



# Professional Services for Project 18-28 Water Service Database Modifications



November 1, 2018

Byron Kutz, Assistant Village Engineer  
Village of Oak Park  
201 South Boulevard  
Oak Park, IL 60302

**Re: Request for Proposals (RFP) - Project 18-28  
Water Service Database Modifications**

Dear Mr. Kutz -

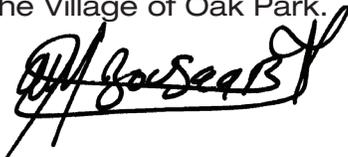
TERRA Engineering, Ltd. (TERRA) is pleased to submit this response to the RFP to provide assistance for water service database modifications. As we highlighted within this proposal, TERRA has more than 25 years of GIS experience working with both public- and private-sector clients. Our team has remained at the forefront of emerging GIS technology through workshops and training.

Project Manager Selena Hilton-Aragon will lead TERRA's team and provide unmatched services for the Village of Oak Park. She is a GIS specialist with more than six years of experience in location management and analysis. Selena's possesses specialized skills in data analysis, project management, internal and external partner communication, establishing and maintaining timelines, scheduling and attention to detail. At TERRA, she performs extensive data entry into Geographic Information System which she analyses for anomalies and accuracy. She has a degree in the utilization of ArcGIS and has nearly a decade of experience working within the software's platforms. Her contact information is as follows:

Selena Hilton-Aragon  
Project Manager / GIS Specialist  
shiltonaragon@terraengineering.com  
312.467.0123

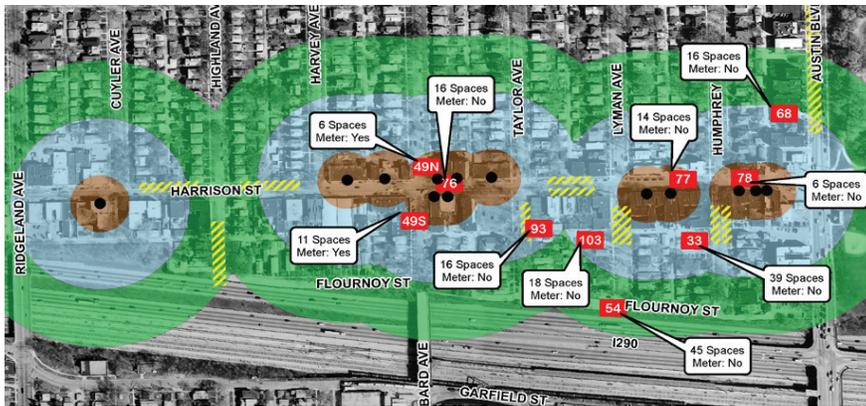
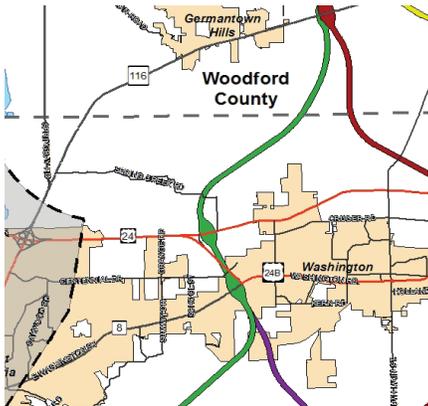
Within this proposal, we have provided description of TERRA's GIS capabilities, strengths and experience pertinent to this project. We have providing a complete understanding of this assignment, outlined our approach, highlighted our team and their specific responsibilities and prior experience. We have listed our firm's project experience, complete with contact information, that most closely compares to the needs of the Village of Oak Park. We commit that the personnel identified within this proposal with remain available throughout the duration of this project. TERRA confirms that we have thoroughly reviewed the RFP and have no objections. In addition, you will find a detailed cost proposal and associated rates attached.

Thank you for your time and consideration, and we are eager to demonstrate our experience for the Village of Oak Park.



Jamil Bou-Saab, PE  
Executive Vice President  
312.467.0123 / jbousaab@terraengineering.com

# 1. FIRM OVERVIEW



## ABOUT TERRA

Combining knowledge of GIS with real-world field experience, TERRA's GIS team provides unique insight into how geospatial data can be leveraged to make work environments more productive and information accessible and usable. The GIS staff at TERRA has a broad background in GIS, data and asset management, and utilities for both the public and the private sectors.

To ensure quality service in this rapidly evolving field, TERRA's staff stays current with emerging GIS technology through workshops and training. We are eager to share our knowledge with clients through discussions about specific project needs. The GIS department at TERRA offers the following services:

### Public Works

- Conversion of paper or CAD files to vector data for GIS
- Mapping and attribution of streets and sewer and water utilities
- Modeling and analysis for assessment of current infrastructure and future demands

### Traffic Analysis

- Speed delay studies using mobile GIS and GPS (see ISTHA Speed Delay)
- Route determination for detours (see sample)
- Database maintenance for historical ADTs
- Graphic displays of traffic analyses
- Parking space utilization

### Emergency Response

- Public safety
- Location studies for facility placement
- Routing and response analysis

### Land Use Planning/Economic Development

- Mapping of current developments and land use
- Corridor studies for new-terrain thruways
- Analysis of census data for demographic studies
- Facility placement based on needs analysis
- Data management/Asset Management

### Build Data Models

- Catalog, update and maintain current datasets
- Creation of new datasets

## MANAGEMENT TEAM

**KAREN STEINGRABER, PE**  
President

**JAMIL BOU-SAAB, PE**  
Executive Vice President

**GEORGE GHAREEB, PE**  
Vice President

**ERIC THERKILDSEN, PE**  
Associate Vice President

## CHICAGO OFFICE

**SELENA HILTON-ARAGON**  
GIS Analyst

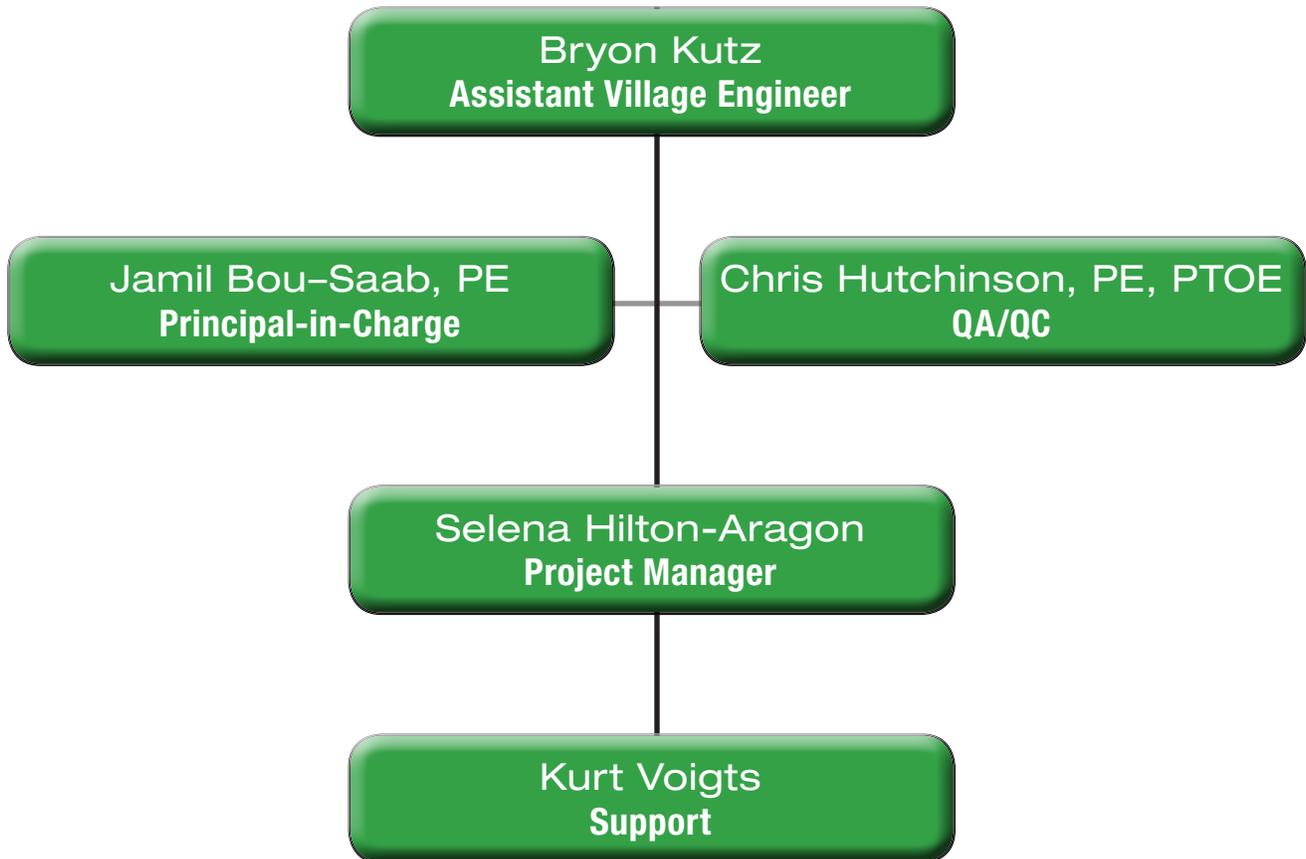
P: 312.467.0123  
E: shiltonaragon@terraengineering.com

## SERVICE SECTORS

- Geographic Information Systems
- Land Use Planning
- Traffic Engineering/Studies
- Site Development
- Municipal Engineering
- Landscape Architecture
- Structural Engineering
- Bridge Inspections
- Surveying
- Land Acquisition
- Construction Engineering
- Transportation Engineering



## Organizational Chart



## SELENA HILTON-ARAGON

Project Manager



Selena is a GIS Specialist with over 6 years of experience in location management and analysis. Selena has specialized skills in data analysis, project management, internal and external partner communication, establishing and maintaining timelines, scheduling, and attention to detail. At TERRA, she performs extensive data entry into Geographic Information System which she analyses for anomalies and accuracy. She has a degree in the utilization of ArcGIS and has almost a decade of experience working within the software's platforms.

**PAGE COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES\*** / Luray, Virginia / Research Assistant / Selena integrated groundwater record data into MS Access. She created a community education program on importance of ground and storm water flow into rivers and streams. Her work also included assisting with drafting and editing grant proposals managed fundraising for community-wide trash clean up competition.

**UNIVERSITY OF VIRGINIA FACILITIES MANAGEMENT\*** / Charlottesville, Virginia / GIS Analyst / Selena verified accuracy of water meter and pipe locations through GIS analysis and updated GIS maps as necessary. She also maintained water modeling data for project conducted by an outside contractor. Her work was with the head of Facilities Management to ensure infrastructure data matched existing GIS database and corrected any discrepancies.

**POINT INSIDE\*** / Bellevue, Washington / Data Content Supervisor / Selena produced geospecific original content using proprietary in-house GIS software, Adobe Illustrator and Photoshop, and Microsoft Excel. She researched and reported client data using multiple data sources. She developed processes and standards for new projects and partners responsible for managing projects for multiple partners simultaneously, including supervision of fledgling search and recommender team. Selena curated training procedure for new employees, including creation of step-by-step instructions for new clients as well as established and maintained partner standards for redesign of existing projects. She coordinated the timely release of new and updated products with various department heads while also creating and analyzing reports of key performance indicators for those projects. Selena collaborated with clients and stakeholders to ensure delivery of quality products, which included responding to and resolving issues reported through customer feedback. This type of customer service motivated her to create reports based on client and consumer data to improve user experience. One of her favorite side tasks was to generate mock-ups and samples of potential features to present to partners.

**RENEWABLE ENERGY CONSULTING SERVICES\*** / Charlottesville, Virginia / Assistant to Department Head / Selena researched impact of projected population growth on existing city infrastructure and held meetings with local government officials in order to collect data and generate reports of plans for infrastructure expansion. She was a contributing author of Cost-Benefit Analysis submitted to Advocates for a Sustainable Albemarle Population.

**RIYADH TRAFFIC MONITORING & ANALYSIS** / Riyadh, Saudi Arabia / GIS Analyst / Selena regularly contributes to the development and maintenance of a web application for client access to traffic data in Riyadh, Saudi Arabia. This project uses ArcGIS Online to host the web application site where users have secure access to traffic data and turning movements for various locations in Riyadh. Each location is carefully curated to meet a set of standards that are constantly evolving.

**DOBBIN INTERNATIONAL\*** / Charlottesville, Virginia / GIS Consultant / Selena performed data integration from static paper and PDF formatted maps of Ghana into a dynamic electronic format in a geographic information system. She researched and mapped the location of endangered species habitats, vegetation, and elevation, natural resources, and human populations. Her analysis set to determine the best route for railroad tracks for exporting iron from the ores to other nations.

### EDUCATION

Master of Urban & Environmental Planning, University of Virginia – Charlottesville, VA, 2012

Bachelor of Science in Geographic Information Systems, James Madison University, Harrisonburg, VA, 2009

### PROFESSIONAL EXPERIENCE

1 year with TERRA

6 years prior to TERRA

## JAMIL BOU-SAAB, PE

Principal-in-Charge



Mr. Bou-Saab offers more than 30 years of professional experience as project engineer, project manager, and as business owner. He has provided leadership in the design and management of infrastructure for municipal capital improvements, highway and traffic improvements and site development projects. As Principal-in-Charge, Mr. Bou-Saab has overseen the development of massive infrastructure projects, streetscape improvements, bicycle and pedestrian paths, riverfront sites, and parks.

**LAKE STREET / Oak Park, Illinois / Principal-in-Charge /** This resurfacing project comprised the preparation of documents for Phase I, II and III and included streetscape, sewer and water main installation, curb and gutter/sidewalk replacement, street lighting/traffic signal installation and street signage and striping.

**VILLAGE OF MATTESON / Matteson, Illinois /** Principal engineer of major water and sewer extensions to service approximately three square miles; 2.5 miles of water and sewer lines; construction administration and observation.

**VILLAGE OF OAK PARK / Oak Park, Illinois /** Village engineer from 1994 to present; design and construction administration for all capital improvements for the village, including resurfacing of streets, new water and sewer lines, new sidewalks, parking lots, intersection design, cul-de-sac development, street lighting, traffic signals and renovation/remodeling of existing pump station.

**DYNASTY GRENSHAW WATERMAIN / Chicago, Illinois / Principal-in-Charge /** New watermain construction is being designed for Grenshaw Street in Chicago. TERRA provided detailed topographic surveys for the street with utility information.

**CENTRAL RESERVOIR OVERFLOW STRUCTURE / Oak Park, Illinois / Principal-in-Charge /** Located beneath Stevenson Park in Oak Park lies a five-million gallon potable water supply that holds water piped from Lake Michigan for use by the village's residents. The project involved Concept and Final engineering for the redesign of the reservoir's over-flow structure to comply with current IEPA Drinking Water Regulations. The project included the removal of an existing six vehicle storage garage and a revised utility layout that will support the future development of the adjacent site.

**3.0-MILLION GALLON (MG) AT GRADE WATER TANK / Matteson, Illinois / Principal-in-Charge /** The project included the preparation of construction documents for a new 3.0-MG at grade water tank for the Village of Matteson. The new water tank was added based on the analysis of the existing water distribution system prepared by TERRA. Construction documents included site geometric layout, structural grading, underground utilities, and tank details.

**BENITO JUAREZ COMMUNITY ACADEMY ADDITION AND SOCCER FIELD / Chicago, Illinois / Principal-in-Charge /** TERRA provided the site work, storm water detention, and landscape design for the building addition, classroom link, plaza, and athletic fields at Juarez Community Academy. Storm water detention BMPs were utilized to design a project that boasts zero storm water discharge to the city sewer system above and beyond the required 100-year rain event. Because of this and other innovative design techniques utilized, the project received ASCE's 2012 Sustainability in Civil Engineering Award.

**2023 INFRASTRUCTURE PROGRAM PHASE I / Kenilworth, Illinois / Principal-in-Charge /** Project includes roadway reconstruction with permeable pavement, storm sewer installation, water main replacement, combined sewer repairs and lining, curb and gutter, porous parkway areas, underdrains, street light pole replacement, erosion and sediment control, parkway restoration, and sidewalk installation.

### EDUCATION

Master of Science in Construction Management, Marquette University, Milwaukee, WI, 1986

Bachelor of Science in Civil Engineering, Marquette University, Milwaukee, WI, 1984

### LICENSES / CERTIFICATES

IL Professional Engineer, 1992 – 062.047537

WI Professional Engineer, 1992 - 28425-6

### PROFESSIONAL EXPERIENCE

25 years with TERRA  
6 years prior to TERRA

### PROFESSIONAL AFFILIATIONS

Facilities Committee of the Board of Education, District 97, Village of Oak Park, Chairman  
Technology Subcommittee of IDOT/American Council of Engineering Companies, Region 1, Chairman  
The Science Advisory Committee, Carthage College, Wisconsin, Member  
Peoria Sustainability Commission, Member  
American Public Works Association, Member  
American Society of Civil Engineers, Member  
Innovative Conference on Asphalt and Transportation, Committee Member  
Citizen Council of Oak Park River Forest High School, Member  
Children's Hospital of University of Illinois – Chicago, Board Member

## CHRIS HUTCHINSON, PE, PTOE

QA/QC



### EDUCATION

Bachelor of Science in Civil Engineering, Washington University, St. Louis, MO, 1996

### LICENSES / CERTIFICATES

Professional Engineer, IL, 2007  
# 062.059625  
Professional Engineer, MO, 2003  
# 2003001046  
Professional Engineer, KS, 2007  
# 19460  
Professional Engineer, FL 2017  
# 82511  
Professional Engineer, WI 2017  
# 45727-6  
Professional Traffic Operations Engineer (PTOE), 2005, # 1797

### PROFESSIONAL EXPERIENCE

7 years with TERRA  
12 years prior to TERRA

### PROFESSIONAL AFFILIATIONS

Engineers Club of St. Louis,  
Board of Directors 2008-2010  
Board of Directors 2013-2015

Institute of Transportation Engineers  
Transportation Engineering Association of Metropolitan St. Louis

### SPEAKING ENGAGEMENTS

North American Travel Monitoring Exposition and Conference (NATMEC):  
2016 – “Traffic Data Collection Program in the Middle East”  
2016 – “Collecting Vehicle and Pedestrian Data at a Large Event”  
2014 – “Utilizing Video Data for Improved Traffic Analysis”  
Miovision Client Case Study –  
2013 - “Multi-Modal Traffic Data

Mr. Hutchinson has acquired more than 19 years of experience in providing civil and traffic engineering services for a variety of projects and clients. As a Professional Traffic Operations Engineer, Chris has certification in the specialized application of traffic operations engineering. His experience includes serving as the traffic engineer on numerous roadway from small individual sites through large scale and complex neighborhoods and corridors for both public and private clients. His design duties have included the traffic modeling and analysis, traffic signal design, and development of plans and specifications for major roadway projects.

**RIYADH TRAFFIC MONITORING & ANALYSIS PROGRAM / Riyadh, Saudi Arabia / Traffic Engineer /** Chris is the project manager for this project which will include 700 locations of ADT Lane counts, 500 locations of video turning movement counts, and 250 sites of speed and classification studies using Radar Traffic Microwave Sensors (RTMS). In addition, TERRA will be designing and implementing 44 permanent traffic data collection stations which will provide real time data to the City’s Traffic Management Center. TERRA will also be responsible for integrating the collected data as well as previously collected existing data into the City’s GIS database. TERRA will also provide resident engineer services for the City to analyze the collected data, provide traffic modeling, suggesting mitigation measures and author reports to the City throughout the project.

**PORT OF EAST ST. LOUIS / East St. Louis, Illinois / Traffic Engineer /** TERRA is the design engineer for the City of East St. Louis project to to develop an inland river port facility as a major intra-modal distribution hub in the geographic center of the United States. Chris performed the data collection, traffic impact study, and alternatives analysis for evaluating multiple access points in the interim and future conditions. To meet the requirements of the Illinois Department of Transportation, TERRA was required to provide engineering solutions for entrances along both the existing Illinois Route 3 and a future Route 3. Chris analyzed the multiple access point locations and made recommendations based on numerous factors including traffic flow, economic development impact, accessibility, utility conflicts and other factors. Chris was also responsible for the traffic signal and other engineering design on the projects as well as attending all meetings with the City.

**CAP THE IKE / Oak Park, Illinois / Traffic Engineer /** Leading the effort to conduct analyses of the traffic simulation and travel demand models of existing conditions and create the complex traffic simulations for this project. Services include modeling a roundabout using VISSIM traffic simulation software, creating traffic simulation models for multiple different scenarios, including a no-build alternative to determine future peak hours and ADT using VISSIM and other traffic-modeling software packages.

**2017 WORLD ROWING CHAMPIONSHIPS / Sarasota/Bradenton, Florida / Traffic Engineer /** TERRA Engineering was asked to prepare a traffic management plan for this 10-day sporting event to be held in the United States for the first time since 1994. Chris was responsible for authoring a traffic management plan. The plan included vehicle trip estimating, traffic flow analysis, route planning, emergency management plans, hurricane evacuation plans, incident management plans, traffic control measures, variable message sign plans, parking lot planning and evaluations, transit availability analysis, evaluation of participant shuttle plans, bicycle plan and pedestrian route planning.

**CLARENDON HILLS DOWNTOWN TRAFFIC STUDY / Clarendon Hills, Illinois / Traffic Engineer /** TERRA performed a traffic study comprised of nine intersection counts and a two-day parking study of 524 parking spaces throughout downtown Clarendon Hills. With this data, Chris recommended improvements to the Prospect Avenue railroad crossing and nearby intersections to improve vehicular flow and enhance pedestrian and cyclist safety. TERRA also recommended changes to the parking areas to make more efficient use of the available spaces to better meet the needs of the Village.

## KURT VOIGTS

Support



Kurt has a wide range of skill sets ranging from land surveying, resident engineering, computer programming, CAD Design and IT management, in his 30 years of experience. He has worked developed several CAD standards for multiple civil engineering companies. In addition, his work has been published on NASA's APOD website.

**BERWYN DEPOT DISTRICT STREETScape** / Berwyn, Illinois / CAD Designer / TERRA Engineering is to provide consulting services in redesigning Berwyn's Water and Sewer system and incorporate an integral streetscape. As a CAD Designer, he helped create plan set for approximately 14000' of water main and 5000' sewer design, as well as developed alignments, profiles and in-street lighting plans and details.

**NORTH AVENUE DAM REMOVAL\*** / Aurora, Illinois / CAD Designer / The North Avenue Dam residing on the Fox River was to be removed to enhance the water quality south of the downtown area of Aurora. Kurt developed the plan set to mitigate erosion control, temporary construction access, typical sections and assisted the engineers in developing the hydraulic modeling for multiple agency permitting.

**BATAVIA DAM REMOVAL\*** / Batavia, Illinois / CAD Designer / Kane County Forest Preserve District wanted to improve the water quality of the river and decided to remove the Batavia dam. The removal design needed to keep several objectives in mind; contain all the sediment upstream while deconstruction was completed, and maintain the original design water elevation level for the cooling intakes for Fermi Labs Particle Accelerator. In addition the dam was constructed in three segments; an earthen dam connecting two concrete structures. Kurt worked with the engineers to model the around the dam including the sediment depths so the engineers could mitigate the risks of damaging sediment travel downstream. In addition he developed the plan set for deconstruction.

**WASCO SANITARY DISTRICT IRRIGATION FIELD\*** / Campton Hills, Illinois / CAD Designer / Wasco Sanitary District expanded the wastewater treatment to include irrigation fields. Assisted in developing plans for pumping and transmission of treated effluent to an irrigation field.

**WASTEWATER LIFT STATION\*** / Gilberts, Illinois / CAD Designer / Developed proposed plan set of a wastewater lift station in a growing community of Gilberts, included were structural, mechanical and site grading.

**HEGEWICH MARSH** / Chicago, Illinois / CAD Designer / Environmental Remediation for a brown-stone project at 122nd Street and Torrance Avenue. As a CAD Designer, he developed remediation plans using MicroStation and ArcGIS, mitigating approximately a 100-acre wetland. The design was developed to use the current wetland boundaries to support endangered species nesting area and foster safe public viewing areas using board walks and trails.

**MWRDGC RASTER CONVERSION TO AUTOCAD** / Chicago, Illinois / CAD Technician / MWRDGC contracted with TERRA to perform as-needed raster conversion to AutoCAD. When requested, MWRDGC would send Tiff files to TERRA. Once received, Kurt would coordinate the raster conversion to AutoCAD using MWRDGC CAD standards and return the AutoCAD files as quickly as 72 hours.

**BROWNSTONES OF ST. CHARLES\*** / St. Charles, Illinois / CAD Designer / Redevelopment of an old piano factory into \$700,000 Brownstone housing units. As a CAD Designer developed support documentation for permitting. Created the plan set including existing and proposed conditions, utility, grading, detail and other site plan sheets. Assisted in designing the proposed roadway profiles, cross sections and storm water systems.

### EDUCATION

GISc, Elmhurst College, Elmhurst, IL, 08/2010 – 05/2011

Bachelor of Arts in Geography, Valparaiso University, Valparaiso, IN, 8/1978 – 12/1983

### PROFESSIONAL EXPERIENCE

5 years with TERRA  
28 years prior to TERRA

### PROFESSIONAL AFFILIATIONS

Illinois GIS Association (ILGISA), Member

\*Experience prior to TERRA

# 3. RELEVANT EXPERIENCE

## VILLAGE OF OAK PARK SEWER & WATER IMPLEMENTATION

The Village of Oak Park has approximately 52,000 residents and is located immediately west of the City of Chicago encompassing 4.5 square miles.

The Village wanted to convert their existing paper atlases into a spatially digital format. Terra Engineering, Ltd acquired, converted and designed a utility database. The implementation process consisted of four phases. The initial phase consisted of scanning of drawings, and loading the scanned drawings into GIS. For the second phase, TERRA created a geometric network to allow specific connectivity and to be able to identify and locate topology errors. The third phase consisted of utilizing a GPS receiver and surveyed total station to gather visible sewer & water appurtenances. The final phase consists of editing the acquired data for production.

TERRA created a digital utility atlas map book for use by field personnel and the Engineering Department for creating plans and providing services.

**CLIENT**  
Village of Oak Park

**CLIENT CONTACT**  
Jim Budrick, PE  
1 Village Hall Plaza  
Oak Park, IL 60302

**SOFTWARE USED**  
ArcInfo 9.2  
ArcEditor 9.2

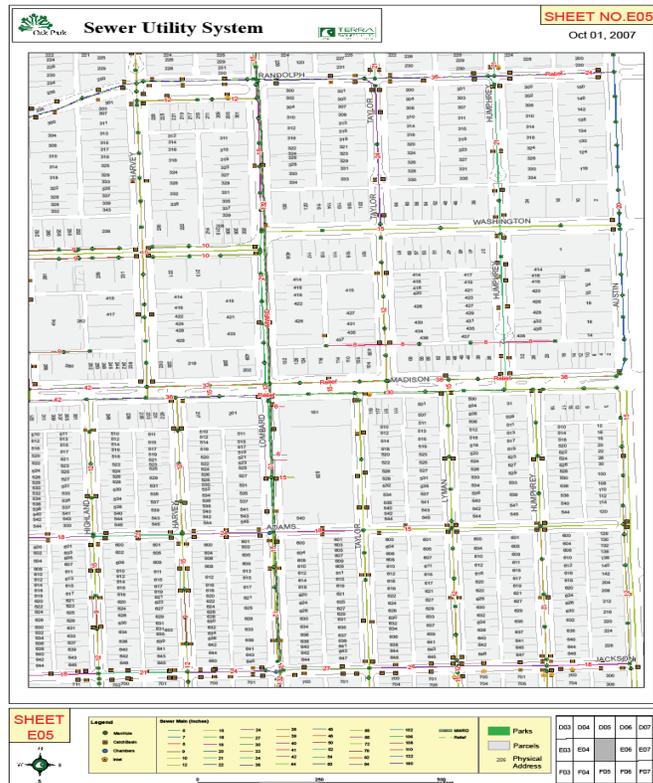
**OTHER SOFTWARE USED**  
Adobe Acrobat 8

**HARDWARE USED**  
Leica GS-20  
Leica System 500  
Leica TCRP1203

**DATE OF SERVICES**  
2003-Present

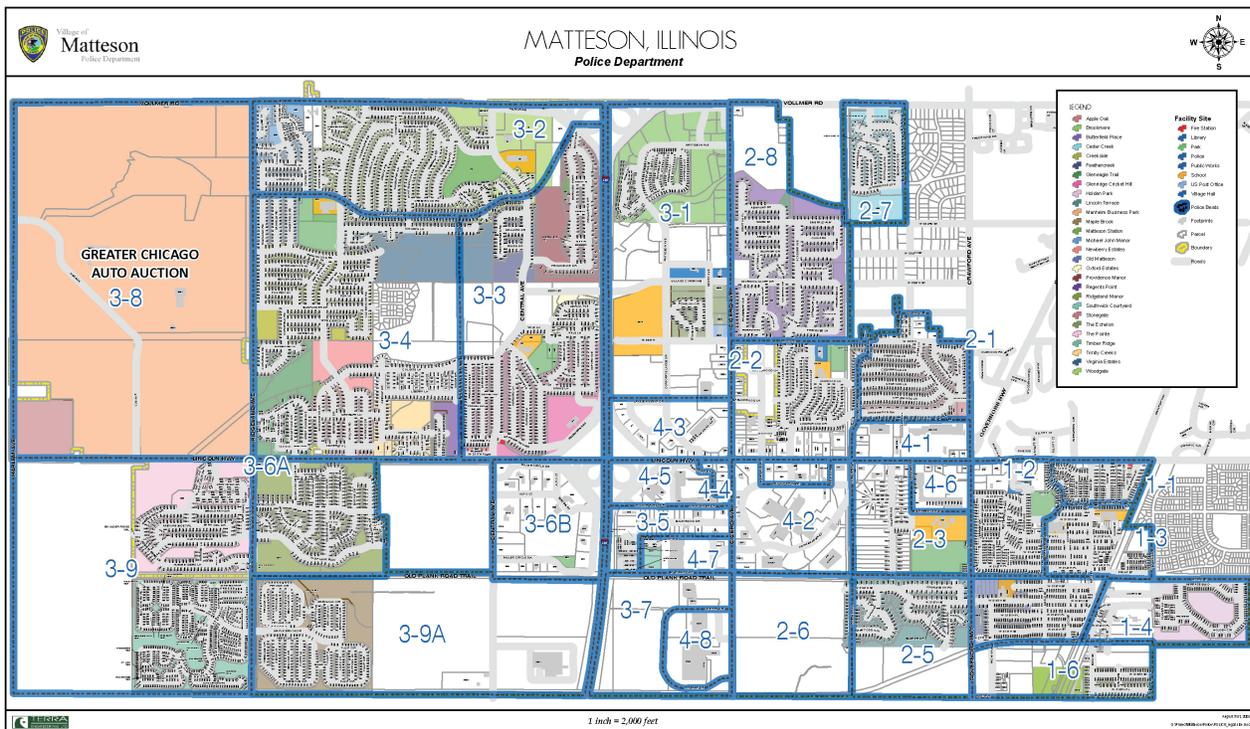
**LOCATION**  
Oak Park, IL

**KEY PERSONNEL AND ROLE**  
Jamil Bou-Saab, P.E., Principal  
Andrew Smith, GIS Analyst  
Wendy Radaz, GIS Analyst



# GIS IMPLEMENTATION AND MANAGEMENT

## Matteson, Illinois



TERRA provided general and comprehensive GIS services, for the Village of Matteson including data creation and management. Initial data was collected from County and State sources for use in the Village's GIS and was modified to reflect local changes. Services started with a series of meetings involving all departments to assess each of their needs and priorities. Each department was made aware of existing geodatasets and ongoing updates. Data sharing and interdepartmental coordination was also discussed. The outcome of this needs assessment determined the services that were to follow.

TERRA converted the Village's paper utility atlases and as-built plans into digital datasets for use in their GIS.

TERRA has provided annual updates to all of the Village's datasets as needed including:

- addresses and parcels
- streets
- zoning
- utilities
- economic development (i.e. business locations)
- community development (i.e. TIF districts, etc)
- emergency management (i.e. police beats and fire station response time)

TERRA also created and maintained three ArcIMS websites for the Village: Economic Development, Zoning and Public Works. These websites were based on the needs assessed early in the process. They are used by the three different departments within the Village as a reference guide to determine PIN numbers, identify zoning designations and locate schools, parks, shopping centers and other points of interest and to view up-to-date utility maps. Basic tools such as measure and print were also made available as needed.

CLIENT  
Village of Matteson

CONTACT  
Bart Gilliam  
Public Works Superintendent  
4900 Village Commons  
Matteson, IL 60443  
708.748.1411  
bgilliam@villageofmatteson.org

DATES  
2002 - 2010

SERVICES  
GIS

# SEWER AND WATER IMPLEMENTATION WITH GIS DEVELOPMENT & ANALYSIS

Matteson, Illinois



The Village of Matteson has approximately 16,000 residents and occupies more than 10 square miles of land. It is one of the most thriving residential, business, and retail hubs of the southern suburbs of Chicago.

The Village wanted to convert their existing paper atlases into a spatially digital format. TERRA Engineering, Ltd acquired, converted and designed a utility database. The initial phase consisted of collaborating scanned drawings and loading the scanned drawings into GIS. For the second phase, TERRA created a geometric network to allow specific connectivity and to be able to identify and locate topology errors. The final phase consists of editing the acquired data for production.

TERRA created a digital utility atlas map book and customized reports for use by field personnel and the Engineering Department for creating plans and providing services.

## SOFTWARE USED

- ArcInfo 9.2
- ArcEditor 9.2

## OTHER SOFTWARE USED

- Adobe Acrobat 8

CLIENT  
Village of Matteson

CONTACT  
Public Works  
4900 Village Commons  
Matteson, IL 60443

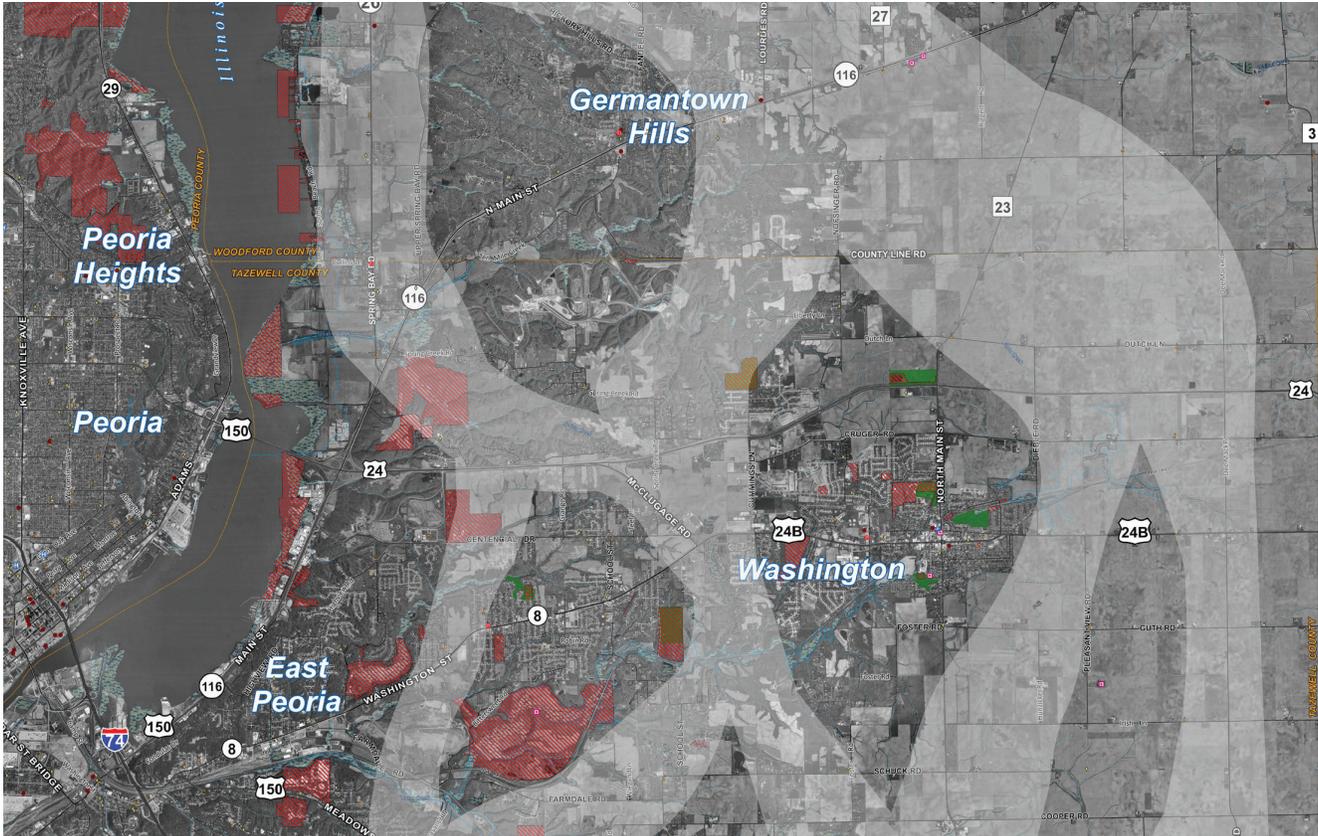
BUDGET  
N/A

DATES  
2003 - 2007

SERVICES  
Site Design

# IDOT EASTERN BYPASS STUDY

## Tazewell, Woodford, and Peoria Counties, Illinois



The Illinois Department of Transportation (IDOT) is conducting a study, anticipated to span eight years, for a new highway connecting Interstate 74 near Morton with Illinois Route 6 north of Peoria. The study is intended to determine the best possible route location, the best design concept, and identifying its impact on the area communities and the natural environment.

The goal of the Eastern Bypass project is to find one path or “corridor” out of many possible corridors that would be the best general location for the Bypass. TERRA Engineering, Ltd. was chosen to gather and convert various data sources, database design, and data maintenance. TERRA will document and create several base and constraint maps for analysis in the decision-making process and for presentation at public involvement activities.

#### SOFTWARE USED

- ArcInfo 9.3
- ArcEditor 9.3
- ArcView 9.3



**CLIENT**  
Illinois Department of Transportation

**CONTACT**  
Michael Lewis, P.E.  
Project Engineer  
Illinois Department of Transportation  
Region Three, District Four  
401 Main Street  
Peoria, IL 61602  
309.671.3333

Jeffery Schlotter  
H.W. Lochner  
225 W. Washington Street, 12th Floor  
Chicago, IL 60606  
800.353.3011

**BUDGET**  
N/A

**DATES**  
2007 - Present

**SERVICES**  
GIS  
Transportation Engineering  
Land Use Planning

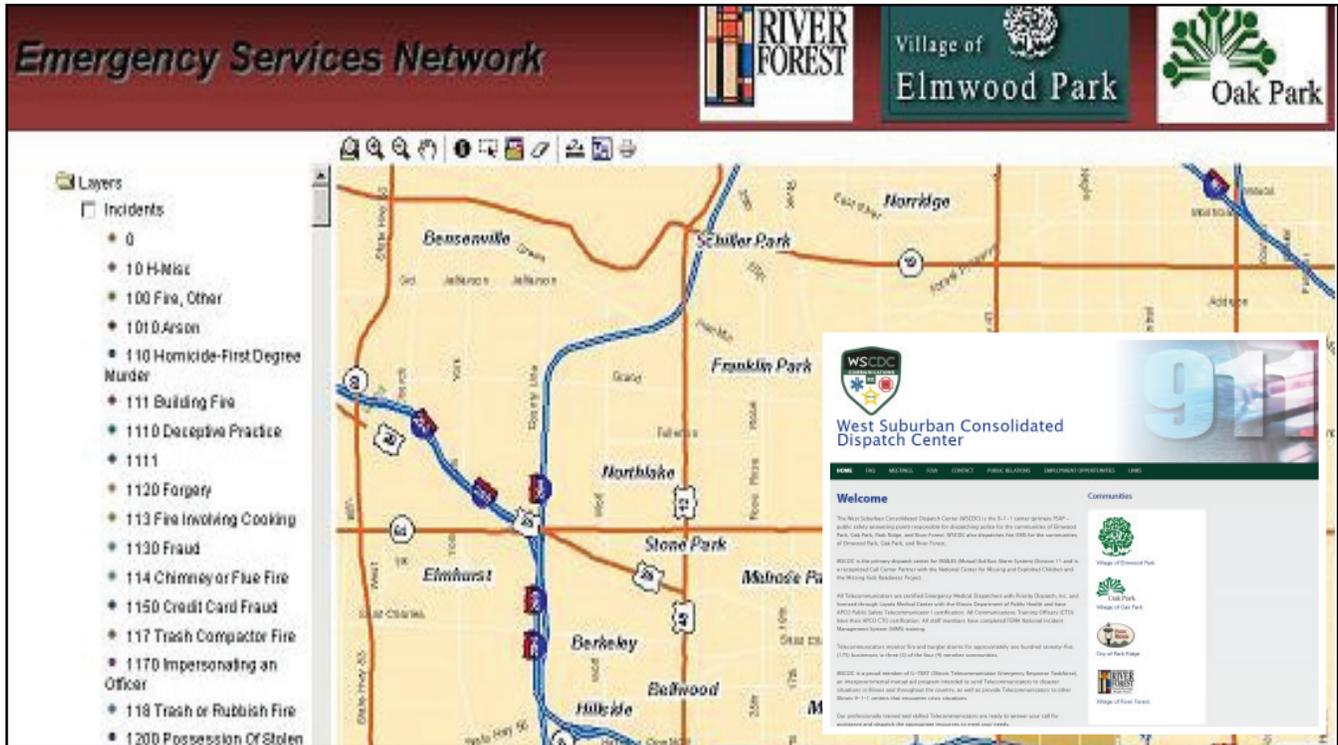


Water Service Database Modifications



# GIS WEB MAPPING APPLICATION DEVELOPMENT WESTCOM

Oak Park, Illinois



TERRA provided general and comprehensive GIS services for Westcom, known as the West Suburban Consolidated Dispatch Center. TERRA has developed a web-based application for crime and emergency-incident analysis for Westcom, a group of communities that includes the Village of Oak Park, the Village of River Forest and the Village of Elmwood Park.

The application uses existing incident data in an Oracle database and leverages that data for use in the ArcGIS Server environment. The application is used by the fire and police chiefs to search for incidents based on geographic location or by incident type.

The application was developed within ArcGIS Server and uses custom Java scripts to query the incident data and return the results.

\*Since project completion WESTCOM has become the West Suburban Consolidated Dispatch Center, and now includes the City of Park Ridge, in addition to the Village of Oak Park, the Village of River Forest and the Village of Elmwood Park.

CLIENT  
Westcom

CONTACT  
Michael Duebner  
1 Village Hall Plaza  
Oak Park, IL 60302

BUDGET  
N/A

DATES  
2007 - 2008

SERVICES  
GIS Services

# 4. PROJECT APPROACH

## PROJECT UNDERSTANDING

TERRA Engineering, Ltd. (TERRA) understands that the Village of Oak Park requires assistance with modifications to its water service database in order to input information into a GIS water distribution system material inventory. Our team also understands that the Village is required to comply with recent IEPA mandates [Section 17.11(c) of the Illinois Environmental Protection Act (415 ILCS5/17.11(c))]. According to the request for proposals, all tasks must be completed before Sunday, April 7, 2019 so the Village of Oak Park can adhere to the IEPA's April 15, 2019 update deadline.

As detailed in the RFP, the Village has approximately 13,000 services throughout its current water system. Since the existing GIS database is based solely on Village of Oak Park atlases, updates are required from additional data sources such as water service tap cards, water meter replacement records, capital improvement records, building permit records and dig records provided by the Village. The necessary data to be entered from these data sources includes materials, year (age), size, addresses and service category. Once the data is collected and entered into the GIS database, to fulfill the IEPA's requirements, the total number of lines, the number of lead service lines, and the number of lead services lines added to the service inventory within the distribution system will be provided to the Village. The final and updated GIS database will be delivered to the Village of Oak Park on a flash drive or external hard drive.

Service Start Date	November 26, 2018
Project Completion	April 7, 2019
Yearly IEPA Inventory Submittal	April 15, 2019

## PROJECT APPROACH

For more than 25 years, TERRA's GIS team has combined knowledge of GIS with real-world field experience. Our staff provides unique insights into how geospatial data can be leveraged to make work environments more productive and information accessible and usable. TERRA has a strong background in GIS, data and asset management, and utilities for both the public and the private sectors. TERRA's staff has remained at the forefront of emerging GIS technology through workshops and training. We are eager to demonstrate our experience for the Village of Oak Park.

For the Village of Oak Park's Water Service Database Modifications, Selena Hilton-Aragon will serve as project manager. Selena is a GIS specialist with more than six years of experience in location management and analysis. She has specialized skills in data analysis, project management, internal and external partner communication, establishing and maintaining timelines, scheduling, and attention to detail. At TERRA, she performs extensive data entry into Geographic Information System which she analyses for anomalies and accuracy. She has a degree in the utilization of ArcGIS and has nearly a decade of experience working within the software's platforms.

Throughout her career, Selena performed database maintenance, management, and data entry for the Page County Department of Environmental Services Ground Water and Well Database. Her work consisted of verifying the accuracy of existing data, as well as inputting new entries based on manually prepared well inspection forms, into Microsoft Access. Selena was the only employee dedicated to this task. As a GIS Intern, Selena was also tasked with performing water pipe and gauge database maintenance for the University of Virginia Facilities

Management. This project required communicating with the field crews and maintenance staff to ensure accurate spatial representation of the water structures throughout the University. Selena was the only employee dedicated to this task.

### 1. Project Kick-Off Meeting

Following our notice to proceed, TERRA will schedule a kick-off meeting to be held at the Village of Oak Park's Public Works Center. That meeting will include representatives from the Village of Oak Park's Engineering Division, Water-Sewer Division and the GIS Consortium analyst. We discuss status updates, comments and any additional services needed.

In addition to the kick-off meeting, we recommend scheduling one meeting per month throughout the duration of the project.

### 2. Data Entry

Service Tap Cards will be checked-out and checked back-in to the Village in batches and entered manually. Water Meter Replacement Records and Dig Records will be compiled using automation through either Visual Basic or Python programming to extract the necessary records and then add to the existing GIS Database. Capital Improvement Records will also be entered manually.

Building permit records will be accessed and the data entered by the GIS Analyst on-site at the Village of Oak Park for a period of no more than two (2) weeks, based on the approximately 645 records to modify, including QA/QC. All of the following information will be entered:

- A. Materials
- B. Year (age)
- C. Size
- D. Addresses - some locations may have more than one service
- E. Service category - domestic or fire service.

The QA/QC process employed will ensure the accuracy of the entered data. This process will involve a second set of eyes verifying the manually entered data and automated data entry and the original data correspond to each other.

### 3. Consultant Access

In any effort minimize costs, TERRA's staff will update the existing Village of Oak Park Water Service GIS Database using the data sources provided entirely from TERRA's office located in Chicago, Illinois, with the exception of the Building Permit Records as stated above. In addition, Service Tap Cards will be collected and returned on a weekly basis. All face-to-face meetings will be held at the Village of Oak Park's Public Works Center.

### 4. IEPA Requirements

TERRA's staff will help the Village of Oak Park satisfy all Section 17.11(c) of the Illinois Environmental Protection Act (415 ILCS5/17.11(c)) requirements. That will include:

- A. Total number of service lines within or connected to the distribution system, including privately owned service lines
- B. Number of all known lead service lines within or connected to the distribution system, including privately owned lead service lines
- C. Number of the lead service lines that were added to the inventory after the previous year's submission

### 5. Deliverables

All tasks will be completed before Sunday, April 7, 2019. Once completed, TERRA's staff will provide the Village of Oak Park with a flash drive, or FTP site if preferred. All final reviews of the database modifications will be held at a contract-completion meeting at the Village's Public Works Center.

## PAYROLL ESCALATION TABLE FIXED RAISES

FIRM NAME  
PRIME/SUPPLEMENT  
Prepared By

TERRA Engineering

DATE 10/31/18  
PTB-ITEM# 175

CONTRACT TERM 5 MONTHS  
START DATE 11/26/2018  
RAISE DATE 1/1/2019  
END DATE 4/25/2019

OVERHEAD RATE 177.93%  
COMPLEXITY FACTOR 0  
% OF RAISE 3%

### ESCALATION PER YEAR

year	First date	Last date	Months	% of Contract
0	11/26/2018	1/1/2019	1	20.00%
1	1/2/2019	5/1/2019	4	82.40%

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The total escalation = 2.40%





### AVERAGE HOURLY PROJECT RATES

FIRM TERRA Engineering  
PTB-ITEM# 175  
PRIME/SUPPLEMENT 0

DATE 10/31/18

SHEET 1 OF 2

PAYROLL CLASSIFICATION	AVG HOURLY RATES	TOTAL PROJ. RATES			Meetings			Data Entry - Water Service			Data Entry - Water Meter R			Data Entry - Capital Improve			Data Entry - Building Permit Re		
		Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg
Principal	76.80	2.0	0.49%	0.38	2	20.00%	15.36	0			0			0			0		
CAD/IT	31.56	30.0	7.34%	2.32	2	20.00%	6.31	10	11.11%	3.51	5	5.88%	1.86	5	6.10%	1.92	3	5.17%	1.63
GIS Analyst	25.85	376.5	92.17%	23.82	6	60.00%	15.51	80	88.89%	22.97	80	94.12%	24.33	77	93.90%	24.27	55	94.83%	24.51
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<b>TOTALS</b>		408.5	100%	\$26.51	10.0	100.00%	\$37.18	90.0	100%	\$26.48	85.0	100%	\$26.18	82.0	100%	\$26.19	58.0	100%	\$26.14

### AVERAGE HOURLY PROJECT RATES

**FIRM** TERRA Engineering  
**PTB-ITEM#** 175  
**PRIME/SUPPLEMENT** 0

**DATE** 10/31/18  
**SHEET** 2 OF 2

PAYROLL CLASSIFICATION	AVG HOURLY RATES	Data Entry - Dig Records			Deliverable														
		Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg			
Principal	76.80	0																	
CAD/IT	31.56	5	6.02%	1.90															
GIS Analyst	25.85	78	93.98%	24.29	0.5	100.00%	25.85												
<b>TOTALS</b>		83.0	100%	\$26.19	0.5	100%	\$25.85	0.0	0%	\$0.00	0.0	0%	\$0.00	0.0	0%	\$0.00	0.0	0%	\$0.00



RESPONDENT CERTIFICATION

PROPOSAL SIGNATURE: Karen Steingraber  
State of Illinois  
County of Cook  
Karen Steingraber  
TYPE NAME OF SIGNEE

being first duly sworn on oath deposes and says that the Respondent on the above proposal is organized as indicated below and that all statements herein made on behalf of such Respondent and that this deponent is authorized to make them, and also deposes and says that he has examined and carefully prepared their bid proposal from the Contract Exhibits and Specifications and has checked the same in detail before submitting this proposal or bid; that the statements contained herein are true and correct.

Signature of Respondent authorizes the Village of Oak Park to verify references of business and credit at its option.

Signature of Respondent shall also be acknowledged before a Notary Public or other person authorized by law to execute such acknowledgments.

Dated 10/30/2018

(Seal - If Corporation) TERRA Engineering, Ltd.  
Organization Name  
By Karen Steingraber  
Authorized Signature  
225 W. Ohio Street, 4th Floor  
Address  
312.467.0123  
Telephone

Subscribed and sworn to before me this 30 day of October, 2018.

In the state of Illinois. Michelle Campbell  
Notary Public  
My Commission Expires: 6/11/2020  
(Fill Out Applicable Paragraph Below)

(a) Corporation

The Respondent is a corporation, which operates under the legal name of TERRA Engineering, Ltd.  
and is organized and existing under the laws of the State of Illinois.

The full names of its Officers are:

President Karen Steingraber  
Secretary Jamil Bou-Saab  
Treasurer Karen Steingraber

The corporation does have a corporate seal. (In the event that this bid is executed by a person other than the President, attach hereto a certified copy of that section of Corporate By-Laws or other authorization by the Corporation which permits the person to execute the offer for the corporation.)

(b) Partnership

Name, signature, and addresses of all Partner

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The partnership does business under the legal name of \_\_\_\_\_ which name is registered with the office of \_\_\_\_\_ in the county of \_\_\_\_\_ in the state of \_\_\_\_\_.

(c) Sole Proprietor

The Respondent is a Sole Proprietor whose full name is \_\_\_\_\_.  
If the Respondent is operating under a trade name said trade name is \_\_\_\_\_ which name is registered with the office of \_\_\_\_\_ in the county of \_\_\_\_\_ in the state of \_\_\_\_\_.

Signed \_\_\_\_\_  
Sole Proprietor



Attachment I.

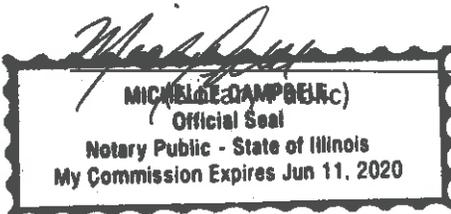
**RESPONDENT CERTIFICATION**

TERRA Engineering, Ltd., as part of its bid on a contract for  
(name of Respondent)

Professional Services for Project 18-28, Water Service Database Modifications to the Village of Oak Park, hereby certifies that said Respondent is not barred from bidding on the aforementioned contract as a result of a violation to either Section 33E-3 or 33E-4 of Article 33E of Chapter 38 of the Illinois Revised Statutes or Section 2-6-12 of the Oak Park Village Code relating to "Bidding Requirements".

By: *Karen Stenzel*  
(Authorized Agent of Respondent)

Subscribed and sworn to  
before me this 30 day  
of October, 2018





Attachment II. TAX COMPLIANCE AFFIDAVIT

Karen Steingraber, being first duly sworn, deposes and says:

that he/she is President of  
(partner, officer, owner, etc.)

TERRA Engineering, Ltd.  
(bidder selected)

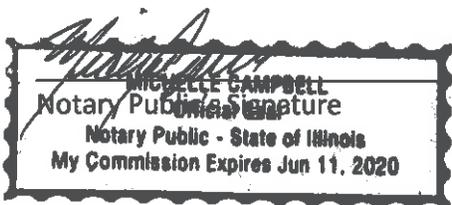
The individual or entity making the foregoing proposal or proposal certifies that he/she is not barred from entering into an agreement with the Village of Oak Park because of any delinquency in the payment of any tax administered by the Department of Revenue unless the individual or entity is contesting, in accordance with the procedures established by the appropriate revenue act, liability for the tax or the amount of the tax. The individual or entity making the proposal or proposal understands that making a false statement regarding delinquency in taxes is a Class A Misdemeanor and, in addition, voids the agreement and allows the municipality to recover all amounts paid to the individual or entity under the agreement in civil action.

Karen Steingraber  
By:  
Its:

President  
(name of bidder if the bidder is an individual)  
(name of partner if the bidder is a partnership)  
(name of officer if the bidder is a corporation)

The above statement must be subscribed and sworn to before a notary public.

Subscribed and sworn to before me this 30 day of October, 2018.



- Notary Public Seal -

**Minority Business and Women Business Enterprises Requirements**

The Village of Oak Park in an effort to reaffirm its policy of non-discrimination, encourages and applauds the efforts of bidders and subConsultants in taking affirmative action and providing Equal Employment Opportunity without regard to race, religion, creed, color, sex, national origin, age, handicap unrelated to ability to perform the job or protected veteran's status.

**Reporting Requirements**

The following forms must be completed in their entirety, notarized and included as part of the proposal document. Failure to respond truthfully to any question on the list or failure to cooperate fully with further inquiry by the Village of Oak Park will result in disqualification of your proposal.



**Attachment III.**

**ORGANIZATION OF BIDDING FIRM**

**Please fill out the applicable section:**

**A. Corporation:**

The Consultant is a corporation, legally named TERRA Engineering, Ltd. and is organized and existing in good standing under the laws of the State of Illinois. The full names of its Officers are:

President Karen Steingraber

Secretary Jamil Bou-Saab

Treasurer Karen Steingraber

Registered Agent Name and Address: TERRA Engineering, Ltd. 225 W. Ohio Street, 4th Floor, Chicago, IL 60654

The corporation has a corporate seal. (In the event that this Bid is executed by a person other than the President, attach hereto a certified copy of that section of Corporate By-Laws or other authorization by the Corporation that permits the person to execute the offer for the corporation.)

**B. Sole Proprietor:**

The Consultant is a Sole Proprietor. If the Consultant does business under an Assumed Name, the

Assumed Name is \_\_\_\_\_, which is registered with the Cook County Clerk. The Consultant is otherwise in compliance with the Assumed Business Name Act, 805 ILCS 405/0.01, et. seq.

**C. Partnership:**

The Consultant is a Partnership which operates under the name \_\_\_\_\_

The following are the names, addresses and signatures of all partners:

\_\_\_\_\_  
\_\_\_\_\_

Signature

\_\_\_\_\_  
\_\_\_\_\_

Signature

(Attach additional sheets if necessary.) If so, check here \_\_\_\_\_.

If the partnership does business under an assumed name, the assumed name must be registered with the Cook County Clerk and the partnership is otherwise in compliance with the Assumed Business Name Act, 805 ILCS 405/0.01, et. seq.

**D. Affiliates:** The name and address of any affiliated entity of the business, including a description of the affiliation: \_\_\_\_\_

\_\_\_\_\_  
Signature of Owner



Attachment IV.      **Compliance Affidavit**

I, Karen Steingraber being first duly sworn on oath depose and state as follows:  
(Print Name)

1. I am the (title) President of the Proposing Firm (“Firm”) and am authorized to make the statements contained in this affidavit on behalf of the Firm.
2. The Firm is organized as indicated on Exhibit A to this Affidavit, entitled “Organization of Proposing Firm,” which Exhibit is incorporated into this Affidavit as if fully set forth herein.
3. I have examined and carefully prepared this proposal based on the Request for Proposals and verified the facts contained in the proposal in detail before submitting it.
4. I authorize the Village of Oak Park to verify the Firm’s business references and credit at its option.
5. Neither the Firm nor its affiliates<sup>1</sup> are barred from proposing on this project as a result of a violation of 720 ILCS 5/33E-3 or 33E-4 relating to bid rigging and bid rotating, or Section 2-6-12 of the Oak Park Village Code related to “Proposing Requirements”.
6. The Proposing Firm has the M/W/DBE status indicated below on the form entitled “EEO Report.”
7. Neither the Firm nor its affiliates is barred from agreement with the Village of Oak Park because of any delinquency in the payment of any debt or tax owed to the Village except for those taxes which the Firm is contesting, in accordance with the procedures established by the appropriate revenue act, liability for the tax or the amount of the tax. I understand that making a false statement regarding delinquency in taxes is a Class A Misdemeanor and, in addition, voids the agreement and allows the Village of Oak Park to recover all amounts paid to the Firm under the agreement in a civil action.
8. I am familiar with Section 13-3-2 through 13-3-4 of the Oak Park Village Code relating to Fair Employment Practices and understand the contents thereof; and state that the Proposing Firm is an “Equal Opportunity Employer” as defined by Section 2000(E) of Chapter 21, Title 42 of the United States Code Annotated and Federal Executive Orders #11246 and #11375 which are incorporated herein by reference. **Also complete the attached EEO Report or Submit an EEO-1.**
9. I certify that the Consultant is in compliance with the Drug Free Workplace Act, 41 U.S.C.A, 702.

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<sup>1</sup> Affiliates means: (i) any subsidiary or parent of the bidding or contracting business entity, (ii) any member of the same unitary business group; (iii) any person with any ownership interest or distributive share of the bidding or contracting business entity in excess of 7.5%; (iv) any entity owned or controlled by an executive employee, his or her spouse or minor children of the bidding or contracting business entity.

Signature: *Karen Steingraber* Printed Name Karen Steingraber

Name of Business: TERRA Engineering, Ltd. Your Title: President

Business Address: 225 W. Ohio Street, 4th Floor, Chicago, IL 60654

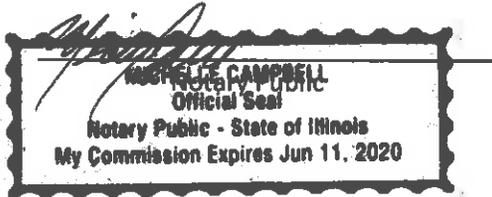
(Number, Street, Suite #)

(City, State & Zip)

Telephone: 312.467.0123 Fax: 312.467.0220

Web Address: www.terraengineering.com

Subscribed to and sworn before me this 30 day of October, 2018.



**M/W/DBE STATUS AND EEO REPORT**

1. Consultant Name: TERRA Engineering, Ltd.

2. Check here if your firm is:

- Minority Business Enterprise (MBE) (A firm that is at least 51% owned, managed and controlled by a Minority.)
- Women’s Business Enterprise (WBE) (A firm that is at least 51% owned, managed and controlled by a Woman.)
- Owned by a person with a disability (DBE) (A firm that is at least 51% owned by a person with a disability)
- None of the above

[Submit copies of any W/W/DBE certifications]

3. What is the size of the firm’s current stable work force?

68 Number of full-time employees

14 Number of part-time employees

4. Similar information will be requested of all subConsultants working on this agreement. Forms will be furnished to the lowest responsible Consultant with the notice of agreement award, and these forms must be completed and submitted to the Village before the execution of the agreement by the Village.

Signature: 

Date: 10/30/2018

Failure to respond truthfully to any questions on this form, failure to complete the form or failure to cooperate fully with further inquiry by the Village of Oak Park will result in disqualification of this Bid. For assistance in completing this form, contact the Department of Public Works at 708-358-5700.

**EEO REPORT**

Please fill out this form completely. Failure to respond truthfully to any questions on this form, or failure to cooperate fully with further inquiry by the Village of Oak Park will result in disqualification of this proposal. An incomplete form will disqualify your proposal. For assistance in completing this form, contact the Purchasing Department at 708-358-5473.

**An EEO-1 Report may be submitted in lieu of this report**

Consultant Name TERRA Engineering, Ltd.

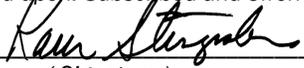
Total Employees 82

Job Categories	Total Employees	Total Males	Total Females	Males				Females				Total Minorities
				Black	Hispanic	American Indian & Alaskan Native	Asian & Pacific Islander	Black	Hispanic	American Indian & Alaskan Native	Asian & Pacific Islander	
Officials & Managers	10	8	2				1					1
Professionals	46	33	13	1			3	2	2		1	9
Technicians	15	14	1		2							2
Sales Workers												
Office & Clerical	7	1	6					1	1		1	3
Semi-Skilled	4	4			2							2
Laborers												
Service Workers												
<b>TOTAL</b>	<b>82</b>	<b>60</b>	<b>22</b>	<b>1</b>	<b>4</b>		<b>4</b>	<b>3</b>	<b>3</b>		<b>2</b>	<b>17</b>
Management Trainees												
Apprentices												

This completed and notarized report must accompany your Proposal. It should be attached to your Affidavit of Compliance. Failure to include it with your Proposal will be disqualify you from consideration.

Karen Steingraber, being first duly sworn, deposes and says that he/she is the President  
 (Name of Person Making Affidavit) (Title or Officer)  
 of TERRA Engineering, Ltd. and that the above EEO Report information is true and accurate and is submitted with the intent that it

be relied upon. Subscribed and sworn to before me this 30 day of October, 2018.

 10/30/2018  
 ( Signature ) ( Date )