive geophysical survey was initially performed to identify waste limits and areas of interest for further study. Then a backhoe was used to excavate test pits to determine waste boundary and soil cover thickness. A soil boring program was performed around the perimeter of the fill area and the boring locations were instrumented as ground water monitoring wells and landfill gas probes. Environmental site monitoring occurred to check for any ground water impacts and landfill gas migration.

The final site product was a Site Assessment Report with recommendation for site improvements. This report was submitted to Ohio EPA for review.

H. C. NUTTING
A Terracon COMPANY

Erskine Commons

Anchor Properties
South Bend, Indiana

Developer:
Anchor Properties
Covington, Kentucky

Contact:
Mr. Mike Ricke
Anchor Properties
859-578-2608

Project Manager:
Ron Ebelhar

Date:
2003 - 2006

Fee:
$290,000

Highlights:

Deep Dynamic Compaction of Landfill Areas

Undercuts of Waste Materials in Building Footprints

Passive Methane Gas Venting Layer

Slurry Cutoff Wall Specifications

Construction Quality Assurance

The Fritterling Landfill was a 13-acre construction and demolition debris/foundry sand landfill site that operated from 1969 to 1982. The site development originated as sand and gravel borrow area for construction of a highway interchange adjacent to property. Landfilling of foundry sand and related materials started shortly thereafter. It was closed in 1982 and an engineered final cover was never installed. The landfill did not have a liner, leachate management collection system or any landfill gas control systems. The Developer purchased 56 acres including the landfill for redevelopment, including a Wal-Mart Supercenter, Lowe's Home Improvement Store, an additional anchor and seven outlots for various retail use.

HCN/Terracon (formerly H. C. Nutting Company) was hired to perform geotechnical consulting services for the site and to provide recommendations for development of the site to avoid potential adverse effects such as short- and long-term settlement, landfill gas, and impacts on groundwater.

HCN/Terracon performed a file search and review of previous geotechnical work done in the area, site reconnaissance, geotechnical borings, and laboratory testing and engineering recommendations. Several geotechnical engineering reports were prepared that addressed the overall site conditions, then individual reports for each of the major areas to be developed. From these reports and a series of meetings with the civil designers and construction managers, the site improvements were addressed in preparation of construction plans and specifications to implement that work.

Those improvements were:

- Locate building pads outside waste areas or undercut where encroachment was unavoidable
- Evaluate sources of borrow under shallow areas of landfill
- Dynamic compaction of landfill waste area - locate parking areas and roadways in dynamic-compacted landfill areas
- Install passive landfill gas vents in building walls adjacent to landfill areas, and
- Install slurry cutoff wall to prevent infiltration from detention pond into landfill areas

HCN/Terracon performed construction quality assurance during site grading, undercuts, dynamic compaction, geosynthetic clay liner installation, leachate collection system installation, installation of passive gas venting layer, building pad compaction, cement stabilization of building pad where necessary, concrete and asphalt roadways and parking areas. Daily field reports were prepared for agency submittal and posted to an Internet ftp site for use by all project stakeholders.

H. C. NUTTING

A Terracon COMPANY

ELDA Recycling and Disposal Facility

Cincinnati, Ohio

Client:
Waste Management of Ohio, Inc.
Closed Sites Group

Client Contact:
Robin Jones
4010 Powell Rd.
Huber Heights, Ohio 45424
P 937.235.2382

Project Manager:
Ron Ebelhar – Senior Review & Geotechnical Engineer

Bruce Rome – Project Manager/Senior Engineer

Date:
2002-2009

Fee:
$300,000
(Total of 8 work order authorizations to Master Services Agreement with three change orders)

Highlights:

Analysis of Landslides

Design of Remedial Measures

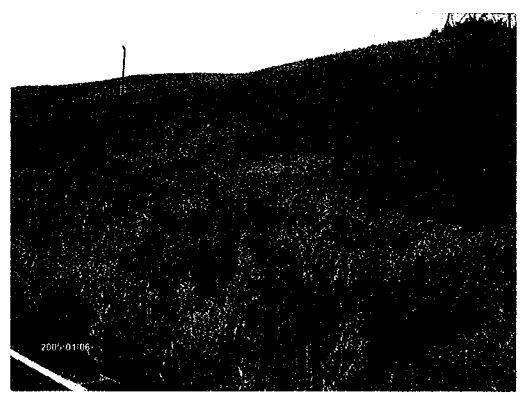
Construction Quality Assurance

The ELDA Recycling and Disposal Facility is a closed municipal solid waste landfill located within the City of Cincinnati city limits. It was operated until the late 1990s. H. C. Nutting Company staff has provided engineering consulting services at the facility through a Master Services Agreement since the mid 1990s in support of waste disposal landfill operations and closure maintenance. Work orders were awarded for construction plans and construction observation in 2007 and 2008 for site repairs.

Scope of Work

HCN has performed site investigations, monitored and documented construction activities and have prepared design and permit documents for site construction. Site services include:

- Landslide investigations at three locations,
- Analysis and design of repair measures for landslide situations,
- Designed a concrete retaining wall for landslide repair,
- Laboratory testing of soil, aggregate and geosynthetic materials,
- Design of stormwater drainage and erosion controls for the cap system,
- Monitoring surface preparation through cut and fill activities,
- Monitoring recompacted soil construction,
- Monitoring installation of groundwater seep control systems,
- Monitoring landfill gas and leachate force main system construction,
- Confirmation of geosynthetic material compliance with project specifications,
- Prepared construction plans, specifications and bid documents, and
- Monitoring construction of a transfer station facility building.



H. C. NUTTING

A Terracon COMPANY

North Side Compost Facility

Amberley Village
Hamilton County, Ohio

Client:
Amberley Village
Hamilton County, Ohio

Client Contact:
Bernard Boraten, City Manager
513.531.8675

Project Manager:
Bruce Rome

Date:
2004-2009

Fee:
$40,000

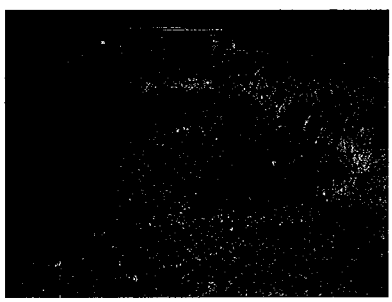
Highlights:

Landfill Gas Monitoring

Construction Plan and Bidding Documents

Prepared Reports for Agency Submittal

Construction Quality Assurance



Project Description

The Amberley Village Compost Debris Landfill is a closed landfill located in the Village of Amberley, Hamilton County, Ohio. The landfill facility operated as a series of trenches excavated 6 to 10 feet deep, probably beginning in the 1950's and ending in the late 1980's. The Village used these trenches for disposal of leaves, wood debris, tree limbs and logs. The filled trenches were then covered with 2 to 4 feet of native clay soil. Hamilton County Department of Health permitted the landfill in 1969. The Village closed the disposal facility in 1989 and replaced it with a surface composting facility.

Scope of Work

HCN prepared a Gas Monitoring Plan pursuant to Ohio Administrative Code regulations. At the Village's request, HCN prepared an application to Ohio EPA for the complete removal of the disposed material at the site. The Village had a opportunity to sell the land to a developer for commercial and residential use.

Along with the removal application, HCN prepared construction bid documents consisting of bidder's instructions, contract, general conditions, construction specifications, and construction plan drawings. The goal of the waste removal was to recycle as much of the debris. The selected contractor was able to separate the material such that 90% of the waste was recycled as landscape mulch the remaining going to a licensed municipal landfill.

HCN provided construction quality assurance services and certification that the site was cleaned of the deposited material and monitored the placement of compacted fill to backfill the excavation. The project found waste extended beyond the known boundary including under a cell tower compound. The material in the compound was not removed. HCN worked with the Villlage and Ohio EPA to develop a monitoring plan for the remaining debris.

H. C. NUTTING

A Terracon COMPANY

Beech Hollow Landfill

Wellston, Jackson County, Ohio

Project:
Beech Hollow Landfill
Wellston, Ohio

Client:
Rumpke Waste, Inc.

Client Contact:
Mr. John Hattersley
10795 Hughes Rd.
Cincinnati, Ohio 45251
P 513.581.0122

Project Manager:
Mr. Bruce Rome

Date:
1995-2009

Fee:
$500,000 +

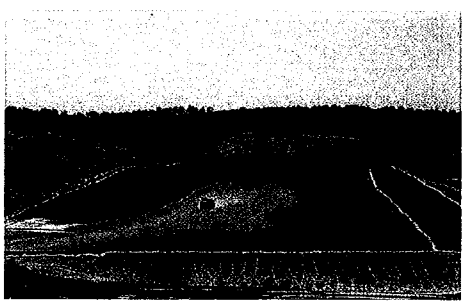
Highlights:

Construction Quality Assurance

Geotechnical Slope Stability Analysis

Test Pad Demonstrations

Pre-Qualification of Construction Materials



Beech Hollow Landfill is an active municipal solid waste landfill located in the southeastern part of Ohio. H. C. Nutting Company (HCN) has provided engineering consulting services at the Beech Hollow Landfill since 1995 in support of the landfill operations.

The Beech Hollow Landfill site setting is unique in that it is located in an area of former and active strip mining of natural resources (coal, sand and gravel). The area of the landfill development includes overburden stockpiles and natural geologic deposits. Development of the landfill requires examination of excavated subbase conditions for sound, firm foundation soils. This typically requires over-excavation of soils to achieve acceptable conditions. The soils for liner construction include natural clay deposits and overburden mine spoil materials. These materials are processed on-site through a crushing and screening operation then tested for confirmation of soil liner quality.

HCN has monitored and documented construction activities of ten waste disposal cells and monitored and documented construction activities of 67 acres, plus interim final cover placement on completed waste disposal areas. HCN has also amended project specifications, completed geotechnical analysis (slope stability) on interim landfill slopes, and tested geomembrane liner material for project compliance. These services include:

- construction quality assurance and certification,
- borrow source documentation,
- geotechnical laboratory material testing,
- soil liner test pad demonstration,
- subsurface preparation through monitoring cut and fill activities,
- soil liner construction,
- geomembrane liner installation,
- leachate management system construction, and
- confirmation of geosynthetic material compliance with project specifications.

H. C. NUTTING

A Terracon COMPANY

Woodsdale Sanitary Landfill

Butler County Department of Environmental Services
Butler County, Ohio

Client:
Butler County Dept. of Environmental Services
Butler, Ohio

Client Contact:
Dept. of Environmental Services
513.887.3077

Project Manager:
Bruce Rome

Date:
1995-1998

Fee:
$190,000

Highlights:

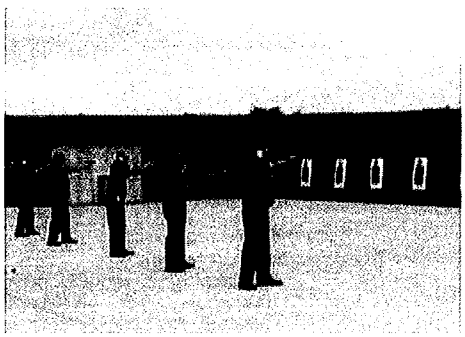
Environmental Assessment & Remedial Measures

Install Leachate Collection System

Installed Holding Tank with Monitoring Sensors

Prepared Reports for Agency Submittal

Construction Quality Assurance



The Woodsdale Sanitary Landfill is a 53 acre landfill site that operated from 1971 to 1982. It was closed in 1982 and landfill final cover, consisting of two (2) feet of compacted clayey soil, was placed in 1988. The site liner is reported to be a two (2) foot thick natural or placed clay layer. The landfill does not have a leachate management drainage layer or collection system or any landfill gas control systems. The Owner had been approached by several interested groups in seeking to use this site and adjacent owned property for other activities due to its rural setting, close location to the Great Miami River, and location to a County Park meeting facility.

Terracon/HCN (formally H. C. Nutting Company) was hired to complete an environmental assessment on the site and propose remedial measures to address several obvious problems (leachate seeps, landfill gas odors, and erosion of the final cover) and others. The project work was geared toward preparing the site to enable a final use other than open green space. Ground water quality was not part of the site assessment work.

Terracon/HCN performed a file search and review and completed a detailed site reconnaissance survey that identified locations of landfill seeps, waste settlement depressions, landfill gas blow-outs, animal burrows, and areas of final cover needing soil and vegetation repair.

A Landfill Condition Evaluation report was prepared that addressed the site conditions, proposed repairs, prioritization of repairs, and potential final uses. From this report, the immediate environmental improvements were addressed in preparation of construction plans and specifications to implement that work. Those improvements were:

- Install a toe of slope leachate collection system in the areas experiencing the greatest volume of leachate seeps,
- Install an underground double-walled holding tank with level monitoring sensors for leachate withdrawal,
- Sealing other smaller leachate breakouts,
- Install passive landfill gas vents, and
- Repair eroded final cover on one side of the landfill.

Terracon/HCN performed construction quality assurance during the installation of the leachate collection pipe and holding tank, monitored installation of passive gas vents, sealing of the smaller leachate breakouts, and monitored the repair and restoration of the final cover. A construction record report was prepared for agency submittal. Since installation of the leachate collection pipe, the leachate seeps have diminished. Butler County Sheriff's Department has constructed a shooting range facility at the landfill to provide a low-impact use of the site.

H. C. NUTTING

A Terracon COMPANY

ATTACHMENT 4

PERSONNEL RESUMES

H. C. NUTTING

A Terracon COMPANY

RONALD J. EBELHAR, P. E., F.ASCE, F.ASTM

SENIOR PRINCIPAL - LANDFILL & ENVIRONMENTAL SERVICES

PROFESSIONAL EXPERIENCE

Mr. Ebelhar has served as project manager and senior consultant in connection with selected geotechnical and environmental engineering projects worldwide. Mr. Ebelhar has provided design and consulting services for a variety of commercial, industrial, waste disposal (RCRA/TSCA) and public utility applications; environmental site evaluations for commercial, industrial, and public utility sites; geotechnical engineering design and construction services; and marine geosciences and engineering field explorations.

AREAS OF EXPERTISE INCLUDE:

Geotechnical Engineering
Seismic Site Response / Vibration Analyses
Marine Geosciences and Engineering
Environmental Site Evaluations
Environmental/Remedial Engineering Design

PROJECT EXPERIENCE

- Skinner Landfill Superfund Site, West Chester, Ohio - CERCLA site remedial design communication with PRPs, OEPA and USEPA. Site includes RCRA Subtitle C landfill cover, contaminated groundwater collection and treatment system, upgradient groundwater control system evaluation, and Soil Vapor Extraction system feasibility evaluation.

- Waste Management of Kentucky, Outer Loop RDF. Louisville, Kentucky - Prepared conceptual layout and grading plans for microbial algae - based leachate treatment systems. Designed cascade aeration system "polishing step" for ammonia removal.

- A.M. Kinney / Lockwood Greene / WMCO, Fernald Environmental Restoration Project, Fernald, Ohio - Supervised geotechnical and field construction quality assurance for access road improvements, the FMPC coal storage facility, the Building 20 autoclave, surge lagoon, Pit #4 cover, Advanced Wastewater Treatment Plant, etc. Geotechnical engineering analyses for remediation of Storm Water Retention Basins.

- Parsons, Fernald Environmental Restoration Project, Fernald, Ohio - Peer review for settlement evaluation of On-Site Disposal Facility, geotechnical sampling and testing plan for geotechnical characterization of the Former Plant Area for excavation and dewatering plans, preparation of conceptual dewatering considerations.

EDUCATION

Bachelor of Science, Civil Engineering, University of Kentucky, 1975

Master of Science, Civil Engineering, University of Kentucky, 1976

REGISTRATIONS

Professional Engineer in Ohio, Kentucky, Indiana, West Virginia, Texas, Utah, Pennsylvania and Illinois

AFFILIATIONS

ASTM Committee D18 Chairman, 2008 to present

ASTM Committee D18 First Vice Chairman, 2001 to 2007

American Society of Civil Engineers, 1977 to present

Society of American Military Engineers, 1994 to present

ASTM Special Services Award for contributions to the development of standards for soil dynamics and cyclic testing, 1986 and 1993

ASTM Technical Editors Award, 1995

ASTM A. Ivan Johnson Outstanding Achievement Award, 2002

ASTM Award of Merit, June 2003

ASTM Woodland G. Shockley Award, January 2007

WORK HISTORY

H. C. Nutting Company, A Division of Terracon, Principal Engineer from 1996 to present

Rust E & I, Vice Pres. . Principal Engineer from 1987 to 1996

McClelland Engineer, Consultant from 1977 to 1987

- City of Cincinnati, Ridgewood Development Site, Cincinnati, Ohio - Designed retrofit leachate collection system and barrier for landfill adjacent to industrial development site. Geotechnical aspects of design for four-lane street access over existing closed landfill was performed and built. Supervised remediation and disposal of hazardous materials encountered during excavation of force main lift station and meter/valve pit.

- Commonwealth of Kentucky, Maxey Flats Disposal Facility, Hillsboro, Kentucky - Monitoring of a low level nuclear waste disposal facility for two years. Management of five-member site staff performing monitoring surface water, groundwater and air quality, maintenance of existing leachate removal system and landfill cell covers, design and installation of surface water control system improvements and new PVC landfill covers, and construction oversight for a new geosynthetic-lined disposal cell.

- CECOS International, Cap Subsidence Modeling, Williamsburg, Ohio - Project Manager for evaluation of potential for subsidence of RCRA/TSCA Landfill Cap. The project included the tabulation of daily disposal records of discarded transformers, noting locations of the transformers. Mine void subsidence theory was used to project the zone of influence to the cap surface and to estimate the deformations caused by the void closure. Tabular and graphical presentations of the worst-case deformation potential were prepared and submitted.

- CECOS, Aber Road, Williamsburg, Ohio - CQA Certifying engineer for double composite-lined temporary containment facility for potentially contaminated surface runoff, Stormwater Management Facilities, Interim Gas Control system for Cell 2. Responsibilities included review and analyses of field data and certification of construction.

- Golsch Environmental, Hooven, Ohio - Project manager for permitting of 63-acre Construction and Demolition Debris landfill. Project included preparation of permit application, site characterization, facility design plans, debris placement plans, facility closure plans, and groundwater monitoring plan.

- Rumpke Waste Systems, Rumpke Sanitary Landfill, Cincinnati, Ohio - CQA certifying engineer for 4.3-acre solid waste landfill, with 295,000 cu.yd. structural fill berm, composite soil/GCL/HDPE liner, geocomposite leachate collection system.

- Rumpke Waste Systems, Beech Hollow Landfill, Wellston, Ohio - CQA certifying engineer for 4.8-acre solid waste landfill cell, composite soil/HDPE liner, synthetic leachate collection system in reclaimed coal mine area.

- Rumpke Waste Systems, Brown County Landfill, Georgetown, OH - CQA engineer for 3.2-acre solid waste landfill cell, composite soil/GCL/HDPE liner, geocomposite/HDPE pipe leachate collection system

- Waste Management of Kentucky, Blue Ridge RDF, Irvine, Kentucky - Certifying engineer for 4-acre vertical expansion, including structural fill berm on existing slope, geosynthetic clay liner and HDPE geomembrane liner.

- Waste Management of Ohio, Stony Hollow RDF, Dayton, Ohio - Certifying engineer for Cell 1B involving rock excavation, subbase isolation and structural fill placement, compacted soil liner placement, geosynthetic clay liner, HDPE geomembrane and leachate management media for a 7.6-acre cell.

- Waste Management, ELDA RDF, Cincinnati, Ohio - Supervised geotechnical slope and seismic stability analyses (including site response analyses, yield acceleration and cumulative deformation) for 180-ft. high solid waste landfill embankment on hillside site. Supervised design of Construction & Demolition Debris landfill expansion

- GENCO, Hazardous Waste Landfills, Bangkok, Thailand - supervised and prepared aspects of design documents for hazardous waste landfills at Ratchaburi and Rayong Industrial Estate. Provided data to support proformae and permit documents, prepare specifications, CQA and Operations plans.

- Westinghouse, Interim Storage Facility, Bloomington, Indiana - Supervised and performed geotechnical, geologic and hydrogeologic studies of the overburden soils and limestone bedrock materials. Supported design and supervised construction quality assurance of RCRA/TSCA double-composite lined cell, with synthetic leak detection system, geosynthetic leachate collection system, passive gas collection and venting system and composite cap. Prepared certification report for construction and excavation plan for subsequent closure of facility.

- Aptus, Tooele, Utah - project manager for design and permitting a 1000-acre RCRA/TSCA waste disposal facility. Responsible for exploration, construction cost estimates, closure/post closure monitoring program design, contract administration, budget and schedule.

- Newport Steel, Wilder, Kentucky - Designed RCRA Subtitle C-equivalent asphalt cap for slag landfill. Supervised geotechnical study for design and load testing of deep foundation systems for various plant expansions. Design activities included 120-ft-long pipe piles, wave equation/pile drivability predictions, compile load tests.

PUBLICATIONS

- Ebelhar, R.J., **"Parameter Selection for Static Slope Stability in Earth Slopes",** *Proceedings, Slope Stability in Waste Systems*, ASCE, Central Ohio Section 1997 Fall Seminar, Columbus, OH, November 1997.

- Ebelhar, R.J., Drnevich, V.P., and Kutter, B.L., **"Dynamic Geotechnical Testing II",** *Proceedings, ASTM Symposium of Dynamic Geotechnical Testing*, STP 1213, August, 1994

- Clukey E.C., Ebelhar, R.J., et. al., ***"Wave Attenuation, Mudslide and Structural Analyses for Mississippi Delta / Main Pass Caisson,"*** Journal of Offshore Mechanics and Arctic Engineering, ASME, Vol. 112, No. 1, February 1990.

- Young, A.G., Ebelhar, R.J., et al, **"Cone Penetrometer and Conductor Pullout Tests in Carbonate Soils",** *Proceedings, International Conference on Engineering for Calcareous Sediments*, Perth, Australia, ISSMFE, Balkema/Rotterdam, 1988

- Johnson, G.W., Ebelhar, R.J., et al, **"Comparison of In Situ Vane, Cone Penetrometer and Laboratory Tests",** *Proceedings, ASTM Symposium on Vane Shear Strength Testing on Soils: Field and Laboratory,* STP 1014, December, 1988.

- Ebelhar, R.J. and Workman, J.P., **"Comparison of CRS Consolidation and Incremental Consolidation Tests",** *Proceedings, ASCE Texas Section Meeting*, 1980.

- Ebelhar, R.J.and Drnevich, V.P. et al, **"Geotechnical Properties of Eastern Kentucky Mine Spoils",** *Proceedings, Ohio River Valley Soils Seminar*, ORVSS VI, Lexington, KY, 1976.

H. C. NUTTING

A Terracon COMPANY

BRUCE E. ROME, P.E.

PRINCIPAL CIVIL ENGINEER

PROFESSIONAL EXPERIENCE

Mr. Rome has 34 years of experience involved with site engineering including grading, storm water drainage, regulatory permitting. Project types include residential properties, commercial and industrial facilities, and solid waste landfills. Responsibilities include conceptual and final design, report and drawing preparation, development of construction specifications, construction bidding and contract documents, coordination and management of construction observation, volume and cost estimate calculations, hydrologic analysis, and hydraulic analysis of drainage channels, spillways, and detention ponds. Specific project experience is represented below.

PROJECT EXPERIENCE

Mr. Rome has worked on various civil & environmental engineering projects at the following locations:

Landfill Project List

- Adams County LF, West Union, OH
- Akron Landfill, Akron, OH
- Amberley Village LF, Amberley, OH
- Beech Hollow Landfill, Wellston, OH
- Bond Road LF, Hamilton County, OH
- Brown County LF, Georgetown, OH
- Cherokee Run LF, Bellefontaine, OH
- Cincinnati Water Works Sludge Disposal Landfill, Fairfield, OH
- ELDA Landfill, Cincinnati, OH
- Golsch Environmental C&DD Landfill, Hooven, OH
- Hoffman Road Landfill, Toledo, OH
- Miamitown C&DD LF, Miamitown, OH
- Pike Sanitation Landfill, Waverly, OH
- Pine Grove Landfill, Finy & Assoc., Amanda, OH
- Rumpke Sanitary LF, Cincinnati, OH
- Seneca East LF, Tiffin, OH
- Skinner LF Superfund Site, West Chester, OH
- Suburban South LF, Brownsville, OH
- Triangle Landfill, Ross County, OH
- Village of Milan, OH
- Wellston Landfill, Wellston, OH
- Whitewater C&DD Landfill, Cincinnati, OH
- Willowcreek Landfill, Atwater, OH
- Woodsdale Road LF, Butler County, OH

- Blue Ridge Landfill, Irvine, KY
- Dow Corning Landfill, Carrollton, KY
- Newport Steel Landfill, Wilder, KY
- Maysville-Mason County LF, Maysville, KY
- Montgomery County LF, KY
- Outer Loop Landfill, Louisville, KY
- Pendleton County LF, Butler, KY
- Wilder Ash Fill Site, Wilder, KY

- Fryman Property Cleanup, Rising Sun, IN
- Rockport Fly Ash LF, Rockport, IN

- Chain of Rocks LF, Chouteau Island, IL
- Milam Landfill, Fairmont City, IL

- Folkerstma Refuse Site, Walker, MI
- Jefferson Conner Revitalization Project, Detroit, M'
- KAVCO Landfill, Barry County, MI

EDUCATION

Bachelor of Science, CEE, University of Wisconsin-Madison 1979

A.A.S., Civil, Gateway Technical Institute, Racine, WI 1974

REGISTRATIONS

Professional Engineer in Indiana, Kentucky, Michigan, Ohio, and Wisconsin

CERTIFICATIONS

OSHA 40-hour Hazardous Materials Training

AFFILIATIONS

American Society of Civil Engineers

EMPLOYMENT HISTORY

H. C. Nutting Company, A Terracon Company, Professional Engineer 1997 to present

RUST E & I, Professional Engineer 1994 to 1997

Warzyn Engineering, Inc., Professional Engineer 1974 to 1994

- Kentwood Landfill, Kentwood, MI
- City of Ashland Landfill, Ashland, WI
- Fond du Lac County LF, Fond du Lac, WI
- Lauer I Landfill, Menomonee Falls, WI
- Metro Landfill, Franklin, WI
- Metropolitan Refuse District LF, Middleton, WI
- Muskego Landfill, Muskego, WI
- Omega Hills Landfill, Germantown, WI
- Orchard Ridge LF, Menomonee Falls, WI
- Parkview LF, Menomonee Falls, WI
- Pheasant Run LF, Bristol, WI
- WP&L Ash Landfill, Portage, WI
- WP&L Ash Landfill, Sheboygan, WI
- AEP Historic Waste Site, St. Albans, WV
- Thailand Hazardous Waste Process and Disposal Facility, Plauk Daeng, Rayong Province, Thailand

Project Descriptions - Site Review and Assessments

- **Hoffman Road Landfill, Division of Solid Waste, City of Toledo, Toledo, OH** Project Engineer for investigation of old landfill areas to incorporate environmental improvements into landfill expansion plans.

- **John E. Amos Power Plant, St. Albans, WV** Project Engineer to investigate a historic waste disposal area on an power plant facility and develop a waste removal plan and construction plans and specifications.

- **KAVCO Landfill, Barry County, MI** Project Engineer to investigate conditions of prematurely closed landfill for design of closure cover system and environmental controls.

- **Metro Landfill, Waste Management of Wisconsin, Franklin, WI** Investigation of existing 40 acre landfill for design of environmental improvements including compacted clay cut off walls, leachate collection systems to enable a former hazardous waste landfill to remain in operation for municipal solid waste disposal.

- **Omega Hills Landfill, Waste Management of Wisconsin, Germantown, WI** Project Engineer for investigation of an existing 100 acre hazardous/non-hazardous waste landfill to design improvements including soil-bentonite cut off walls, leachate collection systems, and surface water drainage controls to close the facility.

- **Skinner Landfill, PRP Group, West Chester, OH** Project Engineer to complete data review of landfill operations including site reconnaissance to design a landfill cover system for an inactive disposal facility.

- **Village of Milan, Historic Waste Facility, Milan, OH** Project Engineer to oversee the investigation of environmental impacts of a 1.4-acre historic waste fill.

- **Willowcreek Landfill, Browning Ferris Industries, Atwater, OH** Project Engineer for investigation of existing landfill to incorporate improvements as part of the landfill expansion.

- **Woodsdale Road Landfill, Butler County, OH** Project Engineer for investigation of existing landfill conditions to design environmental improvements for a closed municipal solid waste landfill to enable post-closure use.

Project Descriptions - Landfill Engineering

- **Akron Landfill, Waste Management, Inc., Akron, OH** Project Engineer/Manager to prepare construction plans and specifications, oversee quality assurance for cover and drainage improvements, upgrades to landfill gas control system, and engineering assistance during construction for a closed 30 acre landfill.

- **Amberley Village, North Site Compost Facility, OH** Project Engineer and Manager to prepare permit documents, construction plans and specifications, and bidding documents for leaf and wood debris removal from former compost site.

- **Blue Ridge Recycling and Disposal Facility, Waste Management of Kentucky, Irvine, KY** Project Engineer and Manager to prepare construction plans and specifications for new waste disposal cell construction, quality assurance of existing landfill closure and new cell construction, and prepared permit documents and plans for landfill modification/expansion.

- **Bond Road Landfill, Solutia, Inc., Hamilton County, OH** Project Engineer/Manager for preparation of construction plans and specifications to upgrade an existing landfill to current operational standards including storm water drainage analysis, sedimentation pond design, access road alignments, improvements to existing waste disposal area leachate collection system, and construction staking plans.

- **Cherokee Run Landfill, Bellefontaine, OH** Project Engineer for preparation of construction plans for landfill closure and new cell construction. Also developed borrow area plans for Ohio DNR permit application.

- **Folkerstma Refuse Site, PRP Settling Defendants, Walker, MI** Project Engineer to prepare construction plans and specifications including design of a final grade and cover system, groundwater control system, and stream clean up for an NPL waste disposal facility. Oversee construction certification.

- **Fryman Property Cleanup, City of Rising Sun, IN** Project Engineer to prepare construction plans, specifications, bidding and contract documents for contaminated soil cleanup on a former salvage yard site.

- **Hoffman Road Landfill, Division of Solid Waste, City of Toledo, Toledo, OH** Project Engineer/Manager for master planning, design and preparation of Ohio EPA permit documents for a 100 acre expansion to the facility.

- **KAVCO Landfill, Barry County, MI** Project Engineer to prepare construction plans and specifications to implement final covering of a prematurely closed landfill.

- **Kentwood Landfill, Kent County Department of Public Works, Kentwood, MI** Project Engineer to prepare construction plans and specification for NPL waste disposal facility clean up and closure and Project Manage/Engineer for construction quality assurance oversight.

- **Jefferson Conner Industrial Revitalization Project, Detroit, MI** Project Engineer to design and prepare construction plans and specifications of a site containment system to enable use of the property as an automotive assembly plant.

- **Omega Hills Landfill, Germantown, WI** Project Engineer for design of environmental improvements for a 100-acre NPL waste disposal facility. Improvements included soil-bentonite cut off walls, groundwater collection system, leachate collection system, force main systems, surface water drainage, and site closure sequencing.

- **Outer Loop Recycling and Disposal Facility, Louisville, KY** Project Engineer for design of leachate force main system and to oversee and certify geotechnical repairs of a landslide that occurred during new cell construction.

- **Pike Sanitation Landfill, Waverly, OH** Project Engineer for preparation of landfill modification plans to improve leachate collection and landfill operations. Responsibilities included leachate

collection and force main pumping systems, surface water drainage analysis, sedimentation basins, volume estimates, and design plans.

- **Rockport Plant Fly Ash Landfill, Rockport, IN** Project Engineer for redesign of existing power plant fly ash landfill to maintain approved waste volume with in a smaller footprint.

- **Rumpke Sanitary Landfill, Cincinnati, OH** Project Engineer for preparation of construction plans for cell construction, design of leachate force main system, surface water drainage improvements, filling plans for excess excavated soil, design assistance for a 100-acre expansion permit documents and conceptual design of future expansions.

- **Skinner Landfill, PRP Group, West Chester, OH** Project Engineer for design of landfill cover system for a closed disposal facility. Responsibilities included cap design, surface water drainage controls, preparation of regulatory reports and construction plans and specifications.

- **Thailand Hazardous Waste Process and Disposal Facility, Waste Management International, Plauk Daeng, Rayong Province, Thailand** Project Engineer and Manager to design and prepare construction plans and specifications for development of three hazardous waste disposal facilities.

- **Whitewater Reclamation C&DD Landfill, Cincinnati, OH** Project Engineer for redesign of an existing C&DD landfill, preparation of cell construction plans, leachate system design, and assist with annual regulatory permitting renewals.

- **Willowcreek Landfill, Browning Ferris Industries, Atwater, OH** Project Engineer/Manager for preparation of landfill permit plans, design of storm water drainage controls, leachate collection systems, and existing landfill closure associated with the landfill expansion.

- **Woodsdale Road Landfill, Butler County, OH** Project Engineer/Manager for design of leachate collection and storage system, passive gas control, and cover repairs for a closed municipal solid waste landfill. Managed construction oversight of improvement implementation.

Project Descriptions - Construction Certification

- **Amberley Village, North Site Compost Facility, OH** Project Manager of field technicians completing observation and field testing during leaf and wood debris removal from former compost site. Provided engineering support, review of contracted services and payment applications, and prepared construction certification report. Prepared gas venting system plans for remaining debris in area of cell tower.

- **Beech Hollow Landfill, Wellston, OH** Project Manager of field technicians completing observation and field testing during new landfill cell construction and Senior Engineer for construction certification of nine new waste disposal cells covering approximately 60 acres.

- **Blue Ridge Landfill, WMK, Irvine, KY** Project Manager for field technicians performing construction quality assurance for certification of four new landfill cells and capping of existing landfill.

- **Brown County Landfill, Georgetown, OH** Project Manager of field observation and testing by soil technicians during construction of seven new landfill cells and an interim final grade closure. Certifying Engineer of the cell construction and closure activities.

- **Cincinnati Transfer Station, Waste Management of Ohio** Project Manager and Engineer for certification of transfer station construction.

- **ELDA Landfill, WMO, Cincinnati, OH** Project Manager of field observation and testing of closed landfill slope repairs and active gas system header pipe repairs.

- **Pendleton County Landfill, Rumpke Waste of Kentucky, Butler, KY** Project Manager and Engineer for certification of material pre-qualification, structural fill construction, new cell soil liner construction, geomembrane installation, and leachate collection system construction.

- **Pike Sanitation Landfill, Waverly, OH** Project Manager of field observation and testing by soil technicians during construction of two new landfill cells and Certifying Engineer of the cell construction.

- **Rockport Fly Ash Landfill, American Electric Power, Rockport, IN** Project Engineer of field observation work for new cell soil liner and containment berm construction.

- **Rumpke Sanitary Landfill, Cincinnati, OH** Project Engineer of field observation work for structural fill construction, new cell soil liner construction, geomembrane installation, and leachate collection system construction.

- **Whitewater Reclamation C&DD Landfill, Cincinnati, OH** Project Engineer for field observation work for new cell soil liner and leachate collections system, and leachate storage tank compound construction.

Publications / Presentation

- ***Comprehensive Analysis and Restoration of a Large Scale Slope Failure,*** Steven Zhou, Rust E & I, Bruce Rome, H. C. Nutting Company, Anthony Stockman, Waste Management, presented at 20th International Madison Waste Conference, April 1998

- ***An Alternative Leachate Extraction Manhole Design and Construction,*** Bruce Rome, Warzyn Engineering, Inc., Robert Vallis, Waste Management; presented at the 10th Annual Madison Waste Conference, September 1987

Continuing Education

- ***Stream Bank Stabilization for Restoration and Flood Control Projects***, American Society of Civil Engineers, Charlotte, North Carolina, July 2007

- ***Rain Garden Workshop & Training***, Greater Cincinnati Rain Garden Alliance, Cincinnati, Ohio, May 2007

- ***Stream Investigation, Stabilization and Restoration Workshop***, American Society of Civil Engineering, Buffalo, New York, September 2004

- ***Hydrologic Modeling using HEC-HMS,*** ASCE, Champaign, Illinois, October 2003

- ***7th Annual Landfill Symposium,*** Solid Waste Association of North American, Louisville, Kentucky, June 2002

- ***Urban Stormwater Management and Detention Pond Design,*** Cincinnati, Ohio 1997

- ***Urban Hydrology & Detention Pond Design,*** University of Wisconsin - Milwaukee, March 1992

- ***HELP Modeling Workshop,*** University of Wisconsin - Milwaukee, August 1989

H. C. NUTTING

A Terracon COMPANY

FRED W. ERDMANN, P.E., P.G.

SENIOR CONSULTANT

PROFESSIONAL EXPERIENCE

Mr. Erdmann has over 41 years of experience in the area of applied geological engineering. He provides project management and technical assistance to clients seeking solutions to problems in **waste management and groundwater cleanup projects**.

AREAS OF EXPERTISE INCLUDE:

Groundwater Contamination Studies
Waste Management Engineering
Environmental Site Remediation
Environmental Site Assessments
Closure Cost Estimates
Litigation Support

PROJECT EXPERIENCE

- **Brine Contaminated Aquifer Cleanup** - Performed an electrical resistivity survey to delineate the extent of salt brine contamination in an alluvial aquifer located in Lawrenceburg, Indiana. The study served as a basis for designing and implementing a groundwater pumping program to reduce chloride levels below Secondary Drinking Water Standards, to rehabilitate the aquifer as a source of public drinking water.

- **Kentucky Transportation Cabinet** - Directed the investigation of seventy five Kentucky Transportation Cabinet facilities in Districts 9, 10, 11 and 12 during the course of preparing Phase I Environmental Site Assessments in 2002 through 2003. Mr. Erdmann personally investigated a number of sites and examined them for areas of concern and potential releases to groundwater and surface water receptors.

- **West Kentucky Sanitary Landfill, near Mayfield, Kentucky** - Conducted a study to look for evidence of fault displacement in test trenches at a new cell expansion area of the West Kentucky Sanitary Landfill, near Mayfield, Kentucky.

- **Closed Sanitary Landfill near Wellston, Ohio** - Directed the investigation of acidic seeps at a closed sanitary landfill near Wellston, Ohio. Most of the acid-forming material was linked to overburden that originated from a former surface mine. The barren areas were graded and successfully treated by the application of pulverized limestone along with fertilizer, seed and mulch.

- **Former Trap Shooting Range in Northern Kentucky** - Directed a study of lead and arsenic in surficial soil at a former trap shooting range in Northern Kentucky for a land developer. Fifty-eight sampling stations were established down range of the trap house and one water sample was collected from a small watercourse. Lead concentrations were found to be elevated above back-ground levels, but none exceeded State or U. S. EPA action levels.

EDUCATION

Bachelor of Science, Geological Engineering, University of Missouri at Rolla (Missouri School of Mines), 1967

Master of Science, Geological Engineering, University of Missouri at Rolla (Missouri School of Mines), 1971

REGISTRATIONS

Professional Engineer in Ohio, Kentucky, Missouri, Florida, Indiana, Pennsylvania, West Virginia and Michigan

Professional Geologist in Kentucky and Tennessee

CERTIFICATIONS

Numerous specialty seminars on geology, mining and geotechnical engineering

PADI Certified Open Water SCUBA Diver

AFFILIATIONS

Association of Environmental and Engineering Geologists

American Institute of Professional Geologists

WORK HISTORY

H. C. Nutting Company, A Terracon Company, Professional Engineer & Professional Geologist from 2001 to present

ENSAFE - 1998 to 2001

Dames & Moore - 1985 to 1998

Soil & Material Engineers - 1982 to 1985

Dames & Moore - 1967 to 1982

- **Groundwater Investigation in Dayton, Ohio** - Directed the groundwater investigation for a VOC contaminated site at an adhesives manufacturing plant in Dayton, Ohio. Designed and installed an emergency extraction well system, followed by an expanded extraction well system and an air-stripping tower that has operated successfully.

- **SVE System in Cincinnati, Ohio** - Directed soil and groundwater investigations at a former elevator manufacturing facility in Cincinnati, Ohio. Directed the removal of oil-contaminated soil and the installation of an SVE system to remove VOCs from the site.

- **Lima, Ohio** - Directed the development of closure plan for four mixed (radioactive and hazardous) waste impoundments at a manufacturing complex in Lima, Ohio.

- **Wright-Patterson Air Force Base in Dayton, Ohio** - Directed a subsurface investigation at Wright-Patterson Air Force Base in Dayton, Ohio to delineate the extent of PCB's in soil and groundwater, resulting from the release of transformer dielectric fluid.

- **Fueling Station in Nitro, West Virginia** - Managed the remediation of an underground fuel spill at a major truck stop and fueling station in Nitro, West Virginia.

- **Interdiction Well System in Lawrenceburg, Indiana** - Designed and implemented an interdiction well system to remove salt brine from an alluvial aquifer that was contaminated as a result of a gas well blow-out in Lawrenceburg, Indiana.

- **Latonia (Ft. Wright), Kentucky** - Directed a Remedial Investigation / Feasibility Study at a former gasoline and asphalt refinery in Latonia (Ft. Wright), Kentucky.

- **Gas Monitoring Plan for the Village of Amberley, Ohio** - Prepared an Explosive Gas Monitoring Plan for the Village of Amberley, Ohio to monitor methane gas generated from the decomposition of wood chips and leaves buried in compost disposal cells.

- **Closure and Post Closure Plans for Allied Drum Service Company Facility, Louisville, Kentucky** - Prepared Closure Plans and Post Closure Plans for the Allied Drum Service Company facility in Louisville, Kentucky. All of the RCRA units included in these plans have since been clean closed. Mr. Erdmann also prepared a Groundwater Sampling and Analysis Plan for the facility. All of the documents were approved by the Kentucky Division of Waste Management.

- **Environmental Compliance Audit** - As project manager, Mr. Erdmann lead a group of team leaders to perform a comprehensive environmental compliance audit of all facilities operated by the Ormet Aluminum Corporation in North America. Facilities included Ormet's main aluminum reduction and fabrication plant in Hannibal, Ohio, the Burnside alumina plant and marine transloading facility in Louisiana, an aluminum can recycling facility in West Virginia, and foil manufacturing plants in Tennessee and Mississippi.

- **Formcast® Environmental Compliance Audit** - Performed a comprehensive environmental compliance audit of the Formcast® aluminum casting plant in Denver, Colorado.

- **Cryolite Environmental Compliance Audit** - Performed an environmental compliance audit of a cryolite manufacturing plant in St. Louis Potosi, Mexico.

- **Ceramics Plant in Lawrenceburg, Kentucky** - Directed the development of a closure plan and post closure permit application for the chemical fixation of lead-bearing sludges at a ceramics plant in Lawrenceburg, Kentucky, and including preparation of bid documents. Assisted the owner in bid evaluation and contractor selection, and then performed quality assurance oversight.

- **Groundwater Study** - Performed investigations of a fractured bedrock aquifer at a hazardous waste management facility near Maysville, Kentucky in support of a groundwater monitoring requirement. Prepared a *Groundwater Monitoring Waiver Demonstration Report* for the owner that was accepted by U.S. EPA Region IV.

- **Hazardous Waste Disposal Site near Maysville, Kentucky** - Directed the closure of two former sludge drying beds at a hazardous waste disposal site near Maysville, Kentucky. The project involved preparation of plans and specifications, contractor supervision, and closure certification.

- **Contaminated Embankment Study** - Directed site investigations and closure plans for a portion of the Highway 16-17 Connector in northern Kentucky. Gasoline contaminated soil was treated and incorporated into a highway embankment. The project, conducted on behalf of the Kentucky Department of Highways, included construction supervision and closure certification.

- **Soil and Groundwater Investigation** - Directed the investigation of soil and groundwater seepage at a former wood treatment facility in northwest Ohio that used chromated copper arsenate as a wood preservative.

- **Contaminated Sand Blast Media - Directed** the preparation of closure plans for three sites in northern Kentucky where characteristically hazardous sand blasting media was stored or disposed of by a bridge painting contractor. Client was the Kentucky Transportation Cabinet.

- **Ashtabula, Ohio** - Directed closure certification of a warehouse facility used to store polychlorinated biphenyls (PCB) transformers in Ashtabula, Ohio.

- **Electrical Substation in Hamilton County, Ohio** - Directed a subsurface investigation in the vicinity of an electrical substation in Hamilton County, Ohio to determine the extent of PCBs in soil, resulting from the release of transformer dielectric fluid.

- **Gould Corp. Compliance Audits** - Performed a series of environmental compliance audits for Gould Corporation. These included manufacturing and electronics assembly plants in Ohio, Idaho, Arizona, Texas and several "twin plant" locations in Mexico.

- **Washington, Indiana** - Managed a subsurface investigation to delineate the nature and extent of a former solid waste disposal facility near Washington, Indiana.

- **Four County Landfill in Fulton County, Indiana** - Performed groundwater investigations at the Four County Landfill in Fulton County, Indiana to evaluate compliance with groundwater monitoring requirements.

- **Noblesville, Indiana** - Directed the development of a RCRA Facility Investigation (RFI) and the design of Interim Measures for an industrial facility in Noblesville, Indiana. For this project, groundwater was impacted by volatile organic compounds that were disposed of in a solid waste landfill.

- **Coal Company Environmental Compliance Audit** - Performed environmental compliance audits for a major coal company headquartered in St. Louis, Missouri. Looked at compliance issues associated with a large number of mines, coal preparation plants and barge loading facilities at several points on the Ohio and Mississippi Rivers.

- **Remedial Investigation in Bridgeport, Ohio** - Directed the Remedial Investigation for a former manufacturing facility in Bridgeport, Ohio contaminated with VOCs and metal hydroxide sludges.

- **Pine Grove Subdivision Superfund site in Traverse City, Michigan** - Directed a Remedial Investigation/ Feasibility Study (RI/FS) of the Pine Grove Subdivision Superfund site in Traverse City, Michigan. Performed ground water sampling, consolidated historical data, and directed additional field investigations as required by the MDNR. A soil vapor extraction pilot test was conducted and a full-scale SVE program was designed to remove VOCs from soil at the two source areas.

- **Contaminated Pot Liner Study** -Directed a comprehensive hydrogeological investigation of an aluminum fabrication and reduction complex near Ravenswood, West Virginia to assess and control ground water contamination.

- **Turtlecreek - Union Road Landfill, City of Lebanon, Ohio** - Performed routine explosive gas monitoring and report preparation for the closed sanitary landfill located on Turtlecreek - Union Road for the City of Lebanon, Ohio.

- **New Piper Aircraft, Inc.** - Directed an RI/FS at a Superfund site in Vero Beach, Florida. Proposed an engineering solution that was far more cost effective than any contemplated in U.S. EPA's FS, and was accepted by the agency for the removal of VOCs in ground water.

- **Industrial Park in Scranton, PA** - Directed the investigation of soil and groundwater quality at an industrial park site near Scranton, Pennsylvania that was impacted by surface mining.

- **Manufacturing Plant in Frankfort, Kentucky** - Conducted groundwater quality studies for a manufacturing plant in Frankfort, Kentucky to remediate contamination resulting from the improper disposal of solid and hazardous waste on the property.

- **Wood Treatment Facility near Standiford Field in Louisville, Kentucky** - Conducted remedial investigations for a wood treatment facility near Standiford Field in Louisville, Kentucky on behalf of the Brown Foundation.

- **Ceramics Plant in Lawrenceburg, Kentucky** - Directed the development of a closure plan and post closure permit application for the chemical fixation of lead-bearing sludges at a ceramics plant in Lawrenceburg, Kentucky.

- **Shelby County, Tennessee** - Designed and implemented a remediation well system for the removal of trichoroethene from an industrial site in Shelby County, Tennessee.

- **U.S. Department of the Navy** - Managed a portion of the Charleston Navy Yard environ-mental cleanup for the U.S. Department of the Navy, Southern Division with multiple areas of concern.

- **Brantford, Ontario** - Managed a groundwater contamination study for an industrial client in Brantford, Ontario. Volatile organic compounds originating at a manufacturing site were mapped along a plume several city blocks long.

- **McGregor, Texas** - Managed a portion of the Naval Weapons Industrial Reserve Plant Remedial Study in McGregor, Texas. Worked on the remediation of ammonium perchlorate in springs, soil and groundwater released from the maintenance of solid rocket motors.

- **Groundwater Quality Investigation in Cleveland, Ohio** - Directed a groundwater quality investigation at a chemical plant in Cleveland, Ohio to evaluate the release of nickel salts into an alluvial aquifer adjacent to the Cuyahoga River.

In addition to the specific projects listed above, Mr. Erdmann has performed numerous Phase I Environmental Site Assessments for commercial, industrial and residential properties over the course of the past 20 years.

LEWIS E. EPLIN, LRS

PROJECT ENVIRONMENTAL SCIENTIST

H. C. NUTTING

A Terracon COMPANY

Mr. Eplin has been with H.C Nutting, A Terracon Company since June of 2004. During his time with H.C Nutting and past employment, Mr. Eplin has conducted Phase I Environmental Assessments, Subsurface Investgations Sampling and Waste Charactorization Investigations on a wide range of sites. Mr. Eplin has conducted investigations for clients that include private individuals, national companies, lending institutions, and real estate brokers.

Mr. Eplin has experience with sites ranging from single-family residences to industrial sites containing multiple environmental conditions. Based on the findings of many investigations, Mr. Eplin has developed and implemented sampling plans resulting in the elimination or confirmation of concerns.

PROJECT EXPERIENCE

John E. Amos Historic Waste Disposal Area, Winfield, WV
Supervised the test pit exploration and sampling of waste material of an inactive landfill from the 1970s. Identified sampling areas and sampled material for characterization of the waste as hazardous or non-hazardous. Determined waste horizontal and vertical limits.

Former Rail Yard Redevelopment, Elkins, WV
Based on a review of the historical information, the site was utilized as a rail yard from approximately 1880 to 1981 and sold to be used as a business park. The rail yard once contained aboveground and underground petroleum storage tanks, a paint shop, an oil inspection pit, and a locomotive turn table. Assessed the site for chemicals of concern with removal of the soil containing the highest concentrations. As Project Manager and Environmental Professional, I prepared a sampling plan, field boring logs, supervising soil sampling using hollow stem auger methods and report preparation. Analyzed laboratory data evaluating concentrations of contaminants of concern and implemented a remediation plan which resulted in a No further Action Required status from the WVDEP.

HEAVY MACHINERY MANUFACTURING FACILITY, CROSS LANES, WV
During the Phase I of the property RECs were identified related to the manufacturing activities at the facility. The presence of evidence of contamination from oil, solvents and heavy metals over many years was obvious. The refinancing of the facility was eminent and the project shifted quickly to a Phase II ESA. A sampling plan was developed and the contamination was found to be minimal for an industrial site. Financing was approved for the facility.

AUTOMOTIVE DEALERSHIP SERVICE CENTER, CHARLESTON, WV
Mr. Eplin conducted a Phase I ESA of an Automotive Dealership in preparation of a property transaction. Known RECs existed at the site including the historical use of solvents and petroleum products. The site contained aging underground hydraulic lifts; which are a common source of contamination. To expedite the property transaction, limited Phase II sampling was conducted concurrently with the Phase I. Contamination was discovered and the project moved to a delineation phase. The information was evaluated by the parties involved and the property transaction proceeded.

EDUCATION

B.S, Environmental Science-Geology, 2000, Marshall University

CERTIFICATIONS

West Virginia Licensed Remediation Specialist

OSHA 40-Hour HAZWOPER Training

West Virginia Licensed Asbestos Inspector

West Virginia Certified Monitoring Well Driller

WORK HISTORY

CTL Engineering, Environmental Scientist, 2000-2004

H.C. Nutting Company, Project Environmental Scientist, 2004-present

H. C. NUTTING

A Terracon COMPANY

STEPHEN B. NIEHAUS

STAFF ENVIRONMENTAL GEOLOGIST

PROFESSIONAL EXPERIENCE

Mr. Niehaus serves as a Staff Environmental Geologist for the H.C. Nutting Company. He is responsible for performing subsurface sampling using traditional hollow stem auger methods and Geoprobe methods. He is experienced in Geoprobe sampling for soil and groundwater. He has also prepared Phase I ESA reports, Phase II ESA reports, and assisted in writing proposals.

EDUCATION

Bachelor of Science, Geology, University of Cincinnati, 2006

OSHA Health and Safety 10-Hour Construction Safety Course

WORK HISTORY

H. C. Nutting Company, A Terracon Company, Senior Environmental Technician from 2007 to present

PROJECT EXPERIENCE

- **Kentucky Transportation Cabinet / Green County, Kentucky** – Served as drill coordinator/supervisor, as well as performed soil field classification and collecting bag samples for over eight miles of the KY-61 bypass through Greensburg, KY. Also was responsible for the clearing of utilities and acquiring permission to drill from land owners. This was a three month long project.

- **The Kroger Company / Indianapolis, Indiana** – Inspected drilling operations and performed soil classifications for a proposed Kroger gas kiosk. Also collected water samples from selected borings. Also prepared two Phase II ESA reports for this site.

- **Love's Travel Stop / St. Paul, Indiana** – Inspected drilling operations and performed soil classifications in support of a geotechnical study for a proposed truck stop. Also collected water samples from selected borings.

- **Hunt Builders Corps – Fujitec America / Lebanon, Ohio** – Performed Geoprobe soil sampling and soil classification.

- **The Kroger Company / Nora, Indiana** – Performed Geoprobe soil and groundwater sampling and soil classification for a proposed Kroger food store.

- **Murphy Oil USA - Walmart / Ohio** – Performed Geoprobe soil and groundwater sampling and soil classification for multiple sites in Cincinnati and Columbus.

- **IDI – Monroe Expansion Land / Monroe, Ohio** – Inspected drilling operations, monitoring well installations, and performed soil classifications in support of a geotechnical study being performed on site. Developed and sampled monitoring wells.

- **DCI Properties, LLC / Dayton, Kentucky** – Assisted in the collection of CPT data in support of a geotechnical study for new development.

- **D & L Properties of Blue Ash III, LLC / Blue Ash, Ohio** – Prepared Phase I ESA report consisting of reviewing current and historical information, contacting local agencies and reviewing regulatory databases, and performed the site reconnaissance visit.

- **Annuity Real Estate Partners / Blue Ash, Ohio** – Prepared Phase I ESA report consisting of reviewing current and historical information pertaining to the site, contacting local agencies and reviewing regulatory databases, and performed site reconnaissance visit.

H. C. NUTTING

A Terracon COMPANY

NICHOLAS BIDDINGER

STAFF HYDROGEOLOGIST

PROFESSIONAL EXPERIENCE

Mr. Biddinger serves as a Staff Environmental Geologist for the H. C. Nutting Company. He is responsible for performing subsurface sampling using traditional hollow-stem auger methods and Geoprobe methods. He is experienced in Geoprobe sampling for soil and groundwater, and in CPT (cone-penetrometer testing) data collection using both acoustic and wire-line CPT methods. He has also prepared Phase II ESA reports, written proposals, and assisted with Phase I ESA reports. He is also experienced in construction materials testing, including concrete testing, reinforcing steel inspection, footing inspection, soil compaction testing, footing inspection, geosynthetic inspection, and ferro-scan inspection.

EDUCATION

Bachelor of Arts, Geology, Miami University, 2006

OSHA Health and Safety 10-Hour Construction Safety Course

WORK HISTORY

H. C. Nutting Company, A Terracon Company, Staff Environmental Geologist from 2006 to present

PROJECT EXPERIENCE

- **Terracon Louisiana Levee / New Orleans** - Performed over 2700 ft. of CPT borings in support of the U.S. Army Corps of Engineer's evaluation of levee integrity in New Orleans, Louisiana. Also assisted with final report preparation. This was a three-month-long project.

- **Waste Path Landfill / Calvert City, Kentucky** - Performed CPT data collection as part of a fault study for a permit application for fill expansion.

- **Amylin Pharmaceuticals / West Chester, Ohio** - Performed CPT data collection in support of a geotechnical study for new building construction.

- **Kentucky Transportation Cabinet / Greenup, Kentucky** – Performed CPT data collection in support of a bridge replacement over the Little Sandy River.

- **DCI Properties, LLC / Dayton, Kentucky** – Performed CPT data collection in support of a geotechnical study for new development.

- **MWH Americas Inc. / Smithland, Kentucky** - Inspected drilling operations and performed overburden and rock core classification.

- **Hines Truck Stop / Dayton, Ohio** - Inspected drilling operations and performed soil classification. Also performed monitoring well sampling and slug tests.

- **Rumpke Brown County Landfill / Georgetown, Ohio** – Technician responsible for the inspection and testing of soil for preparation of a new landfill cell.

- **DeBra-Kuempel / Fairfax, Ohio** – Performed Geoprobe soil and groundwater sampling and prepared the Phase II ESA report.

- **Rumpke Pendleton County Landfill / Butler, KY** - Technician responsible for inspection and testing of soil liner and geomembrane liner for new landfill cell and leachate pond construction.

H. C. NUTTING

A Terracon COMPANY

DERON BUCHANAN

GEO-ENVIRONMENTAL ENGINEERING AIDE

PROFESSIONAL EXPERIENCE

Mr. Buchanan is experienced in geosynthetic material installations, (verification, testing and inspection); controlled fill placement, compaction testing and inspection; excavated foundation examination; geotechnical and geosynthetic laboratory testing; asphalt field compaction; fresh concrete sampling; coring and destructive testing on hardened concrete, soil classification, geoprobe exploration, and cone penetrometer testing.

PROJECT EXPERIENCE

- **ELDA Landfill, Cincinnati, Ohio.** Construction manager and lead engineering technician for an 80 acre landfill closure. Responsibilities included the inspection and testing of a clay barrier, daily scheduling of contractors activities, liaison between client and contractors, and review of contractor's invoices. Additional responsibilities included the preparation of the Construction Quality Assurance Certification Report.

- **Pike Sanitation Landfill, Waverly, Ohio.** Engineering technician responsible for soil and 60 mil HDPE liner CQA inspection and testing for 7 acre waste disposal cell. Responsibilities included maintaining and performing compliance/conformance testing in the field laboratory for geosynthetic operations. Assisted with Construction Quality Assurance Certification Report.

- **Pine Grove Landfill, Amanda, Ohio.** Field technician responsible for 60 mil HDPE liner CQA inspection and testing for two waste disposal cells. Performed testing in a field geosynthetics laboratory.

- **Dow Corning, Carrollton, Kentucky.** Lead soils technician responsible for CQA inspection and testing of clay liner material for a new waste disposal cell. Additional responsibilities included assisting with the preparation of the Construction Quality Assurance Certification Report.

- **Beech Hollow Landfill, Wellston, Ohio.** Engineering technician responsible for CQA inspection and testing on 60 mil HDPE for three waste disposal cells. Additional responsibilities included maintaining and performing compliance and conformance testing in the field geosynthetics laboratory. Assisted with Construction Quality Assurance monitoring and Certification Report preparation.

- **Countywide Landfill, East Sparta, Ohio.** Engineering technician responsible for the inspection and testing of 600,000 sq. ft. of 60 mil HDPE.

EDUCATION

Cincinnati Technical College, Cincinnati, Ohio 1989 - 1991

University of Cincinnati, Cincinnati, Ohio 1988 - 1989

CERTIFICATIONS

Nuclear Density Gauge Operator - Nuclear Regulatory Commission

Occupational Safety & Health Administration (OSHA) - 40 hour Health & Safety Training

OSHA -30 hour Site Supervisor Training (OSHA 510)

NICET Certified

Level III Geotechnical Engineering Technology

Level II Geosynthetics Installations

ACI Level 1 Concrete

WORK HISTORY

H. C. Nutting Company, A Terracon Company, Geo-Environmental Engineering Aide 1997, 2000 to present

EarthTech, 1997 - 2000

Rust E & I, 1990 - 1997

- **Piketon Gaseous Diffusion Plant, Piketon, Ohio.** Engineering technician responsible for CQA inspection and testing of 486,130 sq. ft. of 40 mil HDPE and GCL. Additional responsibilities included maintaining and performing compliance/conformance testing in the field laboratory for geosynthetic operations. Assisted with Construction Quality Assurance Certification Report.

- **Suburban Landfill, Brownsville, Ohio.** Lead soils and geosynthetics technician for Cells 5A, and 5B. Responsible for CQA during the excavation of cell, subbase isolation material placement, clay liner placement, 385,040 sq. ft. of geosynthetic installation, and the leachate collection system. Supervised field technicians, reviewed daily test data and field reports. Also assisted with the Construction Quality Assurance Certification Report. Geosynthetic technician for Cells 3 and 4. Responsible for CQA inspection and testing for 450,000 sq. ft. of geosynthetic installation and the leachate collection system. Additional responsibilities included assisting with the Construction Quality Assurance Certification Report.

- **Blue Ridge Landfill, Irvine, Kentucky.** Geosynthetic technician responsible for CQA inspection and testing for 85,000 sq. ft. of 4-mil VLDPE, 172,240 sq. ft. of 60 mil HDPE, geotextile, and the leachate collection system. Additional responsibilities included assisting with the Construction Quality Assurance Certification Report.

- **Feed Material Production Center, Fernald, Ohio.** Engineering technician responsible for testing and inspection controlled fill placement, fresh concrete sampling and excavated foundation examination at a high security access facility. Responsible for coordinating daily schedule for multiple concurrent projects, issuance of daily reports and liaison between client and multiple subcontractors.

- **Columbia Ridge Landfill, Arlington, Oregon.** Lead soils technician responsible for CQA inspection and testing of 700,000 sq. Ft. of clay liner material. Additional responsibilities included assistance in CQA inspection and testing of 700,000 sq. ft. of 60 mil HDPE, on-site soils laboratory testing, on-site geosynthetic laboratory testing, and preparation of support documentation.

- **Stony Hollow Landfill, Dayton, Ohio.** Engineering technician responsible for CQA inspection and testing of 435,600 sq. ft. of 60 mil HDPE. Additional responsibilities included maintaining and performing compliance/conformance testing in the field laboratory for geosynthetic operations.

- **Prairie View Landfill, South Bend, Indiana.** Lead geosynthetic technician for Phase 4 Cell 3. Responsibilities included the CQA inspection for 239,580 sq. ft. of 60 mil HDPE, and also assisted with the Construction Quality Assurance Certification Report.

- **Black Foot Landfill, Winslow, Indiana.** Lead geosynthetic technician for Cell 4B. Responsible for CQA inspection for 174,240 sq. ft. of 60 mil HDPE, geotextile, and the leachate collection system. Additional responsibilities included assisting with the Construction Quality Assurance Certification Report.

- **Eagle Valley Landfill, Orion, Michigan.** Geosynthetic technician for Cell 6. Responsible for CQA inspection and testing for 570,000 sq. ft. of 60 mil HDPE, geonet, bentofix, and other geotextiles. Additional responsibilities included maintaining and performing compliance/conformance testing in the field laboratory for geosynthetic operations and preparation of support documentation.

- **Van Buren Landfill, Wayne, Michigan.** Geosynthetic technician for Cells 2A North and 2B. Responsible for CQA inspection and testing for 895,000 sq. ft. of 60 mil HDPE. Additional responsibilities included maintaining and performing compliance/conformance testing in the field laboratory for geosynthetic operations and preparation of support documentation.

- **Mountain View Reclamation Facility, Greencastle, Pennsylvania.** Lead geosynthetic technician responsible for 600,000 sq. ft. of 60 mil HDPE, geonet, GCL, and other geotextiles. Additional responsibilities included preparation of support documentation.

- **Tullytown Landfill, Tullytown, Pennsylvania.** Engineering technician responsible for CQA inspection and testing of 1,200,000 sq. ft. of 60 mil HDPE.

- **Interim Storage Facility, Bloomington, Indiana.** Lead engineering technician responsible for CQA inspection and testing for the clay liner and 90,000 sq. ft. of 60 mil HDPE for a hazardous waste disposal cell. Also responsible for daily coordination of contractor's activities, liaison between client and contractor and issuing daily reports to the resident project engineer.

- **Bradley Landfill, Sun Valley, California.** Lead geosynthetic technician responsible for CQA inspection and testing for 800,000 sq. ft. of 80 mil HDPE. Also responsible for compliance testing in the field laboratory and preparation of support documentation.

- **Westside Landfill, Three Rivers, Michigan.** Lead geosynthetic technician responsible for CQA inspection and testing for 750,00 sq. ft. of 60 mil HDPE, geonet, bentofix, and other geotextiles. Additional responsibilities included the preparation of support documentation.

- **Central Disposal Facility, Pompano Beach, Florida.** Engineering technician responsible for CQA inspection and testing for 200,000 sq. ft. of 40 mil CO-EX liner for an existing cell cap. Also responsible for the CQA inspection and testing of repairs made on a new cell damaged by a hurricane.

- **Arden Landfill, Washington, Pennsylvania.** Engineering technician responsible for the inspection and testing for 1,000,000 sq. ft. of 60 mil HDPE. Additional responsibilities included maintaining and performing compliance/conformance testing in the field laboratory for both the geosynthetic and soil operations.

- **Greater Cincinnati Airport (CVG) Expansion, Kenton County, Kentucky.** Two year assignment as on-site Engineering Aide responsible for managing field technicians for the inspection and testing for new airport runway construction including public roadway relocation and construction of support facilities.

- **Fly Ash Landfill, Rockport, Indiana.** Engineering Aide overseeing the construction quality assurance by field technician for landfill cell and landfill cap construction. Responsibilities included maintaining and performing compliance testing in the field laboratory for soil operations, reviewing field testing data, and preparation on Certification Reports.

- **Blue Grass Army Depot, Richmond, Kentucky.** Engineering technician responsible for the inspection and testing for soil and geomembrane cap. Responsibilities included maintaining and performing compliance testing.

- **Outer Loop Landfill, Louisville, Kentucky.** Engineering technician responsible for the inspection and testing for 60 mil HDPE geomembrane liner installation. Responsibilities included maintaining and performing compliance testing.

H. C. NUTTING

A Terracon COMPANY

JOSEPH KRUGER

GEO-ENVIRONMENTAL ENGINEERING AIDE

PROFESSIONAL EXPERIENCE

Mr. Kruger is experienced in landfill construction from new cell to landfill closure, leachate collection systems, landfill gas systems. Has extensive experience with geosynthetic membrane installation, (verification, testing and inspection); controlled fill placement, compaction testing and inspection; excavated foundation examination; geotechnical and geosynthetic laboratory testing; asphalt field compaction; fresh concrete sampling; coring and destructive testing on hardened concrete, auger-cast piles.

PROJECT EXPERIENCE

- **Erskine-Commons, South Bend, Indiana**. - Lead CQA technician for Brownfield site restoration. Monitored excavation of waste materials, construction of onsite geosynthetic clay lined disposal cell for C&DD waste relocation, structural fill testing, monitored dynamic waste compaction, pipeline relocations and installations, provided earthwork support for construction manager.

- **Brown County Landfill, Rumpke Waste, Inc., Georgetown, Ohio** Lead CQA technician responsible for CQA inspection and testing of clay liner, geomembrane line, and leachate collection system for Phase IIB/IIB-S. Performed QA duties including monitoring, testing, field reporting, data entry, and assisting with Certification Report assembly.

- **Beech Hollow Landfill, Rumpke Waste, Inc., Waverly, Ohio** Field monitoring for structural fill berm and landfill cell undercuts. Confirmed subgrade conditions were down to natural soil and suitable for backfilling to design landfill liner subgrade. Monitored backfill placement, soil processing, field testing, and field reporting.

- **Blue Ridge RDF, Irvine, Kentucky** - Lead CQA technician responsible for CQA inspection and testing for structural fill, under drain collection system, clay liner, geomembrane, and leachate collection system for Cells 1 through 7. Performed QA duties including monitoring, testing, field reporting, data entry and assisting with CQA report.

- **Blue Ridge RDF, Irvine, Kentucky** - Lead engineering technician for inspection and testing for 85,000 square feet of 40-mil coverseal geosynthetic liner for final cap. Provided daily coordination of contractor's activities, liaison between client and contractor and issued daily reports to the project engineer.

- **Waste Management of Kentucky, Outer Loop RDF**, Cell 1B, Nelson County, Kentucky. Lead CQA technician responsible for deployment of a 7-acre, single layer geomembrane system. Performed data entry and site manager duties in the absence of site manager.

EDUCATION

University of Cincinnati in Cincinnati, Ohio 1981

CERTIFICATIONS

Nuclear Density Gauge Operator - Nuclear Regulatory Commission

Occupational Safety & Health Administration (OSHA) - 40 hour Health & Safety Training

OSHA -30 hour Site Supervisor Training (OSHA 510)

WORK HISTORY

H. C. Nutting Company, A Terracon Company, Geo-Environmental Engineering Aide, 2004 to present

EarthTech, 2000 - 2004

SCS Engineers, 1999 - 2000

Rust E & I, 1990 - 1999

- **Autumn Hills Landfill, Cell 12, Holland, Michigan.** Senior engineering technician responsible for organizing testing frequencies for clay liner installation; provided QA inspection of earthwork and geosynthetics liner installation; co-authored final CQA documentation report; inspected and documented clay and geosynthetic composite liner.

- **Cedar Ridge RDF, Charlevoix, Michigan.** Senior engineering technician responsible for the construction quality assurance work related to a single composite liner system including structural fill, perimeter berm construction, cohesive soil liner construction, 60 mil HDPE liner for more than 125,000 square feet and leachate collection system including toe drain pipe construction.

- **Independent Landfill, Muskegon, Michigan.** Lead engineering technician for CQA inspection and testing for the clay liner for an 11-acre cap repair. Obtained samples of materials used and issued daily reports to the project engineer and client.

- **Northern Oaks RDF, Harrison, Michigan.** Lead engineering technician for CQA inspection and testing for the clay liner and inspect and testing for 290,500 square feet of double 60-mil HDPE geosynthetic liner for new 3.2 acre waste disposal cell. Provided daily coordination of contractor's activities and liaison between client and contractor.

- **Woodland Meadows Landfill, Wayne, Michigan.** Engineering technician for CQA inspection and testing for 700,000 sq. ft of 40 mil HDPE coverseal liner system for an 18-acre cap.

- **Venice Park RDF, Lennon, Michigan.** Senior engineering technician responsible for the construction of a double composite liner system including construction of 2-foot-thick primary cohesive soil liner on top of secondary geosynthetic components. Provided quality assurance work on perimeter berm, structural fill, secondary clay liner, secondary geosynthetics, primary clay liner and primary leachate collection system. Supervised installation of more than 250,000 square feet of HDPE liner construction.

- **Countywide Landfill, Canton, Ohio.** CQA technician responsible for controlled fill placement and compaction testing of structural fill and clay liner. Also responsible for data reduction for geomembrane installation of 600,000-square-foot single HDPE liner system.

- **Feed Materials Production Center, Fernald, Ohio.** Engineering technician responsible for controlled fill placement and compaction testing, sampling and testing of fresh concrete and excavated foundation examination at a high security access facility. Coordinated schedule for multiple concurrent projects and provided client-subcontractor liaison.

- **Pike Sanitation Landfill, Waverly, Ohio.** Engineering technician responsible for soil CQA inspection and testing for 14-acre waste disposal cell. Assisted with Construction Quality Assurance Certification Report.

- **Skinner Landfill, West Chester, Ohio.** Senior engineering technician responsible for geosynthetics liner installation; Co-authored final CQA documentation report; Inspected and documented 480,000 sq. ft. of geosynthetic liner, Geosynthetic Clay Liner and Geocomposite installation.

- **Arden Sanitary Landfill, Washington, Pennsylvania.** Engineering technician respon-sible for CQA inspection and testing for 1,000,000 square feet of 60-mil HDPE geosynthetic liner and issuing daily reports for 7 acres of new disposal cells at an active landfill. Also responsible for soil placement verification and compaction testing on the clay liner for 7 acres of new disposal cells and issuing daily reports. Conducted compliance and conformance testing in the field laboratory for both the geosynthetic and soil operations.

- **Mountain View Reclamation, New Castle, Pennsylvania.** Senior engineering technician responsible for inspection of geosynthetics liner installation for landfill cap and co-authored final CQA documentation report.

- **Piedmont Landfill, Kernersville, North Carolina.** CQA technician responsible for controlled fill using a soil bentonite mixture for a 7-acre composite liner. Monitored, tested and documented controlled fill placement and performed QA for geosynthetic liner material. Inspection included clay liner and over 1.5 million sq. ft. double HDPE liner system.

- **Superior Landfill, Savannah, Georgia**. Senior soils technician responsible for controlled fill placement and compaction testing of structural fill. Lead engineering technician responsible for CQA inspection and testing for a new 8-acre waste disposal cell. Site manager responsibilities included monitoring contractor activities and supervision of engineering technicians for a 10-acre HDPE liner system.

- **Live Oak Landfill, Atlanta, Georgia.** Lead engineering technician for CQA inspection and testing for the structural fill and inspect and testing for 870,000 square feet of 60-mil HDPE double liner geosynthetic system for a new eleven acre waste disposal cell.

- **Black Oak Landfill, Springfield, Missouri.** Lead engineering technician for CQA inspection and testing for 300,000 square feet of 60-mil HDPE liner geosynthetic system for a new 7-acre waste disposal cell. Provided daily coordination of contractor's activities and liaison between client and contractor. Issued daily reports to the project engineer.

- **Oak Ridge Landfill, Indianapolis, Indiana.** Lead engineering technician for CQA inspection and testing for 60-mil HDPE liner geosynthetic system for a new 11-acre waste disposal cell. Provided daily coordination of contractor's activities and liaison between client and contractor. Issued daily reports to the project engineer.

- **Danville Landfill, Indianapolis, Indiana.** Senior soils technician responsible for controlled fill placement and compaction testing of structural fill for a 9-acre cell.

- **Page Landfill, Page, Arizona.** Lead engineering technician for CQA inspection for a 57-acre final cap. Oversaw placement 2.4 million square feet of GCL and the compaction of the 1-foot subgrade by the contractor's QC technician. Inventoried material and kept track of daily GCL deployment. Provided daily coordination of contractor's activities and liaison between client and contractor.

- **Shuttle Columbia Recovery Team, Palestine, TX.** Senior engineering technician responsible for Logging and documentation of recoverable shuttle debris.

- **Site Exploration – Geoprobe**. Assisted with operation of geoprobe equipment using cone penetrometer equipment at environmental assessment project site in Cincinnati, Ohio and at a proposed commercial site development property in Greenwood, Indiana.

- **Dart Polymers, Owensboro, Kentucky.** Senior engineering technician responsible for monitoring and documenting construction of industrial plant facility expansion observing installation of 75 auger-cast piles; monitoring and testing concrete pile caps, and concrete floor; and monitored grouting of concrete block walls.