BOARD OF COUNTY COMMISSIONERS
WARREN COUNTY, OHIO

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TOM GROSSMANN
SHANNON JONES
DAVID G. YOUNG

GENERAL SESSION AGENDA

October 4, 2022

#1		Clerk—General
#2	9:00	Eric Kearney, CEO & President of Greater Cincinnati and NKY African American Chamber of Commerce – Present Findings of Study on the Economic Impact of Black- owned Business in Warren County
#3	9:15	Executive Session— Sheriff's Office Union Negotiations

The Board of Commissioners' public meetings can now be streamed live at Warren County Board of Commissioners - YouTube

Meeting #38 of 2022

APPROVE REQUISITIONS AND AUTHORIZE COUNTY ADMINISTRATOR TO SIGN DOCUMENTS RELATIVE THERETO

BE IT RESOLVED, to approve requisitions as listed in the attached document and authorize Tiffany Zindel, County Administrator, to sign on behalf of this Board of County Commissioners.

moved for adoption of the foregoing resolution, being seconded by . Upon call of the roll, the following vote resulted:

M
M
M

Resolution adopted this 4th day of October 2022.

BOARD OF COUNTY COMMISSIONERS

Tina Osborne, Clerk

/tao

cc:
Commissioners' file

REQUISITIONS

Department	Vendor Name	Description	Amount
ENG	TRANSPORTATION IMPROVEMENT DISTRICT	BOCC CONTRIBUTION FOR THE SECOND HALF OF 2022	$ 1,673,667.99

PO CHANGE ORDER

Department	Vendor Name	Description	Amount	
FAC	PRODIGY BUILDING SOLUTIONS LLC	SILVER STREET PAVING	$ 13,024.00	INCREASE
WAT	TERRAN CORPORATION	PROFESSIONAL SERVICES FOR WELL OPTIMIZATION ST	$ 348,185.00	INCREASE

10/4/2022 APPROVED:

Tiffany Zindel, County Adminsitrator

*CONSENT AGENDA**

October 4, 2022

1. *Approve the minutes of the September 27, 2022, Commissioners' Meeting.*

PERSONNEL

2. *Hire Deilibeth Cruz and Evan Mahle as Investigative Caseworker II within Children Services*
3. *Recognize the hiring of Traci Stivers as Director of Community Relations within the Workforce Investment Board*
4. *End temporary pay supplement for Jeff Stilgenbauer and Julie Driscoll within OMB*

GENERAL

5. *Advertise for public hearing #1 for Fiscal Year 2023 Community Development Block Grant Program*
6. *Authorize Treasurer to initiate contract negotiations with Harris Local Point for Tax Bill Printing and Mailing Services*
7. *Accept quote from Business Communications Specialist for VOIP Integrated DECT Headset on behalf of Telecommunications*
8. *Approve Task Completion Report #1 for Central Square Technologies on behalf of Telecommunications*
9. *Approve Classroom Training Agreement with Performance Training Solutions, LLC on behalf of OhioMeansJobs Warren County*
10. *Approve MOU for school recourse deputies between Kings Local School District on behalf of Sheriff's Office*
11. *Acknowledge payment of bills*
12. *Enter into W/S performance bond agreement with Wilson Farms Development II and approve final plat*

FINANCIALS

13. *Approve supplemental appropriation into Auditor 11014100*
14. *Approve supplemental appropriation and appropriation adjustments within Common Pleas Court 2289 and 11011220*
15. *Approve appropriation adjustments within County Court 11011280, Coroner 11012100, and Children Services 2273*

**Please contact the Commissioners' Office at (513) 695-1250 for additional information or questions on any of the items listed on the Consent Agenda*

FOR CONSIDERATION NOT ON CONSENT AGENDA

1. Request Director of Transportation to review the engineering and traffic investigation and determine and declare a reasonable and safe prima-facie speed limit on Lytle Five Points Road beginning at Crossley/Yankee Road and continuing to SR 48
2. Authorize Amendment No. 1 to the professional services agreement with Terran Corporation, increasing the purchase order $348,185, to provide further analysis of the Middletown Junction property and evaluate the existing Thompson Wellfield property to explore the possibility of installing additional production wells along the property

REQUEST DIRECTOR OF TRANSPORTATION TO REVIEW THE ENGINEERING AND TRAFFIC INVESTIGATION AND TO DETERMINE AND DECLARE A REASONABLE AND SAFE PRIMA-FACIE SPEED LIMIT ON LYTLE FIVE POINTS ROAD (CR#46) BEGINNING AT CROSSLEY/YANKEE ROAD AND CONTINUING TO STATE ROUTE 48

WHEREAS, a request has been made to this Board that the statutory vehicular speed limit established by Ohio Revised Code, Section 4511.21, is greater than that considered reasonable and safe on Lytle Five Points Road (CR#46) beginning at Crossley/Yankee Road to State Route 48; and

WHEREAS, this Board has caused to be made an engineering and traffic investigation upon the section of road described; and

WHEREAS, it is the determination of this Board that such investigation confirms the allegation that the statutory speed limit of 55 mph is greater than is reasonable and safe and the conditions found to exist at such location; and

NOW THEREFORE BE IT RESOLVED by the Board of County Commissioners of Warren County, Ohio that:

Section 1. By virtue of the provisions of Ohio Revised Code, Section 4511.21, the Director of Transportation is hereby requested to review the engineering and traffic investigation and to determine and declare a reasonable and safe prima-facie speed limit on Lytle Five Points Road (CR#46) beginning at Crossley/Yankee Road to State Route 48.

Section 2. That when this Board is advised that the Director of Transportation has determined and declared a reasonable and safe speed limit on the section of road described in Section 1, standard signs, properly posted and giving notice thereof, will be erected upon which such declared speed limit shall become effective.

M. moved for adoption of the foregoing resolution being seconded by M. Upon call of the roll, the following vote resulted:

M
M
M

Resolution adopted this 4th day of October 2022.

BOARD OF COUNTY COMMISSIONERS

_____
Tina Osborne, Clerk

cc: Engineer (file)

AUTHORIZE AMENDMENT NO. 1 TO THE PROFESSIONAL SERVICES AGREEMENT WITH TERRAN CORPORATION, INCREASING PURCHASE ORDER NO. 21002438 FOR THE HYDROGEOLOGICAL EVALUATION OF THE SOUTH WEELLFIELDS, SUBFUND NO. 5410

WHEREAS, Warren County (hereinafter "County") and the Terran Corporation (hereinafter "Terran") entered into a professional services agreement on October 26, 2021 for the hydrogeological evaluation of the County's existing wellfields to quantify the potential production capacity and sustainability of the County's source water; and

WHEREAS, the steady-state hydrogeological model created by Terran identified the possibility of developing the County's Middletown Junction property with a three-well operation pumping between 550 to 600 gallons per minute per well and producing 2.5 million gallons per day; and

WHEREAS, the County is interested in further analysis of the Middletown Junction property and also evaluation of the existing Thompson Wellfield property to exploring the possibility of installing additional production wells along the property; and

WHEREAS, it is the desire of this Board to amend the Agreement with Terran to allow for additional professional services including detailed hydrogeological analysis of the Middletown Junction and Thompson Wellfield properties; and

NOW THEREFORE BE IT RESOLVED, to approve Amendment No. 1 increasing Purchase Order No. 21002438 to Terran, Corporation. in the amount of $348,185 creating a new contract price of $391,485. Said Amendment, attached hereto and made a part hereof, shall be subject to the following conditions:

1. The scope of services shall be as stipulated in the "Proposal for Middletown Junction Site Characterization" document submitted to Warren County on August 5, 2022 by Terran and attached hereto and made a part hereof.

2. Compensation for the additional services shall be in accordance with the October 26, 2021 Professional Services Contract, with total additional compensation not to exceed $348,185.

_____ moved for adoption of the foregoing resolution, being seconded by _____. Upon call of the roll, the following vote resulted:

_____

_____

_____

Resolution adopted this ____ day of _____, 2022

BOARD OF COUNTY COMMISSIONERS

_____

Tina Osborne, Clerk

cc: OMB
Auditor ____
Water/Sewer (File) ____
Project File
C/A – Terran

i:\resolutions\water\Resolution-2022 09 – Amendment No. 1

AMENDMENT NO. 1
PROFESSIONAL SERVICES AGREEMENT

THIS AMENDMENT NO. 1, is effective on the date last executed by the Parties hereto, by and between the WARREN COUNTY BOARD OF COUNTY COMMISSIONERS, on behalf of WARREN COUNTY, OHIO (hereinafter "COUNTY") and Terran Corporation, 4080 Executive Drive, Beavercreek, Ohio 45430-1061 (hereinafter "CONSULTANT").

WHEREAS, the COUNTY and the CONSULTANT entered into a professional services agreement on October 26, 2021 for the hydrogeological evaluation of Warren County's existing wellfields to quantify the potential production capacity and sustainability of the COUNTY's source water; and

WHEREAS, the steady-state hydrogeological model created by the CONSULTANT identified the possibility of developing the COUNTY's Middletown Junction property with a three-well operation pumping between 550 to 600 gallons per minute per well and producing 2.5 million gallons per day; and

WHEREAS, the COUNTY is interested in further analysis of the Middletown Junction property and also evaluation of the existing Thompson Wellfield property to exploring the possibility of installing additional production wells along the property; and

WHEREAS, it is the desire of this Board to amend the Agreement with the CONSULTANT to allow for additional professional services including detailed hydrogeological analysis of the Middletown Junction and Thompson Wellfield properties; and

NOW, THEREFORE, IT IS AGREED by and between the COUNTY and the CONSULTANT that the existing agreement for the Hydrogeological Evaluation of the South Wellfield is hereby amended as follows:

SCOPE OF SERVICES

The contractual scope shall be modified as identified in the CONSULTANT's letter dated, August 5, 2022, attached hereto and made a part hereof.

COUNTY RESPONSIBILITIES

The COUNTY shall supply the following data/additional services to the CONSULTANT:

1. Provide full information as to the requirements of the project.

2. Assist CONSULTANT by placing at their disposal all available information pertinent to the project.

3. Examine all studies, reports, sketches, drawings, proposals and other documents presented by the CONSULTANT, obtain advice of an attorney, insurance counselor and other consultants as deemed appropriate for such examination and render in writing decisions pertaining thereto within a reasonable time so as not to delay the service of the CONSULTANT.

SCHEDULE

The CONSULTANT'S additional services shall commence upon the execution of the Amendment by both the CONSULTANT and the COUNTY. All tasks shall be completed December 31, 2023.

COMPENSATION

1. The CONSULTANT's fee for all services performed pursuant to this Amendment shall be on a "hourly cost-times-factor" basis for all labor incurred by the CONSULTANT, in accordance with the October 26, 2021 Agreement.

2. Based on the scope of work as described herein, total compensation for all services performed under this Amendment, and all direct reimbursable costs, shall not exceed $348,185.

3. Payment of compensation shall be made to the CONSULTANT within thirty (30) days after the receipt of an invoice from the CONSULTANT.

TERMS & CONDITIONS

Except as provided herein, the terms and conditions of the October 26, 2021 Professional Services Agreement shall remain binding and in force and effect in all other aspects, and incorporated as if fully re-written herein.

[the remainder of this page is intentionally left blank]

CONSULTANT:

IN EXECUTION WHEREOF, Terran Corporation, has caused this Agreement to be executed by Brent E. Huntsman., its President, on the date stated, pursuant to a resolution authorizing the same.

TERRAN CORPORATION

SIGNATURE: _____

NAME: Brent E. Huntsman

TITLE: President

DATE: 9/28/2022

COUNTY:

IN EXECUTION WHEREOF,, the Warren County Board of Commissioners has caused this Agreement to be executed by _____, its _____ on the date stated below, pursuant to Board Resolution No. _____, dated _____.

WARREN COUNTY BOARD OF COMMISSIONERS

SIGNATURE: _____

NAME: _____

TITLE: _____

DATE: _____

Approved as to form:

DAVID P. FORNSHELL,
PROSECUTING ATTORNEY
WARREN COUNTY, OHIO

_____
By: Adam Nice, Assistant Prosecutor

Terran Corporation
Environmental Services

August 5, 2022

Mr. Chris Brausch, P.E.
Sanitary Engineer
Warren County Water & Sewer Department
406 Justice Drive
Lebanon, OH 45036

RE: Proposal for Middletown Junction Site Characterization
Warren County, Ohio
Terran Proposal P-WARN22A(2)

Dear Mr. Brausch:

Terran Corporation respectfully submits for your consideration the following revised proposed scope of work and cost estimate for site characterization services at the Middletown Junction property owned by the Warren County Commissioners and the Ohio Dept. of Natural Resources (ODNR). Our understanding of the required services is based upon the groundwater modeling work provided in the technical report *"Wellfield Production Analysis for the East, Revis, Sod Farm and Thompson Wellfields, Warren County, Ohio"* and the meeting held between the Warren County Water & Sewer Department (WCW&SD) and Terran Corporation on May 25, 2022. Revisions to this proposal come from our second meeting held on July 26, 2022 which includes exploratory work at the Thompson wellfield property.

PROJECT BACKGROUND

Middletown-Junction Property

As provided in Scenario #3 of the technical report, the groundwater computer simulation indicated that a three-well operation, each well pumping between 550 to 600 gallons per minute (gpm) and cumulatively producing upwards of 2.5 millions of gallons per day (MGD), is potentially feasible for the Middletown Junction (M-J) property. The simulation result is similar to conclusions advanced in the early 1990s that considered the site as a potential prospect for development using three production wells producing approximately 1.5 to 2.5 MGD (by Civil and Environmental Consultants, Inc. (CEC)).

CEC installed test well TW-1 as a 90 ft. deep well, 8-inches in diameter with a 125-slot screen, 20 feet in length, set between 68 and 88 feet below ground surface (ft. bgs). The well was installed in 1993 and is still present on site as found during a site inspection by Terran and WCW&SD in June 2022 (i.e. MJ-TW1, Figure 1). Test well TW-1 was pumped at 700 gpm for three days during December 1993, producing drawdown in site piezometers on the order of 2-feet across the site. A second pump test using TW-1 was conducted by Tetra Tech in 2006, pumping at 715 gpm for three days and producing the same results. High water events on the Little Miami River thwarted long-term operation of each constant rate test but demonstrated that leakance from the river is an active source of recharge during precipitation events upgradient of the site. Tetra Tech in their report "Little Miami River Wellfield Development" (2007) reported that a second pump test was conducted by CEC using a second test well TW-2; however, the

well could not sustain a constant pumping rate of 1,700 gpm. Uncertainty associated with the cumulative test results caused Tetra Tech to not recommend the site for development.

As previously described, Terran's modeling results indicated a 3-well operation is possible, assuming the site hydrogeology has certain physical characteristics associated with it including:

- The aquifer is continuous across the site as a sand and gravel outwash deposit with hydraulic conductivity values in the range of 200 to 650 ft./day. Thickness of the deposit varies but overall has sufficient thickness to support wells with screens 20 feet in length set at the bottom of the aquifer at depths of 70 feet more or less.
- The shale bedrock occurs at depths of 25 to 30 feet thick on the north-northeast side of the M-J site (under the Little Miami River) and at depths of 70 to 90 feet thick at the M-J property and continues as such southward from the property as a buried valley aquifer. In other words, the property is not a plunge pool or "bathtub" whereby the sand and gravel outwash is bounded laterally by shale in all directions like a bowl (Figure 2).
- The Little Miami River is capable of recharging the aquifer with a bed hydraulic conductivity value of 0.25 ft./day or higher.

The present site conceptual model is based on the results of the 1990s site investigation; however, site characterization tools have improved significantly since then and a better characterization of the site can be implemented, building on the 1990s information. To accomplish this, Terran proposes to conduct the site characterization scope of work as described in the next section below.

Thompson Wellfield Property

The Thompson wellfield property (Thompson WF Property) consists of a single production well, PWT-12, operating at a production rate of 1,000 gpm. Previous exploratory efforts during the early 1990s determined depth to bedrock ranged 19 to 65 feet bgs. During 2005, additional borings determined bedrock as deep as 85 feet occurs at the site. Production well PWT-12 was installed in 2006 and depth to bedrock was 61 feet bgs at that location. A second well (PWT-11) was proposed for a location 2,100 feet north of PWT-12 at that time but shallow bedrock (@ 40 ft.) was encountered at the location.

Due to the variable depth to bedrock across the site, WCW&SD has expressed interest in re-evaluating the Thompson WF Property to see if another location exists that can support a second production well. Terran has revised the original proposal to include investigative field work to evaluate the site including geophysical delineation and exploratory soil borings/monitoring wells. A description of the proposed exploratory field work to be provided in the Scope of Work section of this proposal.

PROJECT OBJECTIVES AND APPROACH

Terran proposes to conduct a phased program for the wellfields at the M-J property and Thompson WF Property. The project phases include the following:

1. **Phase 1 Site Characterization**: Characterization of the property to bedrock with geophysical delineation and/or exploratory soil borings to investigate nature, thickness

and quality of unconsolidated deposits overlying bedrock at the site. Install piezometer/monitoring wells for background hydraulic characterization purposes. Analyze soil samples for particle analysis for screen design. Recommendations for further pursuit of development to be decided based on this phase of work. If favorable, proceed to Phase 2.

2. **Phase 2 Aquifer Production Assessment:** Conduct an assessment of the wellfield and its production potential. Conduct aquifer testing using test well TW-1 and/or TW-2. Use the computer model of the property to refine the wellfield design to meet proposed production capacity. Revise the existing computer model to site production well locations, define potential drawdown, zone of influence, and recharge/no-flow boundaries around the wellfield.
3. **Phase 3 Initial Wellfield Design:** Design a production well using Phase 1 and 2 data for contractor installation. Other facets of wellfield design such as raw water line design and electrical service design to be included in this Phase as needed. Pursue Ohio EPA preliminary site approval of wellfield to serve as a Public Water System, Community Water Supply (PWS CWS).
4. **Phase 4 Initial Well Installation/Testing:** Install one production well (or more) based on Phase 1 and 2 design details and recommendations. Construct, develop and aquifer rate test the well to characterize its actual production capability, drawdown and aquifer properties (hydraulic conductivity, storage, porosity, etc.). Install additional piezometers or monitoring wells as needed for the aquifer pump test. Update wellfield model as needed using Phase 3 information. Finalize design requirements for raw water lines, electrical service, etc. Submit plans for Ohio EPA approval to serve as PWS CWS wellfield.
5. **Phase 5 Full Scale Implementation:** Using technical information developed during Phases 1 to 4, with applicable regulatory agency approval, fully develop the wellfield to the desired production capacity as site conditions and logistical constraints allow. Install additional production wells, raw water lines, electrical service and related infrastructure as needed. Prepare the required wellhead source area protection plan.

Terran proposes to conduct a hydrogeologic investigation to characterize the proposed site pursuant to Ohio Administrative Code (OAC) 2745-9-04 rules governing new well siting. For this proposal scope of work (SOW), Terran proposes to implement both Phase 1 and Phase 2 objectives to verify, refine and expand the site conceptual model as provided in the computer model used to simulate the M-J and Thompson WF Properties. The site conceptual model incorporates the key characteristics as described in the previous section. To implement Phases 1 and 2, Terran proposes the following tasks:

- Task 1: Prepare the site property for equipment access to drill exploratory soil borings. Brush and tree removal, clearing/leveling, staking and utility demarking as needed to prepare the site for a drill rig to access the areas of interest will be completed under this task.

- Task 2: Drill up to seven exploratory soil borings at the M-J property (Figure 1). Conduct a geophysical mapping survey at the Thompson WF property and based on the mapping findings, drill up to two exploratory soil borings at the site. Use the

rotosonic drilling method to provide the most comprehensive means to characterize the nature and thickness of the outwash aquifer. Collect and analyze soil samples of the aquifer for well screen design purposes.

- Task 3: Install up to four 2-inch monitoring wells in key locations for use in aquifer testing at the site. Install river gauges along the Little Miami River at up gradient and down gradient locations of the site. Develop the wells and install transducers to measure background hydraulic activity at the site for a period of one month. Survey the piezometer top-of-casing and ground surface elevations for water level data analysis and construction control purposes.

- Task 4: Rehabilitate test well TW-1 for use in an aquifer test of the site. Conduct a constant rate test of TW-1 at a rate of 600 gpm for three to five days, weather conditions permitting. Sample the well water at the conclusion of the test for Ohio EPA new well parameters to evaluate groundwater quality purposes.

- Task 5: Revise and calibrate the M-J portion of the computer model domain using the new site characterization data and rerun Scenario #3 using the revised, calibrated model. Prepare report and recommendations for further production well development at the site based on the project findings and conclusions.

A brief description of the proposed work is provided below.

Task 1: Site Preparation

Brush and tree removal, clearing/leveling, staking and utility demarking as needed to prepare the site for a drill rig to access the areas of interest will be completed under this task. Terran will mobilize a crew to stake and clear lanes and drill sites of sufficient size to permit drilling of the site using a track-mounted rotosonic drill rig and ancillary equipment (i.e. water truck). A brush hog will be needed to clear lanes of travel to access the sites. Small trees and brush will be cleared to permit access for a drill rig to drill the proposed sites for exploratory soil borings and production wells (Figure 1). The crew will also locate test well TW-2 and clear the area around it to prepare it for inspection, testing and/or permanent abandonment as needed.

At the Thompson WF Property, site clearance will be needed to provide access for the geophysical transects and drill rig access.

Task 2a: Aquifer Site Characterization: M-J Property

For Task 2 at the M-J Property, seven exploratory soil borings TRN-1 to TRN-7 are proposed to define the stratigraphy and hydrogeologic properties of the site (Figure 1). The soil borings are spaced in a pattern throughout the property (and adjoining properties) to characterize the length, width and thickness of outwash aquifer across the site. Borings are sited to expand upon previous soil borings and test well logs that have initially defined the site stratigraphy. The objective is to refine the conceptual model as incorporated into the computer model of the M-J property.

The soil borings will be drilled using rotosonic drilling and continuous soil sampling. Rotosonic drilling provides for the fastest and most efficient drilling and soil coring when compared to

other techniques for deep soil borings and wells as is required for this project. Each soil boring will be drilled and sampled to either bedrock or 100 feet total; whichever one comes first.

Soil cores will be collected on 10-foot intervals, inspected, logged and photographed by a Terran staff geologist. Soil samples will be collected from the aquifer of interest (presumably on 5-foot intervals from the soil borings TRN-2, -3 or -5) and submitted for grain-size analysis to aid in the preliminary design of the production well(s). Soil boring logs will be prepared thereafter for inclusion into the project report.

Task 2b: Aquifer Site Characterization: Thompson WF Property

Aquifer site characterization at the Thompson WF Property will utilize a geophysical mapping survey to evaluate the depth to bedrock and the granular deposits at the 25 acre site. Terran proposes to retain Xenon Geosciences, Inc. to conduct the survey and analyze the data. Terran will assist Xenon Geosciences in provision of field manpower and support equipment to conduct the survey. A series of transacts will be conducted along the length and width of the site to map the depth to bedrock (Figure 3).

Two geophysical methods are recommended for use at the site: resistivity and seismic refraction tomography. The seismic refraction tomography yields results with greater correlation to measured rock depths and is comparatively robust. The earth resistivity method is also recommended as it can be used to evaluate lithologic changes with the alluvial cover along the property. Because seismic method is sensitive to material mechanical properties and the resistivity method is sensitive to bulk formation porosity, the use of both methods will result in a final interpretation that is more reliable than that with either single method. The two methods are provided on an optional basis so that seismic, resistivity or both can be authorized. Costing using a single method versus using both methods is provided in the business section of this proposal.

Conduct of the geophysical survey will need to be done once the trees have lost their foliage so that the geophysical GPS equipment can function properly at the site. This means the Thompson site characterization will need to be done separate from the M-J site in terms of timing in the event that WCW&SD wants to commence the M-J Property investigation in September 2022. The Thompson site would be investigated in the November-December timeframe during a period of fair weather in the forecast.

Up to two soil borings are proposed for the Thompson wellfield property. Location of the two soil borings to be determined based on the results of a geophysical survey of the Thompson wellfield property. Terran will consult with WCW&SD regarding the geophysical mapping results and proposed exploratory soil boring location(s) prior to mobilizing to the site to confirm the results using sonic drilling method.

Task 3: Aquifer Hydrologic Characterization

Task 3 will entail installation of devices to characterize hydraulic activity of the outwash aquifer. To accomplish this, up to four of the Task 2 soil borings will have a 2-inch PVC monitoring well constructed at the M-J property. Each monitoring well will be screened within the aquifer for use in sentient water level monitoring and pump test water level measurements. Other potential

use of the monitoring wells includes water quality samples and future wellfield source water protection program purposes.

At the Thompson WF property, up to two monitoring wells are proposed for installation in the event the soil borings confirm a thick deposit occurs at the site (based on the exploratory soil borings drilled under Task 2b). The monitoring well(s) will be installed at the same time the soil exploratory borings are drilled to save mobilization cost to WCW&SD.

The monitoring wells will be constructed of schedule 40 PVC with a 20-foot length of screen with 20-slot openings. A quartz sand filter pack will be constructed around each screen and each well constructed in accordance with the example well log of Figure 4. After construction, each monitoring well will be developed by surging followed by pumping to remove fine-sized sediment by the drilling firm. A well log will be prepared for each monitoring well installed for this project.

After development, Terran will install pressure transducers and data loggers to monitor the water level activity at the site. Terran will also install a stilling wells/well point at upgradient and down gradient locations to serve as staff gauges for collecting water level measurements of the Little Miami River. A pressure transducer will also be installed for sentient monitoring and the sentient monitoring data used to provide insight into the river-aquifer interaction. The sentient monitoring transducers will collect water level data for at least one month to develop a base line of water level activity and recharge in the aquifer.

Surveying services will be needed to convert field measurements into elevation measurements for mapping and modeling purposes. *We understand that WCW&SD will assume responsibility for provision of a professional surveying crew to the survey the M-J Property and to measure the northing-easting, top-of-casing and ground surface elevations of the soil borings ground surface, monitoring wells and stream gauges.* We request a copy of the survey results be provided to Terran for use in data management and modeling purposes.

Task 4: TW-1 & TW-2 Aquifer Pump Tests

To characterize hydrogeologic properties of the outwash aquifer, Terran proposes to reuse the 1993 test well TW-1 for aquifer pump testing purposes. Prior to conducting the pump tests, redevelopment of the well is recommended to ensure the well screen is clean and ready for service. Terran will mobilize equipment the site to surge and redevelop the well in advance of the pump test. On satisfactory demonstration that the test well is fully functioning, Terran will install a submersible pump capable of pumping 500 to 800 gpm to conduct a step drawdown test and a 72 hour constant rate test. The piezometers and river gauges installed during Task 3 will be used to collect water levels throughout the aquifer testing.

Terran also recommends locating, inspecting, redeveloping and step-testing TW-2 for purposes of evaluating its potential for use as a PWS CWS production well (Figures 1 and 5). A review of its location (its actual location is uncertain) and its construction details indicates there is potential for converting the well into a PWS depending on its location, securing a defensible 300-foot isolation radius around the well, its physical/operating condition and other issues of concern. Previous testing indicates the well cannot sustain 1,700 gpm; however, we believe the well may be capable of sustaining between 500 to 700 gpm depending on its condition and the

hydrogeologic boundaries (consistent with the Scenario #3 modeling results). Depending on the results of this investigation, a recommendation for converting TW-2 into a PWS CWS well or to permanently abandon it will be provided.

Terran will collect a water sample at the conclusion of the constant rate test for Ohio EPA new well parameters to evaluate groundwater quality purposes (Table 1). This sample result will be compared against previous sample results to evaluate current conditions, treatment requirements and regulatory acceptability issues.

Task 5: GW Modeling, Data Management & Report Preparation Services

Task 5 is the data management and report preparation for this project. Services to include revising the computer model to include the site characterization data developed by Tasks 2 to 4. The aquifer width, thickness and lateral extent will be adjusted based on the findings of the seven test borings. The model will be recalibrated to the pre-pumping groundwater elevations and a transient calibration will be conducted to simulate the constant rate test. Once calibrated, the model will then be used to re-simulate Scenario #3 as provided in the project modeling report.

The Thompson WF property model domain will be modified based on the field results and a simulation including a new production well at the best location identified will be conducted to evaluate production expansion potential at the wellfield.

The M-J Property aquifer pump test results will be analyzed and results summarized using AQTESOLV Software. Analysis curves and summary data will be provided for inclusion into the project report. Soil boring, well logs and geologic cross sections will also be prepared for inclusion into the technical report.

A technical report will be prepared presenting the findings, conclusions and recommendations of this project. The report will present a description of the site exploratory results, the constant rate test results, the revised site conceptual model, the revised computer flow model domain, calibration results, simulation results and related documentation. Maps showing the model's revised M-J Property Scenario #3 potentiometric surface, particle track simulations and production results will be prepared as well as those conducted for the Thompson wellfield property. Recommendations for further development as a wellfield will be advanced for consideration. A draft report will be provided to WCW&SD project team to review and comment before finalizing the document. An electronic pdf copy will also be provided.

Business Proposal

The costs of services proposed to be provided on a Time and Materials basis:

MIDDLETOWN-JUNCTION PROPERTY	
Task 1 Site Preparation Services	$10,755 to $23,400
Task 2 Soil Borings/Site Characterization Services	
Terran Labor & Expenses	$ 7,410 to $10,495
Drilling Subcontractor Services	$46,915 to $58,620
Geotech Lab Services	$ 1,260 to $ 3,785
Task 2 Subtotal =	$55,585 to $72,900

Task 3 Monitoring Well/Stream Gauge Construction Services	
Terran Labor & Expenses	$ 5,175 to $ 7,940
Drilling Subcontractor Services	$26,170 to $30,205
Task 3 Subtotal =	$31,345 to $38,145
Task 4 Site Hydraulic Characterization Services	
Terran Labor & Expenses	$28,690 to $38,785
Analytical Laboratory Services	$ 790 to $ 1,585
Task 4 Subtotal =	$29,480 to $40,370
Task 5 Modeling, Project Data Management & Report Preparation	$20,085 to $25,115
Grand Total =	**$147,250 to $199,930**
THOMPSON WELLFIELD PROPERTY	
Task 1 Site Preparation Services	$5,030 to $8,185
Task 2 Site Characterization Services	
Terran Labor & Expenses	$11,045 to $13,065
Geophysical Subcontractor Services*	$37,770 to $77,635
Task 2 Subtotal =	$48,815 to $90,700
Task 3 Monitoring Well Construction Services	
Terran Labor & Expenses	$ 3,215 to $ 4,250
Drilling Subcontractor Services	$20,415 to $31,600
Geotech Lab Services	$ 1,425 to $ 3,315
Task 3 Subtotal =	$25,055 to $39,165
Task 5 Modeling, Project Data Management & Report Preparation	$7,055 to $10,205
Grand Total =	**$85,955 to $148,255**

* Seismic only: $43,610; Resistivity only: $37,770; Combined methods: $77,635

The scope of services can be provided on a **Time and Materials** basis. The scope of work as described in this proposal can be accomplished for the Estimated Total as shown above. Only those costs incurred will be charged and they will not exceed the estimated probable cost stated above without prior approval. The contents of this proposal have been submitted in confidence and represent trade secrets and/or privileged, confidential, or financial information. The technical and/or financial contents of this proposal shall be used only for evaluation purposes by the recipient and shall not be disclosed to third parties.

Assumptions

Terran has made the following assumptions in preparing the above scope of work and cost estimate:

- One round of mobilization and demobilization to the Thompson WF Property for the conduct of the geophysical survey field work. The field work to be scheduled for late fall during periods of favorable weather in the forecast at the site.
- The Thompson WF Property will be free of brush and tree foliage at the time of the geophysical survey.
- One round of mobilization and demobilization to the site for drilling the exploratory soil borings, and constructing and developing the monitoring wells at the M-J Property.
- One round of mobilization and demobilization to the site for drilling the exploratory soil borings, and constructing and developing the monitoring wells at the Thompson WF property.
- WCW&SD to provide a professional surveyor to survey the monitoring well northings and eastings, ground surface elevation and top-of-casing elevations (and Little Miami River gauge stilling wells) at no cost to Terran Corp.
- WCW&SD to obtain permission to access and drill neighboring properties as shown in Figure 1 at no cost to Terran Corp.
- Up to five field days for site preparation services during standard business work day (Monday to Friday, 8:00 a.m. to 5:00 p.m.).
- Up to seven field days for drilling and well construction services during standard business work day (Monday to Friday, 8:00 a.m. to 5:00 p.m.).
- Drilling and sampling of up to seven soil borings using rotosonic drilling method to bedrock or 100 feet each, whichever is encountered first at the M-J property.
- Drilling and sampling of up to two soil borings using rotosonic drilling method to bedrock or 100 feet each, whichever is encountered first at the Thompson WF property.
- Installing up to four, 75-ft. deep, 2-inch schedule 40 PVC monitoring wells with 20-foot long screens and 20 slot openings at the M-J property. Natural formation collapse will serve as the screen filter pack and standard well construction format (bentonite seal and bentonite grout) to finish out each well. Stand pipe outer protective covers with concrete bases to be constructed.
- Installing up to two, 75-ft. deep, 2-inch schedule 40 PVC monitoring wells with 20-foot long screens and 20 slot openings at the Thompson WF property. Well construction as described above.
- Analysis of up to fifteen aquifer soil samples from the M-J property and five samples from the Thompson WF property for the D422 grain-size particle testing method by an off-site geotechnical laboratory on standard turn around schedule.
- Provision of potable water by a local water source for sonic drilling purposes at no cost to Terran Corporation.

- Development, step-drawdown testing and sampling of TW-2 is included on the high side of the proposal estimate range of costs.
- Two round trips to the site to install and remove the pressure transducers/data loggers.
- Installation of pressure transducer/data loggers into two to four monitoring wells and the Little Miami River for water level measurements for a period of one month duration.
- Collection and analysis of two water samples (M-J Property and Thompson WF Property) for the Ohio New Well parameters (less radiological and bacterial tests, Table 1). A third sample is included for TW-2 on the proposal high side of estimated costs.
- Preparation and provision of one technical report as an electronic document. Hard copies of the report provided upon request.

Provision of additional services outside of the scope of work will be conducted on a time and material basis upon written permission to proceed from WCW&SD.

****

Mr. Brausch, thank you for this opportunity to propose Terran's technical services to assist Warren County in this well field development project. If you have any questions regarding the contents of this proposal, please feel free to contact us at (937) 320-3601.

Sincerely,

Kelly C. Smith, CPG
Sr. Hydrogeologist

Brent E. Huntsman, CPG
President

Figure 2. Colorized depth to bedrock surface map of the M-J property.

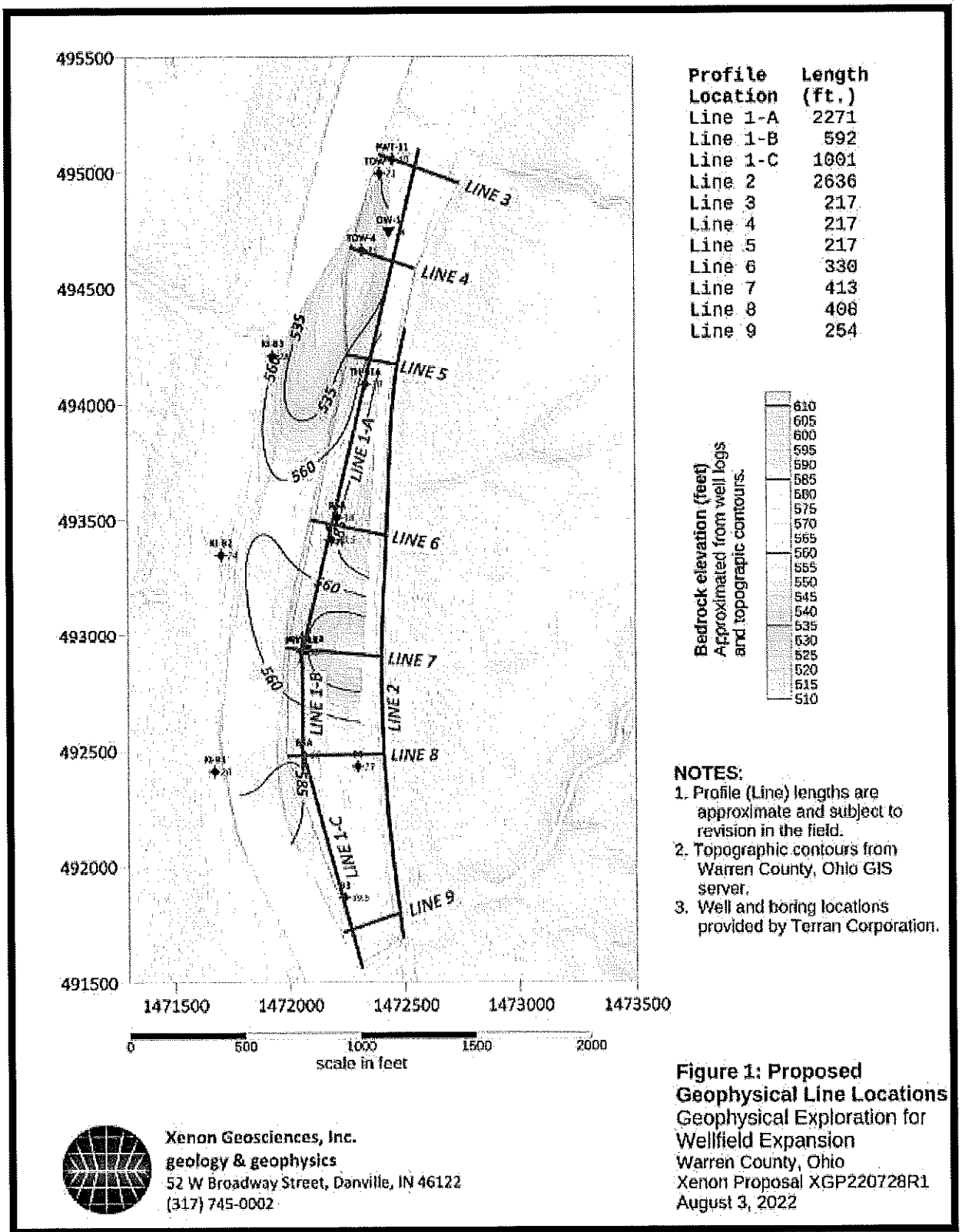

Figure 3. Proposed geophysical survey transect lines across the Thompson WF property.

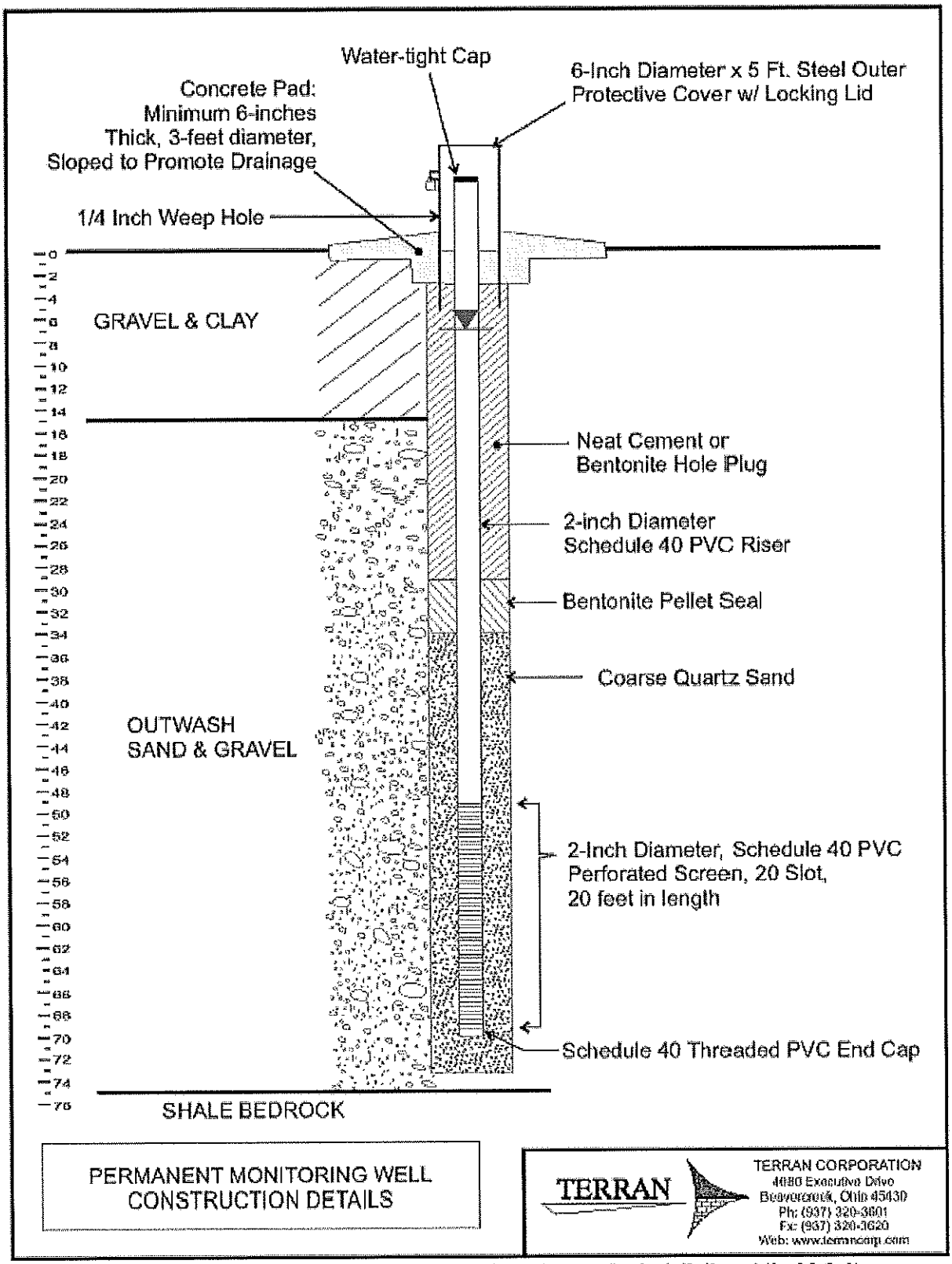

Figure 4. Example monitoring well construction diagram for installation at the M-J site.

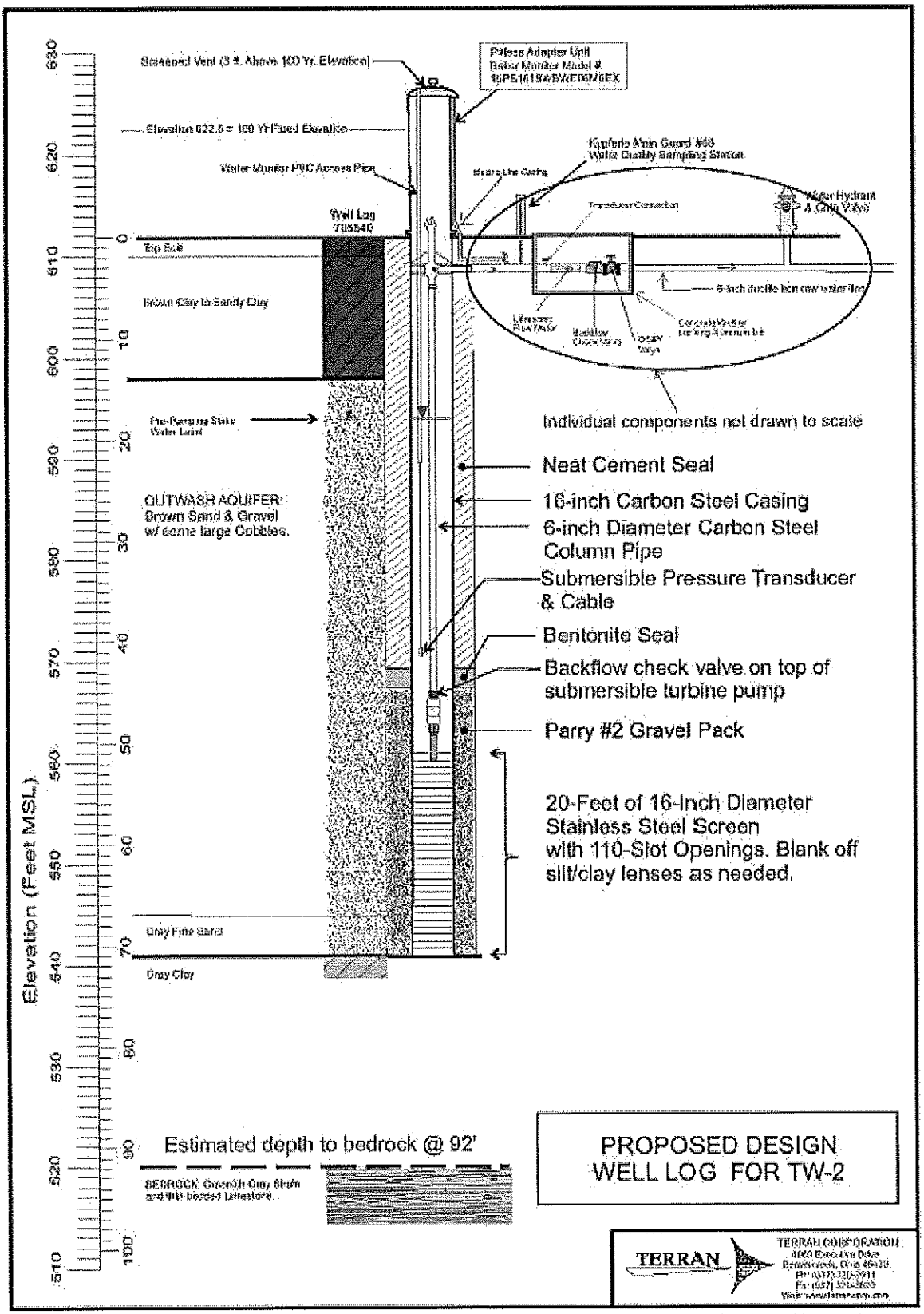

Figure 5. Proposed design of TW-2 for service as production well at the M-J Property.

Table 1. Ohio EPA Required Parameters for Analysis of Public Water Supply Wells

PARAMETER	*MCL/STANDARD*
Inorganic Constituents:	
Alkalinity Total, as $CaCo_3$	No Standard
Antimony Total, Sb	0.006 mg/L
Arsenic Total, As	0.05 mg/L
Barium Total, Ba	2 mg/L
Beryllium Total, Be	0.004 mg/L
Cadmium Total, Cd	0.005 mg/L
Calcium Total, Ca	No Standard
Chloride, Cl	250 mg/L (SMCL)
Chromium Total, Cr	0.1 mg/L
Copper Total, Cu	1.3 mg/L
Cyanide, CN^-	0.2 mg/L
Fluoride Total, F	4.0 mg/L
Iron Total, Fe	0.3 mg/L (SMCL)
Lead Total, Pb	0.015 mg/L
Magnesium Total, Mg	No Standard
Manganese Total, Mn	0.05 mg/L (SMCL)
Mercury Total, Hg	0.002 mg/L
Nickel Total, Ni	0.1 mg/L
Nitrate-Nitrite, N	10 mg/L
pH, Lab S.U.	7.0 – 10.5 (SMCL)
Residue, Total Filt (Total Dissolved Solids)	500 mg/L (SMCL)
Selenium Total, Se	0.05 mg/L
Silver Total, Ag	0.1 mg/L (SMCL)
Sodium Total, Na	No Standard
Sulfate, SO_4	250 mg/L (SMCL)
Thallium Total, Tl	0.002 mg/L
Volatile Organic Compounds:	
Benzene	0.005 mg/L
Carbon Tetrachloride	0.005 mg/L
o-Dichlorobenzene	0.6 mg/L
p-Dichlorobenzene	0.075 mg/L
1,2-Dichloroethane	0.005 mg/L
1,1-Dichloroethylene	0.007 mg/L
cis-1,2-Dichloroethylene	0.07 mg/L
trans-1,2-Dichloroethylene	0.1 mg/L
Dichloromethane	0.005 mg/L
1,2-Dichloropropane	0.005 mg/L
Ethylbenzene	0.7 mg/L
Monochlorobenzene	0.1 mg/L
Styrene	0.1 mg/L
Tetrachloroethylene	0.005 mg/L
Toluene	1.0 mg/L
1,2,4-Trichlorobenzene	0.07 mg/L
1,1,1-Trichloroethane	0.2 mg/L
1,1,2-Trichloroethane	0.005 mg/L
Trichloroethene	0.005 mg/L
Vinyl Chloride	0.002 mg/L
Xylenes (total)	10 mg/L
Synthetic Organic Compounds:	
Atrazine	0.003 mg/L
Alachlor	0.002 mg/L
Simazine	0.004 mg/L
Radiological (Gross Alpha, Beta, Radium226/288	Not Sampled*
Bacteria Standards (Coliform Bacteria)	Not Sampled*

* Not sampled for the preliminary evaluation but will be required for final approval of new production well(s)

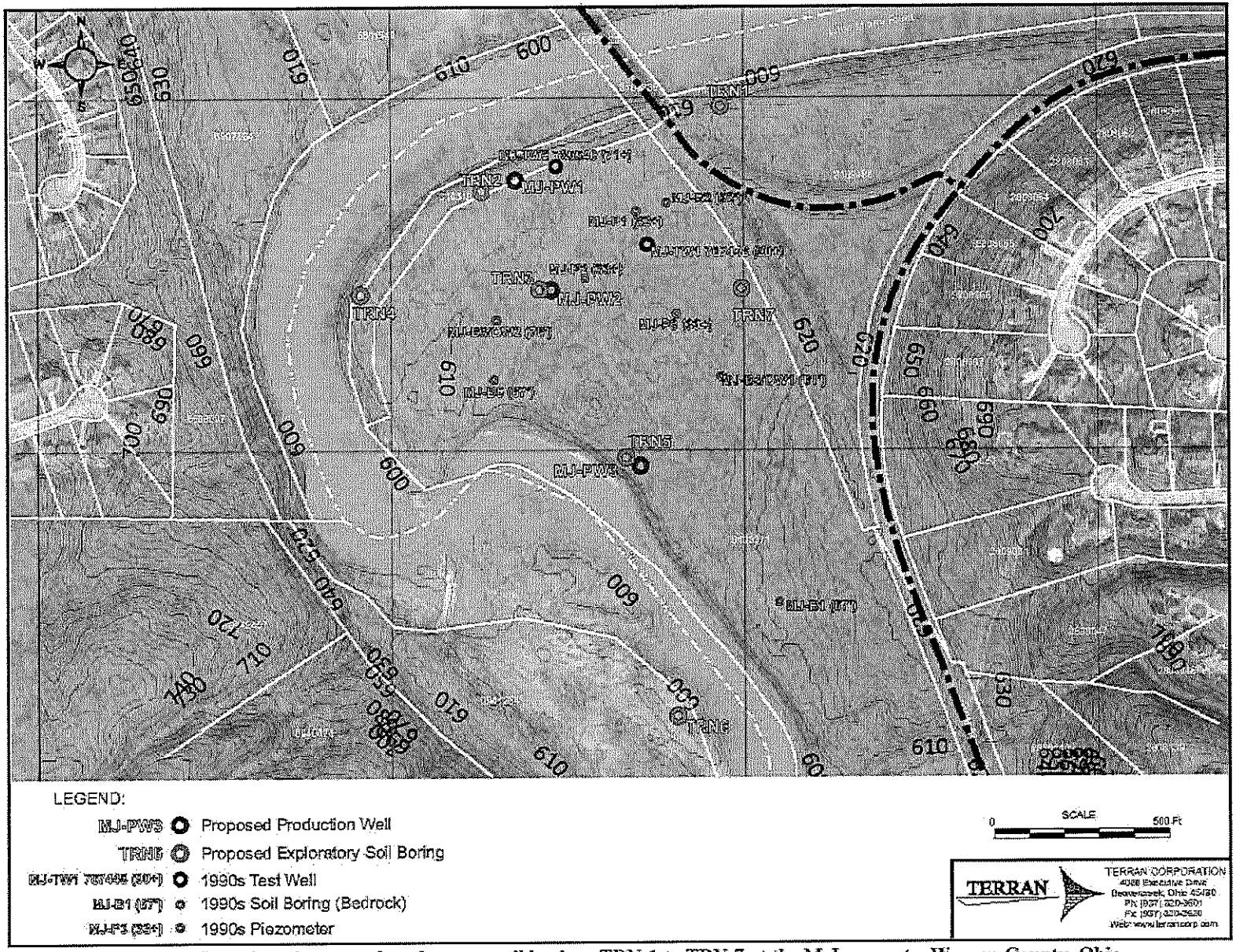

Figure 1. Location of proposed exploratory soil borings TRN-1 to TRN-7 at the M-J property, Warren County, Ohio.

REQUEST FOR AUTHORIZATION TO ATTEND ASSOCIATION MEETING, CONVENTION OR TRAINING SEMINAR/SESSION

This form is to be completed by Department Head/Elected Official requesting authorization to attend an Association Meeting or Convention or Training Seminar/Session sponsored by an Association as required by O.R.C. Section 325.20. Additionally, authorization is required for any training seminar/session held more than 250 miles from county campus;

*NAME OF ATTENDEE: Mark Dawson DEPARTMENT: WCEO/HWY DEPT

*POSITION: Deputy of Operations DATE: 9/27/22

REQUEST FOR AUTHORIZATION FOR THE ABOVE-NAMED EMPLOYEE/ELECTED OFFICIAL TO ATTEND THE FOLLOWING:

ASSOCIATION MEETING ✓ CONVENTION ASSOCIATION SPONSORED TRAINING SEMINAR/SESSION

TRAINING MORE THAN 250 MILES

PURPOSE: Superintendents & Mechanics Conference

LOCATION: Cherry Valley Hotel 2299 Cherry Valley Road SE Newark, Ohio 43055

DATE(S): October 12-13, 2022

TYPE OF TRAVEL: (Check one)

AIRLINE STAFF CAR ✓ PRIVATE VEHICLE OTHER

LODGING: Cherry Valley Hotel

ESTIMATED COST OF TRIP: $1,854.00

I CERTIFY THAT DIRECTION HAS BEEN GIVEN TO ALL EMPLOYEES ATTENDING THIS FUNCTION, THAT IT IS EXPECTED OF THEM TO ATTEND APPLICABLE SESSIONS.

DEPARTMENT HEAD/ELECTED OFFICIAL REQUESTING AUTHORIZATION:

Neil F. Turnison 9/27/2022

Signature/Title Date

BOARD OF COMMISSIONERS' APPROVAL:

Commissioner Date

Commissioner Date

Commissioner Date

*If additional employees will be attending the Association Meeting, Convention or Training Seminar/Session please list names and positions here:

Alex Foltz, Dennis New, Kevin Stouder, Jim Arrington, Brent Wells

REQUEST FOR AUTHORIZATION TO ATTEND ASSOCIATION MEETING, CONVENTION OR TRAINING SEMINAR/SESSION

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*NAME OF ATTENDEE: DAVID SHIVERDECKER DEPARTMENT: TELECOM

*POSITION: Data Systems Analyst 1 DATE: 9/20/22

REQUEST FOR AUTHORIZATION FOR THE ABOVE-NAMED EMPLOYEE/ELECTED OFFICIAL TO ATTEND THE FOLLOWING:

ASSOCIATION MEETING CONVENTION ASSOCIATION SPONSORED TRAINING SEMINAR/SESSION ✓

TRAINING MORE THAN 250 MILES

PURPOSE: Ohio GIS Conference, URISA Workshop Part 1 & 2

LOCATION: Columbus, Ohio

DATE(S): 9/20/22 - 9/22/22

TYPE OF TRAVEL: (Check one)

AIRLINE STAFF CAR ✓ PRIVATE VEHICLE OTHER

LODGING: None

ESTIMATED COST OF TRIP: $349.99

I CERTIFY THAT DIRECTION HAS BEEN GIVEN TO ALL EMPLOYEES ATTENDING THIS FUNCTION, THAT IT IS EXPECTED OF THEM TO ATTEND APPLICABLE SESSIONS.

DEPARTMENT HEAD/ELECTED OFFICIAL REQUESTING AUTHORIZATION:

Signature/Title Date

BOARD OF COMMISSIONERS' APPROVAL:

Commissioner Date

Commissioner Date

Commissioner Date

*If additional employees will be attending the Association Meeting, Convention or Training Seminar/Session please list names and positions here:

REQUEST FOR AUTHORIZATION TO ATTEND ASSOCIATION MEETING, CONVENTION OR TRAINING SEMINAR/SESSION

This form is to be completed by Department Head/Elected Official requesting authorization to attend an Association Meeting or Convention or Training Seminar/Session sponsored by an Association as required by O.R.C. Section 325.20. Additionally, authorization is required for any training seminar/session held more than 250 miles from county campus;

*NAME OF ATTENDEE: TAMMY WHITAKER DEPARTMENT: OMB

*POSITION: BENEFITS MANAGER DATE: 9/27/22

REQUEST FOR AUTHORIZATION FOR THE ABOVE-NAMED EMPLOYEE/ELECTED OFFICIAL TO ATTEND THE FOLLOWING:

ASSOCIATION MEETING ✔ CONVENTION ASSOCIATION SPONSORED TRAINING SEMINAR/SESSION

TRAINING MORE THAN 250 MILES

PURPOSE: NETWORKING AND FUNDRAISING EVENT. TAMMY IS ON THE BOARD AND ~~NEEDS TO ATTEND.~~ This includes a Business Meeting

LOCATION: WETHERINGTON COUNTRY CLUB, WEST CHESTER OH

DATE(S): 10/7/22

TYPE OF TRAVEL: (Check one)

AIRLINE STAFF CAR PRIVATE VEHICLE ✔ OTHER

LODGING:

ESTIMATED COST OF TRIP: $165 REGISTRATION FEE

I CERTIFY THAT DIRECTION HAS BEEN GIVEN TO ALL EMPLOYEES ATTENDING THIS FUNCTION, THAT IT IS EXPECTED OF THEM TO ATTEND APPLICABLE SESSIONS.

DEPARTMENT HEAD/ELECTED OFFICIAL REQUESTING AUTHORIZATION:

Signature/Title Date

BOARD OF COMMISSIONERS' APPROVAL:

Commissioner Date

Commissioner Date

Commissioner Date

*If additional employees will be attending the Association Meeting, Convention or Training Seminar/Session please list names and positions here:

REQUEST FOR AUTHORIZATION TO ATTEND ASSOCIATION MEETING, CONVENTION OR TRAINING SEMINAR/SESSION

This form is to be completed by Department Head/Elected Official requesting authorization to attend an Association Meeting or Convention or Training Seminar/Session sponsored by an Association as required by O.R.C. Section 325.20. Additionally, authorization is required for any training seminar/session held more than 250 miles from county campus;

*NAME OF ATTENDEE: Lesli Holt DEPARTMENT: EMA

*POSITION: Ops Mgr DATE: 9/22/22

REQUEST FOR AUTHORIZATION FOR THE ABOVE-NAMED EMPLOYEE/ELECTED OFFICIAL TO ATTEND THE FOLLOWING:

ASSOCIATION MEETING ✔ CONVENTION ✔ ASSOCIATION SPONSORED TRAINING SEMINAR/SESSION

TRAINING MORE THAN 250 MILES

PURPOSE: Requesting to attend the Emergency Management Association of Ohio's (EMAO) ~~Winter~~ Conference

LOCATION: Salt Fork Lodge and Conference Center (14755 Cadiz Rd, Lore City, Ohio 43755)

DATE(S): December 7-9, 2022

TYPE OF TRAVEL: (Check one)

AIRLINE STAFF CAR ✔ PRIVATE VEHICLE OTHER

LODGING: Salt Fork Lodge

ESTIMATED COST OF TRIP: $1,000 for two attendees (See attached cost explanation sheet)

I CERTIFY THAT DIRECTION HAS BEEN GIVEN TO ALL EMPLOYEES ATTENDING THIS FUNCTION, THAT IT IS EXPECTED OF THEM TO ATTEND APPLICABLE SESSIONS.

DEPARTMENT HEAD/ELECTED OFFICIAL REQUESTING AUTHORIZATION:

Melissa Barr 9/26/2022

Signature/Title Date

BOARD OF COMMISSIONERS' APPROVAL:

Commissioner Date

Commissioner Date

Commissioner Date

*If additional employees will be attending the Association Meeting, Convention or Training Seminar/Session please list names and positions here:
Sydney Renner