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Header # 1

[List View](#)

General Information

[Contact](#)[Default Values](#)[Discount](#)[Document Information](#)[Clarification Request](#)

Procurement Folder: 1752879

Procurement Type: Central Purchase Order

Vendor ID: 000000206512 

Legal Name: TERRADON CORPORATION

Alias/DBA:

Total Bid: \$0.00

Response Date: 08/20/2025 

Response Time: 12:16

Responded By User ID: aasbury1 

First Name: Ashley

Last Name: Asbury

Email: ashley.sodosky@terraddon.co

Phone: 3047558291

SO Doc Code: CEOI

SO Dept: 0310


SO Doc ID: DNR2600000002

Published Date: 8/4/25

Close Date: 8/21/25

Close Time: 13:30

Status: Closed

Solicitation Description: A&E - Tomlinson Run Dam Improvements 

Total of Header Attachments: 1

Total of All Attachments: 1



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

State of West Virginia
Solicitation Response

Proc Folder: 1752879
Solicitation Description: A&E - Tomlinson Run Dam Improvements
Proc Type: Central Purchase Order

| Solicitation Closes | Solicitation Response | Version |
|---------------------|------------------------------|---------|
| 2025-08-21 13:30 | SR 0310 ESR08202500000001199 | 1 |

VENDOR
000000206512
TERRADON CORPORATION

Solicitation Number: CEOI 0310 DNR2600000002
Total Bid: 0
Response Date: 2025-08-20
Response Time: 12:16:06
Comments:

FOR INFORMATION CONTACT THE BUYER
Joseph (Josh) E Hager III
(304) 558-2306
joseph.e.hageriii@wv.gov

| | | |
|--------------------|--------------|-------------|
| Vendor | | |
| Signature X | FEIN# | DATE |

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

| Line | Comm Ln Desc | Qty | Unit Issue | Unit Price | Ln Total Or Contract Amount |
|------|-----------------------------------|-----|------------|------------|-----------------------------|
| 1 | Professional engineering services | | | | 0.00 |

| Comm Code | Manufacturer | Specification | Model # |
|-----------|--------------|---------------|---------|
| 81100000 | | | |

Commodity Line Comments: Qualifications Submittal

Extended Description:

Design and contract administration services of dam improvements at Tomlinson Run State Park.



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

State of West Virginia
Centralized Expression of Interest
Architect/Engr

| | | | |
|--|----------------------------|-------------------------|---------------------------------|
| Proc Folder: 1752879 | | | Reason for Modification: |
| Doc Description: A&E - Tomlinson Run Dam Improvements | | | |
| Proc Type: Central Purchase Order | | | |
| Date Issued | Solicitation Closes | Solicitation No | Version |
| 2025-08-04 | 2025-08-21 13:30 | CEOI 0310 DNR2600000002 | 1 |

BID RECEIVING LOCATION

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

VENDOR

Vendor Customer Code:
Vendor Name : TERRADON Corporation
Address : 409 Jacobson Drive
Street :
City : Poca
State : WV **Country :** US **Zip :** 25159
Principal Contact : Ryan Wheeler, VP Business Development
Vendor Contact Phone: 304-755-8291 **Extension:**

FOR INFORMATION CONTACT THE BUYER

Joseph (Josh) E Hager III
(304) 558-2306
joseph.e.hageriii@wv.gov

Vendor Signature X *Ryan Wheeler*

FEIN# 55-0687626

DATE 08/20/2025

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

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.:

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

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

Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|---|--|
| <input type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

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

Company

Ryan Wheeler

Authorized Signature

Date

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

August 20, 2025

Subject: EOI - Tomlinson Run Dam Improvements Project - So. No. CEOI 0310 DNR2600000002

Attn: Josh Hager, Buyer
Solicitation No.: CEOI 0310 DNR2600000002
Bid Opening Date: 08-21-2025 Bid Opening Time: 13:30
Department of Administration, Purchasing Division
Fax Number: 304-558-3970

Selection Committee:

The TERRADON Corporation Team (Partnered with DLZ) is pleased to submit our Expression of Interest for the Tomlinson Run Dam Improvements project. As West Virginia's largest woman-owned engineering firm, TERRADON brings more than 30 years of statewide experience in dam rehabilitation, dredging design, and civil infrastructure projects, backed by an integrated team of engineers, geotechnical specialists, surveyors, and environmental scientists.

Our team, led by Will Thornton, PE, PS is supported by a core group of engineers, geotechnical specialists, surveyors, and environmental scientists with direct Class I dam rehabilitation experience. These projects required advanced hydrologic/hydraulic analysis, slope stabilization, spillway upgrades, regulatory compliance, and comprehensive construction oversight—capabilities directly aligned with this scope.

We are committed to providing a safe, compliant, and cost-effective solution that preserves park operations and meets WV DNR's long-term objectives. We look forward to the opportunity to discuss our approach further during the selection process.

Sincerely,



Ryan Wheeler, VP of Business Development

STATEMENT OF QUALIFICATIONS

WVDNR EOI- TOMLINSON RUN DAM IMPROVEMENTS

Hancock County, WV

Submitted By

TERRADON Corporation
409 Jacobson Drive
Poca, WV 25159
304-755-8291
Subconsultant: DLZ

Point of Contact

Will Thornton, PE, PS
VP of Engineering
will.thornton@terraddon.com
304-729-9164

Submitted To

Attn: Josh Hager, Buyer
Solicitation No.: CEOI 0310 DNR2600000002
Bid Opening Date: 08-21-2025
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Department of Administration, Purchasing Division
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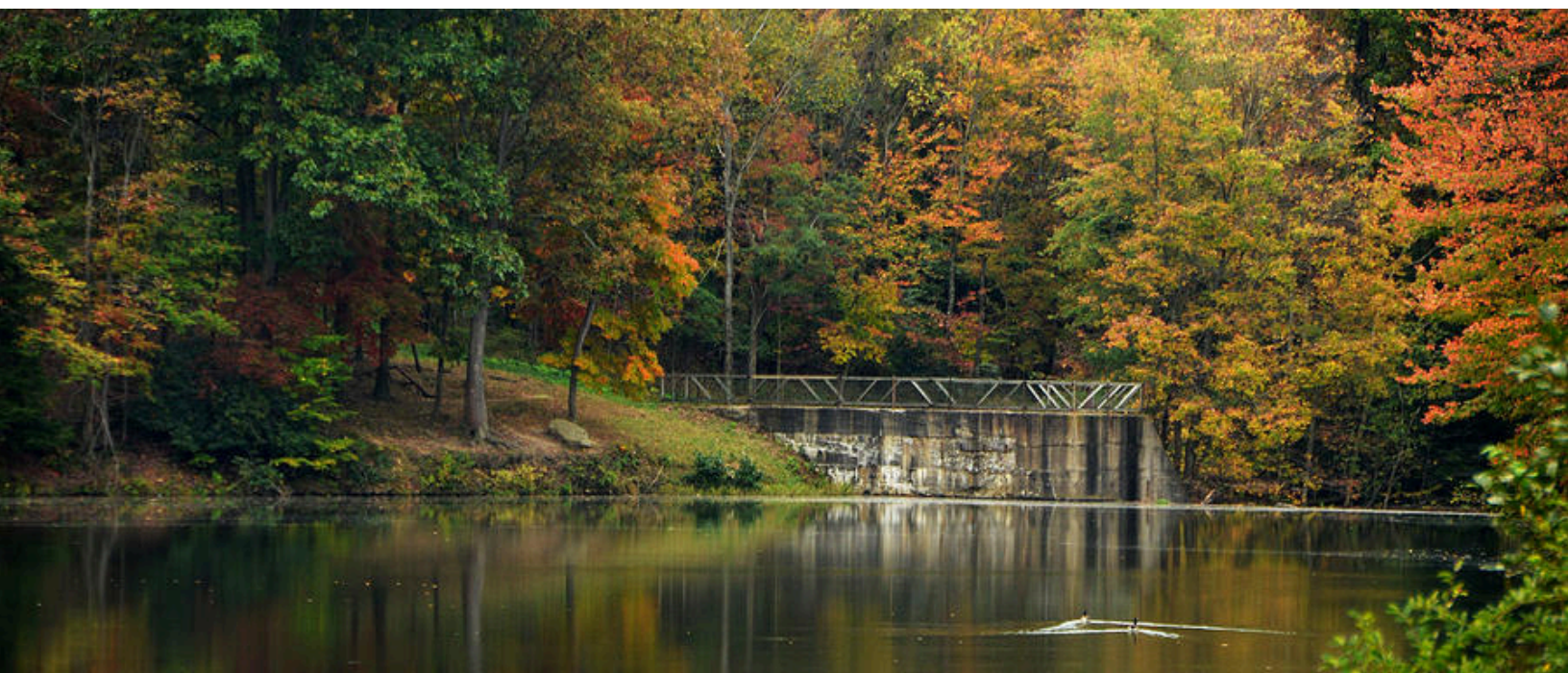


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FIRM INTRODUCTION



TERRADON Corporation is a leading provider of engineering, surveying, environmental, and geotechnical services with over 30 years of experience serving West Virginia and the Appalachian region. Our multidisciplinary team includes licensed engineers, landscape architects, surveyors, and environmental scientists who work collaboratively to provide fully integrated project delivery. This in-house approach allows us to seamlessly transition from design and permitting to construction oversight and compliance.

TERRADON is experienced in managing projects funded through a variety of state and federal programs. We assist clients in navigating agency requirements and ensuring compliance with applicable regulations, including NEPA, Section 404/401, and ADA accessibility standards. Our familiarity with WVDEP, USACE, and SHPO coordination processes adds value and efficiency to environmentally sensitive and publicly funded initiatives.

TERRADON's corporate culture promotes innovation and progressive thinking. Project leaders strive to sustain customers through a wide-range of engineering offerings. TERRADON employees understand the purpose behind their services and work to cultivate lasting relationships with clients through honest, hard work.



36+

Years of operations

5+

**Offices in the
Appalachian Region**

TERRADON is the largest, woman-owned engineering firm in West Virginia and is a certified Women's Business Enterprise.

85+

Employees

GEOTECHNICAL ENGINEERING



Services

- Test Borings
- Test Pit Excavations
- Geophysical Data
- Hand Sampling Methods
- Drone Monitoring
- Monitoring Well and Piezometer Installation
- Soil & Rock Logging Sampling
- Landslide Analysis
- Remedial Landslide
- Stability Analysis
- Retaining Structures
- Foundation Design
- Buttressing and Regrading
- Subsurface Drainage
- Structural Corrections
- Retaining Walls
- MSE & Gravity Walls
- H-Piles and Lagging

TERRADON offers some of the most experienced staff in the region for local geotechnical expertise. This team of experts brings a distinctive, specialized understanding of the difficult soil and groundwater conditions found in the Ohio Valley and Appalachian Regions of the United States.

The Geotechnical group has provided investigations associated with slip repairs, landslide analysis and remedial design, earthen dams, mining, waste disposal, new building construction, cell and high mast towers, landfill permitting and cap design, flexible/rigid pavement design, and environmental remediation.

TERRADON Corporation has provided design, analysis, and construction inspection on more than 300 slip repair projects across the Appalachian Region. TERRADON is well versed in providing test boring services to slip projects and also provides other methods of slip analysis and design. TERRADON is qualified to provide Ground Penetrating Radar (GPR) and Resistivity testing to evaluate landslides and ascertain information such as: potential failure surface, mapping bedrock, locating subsurface voids, determining the amount of displacement, subsurface anomalies, locating groundwater, and determining stratigraphy layering.

TERRADON personnel are also experienced in various hand sampling techniques such as hand auguring, dynamic and static cone penetrometer tests, and hand dug test holes. These sampling and testing techniques are beneficial for determining subsurface stratigraphy, locating groundwater, collecting soil samples for laboratory analysis, locating failure surface, and determining the landslides boundary.

Additionally, TERRADON's surveyors are experienced in the use of drone and/or thermal imagery to characterize aspects or quantify landslides. The use of drone imagery is beneficial in mapping landslides in rough terrain, where the drone images can be utilized in the creating of a ground surface profile in-lieu of traditional survey techniques. The use of drone can allow the determinations of local geomorphology to assess the risk of future landslides.

DLZ'S EXPERIENCED, IN-HOUSE PERSONNEL BRING DEEP EXPERTISE IN RELEVANT AREAS INCLUDING GEOTECHNICAL, STRUCTURAL, CIVIL, AND HYDROLOGIC/HYDRAULIC ENGINEERING, SURVEYING, DRILLING AND SAMPLING, AND MATERIALS TESTING.

DLZ works with private dam owners, state, and local dam safety agencies, and the U.S. Army Corps of Engineers (USACE) in the design, evaluation, construction, and inspection of new or existing earthfill, rockfill, and concrete dams, as well as locks and flood control systems. DLZ has extensive experience and a thorough understanding of both the physical and regulatory environments that control dam safety issues. DLZ's dam rehabilitation services include stability and settlement analysis, under seepage and uplift modeling, seismic studies, instrumentation installation and monitoring, recommendations for remedial repairs and rehabilitation, and coordination and reporting to regulatory agencies. DLZ has completed 107 dam rehabilitation projects with the USACE and the Ohio Department of Natural Resources over the last 10 years. They evaluated alternatives and made recommendations to bring the dams into current dam safety compliance and developed cost estimates to repair, improve, and/or replace the dams and their associated appurtenances. Once the dams are rehabilitated, DLZ often prepares the Operation and Maintenance Manuals and Emergency Action Plans.

For over 10 years DLZ has provided risk assessment services to the USACE in support of their infrastructure and dam safety improvement efforts. This includes numerous assignments on projects like the Bluestone Dam in Hinton, West Virginia, which is considered by the USACE to be one of their top dam safety risk priorities. DLZ's efforts on Bluestone included evaluation of the risks associated with drift and debris buildup and blockage in the dam gates; cavitation and associated scour due to dam overtopping; spillway concrete apron displacement due to hydraulic jacking; and geophysics evaluations at the site associated with the risk of seismically critical fault zones.

They have also investigated the risks at Tom Jenkins Dam near Glouster, Ohio, that arise from past coal mining activities near and beneath the dam. The project specifically looked at risks associated with loss of the pool due to the collapse of manmade subsurface features. Their risk-based services also included determining the dam safety implications of drilling, hydrofracturing, and natural gas extraction near Joe Pool Dam in Grand Prairie, Texas.



DLZ dam safety areas of expertise include:

- Hydrologic and hydraulic investigations
- Dam and levee safety studies
- Dam and levee design and inspection
- Dam operations and maintenance training
- Flood control planning
- Lock and dam studies, rehabilitation, and improvements
- Flood wall design
- Pump station design
- Hydrologic/hydraulic engineering
- Geotechnical engineering
- Structural engineering
- Civil engineering
- Mechanical engineering
- Electrical engineering
- Drilling and laboratory testing
- Surveying/GIS/ROW acquisition
- Environmental/ecological services
- Regulatory permitting

TRANSPORTATION ENGINEERING



TERRADON's Roadway and Bridge Design group is one of the most respected in the region. The department is well-known for its structural design capabilities and expert knowledge in bridge rehabilitation and new designs. Whether the job requires project planning, preliminary engineering studies or detailed roadway design, TERRADON maintains the resources needed to successfully complete transportation projects. Success on each project is achieved by using advanced technology to produce innovative, pragmatic design. TERRADON engineers are among leading professionals experienced in an array of transportation and quality & assurance measuring services.

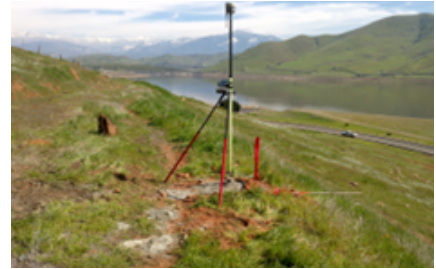
TERRADON's certified staff is trained to work under unique and changing task orders and to maintain quality work to clientele that creates a maintained respected relationship between TERRADON and it's client. TERRADON provides a diverse staff of professionals capable of providing project planning and preliminary engineering services, as well as final roadway and bridge designs (plans, specifications, and estimates). The firm's transportation engineers and technicians apply the latest technology to innovative, award-winning projects. TERRADON's transportation staff has a wide range of experience that includes preparing maintenance of traffic plans, signing and pavement marking plans, utility coordination, drainage design, and right-of-way plans.

TERRADON's Transportation sector has enjoyed a long-standing relationship with several states' Departments of Transportation including the WVDOT. TERRADON has performed successful engineering design for the agency for more than 20 years. The group is led by an experienced transportation engineer and includes veteran staff with demonstrated experience. TERRADON routinely works on transportation projects, including survey, right-of-way, utilities, and specification design and review with WVDOT personnel. Additionally, TERRADON has been recognized for outstanding engineering work on several occasions with engineering excellence nominations and awards.

Services

- Structural Engineering
- Bridge Design
- Roadway Planning & Review
- Structural Planning & Review
- Roadway Design
- Maintenance of Traffic
- Bridge & Structural Inspections
- Right of Way Plans
- Corridor Studies
- Intersection Improvements
- Sidewalk Replacement
- Trails & Trailhead Design

SURVEY & MAPPING



TERRADON has been a leader in West Virginia and the surrounding region for the land surveying industry since 1989. The team has developed an extensive resume of successful surveying and mapping projects performed for a diverse group of repeat private and public sector clients. TERRADON's experienced staff of licensed professional surveyors and mappers bring expertise and proficiency to every project task.

The company is committed to staying ahead of the industry's pace by investing in state-of-the-art equipment and technology. That commitment enables TERRADON to overcome unique and challenging project conditions or obstacles and efficiently provide the most accurate and complete information available to clients. TERRADON has a long history of providing design and construction survey services for numerous transportation projects. Efficient and accurate results are ensured by prioritizing the use of modern technology, including state of the art GPS and robotic total stations, with the latest design software.

TERRADON maintains full-time Professional Surveyors on staff. The firm services projects through the use of in-house field survey crews who are backed by corporate staff members, including an experienced team of CAD designers. TERRADON's transportation survey group is experienced in preparing highway right-of-way plans, including courthouse research and right of way questionnaires, and writing legal descriptions for right of way take parcels, temporary construction easements and permanent drainage easements.

Services

- Boundary Surveys
- Control Surveys
- ALTA/NSPS Surveys
- As-built Surveys
- Deformation/Monitoring Surveys
- Utility Survey & Mapping
- Construction Staking
- Hydrographic Surveys
- Geodetic Surveys
- Ground Penetrating Radar (GPR)
- 3-D Terrestrial Scanning
- FEMA Flood Certificates
- Design Level Base Mapping
- Topographic and Planimetric Survey Mapping
- Transportation Corridor Mapping
- Right-of-Way Mapping
- Highway Right of Way Plan Development
- Major and Minor Subdivision Plans
- GIS Mapping
- Drone 3-D Mapping
- Photogrammetric Mapping
- Dam Instrumentation Surveys

CONSTRUCTION TESTING & INSPECTION



TERRADON Corporation delivers a comprehensive range of field services, excelling in construction testing and inspection, laboratory testing, construction management, and administration. TERRADON's extensive capabilities ensure high-quality results and efficient project delivery across various construction sectors.

TERRADON Corporation excels in providing comprehensive construction inspection and testing services, setting itself apart from competitors with its broad range of specialized offerings and commitment to excellence. The firm's services are crucial for ensuring compliance with project design specifications and regulatory standards across various types of construction projects, including utility, highway, and commercial ventures. TERRADON's expertise encompasses materials testing and construction monitoring.

TERRADON's team of technicians are certified by the American Concrete Institute (ACI) and the West Virginia Department of Highways, reflecting their proficiency in key areas such as concrete, asphalt, compaction, soils, and aggregate testing. These certifications underscore their capability to handle complex projects and adhere to high industry standards. TERRADON prioritizes efficient field work by applying the most cost-effective methodologies to complete the project. This includes expedited reporting, efficient and accurate monitoring, and effective and continual communication between the project team. Our goal is to provide the most accurate testing and inspection services at a pace that keeps your project moving forward to ensure on-time and on-budget results.

The company's team also includes specialized inspectors in environmental, geotechnical, and geological fields. This multidisciplinary approach allows TERRADON to address a wide range of project needs. Their dedication to quality, regulatory compliance, and client satisfaction positions them as a leading choice in the industry for reliable and thorough construction support.

TERRADON provides robust construction management and administrative support, facilitating efficient project execution from inception to completion. By integrating advanced testing capabilities with expert construction management, TERRADON Corporation ensures superior quality control, project efficiency, and successful outcomes for a wide range of construction projects.

ENVIRONMENTAL SERVICES



Our team has a commitment to the Ohio Valley and Appalachian regions that goes far beyond our jobs. It is where we work, where we live, and where we play. It is where our family and friends are, it's home. That's why our team at TERRADON sees our environmental services as critical to both preservation and responsible development. Every project has the potential to impact ecological resources and our surrounding environment. Our accomplished team at TERRADON provides unparalleled environmental services and understands the risks, procedures, and regulatory standards involved in managing environmental resources. A team that knows the urgency of conducting the proper studies to protect natural resources, wetlands, and ecology around your project while keeping it on schedule, and within budget.

The experience of our team provides us the ability to address environmental issues. Our environmental team draws on credentials in chemical engineering, chemistry, civil engineering, environmental sciences, landscape architecture, geology, and geotechnical engineering to help manage complex issues. From permitting to site assessment and reporting, our team is well-versed in federal and state requirements. Our team provides education and assistance, not just for the permitting process, but for the overall concept to construction of a project. Client communication and transparency ensure that project stakeholders are constantly in-the-know, while our years of building relationships with federal and local agencies help ensure smooth, timely and sound timelines. In the end, this makes TERRADON a regional leader in environmentally responsible projects.

Services

- Environmental Site Assessments (ESA)
- Phase I ESA
- Phase II ESA
- NEPA EA
- Environmental Audits
- NEPA Compliance
- Hazardous Waste
- Wastewater
- Stormwater
- Groundwater
- Air Permitting
- Wetland Delineation
- Aquatic Resource Mitigation
- Tier II Reporting
- Asbestos and Lead Inspection
- Underground Storage Tanks
- Impoundment Stabilization and Closure
- 401 and 404 Permitting
- Turbidity Monitoring
- Risk Management Plans
- Emergency Response Plans
- SPCC Planning
- BMP Planning
- Land Restoration and Brownfields
- Environmental Sciences

PROJECT TEAM ORGANIZATION



| | |
|--|--|
| | WVDNR <i>Project Owner</i> |
| | Will Thornton, PE, PS <i>Project Manager & Point of Contact</i> |
| | Geotechnical Engineering Chris Hancock Joe Carte, PE John James, PE Brittany Beckwith |
| | Civil Engineering Dakota Smith, PE Andrew Wagner, PE |
| | Survey & Mapping Robert Thaw, PS Dave Brown, PS |
| | Testing & Inspection Jason Asbury, CESSWI, TRECNO Tyler Bailey, TRETSR |
| | Subconsultant Services - DLZ Timothy A. Hampshire, PE Eric Tse, PhD, PE Brian E. Mott, PG M.P. Cherian, PhD, PE Todd Harkins, PE Mark D. Kessinger, PMP Jonathan E. LaTurner, PE Jeffrey A. Miller, PE Corey Van Luchene, PS, SE Jody D. Sucharski, PE, CCM Nathan G. Niedermeier, PE Barry K. Wong, PE Nathan Dickman, PE |



WILL THORNTON, PE, PS

VP of Engineering

Years Experience | 35 Years

Years With Firm | 11 Years

Education

B.S. Civil Engineering,
West Virginia Institute
of Technology, 1989

Registrations

Professional Engineer
(PE): WV 1994,
#12364; VA 2000,
#65227; OH 1999,
#35591

Professional Surveyor
(PS): WV, 1996, #1642

Affiliations

American Society of
Civil Engineers (ASCE)

Past President, WV
ASCE & Charleston
Branch ASCE

Appointments

Fayette Institute of
Technology,
Engineering Program
Advisory Board

Fayette Trail Coalition,
Board of Directors

City of Montgomery,
City Engineer and
Member Sanitary Board

City of Smithers, City
Engineer and Member
Building Committee

Town of Glasgow, Town
Engineer and Member
Housing Board

Thornton is an experienced Department Manager, project manager and design engineer for civil engineering design projects. Thornton has more than 35 years of experience with engineering firm in West Virginia, including three years with a construction firm performing major concrete paving projects in the region. Thornton also provided consultant review for the WVDOT, Division of Highways. The major design projects with which he has been involved included roadway design, bridge design and rehabilitation, drainage design, site design, trail design, permitting, property surveys, Right-of-Way Services, maintenance of traffic and construction administration and oversight. He provides analysis and design on the construction and rehabilitation of a variety of infrastructure utilities (Water, wastewater and storm water), including streets, drainage, sidewalks, buildings, and traffic and other safety improvements.

Project Experience

USACE Winfield L&D Emergency Action Plan Kanawha River Locks and Dams

Contract Manager for the development of an Emergency Action Plan for the Winfield Locks and Dam

USACE Delaware Spillway Bridge Rehab Design, Delaware, OH

Contract Manager for Design, Analysis and Contract Plan preparation for the rehabilitation of the 6-span spillway bridge located at the Delaware Dam.

USACE Clendening Spillway Bridge Rehab and Service Bridge Replacement, Clendening, OH

Contract Manager for Design, Analysis and Contract Plan preparation for the rehabilitation of the spillway bridge and the replacement of the service bridge located at the Clendening Dam.

Brookfield Renewable Resources – Hawks Nest Dam, Fayette County WV

Contract Manager providing Site Manager services during the retrofitting of the Hawks Nest Dam with 40 post tensioned anchors.

Bluestone Dam, Summers County, WV

Brenner provides design assistance for the various elements of the drill rig platform. The team designed anchors and plates to make sure they could handle applied loading. Structural steel designs have been performed in accordance with AASHTO LRFD Bridge and United States Army Corp. of Engineers EM-385, as required by project specifications.

Willow Island Locks and Dam, Newport Township, Ohio

TERRADON was responsible for assisting and checking the design of a lifting mechanism to raise the bridge enough to get the weight off of the beam seat/corbel. Once the weight is relieved from the beam seat/corbel a spall in the concrete will be rehabilitated.



JOE CARTE, PE

Senior Geotechnical Engineer

Years Experience | 41 Years

Years With Firm | 7 Years

Education

B.S. Mining
Engineering, WV
Institute of Technology,
1982

Registrations

Registered Professional
Engineer (PE):
West Virginia, 1993
(#12025)
Ohio, 1995 (#E-59221)
Kentucky, 1995
(#18103)
Virginia, 2022 (#62908)

Mr. Carte's role at TERRADON Corporation is to provide senior-level review, training, and assist with the day-to-day tasks and geotechnical decisions. Joe brings 40+ years of diverse geotechnical experience and is a registered Civil Engineer. Mr. Carte has provided heavy foundation design for bridges, towers, and tanks throughout his career. Some of Joe's accomplishments at TERRADON were to initiate a geotechnical department and was co-inventor of a soil bolting system (patented) for correcting landslides. Mr. Carte's experience as the Geotechnical Group Leader at both TERRADON and WVDOH gives him insights into the statewide geology, various design guidelines, and with LRFD and various Building Codes.

Project Experience

New Cobun Creek Dam Project, Monongalia County, WV

Dewatering Specialist for the new Cobun Dam keyway, abutments, and surface water rerouting. Designed a cutoff trench to improve dewatering of the upper aquifer. Provided expert peer review of geotechnical and pump testing reports. Planned and specified additional observations of wells/piezometers to ascertain the groundwater response to dewatering. Supervised field construction of the cut-off trench. Visited construction site routinely and as needed for special dewatering situations.

Wellsburg Bridge & WV Route 2 Roadway Improvement Project, Brooke, WV

Ohio River Bridge crossing and over 2 miles of roadway realignment, \$131M. Reviewed preliminary geotechnical investigations and reports for roads and bridges. Attended confidential WVDOH meetings with bidders where geotechnical landslide repair alternatives were discussed, and based on risk-informed assessments, the WVDOH either approved or disapproved the alternates. Developed unique criteria for the project specifications and reviewed design for compliance with the criteria.

US Route 35 New Highway Project, Putnam & Mason Counties, WV

Responsible for reviewed preliminary geotechnical investigations and of geotechnical data reports for roads and bridges. Developed and design-build criteria for the project specifications. Reviewed final geotechnical designs for multi-mile sections over a 9-year period. Performed geotechnical investigations of problems that occurred during construction and provided remedies.

Almost Heaven Hot Tub Facility, Greenbrier, WV

Assisted with the subsurface investigation, laboratory investigation, and foundation recommendations for a manufacturing facility expansion.

Martinsburg Airport Taxiway, Berkeley County, WV

Assisted with the subsurface and laboratory investigations and pavement design for the airport's new taxiway additions/extension.



CHRIS HANCOCK

Geotechnical Engineering Lead

Years Experience | 41 Years

Years With Firm | 7 Years

Education

B.S. Civil Engineering –
Geotechnical
Emphasis, West
Virginia Institute of
Technology, 2015

Certifications

OSHA 10 Hour
Construction

Christopher Hancock is a Geotechnical Engineering Lead at TERRADON. This role involves cost proposal preparation, client coordination, project management, and staff management / training. Chris's skills and abilities include AutoCAD, foundation design, designs using Geosynthetic Materials, MSE wall design, and groundwater and seepage control. Additionally, the geotechnical services provided by TERRADON involve working with large project teams to deliver a successful project. Chris is proficient in various software programs related to scientific study, including Civil3D.

Project Experience

New Cobun Creek Dam No. 2 – Monongalia County, WV

Dewatering Specialist for the new Cobun Dam; keyway, abutments, and surface water management. A dewatering plan was prepared utilizing subsurface investigation information, along with installation and data collection from piezometers. The plan consisted of a cutoff trench to improve dewatering of the upper aquifer, assisted by well-points to dewater lower aquifers. Prepared the dewatering design documentation report. Completed geotechnical and pump tests and prepared reports. Prepared plans and specifications for the dewatering (surface and subsurface) activities. Completed a risk assessment of the over-topping potential of the coffer dam during a PMP event during winter shutdown, prepared plans and specifications for a earthen berm and spillway to protect the constructure site during the shutdown. Visited construction site routinely and as-needed for special dewatering situations.

Clendenin Flood Relief, Kanawha County, WV

Served as an on-site geotechnical drilling representative during subsurface investigation for two replacement bridges and eleven retaining walls after the summer flood of 2016. Performed: visual classification on rock and soil, sample collection, mapping boring locations, creating boring logs, laboratory testing, and coordinating with drill teams. Provided CAD support to the design team and senior CAD technicians during the design of the structures.

Axton Solar Array – New Solar Array Facility, Axton, VA

Supported development of a 546-acre solar facility including modules, transformers, a substation, and access roads. Supervised drilling operations, classified soils and bedrock, and coordinated sampling and lab testing. Evaluated subsurface data to support design of foundations and infrastructure. Contributed to engineering recommendations aligned with project demands. Assisted in compiling detailed documentation summarizing findings, conclusions, and recommendations.

Toyota 6 & 14-Bay Expansion, Putnam County, WV

TERRADON was contracted by TMMNA to complete a geotechnical investigation for the 21,600 & 50,400 sf expansions at the manufacturing facility in Buffalo, WV. Hancock completed the Geotechnical Investigation Report that detailed the results of the drilling operation. The report also included: deep foundation recommendations, site development specifications, asphalt and concrete pavement recommendations, seismic design considerations, and laboratory testing results.

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person. Limit one page per person)

| | | |
|---|--|--|
| 16. NAME Timothy A. Hampshire, PE | 17. ROLE IN THIS CONTRACT Dam Safety Design Leader | 18. YEARS EXPERIENCE a. TOTAL 34 b. WITH CURRENT FIRM 34 |
| 19. FIRM NAME AND LOCATION (City and State) DLZ Ohio, Inc. Columbus, Ohio | 20. EDUCATION (Degree and Specialization) Ph.D. Structural Engineering (in-progress) M.S. Civil Engineering B.S. Engineering | 21. CURRENT OH PROF REGISTRATIONS (List Discipline) Professional Engineer - Ohio, 1999, #E-64040 |

22. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

Special Training: Mr. Hampshire meets the dam safety experience requirements of a "Part 12D Independent Consultant" for the inspection of Federal Energy Regulatory Commission (FERC) dams. Affiliations: Society of American Military Engineers (SAME); Association of State Dam Safety Officials (ASDSO); American Council of Engineering Companies (ACEC) – Geotechnical Committee; Current President - SAME Huntington

23. RELEVANT PROJECTS (Up to a maximum of 5 samples)

| | (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
|---|---|---|--|--------------------|--------------|--------------------------------|
| | | | | Design | Construction | |
| a. | Acton Lake Dam and Spillway Assessment and Rehabilitation Ohio Department of Natural Resources Butler County, Ohio | Water Control Facility N/A \$1.9M fee | Renovation/Addition General Contracting Full AE Services | 2013 | 2017 | 2 |
| (6) Role (Benefit / Value to Client) Project Manager/Overall Design Lead. Evaluated existing dam and spillway to determine which features did not meet current dam safety standards. The evaluation showed that numerous features were deficient, including: underseepage and exit gradients; structural integrity of retaining walls and concrete lining of spillway; and stability of existing spillway weir. Remedial measures, including rock anchors, drilled shafts, and a drainage trench/berm system, were recommended to correct all deficient features. ODNR authorized the preparation of construction documents (plans, specifications, and construction cost estimate) in 2013. Construction began in 2014 and was completed in early/mid 2017. DLZ is also responsible for preparation of the Operations, Maintenance, and Inspection (OMI) manual and the Emergency Action Plan (EAP) document for ODNR. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | | |
| b. | Portage Lakes Dams Assessments and Rehabilitations Ohio Department of Natural Resources Summit County, Ohio | Water Control Facility N/A \$480K CA fees (on budget) | Renovation/Addition General Contracting Full AE Services | 2014 | 2016 | 7 |
| (6) Role (Benefit / Value to Client) Project Manager/Geotechnical Engineer/Structural Engineer/Construction Administration Lead. Responsible for developing improvements to West Reservoir and Tuscarawas River Diversion Dams, including roller compacted concrete armoring, gate house and spillway improvements, bridge designs, and sluice gate equipment upgrades. West Reservoir Dam was successfully bid and awarded, and construction was completed in Spring 2013. Tuscarawas River Diversion Dam was successfully bid and awarded in 2013 with construction completed in 2016. The work also included accelerated repairs (Interim Risk Reduction Measures – IRRM's) to the East Reservoir Emergency Spillway. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | | |
| c. | Indefinite Delivery Contract for Geotechnical Services USACE Huntington District Huntington, WV | Various Water Control Facilities N/A \$4.5M (max contract value not exceeded) | Renovation/Addition General Contracting Geotechnical/Structural Investigations | 2015 | Varies | |
| (6) Role (Benefit / Value to Client) Deputy Project Manager and Quality Control. Deputy Project Manager for an Indefinite Delivery Contract to provide geotechnical engineering, subsurface investigations, and expert dam safety risk analysis and issue evaluations to support the Huntington District, LRD, and the DSMMCX. In this capacity, Mr. Hampshire has been involved with Task Orders involving concrete coring, drilling and sampling, instrumentation installation, seepage barriers, geophysical investigations, Expert Opinion Solicitations, and piping inspection. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | | |
| d. | Tycoon Lake Dam Emergency Assessment and Rehabilitation Ohio Department of Natural Resources Gallia County, Ohio | Water Control Facility N/A \$250K fee (on budget) | Rehabilitation Engineering Services Assessment | 2020 | 2020 | 4 |
| (6) Role (Benefit / Value to Client) Project Manager. This project involved an initial assessment of a landslide that had occurred in the downstream face of the dam. The scope eventually involved performing a full assessment of the dam and development of alternatives to remediate deficiencies. Numerous finite-element seepage analyses were performed in addition to slope stability analyses for the assessment of the dam embankment. Alternatives developed also include modifications to the principal spillway tower, addition of an auxiliary spillway, rehabilitation of the outlet works, and addition of a graded aggregate filter at the outlet to prevent particle migration from the foundation. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | | |
| e. | Lake White Reservoir Water Transfer Assessment and Dam Rehabilitation Ohio Department of Natural Resources Pike County, Ohio | Water Control Facility N/A \$1.5M fee (on budget) | Renovation Prime Full AE Services | 2019 | 2020 | |
| (6) Role (Benefit / Value to Client) Project Manager and Overall Design Lead. Led the management and technical aspects of this project that included an extensive and comprehensive assessment of the dam and surrounding areas in order to determine the cause of the indeterminate water loss (seepage) from the lake. Mr. Hampshire also lead the design and construction administration associated with a two-stage filter system that was installed in the downstream area of the dam to help control seepage related erosion/piping concerns. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | | |

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person. Limit one page per person)

| | | | |
|--|--|---|--|
| 16. NAME Eric Tse, Ph.D., PE | 17. ROLE IN THIS CONTRACT Geotechnical Engineer | 18. YEARS EXPERIENCE a. TOTAL 33 b. WITH CURRENT FIRM 16 | |
| 19. FIRM NAME AND LOCATION (City and State) DLZ Ohio, Inc. Columbus, Ohio | 20. EDUCATION (Degree and Specialization) Ph.D. Geotechnical Engineering M.S. Structural Engineering B.S. Civil Engineering | 21. CURRENT OH PROF REGISTRATIONS (List Discipline) Professional Engineer – West Virginia, 2015, #21501; OH; TX; MO; KY; IN; MI; PA | |

22. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

Dr. Tse has 30 years in geotechnical engineering, including extensive experience providing services to federal, state, and local clients. His experience includes slope stability, bearing capacity, settlement, and seepage analyses of both shallow and deep foundations, soil and rock anchors, and retaining wall structures. Mr. Tse has been responsible for all phases of planning and subsurface explorations, and the preparation of analyses, recommendations, reports, and design plans for dams, levees, locks, and other water control structures.

23. RELEVANT PROJECTS (Up to a maximum of 5 samples)

| | (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
|---|--|---|--|--------------------|--------------|--------------------------------|
| | | | | Design | Construction | |
| a. | Portage Lakes Dams Assessments and Rehabilitations Ohio Department of Natural Resources Summit County, Ohio | Water Control Facility N/A \$480K CA fees (on budget) | Renovation/Addition General Contracting Full AE Services | 2014 | 2016 | 7 |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Senior Geotechnical Engineer. Performed stability and seepage evaluations for the proposed downstream cutoff wall as part of the rehabilitation of the dam; performed filter and drainage blanket design and assisted in the preparation of the design report addendum. During construction, performed seepage and stability evaluations associated with a contractor-proposed wall design. | | | | | | |
| b. | Acton Lake Dam and Spillway Assessment and Rehabilitation Ohio Department of Natural Resources Butler County, Ohio | Water Control Facility N/A \$1.9M fee | Renovation/Addition General Contracting Full AE Services | 2013 | 2017 | 2 |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Senior Geotechnical Engineer. Reviewed slope stability analyses and performed seepage analyses for the rehabilitation of the dam and assisted in the design of the drainage system for the improved dam. | | | | | | |
| c. | Grand Lake St Marys West Embankment Dam Rehabilitation and East Spillway Assessment Ohio Department of Natural Resources Mercer/Auglaize Counties, Ohio | Water Control Facility N/A \$584K fee (on budget) | Inspection Prime Engineering | 2020 | 2021 | 5 |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Senior Geotechnical Engineer. Performed visual inspection of the dam and spillway to evaluate their physical conditions, prepared an inspection report of the findings, and led all geotechnical engineering efforts associated with seepage and stability concerns of the dam. Performed an assessment of the historic east spillway structure and reviewed calculations and plans associated with an Aquatic Nuisance Species (ANS) barrier structure at the east spillway, which was taken through Preliminary Design by DLZ. | | | | | | |
| d. | Lake La Su An Dam Assessment and IRRM Designs Ohio Department of Natural Resources Williams County, Ohio | Water Control Facility N/A \$50K fee (on budget) | Inspection/Rehabilitation Prime Engineering | 2020 | 2021 | |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Geotechnical Engineer. Investigation and assessment of the dam in order to provide remediation designs associated with a stormwater manhole, piping, and pump system that are located along the downstream slope of the dam. During construction a dam safety issue arose when an unknown sand layer was encountered during construction. Mr. Tse provided remediation designs associated with a two-stage filter and seepage collector system that was installed (IRRM) until longer-term remediation designs could be implemented. | | | | | | |
| e. | Tycoon Lake Dam Emergency Assessment and Rehabilitation Ohio Department of Natural Resources Gallia County, Ohio | Water Control Facility N/A \$250K fee (on budget) | Rehabilitation Engineering Services Assessment | 2020 | 2020 | 4 |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Senior Geotechnical Engineer/Reviewer. After a landslide occurred on the downstream slope of the South Dam at Tycoon Lake, Mr. Tse immediately visited the site with ODNR personnel in order to assess the situation and provide immediate dam safety recommendations. Mr. Tse was involved as the lead geotechnical engineer for the assessment of the South Dam and East Dam at the project site. | | | | | | |

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person. Limit one page per person)

| | | |
|--|---|--|
| 16. NAME Brian E. Mott, PG | 17. ROLE IN THIS CONTRACT Project Professional Geologist | 18. YEARS EXPERIENCE a. TOTAL 35 b. WITH CURRENT FIRM 35 |
| 19. FIRM NAME AND LOCATION (City and State) DLZ Ohio, Inc. Columbus, Ohio | 20. EDUCATION (Degree and Specialization) B.S. Geology | 21. CURRENT OH PROF REGISTRATIONS (List Discipline) Professional Geologist – KY; PA; TN |

22. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

Certifications: NHI-FHWA-SSI-132079, NDA, 2010; Certified Underground Storage Tank Installer; National Highway Institute/Federal Highway Administration Certified Specialist, Subsurface Investigation

Special Training: Soil and Rock Classification, ODOT; 40-Hour Health and Safety Training and Annual Updates, OSHA; Health and Safety Officer Training; Site Supervisors Training Course for Hazardous Waste Site Operations; Confined Space Entry Training; 10-Hour Construction Safety and Health; 30-Hour Construction Safety. Mr. Mott has managed numerous subsurface exploration programs, including those utilizing geophysical methods. Mr. Mott has also overseen the installation of field instrumentation (e.g., piezometers, slope inclinometers) and field testing (e.g., slug and packer tests). Mr. Mott is familiar with various types of field monitoring instrumentation and has extensive experience preparing health and safety plans. **Co-authored, "Ohio's Geology in Core and Outcrop: A Field Guide for Citizens and Environmental and Geotechnical Investigators".**

23. RELEVANT PROJECTS (Up to a maximum of 5 samples)

| | (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
|----|--|---|--|--------------------|--------------|--------------------------------|
| | | | | Design | Construction | |
| a. | Acton Lake Dam and Spillway Assessment and Rehabilitation , Ohio Department of Natural Resources Butler County, Ohio | Water Control Facility N/A \$1.9M fee | Renovation/Addition General Contracting Full AE Services | 2013 | 2017 | 2 |
| | (6) Role (Benefit / Value to Client) Geologist. Conducted investigations pertaining to hydraulic/seepage relief trench drain design to the earth embankment portion of Acton Lake Dam. Designed relief trench drain system to manage the groundwater and provided plans and specifications for the relief system. Provided oversight and excavation monitoring to ensure proper installation of the system to optimize system performance on the basis of field conditions encountered during installation. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| b. | Lake White Reservoir Water Transfer Assessment and Dam Rehabilitation Ohio Department of Natural Resources Pike County, Ohio | Water Control Facility N/A \$1.5M (on budget) | Renovation Prime Full AE Services | 2019 | 2020 | |
| | (6) Role (Benefit / Value to Client) Project Geologist and Hydrogeologist. After significant improvements to the Lake White Dam were completed in 2017, unexplained and significant water loss was observed and documented from the reservoir. Mr. Mott was responsible for conducting a thorough review of readily available geologic and hydrogeologic information and documentation for the project and providing professional recommendations regarding any possible geologic causes of the water loss. Also, was involved in the hydrogeologic evaluation of the groundwater conditions and the geotechnical exploration and instrumentation installation at the site. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| c. | Lockington Dam Subsurface Investigation and Instrumentation Implementation Miami Conservancy District (MCD) Shelby County, Ohio | Water Control Facility N/A \$120K Fee | Instrumentation General Contracting Full AE Services | 2019 | 2020 | |
| | (6) Role (Benefit / Value to Client) Geologist/Designer. Directed field operations for the subsurface investigations and instrumentation implementation at Lockington Dry Dam. Designed elaborate instrumentation plan to monitor water levels inside the dry dam earthen embankment dam during high water events in order to help determine how water infiltrates and recedes from the granular shell of the embankment. Mr. Mott developed and provided the specifications for the instrumentation installation and assisted the client with software programming and data downloading for future water monitoring. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| d. | Piqua Hydraulic Canal and Dam/Levee System Evaluations City of Piqua Piqua, Ohio | Water Control Facility N/A \$170K Fee (on budget) | N/A Prime Full AE Services | 2016 | N/A | |
| | (6) Role (Benefit / Value to Client) Project Geologist. Provided oversight and coordination of the geotechnical field investigation to assess the condition of this 1870s-era canal system. Performed field geologic inspections and evaluated the historical aspects of the project. Mr. Mott also assisted with development of the Emergency Action Plan (EAP) for the project. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| e. | Tycoon Lake Dam Emergency Assessment and Rehabilitation Ohio Department of Natural Resources Gallia County, Ohio | Water Control Facility N/A \$250K fee (on budget) | Rehabilitation Engineering Services Assessment | 2020 | 2020 | 4 |
| | (6) Role (Benefit / Value to Client) Geologist Investigation Lead: This project involved an initial assessment of a landslide that had occurred in the downstream face of the dam. The scope eventually involved performing a full assessment of the dam and development of alternatives to remediate deficiencies. Numerous finite-element seepage analyses were performed in addition to slope stability analyses for the assessment of the dam embankment. Alternatives developed also include modifications to the principal spillway tower, addition of an auxiliary spillway, rehabilitation of the outlet works, and addition of a graded aggregate filter at the outlet to prevent particle migration from the foundation. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person. Limit one page per person)

| | | | |
|--|--|---|--|
| 16. NAME M.P. Cherian, Ph.D., PE | 17. ROLE IN THIS CONTRACT Hydrologic / Hydraulic Engineer | 18. YEARS EXPERIENCE a. TOTAL 36 b. WITH CURRENT FIRM 25 | |
| 19. FIRM NAME AND LOCATION (City and State) DLZ Ohio, Inc. Columbus, Ohio | 20. EDUCATION (Degree and Specialization) Ph.D. Civil and Environmental Engineering M. Tech Civil Engineering B. Tech Civil Engineering | 21. CURRENT OH PROF REGISTRATIONS (List Discipline) Professional Engineer – OH; MI | |

22. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

Special Training: Flow 3-D Workshop, PSMJ Project Manager Training, Transient Analysis Program (TAP), Unsteady HEC-RAS, Geo-RAS, Geo-HMS, ArcView 3.2 Training, Optimization of Hydroelectric Operations, Water and Power Management, GIS in Civil Engineering, GIS Applications in Water, Wastewater and Stormwater Systems, HEC-RAS, HEC-HMS, and FEMA's NFIP Program, September 1998

23. RELEVANT PROJECTS (Up to a maximum of 5 samples)

| | (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
|----|---|---|--|--------------------|--------------|--------------------------------|
| | | | | Design | Construction | |
| a. | Acton Lake Dam and Spillway Assessment and Rehabilitation Ohio Department of Natural Resources Butler County, Ohio | Water Control Facility N/A \$1.9M fee | Renovation/Addition General Contracting Full AE Services | 2013 | 2017 | 2 |
| | (6) Role (Benefit / Value to Client) Lead H&H Engineer. Conducted full hydraulic analysis for the project including PMF generation, dam break analysis, and inundation mapping. Also lead efforts associated with preparation of the Emergency Action Plan (EAP) for the project. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| | | | | | | |
| b. | Buckeye Lake Spillway, Dam, and Park Assessments and Rehabilitation Ohio Department of Natural Resources Buckeye Lake, Ohio | Water Control Facility N/A \$1.5M fee | Investigation Prime Engineering | 2015 | Varies | |
| | (6) Role (Benefit / Value to Client) Lead H&H Engineer. Performed dam break analysis and generated inundation mapping which were complex due to the uncertain location for the breach occurrence. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| | | | | | | |
| c. | Lake White Reservoir Water Transfer Assessment and Dam Rehabilitation Ohio Department of Natural Resources Pike County, Ohio | Water Control Facility N/A \$1.5M fee (on budget) | Renovation Prime Full AR Services | 2019 | 2020 | |
| | (6) Role (Benefit / Value to Client) Lead H&H Engineer. Performed numerous H&H and hydrogeologic evaluations in order to help determine the cause and location of the water loss from Lake White. The evaluations needed to consider the hydrogeologic effects from the downstream Scioto River as well as the hydraulics and hydrogeology of the lake inflows from Pee Pee Creek. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| | | | | | | |
| d. | Grand Lake St Marys West Embankment Dam Rehabilitation and East Spillway Assessment Ohio Department of Natural Resources Mercer and Auglaize Counties, Ohio | Water Control Facility N/A \$584K (on budget) | Renovation Prime Full AE Services | 2020 | 2021 | 5 |
| | (6) Role (Benefit / Value to Client) Lead H&H Engineer. Responsible for determining the impacts of the proposed construction on the downstream 100-year FEMA floodplain. The H&H evaluations revealed that the proposed West Embankment Dam improvements would result in a “no-rise” situation in the floodplain. Also assisted with obtaining a permit from the Local Floodplain Manager. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| | | | | | | |
| e. | Tycoon Lake Dam Emergency Assessment and Rehabilitation Ohio Department of Natural Resources Gallia County, Ohio | Water Control Facility N/A \$250K fee (on budget) | Rehabilitation Engineering Services Assessment | 2020 | 2020 | 4 |
| | (6) Role (Benefit / Value to Client) Lead H&H Engineer. Developed a HEC-HMS watershed model to conduct PMF routing. Used the model to develop hydraulic alternatives to safely pass the design flood event. Alternatives included a modified intake structure, auxiliary spillway, and raising of the dam embankment. Conducted analyses for and designed the temporary siphon system to dewater the lake during construction. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
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E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person. Limit one page per person)

| | | | |
|--|---|---|----------------------------|
| 16. NAME Todd Harkins, PE | 17. ROLE IN THIS CONTRACT Civil Engineer | 18. YEARS EXPERIENCE | |
| | | a. TOTAL 27 | b. WITH CURRENT FIRM 13 |
| 19. FIRM NAME AND LOCATION (City and State) DLZ Ohio, Inc. Columbus, Ohio | 20. EDUCATION (Degree and Specialization) B.S. Civil Engineering | 21. CURRENT OH PROF REGISTRATIONS (List Discipline) Professional Engineer – OH; IL; MI; MO; IN; KY; PA | |

22. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

Special Training: Right-of-Way Plan Development Training Course, ODOT, 2003; OSHA Confined Space Entry

Affiliations: ASCE - American Society of Civil Engineers, ASCE | NCEES -National Council of Examiners for Engineering and Surveying, NCEES | Water Environment Federation, WEF | American Public Works Association, APWA | American Wind Energy Association, AWEA

23. RELEVANT PROJECTS (Up to a maximum of 5 samples)

| | (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
|----|--|--|--|--------------------|--------------|--------------------------------|
| | | | | Design | Construction | |
| a. | Tappan Lake Park – Master Plan Updates and Designs Muskingum Watershed Conservancy District Deersville, Ohio | State Park Facility 7,350 Acre Site \$1.3M (on budget) | New Construction General Contracting Full AE Services | 2021 | 2025 | |
| | (6) Role (Benefit / Value to Client) Project Manager and Lead Civil Engineer. Updated the existing MWCD master plan for the facility, which included providing design recommendations, project phasing, cost estimates, and anticipated schedules. Responsible for the complete design of site civil features including site layout and planning, layouts, grading, horizontal controls, roadway plan and profiles, and storm water conveyance. Also coordinated with Ohio EPA regarding permanent storm water BMP's. | | | | | |
| b. | Acton Lake Dam and Spillway Assessment and Rehabilitation Ohio Department of Natural Resources Butler County, Ohio | Water Control Facility N/A \$1.9M fee | Renovation/Addition General Contracting Full AE Services | 2013 | 2017 | 2 |
| | (6) Role (Benefit / Value to Client) Senior Civil Engineer. Provided technical input, guidance, and performance observations relative to the design of a dam trench drain piping, culvert, and manhole system. The technical input was critical given the hydraulic (phreatic groundwater) pressures associated with the system along with the varying piping, culvert, and manhole invert elevations. | | | | | |
| c. | Buckeye Lake Spillway, Dam, and Park Assessments and Rehabilitation Ohio Department of Natural Resources Fairfield and Licking Counties, Ohio | Water Control Facility N/A \$1.5M | Investigation Prime Full AE Services | 2015 | Varies | |
| | (6) Role (Benefit / Value to Client) Senior Civil Engineer. Developed preliminary and final site-civil concept-level drawings and renderings of the project. These drawings were utilized by ODNR in their public outreach and education efforts. The final site-civil concept designs needed to accommodate the proposal new dam design and configuration; requirements from ODNR Dam Safety, Engineering, and Parks groups; and aesthetics and input from the general public and local stakeholders. | | | | | |
| d. | Lake White Reservoir Water Transfer Assessment and Dam Rehabilitation Ohio Department of Natural Resources Pike County, Ohio | Water Control Facility N/A \$1.5M (on budget) | Renovation Prime Full AE Services | 2019 | 2020 | |
| | (6) Role (Benefit / Value to Client) Senior Civil Engineer. Provided site-civil engineering guidance, designs, and plan development associated with a storm pipe, manhole, and catch basin stormwater and groundwater conveyance system for the project. The water conveyance system needed to be designed to accommodate groundwater seepage from the dam as well as stormwater and floodwater from the adjacent creek and Scioto River. | | | | | |

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person. Limit one page per person)

| | | | |
|--|--|--|--|
| 16. NAME Mark D. Kessinger, PMP | 17. ROLE IN THIS CONTRACT Civil Engineer | 18. YEARS EXPERIENCE a. TOTAL 43 b. WITH CURRENT FIRM 10 | |
| 19. FIRM NAME AND LOCATION (City and State) DLZ National, Inc. Columbus, OH | 20. EDUCATION (Degree and Specialization) B.S. Civil Engineering M.S. Engineering Management | 21. CURRENT OH PROF REGISTRATIONS (List Discipline) Project Management Professional - #535355 | |

22. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

Fellow, Society of American Military Engineers

1995 USACE Huntington District Civilian of the Year

1997 USACE Great Lakes & Ohio River Division Employee of the Year

1998 USACE Huntington District Federal Engineer of the Year

1999 USACE Great Lakes & Ohio River Division Project Delivery Team of the Year

2000 USACE Great Lakes & Ohio River Division Commander's Superior Civilian Service Award

2005 NASA Director's Achievement Award

2013 USACE Huntington District Project Manager of the Year

23. RELEVANT PROJECTS (Up to a maximum of 5 samples)

| (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
|---|---|--|--------------------|--------------|--------------------------------|
| | | | Design | Construction | |
| US Army Corps of Engineers Huntington, WV | Dam Rehabilitation Cost: \$400M+ | Planning, design, engineering and construction. | 2013 | 2015 | |
| <div>a.</div> <div>(6) Role (Benefit / Value to Client)</div> <div>The USACE's Huntington District has more dams (35) than any other Corps district in the country. Most were constructed between the 1930's and 1950's, and did not meet today's dam safety criteria. Under the Corps' Dam Safety Assurance Program, Mr. Kessinger led teams that completed the necessary planning, design, engineering and construction to bring 35 Corps dams up to current dam safety standards. Mr. Kessinger first served as a Hydraulic Engineer, then as the Engineering Manager and led all engineering aspects of these projects, and later as the Senior Project Manager, and led all aspects of the projects including design, engineering, permitting, real estate acquisition and construction, to bring the dams into compliance with modern dam safety standards.</div> <div><input checked="" type="checkbox"/> Check if project performed with current firm</div> | | | | | |
| Muskingum Watershed Conservancy District Muskingum Basin, OH | Dam Rehabilitation Cost: \$200M+ | Planning, design, engineering and construction. | 2013 | 2015 | |
| <div>b.</div> <div>(6) Role (Benefit / Value to Client)</div> <div>As the US Army Corps of Engineers' Liaison to the Muskingum Watershed Conservancy District, Mr. Kessinger worked on a number of dam safety projects including Beach City, Bolivar, Dover and Mohawk Dams. These dams, which were built from 1933 to 1938, did not meet current criteria for dam safety. He worked closely with the MWCD to design fixes to enable the dams to meet current criteria and then to construct the improvements.</div> <div><input checked="" type="checkbox"/> Check if project performed with current firm</div> | | | | | |
| Buckeye Lake Spillway, Dam, and Park Assessments and Rehabilitation State of Ohio Buckeye Lake, Ohio | Water Control Facility N/A \$25K fee (on budget) | Evaluation Prime Engineering | 2014 | 2015 | |
| <div>c.</div> <div>(6) Role (Benefit / Value to Client)</div> <div>Served as the Project Manager for a USACE team that evaluated the structural integrity of Buckeye Lake Dam for the Ohio Department of Natural Resources. Served as the main POC with the ODNR and led several public meetings with local citizens to explain the team's findings. The team's recommendations helped to validate the State of Ohio taking action to correct the deficiencies at the dam.</div> <div><input checked="" type="checkbox"/> Check if project performed with current firm</div> | | | | | |
| US Army Corps of Engineers Bluestone Dam Hinton, West Virginia | Dam Rehabilitation Cost: \$2M+ | 3D Imaging of Dam | 2015 | N/A | 8 |
| <div>d.</div> <div>(6) Role (Benefit / Value to Client)</div> <div>As Project Manager, led a team of experts who developed 3D images of the dam including all of its critical components and working features. The images not only show the dam in its current state, but also enable the design of future modifications to the dam that would allow it to meet current dam safety criteria.</div> <div><input checked="" type="checkbox"/> Check if project performed with current firm</div> | | | | | |
| Montgomery Dam Emergency Bulkhead Design U.S. Army Corps of Engineers Pittsburgh District Ohio River | Lock and Dam \$720k fee (on budget) | General Contracting Full AE Services | 2024 | 2026 est | |
| <div>e.</div> <div>(6) Role (Benefit / Value to Client)</div> <div>Mr. Kessinger with the Project Manager for the DLZ team that redesigned the dam's emergency bulkheads. The Pittsburgh District requested that the 3 existing steel bulkheads be replaced with 4 aluminum bulkheads in order to reduce their weight and the lifting requirements of the existing gantry crane that must lift them and put them in place in each dam gate bays.</div> <div><input checked="" type="checkbox"/> Check if project performed with current firm</div> | | | | | |

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person. Limit one page per person)

| | | | |
|--|---|---|--|
| 16. NAME Jonathan E. LaTurner, PE | 17. ROLE IN THIS CONTRACT Hydraulic/Hydrologic Engineer | 18. YEARS EXPERIENCE a. TOTAL 40 b. WITH CURRENT FIRM 27 | |
| 19. FIRM NAME AND LOCATION (City and State) DLZ Indianapolis, Indiana | 20. EDUCATION (Degree and Specialization) B.S. Civil Engineering | 21. CURRENT OH PROF REGISTRATIONS (List Discipline) Professional Engineer – IN; MI; TN | |

22. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

Special Training: PSMJ Project Manager Training; LPA Project Development Training; Indiana Department of Transportation: Bridge Hydraulic Design, Small Structure and Pipe Hydraulic Design, Drainage Design for Driveway Permits, Storm Sewer and Detention

23. RELEVANT PROJECTS (Up to a maximum of 5 samples)

| | (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
|----|--|--|---|--------------------|--------------|--------------------------------|
| | | | | Design | Construction | |
| a. | Lake Lemon Dam Inspection Indiana Department of Natural Resources Bloomington, Indiana | N/A \$11,000/ Under Budget | Inspection Inspection & Reporting | 2014 | N/A | |
| | (6) Role (Benefit / Value to Client) Project Supervisor. High Hazard Dam Inspection and Reporting to the Indiana Department of Natural Resources for the Lake Lemon Dam inspection included the earthen embankment, spillways, and associated spillway works. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| b. | Muncie Levee Accreditation Muncie Sanitary District Muncie, Indiana | N/A \$393,550/ | Levee Inspection Repair Recommendations | 2016 | N/A | |
| | (6) Role (Benefit / Value to Client) Project Supervisor. Responsible for determining whether the individual Hydrology, Hydraulics, Structural, Geotechnical, Mechanical, and Electrical components would adequately meet their respective accreditation requirements. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| c. | Mounds Lake Dam Anderson Corporation for Economic Development Anderson, Indiana | \$120,000 Phase I \$600,000 Phase II | Design Study | 2014 | N/A | |
| | (6) Role (Benefit / Value to Client) Project Manager. Responsible for all engineering facets of the project including hydrology, hydraulics, structural, geotechnical, transportation, and utility components. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| d. | Lake Holiday Lake Holiday HOA Crawfordsville, Indiana | Holding Pond Construction for Dredged Materials \$200,000 / Under Budget | Dam Inspection & Repair Holding Pond Design Dredging Oversight | 1998 | N/A | |
| | (6) Role (Benefit / Value to Client) Project Supervisor. High Hazard Dam Inspection and Reporting to the Indiana Department of Natural Resources for the Lake Holiday inspection included holding pond embankment. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| e. | Greenwood Flood Control Project Study, City of Greenwood, Indiana Greenwood, Indiana. | N/A \$111,200 | Flood Study | 2016 | N/A | |
| | (6) Role (Benefit / Value to Client) Project Manager. Responsible for hydraulics and design QA/QC. <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person. Limit one page per person)

| | | | |
|--|--|---|--|
| 16. NAME Jeffrey A. Miller, PE | 17. ROLE IN THIS CONTRACT Structural Engineer | 18. YEARS EXPERIENCE a. TOTAL 25 b. WITH CURRENT FIRM 24 | |
| 19. FIRM NAME AND LOCATION (City and State) DLZ Ohio, Inc. Columbus, Ohio | 20. EDUCATION (Degree and Specialization) B.S. Civil Engineering with Specialization in Structural Engineering | 21. CURRENT OH PROF REGISTRATIONS (List Discipline) Professional Engineer - OH | |

22. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

Special Training: NHI Fracture Critical Inspection Techniques for Steel Bridges; ACI Concrete Field Testing Technician - Grade 1; ODOT: Element Level Bridge Inspection Training, Bridge Inspection Training Refresher, Permit Required Confined Space Training, LRFD – Loads & General Overview, Bridge Project Manager, Bridge Inspection Level I and Level II

23. RELEVANT PROJECTS (Up to a maximum of 5 samples)

| | (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
|----|--|---|--|--------------------|--------------|--------------------------------|
| | | | | Design | Construction | |
| a. | Acton Lake Dam and Spillway Assessment and Rehabilitation Ohio Department of Natural Resources Butler County, Ohio | Water Control Facility N/A \$1.9M fee | Renovation/Addition General Contracting Full AE Services | 2013 | 2017 | 2 |
| | (6) Role (Benefit / Value to Client) Structural Engineer. Provided designs and plans for the rehabilitation of retaining walls on the project. Previous experience with the project from the inspection and preparation of the Acton Lake Dam Condition Assessment report provided the client someone who was familiar with the project and able to coordinate aspects of all the structural items on the project. | | | | | |
| | <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| b. | Grand Lake St Marys West Embankment Dam Rehabilitation and East Spillway Assessment Ohio Department of Natural Resources Mercer and Auglaize Counties, Ohio | Water Control Facility N/A \$584K (on budget) | Inspection Prime Full AE Services | 2020 | 2021 | 5 |
| | (6) Role (Benefit / Value to Client) Structural Engineer. Involved in the preliminary structural design of an Aquatic Nuisance Species (ANS) structures that is to be incorporated into the East Spillway facility at Grand Lake St Marys. Mr. Miller reviewed the calculations associated with the stability of the structural under various loading (hydrologic) conditions. The proposed ANS structure was taken through Preliminary Design by DLZ. | | | | | |
| | <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| c. | Five Dry Dams – Assessments, Analyses, and Rehabilitation Miami Conservancy District (MCD) Shelby County, Ohio | Various Water Control Facilities N/A \$1.6M fee (on budget) | Rehabilitation General Contracting Full AE Services | Ongoing | N/A | 6 |
| | (6) Role (Benefit / Value to Client) Structural Engineer. Inspected and assisted in the preparation of construction documents for the rehabilitation and improvements to the dry dams in the Dayton area. Evaluations included stability (sliding, overturning) and designs included drainage retrofitting for the existing concrete walls. | | | | | |
| | <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| d. | Tycoon Lake Dam Emergency Assessment and Rehabilitation Ohio Department of Natural Resources Gallia County, Ohio | Slip Investigation Dam Assessment N/A \$250K CV (Task Order) | Various Task Order Project Full AE Services | 2020 | 2020 | 4 |
| | (6) Role (Benefit / Value to Client) Structural engineer for an IDIQ Task Order assignment from ODNR that inspected and prepared reports for the structural assessment of five culverts and two headwalls on the project. Project benefited from his previous culvert inspection experience to evaluate the multiple types of culverts and headwalls on the project and perform confined space entries into the culverts. The end result of the project will be to implement Interim Risk Reduction Measures (IRRM's) at the site until longer term improvements can be made. | | | | | |
| | <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |
| e. | Hargus Lake Dam Gatewell Assessment and Rehabilitation Ohio Department of Natural Resources Circleville, Ohio | Water Control Facility N/A \$30K (on budget) | Inspection Prime Full AE Services | 2016 | 2016 | |
| | (6) Role (Benefit / Value to Client) Structural engineer that was involved in the structural inspection of a gatewell at the site to provide information for the rehabilitation of the structure. Project benefited from his structural experience on previous dam projects inspecting similar gatewell structures. | | | | | |
| | <input checked="" type="checkbox"/> Check if project performed with current firm | | | | | |

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person. Limit one page per person)

| | | | | |
|--|---|---|--|----------------------------|
| 16. NAME Corey Van Luchene, PS, SE | 17. ROLE IN THIS CONTRACT Structural Engineer | 18. YEARS EXPERIENCE A. TOTAL 25 | | B. WITH CURRENT FIRM 25 |
| 19. FIRM NAME AND LOCATION (City and State) DLZ South Bend, Indiana | 20. EDUCATION (Degree and Specialization) B.S. Civil Engineering | 21. CURRENT OH PROF REGISTRATIONS (List Discipline) Professional Engineer – IL; IN; ID; KS; OH; KY; MI; WI; D.C.: DE; MD; MO; MN; FL; NH; TN; MT; WY; AL; CO; NV; GA | | |

22. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

Special Training: NHI Safety Inspection of In-Service Bridges, NHI Fracture Critical Inspection Techniques for Steel Bridges, INDOT Certified Bridge Inspection Team Leader, Illinois Capital Development Board (CDB) Project Management for Architects/Engineers

| | (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
|--|---|--|---|--------------------|--------------|-----------------------------------|
| | | | | Design | Construction | |
| a. | Monongahela River Locks and Dam No. 4 (Charleroi Locks and Dam) Rehabilitation USACE – Pittsburgh District Westmoreland County, Pennsylvania | Water Control and Navigation Facility N/A \$1.0M fee (total) (on budget) | Investigation, Renovation/Addition Prime Full AE Services | 2014 | 2024 | |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Structural Engineer. Responsible for the structural design of a portion of the reverse coffer dam system (15' thick, 40' tall gravity wall that would not impose loads onto the adjacent existing lock walls) and steel stabilization struts. Both elements were required due to the phasing required for the construction of numerous improvements to this lock and dam facility. Design was done in accordance with Army Corp Design Standards for hydraulic structures. | | | | | | |
| b. | Acton Lake Dam and Spillway Assessment and Rehabilitation Ohio Department of Natural Resources Butler County, Ohio | Water Control Facility N/A \$1.9M fee | Renovation/Addition General Contracting Full AE Services | 2013 | 2017 | 2 |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Structural Engineer. Responsible for the structural design of a new cast-in-place concrete lake drain structure, maintenance access bridge and a drilled shaft retaining wall and responsible for the checking of the calculations for the rehabilitation of the spillway and rock slope walls. Design was done in accordance with Army Corp Design Standards and ACI Design Standards for Environmental Structures. | | | | | | |
| c. | Muncie Wire Mill Levee Assessment USACE, Louisville District Muncie, Indiana | Water Control Facility \$190K fee | Addition General Contracting Full A/E Services | 2014 | N/A | |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Structural Engineer of Record. Responsible for reviewing the existing as-built design of a cast-in-place concrete wall portion of the levee and the addition of additional height to the stem to meet current Army Corps of Engineers freeboard requirements. | | | | | | |
| d. | Emsworth, Montgomery, & Dashields Locks and Dams Assessments USACE – Pittsburgh District Allegheny and Beaver Counties, Pennsylvania | Water Control and Navigation Facility N/A \$2.0M fee (on budget) | Investigation, Renovation/Addition Prime Full AE Services | 2009 | 2010 | |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Structural Engineer. Performed structural evaluations of gates at Montgomery Locks and Dam and Emsworth Locks and Dams. The work was performed on an accelerated and aggressive schedule due to a dam safety emergency that had occurred at the Montgomery facility. The structural evaluation information was used to facilitate Interim Risk Reduction Measures (IRRM) at Montgomery Locks and Dam along with the design of replacement gates for the facility. | | | | | | |

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person. Limit one page per person)

| | | | | |
|---|---|---|----------------|----------------------------|
| 16. NAME Jody D. Sucharski, PE, CCM | 17. ROLE IN THIS CONTRACT Drilling/Field Testing/Laboratory Service/Construction Administration | 18. YEARS EXPERIENCE <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">a. TOTAL 28</td> <td style="width: 50%; border: none;">b. WITH CURRENT FIRM 12</td> </tr> </table> | a. TOTAL 28 | b. WITH CURRENT FIRM 12 |
| a. TOTAL 28 | b. WITH CURRENT FIRM 12 | | | |
| 19. FIRM NAME AND LOCATION (City and State) DLZ Ohio, Inc. Columbus, Ohio | 20. EDUCATION (Degree and Specialization) B.S. Civil Engineering | 21. CURRENT OH PROF REGISTRATIONS (List Discipline) Professional Engineer – OH; PA; SC; IN | | |

22. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)
Certifications: Certified Construction Manager (CCM), Construction Management Association of America (CMAA), Confined Space Entry Training, OSHA 30 Hour Safety

Affiliations: USACE, ASFE, NSPE, ASCE

23. RELEVANT PROJECTS (Up to a maximum of 5 samples)

| | (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
|-----------|---|--|--|--------------------|--------------|--------------------------------|
| | | | | Design | Construction | |
| a. | Acton Lake Dam and Spillway Assessment and Rehabilitation Ohio Department of Natural Resources Butler County, Ohio | Water Control Facility N/A \$1.9M fee | Renovation/Addition General Contracting Full AE Services | 2013 | 2017 | 2 |
| | (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Construction Project Manager. Provided construction management, contract administration, and observations of construction activities to ensure compliance with ODNR plans and specifications. Acton Lake Dam is a Class I high-hazard structure that impounds approximately 560 surface acres of water at normal pool and has a contributing drainage area of 99 square miles. This approximately \$14 million dollar project consisted of partial and complete removal of portions of the ogee weir, spillway, and outlet channel walls and floor slab. A granular drainage trench was installed at the toe of the dam in addition to several additional dam and drainage structure upgrades. Work was performed under normal seasonal conditions without lowering lake pool elevations to ensure the lake would continue to provide vital fishing and recreational activities for the general public. The Class I high-hazard rating of the dam required specially implemented, controlled, and monitored safety procedures and considerations. | | | | | |
| b. | Portage Lakes Dams Assessments and Rehabilitations Ohio Department of Natural Resources Portage Lakes, Ohio | Water Control Facility N/A \$3.5M const., \$300K fee | Renovation/Addition General Contracting Full AE Services | 2014 | 2016 | 7 |
| | (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Construction Engineer. Provided Construction Management assistance with respect to construction monitoring, special inspection, and material testing to ensure compliance with specifications for the armoring of Tuscarawas Dam. Assisted with quantity tracking, pay requesting processing, and the issuing of change and field orders. Assisted in review of design modifications before installation. | | | | | |
| c. | Lake Shawnee Spillway Assessment and Rehabilitation Shawnee Hills, Ohio Property Owners Association Shawnee Hills, Ohio | Water Control Facility N/A \$75K fee | Renovation General Contracting Full AE Services | 2013 | 2014 | |
| | (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Construction Engineer. Mr. Sucharski provided post construction Engineering Services regarding quality assurance, quantity verification, and final records documentation. The project included full removal & replacement of the spillway's concrete surface, slip lining & grouting of the existing drainage pipe within the spillway, and installation of a natural filter system, designed to allow for seepage to occur without eroding the spillway's soil base. | | | | | |
| d. | Grand Lake St Marys West Embankment Dam Rehabilitation and East Spillway Assessment Ohio Department of Natural Resources Mercer and Auglaize Counties, Ohio | Water Control Facility N/A \$584K fee (on budget) | Renovation/Addition General Contracting Engineering Services | 2020 | 2021 | 5 |
| | (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Construction Engineer. Mr. Sucharski coordinated the efforts associated with obtaining regular readings of groundwater measuring devices (e.g. piezometers) that were installed by DLZ as part of the project. During construction, Mr. Sucharski coordinated the schedules of field personnel that were associated with construction administration, testing, and inspection services for the project. | | | | | |

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person. Limit one page per person)

| | | | |
|--|--|---|----------------------------|
| 16. NAME Nathan G. Niedermeier, PE | 17. ROLE IN THIS CONTRACT Drilling/Field Testing/Laboratory Service/Construction Administration | 18. YEARS EXPERIENCE a. TOTAL 16 | b. WITH CURRENT FIRM 16 |
| 19. FIRM NAME AND LOCATION (City and State) DLZ Ohio, Inc. Columbus, Ohio | 20. EDUCATION (Degree and Specialization) B.S. Civil Engineering | 21. CURRENT OH PROF REGISTRATIONS (List Discipline) Professional Engineer - OH | |

22. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

Certifications: Radiation Safety Officer Nuclear Densometer Certification; Radiation Safety and Haz-mat Certification; ODOT - Level III Bituminous Concrete Technician; OAIMA Level I Aggregate Technician; OSHA 30hr Safety; IMSA: Work Zone Temporary Traffic Control Technician, Traffic Signal Technician Level I, Roadway Lighting Technician Level I, Traffic Signal Construction Tech. Level II.

23. RELEVANT PROJECTS (Up to a maximum of 5 samples)

| | (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
|--|--|---|--|--------------------|--------------|--------------------------------|
| | | | | Design | Construction | |
| a. | Portage Lakes Dams Assessments and Rehabilitations Ohio Department of Natural Resources Summit County, Ohio | Water Control Facility N/A \$450K (on budget) | Renovation/Addition General Contracting Full AE Services | 2014 | 2016 | 7 |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Field Engineer. Responsible for quality assurance, inspection, quantity verification, and final records documentation. Included both concrete and roller compacted concrete testing. Project consisted of placing sheet piling using a silent pile driver, demolition and dewatering of the site, constructing spillways and bridges, installation of a granular blanket drain, placement of roller compacted concrete (RCC), and gatehouse improvements including electrical and mechanical upgrades. | | | | | | |
| b. | Lake Shawnee Spillway Assessment and Rehabilitation Shawnee Hills, Ohio Property Owners Association Shawnee Hills, Ohio | Water Control Facility N/A \$75K fee | Renovation General Contracting Full AE Services | 2013 | 2014 | |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Field Engineer. Responsible for quality assurance, inspection, quantity verification, and final records documentation. Included concrete testing. Project included full removal & replacement of the spillway's concrete surface, slip lining & grouting of the existing drainage pipe within the spillway, and installation of a natural filter system, designed to allow for seepage to occur without eroding the spillway's soil base. | | | | | | |
| c. | Grand Lake St Marys West Embankment Dam Rehabilitation and East Spillway Assessment Ohio Department of Natural Resources Mercer and Auglaize Counties, Ohio | Water Control Facility N/A \$584K fee (on budget) | Renovation/Addition General Contracting Engineering Services | 2020 | 2021 | 5 |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Construction Engineer. Assisted with obtaining regular readings of groundwater measuring devices (e.g. piezometers) that were installed by DLZ as part of the project. During construction Mr. Niedermeier performed construction administration, testing, and inspection services for the project. | | | | | | |
| d. | 5th Avenue Dam Removal and Lower Olentangy River Restoration City of Columbus Columbus, Ohio | Infrastructure \$6,765,000 \$135K (under budget) | Demolition, Restoration CMR Inspection and Testing | 2012 | 2014 | |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Field Engineer. Provided construction administration and inspection services. Project included restoring the Olentangy River using natural channel design including channel excavation; live branch layering; toe wood; and various plantings of live stakes, trees and shrubs. | | | | | | |
| e. | Acton Lake Dam and Spillway Assessment and Rehabilitation Ohio Department of Natural Resources Butler County, Ohio | Water Control Facility N/A \$1.0M | Renovation/Addition General Contracting Full AE Services | 2013 | 2017 | 2 |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Field Engineer. Responsible for quality assurance, inspection, quantity verification, and final records documentation. Included concrete testing. Project included full and partial removal and replacement of concrete walls, weir, and spillway floor; slip lining and grouting of a drain tunnel; installation of a temporary cofferdam box; installation of natural filter/drainage system and backfill; installation of rock anchors; installation of drilled shafts, as well as aesthetic and site access improvements. | | | | | | |

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person. Limit one page per person)

| | | | |
|--|--|---|--|
| 16. NAME Barry K. Wong, PE | 17. ROLE IN THIS CONTRACT Geotechnical Services Supervisor | 18. YEARS EXPERIENCE a. TOTAL 36 b. WITH CURRENT FIRM 36 | |
| 19. FIRM NAME AND LOCATION (City and State) DLZ Ohio, Inc. Columbus, Ohio | 20. EDUCATION (Degree and Specialization) M.S. Construction Management in Civil Engineering B.S. Civil Engineering | 21. CURRENT OH PROF REGISTRATIONS (List Discipline) Professional Engineer – OH; KY; IN; PA; NJ; MI | |

22. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

Certifications: American Concrete Institute: Field Testing, Strength Testing; NICET Construction Materials Soils, Concrete, Asphalt Level II; Level 3 Asphalt Inspector/Technician, ODOT; Concrete Technician, Ohio Ready Mixed Concrete Association.

Special Training: PSMJ Project Manager Training, Biaxial Geogrids and Subgrade Stabilization Short Course, Parking Lots and Site Paving, ACI, Porous Asphalt Pavement Seminar, National Asphalt Pavement Association, University of Wisconsin-Madison, Evaluation and Rehabilitation of Pavements, Soil Engineering for Roads and Pavements, Geotechnical Aspects of Pavements, National Highway Institute Trenchless Technology, SSES and Buried Asset Management, Trenchless Technology Seminar, Inspector Training and Certification Program, The National Association of Sewer Service Companies (NASSCO)

23. RELEVANT PROJECTS (Up to a maximum of 5 samples)

| (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
|--|---|--|--------------------|--------------|--------------------------------|
| | | | Design | Construction | |
| a. Geotechnical Drilling and Field Testing USACE, Buffalo District Various Locations, Ohio | Various \$326K fee (under budget) | Drilling, Testing | 2013 | N/A | |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Geotechnical Engineer. Oversaw the drilling and testing at four sites in Ohio. One of the projects required drilling from a barge in Lake Erie; in addition to SPT and undisturbed sampling, in-situ vane shear testing was also performed. The other projects were at CDF sites, which required accessing boring locations with very soft soils. In addition to the field work, a full-range of laboratory tests were performed. | | | | | |
| b. Acton Lake Dam and Spillway Assessment and Rehabilitation Ohio Department of Natural Resources Butler County, Ohio | Water Control Facility N/A \$1.9M fee | Renovation/Addition General Contracting Full AE Services | 2013 | 2017 | 2 |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Materials Engineer. Oversaw concrete coring and evaluation of spillway weir, retaining walls, and concrete lining of outlet channel. Compression testing and petrographic analyses were performed to help evaluate the condition of the concrete. Prepared recommendations for rehabilitation of the various concrete elements. Coordinated drilling and testing services. | | | | | |
| c. Piqua Hydraulic Canal and Dam/Levee System Assessments City of Piqua Piqua, Ohio | Water Control Facility N/A \$171K fee (on budget) | Investigation Prime Full AE Services | 2016 | N/A | |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Drilling Supervisor/Geotechnical Engineer. Project involved evaluating an existing 10,000-foot long earthen levee/dam that retains the water supply for the City of Piqua, Ohio. Oversaw the drilling and sampling program that consisted of 31 borings extended to depths of up to 75 feet. Both standard penetration test (SPT) and undisturbed sampling were performed. Laboratory testing included both triaxial and permeability testing. | | | | | |
| d. Buckeye Lake Spillway, Dam, and Park Assessments and Rehabilitation Ohio Department of Natural Resources Fairfield/Licking Counties, Ohio | Water Control Facility N/A \$1.5M (on budget) | Investigation Prime Engineering | 2015 | Varies | |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Materials Engineer. Coordinated and directed all drilling and field testing and inspection services during the various phases of this project. | | | | | |
| e. Grand Lake St Marys West Embankment Dam Rehabilitation and East Spillway Assessment Ohio Department of Natural Resources Mercer/Auglaize Counties, Ohio | Water Control Facility N/A \$584K (on budget) | Rehabilitation Prime Full A/E Services | 2020 | 2021 | 5 |
| (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Drilling Supervisor. Assisted in ensuring that all geotechnical explorations for the project were performed in accordance with ODNR and USACE requirements. | | | | | |

E. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT

(Complete one Section E for each key person. Limit one page per person)

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|--|---|---|--|
| 16. NAME Nathan Dickman, PE | 17. ROLE IN THIS CONTRACT Civil Engineer | 18. YEARS EXPERIENCE a. TOTAL 17 b. WITH CURRENT FIRM 8 | |
| 19. FIRM NAME AND LOCATION (City and State) DLZ Ohio, Inc. Columbus, Ohio | 20. EDUCATION (Degree and Specialization) B.S. Civil and Environmental Engineering | 21. CURRENT OH PROF REGISTRATIONS (List Discipline) Professional Engineer – West Virginia, 2024, #26479; OH; KY; PA | |

22. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.)

Certifications: NASSCO – PACP Certification

23. RELEVANT PROJECTS (Up to a maximum of 5 samples)

| | (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
|----|---|--|--|--------------------|--------------|--------------------------------|
| | | | | Design | Construction | |
| a. | Aqua on the Levee Headwall Emergency Repair Sanitation District No. 1 of Northern Kentucky Newport, Kentucky | Storm Sewer and Headwall with flap gate \$487K | Replacement General Contracting Full AE Services | 2024 | 2024 | |
| | (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Project manager/engineer tasked with the design of a replacement 48-inch storm sewer and headwall which outlets to the Ohio River. The headwall includes a flap gate to prevent high Ohio River water from flowing backwards through an adjacent flood levee. The previous storm sewer and headwall had failed and slid down the riverbank. The replacement project includes a new headwall on H-piles and substantial rock fill for long-term stability | | | | | |
| b. | (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
| | 2nd & Crescent Levee Sluice Gate Replacement Project Sanitation District No. 1 of Northern Kentucky Covington, Kentucky | Sluice Gate \$431k | Replacement General Contracting Full AE Services | 2022 | 2023 | |
| | (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Project manager/engineer tasked with the replacement design of a 60-inch sluice gate located within a gateway that is part of the Covington flood protection levee. The original gate was installed in 1956 and no longer seated properly, resulting in excessive seepage and longer run times during flood events for the adjacent flood pump station | | | | | |
| c. | (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
| | 4th St Levee Flood Station Gate Replacement Project Sanitation District No. 1 of Northern Kentucky Newport, Kentucky | Sluice Gate \$480k | Replacement General Contracting Full AE Services | 2025 | Ongoing | |
| | (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Project manager/engineer tasked with the replacement design of a 66-inch sluice gate located within a gateway that is part of the Newport flood protection levee. The original gate was installed in 1956 and no longer seated properly, resulting in excessive seepage and longer run times during flood events for the adjacent flood pump station. | | | | | |
| d. | (1) Title, Client & Location (City, State) | (2) Building Type, Size & Project Cost / Performance | (3) Type of Construction, Delivery Model & Services | (4) Date Completed | | (5) Example Project Key No. |
| | Lower Olentangy Tunnel (LOT) City of Columbus Columbus, Ohio | Tunnel 17,300 LF \$268M | New Build General Contracting Full AE Services | 2019 | Ongoing | |
| | (6) Role (Benefit / Value to Client) <input checked="" type="checkbox"/> Check if project performed with current firm Project Engineer / Deputy Project Manager. The LOT project consists of a 12-foot diameter, 60'-70' deep, soft ground and mixed-face tunnel that is nearly 17,300 feet in length. Additional project components include 1,100 LF of 90-inch micro-tunnel, and 6 relief structure connections to existing sewers. Hydraulic connections and control operations include the use of two 6'W x 10'H sluice gates, four weir gates ranging from 4'W x 3'H to 8'W x 6'H, and six flap valves ranging from 30" diameter to 6'W x 10'H. | | | | | |



DAKOTA SMITH, PE

Project Engineer

Years Experience | 8 Years

Years With Firm | 7 Years

Education

B.S. Civil Engineering,
Virginia Polytechnic
Institute & State
University, Blacksburg,
VA, 2016

Registrations

Registered Professional
Engineer (PE):
WV (#24520) 2021;
PA (#PE094473) 2023;
VA (#0402068677)
2024

Dakota Smith is a project engineer for TERRADON Corporation. Smith provides engineering design services on various projects ranging from land slips, sidewalk design, & highway design to deck replacements. Smith has performed various tasks from drafting & roadway/site design in MicroStation, OpenRoads, & AutoCAD, to preparing calculations for different structural components & highway quantities using hydrologic & hydraulic modeling software and environmental permitting and bridge inspection coordination.

Project Experience

Bulkhead Lifting Beam Inspection, Willow Island Locks and Dam, Newport, OH,
Project coordinator for the Bulkhead Lifting Beam inspection located within USACE's Huntington District. Project involved creating pre-inspection documents, performing the inspection, and creating a report. Smith assisted with the pre-inspection documentation and communicated with USACE and the inspector for inspection visits and documentation submissions.

Inspection and Evaluation of Eight (8) HSS – USACE Huntington District, 2024

Project coordinator for eight (8) hydraulic steel structures (HSS) located within USACE's Huntington District. Project involved creating pre-inspection documents, performing inspections, and creating a report for each inspection.

Inspection and Evaluation of Eight (8) Bridges and Two (2) Hydraulic Steel Structures – USACE Huntington District, 2023

Project coordinator for eight (8) bridge & two (2) hydraulic steel structures (HSS) inspections located within USACE's Huntington District. Project involved creating pre-inspection documents, performing inspections, and creating a report for each inspection.

Cobun Creek Dam, Morgantown, WV

Provided engineering support for Kanawha Stone Company on Cobun Creek Dam construction. Smith performed the design of concrete support blocks for the RCPP, provided the buoyancy calculations for during concrete cradle pour, and designed dead men & epoxy grouted anchors to provide additional restraint and not allow pipes to float when concrete cradle was poured.

Victory Hollow Bridge Inspection, Denora, PA, USACE Pittsburgh District

Project coordinator for Victory Hollow Bridge inspection located within USACE's Pittsburgh District. Project involved creating pre-inspection documents, performing the inspection, and creating the inspection report. Smith helped assemble the inspection team, coordinate amongst the team members, assisted with the pre-inspection documentation, scheduled the equipment and maintenance of traffic, coordinated with Norfolk Southern and PennDOT to acquire necessary permits, coordinated West Penn Power to ensure power line temporary disconnection during inspection, and communicated with USACE for the inspection visit and documentation submissions.



ANDREW WAGNER, PE

Project Engineer

Years Experience | 7 Years

Years With Firm | 7 Years

Education

B.S. Mining
Engineering, Virginia
Polytechnic Institute &
State University,
Blacksburg, VA, 2013

Registrations

Registered Professional
Engineer:
West Virginia #25661

Certifications

Corrosion Mitigation for
Reinforced Structures

Bentley Accredited
MicroStation
Professional

Bentley Accredited
Road Designer

Andrew Wagner is a Project Engineer at TERRADON Corporation. Wagner is responsible for design on civil and highway projects. Wagner has a background in mine engineering as well as oil and gas drilling and completions operations management and has served as a drill site manager in the Gulf of Mexico while with another firm. Wagner has experience in highway design, PROWAG-compliant streetscape design, drainage design, site grading, and abandoned mine reclamation, and has provided relevant services on various projects throughout West Virginia. Wagner fulfills CAD management & administrative duties, implementing CAD Standards for MicroStation and OpenRoads projects and serving as the Engineering Group SME on OpenRoads Designer.

Project Experience

Cobun Creek Dam, Morgantown, WV

The project was a dam construction and improvement in Monongalia County, WV. Wagner checked calculations for sizing concrete support blocks placed under a reinforced concrete pressure pipe.

Babcock State Park Narrow Gauge Recreational Trail, Fayette County, WV

The project consisted of the design and preparation of construction plans and related documents for a new pedestrian bridge along with 2,500 linear feet of trail rehabilitation work along the Narrow Gauge Trail within Babcock State Park. Work consisted of pre-fabricated bridge design, layout, and abutment plans, geotechnical reports, and hydraulic reports. Wagner created the base mapping and plan set. Wagner designed three (3) span alternatives for a pedestrian bridge crossing Glade Creek. Wagner developed trail rehabilitation typical sections and proposed pedestrian bridge typical sections and specifications.

WDOH-Fort Hill Bridge Ramp C Rehab, Charleston, WV

This project consisted of the preparation of contract plans and related documents for the rehabilitation of the Fort Hill Bridge Ramp C, which carries Interstate 64 Ramp C over the Kanawha River, CSX railroad and WV Route 61. The existing structure (BAR No. 20A398) is an eight (8) span steel plate girder bridge with an approximate overall length of 771.3'. Wagner developed conceptual maintenance of traffic scheme for the bridge rehab & provided CADD support for the project.

WVDOH I-64 Central Ave OP Bridge, South Charleston, WV

Project was a Bridge Rehabilitation. Rehabilitation items included latex modified concrete (LMC) overlay of the reinforced concrete deck, drainage downspouting replacement with fiberglass reinforced polymer (FRP) pipe, concrete protective coating of substructure and parapets, concrete repairs, etc. Wagner designed roadway pavement markings and produced plan sheets and quantity take-offs for same.



ROBERT THAW, PS

VP of Survey

Years Experience | 45 Years

Years With Firm | 31 Years

Education

A.S. Survey
Technology, West
Virginia Institute of
Technology, 1982

B.S. Civil Engineering
Technology, West
Virginia Institute of
Technology, 1985

Registrations

Professional Land
Surveyor (PLS):
West Virginia, 1991,
#965

Robert Thaw serves as head of TERRADON's Survey and Mapping department. He organizes and supervises survey crews, reviews project plans, and creates base mapping for various projects including noise barriers, interchanges, connectors, bypasses, sidewalks, bike paths, and bridges. Thaw oversees all TERRADON survey activities, including preparation of Right-Of-Way plans; the development of GPS static networks for aerial mapping in the design of roadways; identification of existing utilities and property lines; base image development and control placement for construction projects; and drafting of legal descriptions for ROW parcels. He provides strategic guidance and maintains rigorous quality assurance standards across a comprehensive range of surveying services, including Base Mapping for design, Boundary/Cadastral Surveys, ALTA/NSPS Surveys, and land-based LiDAR surveys, Hydrographic, Photogrammetric, and Route Surveys, along with GPS/GIS integration, instrumentation surveys, and construction surveys, Utility, and Quantity Surveys while ensuring all operations adhere to industry standards and regulatory requirements. His role encompasses strategic planning and maintaining technical excellence across all surveying operations.

Project Experience

USACE Burnsville Lake, WV – 13th Instrumentation Observation

TERRADON conducted a comprehensive instrumentation survey at the dam site, establishing a high-accuracy control network with 14 monuments using GNSS static and terrestrial observations. The project involved monitoring alignment pins, surface displacement monuments, and piezometers, along with a 3D terrestrial scan of the dam structure and detailed documentation. Thaw provided coordination, strategized the survey methods, and oversaw quality control and assurance while managing the budget.

USACE Huntington District, Paint Creek Lake Dam Safety and Boundary Survey

TERRADON conducted boundary and dam safety surveys at Paint Creek Lake, Bainbridge, OH, providing planning, coordination, computations, drafting, and analysis. The project included horizontal and vertical control recovery, topographic surveys, monumentation, and detailed documentation following USACE standards. Thaw coordinated the project, strategized survey methods, and provided QA/QC for the final deliverables.

USACE Huntington District, Canyon Lake Dam Instrumentation 2020 Observation Survey, Canyon Lake, TX

Monitoring and Instrumentation Services. TERRADON performed comprehensive observation surveys of the Canyon Lake Dam, including recovery and survey of existing control, service bridge pins, surface reference marks, settlement plates, and dam centerline profile using integrated GPS/GNSS receivers, robotic total station, and digital levels to prepare detailed comparative analysis reports of current versus historical measurements. Robert Thaw oversaw survey operations, handled budget management, and performed quality control to ensure accuracy and efficiency.



DAVE BROWN, PS

Survey Project Manager

Years Experience | 33 Years

Years With Firm | 25 Years

Education

B.S. Civil Engineering
Technology / Surveying
(West Virginia Institute
of Technology (1996)

Registrations

Professional Land
Surveyor (PLS):
WV, 2003 (#2066) TN,
2008 (#2685)
KY, 2020 (#4344)

Certifications

NOAA's National
Geodetic Survey OPUS
Projects Manager's
Training (2021)

Dave Brown is a Professional Land Surveyor and Survey Project Manager, experienced in various survey and mapping projects throughout the region. Dave is a member of West Virginia Society of Professional Surveyors. Brown's responsibilities include survey project management, GPS networks, control surveys, subdivision design, development of highway Right-of-Way Plans, boundary solutions, reporting and documenting, courthouse research, drafting, construction staking, survey data reduction, survey reports, and preparation of surveying cost estimates and proposals.

Project Experience

USACE Burnsville Lake, WV – 13th Instrumentation Observation

TERRADON conducted a comprehensive instrumentation survey at the dam site, establishing a high-accuracy control network with 14 monuments using GNSS static and terrestrial observations. The project involved monitoring alignment pins, surface displacement monuments, and piezometers, along with a 3D terrestrial scan of the dam structure and detailed documentation. Dave Brown, as Professional Surveyor Lead coordinated field crews, prepared the Report of Survey, and processed GPS Static solutions. He also organized field books, created QC reports, performed digital level adjustments, and assembled coordinate files in spreadsheets for efficient project management and documentation and created tables comparing results with previous observations.

USACE Huntington District, Paint Creek Lake Dam Safety and Boundary Survey

TERRADON conducted boundary and dam safety surveys at Paint Creek Lake, Bainbridge, OH, providing planning, coordination, computations, drafting, and analysis. The project included horizontal and vertical control recovery, topographic surveys, monumentation, and detailed documentation following USACE standards. Dave Brown, as Professional Surveyor Lead managed field crews, compiled the Report of Survey, and processed GPS Static solutions. He also prepared plats and survey exhibits, organized field books, generated QC reports, performed digital level adjustments, and structured coordinate files in spreadsheets.

USACE Huntington District, Canyon Lake Dam Instrumentation 2020 Observation Survey, Canyon Lake, TX

Professional Land Surveyor Lead. Project included planning, coordination, supervision, computations, drafting and analysis for the Canyon Lake Dam Instrumentation 2020 Observation Survey, which included recovery and survey of existing control, service bridge pins, surface reference marks, settlement plates, and dam centerline profile. GPS/GNSS receivers were utilized, with values being refined by use of observations with robotic total station and digital levels. A report of values and comparisons to previous observations was prepared for the project.



JASON ASBURY, CESSWI, TRETNO

VP of Field Services

Years Experience | 22 Years

Years With Firm | 14 Years

Education

B.S. Landscape
Architecture, West
Virginia University,
2004

Certifications

ACI Concrete Field-
Testing Technician –
Grade I

WVDOH Level V
Transportation
Engineering Technician
TRETNO

WVDOH Asphalt Field
& Compaction
Technician; Aggregate
Sampler Technician;
Portland Cement
Concrete Inspector

APNGA Nuclear Gauge
Safety & USDOT
Hazmat

Certified Erosion
Sediment Storm Water
Inspector (CESSWI)

38 Hour USACE
Wetland Delineation

30 Hour OSHA

40 Hour OSHA
HAZWOPER

OSHA Confined Space
Entry Trained

OPEC SafeLandUSA

Jason Asbury is the Vice President of the Field Services Department at TERRADON. Asbury leads TERRADON's Field Services Department, managing a high-performing team of construction inspection professionals across complex infrastructure and development projects throughout the Ohio Valley and Appalachian regions. With over 20 years of experience in construction and consulting, Asbury is a trusted expert in delivering quality assurance, quality control, and construction testing services that consistently exceed industry standards and client expectations. Asbury oversees the complete lifecycle of field services operations—from pre-construction planning through site execution and project closeout. Asbury is also responsible for the operational management of TERRADON's Washington, PA office.

Project Experience

The Bechtel Summit National Scouting Reserve, Glen Jean, West Virginia

Served as the lead Regulatory Coordinator for a large-scale, 10,600± acre recreational development in Fayette County, West Virginia. Acted as the primary liaison with the West Virginia Department of Environmental Protection (WVDEP) on behalf of all contractors and consultants, overseeing the successful acquisition and management of more than 50 individual site permits. Responsibilities included the design and coordination of NPDES permitting, with a focus on erosion and sediment control plans for multiple active contractors and consultants. Facilitated monthly site inspections with WVDEP representatives and coordinated logistics with on-site contractor teams to ensure continuous compliance with environmental regulations. The scope of the project included: Placement of over 550,000 tons of aggregate; Grading operations across 600 acres; Construction of 28 miles of drainage swales and 14 miles of new roads; Design and regulatory oversight for four earthen dams; Installation of more than 60 miles of underground utilities. Successfully ensured regulatory alignment, permit compliance, and environmental stewardship throughout all phases of construction and development.

West Virginia American Water, West Virginia Statewide

Served as Quality Assurance/Quality Control Manager on 59 waterline projects across the state of West Virginia. Managed a team of three full-time inspectors dedicated to ongoing water line construction projects. Oversaw all aspects of field inspection operations, ensuring compliance with quality standards and client expectations. Responsibilities included reviewing as-built drawings, coordinating the collection and delivery of GIS data to the West Virginia American Water GIS Department, and facilitating the resolution of construction-related conflicts and disputes. Provided additional construction support services as requested by the client to maintain project efficiency and integrity.



TYLER BAILEY, TRETNO

Construction Inspection Manager

Years Experience | 22 Years

Years With Firm | 14 Years

Education

B.S. Landscape
Architecture, West
Virginia University,
2018

Certifications

WVDOH Level IV
Transportation
Engineering Technician
– Senior (TRETNR)
(#3198)

OSHA 10 Hour
Construction

First Aid, CPR & AED
Certified

ACI Concrete Field-
Testing Technician-
Grade 1

WVDOH PCC
Inspector; Soil and
Aggregate Compaction
Technician; Asphalt
Field and Compaction
Technician; Aggregate
Technician; Aggregate
Sampling

APNGA RSO
Certification

APNGA Nuclear Gauge
Safety & USDOT
Hazmat

Tyler Bailey is a Field Services Project Manager, Construction Manager, Laboratory Supervisor, and Construction Inspector for TERRADON Corporation. Bailey is responsible for scheduling over 25 field service technicians and inspection personnel to projects, monitoring, and review of reports, and overall client management throughout West Virginia and Virginia Region. He also provides quality control testing and inspection for oil & gas, environmental, commercial, and residential construction projects throughout the Appalachian Region. He interfaces with site owners (public and private) and contractors through onsite meetings and offsite meetings to complete construction testing and inspection projects. Bailey is responsible for monitoring contractor's work for conformance to the design plans, specifications and general permit requirements; experience tracking daily quantities, completing daily inspection reports, reviewing payment requisitions and maintaining field sketchbooks and as-built drawings.

Project Experience

Multiple Mine Reclamation Sites, West Virginia

Field Services Project Manager and Construction QA/QC technician responsible for observing and documenting any and all progress on the site. Scheduling field services and inspection personnel to the project, monitoring, and review of reports, and overall client management throughout. The projects involves working with environmental staff from WV and going on mine reclamation sites to observe/ analyze material. Testing performed onsite was compaction and soil analysis in the laboratory etc. Along with job coordination with project managers, superintendent, contractors, and site engineers.

WVDOT John Nash Boulevard Widening, Wyoming/Mercer County, WV

Construction QA/QC technician responsible for bridge way approach including compaction testing for a newly built bridge along with concrete testing for multiple bridge decks.

Wastewater Treatment Plant Tank Installation/ Utility Relocation, Covington, VA

Field Services Project Manager and Construction QA/QC technician responsible for observing and documenting any and all progress on the site. Scheduling field services and inspection personnel to the project, monitoring, and review of reports, and overall client management throughout. The project consists of installing 2 large above ground tanks and relocating underground utilities, consisting of mass fill and excavation operations, grading, waterline, storm, and sanitary sewer installation, testing being performed onsite are compaction/ proof rolls, concrete testing, rebar inspections, steel inspections, asphalt testing, laboratory specimen breaks for compressive strength, monitoring contractor's work for conformance to the design plans, specifications, and general permit requirements, tracking daily quantities, completing daily inspection reports. Along with job coordination with project managers, superintendent, contractors, and site engineers.

→ SIMILAR PROJECT EXPERIENCE

Mallard Dam at Glade Springs *Raleigh County, WV*

Mallard Dam presents a difficult situation relative to the Dam Safety Rule (47CSR34) requirements. The hazard potential is represented solely by the heavily traveled roadway on the crest of the dam. The dam has overtopped at least twice previously and has a relatively large watershed which will result in future overtopping of the embankment due to inadequate spillway capacity combined with insufficient reservoir storm water storage. While the rule has provisions to determine hazard potential classifications in scenarios where houses and roadways exist downstream, it contains no specific guidance regarding hazards on the crests of dams. The lack of Rule guidance requires DEP to make design approval conditions and set precedent for this situation based upon its core dam safety mission – the protection of lives and property.



The hydraulic and hydrological studies and designs were performed using Soil Conservation Service (SCS) methods and computer program (SITES) to estimate potential runoffs and route resulting runoffs through the principal spillway pipes and dam overtopping. The dam was analyzed for a 100 year storm and the design storm (1/4PMP storm). It was found that the existing dam would overtop during a 100 year storm event by about 1 inch, thus the dam's principal spillway was upgraded. Additionally, the dam upgrade was designed to be overtopped by generally flattening the downstream slope to 5:1 (also providing an internal chimney drain) which also improves the stability of the dam. It was found that grassed permanent Erosion Control Matting (ECM) would provide the necessary shear resistance with a (considerable) Safety Factor of 2.

The proposed internal chimney drain resulted in an upgraded Static Safety Factor of 1.85 and Seismic Safety Factor of 1.3. The Sudden Drawdown condition is not applicable because there is no drain provided (grandfather provision). This is further justified due to the relatively shallow (<5 feet) depth of the pool.

→ SIMILAR PROJECT EXPERIENCE

Beckley Upper Glade Creek Water Supply Dam *Raleigh County, WV*

The general project included providing an additional 15 days of storage for drought conditions for Beckley Water Company. The selected water storage facilities included the Lower and Upper Glade Creek Dams. The study/design was complicated by the necessity to route design floods through the upstream Flattop Lake. The Lower Dam is a concrete Weir type dam, and the impoundment is dissected by WV Route 3. The upper dam is a 76 ft high Earth and Rock Fill dam built circa 1977. The study phase included evaluating the installation of automatic gates on the lower water supply dam which would be operated during “normal” flood events to prevent overtopping of WV Route 3 during flood events less than 100 years, yet provide storage during drought conditions, increasing the pool volume by dredging and excavating below the pool level, constructing another dam on water company property, and an innovative method of raising of the lake level in the upper impoundment. Cost analysis indicated that raising the lake level in the upper reservoir would be the least expensive.

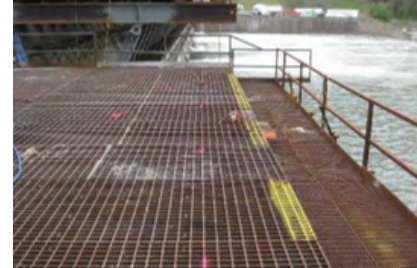


The design for raising the upper lake normal pool level included evaluation of flood events including 100 year and Probably Maximum Precipitation floods and providing designs to safely handle each. This included modifications to the principal intake riser to raise the level while improving its hydraulic efficiency at a reasonable cost and raising the initial operating level of the emergency spillway. The modifications to the principal spillway riser included filling the existing intake weir openings, cutting the top off the riser to provide a new weir 2.5 times as long (ergo 2.5 times hydraulically more efficient at low heads), and constructing a new cover/trash rack. The emergency spillway operating frequency was maintained by designing a new higher concrete control weir to replace the existing; studies indicated this did not significantly affect the flow capacity at high flow rates. During the design, it was found that the Riser could be modified to gain essentially 27 complete days storage, pending weather, at about the same cost. Modifications resulted in 175 million gallons at the construction cost of \$206,000 or about \$0.0012/per gallons additional storage. Design included the addition of monitoring wells to monitor the phreatic surface within the dam.

→ SIMILAR PROJECT EXPERIENCE

Bluestone Dam Phase IV Dam Stability *Hinton, WV*

TERRADON has performed the construction engineering and structural inspection during the Phase 4 Dam Safety project at the Bluestone Dam. The project is currently in its third year, and is expected to be completed in 2019. TERRADON performs routine inspections on all elements of the drilling platform. The steel decking is checked for deformation, section loss, confirmation that no gaps between adjacent panels exist, that all welds are performed, and that no panels are placed in such a manner that undue stresses will be introduced. We check the stringers for deformation, section loss, and that all bolts are properly installed. All connections at the dam face are checked for proper bearing onto the concrete, and the soundness of the concrete is confirmed. TERRADON worked closely with the contractor and various fabricators to develop and approve welding procedures in accordance with AWS D1.5 for these critical items. TERRADON was intimately involved in verifying the setting of welding equipment, the travel speed, welding materials, preheat application, interpass temperatures and proper position. TERRADON also reviewed all ultrasonic and radiographic testing performed during the development of the welding procedure and welder qualification.



TERRADON performed a detailed analysis of the existing stringer-on-pier system that was in place when the current contractor was awarded the project. The platform system originally consisted of nine (9) HP-14x89 stringers spaced at 3'-0-3/8". There have been a maximum of 107 pier systems installed at any given time, and the platform has been lowered 8'-0" in elevation twice, for a total of 16'-0".

The analysis of this platform included placing multiple pieces of equipment that included, but is not limited to a 150 ton crane, a 20 ton carry deck, and a 22.5 ton drill rig at various locations on the platform in order to determine the governing load condition for the various structural steel elements. Because of the angle of the pier column, tension forces are induced into the pier cap. These forces are transferred to the dam by way of two (2) 2" diameter Williams Forms Spin Lock anchors. It was later required for the spans in key locations to be doubled to 15.2', while maintaining access for all equipment. In order to do this, deeper stringers (W24x84) were required. Because of this increased depth, as well as the fact that the HP14x89 stringers were still in use in adjacent locations, it was required that the new W24x84 stringers have the bottom flange and portions of the web coped at the ends. A new bottom flange, as well as bearing stiffeners was designed, and a complete fatigue analysis was performed to confirm that this was an acceptable design approach. Modifications to the column base plates were also required, adding an additional 2' to the overall length, and performing a full penetration groove weld on the 2-7/8" thick plate. Finally, a "fender" system was developed in order to protect portions of the column that have the potential to be submerged during high water events from woody debris collisions.

→ SIMILAR PROJECT EXPERIENCE

Lake Chaweva Dam *Kanawha County, WV*

TERRADON Corporation was retained for planning, design, construction (design-build) and Certificate of Compliance for an earthen and rock fill dam originally constructed in 1930 and taken out of service in 1998. Services included investigation and repair of several landslides caused by dewatering the lake when it was taken out of service. Extensive restoration analyses and studies were required to bring the impoundment structure up to current safety codes.



Hydraulic modeling, analyses and evaluations were performed to determine the correct spillway dimensions to allow for upgrade to the current standards for 100 year storm events. The dam break analysis evaluated the hazard classification of the dam and the potential flood wave downstream. The WINSTABL computer model was used to conduct a stability analysis of the up and downstream faces of the dam.

A limited subsurface investigation was valuable in defining the engineering characteristics at the abutments and within foundation soils. The borrow study reviewed the available earthen materials to rehabilitate the dam. While a sedimentation study and mitigation design was completed for the impoundment. The results and evaluations of the studies and modeling culminated in detailed rehabilitation designs of the embankments, the downstream face of the dam, and the principal and emergency spillways.

Construction plans and technical specifications were prepared by TERRADON in order to bid and construct the needed improvements. Construction inspection and ongoing engineering oversight was provided throughout the construction process on behalf of the client.

→ SIMILAR PROJECT EXPERIENCE

Pettigrew Lake Dam *Kanawha County, WV*

Pettigrew Lake is located in the Meadowood Park in Tornado, WV. The recreational lake is approximately eight acres with an average depth of 10 feet. Over the course of several years, the dam had been significantly weakened by burrowing animals, which resulted in a near breach of the dam, plus the cmp outlet structure had mostly deteriorated. The dam had been damaged for approximately 10 years and the public facility was in disrepair. The Kanawha County Parks & Recreation Commission did not have adequate budget to make the repairs, as there were higher priorities for allocated funds.



Through the cooperative efforts of volunteers organized by the Coal River Group (a nonprofit community organization), the Kanawha County Parks and Recreation Commission and WVDEP granted permission to proceed with the project. TERRADON Corporation volunteered its engineering services to design plans for the repair of the dam structure. The design for the repair of the dam consisted of establishing an access road and compacted fill material to seal a 15 foot breach in the existing dam plus the installation of a new HDPE outlet structure. Massey Coal Services brought in a five man crew and bulldozers to carry out the construction of the design plans.

→ SIMILAR PROJECT EXPERIENCE

Chatham Lake Dam at Glade Springs *Raleigh County, WV*

The general project included development of residential properties around an upscale golf resort in southern West Virginia. Initial involvement included planning, which evolved from three smaller dams and lakes to one large dam and lake. The chosen design resulted in a 70' high dam with one 70 acre lake. Studies included water balance studies including low flow augmentation requirements and golf course irrigation requirements. Of interest: it was found that low flow augmentation requirements, irrigation needs and peak summer evaporation rates were each about equal. After selecting appropriate lake and dam sizing, the dam was designed with safety and cost effectiveness paramount.



Several cost-saving innovations/items were incorporated into the design, including optimizing the use of available materials in a zoned earth and rock fill embankment, the use of a manhole riser as opposed to standard lake riser, (this was permitted as innovative/experimental by West Virginia Dam Safety), and the use of rigid/flexible principal spillway outlet pipe. (Designer John James partnered with WVDEP Dam Safety Engineer on a Paper presented at the ASDSO Southeast Regional Conference, Charleston, WV, May 4, 2010). This procedure provided for the use of high strength concrete pipe with limited flexibility joints to be installed in a flexible configuration within the dam as opposed to conventional concrete cradle on bedrock. This procedure included filling the dam to the half diameter elevation of the outlet pipe, cutting a “cradle” the size for the pipe for it to rest in. Dusting the cradle and top of pipe with dry bentonite (key for seepage control) and continue filling of the dam. While both these procedures were considered somewhat controversial by some peers, monitoring has indicated very successful performance to date. While such “new” or “experimental” practices may not be appropriate for USACE dam projects, it demonstrates TERRADON's willingness and ability to develop, consider and design cutting-edge and innovative solutions. It is estimated that these innovations saved up to 50% on the cost of the dam.

Other design procedures included hydraulic design to provide a nearly constant lake level (the difference in lake level between normal pool and 100 year pool is only one foot, as requested by developer). The design also included dambreak modeling (using both the National Weather Service Dambreak and HEC-RAS programs) and development of downstream inundation maps and resultant emergency action plan. The cost of the dam project was about \$1.3 Million.

→ SIMILAR PROJECT EXPERIENCE

Dawson Lake Dam *Greenbrier County, WV*

The developer desired a recreational lake as a design feature for an upscale residential development in Dawson, Greenbrier County, WV. The initial scope included a study of dam height/cost/lake area and included some non-engineering aspects such as aesthetic details as a residential feature, the developer was interested in the lake area as opposed to water volume. A challenging requirement imposed by the developer was that the difference in normal pool and 100 year pool be less than one foot. This requirement, combined with the WV dam safety requirements, necessitated a dam design configuration was actually less expensive than smaller dam designs that were studied. These smaller dams could not meet both project requirements, simultaneously.



Pertinent design analyses included hydrology/hydraulic analysis including flood routing for 100 year and PMP storms, and dam break analysis for both sunny day and overtopping events. The SITES computer model was used for flood routing and the NRCS's DAMBRK model for dam break analysis. Stability analysis was analyzed for the end of construction, sudden draw down, long term, and seismic conditions using the WINSTABL computer model. The dam design included a filter design using Part 628, National Engineering Handbook, Chapter 45.

TERRADON designed the dam to be as economical as possible, which included an innovative concept for making a portion of the emergency spillway a constructed wetland as part of necessary on site wetland mitigation required by the Army Corps of Engineers. TERRADON also provided quality control (QC) and construction certification for the Dawson Dam and has provided the WVDEP required dam safety inspections since the completion of construction. Services also included the development of an Emergency Action Plan and an Operation and Maintenance Plan for the Dawson Dam. Night and day as the stabilization activities continued and new developments on the site were discovered.

→ SIMILAR PROJECT EXPERIENCE

Cobun Creek Dam *Morgantown, WV*

The project includes construction of Cobun Creek Dam No. 2; a 74-foot high water supply dam located one mile south of I-68 along Upper Cobun Creek Road in Monongalia County, WV and improvements to Cobun Creek Dam No. 1 located just upstream of US Route 119.

Dam No. 2 included construction of a 74 foot tall earthen dam. This dam will stretch approximately 870 feet across the crest of the dam and be approximately 440 feet wide from the upstream toe of the reservoir to the downstream toe of the reservoir. The project includes reservoir basin grubbing; water control and dewatering facilities; erosion and sedimentation control; excavation, drilling and grouting; processing, screening, sorting, transporting and placing earth embankment materials; reinforced concrete spillway and intake structure; seepage collection and conveyance system; filter drain system; structural steel access bridge including pier and abutment; Upper Cobun Creek Road relocation; reservoir silt trap; 48"/66" diameter outlet conduit; mechanical piping; embankment slope protection; stream channels; and drainage structures and all required appurtenances.

Work required at Cobun Creek Dam No. 1 includes new reinforced concrete spillway structure; rock spillway channel improvements; slope protection; and replacement of intake structure sluice gates.

These projects are funded by bonds approved by Morgantown City Council in February 2017. These projects will provide Morgantown with a dependable secondary source of raw water now and at least for the next 50 years although usability will likely far exceed that timeframe. This not only benefits current residents but such infrastructure investments provide for community growth and help attract future commercial investments. Also, the benefits of constructing the reservoir in the chosen location is that MUB currently owns the property. This significantly reduces overall project costs.

The contractor completed 179,334 CY of excavation in total for this project. The company installed 1,141 LF of wire fencing, and 1,380 LF of guardrails. Crews were also responsible for 8,850 SY of foundation cleanup, grubbing and seeding.



→ SIMILAR PROJECT EXPERIENCE

Brookfield Deep Creek Lake Depression Monitoring *Oakland, WV*

TERRADON Corporation was selected by Brookfield Renewable to conduct ground penetrating radar (GPR) investigations at the Deep Creek Lake Dam, located near Oakland, Maryland. The primary goal of this effort was to evaluate subsurface conditions along specific areas of the dam to detect potential cavities or voids that could indicate early signs of structural concern. Using exhibits provided by the owner, TERRADON surveyed two key areas of interest: a narrow bench and an asphalt path—both situated on and adjacent to the dam.

To ensure thorough coverage and accuracy, TERRADON employed a dual-frequency GSSI ground penetrating radar system. The 350 MHz SIR 4000 system was utilized for shallow, high-resolution imaging, while the 200 MHz system allowed for deeper penetration up to 7 meters in ideal soil conditions. This approach enabled a well-rounded depiction of subsurface anomalies across a linear route stretching from station 0+00 to 12+30. Data collection was completed in a single day by a specialized field crew who also painted anomalies on-site and captured geospatial data for precise mapping.

Following fieldwork, TERRADON's engineering and survey staff processed and interpreted the GPR data in-office. Any additional anomalies identified during this phase were incorporated into a final deliverable map and technical report. The final documentation included radargram interpretations and feature locations plotted with reference to state plane coordinates and the dam's baseline, enabling Brookfield Renewable to better understand any subsurface irregularities.

Throughout the project, TERRADON adhered to strict safety standards, including OSHA regulations and site-specific safety protocols. The project not only addressed immediate engineering concerns for Brookfield but also supported long-term infrastructure resilience. By proactively identifying potential subsurface issues, the project contributes to the safety of the surrounding community and ensures the continued reliability of one of Maryland's key hydroelectric resources.



→ SIMILAR PROJECT EXPERIENCE

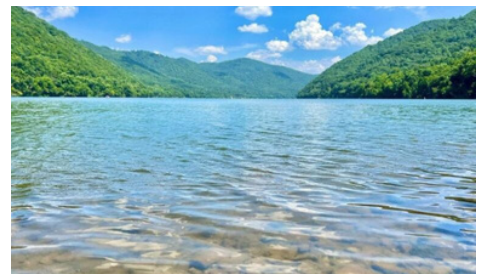
Bluestone Lake Dam Boundary Survey *Hinton, WV*

TERRADON Corporation was selected to provide planning, coordination, supervision, computations, drafting and analysis for the Bluestone Lake Boundary Line Inspection and Marking project in Hinton, WV. Survey crews from TERRADON provided final ASCII coordinate listings, original field notes, geotagged photographs, plots, computations, monument locations and all quality control methods as deliverables to the client.

TERRADON recovered and refreshed the United States Army Corps of Engineers (USACE) Fee Boundary line along the East side of the lake, from the Dam to Devils Featherbed Road and from the Virginia State Line to Roundbottom Creek. Crews installed new boundary posts at all existing corners, and painted line trees when possible along the boundary at 25' intervals and placed project boundary signs at 100' intervals.

As a deliverable to the client, TERRADON obtained all of the data required for the completion of the boundary control card for each corner recovered, about 205 in total. The project required the corners be staked utilizing a GNSS receiver. TERRADON provided photographic documentation of monuments with horizon photos from two different directions and one close photograph, as well as location sketches noting two finder references.

TERRADON also surveyed all possible encroachments in the above locations including location of the survey monuments, any signs or buildings or structures across and on to government fee land, mowing signs, and any signs of use of the government lands by private individuals or groups.



→ SIMILAR PROJECT EXPERIENCE

Englebridge Lake Boundary Survey *Smartsville, Yuba County, CA*

TERRADON Corporation was selected to provide planning, coordination, supervision, computations, drafting and analysis for the Englebright Lake Boundary Survey near Smartsville, CA.

TERRADON survey crews were responsible to recover and refresh the United States Army Corps of Engineers (USACE) FEE Boundary line for Rice Crossing, Boston Bar, The Wildlife Area, and Dixon Hill. Rice crossing had 57 corners with 25 of them not on record with the USACE of being set, 20 corners at Boston Bar with 12 not on record with the USACE, 45 corners at The Wildlife Area with none on record with the USACE, and 20 at Dixon Hill with 12 not on record.

TERRADON marked the fee boundary line between corners with survey flagging. Additionally, TERRADON was required to create/update the data required in U-Smart for each corner recovered or reset including a close up and two horizontal photos of each corner. The corners were located with a GNSS receiver to achieve an accuracy of 0.95' or less.

All encroachments or trespasses were documented photographically and with sketches and survey data and included on an exhibit map and documented in the final report.

TERRADON also surveyed all apparent encroachments in the above locations including location of any signs or buildings or structures across and onto government fee land, mowing signs, and any signs of use of the government lands by private individuals or groups.



→ SIMILAR PROJECT EXPERIENCE

Paint Creek Lake Boundary Survey *Bainbridge, Ross County, OH*

TERRADON Corporation was selected to provide planning, coordination, supervision, computations, drafting and analysis for the Boundary Survey at Paint Creek Lake in Bainbridge, OH.

Survey crews from TERRADON established horizontal and vertical control, and provided final ASCII coordinate listings, original field notes, geotagged photographs, plots, computations, monument locations and all quality control methods as deliverables to the client.

TERRADON recovered and refreshed fee boundary for the United States Army Corps of Engineers (USACE) at Paint Creek Lake in Bainbridge, OH. Crews installed new boundary posts at all existing corners, and painted line trees when possible along the boundary at 25' intervals and placed project boundary signs at 100' intervals. Carsonite posts were placed along the fee boundary line in open areas, at appropriate spacing.

As a deliverable to the client, TERRADON obtained all of the data required for the completion of the boundary control card for each corner recovered, about 40 in total. The project required the corners be staked utilizing a GNSS receiver. TERRADON provided photographic documentation of monuments with horizon photos from two different directions and one close photograph, as well as location sketches noting two finder references.

TERRADON also surveyed all possible encroachments in the above locations including location of the survey monuments, any signs or buildings or structures across and on to government fee land, mowing signs, and any signs of use of the government lands by private individuals or groups.



F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

24. EXAMPLE PROJECT KEY NUMBER (1 – 10)

1

(Present as many projects as requested by the Contracting Authority, or a maximum of 10 projects, if not specified. Complete one Section F for each project. Limit one page in length.)

25. TITLE AND LOCATION (City and State)

**Schoonover Lake Dam Rehabilitation
City of Lima | Allen County, Ohio**

26. YEAR COMPLETED

DESIGN (if applicable)
2020

CONSTRUCTION (if applicable)
2021

27. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER
City of Lima, Ohio

b. POINT OF CONTACT NAME
Mr. Kirk Niemeyer, P.E.
City Engineer

c. POINT OF CONTACT PHONE NUMBER
419.221.5288

d. POINT OF CONTACT E-MAIL ADDRESS
kirk.niemeyer@cityhall.lima.oh.us

28. DESCRIPTION OF PROJECT (Include project info, services, benefit/value, results, relevance, references, photographs/diagrams, awards/certifications, team members)

The City of Lima, Ohio selected DLZ to provide the required professional services to conduct **field reconnaissance, engineering assessments, and investigations, and to prepare a Preliminary Design Report** for the rehabilitation of Schoonover Lake Dam in Allen County, Ohio. The purpose of these investigations was to develop a report that **identified deficiencies with the facility and contained alternatives, recommendations, master planning prioritization, and cost estimates to repair, improve, and/or replace any deficiencies noted with the dam and associated appurtenances.**

Schoonover Lake Dam, a Class III structure per the Ohio Department of Natural Resources Dam Safety Group, was reportedly completed in 1890 by constructing an earthen embankment that cut off a portion of the Ottawa River. The earthen embankment has a height of approximately 16.5 feet and a length of approximately 1,562 feet. A unique aspect of this facility is that the earthen dam is situated between the Ottawa River (at the downstream toe) and the upstream empoundment (i.e. there is water on both sides of the dam). As a result, slope stability and water seepage through the earthen embankment were significant concerns, with the potential for water seepage in both directions (i.e. **transient reverse gradients**).

Based on observations and inspections, several deficiencies were noted with the dam. These include the **lack of an emergency spillway** and means for controlled drainage, insufficient erosion protection on the upstream and downstream slopes, excessive vegetation along the slopes (including large diameter trees), excessively steep slopes, seepage along the downstream slope, and **disrepair of existing appurtenant structures (including the existing lake drain structure).**

A wide range of disciplines were provided by DLZ in order to accomplish the project tasks. These disciplines included **civil engineering, surveying, geotechnical engineering, structural engineering, hydraulics and hydrology (H&H), mechanical engineering (gates and operators), environmental/ecological, and U.S. Army Corps of Engineers 401/404 permitting.**

The results of the preliminary investigation indicated that the facility was inadequate with respect to seepage, slope stability, and erosion control. Additional analyses and design efforts include addressing slope stability and seepage issues; replacement of the existing, **deteriorated concrete drop-box style principal spillway and outlet pipe/culvert; installation of a new lake drain structure;** clearing of heavy vegetation; and removal of several existing but no longer needed appurtenant structures (including a cut stone block retaining wall). Authorization by the City of Lima for DLZ to prepare final designs, plans, specifications, and quantity and costs estimates was given in 2013 with construction completed in 2021.

The project involved the design and construction of a new lake drain system/structure. DLZ also provided construction administration, inspection, and testing services during the work.

In 2015, a sudden and significant localized failure of the downstream (riverside) dam slope occurred, jeopardizing the integrity of the system. DLZ mobilized quickly to the site and provided recommendations for Interim Risk Reduction Measures (IRRM's) to temporarily stabilize the condition until construction of the overall (longer term) remediation measures begins. The IRRM's were successfully constructed and are currently functioning satisfactorily. DLZ continues to monitor the status of the IRRM's until longer term remediation measures are constructed.



29. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

a. (1) FIRM NAME
DLZ Ohio, Inc.

(2) FIRM LOCATION (City and State)
Columbus, Ohio

(3) ROLE / RELATIONSHIP
Prime Consultant

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

24. EXAMPLE PROJECT KEY NUMBER (1 – 10)

2

(Present as many projects as requested by the Contracting Authority, or a maximum of 10 projects, if not specified. Complete one Section F for each project. Limit one page in length.)

25. TITLE AND LOCATION (City and State)

**Acton Lake Dam and Spillway Rehabilitation
Hueston Woods State Park | Butler County, Ohio**

26. YEAR COMPLETED

DESIGN (if applicable)
2023

CONSTRUCTION (if applicable)
2027

27. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER

Ohio Department of Natural Resources

b. POINT OF CONTACT NAME

Mr. Jeremy Wenner, P.E.
Chief Engineer

c. POINT OF CONTACT
PHONE NUMBER

614.265.6719

d. POINT OF CONTACT E-MAIL ADDRESS

Jeremy.Wenner@dnr.state.oh.us

28. DESCRIPTION OF PROJECT (Include project info, services, benefit/value, results, relevance, references, photographs/diagrams, awards/certifications, team members)

ODNR selected DLZ to provide the required professional services to conduct preliminary investigations and prepare a Preliminary Design Report for the rehabilitation of the Acton Lake Dam and Spillway, located in the Hueston Woods State Park near Oxford, Ohio. The purpose of these investigations was to develop a report that identified deficiencies with the facility and contained alternatives, recommendations, and a cost estimate to repair, improve, and/or replace, as needed, any deficiencies noted with the dam and associated appurtenances. Failure of the facility could lead to significant flooding downstream of the dam, potential loss of life, and detrimental impacts to the local economy.

The project was built in the mid 1950s, and consists of an earthfill embankment, **side channel concrete spillway**, concrete lined outlet channel, lake drain structure, and other appurtenant structures. The earthfill portion of the dam is approximately 60 feet high and 1,100 feet long. The spillway has a crest length of about 330 feet and is an ogee section. Various concrete retaining walls and concrete panels are located at the left end of the embankment and downstream of the spillway crest. A detailed site inspection was conducted by a team of several engineers. This included inspection and exercising of the gates and gate operators in the existing lake drain structure. Test borings of the soil and bedrock were performed in order to determine the subsurface conditions. Both open tube and vibrating wire piezometers were installed. **Geotechnical analyses indicated that the slope stability was adequate, but that underseepage and exit gradients were a significant concern. Underseepage and sand boils had been observed at the toe of the dam. Recommendations were made to construct a seepage berm and drainage trench at the downstream toe.**



Retaining walls were evaluated for structural integrity as well as bearing capacity and stability. The evaluations determined that several walls were inadequate and needed to be replaced. **Stability analysis of the exiting concrete spillway (ogee weir) was also undertaken.** It was determined that both sliding and overturning stability were deficient. Rock anchors were designed for stabilizing the weir. Concrete panels were originally used along the rock cut for the spillway outlet channel. The quality of the concrete was evaluated by obtaining core samples, which were then tested for compressive strength and petrographic analyses. In addition to deterioration of the concrete, some of the original anchors that secured the concrete panels to the rock had failed. Recommendations were made to replace the concrete panels and anchorage system. **Stability and strength of the concrete lake drain structure and concrete outlet pipe were also found to be a concern.**



The final report included the results of the investigation, analyses, and cost estimates for various remediation measures. ODNR approved the recommendations submitted by DLZ and authorized the firm to develop the final design and contract bid documents. **Final design of the improvements included the replacement of several structural features, the construction of a seepage berm, and the installation of subsurface toe drain to control underseepage. The existing concrete lake drain structure was replaced with a larger and more efficient concrete structure (including new gates and gate operators), and the existing concrete outlet pipe was sliplined.** All designs were in general accordance with the U.S. Army Corps of Engineers guidelines. Environmental, ecological, and historical studies were performed and all required regulatory permits were obtained. **A complete hydrology and hydraulic assessment of the project was performed and developed.**

ODNR authorized the preparation of construction documents (plans, specifications, and construction cost estimate) in 2013. The project was successfully bid and awarded in spring 2014, with construction completed in early/mid 2017. **DLZ was also responsible for construction administration and preparation of the Operations, Maintenance, and Inspection (OMI) manual and the Emergency Action Plan (EAP) document for ODNR.**

In keeping with DLZ's history of innovative and contemporary thinking, DLZ recommended the use of "e-Builder", an on-line system for construction administration and tracking of invoices, RFI's, submittal reviews, etc. The system was implemented on the Acton Lake project, and has been used successfully by ODNR, DLZ, and the construction contractor. This "paperless approach" to construction administration has helped to reduce waste and promote the idea of a **"green project"**.

29. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

a. (1) FIRM NAME

DLZ Ohio, Inc.

(2) FIRM LOCATION (City and State)

Columbus, Ohio

(3) ROLE / RELATIONSHIP

Investigation and design services

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

24. EXAMPLE PROJECT KEY NUMBER (1 – 10)

3

(Present as many projects as requested by the Contracting Authority, or a maximum of 10 projects, if not specified. Complete one Section F for each project. Limit one page in length.)

25. TITLE AND LOCATION (City and State)

Adams Lake Dam Assessment and Rehabilitation
West Union, Adams County, Ohio

26. YEAR COMPLETED

DESIGN (if applicable)
2025

CONSTRUCTION (if applicable)
TBD

27. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER

Ohio Department of Natural Resources

b. POINT OF CONTACT NAME

Mr. Eric Shafer, P.E.

c. POINT OF CONTACT PHONE NUMBER

614.265.6760

d. POINT OF CONTACT E-MAIL ADDRESS

eric.shafer@dnr.ohio.gov

28. DESCRIPTION OF PROJECT (Include project info, services, benefit/value, results, relevance, references, photographs/diagrams, awards/certifications, team members)

Adams Lake Dam is a Class I high hazard dam located in Adams Lake State Park in Adams County, Ohio. The dam was originally constructed in 1947 and was modified in 1993 after a seepage failure within the dam embankment. The dam requires rehabilitation as the current dam configuration can only pass 61% of the probable maximum flood without overtopping the dam embankment. In addition to capacity issues, recent evaluations have determined that the principal spillway fails to meet current dam safety standards and requires complete replacement. Due to the deficiencies observed, ODNR has identified Adams Lake as a high priority structure to be rehabilitated.

DLZ is serving as a subconsultant to Michael Baker International offering multiple services for the rehabilitation of Adams Lake Dam that includes subsurface exploration and inspection of the lake drain.

H&H Analysis. One of the main deficiencies of Adams Lake is inadequate spillway capacity. The hydrologic analysis of the watershed has been finalized and the routing analysis has been performed for the existing dam and rehabilitation alternatives. Hydraulic calculations for the sizing of a replacement labyrinth spillway and the stilling basin have also been completed.

Preliminary Design and Alternatives Evaluation. Multiple alternatives were developed to meet current dam safety regulations that included a replacement spillway with increased discharge capacity, emergency spillway widening, embankment modifications to increase storage capacity, and RCC overtopping protection system with in-kind spillway replacement. Each alternative was evaluated for the benefits and drawbacks with regards to the dam's performance, functionality, impacts, and anticipated construction costs. Ultimately, the replacement labyrinth spillway option was selected that did not require raising the embankment to increase storage capacity.

Preliminary Design and Alternatives Evaluation. Multiple alternatives were developed to meet current dam safety regulations that included a replacement spillway with increased discharge capacity, emergency spillway widening, embankment modifications to increase storage capacity, and RCC overtopping protection system with in-kind spillway replacement. Each alternative was evaluated for the benefits and drawbacks with regards to the dam's performance, functionality, impacts, and anticipated construction costs. Currently, the replacement labyrinth spillway is the top option to being considered.

Final Design. DLZ is working with Michael Bake to provide final design services for the rehabilitation of Adams Lake Dam. This includes the design and layout of the labyrinth spillway, which includes the development of plan views, profiles, cross sections, and details to capture the intricacy of the labyrinth spillway. Since the lake drain is not functioning properly due to excessive sedimentation within the lake, a new lake drain system is being designed that will be easier to operate for ODNR Parks Staff. The design also includes the overall civil design and will be incorporating the labyrinth spillway and lake drain designs on construction drawings.



29. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

a. (1) FIRM NAME
DLZ Ohio, Inc.

(2) FIRM LOCATION (City and State)
Columbus, Ohio

(3) ROLE / RELATIONSHIP
Subconsultant - Subsurface
Exploration and Lake Drain
Inspection

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

24. EXAMPLE PROJECT KEY NUMBER (1 – 10)

4

(Present as many projects as requested by the Contracting Authority, or a maximum of 10 projects, if not specified. Complete one Section F for each project. Limit one page in length.)

25. TITLE AND LOCATION (City and State)

**Tycoon Lake Dam – Dam Assessments and Alternatives Analysis; Final Design; and Construction Administration
Gallia County, Ohio**

26. YEAR COMPLETED

DESIGN (if applicable)
2020

CONSTRUCTION (if applicable)
2020

27. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER

The Ohio Department of
Natural Resources

b. POINT OF CONTACT NAME

Mr. Jacob Bench, P.E.

c. POINT OF CONTACT PHONE NUMBER

614-813-5253

d. POINT OF CONTACT E-MAIL ADDRESS

jacob.bench@dnr.state.oh.us

28. DESCRIPTION OF PROJECT *(Include project info, services, benefit/value, results, relevance, references, photographs/diagrams, awards/certifications, team members)*

This project was conducted under our FY19-20 Statewide Dam Technical Services contract with ODNR. Tycoon Lake was formed by the construction of two earthen dams referred to as the south embankment and the east embankment. The Ohio Department of Natural Resources (ODNR) has designated both of the dams as Class I (high hazard) structures. **The principle spillway consisted of a concrete lake drain tower** with a 30-inch sluice gate and a 30-inch diameter reinforced concrete conduit, which outlets at the toe of the south embankment into a short reinforced concrete channel.



In February 2019, a landslide (slip) occurred on the downstream face of the south embankment. ODNR contacted DLZ to perform a site assessment and provide emergency recommendations for temporary measures to mitigate the effects of the slide. The slide area was temporarily protected by a plastic cover to prevent any further damage to the slope from surface runoff. Due to the fact that the existing sluice gate for the lake drain was considered inoperable, a siphon system consisting of three (3) 18-inch diameter HDPE pipes was designed by DLZ and installed at the south embankment in order to lower the lake level and **reduce dam safety risks**.

Subsequent to the emergency landslide repair work, ODNR directed DLZ to perform a **dam assessment and alternatives analysis of both dam embankments and appurtenances**. The dam assessments were completed using data collected from additional **geotechnical explorations, surveying and bathymetric studies,**

hydrologic and hydraulic (H&H) evaluations, and structural engineering analyses. During DLZ's assessment, it was found that the system can only safely pass approximately 80% of the Probable Maximum Flood (PMF). **In order to pass the 100% PMF event (required for Class I dams), DLZ evaluated several options. Ultimately, the most economical option was to add an emergency spillway.** The emergency spillway was sized in order to safely pass the PMF event and will be engaged at a pool level of elevation 620, approximately 2.7 feet above the 100-year pool level. Final recommendations were provided to ODNR and DLZ was authorized to proceed with final design of the preferred alternative. Final DLZ-designed features consisted of the following:

- Addition of Emergency Spillway near Left Abutment
- Slip-lining of Principal Spillway Conduit
- Repair of Landslide in Downstream Slope of South Embankment
- Rehabilitation of Principal Spillway Control Tower
- Installation of Two-stage Aggregate Filter in Outlet Channel
- Add new sluice gate lake drain
- Abandon lower (inoperable) lake drain

In addition to design and bidding services, the DLZ Team also performed a **mussel survey and archeological review of the project area and prepared the waterway (U.S. Army Corp of Engineers) permit.** In October 2020, DLZ completed the construction phase of this project **where our team provided Construction Administration, Inspection, Materials Testing and Closeout services to ODNR during the construction phase.**



29. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

| | | |
|---|---|---|
| <p>a. (1) FIRM NAME DLZ Ohio, Inc.</p> | <p>(2) FIRM LOCATION (City and State) Columbus, Ohio</p> | <p>(3) ROLE / RELATIONSHIP Prime: Assessment, Final Design and Construction Administration</p> |
|---|---|---|

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

24. EXAMPLE PROJECT KEY NUMBER (1 – 10)

5

(Present as many projects as requested by the Contracting Authority, or a maximum of 10 projects, if not specified. Complete one Section F for each project. Limit one page in length.)

25. TITLE AND LOCATION (City and State)

**Grand Lake St Marys – West Embankment Dam and East Spillway Rehabilitation
Mercer and Auglaize Counties, Ohio**

26. YEAR COMPLETED

DESIGN (if applicable)
2020

CONSTRUCTION (if applicable)
2021

27. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER

The Ohio Department of
Natural Resources

b. POINT OF CONTACT NAME

Mr. Eric Shafer, P.E.

c. POINT OF CONTACT PHONE NUMBER

614-265-6760

d. POINT OF CONTACT E-MAIL ADDRESS

Eric.Shafer@dnr.state.oh.us

28. DESCRIPTION OF PROJECT *(Include project info, services, benefit/value, results, relevance, references, photographs/diagrams, awards/certifications, team members)*

The Ohio Department of Natural Resources (ODNR) tasked DLZ with providing **civil engineering, hydrology and hydraulics (H&H), surveying, structural engineering, geotechnical engineering, construction administration, and other professional services associated with the rehabilitation of the West Embankment Dam and East Spillway Structure** at Grand Lake St Marys. Originally constructed between 1837 and 1845 as a water source for the Miami-Erie Canal system, the lake now provides recreational opportunities (swimming, boating, fishing) for visitors. The West Embankment Dam at Grand Lake St Marys is currently considered a Class I Structure measuring approximately 4,800 feet long and 20 feet high. **The East Spillway is situated at the East Dam, which is currently considered a Class II Structure** measuring approximately 7,980 feet long and 18 feet high.



DLZ's initial tasks on the project consisted of a **comprehensive visual assessment of the East and West Embankment Dams and associated structures**. DLZ also utilized the services of a

subconsultant to perform an underwater inspection of the East Spillway facility. The evaluations revealed overly steep downstream embankment slopes; heavy vegetation and debris piles on the embankments (including larger diameter trees); potential seepage concerns; and **deteriorated East Spillway Structure concrete**. Soil borings, laboratory testing of soil samples, and field topographic surveying were then performed by DLZ to support **seepage and slope stability evaluations and associated remediation designs at the West Embankment Dam**. The evaluations revealed that the downstream slope was overly steep and potentially unstable, and that seepage through the embankment was a concern. Therefore, DLZ designed a 3H:1V flattened slope system **with integral internal drainage system** for the West Embankment Dam. Ancillary designs, including culvert replacements, utility protection/relocations, and historic foundation removals, along with **environmental tasks and waterways (U.S. Army Corps of Engineers) permitting**, were also performed by DLZ.



At the Grand Lake St Marys East Spillway Structure, the assessments revealed the facility to be in poor condition, with **deteriorated concrete and exposed reinforcing steel, inoperable sluice gates**, and concerns associated with the integrity of an historic lock structure that makes up a portion of the facility. DLZ is currently recommending significant structural and geotechnical improvements to the East Spillway and is coordinating with the Ohio State Historic Preservation Office (SHPO) regarding the historic facility. In addition, DLZ was tasked with developing preliminary designs for an Aquatic Nuisance Species (ANS) barrier to be installed at the East Spillway. The ANS barrier preliminary design developed by DLZ can accommodate ANS species on the order of 1/8" in size.

Construction for the West Embankment Dam began in September 2020 under a Construction Manager at Risk (CMR) delivery system. **DLZ provided all construction administration, testing, and inspection services for the work.**

DLZ's history and relationships with the U.S. Army Corps of Engineers helped it obtain the Waterways Permit for this project in only 55 days

29. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

| | | |
|---|---|---|
| a. (1) FIRM NAME DLZ Ohio, Inc. | (2) FIRM LOCATION (City and State) Columbus, Ohio | (3) ROLE / RELATIONSHIP Prime: Assessment, Design, Construction Administration |
|---|---|---|

| | |
|---|--|
| F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT <i>(Present as many projects as requested by the Contracting Authority, or a maximum of 10 projects, if not specified. Complete one Section F for each project. Limit one page in length.)</i> | 24. EXAMPLE PROJECT KEY NUMBER (1 – 10) 6 |
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|---|---|-----------------------------------|---|
| 25. TITLE AND LOCATION (City and State) Five Dry Dams: Assessments, Alternatives Analysis, Rehabilitation Design, and CA Shelby, Montgomery, And Greene Counties, Ohio | 26. YEAR COMPLETED <table border="1"> <tr> <td>DESIGN (if applicable) Ongoing</td><td>CONSTRUCTION (if applicable) Ongoing</td></tr> </table> | DESIGN (if applicable) Ongoing | CONSTRUCTION (if applicable) Ongoing |
| DESIGN (if applicable) Ongoing | CONSTRUCTION (if applicable) Ongoing | | |

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|--|--|--|--|
| 27. PROJECT OWNER'S INFORMATION | | | |
| a. PROJECT OWNER Miami Conservancy District | b. POINT OF CONTACT NAME Mr. Barry Puskas, P.E., GISP | c. POINT OF CONTACT PHONE NUMBER 937.223.1278 x3243 | d. POINT OF CONTACT E-MAIL ADDRESS bpuskas@mcdwater.org |

28. DESCRIPTION OF PROJECT *(Include project info, services, benefit/value, results, relevance, references, photographs/diagrams, awards/certifications, team members)*

The Miami Conservancy District (MCD) owns and maintains five earthen embankment "dry" dams (Lockington, Englewood, Taylorsville, Germantown, and Huffman) located near Dayton, Ohio. The dams were originally constructed beginning in 1918 and generally completed in 1922. The vast majority of the embankments were constructed using the hydraulic fill method. The dams have differing configurations, but generally contain large concrete conduit principal spillways. The inlet and outlet works associated with the principal and auxiliary spillways contain large unreinforced concrete gravity training/retaining walls, which are up to 84 feet tall and 40 feet thick at the base. These structures were constructed of individual concrete "blocks", each approximately 5 feet in height. All dams, with the exception of Germantown and Englewood, have a concrete ogee-shaped auxiliary spillway. The ogee spillway was generally constructed using the same five-foot high concrete blocks and is also unreinforced.



Dam Assessments

As part of this work, DLZ evaluated the structural stability of dozens of wall and ogee spillway sections and considered each five-foot lift as an independent monolith. Therefore, the stability of each monolith was fully evaluated for several different loading conditions, including the one-percent annual chance exceedance (1% ACE), MCD's Official Plan Flood (OPF), and the Probable Maximum Flood (PMF). The analysis work included conducting approximately 4,500 stability analyses, consisting of sliding, overturning (eccentricity), and bearing using USACE analysis methodology. Additionally, uplift of the stilling basin floor slab was evaluated. During DLZ's assessment of Lockington Dam, the original construction report was reviewed in order to understand how seepage or bearing may be affected by the presence of karst bedrock in the foundation. The construction report indicated that the foundation bedrock (beneath the concrete walls and spillway) was drilled and grouted in order to mitigate the threat of seepage or poor bearing resistance in the upper bedrock as a result of karstic conditions, fracturing, or solution cavities. Subsequent to construction of the dam, MCD also performed a pressure grouting program which sought to grout the upper bedrock along the centerline of the embankment dam.

Rehabilitation Alternatives Analysis

Part of DLZ's work on these projects consisted of evaluating rehabilitation alternatives for improving the sliding and overturning resistance of the concrete training/retaining walls and auxiliary (ogee) spillway sections. Where data was available, DLZ re-evaluated the hydraulic loading conditions using piezometer data from the dam sites. Using the revised hydraulic loading, DLZ assessed the stability of the walls and considered various alternatives. The alternatives considered consisted of drainage behind the walls, alterations to the wall geometry (additional concrete mass), vertical rock anchors, and horizontal anchors. DLZ determined the feasibility of each of these alternatives where the goal was to meet MCD's selected factor of safety criteria for their dry dams. Quantities and construction cost estimates were developed for the viable alternatives.

Final Rehabilitation Design, CA, and Materials Testing

In support of the design effort, a subsurface exploration was conducted for all projects. Subsequent geotechnical slope stability and seepage evaluations of the earthen embankment portions of the dam were performed by DLZ to support design. Geotechnical efforts consist of design of a two-stage aggregate filter around the drainpipe and assessment of temporary slopes using limit-equilibrium analyses for the proposed temporary excavation into the dam on the backside of the training walls. Surveying, including flying drone surveying, was performed in order to finalize the designs and develop biddable construction documents. DLZ considered the deterioration of the concrete wall and spillway monoliths and developed plans to demolish and replace the upper concrete monolith sections. Below the monoliths to be replaced, hydro-demolition and patching was planned. Construction of the Lockington Dam Right Wall rehabilitation project began in October 2019 and was substantially completed in late fall 2020. DLZ's effort during construction consist of providing as-needed engineering services, and full-time construction inspection, and material testing services. Coordination with both the Ohio Department of Natural Resources (ODNR) Dam Safety and MCD's Board of Consultants (consisting of dam experts from public, private, industry, and higher education entities) was required.

| | | |
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| 29. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT | | |
| a. (1) FIRM NAME DLZ Ohio, Inc. | (2) FIRM LOCATION (City and State) Columbus, Ohio | (3) ROLE / RELATIONSHIP Prime: Investigation, inspection, analyses, designs, construction administration and testing |

| | |
|---|---|
| <p style="text-align: center;">F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT</p> <p style="text-align: center;"><i>(Present as many projects as requested by the Contracting Authority, or a <u>maximum of 10 projects</u>, if not specified. Complete one Section F for each project. Limit one page in length.)</i></p> | <p>24. EXAMPLE PROJECT KEY NUMBER (1 – 10)</p> <p style="text-align: center; font-size: 1.5em;">7</p> |
|---|---|

| | | | |
|---|---|--------------------------------|--------------------------------------|
| <p>25. TITLE AND LOCATION (City and State)</p> <p>Portage Lakes Dams and Spillways Rehabilitations Summit County, Ohio</p> | <p style="text-align: center;">26. YEAR COMPLETED</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;">DESIGN (if applicable) 2014</td> <td style="width: 50%; padding: 2px;">CONSTRUCTION (if applicable) 2016</td> </tr> </table> | DESIGN (if applicable) 2014 | CONSTRUCTION (if applicable) 2016 |
| DESIGN (if applicable) 2014 | CONSTRUCTION (if applicable) 2016 | | |

| 27. PROJECT OWNER'S INFORMATION | | | |
|--|--|--|--|
| <p>a. PROJECT OWNER</p> <p>Ohio Department of Natural Resources</p> | <p>b. POINT OF CONTACT NAME</p> <p>Mr. James Hilovsky, P.E. Project Manager</p> | <p>c. POINT OF CONTACT PHONE NUMBER</p> <p>614.265.6967</p> | <p>d. POINT OF CONTACT E-MAIL ADDRESS</p> <p>James.Hilovsky@dnr.state.oh.us</p> |

28. DESCRIPTION OF PROJECT *(Include project info, services, benefit/value, results, relevance, references, photographs/diagrams, awards/certifications, team members)*

Introduction

Portage Lakes is a system of natural and man-made lakes and canals originally constructed as a system of interconnected feeder lakes to provide water for the Ohio and Erie Canal. DLZ was retained by Ohio Department of Natural Resources (ODNR) to evaluate the outflow and flood storage capacities of the Portage Lakes with the respect to current ODNR Dam Safety standards. **Included were the East, West, and North Reservoirs; the Tuscarawas River Diversion Dam; Long Lake; Lake Nesmith; Summit Lake; the Ohio Canal; and the gate structure at Lock No. 1.** As part of the work comprehensive field inspections of the various systems components were performed. **This included inspection of the concrete dams, earthen embankments, floodwalls, basins, canalways/mill races, gatehouse structures, gate operators and gates, pipes and conduits, and electrical systems.** Various alternatives to correct system deficiencies were identified and presented to ODNR for consideration. Two major components of the overall work performed by DLZ included West Reservoir Dam and Tuscarawas River Division Dam.



West Reservoir Dam Improvements

West Reservoir Dam was constructed in the early part of the 1900s. The project did not meet current dam safety criteria so ODNR addressed the overtopping deficiency by calling for the **embankment to be armored with roller-compacted concrete (RCC) to protect it against overtopping. A granular drainage blanket and collector system was specified beneath the RCC on the downstream slope of the dam to safely collect any seepage** that might flow through the embankment. Regarding seepage beneath the embankment, analyses indicated that safety factors against piping at the downstream toe of the embankment were not adequate. Therefore, two measures were specified to address these issues: a cutoff wall near the toe and a toe drain near the bottom of the downstream slope. **A new concrete chute spillway with access bridge was also designed and provided.** Other items of work included installation of a new/replacement ductile iron (DIP) outlet pipe; new slice gates, stems, floor stands, and operators in the gatehouse; and electrical service/system upgrades.

In keeping with DLZ's tradition of innovative designs and thinking, and to alleviate concerns regarding the stability of the embankment soils and surrounding improvements, DLZ's designs for the project included the requirement that the sheet piling for cut-off wall construction be installed using non-vibratory, hydraulic push-in methods (i.e. "Giken Silent Piler" equipment). The West Reservoir Dam project was successfully bid and awarded, and construction on the West Reservoir was completed in spring 2013.

Tuscarawas River Diversion Dam Rehabilitation

Tuscarawas River Division Dam was constructed in the mid-1950s. The dam consists of a zoned, earth embankment with a **concrete ogee-type spillway**. The project did not meet current dam safety criteria so ODNR addressed the overtopping deficiency by calling for the embankment to be **armored with roller-compacted concrete (RCC) to protect it against overtopping**. The dam and reservoir are adjacent to the Firestone Country Club, and Harrington Road crosses the embankment. Consequently, the RCC work had to be coordinated with the roadway design details. In addition, Harrington Road provides an important access to the Country Club, where an important PGA event occurs every summer. As a result, detailed maintenance of traffic and construction sequencing plans were developed to allow dam construction to continue without significant interruptions to the traffic flow for the significant PGA event. **The RCC design needed to address several issues:** seepage through the embankment during the design storm, seepage under the embankment during the design storm, and erosion of the downstream toe during an overtopping event. The bid package for construction included rehabilitation of two gatehouses (**new slice gates, stems, floor stands, and operators, as well as electrical service/system upgrades**); **improvements to the existing concrete spillway to improve structural integrity and stability factors of safety**; reconstruction of Harrington Road; and replacement of the bridge superstructure over the spillway. Construction was completed in 2016.



East Reservoir Emergency Spillway Repairs

In late 2014, significant deterioration of the East Reservoir Emergency Spillway bottom slab, directly beneath the Portage Lakes Drive bridge, was identified by ODNR. DLZ was engaged to inspect and assess the condition of the slab and to develop interim risk reduction measures (IRRM) to rehabilitate the bottom slab until longer-term improvements to the facility could be made. Working directly with the Contractor that was already engaged for the Tuscarawas River Diversion Dam project, a design was developed for removal and replacement of the deteriorated spillway slab section. The design was presented to the Contractor in the form of simplified sketches and notes/specifications as well as direct field input from DLZ personnel during the work

| FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT | | |
|--|--|---|
| <p>a. (1) FIRM NAME</p> <p>DLZ Ohio, Inc.</p> | <p>(2) FIRM LOCATION (City and State)</p> <p>Columbus, Ohio</p> | <p>(3) ROLE / RELATIONSHIP</p> <p>Investigation, design, and construction services</p> |

F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

24. EXAMPLE PROJECT KEY NUMBER (1 – 10)

8

(Present as many projects as requested by the Contracting Authority, or a maximum of 10 projects, if not specified. Complete one Section F for each project. Limit one page in length.)

25. TITLE AND LOCATION (City and State)

USACE Huntington District, Bluestone Dam Expert Opinion Elicitation and Geophysical Surveying, Hinton, West Virginia

26. YEAR COMPLETED

DESIGN (if applicable)
2015

CONSTRUCTION (if applicable)
Ongoing

27. PROJECT OWNER'S INFORMATION

| | | | |
|---|---|--|------------------------------------|
| a. PROJECT OWNER U.S. Army Corps of Engineers, Dam Safety Modification Mandatory Center of Expertise | b. POINT OF CONTACT NAME Mr. Donald Whitmore | c. POINT OF CONTACT PHONE NUMBER 330.399.5685 | d. POINT OF CONTACT E-MAIL ADDRESS |
|---|---|--|------------------------------------|

28. DESCRIPTION OF PROJECT (Include project info, services, benefit/value, results, relevance, references, photographs/diagrams, awards/certifications, team members)

Under a contract with the USACE Dam Safety Modification Mandatory Center of Expertise (DSMMCX), DLZ completed a broad scope of dam safety and flood damage reduction engineering services to support the mission of the Huntington District and the DSMMCX. Efforts included assembling and leading 4 teams of experts, conducting Expert Opinion Elicitation (EOE); risk assessments; performing drilling, sampling, and instrumentation installation/ commissioning and rehabilitation of relief wells and drains; relief well and drain rehabilitation; and other related services. This contract illustrated DLZ's ability to perform and manage a wide range of projects simultaneously.

Prior dam safety evaluations indicated that Bluestone Dam did not meet current design criteria for stability during the Probable Maximum Flood (PMF) pool conditions. At the direction of the Huntington District, DLZ led four teams of nationally recognized experts to estimate the probabilities and extent of resultant damages caused by a variety of PMF effects. Expert teams were assembled to evaluate and develop solutions regarding: (1) the effects of drift and debris blockage of the spillway, (2) cavitation of the spillway and scour of non-overflow portions of the dam, (3) high pool apron flotation and hydraulic jacking and scour at the dam toe due to penstock flow, and (4) abutment scour and monolith displacement requiring intervention to prevent a breach.



Use of Civil Information Modeling

The panels of experts were assembled in the fields of structural engineering (including Civil Information Modeling using 2D and 3D finite elements), hydraulic engineering, geotechnical engineering, scour, cavitation, and drift and debris blockage.

DLZ established structured protocols for the teams of experts and conducted four workshops to allow each team to share their respective knowledge and quantify any uncertainty for their respective area. The workshops provided the opportunity for each expert to share information about their respective topic and to freely discuss the issues and available evidence. The teams also reviewed existing data and reports and conducted site reviews at the dam.

DLZ and the four teams of experts also met with USACE personnel at the Huntington District office and at the Dam Safety Centers of Expertise in Vicksburg, MS and Denver, CO to assess and conditionally determine probabilities and extent of damages. DLZ then prepared preliminary reports documenting the processes and findings and revised and finalized the reports following review and comment by USACE via "DrChecks".

29. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

| | | |
|------------------------------------|--|----------------------------------|
| a. (1) FIRM NAME DLZ Ohio, Inc. | (2) FIRM LOCATION (City and State) Columbus, Ohio | (3) ROLE / RELATIONSHIP Prime |
|------------------------------------|--|----------------------------------|

CUSTOMER FEEDBACK

City of Huntington, WV

Mark Bates, Director of Public Works
800 Fifth Avenue, Huntington, WV 25701
304-696-5540

USACE Huntington District

Christopher Chandler, Chief of Division
304-399-5735

WV Division of Highways - Planning Division

Tim Sedosky, Acting Planning Director
304-414-6938

PROJECT APPROACH



TERRADON Corporation proposes a comprehensive, phased approach to the Tomlinson Run Dam Improvements that aligns directly with the WV Division of Natural Resources' goals, objectives, and regulatory requirements. Our method builds on decades of successful dam safety, rehabilitation, dredging, and permitting projects throughout West Virginia, ensuring a safe, cost-effective, and timely project delivery.

1. Initial Review and Coordination

Our process begins with a thorough review of existing plans, studies, and operational data for Tomlinson Run Dam. Leveraging our in-house survey, geotechnical, and environmental teams, we will:

- Conduct on-site inspections to assess current structural, hydraulic, and operational conditions.
- Establish clear communication protocols with the DNR to ensure consistent coordination.
- Identify operational constraints to minimize disruption to concurrent park activities during design and construction.
- Review as-built drawings, historical inspection reports, instrumentation data, and dam safety inspection records.

Key Deliverables:

- Gap analysis of existing information
- Preliminary findings and risk identification
- Updated project schedule integrating agency milestones

2. Detailed Investigation and Data Collection

Our integrated field teams will mobilize to collect comprehensive site data, including:

- Survey & Mapping: High-precision topographic, bathymetric, and boundary surveys using GPS, robotic total stations, and LiDAR for accurate mapping of the dam, spillway, reservoir, and dredge areas.
- Geotechnical Investigation: Subsurface exploration, laboratory testing, and stability analysis using proven models (e.g., SLOPE/W, WINSTABL) to inform embankment, foundation, and spillway designs.
- Hydrologic & Hydraulic Analysis: PMP/PMF modeling, dam breach analysis, and flood routing using HEC-HMS and HEC-RAS to validate spillway capacity and compliance with WV Dam Safety regulations.
- Environmental Assessment: Wetland delineations, NEPA compliance, cultural resource coordination, and water quality sampling to support dredging and construction permitting.

PROJECT APPROACH

3. Concept Development & Alternatives Analysis

Using collected data, we will develop feasible, cost-effective design alternatives for dam rehabilitation, dredging, and associated site improvements:

- Evaluate principal and auxiliary spillway modifications to handle required design storms.
- Develop sediment removal strategies with an emphasis on minimizing turbidity and environmental disturbance.
- Incorporate erosion control and slope stabilization measures.
- Assess public safety upgrades such as guardrails, signage, and access improvements.
- Utilize life-cycle cost analysis to identify the most sustainable, long-term solutions.

We will review alternatives with DNR to select a preferred plan that balances safety, performance, and budget.

4. Final Design & Permitting

TERRADON will prepare complete construction plans, technical specifications, and cost estimates in compliance with WV Dam Safety requirements, USACE 404/401 permitting, and any required FEMA or SHPO clearances.

Our permitting process will include:

- WVDEP Dam Safety Certificate of Approval application
- WVDEP NPDES Construction Stormwater Permit
- USACE Section 404 / WVDEP 401 Water Quality Certification
- Coordination with WV State Historic Preservation Office and US Fish & Wildlife Service for cultural and environmental compliance.

5. Bidding Assistance

We will prepare bidding documents per WV purchasing requirements, assist with contractor pre-bid meetings, respond to RFIs, and evaluate bids for technical compliance.

6. Construction Contract Administration

During construction, TERRADON will provide full-time construction observation led by our experienced dam safety inspectors and field services staff:

- Verify compliance with design plans and specifications.
- Perform QA/QC materials testing (soil compaction, concrete strength, aggregate quality).
- Maintain daily inspection logs, photo documentation, and as-built records.
- Coordinate with the contractor to resolve field issues quickly without impacting the project schedule.
- Provide progress reporting to DNR and Dam Safety regulators.

PROJECT APPROACH



7. Project Closeout and Dam Safety Certification

Upon completion, we will:

- Perform final inspections with DNR and regulatory agencies.
- Prepare as-built drawings and a final construction report.
- Submit documentation to obtain the Certificate of Approval from WV Dam Safety.
- Develop or update the Emergency Action Plan (EAP) and Operation & Maintenance Plan to reflect improvements.

Our Competitive Advantage

- **Dam Safety Expertise:** Our key staff have managed complex WV dam rehabilitation projects such as Cobun Creek Dam, Lake Chaweva Dam, Beckley Upper Glade Creek Dam, and Dawson Lake Dam.
- **In-House Multidisciplinary Team:** Surveyors, geotechnical engineers, environmental scientists, hydraulic modelers, and construction inspectors work under one roof for seamless project delivery.
- **Proven Regulatory Navigation:** We have extensive experience working with WVDEP, USACE, FEMA, and SHPO to secure timely approvals.
- **Constructability Focus:** We design with construction in mind, integrating input from our construction oversight staff to avoid costly change orders.

CERTIFICATE OF *Authorization*

STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS

*The West Virginia State Board of Registration for Professional Engineers
having verified the person in responsible charge is registered in
West Virginia as a professional engineer for the noted firm, hereby certifies*

TERRADON CORPORATION

C00901-00

Engineer in Responsible Charge: ASHLEY L. LIOI - WV PE 020507

*has complied with section §30-13-17 of the West Virginia Code governing
the issuance of a Certificate of Authorization. The Board hereby notifies you of its
certification with issuance of this Certification of Authorization for the period of:*

January 1, 2024 - December 31, 2025

providing for the practice of engineering services in the State of West Virginia.

IF YOU ARE REQUIRED TO REGISTER WITH THE SECRETARY OF STATE'S OFFICE,
PLEASE SUBMIT THIS CERTIFICATE WITH YOUR APPLICATION.



IN TESTIMONY WHEREOF, THE WEST VIRGINIA STATE BOARD OF
REGISTRATION FOR PROFESSIONAL ENGINEERS HAS ISSUED THIS COA
UNDER ITS SEAL, AND SIGNED BY THE PRESIDENT OF SAID BOARD.

Scott E. Thomas Jr.

BOARD PRESIDENT

WEST VIRGINIA BOARD OF PROFESSIONAL SURVEYORS



Certificate of Authorization

Terradon Corporation

Poca, WV



CERTIFICATE OF AUTHORIZATION # 25-5430

This certificate is issued by the West Virginia Board of Professional Surveyors in accordance with W.Va. Code §30-13A-20
The person or organization identified on this certificate is licensed to conduct professional surveying and mapping
services in the State of West Virginia for the period

January 1, 2025 through December 31, 2025

This certificate is not transferable and must be displayed at the office location for which issued.

In witness whereof, I have put my hand, this 01 day of January 25

2025

A handwritten signature in black ink, appearing to read "Sefton R. Stewart".

Sefton R. Stewart, P.S., Chairman
Lantz G. Rankin, P.S., Member



A handwritten signature in black ink, appearing to read "James T. Rayburn".

James T. Rayburn, P.S., Secretary
Gary Facemyer, P.E., P.S., Member

Douglas C. McElwee, Esq.

Public Member

**WEST VIRGINIA
STATE TAX DEPARTMENT
BUSINESS REGISTRATION
CERTIFICATE**

ISSUED TO:
**TERRADON CORPORATION
401 JACOBSON DR
POCA, WV 25159-9691**

BUSINESS REGISTRATION ACCOUNT NUMBER: **1040-5251**

This certificate is issued on: **06/11/2010**

*This certificate is issued by
the West Virginia State Tax Commissioner
in accordance with W.Va. Code § 11-12.*

*The person or organization identified on this certificate is registered
to conduct business in the State of West Virginia at the location above.*

This certificate is not transferrable and must be displayed at the location for which issued.

This certificate shall be permanent until cessation of the business for which the certificate of registration was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.

Change in name or change of location shall be considered a cessation of the business and a new certificate shall be required.

TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of this certificate displayed at every job site within West Virginia.

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JOHN A. MYERS
CABINET SECRETARY

STATE OF WEST VIRGINIA
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON STREET, EAST
CHARLESTON, WEST VIRGINIA 25305-0130

W. MICHAEL SHEETS
DIRECTOR

April 27, 2018

Terradon Corporation
409 Jacobson DR
Poca, WV 25159

Mr. Wheeler,

This is to notify you that your Small, Women-, and Minority-Owned Businesses (SWAM) Certification Application has been approved on the basis of your representations that the vendor named above meets the definition of a Small, Women-, and Minority-Owned Businesses as set forth in the *West Virginia Code of State Rules* 148-22-1 et seq. This certification becomes effective:

4/27/2018

And shall automatically expire without notice two years after the effective date unless revoked by the Purchasing Director or upon expiration pursuant to the *West Virginia Code of State Rules* 148-22-8. The type(s) of Small, Women-, and Minority-Owned Businesses (SWAM) Certification approved for your entity:

Women Owned Business Small Business

To maintain certification without lapse, a certified business shall apply to renew its certification at least 60 days prior to the end of the two-year certification period. Complete renewal instructions, recertification forms, and a list of all SWAM Certified entities are available online at www.state.wv.us/admin/purchase/VendorReg.html.

If you have questions, please contact the West Virginia Purchasing Division at 304-558-2306.

Sincerely,

A handwritten signature in blue ink that reads "Wendy Means".

Wendy Means
Vendor Registration Coordinator



THANK YOU FOR THE OPPORTUNITY!



 **Website**
www.terraddon.com

 **Phone**
304-755-8291

Point of Contact
Will Thornton, PE, PS
VP of Engineering
will.thornton@terraddon.com
304-729-9164