

Proposal

GIS SERVICES FOR MS4 STORMWATER INFRASTRUCTURE MAPPING & WATERSHED IMPROVEMENT PLAN

Township of West Orange, Essex County, New Jersey



Submitted to:

Township of West Orange
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West Orange, New Jersey 07052





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October 30, 2025

Zayibeth Carballo, PE, PLS, PP, CME, CFM, CFS
Director, Municipal Engineering
Township West Orange
25 Lakeside Avenue
West Orange, NJ 07052

RE: Proposal for Professional Engineering Services for
GIS Services for MS4 Stormwater Infrastructure Mapping/Watershed Improvement Plan
Township of West Orange, Essex County, New Jersey
FPA No. 24665.PR1

Dear Ms. Carballo:

French & Parrello Associates (FPA) is pleased to submit this proposal in response to the Township's Request for Proposals for Professional Engineering Services GIS Services for Municipal Separate Storm Sewer (MS4) Infrastructure Mapping & Watershed Improvement Plan for the Township of Maplewood. Our team has extensive expertise in the New Jersey Department of Environmental Protection's (NJDEP) New Jersey Pollution Discharge Elimination Systems (NJPDES) Stormwater Permitting and Water Quality Management Municipal Stormwater Regulation program, and particularly the infrastructure mapping requirements for Tier A MS4 general permits including the Watershed Inventory Report.

Led by our assigned project manager Stefanie Williams, PE and our GIS manager Christopher Nourry, GISP, FPA has successfully worked with multiple municipalities throughout New Jersey to complete comprehensive stormwater mapping inventories and meet Tier A MS4 permitting requirements. These municipalities include the Township of Freehold, Township of Howell, Pohatcong Township, Mendham Township, Chester Township, Hope Township, Hardwick Township, Blairstown Township, the Borough of Carteret, Knowlton Township, and Allamuchy Township.

FPA's team of highly qualified professionals, each selected for this project based on their specialized experience, are highly respected, and ready to proceed with work at the Township's request. It is our objective to successfully provide the Township with a quality work product that will meet the goals outlined in the Request for Proposal. Our project manager and team members are committed to the overall success of this truly unique project. If selected, we look forward to working with the Township on this project.

Respectfully Submitted,
FRENCH & PARRELLO ASSOCIATES


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Section 1

Technical Proposal

French & Parrello Associates, PA (FPA) is pleased to submit this proposal to the **Township of West Orange (Township)** to provide Professional Engineering and GIS Services for Stormwater System Mapping. In accordance with the New Jersey Department of Environmental Protection's (NJDEP) New Jersey Pollutant Discharge Elimination System (NJPDES) Tier A General Permit requirements, specifically the Minimum Standards for Mapping and Scouring, and Illicit Discharge Detection Elimination and Watershed Inventory Report, municipalities are required to complete the following:

Map the following MS4 infrastructure:

- Outfalls
- Groundwater discharge points
- System interconnections (to/from)
- Storm drain inlets including catch basins
- Manholes
- Conveyance (piping and ditches)
- Pump stations
- Storm water facilities (green infrastructure, manufactured treatment devices, infiltration/detention systems)
- Property boundaries of maintenance yards and other ancillary operations

Additionally, the NJDEP requires municipalities to develop a comprehensive Watershed Improvement Plan that is divided into three phases: an inventory, an assessment, and a final plan. The purpose of the plan is to systematically reduce pollutant loading to all receiving waters within or bordering the municipality that are subject to Total Maximum Daily Loads (TMDLs) or are listed as impaired, to mitigate storm-water flooding, and to integrate water-quality and flood-protection objectives with other regulatory frameworks (e.g., endangered-species, climate resiliency, green infrastructure). The plan must be completed in a phased, publicly-informed manner, with each phase building on the data and priorities established in the previous one.

Each Phase and their underlying requirements are briefly detailed as follows:

Phase I – Watershed Inventory Report

(Due December 31, 2025)

- Electronic mapping of all required items using the NJDEP GIS database.
- Stormwater outfall data, including outfalls owned and operated by the municipality and an outfall pipe map.
- Drainage area delineation for each outfall.
- Receiving water bodies for each outfall, along with their water quality classification.
- Mapping of stormwater interconnections from the municipality into other entities' systems, including associated drainage areas.
- Inventory of storm drain inlets owned or operated by the municipality.
- Identification of areas affected by TMDLs that lie within or border the municipality.
- Identification of areas affected by water quality impairments within or bordering the municipality.
- Mapping of overburdened communities and impervious surface areas.
- Location and ownership details of all known stormwater outfalls, basins, and infrastructure not owned or operated by the municipality.

Phase II – Watershed Assessment Report

(Due on or before January 1, 2027)

- Assessment of potential watershed conditions by analyzing mapped data to identify water quality impairments and flooding risks.

- Identify potential projects or actions that will address water quality impairments, TMDL reductions and stormwater quantity issues.
- Summarize public feedback gathered from the semi-annual information sessions.
- Provide an estimate of funding needs for each project, identifying potential sources (NJ Water Bank, SWU formation, grants, FEMA BRIC grants, etc.).
- Develop an implementation schedule for all proposed projects to meet TMDL reduction goals and improve water quality and quantity issues
- Post the report on the municipality's website and initiate a 60-day public comment period for formal input.
- Provide a timeline for implementation of selected projects
- Semi-annual public information sessions (in-person or virtual) to be conducted following the completion of Phase II of the Watershed Improvement Plan.

Phase III – Watershed Improvement Plan Report

(Due on or before December 1, 2027)

- Phase III focuses on project selection and committing specific water quality and stormwater improvement projects based on the assessments and data compiled in Phases 1 and 2.
- Identify the proposed projects from phase 2 that will be implemented to address water quality impairments, TMDL's and flooding concerns.
- Summarize public comments received and document any changes made to the final plan.
- Present the proposed timeline for selected water-quality improvement projects identified in Phase 2.
- Provide the schedule of public information sessions to be held during the implementation phase.
- Identify problems outside municipal jurisdiction (e.g., agricultural pollutant loading, non-municipal lands) and opportunities to address them.
- Break down project costs by year and list funding opportunities that can be pursued.

Based upon the requirements highlighted above, we offer the following scope of work detailing the work tasks included in our proposal:

SCOPE OF WORK

TASK 1: MS4 INFRASTRUCTURE MAPPING – COMPLETION OF MS4 STORMWATER INVENTORY

It is FPA's understanding that the Township has completed a majority of their stormwater inventory as of the date of this proposal. Upon review of the data, FPA has identified the following stormwater inventory assets and the approximate quantity of each:

- Inlets: 3,358
- Outfalls: 172
- Groundwater Discharge Points: 91
- Interconnections: 0
- Retention/ Detention Basins: 0
- Surface Conveyance: 0
- Subsurface Conveyance: 0
- Manholes: 0

Based upon this cursory review of the existing inventory data, FPA has determined that conveyance, interconnections, retention/detention basins, manholes, and any other relevant stormwater facilities still need to be identified and mapped. To complete this task, FPA will coordinate with Municipal staff to obtain existing municipal stormwater infrastructure

mapping which may include GIS data in the form of geodatabases, shapefiles, PDF files, or hardcopy maps and plans. Utilizing data sources such as the NJDEP's Bureau of GIS and the New Jersey Office of Geographic Information System's Open Data portal, FPA will obtain road centerlines, MOD-IV tax parcels, National Hydrography Dataset (NHD) Streams and Waterbodies, and Wetlands of New Jersey to create a basemap upon which the Stormwater infrastructure inventory will be mapped.

With the latest version of the NJDEP's MS4 ESRI geodatabase template, FPA will utilize ESRI's Arcmap or ArcGIS Pro software to configure the Township's stormwater database for completion of the municipality's stormwater infrastructure inventory in NAD83 New Jersey State Plane US survey feet. The database, which reflects the NJDEP's current stormwater mapping requirements, will contain the following feature classes for data conversion and collection:

- Inlets
- Outfalls
- Conveyance, Subsurface
- Conveyance, Surface
- Interconnections
- Groundwater Discharge Points
- Manholes
- Stormwater Management Basin
- Pump Stations
- Stormwater Facilities
- Municipal Properties

FPA will complete conversion of existing stormwater data as required through georeferencing of PDFs and hardcopy maps along with importing existing GIS data to the project geodatabase into the appropriate feature class as listed above. Once this initial mapping phase of the project is completed, FPA will utilize the most recent leaf-off aerial imagery provided by Nearmap US, Inc. to locate and plot any additional stormwater assets that are readily visible, which may include: inlets, outfalls, stormwater management basins, and pump stations.

High Accuracy Mapping and Additional Data Collection

While FPA, as a standard, makes a best effort to approximate pipe sizes and materials, elevation and invert data is typically not typically ascertained unless explicitly requested by the client since this is not a requirement of the NJDEP for stormwater inventory submittal. It is FPA's understanding that the Township is requesting high accuracy data collection in addition to the standard mapping tasks to be completed in Task 1 of this Proposal. Due to the nature of high accuracy data collection, which requires additional loiter time at each asset for the setup of a high accuracy GNSS unit, the measurement of the pipe diameters, identification of materials, and the measurement of the invert, this increases the overall length of field work activities. FPA will utilize Trimble TDC 600 GIS tablets paired with Emlid Reach RS3, Emlid Reach RX, or Trimble Catalyst RTK GNSS receivers receiving real time corrections from the Alpha RTK network which covers New Jersey for the highest accuracy possible. FPA will collect the elevation of the grate or manhole rim and utilize a measuring stick or laser measuring device to measure down to each invert as well as collect pipe sizing. It should be noted, this data will be collected by GIS field staff and will not be surveyed by a PLS. The information collected is intended to be utilized in a GIS for informational purposes only. In addition to the elevation data, FPA as a standard, includes GNSS metadata data collection such as HDOP, PDOP, VDOP, Horizontal RMS, and Vertical RMS to assist in validating the accuracy of data collected. ESRI's Field Maps software will be configured with the features and attributes listed above so as to allow users to verify existing assets and add new ones via a data entry form. As per the NJDEP's template geodatabase schema, each distinct stormwater asset type requires several mandatory fields to be completed which will be incorporated into the Field Maps application's form. During the inspection process, a minimum of one photo per asset will be collected. When material type and pipe size are to be recorded, FPA will attempt visually approximate pipe sizing and observe material type without removing or disturbing the grate, lid, or manhole of the structure.

In the event a structure grate or manhole needs to be removed, and is in a right of way, FPA will coordinate with municipal staff to provide traffic control and or police presence. The cost associated with traffic control and police is not included as part of this proposal, and if required, can be provided separately.

Upon completion of both the desktop mapping and field verification and inspection, FPA will proceed to utilize the collected photos and data to complete entry of the remaining required attributes in the project geodatabase. FPA anticipates utilizing bulk calculation of fields which are identical throughout the dataset as well as calculating fields such as cardinal direction required for conveyance assets.

Map Production & Quality Control

Quality assurance (QA) and quality control (QC) will include a thorough review of field-collected GPS data, as well as the evaluation of digitized and converted data in ArcGIS Pro. This process will involve validating the accuracy of the GPS data collected during field mapping, ensuring that the locations and attributes of stormwater assets (e.g., pipes, inlets, outlets, and basins) are precise and correctly mapped. QC will also focus on identifying and correcting any discrepancies, gaps, or misalignments between the newly collected GPS data and existing GIS datasets. Special attention will be given to attribute consistency, correct feature classification, and adherence to the NJDEP's MS4 mapping requirements. Additionally, spatial integrity checks will ensure that assets are properly connected together, and the piping is oriented correctly with proper direction of flow. Any topology errors which include overlaps, misalignments, and gaps will be addressed. This process will also involve checking the digitization and conversion of legacy stormwater data. This will ensure that older datasets have been properly georeferenced, digitized, and integrated into the modern GIS database. QA/QC will also include a verification of schema consistency, the correct assignment of attributes, and compliance with the required metadata standards. Throughout the QA/QC process, feedback will be regularly provided to the field team and digitizers to improve accuracy and minimize the need for rework.

As part of the final inventory deliverables, PDF maps in Arch D size (24 x 36 inches) will be generated of the complete stormwater inventory at a scale of 1 inch = 100 feet or larger. These maps will include inlets and outfalls, the associated conveyance network, and additional key infrastructure components described above. The outfalls and other stormwater features will be labeled alpha numerically with Initial draft maps provided to the Township for review, and feedback will be incorporated into revised versions. After addressing comments and making the necessary revisions, final versions of the PDF maps will be submitted. The maps will be designed for both digital review and large-format printing, ensuring clear, precise representations of the stormwater assets. The map will be based upon the NJOGIS MOD-IV tax parcel layer and will feature streams and waterbodies, roads, The maps will include at a minimum: labeled roadways, tax parcels, streams, waterbodies, and NJDEP mapped wetlands areas. All storm water assets will be shown symbolized and labeled to differentiate between asset type and/or current condition.

TASK 2: ESTABLISHMENT OF A TOWNSHIP GIS SYSTEM

FPA will conduct a comprehensive licensing audit in collaboration with Township staff to inventory existing Esri products, user accounts, and subscription tiers, if available. In the event the Township has an established GIS system, FPA will utilize the existing resources to configure an interactive Stormwater inventory map.

If no existing GIS resources are established for the Township, FPA will coordinate with ESRI to acquire the appropriate ArcGIS Online (AGOL) subscription, ensuring that the organization has sufficient capacity for the MS4 Inventory and any future GIS workloads. It should be noted that in the event licensing is required, fees associated with software acquisition are to be paid directly to ESRI. It is estimated that total licensing costs would be in the range of \$1,500-\$2,500 per year and were included in the cost for this project for budgetary purposes.

Once the AGOL organization is provisioned, FPA will immediately begin setup: configuring organizational security, creating users with corresponding roles and groups, and deploying basemaps and layers for the stormwater inventory. Throughout the initial deployment, FPA will provide training for Township staff in the use of the newly configured GIS web mapping application.

The AGOL organization established for the MS4 inventory is a single, scalable platform that can be leveraged across the Township for a wide array of future GIS initiatives—such as sanitary sewer mapping, pavement asset management, vegetation inventories, and emergency response planning.

TASK 3: WATERSHED IMPROVEMENT PLAN

Phase I – Watershed Inventory Report

The Watershed Inventory Report constitutes the foundational element of the Watershed Improvement Plan, setting the data baseline for all subsequent analyses. Its primary objective is to compile a comprehensive, municipality-wide inventory of all stormwater related assets and conditions that influence water quality and flooding risk within and adjacent to the town. By establishing this inventory, we ensure that planning steps are grounded in an accurate, up-to-date understanding of the stormwater infrastructure, regulatory compliance status, and environmental sensitivities. The inventory report will also serve as a reference for future reviews, enabling a benchmark status of the TMDL and impairment levels of the municipality.

The inventory will rely on multiple data sources to achieve completeness. Existing data will provide the base for outfall mapping, which was mandated in the original permitting requirements for Tier A municipalities. We will supplement this with the NJDEP GIS database (<https://gisdata-njdep.opendata.arcgis.com/>) for publicly available layers such as impervious area, land use, and overburdened community boundaries. Additional field verification will be carried out to confirm the location of private stormwater outfalls, basins, and infrastructure not currently recorded in the GIS. We will conduct GIS-based buffer analyses to delineate drainage areas for each outfall and interconnection point.

One of the key deliverables of Phase I is mapping that visually integrates all inventory items. FPA will create a multi-layer map that overlays outfall locations, HUC-14 areas, drainage basins, receiving water bodies, and water-quality classification segments. GIS tools will be utilized to calculate the drainage area for each outfall and interconnection. This map will be rendered in PDF and shapefile formats to meet the Department's submission requirements and to facilitate future stakeholder workshops and public meetings.

In alignment with NJDEP's Phase I guidance, the Watershed Inventory will include all waters within or bordering the municipality that are listed in the TMDL Look-Up Tool. For each segment, we will document the applicable TMDL pollutant parameters and impairment status. This information will be cross-referenced with the municipality's existing stormwater outfall data to identify connections between outfalls and impaired waters.

The final Phase I deliverables will consist of:

1. A written Watershed Inventory Report summarizing all collected data.
2. Electronic maps with full metadata, incorporating all required features per NJDEP guidance.

These materials will be submitted to NJDEP following municipal authorization.

Phase II – Watershed Assessment Report

Phase II builds on the inventory from the Watershed Inventory Reports. This phase will evaluate the potential for water-quality improvement across each sub-watershed. The Assessment Report will prioritize projects by pollutants and by their projected percent reduction in TMDL or impaired loadings based on NJDEP's WIP project Matrix. It will also quantify the expected benefits in terms of flooding mitigation, thereby linking water-quality and flood-control objectives.

The assessment will involve quantitative modeling, cost-benefit analysis, and a comprehensive review of existing and proposed regulatory frameworks.

Using the inventory data, we will identify watershed improvement projects such as green infrastructure (rain gardens, permeable pavement), potential regulation, maintenance projects and upgrades to the stormwater systems. For each potential project, we will estimate the percent loading reduction for each TMDL or impaired parameter using established load-reduction factors (e.g., 30 % for nitrogen, 40 % for sediment). A spreadsheet model will aggregate these estimates at the sub-watershed level, allowing us to rank projects by their overall environmental benefit and by the urgency of the associated flood risk.

The assessment will also include a detailed financial analysis. For every proposed project, we will estimate capital and operating costs and identify potential funding sources. This will encompass state programs such as the New Jersey Water Bank (NJWB) and stormwater grants.

A critical element of Phase II is the incorporation of community input. All feedback collected during the public information sessions will be systematically analyzed for recurring themes, concerns, and project preferences. We will present a narrative summary of this feedback alongside the technical assessment, demonstrating how public priorities have informed project selection and sequencing.

Based on the technical and financial analyses, the Assessment Report will propose an implementation schedule that details recommended project priorities. The schedule will be flexible to accommodate funding, permitting constraints, and potential regulatory changes.

The Phase II deliverables will consist of:

1. A written Watershed Assessment Report with detailed project tables and cost estimates,
2. Mapping illustrating proposed project locations,
3. A public comment period and summary of received comments, and
4. A preliminary implementation schedule. The report will be submitted to the NJDEP upon municipal approval. This submission will trigger a 60-day comment period during which the public can review and provide formal input on the proposed projects.

Phase III – Watershed Improvement Plan Report

The Watershed Improvement Plan (WIP) is the culmination of the two preceding phases. Phase III of the Watershed Improvement Plan involves the development and submission of a comprehensive Watershed Improvement Plan Report that formalizes the municipality’s commitment to implementing targeted water quality and stormwater management projects. Building upon the data and assessments completed in Phases I and II, this phase will focus on selecting specific projects that address identified water quality impairments, Total Maximum Daily Load (TMDL) reduction goals, and stormwater quantity issues such as localized flooding. Each selected project will be accompanied by a detailed implementation schedule outlining key milestones, timelines, and phasing strategies. The municipality will also identify funding mechanisms for each project, which may include local capital budgets, state or federal grants, and public-private partnerships. The report will incorporate both municipal and private sector initiatives that contribute to watershed improvement objectives. The final deliverables will be a formal Watershed Improvement Plan Report submitted to NJDEP by December 31, 2027, demonstrating alignment with regulatory goals and a clear path toward measurable environmental outcomes.

TASK 4: ROUTINE INLET AND OUTFALL INSPECTIONS

Utilizing the Township’s newly configured Stormwater Web mapping application, FPA will create inspection forms which directly relate to inlet and outfall assets within the inventory GIS. The forms will be accessible through ESRI’s ArcGIS Field

Maps application which is available on both IOS as well as Android devices. The forms will be configured utilizing a schema derived from the NJDEP's Outfall and Inlet inspection form templates. The forms will be designed in a manner to be user-friendly and aid in ease of data collection.

As of the date of this proposal, the total number of Township owned and operated outfalls is approximately 172 structures and 3,358 inlets. These outfalls and inlets are critical in preventing flooding, maintaining water quality, and ensuring public safety within the Township's jurisdiction. As part of the NJDEP MS4 Tier A general permit requirements, at a minimum, each outfall is to be inspected every five (5) years, with a minimum of 20% of the total inspected per year, and inlets are required to be inspected annually, with catch basins inspected every 5 years.

In this regard, FPA will conduct a comprehensive inspection and evaluation of all 172 outfalls, and 3,358 inlets in the first year in order to assess their current state and identify any signs of erosion, scouring, illicit connections (dry weather flow), and grate compliance. Furthermore, consideration will also be given to factors including the structural condition and general maintenance requirements such as vegetation growth or debris accumulation. Inspections will be conducted with a high accuracy GPS paired with a GIS data collection tablet utilizing the above specified ArcGIS Field Maps forms to collect photos and data fields for field workers to collect pertinent information.

Once complete assessments have been conducted on the inlets and outfalls, FPA will provide recommendations if any of the inspected structures require urgent rehabilitation and/or replacement.

It is worth noting that the assessment schedule remains contingent on prevailing weather patterns, it is generally required to complete inspections in favorable weather conditions and at least 72 hours after the most recent rainfall event for outfalls. Adverse weather could hinder fieldwork making it difficult for inspectors to access certain sites or properly assess the presence of illicit connections.

Specific Conditions

- A. We will, at no additional cost, revise and resubmit documents where an error on our behalf has been identified during the approval process. However, French & Parrello Associates, P.A., will not be held responsible for work that may result from comments, reviews, and requirements imposed by any regulatory agency.
- B. The above proposal does not include within the quoted prices the following items are specifically excluded:
 - 1. Project Design and Plans.
 - 2. NJDEP permitting, not specifically stated herein.
 - 3. Surveying
 - 4. There is no guarantee that FPA will meet the 2026 deadlines. However, FPA will work with NJDEP and the town to address MS4 Tier A mapping deadlines.
 - 5. Any work not specifically stated herein.



Section 2

Cost Proposal



Task 1: MS4 Infrastructure Mapping – Completion of MS4 Stormwater Inventory	\$134,100.00
Task 2: Establishment of a Township GIS System	\$27,220.00
Task 3: Watershed Improvement Plan(Phase I – Phase III)	\$137,130.00
Watershed Inventory Reports (Phase I)	\$42,790.00
Watershed Assessment Report (Phase II).....	\$44,070.00
Watershed Assessment Report (Phase III).....	\$50,270.00
Task 4: Routine Inlet and Outfall Inspections.....	\$40,210.00
Total Lump Sum	\$338,660.00

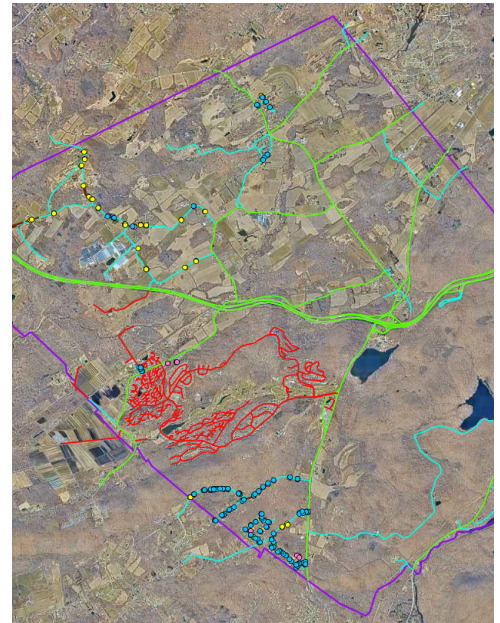
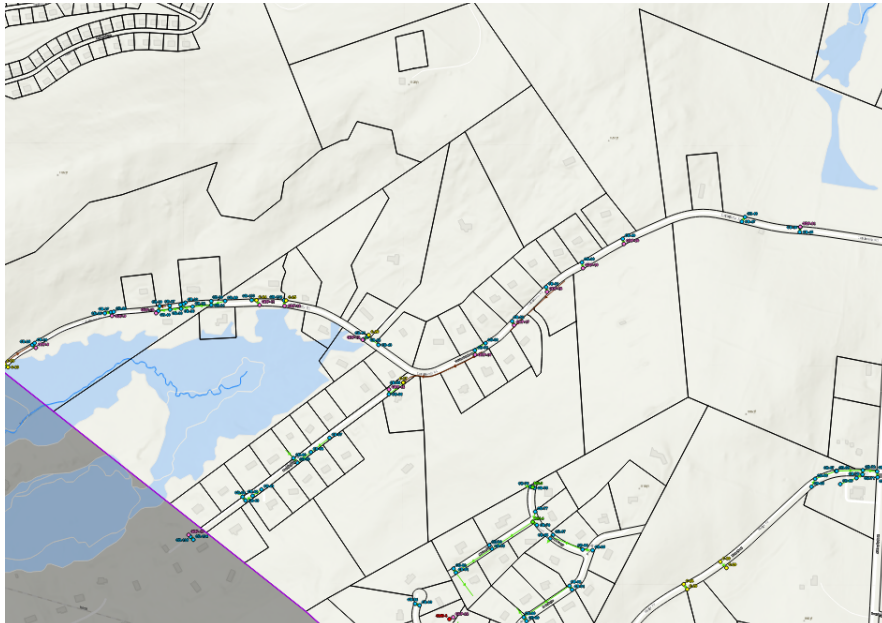


Section 3

Project Experience

Allamuchy Township MS4 Mapping

Allamuchy Township, New Jersey



In accordance with the New Jersey Department of Environmental Protection (NJDEP) New Jersey Pollution Discharge Elimination System (NJPDES) MS4 Tier A permit requirements, the maintenance and upkeep of stormwater management features is required. In order to comply with the MS4 permit requirements, an inventory of municipal stormwater systems must be completed. French & Parrello Associates (FPA) was retained and tasked with completing the inventory in compliance with NJDEP requirements which includes the locating and mapping of outfalls, ground water discharge points, interconnections, inlets, stormwater manholes, stormwater conveyance systems, pump stations, and other stormwater facilities. Utilizing ArcGIS Field maps in conjunction with web mapping applications deployed in ArcGIS Enterprise, 2.29 miles of conveyance, 135 inlets, 1 outfalls, 7 manholes, 26 groundwater discharge points, 5 stormwater basins, and 29 culverts were mapped for Allamuchy Township.

Client

Allamuchy Township

Reference

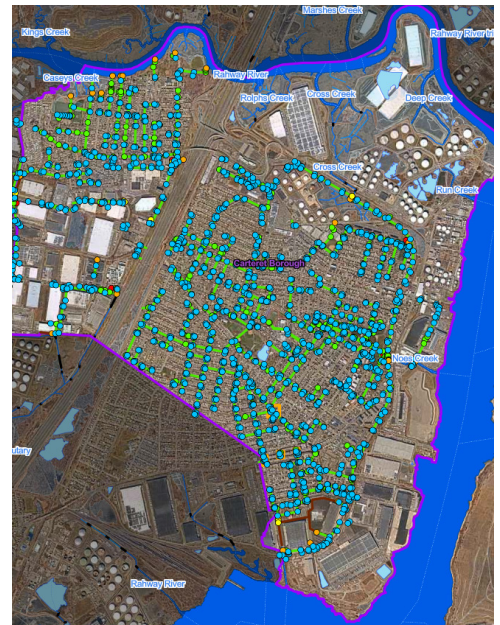
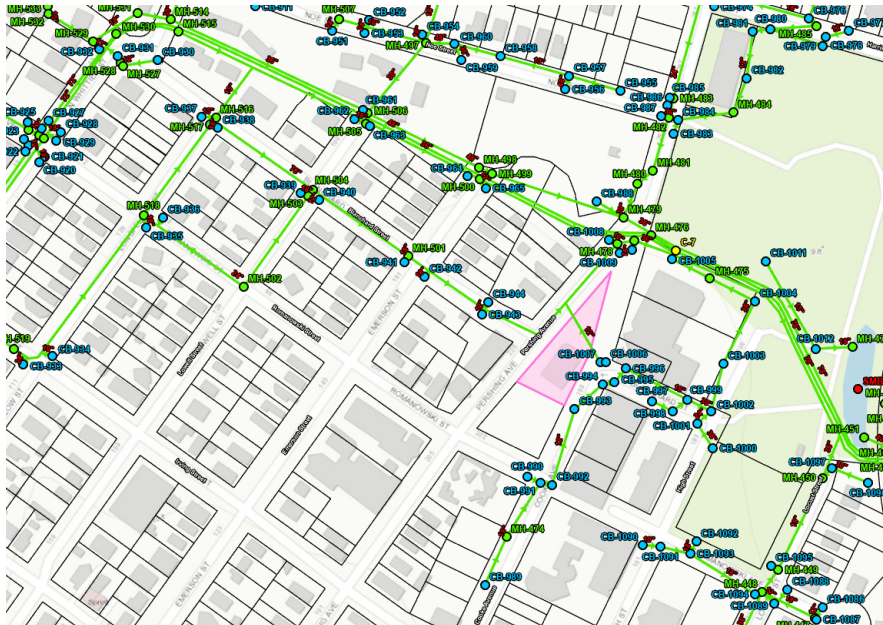
Rosemary Tuohy
Mayor
201.424.2329
mayor@allamuchynj.org

Services

NJDEP MS4 Compliant Mapping
GPS Data Collection
Field Data Collection
Inspection Services
Web Mapping Application Development
Asset Management

Carteret MS4 Mapping

Carteret, New Jersey



French & Parrello Associates (FPA) was retained by the Borough of Carteret to help meet the New Jersey Department of Environmental Protection (NJDEP) New Jersey Pollution Discharge Elimination System (NJPDES) MS4 Tier A permit requirements. To ensure compliance, the MS4 permit mandates a comprehensive asset inventory of the municipal stormwater system. FPA was tasked with creating this inventory, covering the location and mapping of critical stormwater infrastructure such as outfalls, groundwater discharge points, interconnections, inlets, stormwater manholes, conveyance systems, pump stations, and other facilities.

Working with an existing stormwater inventory provided by the Borough, FPA employed ArcGIS Field Maps alongside web mapping applications deployed within ArcGIS Enterprise. Through this technology, FPA mapped 39 miles of conveyance, 1,413 inlets, 20 outfalls, 16 groundwater discharge points, 7 stormwater basins, 8 culverts, and 608 manholes. This detailed mapping effort is a vital step towards the Borough of Carteret's compliance with the MS4 permit requirements.

Client

Borough of Carteret

Reference

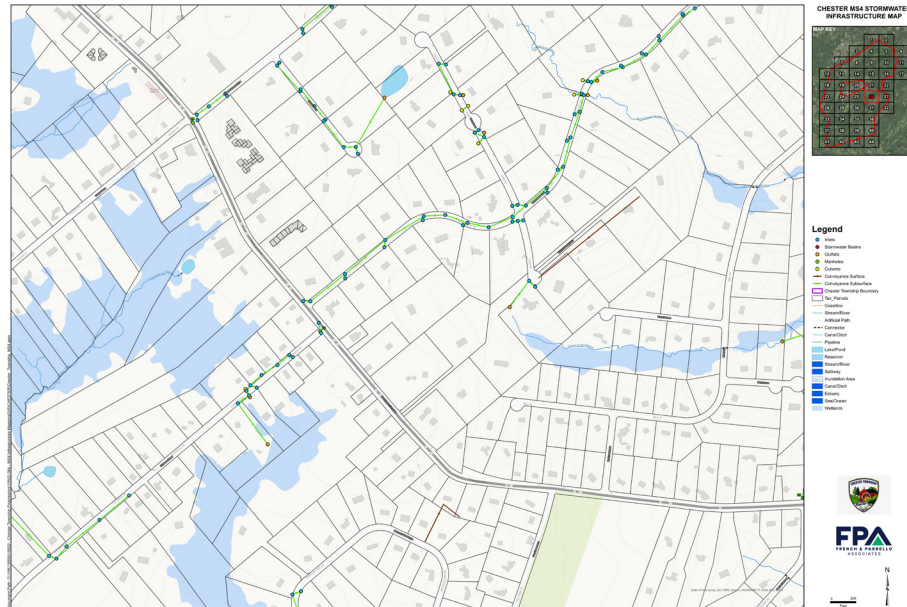
John P. DuPont, PE, CME, PP
 Director of Municipal Engineering
 732.541.3847
dupontj@carteret.net

Services

NJDEP MS4 Compliant Mapping
 GPS Data Collection
 Field Data Collection
 Inspection Services
 Web Mapping Application Development
 Asset Management

Chester Township MS4 Mapping

Chester Township, New Jersey



In accordance with the New Jersey Department of Environmental Protection (NJDEP) New Jersey Pollution Discharge Elimination System (NJPDES) MS4 Tier A permit requirements, the maintenance and upkeep of stormwater management features is required. In order to comply with the MS4 permit requirements, an inventory of municipal stormwater systems must be completed. French & Parrello Associates (FPA) was retained and tasked with completing the inventory in compliance with NJDEP requirements which includes the locating and mapping of outfalls, ground water discharge points, interconnections, inlets, stormwater manholes, stormwater conveyance systems, pump stations, and other stormwater facilities. Utilizing ArcGIS Field maps in conjunction with web mapping applications deployed in ArcGIS Enterprise, 32.94 miles of conveyance, 1,491 inlets, 28 outfalls, 42 manholes, 210 groundwater discharge points, 5 stormwater basins, and 76 culverts were mapped for Chester Township.

Client

Chester Township

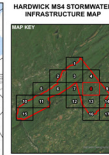
Reference

Robin Collins
Clerk/Administrator
908.879.5100 ext 810

Services

NJDEP MS4 Compliant Mapping
GPS Data Collection
Field Data Collection
Inspection Services
Web Mapping Application Development
Asset Management

Hardwick Township, New Jersey



Client

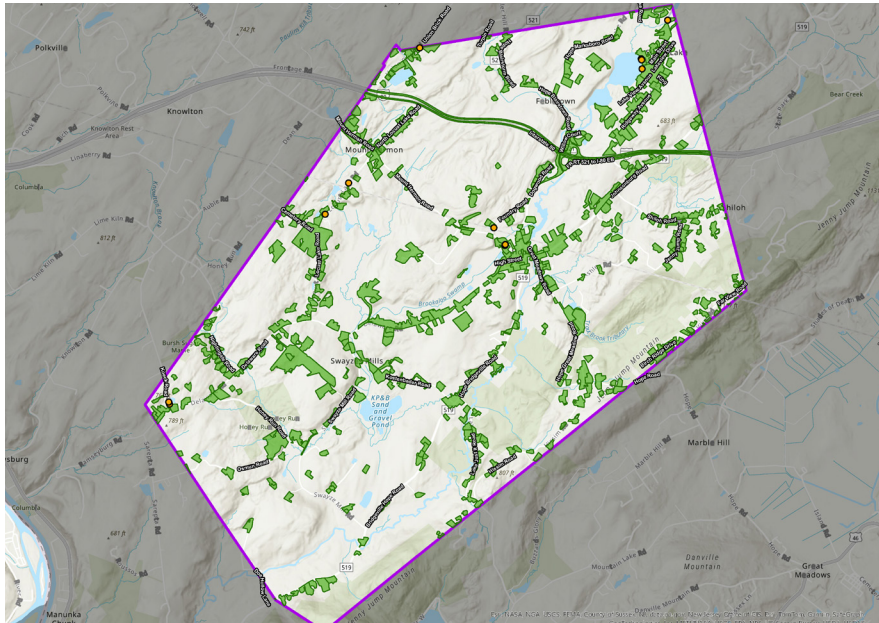
Reference

Services

- NJDEP MS4 Compliant Mapping
- GPS Data Collection
- Field Data Collection
- Inspection Services
- Web Mapping Application Development
- Asset Management

Hope Township – Tier A Stormwater Compliance

Hope Township, Warren County, New Jersey



French & Parrello Associates (FPA) was retained by Hope Township to advance their stormwater management from a Tier B to the Tier A stormwater permit requirements. Our services included:

- Updating the Town's Stormwater Pollution Prevention Plan
- Inspection & Maintenance Mapping
- Annual Employee Training
- Mapping of Recorded Private Storm Facilities
- Stormwater Ordinance Guidance
- Local Public Outreach Material
- Updating the Municipal Stormwater Management Plan
- Stormwater System Mapping
- Watershed Improvement Plan (Phase 1)

FPA has successfully GIS mapped the town's stormwater system, ensuring all components are in place for the Watershed Improvement Plan. Utilizing NJDEP's latest template, we have updated the Town's SPPP to meet all Tier A requirements. FPA provided a tailored employee training to DPW operations and requirements for stormwater system, ensuring that they received all relevant information to their town. FPA created several maps including, Inspection and Maintenance scheduling maps for inlets and outfalls, and a street sweeping map showing the frequency of how often the roads should be swept per the minimum requirements of Tier A. Additionally, FPA has provided local public outreach material to assist with reaching Public Outreach Education requirements.

Client

Township of Hope

Reference

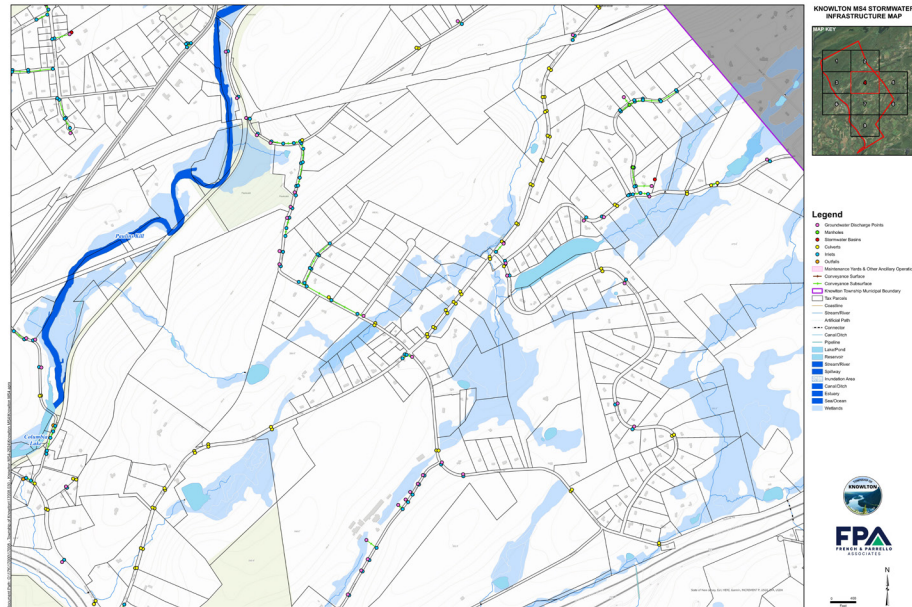
Don Whitmore
Director of DPW
908.459.4303

Services

Stormwater Management
GIS Mapping
Municipal Engineering

Knowlton Township MS4 Mapping

Knowlton Township, New Jersey



In accordance with the New Jersey Department of Environmental Protection (NJDEP) New Jersey Pollution Discharge Elimination System (NJPDES) MS4 Tier A permit requirements, the maintenance and upkeep of stormwater management features is required. In order to comply with the MS4 permit requirements, an inventory of municipal stormwater systems must be completed. French & Parrello Associates (FPA) was retained and tasked with completing the inventory in compliance with NJDEP requirements which includes the locating and mapping of outfalls, ground water discharge points, interconnections, inlets, stormwater manholes, stormwater conveyance systems, pump stations, and other stormwater facilities. Utilizing ArcGIS Field maps in conjunction with web mapping applications deployed in ArcGIS Enterprise, 7.43 miles of conveyance, 386 inlets, 16 outfalls, 4 manholes, 172 groundwater discharge points, 5 stormwater basins, and 147 culverts were mapped for Knowlton Township.

Client

Knowlton Township

Reference

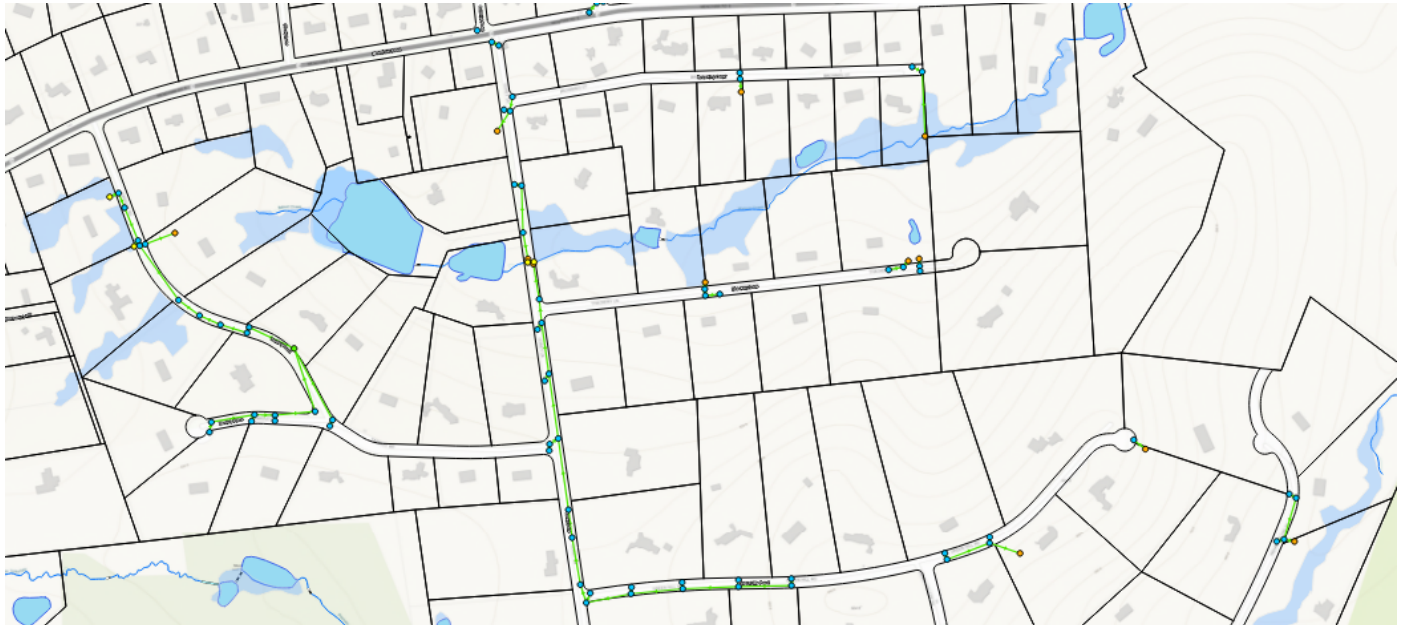
Brian J. Peck
Public Works Manager/CPWM
908.496.4265

Services

NJDEP MS4 Compliant Mapping
GPS Data Collection
Field Data Collection
Inspection Services
Web Mapping Application Development
Asset Management

Mendham Township MS4 Mapping

Mendham Township, New Jersey



In accordance with the New Jersey Department of Environmental Protection (NJDEP) New Jersey Pollution Discharge Elimination System (NJPDES) MS4 Tier A permit requirements, the maintenance and upkeep of stormwater management features is required. In order to comply with the MS4 permit requirements, an inventory of municipal stormwater systems must be completed. French & Parrello Associates (FPA) was retained and tasked with completing the inventory in compliance with NJDEP requirements which includes the locating and mapping of outfalls, ground water discharge points, interconnections, inlets, stormwater manholes, stormwater conveyance systems, pump stations, and other stormwater facilities. Utilizing ArcGIS Field maps in conjunction with web mapping applications deployed in ArcGIS Enterprise, 45.2 miles of conveyance, 2,169 inlets, 86 outfalls, 51 manholes, 275 groundwater discharge points, 34 stormwater basins, and 86 culverts were mapped for Mendham Township. A web mapping application was configured to allow township staff to conduct inspections of the municipality's outfalls. This project is still ongoing.

Client

Mendham Township

Reference

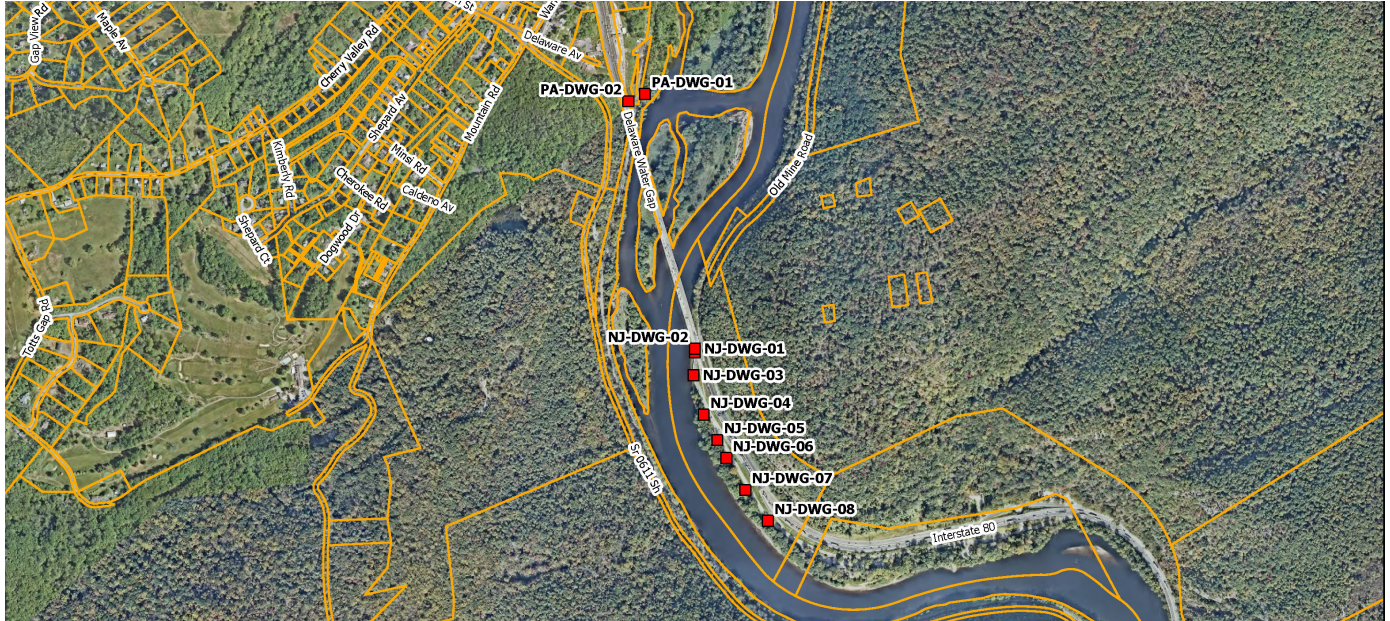
Dave Read
DPW Superintendent
973.543.4509

Services

NJDEP MS4 Compliant Mapping
GPS Data Collection
Field Data Collection
Inspection Services
Web Mapping Application Development
Asset Management

DRJTBC MS4 Stormwater Pollution Prevention Plan (PPP)

Various Locations, New Jersey



French & Parrello Associates (FPA) was retained by the Delaware River Joint Toll Bridge Commission (DRJTBC) to update their Stormwater Pollution Prevention Plan (SPPP). FPA conducted a thorough review of existing data and documents and provided recommendations to ensure compliance with the latest stormwater permit regulations. Site visits were carried out to verify current conditions and capture photo records of stormwater facilities. Additionally, FPA performed GIS mapping to assist in maintaining records.

Utilizing the current NJDEP SPPP template, FPA identified the SPPP Team responsible for implementing various components of the plan. The updated SPPP includes:

- A detailed description of the operation policies.
- Comprehensive record-keeping documentation.
- Implementation schedules aligned with permit requirements, including assistance with frequency.
- A list of responsibilities and descriptions for stormwater compliance per NJDEP regulations.
- Identified areas in need of attention and provided recommendations.

Client

DRJTBC

Reference

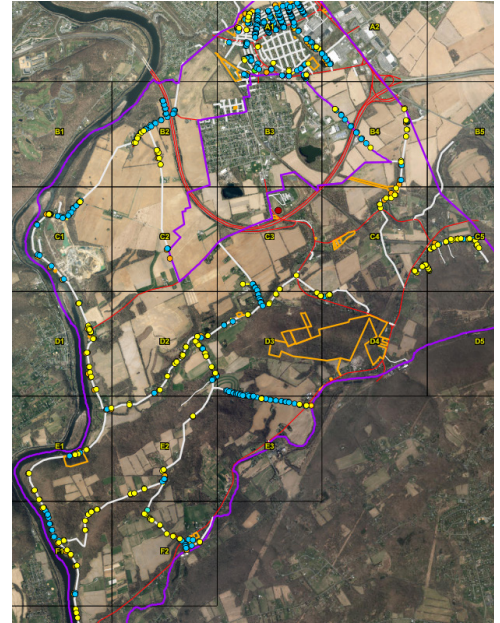
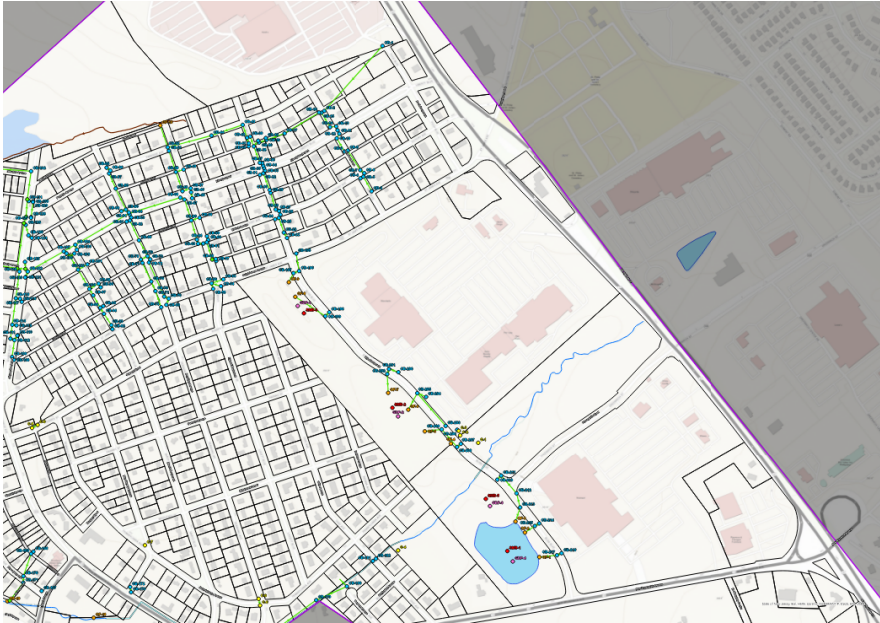
Kevin Skeels, PE
Chief Engineer
267.394.6711
kskeels@drjtbc.org

Services

Stormwater Management
GIS Mapping

Pohatcong Township MS4 Mapping

Pohatcong Township, New Jersey



In accordance with the New Jersey Department of Environmental Protection (NJDEP) New Jersey Pollution Discharge Elimination System (NJPDES) MS4 Tier A permit requirements, the maintenance and upkeep of stormwater management features is required. In order to comply with the MS4 permit requirements, an inventory of municipal stormwater systems must be completed. French and Parrello Associates (FPA) was retained and tasked with completing the inventory in compliance with NJDEP requirements which includes the locating and mapping of outfalls, ground water discharge points, interconnections, inlets, stormwater manholes, stormwater conveyance systems, pump stations, and other stormwater facilities. Utilizing ArcGIS Field maps in conjunction with web mapping applications deployed in ArcGIS Enterprise, 7.73 miles of conveyance, 393 inlets, 74 outfalls, 13 manholes, 5 groundwater discharge points, 5 stormwater basins, and 130 culverts were mapped for Pohatcong Township. This Project is still ongoing.

Client

Pohatcong Township

Reference

Jeff Loveatz
DPW Supervisor
908.454.6121 ext. 310

Services

NJDEP MS4 Compliant Mapping
GPS Data Collection
Field Data Collection
Inspection Services
Web Mapping Application Development
Asset Management



Section 4

Resumes of Key Personnel



Christopher A. Nourry, GISP

Manager of GIS

Mr. Nourry is a certified Geographic Information Systems Professional and the Manager of FPA's Geographic Information Systems (GIS) Services Discipline bringing more than 14 years of expertise and experience to his assignments.

Mr. Nourry has served public and private entities across multiple industries on a range of GIS projects, including utility easement mapping, street light inventories, and stormwater collection system asset inventories, as well as sanitary sewer asset inventories, preliminary wetlands mapping, and property inspections and inventories. His additional experience includes environmental site mapping, customized web mapping applications, application development, and database design and implementation.

Mr. Nourry has extensive experience utilizing ESRI Software, including ArcMap, ArcGIS Pro, ArcCatalog, ArcPad, ArcGIS Field Maps, and ArcGIS Online. He has successfully completed several deployments of ArcGIS Enterprise.

In addition to his experience with GIS, Mr. Nourry is well versed in Microsoft SQL Server, PostgreSQL, Microsoft Azure, Amazon Web Services (AWS), and the Microsoft Power Platform which includes Power Automate, Power BI, and PowerApps. Mr. Nourry has used these skills to deploy cloud services to host complex databases and develop applications for a wide range of uses.

Utilizing his expertise and passion of GIS, combined with his attention to detail and knowledge of GPS and computer hardware, Mr. Nourry established FPA's GIS Services Discipline. He has developed company standards and procedures to ensure all clients receive the most cost-effective and efficient solutions to their project needs.

Career Snapshot

- Manager of GIS Services
- Extensive experience with ESRI GIS software suite
- Database design experience
- Python & SQL
- ArcGIS Enterprise Deployments
- Asset Management
- Statistical Analysis
- Application Development
- AWS & Azure

Education

- BA, Environmental Studies, Ramapo College

Certifications

- Certified Geographic Information Systems Professional (GISP)

Specialized Training

- ArcGIS Enterprise: Configuring a Base Deployment
- ArcGIS Data Reviewer: Implementing Quality-Focused Data Management Workflows
- Administering ArcGIS Online Members
- ArcGIS Online: Using Smart Mapping
- Deep Learning Using ArcGIS Pro
- Spatial Data Science: Data Visualization and Exploration

Union County Electric Vehicle Infrastructure Study

Union County, New Jersey

Served as GIS Analyst for this assignment where zoning data, EV data, and environmental justice factors were consolidated into a public interactive map utilizing ESRI software. The study was launched to support electric vehicle (EV) use in Union County by planning the expansion of a network of charging stations for current and future vehicles. As a major transportation hub connecting to the New Jersey Turnpike, Garden State Parkway, Interstate 78, and Port of Elizabeth, Union County is looking to make EVs a viable choice for a growing population of 575,000 by planning the expansion of an Electric Vehicle Service Equipment (EVSE) network and eliminating barriers to installation. The placement of EV Chargers requires creativity in targeting residential areas to install lower-cost EVSE and strategic placement of higher-cost Level 3 (DC Fast) chargers. The study's goal is to identify locations for EV chargers throughout the County to provide an equitable distribution of chargers while balancing priorities such as maximizing utilization.

Visions at Absecon & Oakland Square – U.S. Housing and Urban Development

Absecon & Red Bank, New Jersey

Utilized GIS to assist a client with qualifying for federal funding through the U.S. Department of Housing and Urban Development (HUD). Mr. Nourry utilized environmental data provided by various state and federal agencies in conjunction with transportation and demographic data to develop regional maps utilizing spatial analysis and mapping techniques to assist in the planning and qualification process. The maps were created to analyze and visualize surrounding demographics, traffic conditions, and environmentally sensitive populations for areas in relation to two proposed apartment complexes and were a critical component in assisting with qualifying the project for HUD funding.

Pohatcong Township MS4 Stormwater mapping

Warren County, New Jersey

In order to assist the Township with the NJDEP's Municipal Stormwater requirements for Tier A municipalities, Mr. Nourry Served as GIS Project Manager responsible for the creation of a Township wide Stormwater asset management GIS. The project entailed utilizing existing spatial data which included stormwater inlets, manholes, culverts, and above and below ground conveyance to create a comprehensive system for the municipality to fulfill the NJDEP's MS4 mapping requirements. The preexisting data was field verified and corrected utilizing high accuracy GNSS equipment. Additionally, new assets were mapped along with all piping interconnections. All information was incorporated into a GIS utilizing ESRI's ArcGIS Pro software and hosted in an ArcGIS Enterprise deployment.

Mendham Township MS4 Stormwater mapping

Warren County, New Jersey

In order to assist the Township with the NJDEP's Municipal Stormwater requirements for Tier A municipalities, Mr. Nourry Served as GIS Project Manager responsible for the creation of a Township wide Stormwater asset management GIS. The project entailed utilizing existing spatial data which included stormwater inlets, manholes, culverts, and above and below ground conveyance to create a comprehensive system for the municipality to fulfill the NJDEP's MS4 mapping requirements. The preexisting data was field verified and corrected utilizing high accuracy GNSS equipment. FPA coordinated with the Municipality's Department of Public works to establish a web mapping application for township staff to conduct field inspections of outfalls as well as catch basins and inlets as they were cleaned and/or repaired. All information was incorporated into a GIS utilizing ESRI's ArcGIS Pro software and hosted in an ArcGIS Enterprise deployment.

Allamuchy Township MS4 Stormwater mapping

Warren County, New Jersey

Mr. Nourry Served as GIS Project Manager responsible for the creation of a Township wide Stormwater asset

management GIS. The project entailed utilizing the NJDEP's MS4 mapping stormwater template database to establish a data collection schema and methodology. Spatial data collected included stormwater inlets, outfalls, groundwater discharge points, manholes, culverts, stormwater facilities, and above and below ground conveyance to create a comprehensive system for the municipality to fulfill the NJDEP's MS4 mapping requirements. The stormwater assets were mapped along with all piping interconnections between the municipal system and other public and private entities. All information was incorporated into a GIS utilizing ESRI's ArcGIS Pro software and hosted in an ArcGIS Enterprise deployment. Once the inventory was completed, a digital map book was created and shared with the municipality with the inventory submitted to the NJDEP in their provided template geodatabase.

Knowlton Township MS4 Stormwater mapping

Warren County, New Jersey

Mr. Nourry Served as GIS Project Manager responsible for the creation of a Township wide Stormwater asset management GIS. The project entailed utilizing the NJDEP's MS4 mapping stormwater template database to establish a data collection schema and methodology. Spatial data collected included stormwater inlets, outfalls, groundwater discharge points, manholes, culverts, stormwater facilities, and above and below ground conveyance to create a comprehensive system for the municipality to fulfill the NJDEP's MS4 mapping requirements. The stormwater assets were mapped along with all piping interconnections between the municipal system and other public and private entities. All information was incorporated into a GIS utilizing ESRI's ArcGIS Pro software and hosted in an ArcGIS Enterprise deployment. Once the inventory was completed, a digital map book was created and shared with the municipality with the inventory submitted to the NJDEP in their provided template geodatabase.

First Energy Environmental GIS

Mr. Nourry was project manager for a large GIS which encompassed multiple subsidiaries throughout New Jersey, Virginia, West Virginia, Pennsylvania, Ohio, Maryland. The GIS was designed with the ESRI ArcGIS suite of software products and permits environmental coordinators to utilize a web mapping application to better facilitate coordination and project completion with multiple contractors. The system was designed to allow project contractors to upload documents and track project progress allowing for faster facilitation of vital information with project stakeholders.

Two Rivers Water Reclamation Authority

Monmouth County, New Jersey

Served as GIS Project Manager responsible for taking new and existing GIS data and creating an ArcGIS online asset inventory system. The previous asset inventory was kept on GIS infrastructure that was not updated and had become unresponsive. FPA was tasked with obtaining the existing inventory data, adding new data, and configuring a web mapping application for the client. The existing features were analyzed and checked against real world information and attributes were updated to allow the client to identify sewer line size and construction material. At the client's request, several widgets were added to the mapping application to allow for public notification, filtering of features based upon predefined criteria, and queries to allow users to utilize their own criteria for feature collection.

Kittatinny – Portland ADSS Fiber Project, First Energy

Blairstown, New Jersey to Portland, Pennsylvania

Mr. Nourry was the GIS Project Manager who conducted GIS field mapping of a 30-foot-wide, 8.2-mile-long utility easement for a proposed installation of fiber optic cables. The field mapping consisted of utilizing GIS field tablets running ArcPad Software to collect critical information, including wetlands data points in conjunction with certified wetlands delineators, utility pole locations and related attributes, and drainage culverts and intersecting waterbodies. All data was post-processed for increased accuracy and a 30-page map book was produced and distributed to the client and project contractors.

Monmouth County Parks System –Park Land Acquisition

Monmouth County, New Jersey

In his role as GIS Project Manager, Mr. Nourry utilized GIS field devices to collect detailed site information regarding the current state of multiple properties. Field workers conducted site inspections by foot and utilized Trimble TDC100 GIS handheld data collectors to record potential environmentally related issues encountered. Typical site inspections included, but were not limited to, collecting geotagged pictures, recording debris piles, and mapping of former or current agricultural areas, as well as fuel oil storage tanks, existing structures, and electrical transformers and septic fields. The information was utilized by office personnel to complete environmental due diligence reports that were utilized by the client during property acquisitions.

Gloucester County Street Map

Gloucester County, New Jersey

Mr. Nourry successfully developed a new street map for Gloucester County. The project involved coordinating with the County to obtain available data, supplementing it with layers from the New Jersey Office of Geographic Information Systems (NJOGIS) Open Data website. FPA imported the data into a database and drafted the map using ArcGIS Pro and Adobe InDesign, incorporating points of interest, labels, color-coding, and symbology based on road type. Once finalized, FPA provided full-color proofs for review, completed revisions as needed, and printed 5,000 copies.



Stefanie Williams, PE, CME

Project Manager | Municipal Engineering

Ms. Williams serves FPA as a Municipal Engineer in our Hackettstown, NJ branch office. In her role at our Hackettstown office, Ms. Williams is responsible for supervising the day-to-day activities for the office's municipalities, including construction management, capital project design, board reviews, lot grading application review, stormwater Tier A compliance requirements and various ancillary projects that occur with municipalities.

During her 10-plus years of experience, Ms. Williams's work has included a various range of projects, including roadway resurfacing programs, road preservation programs, roadway reconstructions, NJDEP MS4 stormwater compliance permitting, stormwater management facilities, streetscape improvements, drainage improvement projects, recreational facility improvements, and culvert design. In addition to her design and construction experience, Ms. Williams has provided engineering services to various Land Use Boards throughout New Jersey. She is also confidentially acquainted with State regulations such as the Local Public Contracts Law, Stormwater Management Rules, RSIS, Flood Hazard Area Control Act and the Municipal Land Use Law, allowing her to provide guidance to FPA's municipal clients as these laws relate to engineering projects and development. Her diverse knowledge base has proven invaluable in guiding both FPA's municipalities and staff to successfully achieve goals.

Ms. Williams previously served as the Staff Engineer for Branchburg Township. She was responsible for providing reviews to the Township Engineer for both the Planning Board and Zoning Board of Adjustment, reviewing all applications to ensure their compliance with the Township's ordinances and engineering standards. As an in-house staff engineer, she answered walk-in and call-in residents with questions regarding projects, road complaints, permitting process, and helped interpret engineer plans. Her responsibilities also included preparing and obtaining grants, including NJDOT local aid grants. She prepared, obtained all necessary permits, designed plans, and prepared cost estimates for various capital improvement projects. During construction, she served as an onsite engineer, providing communication to the residents about any activities that may affect them before, during and after construction, as well as ensuring the contractor followed the specification requirements.

Ms. Williams presently serves as the appointed Land Use Board Engineer for both Hope Township and Hardwick Township in Warren County. She serves as the on-call Engineer for Hardwick and Hope, in Warren County, and Franklin Borough in Sussex County. She also serves as the Assistant to the Township Engineer in Mendham Township in Morris County, Knowlton and Blairstown in Warren County.

Career Snapshot

- Over 10 years of experience
- Advisory Board Member for the New Jersey Society of Municipal Engineers
- Current Municipal Engineer for Hope Township and Hardwick Township
- Previously served as in-house Staff Municipal Engineer for the Township of Branchburg

Education

- BS, Civil Engineering Technology, Rochester Institute of Technology

Registrations / Licenses

- Professional Engineer: NJ
- Certified Municipal Engineer: NJ

Affiliations

- New Jersey Society of Municipal Engineers (NJSME)

Training

- Stormwater Management Design Review Course (NJDEP)
- Stormwater Management Rule Amendment Training (NJDEP)

Hope Township – Highlands Grant - Tier A Compliance Engineering Services (Former Tier B)

Hope Township, New Jersey

Township Engineer for Hope Township in Warren County, New Jersey. Responsibilities include preparing and presenting grant applications to the Highlands Council. Projects prepared include mapping stormwater infrastructure, updating the Municipal Stormwater Management Plan, and providing materials and assistance for Local Public Outreach requirements. Guidance is provided on adopting the Stormwater Community Ordinance, maintaining “Good Housekeeping” records, and initiating the first phase of the Watershed Improvement Plan. The project is funded through a grant by the Highlands Council.

Mendham Township – Highlands Grant - Tier A Compliance Engineering Services (Existing Tier A)

Mendham Township, New Jersey

Work included preparing a grant application for the Highlands Council. Prepared projects include mapping stormwater infrastructure, updating the Municipal Stormwater Management Plan, and providing materials and assistance for Local Public Outreach requirements. Guidance was provided on adopting the Stormwater Community Ordinance, maintaining “Good Housekeeping” records, and initiating the first phase of the Watershed Improvement Plan. The project is funded through a grant by the Highlands Council.

Hope Township Consulting Engineering Services

Hope Township, New Jersey

Engineer for Hope Township in Warren County, New Jersey. Work includes being the appointed Land Use Board Engineer to ensure that proposed projects conform with various land use Ordinances, board requirements and other State and local regulations. Review driveway permits to ensure compliance with regulations. Provides oversight of MS4 permitting compliance. Prepares grant applications and manages the expenditure of funds received, including the use of Local Aid funds from NJDOT. Prepares plans for capital improvement projects. Provides general engineering guidance to the Township Council, including the preparation of Township Ordinances and assisting in the preparation of project budgets.

Hardwick Township Consulting Engineering Services

Hardwick Township, Warren County New Jersey

Engineer for Hardwick Township in Warren County, New Jersey. Work includes being the appointed Land Use Board Engineer to ensure that proposed projects conform with various land use Ordinances, board requirements and other State and local regulations. Assist in Zoning Officer with driveway permits with engineering advice. Provides oversight of MS4 permitting compliance. Prepares grant applications and manages the expenditure of funds received, including the use of Local Aid funds from NJDOT. Prepares plans for capital improvement projects. Provides general engineering guidance to the Township Council, including the preparation of Township Ordinances and assisting in the preparation of project budgets.

Mendham Township Consulting Engineering Services

Mendham Township, Morris County, New Jersey

Assistant to the Township Engineer for Mendham Township in Morris County, New Jersey. Work includes review of grading applications and ensuring proposed projects throughout the Township conform with various land use Ordinances and other State and local regulations. Provides oversight of MS4 permitting compliance. Prepares grant applications for NJDOT local aid and Morris County Trail Construction Grant. Prepares plans for capital improvement projects. Assists with Planning and Zoning Board applications.

Blairstown Township Consulting Engineering Services

Hardwick Township, Warren County, New Jersey

Assistant to the Township Engineer for Blairstown Township in Warren County, New Jersey. Work includes review of land use applications and ensuring proposed projects throughout the Township conform with various land use Ordinances and other State and local regulations. Provides oversight of MS4 permitting compliance. Prepares grant applications and manages the expenditure of funds received, including the use of Local Aid funds from NJDOT. Prepares plans for capital improvement projects.

Knowlton Township Consulting Engineering Services

Knowlton Township, Warren County New Jersey

Assistant to the Township Engineer for Knowlton Township in Warren County, New Jersey. Work includes review of land use applications and ensuring proposed projects throughout the Township conform with various land use Ordinances and other State and local regulations. Provides oversight of MS4 permitting compliance. Prepares grant applications and manages the expenditure of funds received, including the use of Local Aid funds from NJDOT and recreational grants. Prepares plans for capital improvement projects.

Oak Hill at Independence

Independence Township, New Jersey

Appointed Engineer for the Homeowner Association for Oak Hill at Independence Township in Warren County, New Jersey. Work included managing, providing expert opinion, and executing various engineering matters for the Homeowners Association. Completed projects related to roadway resurfacing, driveway improvements, drainage improvements, building code compliance and ADA design assistance. Prepared capital improvement plans and bid specifications.

Branchburg Township Staff Engineer

Branchburg Township, Somerset County, New Jersey

Hired as in-house Staff Engineer for Branchburg Township in Somerset County, New Jersey. Work included managing and executing various engineering matters for the Township. Completed projects related to roadway resurfacing, roadway design and reconstruction, stormwater sewer improvements, oversight and budgeting of capital improvement projects, and the design and rehabilitation of recreational courts at White Oak Park. Assisted in the review of development applications including various warehouse/manufacturing, pharmaceutical office expansions, 6 different affordable housing applications, with 1,300-unit obligation with approximately a total of 3,000 new residential units. Prepared NJDOT local aid grants and managed the obligations and requirements for the projects.



Jake Nelson

Senior GIS Analyst

Mr. Nelson is a Senior GIS analyst for FPA's Geographic Information Systems (GIS) Services Department with 5 years of experience.

Mr. Nelson has performed GPS mapping and analysis on various GIS projects, including MS4 stormwater inventory, utility mapping, curve number calculations, and inundation mapping. He has assisted in the continued development of FPA's GIS workflows and practices and has developed processes to streamline various assignments. His additional experience includes designing web mapping applications, and database management.

Mr. Nelson has extensive experience utilizing ESRI Software, including ArcMap, ArcGIS Pro, ArcGIS Field Maps, Experience Builder and ArcGIS Online. He works within an ArcGIS enterprise deployment and manages the data located on the server. Mr. Nelson has also created data and a model for Machine Learning uses within ArcGIS Pro.

His knowledge and skills acquired from years of working with Geographic Information Systems has allowed Mr. Nelson to add benefit to a growing GIS department and serve as a multi-faceted GIS analyst.

In addition to his experience with GIS, Mr. Nelson has experience working on the Microsoft Power Platform which includes Power Automate, and PowerApps. Mr. Nelson has applied this knowledge toward assisting in the development of multiple web applications. His skillset using power automate has allowed Mr. Nelson to develop flows to send out automated emails to notify users and export data and pertinent information from the custom applications

Career Snapshot

- GIS Analyst
- Extensive experience with ESRI GIS software suite
- Arcade & SQL
- Asset Management
- Statistical Analysis
- Application Development

Education

- BA, Environmental and Resource Economics, University of Delaware

Certifications

- Graduate GIS Certificate (University of Delaware)

Specialized Training

- Automating Workflows Using ArcGIS Pro Tasks
- Administering ArcGIS Online Members
- Performing Analysis Using ArcGIS API for Python
- Deep Learning Using ArcGIS Pro
- Spatial Data Science: Data Visualization and Exploration

Pohatcong Township MS4 Stormwater mapping

Warren County, New Jersey

In order to assist the Township with the NJDEP's Municipal Stormwater requirements for Tier A municipalities, Mr. Nelson created ArcGIS online maps utilizing available existing data, and performed field work to collect additional inventory of the stormwater inlets, manholes, culverts, and above and below ground conveyance to fulfill the NJDEP's MS4 mapping requirements. The preexisting data was field verified and corrected utilizing high accuracy GNSS equipment. All information was incorporated into a GIS utilizing ESRI's ArcGIS Pro software and hosted in an ArcGIS Enterprise deployment.

Mendham Township MS4 Stormwater mapping

Warren County, New Jersey

In order to assist the Township with the NJDEP's Municipal Stormwater requirements for Tier A municipalities, Mr. Nelson created ArcGIS online maps utilizing available existing data, and performed field work to collect additional inventory of the stormwater inlets, manholes, culverts, and above and below ground conveyance to fulfill the NJDEP's MS4 mapping requirements. The preexisting data was field verified and corrected utilizing high accuracy GNSS equipment. All information was incorporated into a GIS utilizing ESRI's ArcGIS Pro software and hosted in an ArcGIS Enterprise deployment.

Allamuchy Township MS4 Stormwater mapping

Warren County, New Jersey

In order to assist the Township with the NJDEP's Municipal Stormwater requirements for Tier A municipalities, Mr. Nelson created ArcGIS online maps utilizing available existing data, and performed field work to collect additional inventory of the stormwater inlets, manholes, culverts, and above and below ground conveyance to fulfill the NJDEP's MS4 mapping requirements. The preexisting data was field verified and corrected utilizing high accuracy GNSS equipment. All information was incorporated into a GIS utilizing ESRI's ArcGIS Pro software and hosted in an ArcGIS Enterprise deployment.

Knowlton Township MS4 Stormwater mapping

Warren County, New Jersey

In order to assist the Township with the NJDEP's Municipal Stormwater requirements for Tier A municipalities, Mr. Nelson created ArcGIS online maps utilizing available existing data, and performed field work to collect additional inventory of the stormwater inlets, manholes, culverts, and above and below ground conveyance to fulfill the NJDEP's MS4 mapping requirements. The preexisting data was field verified and corrected utilizing high accuracy GNSS equipment. All information was incorporated into a GIS utilizing ESRI's ArcGIS Pro software and hosted in an ArcGIS Enterprise deployment.

First Energy Environmental GIS

Mr. Nelson assisted in the creation of a large GIS which encompassed multiple subsidiaries throughout New Jersey, Virginia, West Virginia, Pennsylvania, Ohio, Maryland. The GIS was designed with the ESRI ArcGIS suite of software products and permits environmental coordinators to utilize a web mapping application to better facilitate coordination and project completion with multiple contractors. The system was designed to allow project contractors to upload documents and track project progress allowing for faster facilitation of vital information with project stakeholders. Mr. Nelson created a desktop version of the application utilizing ArcGIS Experience Builder which collaborates with the web mapping application in real time.



Eric C. Betz, PE, BCEE, CME

Vice President

Director of Infrastructure

Mr. Betz, who serves as Vice President and Director of Infrastructure, has over 30 years of experience providing consulting engineering services to local governments, municipal and regional utilities authorities, counties, water companies, state agencies and private clients. His primary area of expertise is in water and wastewater engineering however he has well-rounded experience profile having worked across other sectors including transportation, built environment and energy.

Career Snapshot

- Over 30 years of experience

Education

- MS, Civil/Environmental Engineering, Rutgers University
- BS, Civil/Environmental Engineering, Rutgers University

Registrations / Licenses

- Professional Engineer: NJ
- Certified Municipal Engineer: NJ
- Board Certified Environmental Engineer (W/WW)

Affiliations

- American Academy of Environmental Engineers & Scientists (AAEES)
- American Council of Engineering Companies (ACEC)
- American Society of Civil Engineers (ASCE)
- American Water Works Association (AWWA)
- New Jersey Society of Municipal Engineers (NJSME)
- Utility and Transportation Contractors Association of NJ
- Rutgers University SOE CEE Industry Advisory Board
- Columbia University School of Engineering CBIPS, Board Member

While working for his former employer, where he worked for 29 years, he has designed, managed and provided oversight for infrastructure projects of varying magnitudes and levels of complexity. Mr. Betz, most recently served as Senior VP and Principal, where he was Development Manager for US Northeast Region, which included approximately 800 staff working in 15 offices spanning from New England to DC Metro area and westward to Cleveland, OH, Pittsburg, PA, Buffalo, NY and Chicago, IL. He was responsible for developing business strategy and growth objectives for this region. Mr. Betz routinely tracked hundreds of active opportunities with an aggregate gross revenue value between \$500m and \$1B (pipeline of work). He was responsible for supporting sector and practice leaders, and commercial managers, and promoted internal and external collaboration to deliver major, innovative, critical infrastructure projects.

Over his three plus decades in the industry, he has served public agencies (municipalities, counties, states, federal, utility authorities, transportation authorities) as well as private clients across many industries. Mr. Betz has successfully assisted clients with identifying and receiving funding through various local, state, and federal programs to help them deliver their capital programs. He has been responsible for advisory services, planning, permitting, designing, and providing construction phase engineering services for numerous critical infrastructure improvement projects throughout the region that are in use today, benefitting the health, safety, and welfare of the public.

He is now an integral part of FPA's management team serving as the firm's Director of Infrastructure Technical Organization. In this role he manages the firm's Water & Wastewater, Water Resources & Dams, Solid Waste Management, and Municipal Services groups. Mr. Betz has helped the firm develop and implement a variety of infrastructure projects across the firm's various service sectors including site development, transportation, recreation, buildings/facilities, environment and utilities. He prides himself on tackling challenging infrastructure projects and applying his experience, diverse background, and innovative ideas to help our staff deliver solutions for our vast array of clients in the public and private sectors.

Consulting Engineering Services, NJ Environmental Infrastructure Trust Fund (NJEIT) Pools 1, 2, and 3, NJEIT/NJ Department of Environmental Protection (NJDEP)

Trenton, New Jersey

Program Director responsible for consulting engineering contract that includes three distinct pools of consulting engineering and program management services. Pool #1 involves Redevelopment Project Set-Aside, SAIL Program, and Combined Sewer Overflow (CSO) Abatement Projects support. Pool #2 involves Green Infrastructure/Long Term Control Plans (LTCPs) and preparation of the Guidance Manual for the State of New Jersey. Pool #3 involves H2LOans Software application review. Supervised the preparation of the draft Guidance Document for Evaluating Green Infrastructure as a CSO Control Alternative for LTCPs, which has been submitted to the NJEIT/NJDEP for review and adoption.

Emergency Storm Sewer Rehabilitation, New Jersey Department of Transportation (NJDOT) Emergency On-Call Infrastructure Repairs, IEW Construction Group

Maple Shade, New Jersey

Project Manager and Supervisor responsible for the design of point repairs along a deteriorated 54-inch diameter 15-foot deep corrugated metal pipe (CMP) storm sewer aligned perpendicular to State Highway Route 73 South. Design incorporated repairs to pipeline directly adjacent to a commercial building. The project included the design of a pipeline rehabilitation procedure via slip-lining the entire 400-lf span of CMP storm sewer and new headwall system.

Water and Sewer Improvements Program – Phase 2: Water Distribution and Sanitary Sewer Upgrades (Contract Nos. 1, 2 and 3)

Keyport Borough, New Jersey

Cont. No. 1: Principal-in-Charge responsible for the construction of water distribution and sanitary sewer improvements funded through the USDA-RD program. Water improvements included the installation of 3,200 linear feet (LF) of 8-inch diameter ductile iron pipe (DIP) water mains, 1,300 LF of copper water services, associated water system valves, and fire hydrants. Sanitary sewer improvements included repairs to the aging and deteriorated sewers, manholes, and service laterals, including closed-circuit television (CCTV) inspection and cleaning of approximately 5,500 LF of 6-inch to 8-inch diameter sewer main, cured-in-place (CIPP) lining of 3,000 LF of 6-inch to 8-inch diameter sewer mainlines and associated air testing and grouting, sealing and rehabilitating sanitary sewer manholes, installation of 1,100 LF of 8-inch diameter PVC sewer main, 2,700 LF of 6-inch diameter PVC sewer laterals, and precast concrete manholes. Cont. No. 2: Design and construction administration for the replacement of all 2,500 residential and commercial meters within the service area, including the installation of infrastructure and networks required to remotely read and monitor the meters, and managed services to collect, store, and transmit meter readings. This project is funded through the USDA-RD program. Cont. No. 3: Responsible for the decommissioning and demolition of a 293,000-gallon riveted steel standpipe (c. 1896) and restoration of the site. Demolition work included existing water distribution piping, vaults, and associated electrical panels. The project was funded through the USDA-RD program.

Historic Streetscape Improvements

Allentown Borough, New Jersey

Principal-in-Charge responsible for completion of the design of the streetscape and business district beautification project, which included new brick paver sidewalk improvements along Main Street/County Route 524/539 with new tree pits, decorative lighting, benches, trash receptacles, and bicycle racks. The project also included the design, grading, and layout of a new off-street municipal parking lot with retaining walls. Maintained close coordination with the Borough, Monmouth County Engineering Department, Freehold Soil Conservation District, NJDEP, the State

Historic Preservation Commission, and PSE&G, as well as the funding agencies for the project, including NJDOT Local Aid District Office and Monmouth County Community Development Block Grant (CDBG) Office.

Consulting Engineer and Water & Wastewater Consultant

Freehold Township, New Jersey

Serve as Engineer, Construction Inspector, Project Engineer, Project Manager and Principal-in-Charge during the periods of 1994 – 2016 and 2023 to current, providing general consulting engineering services for the Township and engineering services to the Utilities Department. Assist as needed, with day-to-day engineering activities/tasks, supports the Township Engineer and Superintendent of Public Utilities with project planning, budgeting, implementation of capital improvements, identifying and securing funding assistance. Help coordinate tasks and projects with Township Officials, the Business Administrator, Township Engineer, and Public Works and Utilities Departments. Provide design, bidding, permitting and construction phase services for various capital improvements to the Township's infrastructure including environmental remediation, stormwater projects, water system improvement projects, infiltration/inflow studies and sewer rehabilitation projects, and engineering reviews for water and sewer for the Township's Planning Board.

Municipal Engineering and Wastewater Consultant

Carteret Borough, Middlesex County, New Jersey

Mr. Betz serves as the Borough's primary Municipal Engineering and Utilities Consultant for this energized and redeveloped community of over 20,000 people. Once a mecca for heavy industrial and commercial operations, the community has been transformed and redeveloped into a center for entertainment, community engagement, and is prime location to raise a family, which is conveniently located in the Northeast and close to NYC and North Jersey communities. Mr. Betz helps the Borough evaluate, upgrade, and maintain their 100+ miles of storm and sanitary sewer including the Borough's nine (9) sewage and stormwater pump stations. FPA's team of professionals led by Client Manager and primary Consulting Engineer, Eric C. Betz, PE, BCEE, CME, helps the in-house Director of Municipal Engineering and Public Works handle the day-to-day municipal engineering activities, including budgeting, capital improvements, funding assistance, and coordination with Borough Officials and other Departments. FPA is responsible for helping the community design and construct various capital improvements including replacement of five of the seven sewage pumping stations, construction of a sanitary relief sewer, infiltration/inflow studies, sewer rehabilitation projects removing hundreds of illegal sanitary connections from the Borough's storm sewer system and reducing inflow and infiltration, and has helped deliver numerous public works projects, environmental remediation programs as well as park and recreation projects. We have helped coordinate with State and Federal agencies on behalf of the Borough, resulting in nearly \$13 million in grant monies to help perform infrastructure improvements. Our lead representative, Mr. Betz has served the Borough as their consulting engineer and primary wastewater consultant for over three decades.

Consulting City Engineer

City of New Brunswick, Middlesex County, New Jersey

Mr. Betz serves in the role of Consulting City Engineer for the "The Hub City" reporting to the City's Director of Engineering and Public Works and the City Administrator. FPA's talented team of professionals led by Eric C. Betz, PE, BCEE, CME, City of New Brunswick's Consulting City Engineer and FPA's Vice President & Director of Infrastructure, provides Municipal Engineering support services to the City Engineering and Water Utility on a routine basis and we maintain weekly office hours in the City's Engineering Department. FPA's team of diverse subject matter experts managed by Mr. Betz, assist the City in managing and delivering tasks and projects under their day-to-day operations as well and with various capital projects necessary for the City's complex and aged sanitary, water and stormwater systems, roadways, culverts, parks, buildings, and other municipal infrastructure. Mr. Betz manages and coordinates FPA's resources to provide on-call licensed land surveying support, design and drafting support, engineering design,

environmental and regulatory permitting assistance, public bidding assistance, and construction phase engineering services inclusive of administration and inspection services. Mr. Betz assists the City with capital project planning, budgeting, and implementation. Furthermore, he assists with the review of developer applications for compliance with City, County, State, and industry standards and providing compliance inspections for Board applications and capital projects. Mr. Betz helped the City plan and create their Municipal Stormwater Utility, which is one of the first in the State, and he continues to support them with Tier A MS4 permit compliance and coordination with NJDEP and USEPA. This role affords Mr. Betz and FPA the opportunity to provide survey, engineering, environmental and construction management, and inspection services for this bustling city with a population of more than 55,000, which is also a commercial hub in central New Jersey and home to Rutgers, The State University of New Jersey, and several major hospitals, pharmaceutical companies, and is also known as one of the state's and region's leading hubs for research and innovation.

Municipal Engineering Services

Chatham Borough, New Jersey

Assistant Borough Engineer responsible for providing municipal engineering services and assistance to the Borough on an as-needed basis related to budgeting, planning, funding assistance, capital improvement projects involving water, roadway, streetscape, and stormwater improvements, and professional review for the Borough Planning and Zoning Boards.

City Engineering Department Special Consultant

City of New Brunswick, New Jersey

Principal-in-charge of the team who supported the City's in-house City Engineering Department. Supported capital project needs including CADD, design, permitting, bidding and construction phase engineering services. Our team assisted with capital project budgeting and implementation supporting projects that included stormwater management, traffic and transportation, sanitary sewer system, parks and other city infrastructure. Assisted with review of developer applications for compliance with City, County, State and industry standards.

Special Projects Engineer and Water and Sewer Consultant

Wall Township, New Jersey

Township's Special Projects Consultant and Water and Sewer Engineer responsible for reviewing water and sewer system extensions and proposed improvements for developer applications for compliance with Township and industry standards. Provide general consulting services on the municipal water and sewer infrastructure. Assist the Township in planning and budgeting of capital projects as required.

General Municipal, Water, and Sewer Consultant

Keyport Borough, New Jersey

Borough's Water and Sewer Engineer responsible for reviewing water and sewer system extensions and proposed improvements for developer applications for compliance with Borough and industry standards. Provide general consulting services on the municipal water and sewer infrastructure, including budgeting, planning, and implementing capital improvements.



Brian T. Dougherty, PE, BCEE

Senior Project Consultant / Manager of Water & Wastewater

Mr. Dougherty has more than 28 years of extensive experience in the water and wastewater sector and has designed and managed hundreds of utility and infrastructure projects. His experience includes providing consulting engineering services to local governments, municipal and regional utility authorities, counties, private water companies, state agencies and private clients.

Mr. Dougherty's experience includes the design, permitting, and construction management of a variety of water and wastewater infrastructure. This project experience has included water supply wells, water treatment plants, transmission and distribution mains, and water storage tanks as well as gravity sewer replacements and extensions, sewage pump stations and force mains, and wastewater treatment. He has completed projects involving specialized pipeline designs including horizontal directional drill installations, jack-and-bore and micro-tunnel crossings of critical infrastructure, and pipeline rehabilitation using various techniques. His facility project experience includes new construction, retrofits, and rehabilitation of plant facilities of varying ages, conditions, and capacities. He has also worked on several design-build projects in the role of lead designer and design-build team leader.

Mr. Dougherty has developed condition assessments of water and wastewater facilities and infrastructure. His experience includes feasibility studies and assessments to identify necessary upgrades to water and wastewater infrastructure to meet future conditions. His planning experience includes water and sewer master planning efforts that have included demand and build-out projections and the development of and analysis using hydraulic computer models.

Mr. Dougherty has successfully assisted clients with identifying and receiving funding through various local, state, and federal programs to help them deliver their capital programs, including the NJ State Revolving Fund (iBank), USDA Rural Development and other regional programs.

A licensed engineer in multiple states and a board-certified environmental engineer, Mr. Dougherty has managed water and wastewater engineering departments at other consulting firms during his professional career. As the Water & Wastewater Discipline Manager at FPA, Mr. Dougherty provides managerial direction and supervisory control to develop, manage, promote, and integrate all aspects of the department's operations to meet client needs and achieve department and firm objectives.

Career Snapshot

- Over 28 years of experience

Education

- BS, Civil & Environmental Engineering, Rutgers University
- MS, Civil & Environmental Engineering, Rutgers University

Registrations / Licenses

- Professional Engineer: NJ, NY, PA
- Board Certified Environmental Engineer (W/WW)

Affiliations

- American Water Works Association
- NJ Water Environment Association
- American Academy of Environmental Engineers & Scientists



Veolia Water – Matchaponix Clearwell Replacement Design-Build

Manalapan, New Jersey

Project principal for design-build project involving the replacement of an existing 75,000-gallon steel clearwell tank and low lift pumps, which were at the end of their useful service life. The project involved the design and construction of a new AWWA D115 precast post-tensioned concrete clear well tank with a net effective storage volume of 150,000 gallons. The project also included the installation of three low lift vertical turbine pumps, which will have a maximum capacity of 8.0 MGD. Permitting included local planning board, NJDEP Safe Drinking Water, and Soil Erosion Control.

Private Client – Town Center Road Sanitary Sewer Improvements

East Windsor, New Jersey

Project director for the design and permitting of approximately 7,500 feet of 24-inch relief sewer project and 1,000 feet of 16-inch force main. Project included the design of jack and bore installations to cross a Mercer County roadway and state highway. The project also included improvements to a pump station to upgrade the influent channel with new grinders. Permitting efforts included NJDEP TWA, freshwater wetlands, NJDOT utility opening and Mercer County road opening permits.

Eagleswood Village PFAS Treatment Upgrades

Eagleswood, New Jersey

Project manager for the design and permitting of water treatment plant upgrades to provide treatment for Per- and Polyfluoroalkyl Substances (PFAS) consisting of a dual vessel granular activated carbon system. Other improvements included a new treatment building, hydropneumatic tank, well pitless units, upgraded well pump and new chemical feed systems for caustic soda, orthophosphate, and sodium hypochlorite.

New Jersey American Water – Mount Ephraim 2nd Avenue Lift Station Upgrades

Borough of Mount Ephraim, New Jersey

Project director for route evaluation, design, permitting, bidding and construction administration of replacement of submersible sewage pump station as well as approximately 1,300 feet of 8" and 12" gravity sewer replacements, 3 individual grinder pump stations with 960 feet of 2" force main, and approximately 3,400 feet of 10" force main. Permitting included NJDEP Treatment Works Approval, Camden County Soil Erosion, local and county road opening permits, Conrail permitting, and local planning board approval. Route evaluation included two gravity sewer alignment alternatives to allow for the abandonment of an existing sewer in environmentally sensitive areas and three force main alignment alternatives.

Middlesex Water Company – Maidstone Lift Station Upgrades

Southampton, New Jersey

Project manager for design-build project for the upgrade of a submersible sewage lift station. Upgrades included a new duplex submersible pumping system, pump guide rails, above-grade discharge valve enclosure, new security fencing, and related site improvements. Design also included a bypass pumping system and provisions for permanent bypass connection. Permitting included NJDEP Treatment Works Approval and Township Zoning Board approval.

New Jersey American Water, Roosevelt Avenue Jack and Bore

Township of Ocean, New Jersey

Project director for the design-build effort of 12-inch water main replacement along Roosevelt Avenue that included a jack-and-bore installation of an 18-inch steel casing under NJ Transit railroad. Project included the NJ Transit Occupancy permit and local road opening permits as well as coordination with local authorities.

New Jersey American Water – Linden 36-inch PCCP Transmission Main Replacement

Linden, New Jersey

Project director for design, permitting, and construction management of 7,600 feet of 36-inch water transmission main to replace existing prestressed concrete cylinder pipe (PCCP) main in three phases. The project included easement acquisition, pipeline rehabilitation at two existing railroad crossings, and a new jack-and-bore crossing of a state highway. Project permitting included Conrail Pipeline Occupancy, NJDOT Utility Opening permit, local and county road opening permits, and soil erosion control permitting.

Freehold Borough – Water Treatment Plant

Borough of Freehold, New Jersey

Project manager for the funding assistance, design, and permitting of a new 3.31 MGD water treatment plant, which treats water from six existing water supply wells for iron removal. The project included a new water treatment plant building, which will house a new pressure filtration system and chemical feed systems for sodium hypochlorite, lime, fluoride and polyphosphate. The plant also included a new backwash wastewater tank, supernatant recycle system and sludge pumping system. The project included coordination and planning documents for New Jersey Infrastructure Bank funding.

Keyport Borough – Perry Street Water Treatment Plant Upgrades

Keyport Borough, New Jersey

Project principal for the funding assistance, design, permitting and construction of the upgrades of a 1.44 MGD multi-source treatment plant. The plant improvements include replacement of the existing gravity filters with two new horizontal pressure filters with automated valves and controls, replacement of existing aerator and clarifier with a new induced draft aerator, flocculation and settling basin, new calcium hypochlorite chemical feed system, upgrades to the existing lime, alum and polymer feed systems, three high lift service pumps, two backwash recycle pumps, new vertical turbine pumps for Well Nos. 7 and 8, a 450 kW emergency generator, and various non-process facility components. Prepared the United States Department of Agriculture Rural Development (USDA-RD) fund planning and design documents for the treatment plant upgrades and assisted the Borough for funding of the new generator and automatic transfer switch through FEMA's Hazard Mitigation Grant Program.

New Jersey American Water, 2023 Ocean City Sanitary Sewer Improvements

Ocean City, New Jersey

Project director for design, permitting, and construction management of 7,600 feet of 36-inch water transmission main to replace existing prestressed concrete cylinder pipe (PCCP) main in three phases. The project included easement acquisition, pipeline rehabilitation at two existing railroad crossings, and a new jack-and-bore crossing of a state highway. Project permitting included Conrail Pipeline Occupancy, NJDOT Utility Opening permit, local and county road opening permits, and soil erosion control permitting.

Dudley Park Area Water Main Replacements, New Jersey American Water

Camden County, New Jersey

Project director for the design and permitting of approximately 9,000 feet of 8- and 12-inch water main replacements. Permitting efforts included county and local road opening permits.

New Jersey American Water, Lumberton Water Main Replacements

Burlington County, New Jersey

Project director for design and permitting of 17,400 feet of 6", 8", and 12" water main replacements. Permitting consisted of NJDEP Safe Drinking Water and Burlington County Road Opening Permits.



David Espejo, PE

Project Engineer | Water & Wastewater

Mr. Espejo has proficient experience in municipal and water/wastewater practices which include computer aided design utilizing Autodesk BIM software such as Civil3D and Revit, geographical information system (GIS) mapping; engineering calculations employing hydraulic modeling; the preparation of specifications; and procurement of permits and grants for various capital roadway rehabilitation, stormwater/wastewater/water improvements, and other site/civil projects.

Mr. Espejo has also acquired knowledge in construction management/inspection practices and is familiar with interpreting municipal codes, Department of Transportation standards, DEP Best Water Management Practices, and various other local, state, and federal regulations. Municipal engineering related experience includes assisting with planning board/board of adjustment reviews of land development projects for completeness and technical correctness as well as providing day-to-day engineering support to the municipality and residents.

Career Snapshot

- 6 years of experience

Education

- BS, Civil Engineering, New Jersey Institute of Technology

Registrations / Licenses

- Professional Engineer: NJ

Training

- OSHA 10

Jersey Avenue Water Main Replacement, Phase III

New Brunswick, New Jersey

Assisted in the design, as Project Engineer, for approximately 1,300 linear feet of new 20-inch diameter ductile iron pipe (DIP) and a parallel 1,100 linear feet of new 8-inch diameter DIP to abandon an outdated water main. Tasks also include complying with the City's water standards, SESC permitting and the preparation of specifications.

Sanitary Sewer Master Plan

New Brunswick, New Jersey

Assisted in the development of a build-out analysis to obtain a future flow projection using MOD-IV data, floor area ratio from the municipal code, and state projected flow criteria. Modeled the build-out by separating projections for vacant land, land to be constructed, and land currently in construction. Provided technical writing support for the master plan report which included census information, existing conditions of the city sanitary sewer system, and planned land development projects by the city.

Special Engineering Services

New Brunswick, New Jersey

Provided design support including AutoCAD drafting and geographic information system (GIS) mapping, for various roadway projects. Provided drafting services for curb and sidewalk replacement for Nichol Avenue improvements. Provided design and drafting services for stormwater utility improvements along Wilcox Road. Provided design and drafting services for roadway improvements including pavement restoration, intersection remodeling, curb and sidewalk replacement, ADA ramp installations, and striping layout along Georges Road.

Koenig Lane Water Treatment Plant Filter Media Replacement

Freehold Township, New Jersey

Project Engineer for the replacement of three (3) ion-exchange filters for iron and manganese removal and minor repairs. Provided construction management services such as shop drawing reviews and construction observation.

Outfall Rehabilitation Project

Freehold Township, New Jersey

Assisted in the design, as Project Engineer, for the rehabilitation of three (3) stormwater outfalls with new headwall structures and riprap scour protection. Design included grading, riprap stone sizing calculations, erosion control matting, and general restoration. Provided permitting support for the required NJDEP freshwater wetlands and flood hazard area general permits. Provided construction management services such as shop drawing reviews and construction observation.

Route 9 South and Schanck Road Sanitary Sewer Rehabilitation

Freehold Township, New Jersey

Assisted in the design, as Project Engineer, for the cured-in-place pipe (CIPP) lining of existing asbestos cement pipe in a deteriorated state and the cleaning and CCTV inspection of sewer in satisfactory condition. The project design also included the geopolymer lining of sewer manholes and spot repairs. Provided permitting services for the required NJDOT highway occupancy permit for work within the state right-of-way. Providing construction management services such as shop drawing reviews, payment applications and construction observation.

NJAW Linden 36-Inch PCCP Transmission Main Replacements – Phase 2

Linden, New Jersey

Providing design and drafting services for water transmission main improvements to replace existing PCCP pipe with

approximately 2,770 feet of class 54 ductile iron pipe (DIP). Design includes planning for easement acquisitions, existing utility investigation utilizing GIS mapping, and preparation of utility plan and profile drawings and technical specifications. Providing permit coordination and adherence to agency requirements for Conrail, NJDOT and local road opening permit.

Dorothy Street Pump Station Rehabilitation

Carteret, New Jersey

Assisted with site/civil and process mechanical drawings for the rehabilitation of an existing pump station equipped with two (2) 30-Horsepower sewage pumps. Providing construction observation support and managing shop drawing reviews and project coordination.

NJDEP MS4 Compliance

Carteret, New Jersey

Assisting the Borough with compliance tasks for the NJDEP MS4 permit such as preparing the Tier A annual report, maintaining a stormwater management website, GIS mapping, and preparing a Watershed Improvement Plan.

Manasquan River Regional Sewerage Authority Engineering Services

Howell, New Jersey

Assisting MRRSA with Developer reviews and EPA Waivers for compliance with the agency's rules and regulations. Tasks include reviewing plans and supporting documents and preparing a review letter.

Lower Manasquan Pump Station Upgrades

Howell, New Jersey

Provided design services for the site/civil portion of pump station facility upgrades. Design included vehicle turning movement analysis using AutoTurn for driveway, grading, storm sewer analysis, and retaining wall design.

Municipal Engineering Services for Clinton Township

Clinton Township, New Jersey

Assisted with day-to-day local engineering services for a NJ Highlands municipality. Providing a variety of inspection services for land development projects under construction in the municipality and assistance with technical reviews for site plan applications to the planning board and board of adjustment. Responsibilities include performing inspection practices for site grading, hot mix asphalt paving, concrete flatwork, utilities and storm sewer and sanitary sewer testing methods such as the air pressure test and vertical deflection test. Review of minor site plans for municipal surface water management codes. Assist with NJDEP Tier A Stormwater Permitting compliance and annual roadway rehabilitation and flood mitigation projects through the NJDOT municipal aid program.

Sanitary Sewer System Condition Assessment and Valuation

Mendham Township, New Jersey

Prepared a comprehensive sewer system condition assessment and valuation complete with data collection review, reporting on the Township's two (2) wastewater collection systems, asset inventory tables, complete valuation with cost estimate of the current value of the assets, and a capital improvement program.



Matthew G. Voelkel, PE

Project Manager | Water & Wastewater

Mr. Voelkel has provided engineering services for a wide variety of projects involving water and wastewater facilities as well as civil site design. He has experience with surveying, detailed engineering design utilizing 3D computer-aided design (Civil3D), and construction and inspection practices. He has participated in the design and preparation of plans and specifications, permitting, bidding, and construction management for water and wastewater treatment plants, distribution mains, water supply wells, gravity sanitary sewer mains, sanitary force mains, municipal roadway construction, and airfield/military facilities.

Mr. Voelkel's responsibilities include performing detailed engineering calculations, analyses, evaluations, and studies as well as preparing high quality construction plans and specifications. In addition to project and staff management, he has also assisted in the development of permit documents.

Career Snapshot

- Over 12 years of experience

Education

- BS, Environmental Engineering, State University of New York College of Environmental Sciences and Forestry & Syracuse University
- MS, Environmental Engineering, Manhattan College

Registrations / Licenses

- Professional Engineer: NJ, NY

Affiliations

- American Water Works Association (AWWA)
- Association of Environmental Authorities (AEA)
- New Jersey Water Environment Association (NJWEA)



Three Brooks Road Water Main Replacement

Freehold Township, New Jersey

Project Manager for the design of 5,600 linear feet of 10-inch diameter water main along Three Brooks Road in Freehold Township. The design included three horizontal directional drills at three Monmouth County Bridge Crossings.

Rutgers Village Phase VII Water Main Replacement

City of New Brunswick, New Jersey

Project Manager for the design, bid, and construction phase services for the replacement of 2,000 linear feet of 8-inch and 12-inch diameter water main along South Pennington Road in the City of New Brunswick.

Raceway Mall Tank Rehabilitation

Freehold Township, New Jersey

Project Manager for the design, bid, and construction of the rehabilitation of the 3.0 million gallon water storage standpipe at the Raceway Mall in Freehold Township.

Koenig Lane Water Treatment Plant Filter Upgrades

Freehold Township, New Jersey

Project Manager for the design and construction of ion exchange pressure filter upgrades and filter media replacement for vertical pressure filters at the Freehold Township Water Treatment Plant.

Harmony Street Sanitary and Storm Sewer Improvements

North Plainfield Borough, New Jersey

Construction Administrator for the construction of a replacement sanitary sewer. The work included 300 lf of 8-inch diameter sewer main, sanitary manholes, sanitary sewer laterals, stormwater catch basins, stormwater manholes, and stormwater piping. Responsibilities included coordination with general contractor, Borough Department of Public Works, Borough Engineer, and Borough Police Department.

Route 22 and North Drive Sanitary Sewer Improvements

North Plainfield Borough, New Jersey

Assisted with the design for the construction of replacement sanitary sewer along a state highway. The work included the replacement of 300 lf of 8-inch diameter sewer main, sanitary manholes, and sanitary sewer laterals. The design work included preparing construction drawings and specifications, and developing traffic control plans for single lane and shoulder closing on State Highway Route 22 in accordance with NJDOT regulations. Additional responsibilities included coordination with NJDOT engineers for utility opening permits, and production of construction drawings and specifications.

Lakewood Township Municipal Utilities Authority, Mercury Removal Treatment GAC Media Replacement

Lakewood, New Jersey

Project Engineer for the design, bid, and construction phases for the Mercury Removal Treatment GAC Media Replacement project.

Water Street Distribution System Improvement Charges (DSIC) Water Main Replacement, SUEZ

Toms River, New Jersey

Project Manager for the design of approximately 5,000 lf of water main replacement. The project involved surveying,

geotechnical investigation, water main design, and permitting services.

Asset Management Plan and Geographic Information System (GIS) Utility Survey

Red Bank Borough, New Jersey

Project Manager for the preparation of a Water Utility Asset Management Plan and GIS Utility Survey. The Asset Management Plan addressed all requirements of the New Jersey Water Quality Accountability Act and provided the Borough with a working document to manage water utility assets.

Well Nos. 14 and 15 Well Head Replacement

Freehold Township, New Jersey

Assisted with the design for the replacement of two existing well head pitless adapters. The replacement design included the design of above grade well discharge, piping, and appurtenances located in a Freshwater Wetlands Transition Area. Responsible for producing construction documents, including drawings and specifications, and coordinating with the project Permit Lead for the Freshwater Wetlands permits.

Replacement Well No. 12

Freehold Township, New Jersey

Design Engineer responsible for completing the design replacement of an under producing water supply well. The work included the design of the test well and replacement well within a Freshwater Wetlands Transition Area. Additional responsibilities included producing construction drawings and specifications.

Water System Compliance Assistance, Lakewood Township Municipal Utilities Authority (MUA)

Ocean County, New Jersey

Provided compliance assistance with regard to maintaining compliance with the Safe Drinking Water Act rules and regulations and requirements of the USEPA and NJDEP. The work included maintaining and updating the USEPA CDX website for the Unregulated Contaminant Monitoring Rule data, completion and submission of the quarterly water diversion and utilization reports, monthly and quarterly New Jersey Pollution Discharge Elimination System (NJPDDES) water quality reports for Aquifer Storage and Recovery wells, and renewal and modification to the authority's online air quality general permits.

Munitions Storage Administration Expansion

United States Air National Guard, North Carolina

Assisted with the design to develop civil site plan, utility plan, landscape plan, and construction details for a new administration building, munitions storage buildings, and munitions inspections buildings. The site design involved designing new parking areas, walkways, new ADA accessible routes including curb ramps, locations of underground utilities including gas, electric, water, and communication lines, and stormwater conveyance. Additional responsibilities included coordinating with project architects and electrical engineers.