PDG was hired by Northwestern Water and Sewer District to provide design and construction engineering for the installation of sanitary sewers, 2 pump stations and a new oxidation ditch WWTP in Bloomdale that would be able to handle Bloomdale’s existing flow and add the flow from the unsewered community of Bairdstown.

Project Elements
- 6,800 LF of 8” gravity sanitary sewer
- 27 manholes
- 15,500 LF of 4” force main, including 2 railroad crossings
- Two (2) 90 GPM submersible pump stations
- 100,000 GPD oxidation ditch WWTP including a screening building, oxidation ditch, 2 clarifiers, sludge holding tank, sludge drying bed and an administration building.

Reference
Mr. Jerry Greiner, President
Northwestern Water & Sewer District
12560 Middleton Pike
Bowing Green, Ohio 43402
419.354.9090
PUMP STATIONS AND FORCE MAINS EXPERIENCE

VAN WERT CSO PUMP STATION AND RETENTION BASIN
PDG was hired to provide planning and design services to intercept and store combined sewer overflows for subsequent treatment at the wastewater treatment plant as required by the Ohio CSO policy.

Project elements
- Submersible storm water pump station
- 3 - 6,100 GPM pumps
- 30” diameter force main
- 20” diameter basin drain line
- Water cannon basin cleaning system
- 1 - 750 KW standby generator
- 6 - 25 Hp floating aerators
- 15 million gallon concrete-lined equalization basin with aerators

This project was chosen as the NW Ohio Concrete 2018-2019 Industrial Concrete Project of the Year.

Project Cost
- Engineer’s Estimate $298,925
- Project Cost $232,429
- Funding - OWDA

Completion
- December, 2014

PUT-IN-BAY DOWNTOWN PUMP STATION IMPROVEMENTS
PDG assisted the Village of Put-in-Bay with the design, project funding, bidding and construction administration to improve two downtown sanitary pumping stations. The project was replacement of controls and pumping equipment. A new SCADA system was designed to integrate with existing Village SCADA equipment. The electrical system was upgraded to 480 volt electrical service consolidation to the Bath House location, and permanent standby power was installed.

Project Cost
- Engineer’s Estimate $6.5 million
- Project Cost $358,500

Completed
- 2019

BOWLING GREEN POE/MERCER ROAD PUMP STATION
The City of Bowling Green desired to increase the transfer capacity of the Poe/Mercer Pump Station and add a third screw pump at its Water Pollution Control Facility. The project included:

- Replacing four (4) existing raw sewage pumps, including new motors and shafts, at the Poe/Mercer Pump Station with four (4) new 10 mgd pumps each for a total peak pumping capacity of 30 mgd with one pump out of service.
- Provide new variable frequency drives and new electrical conduits and wiring for power circuits. Evaluate the feasibility of wall mounting new variable frequency drives and removing the existing cabinets that house the current drives.
- Replacement of four (4) hydraulic actuated check valves with new check valves and the PVC piping at the surge relief valve with ductile iron piping and proper pipe supports.
- Raise the concrete walls of the junction chamber 18 inches prior to the aeration tanks at the Water Pollution Control Facility.
- Integration of the new raw sewage pumps into the existing SCADA system.
- Installation of a 750 KW standby power generator with a diesel engine.

Project Cost
- Project Cost $1,597,000
VAN WERT BONNEWITZ AVENUE PUMP STATION

The Bonnewitz Avenue Pump Station project consisted of the replacement of an existing pump station with a new pump station and elimination of another pump station via construction of a gravity sewer. The new pump station included a masonry building housing five self-priming type pumps with a total pumping capacity of approximately 7,000 gallons per minute, electrical, controls and a Supervisory Control and Data Acquisition (SCADA) system. A self-contained standby power generator was also included. The gravity sewer enabled the elimination of a second pump station, consisted of approximately 2,500 feet of 24-inch through 54-inch diameter pipe. Critical to the gravity sewer portion of the project was the coordination of existing utilities and the crossing of railroad tracks via boring and jacking of sewer pipe.

Project Cost
- $2.3 million
Completed
- 2008

ELMORE SANITARY INTERCEPTOR SEWER AND PUMPING STATION IMPROVEMENTS

This project included installation of 4,242 lineal feet of 18", 24" and 27" diameter gravity interceptor sanitary sewer along with a suction lift sanitary sewer pumping station capable of pumping 350 gallons of sanitary waste per minute. This new interceptor sewer collects all Village sanitary sewer flows for delivery to the Village’s Wastewater Treatment Plant. The project was completed in 2 phases with OPWC grant and loan funds as well as loan funding from the Ohio Water Development Authority.

PDG professional services provided for this project included infiltration and inflow analysis with flow monitoring, funding assistance, topographic surveying, design, bidding, construction layout, construction administration, and construction observation.

Project Cost:
- $1,192,340

DEFIANCE WOODED ACRES/COLLEGE LIFT STATION REPLACEMENTS

Poggemeyer Design Group prepared plans, specifications and OEPA Permit applications for the replacement of two City of Defiance Pump Stations. This was part of a design-build contract. These pump stations replaced two obsolete and dangerous Cantech style pump stations installed over 40 years ago. The pump stations were replaced with concrete wet wells and submersible pumps, and included new electrical services, telemetry and valve pits. Sewer by-pass pumping was also included in the design.

Construction Cost
- $757,000
Completed
- 2015

ANTWERP LIFT STATION REPLACEMENTS

Poggemeyer Design Group prepared plans, specifications, bidding documents and OEPA Permit applications for the replacement of the two Village of Antwerp Pump Stations. This is part of a larger project that includes Waste Water Treatment Plant upgrades. These pump stations will replace two obsolete and dangerous Cantech style pump stations installed over 39 years ago. The pump stations will be replaced with concrete wet wells and submersible pumps, and include new electrical services, telemetry and valve pits.

Construction Cost
- $568,645.00
Completed
- 2017
JENNINGS ROAD PUMP STATION UPGRADE NORTHWESTERN WATER & SEWER DISTRICT

PDG provided engineering design to increase the capacity of the Jennings Road PS to handle wet weather flow and eliminate overflows to the Maumee River.

The existing station was a below grade wet well/ dry well pump station with two 300 gpm pumps. PDG performed flow monitoring to determine the capacity of the proposed pump station. The average dry weather flows are around 700 gpm and the wet weather flow can be upward of 2000 gpm.

The new submersible pump station includes:

• Three 1250 gpm submersible pumps with VFD’s
• A 15’ x 11’ x 16’ deep cast in place wet well
• A 15’ x 19’ Precast Concrete Building, assembled on site
• Relocating the telemetry antennae from the existing pump station and adding new telemetry panels and SCADA system
• Installation of a 125 KW standby power generator with diesel engine

PDG also provided engineering and construction services for 3,300 lineal feet of 16” force main for the Jennings Road project.

Construction Cost
• $644,000 - Pump Station
• $570,000 - Force Main

Completed
• 2013

LADY GLEN PUMP STATION IMPROVEMENTS NORTHWESTERN WATER & SEWER DISTRICT

The Lady Glen Pump Station was originally built in the 1970’s and required some upgrades.

PDG was hired to design the improvements including replacing the pumps, controls, and valves at the existing pump station, cleaning and lining the wet well, and installing a bypass connection point.

Project Cost
• $153,150

Completed
• 2017

EASTWOOD SCHOOLS PUMP STATION AND FORCE MAIN NORTHWESTERN WATER & SEWER DISTRICT

Eastwood Schools had a package WWTP to serve the schools wastewater needs. The school was expanding and the WWTP was located in the way. Eastwood contacted NWWSD about operating and maintain a pump station and force main to pump their sewage to Pemberville for treatment.

PDG was hired by NWWSD to design the improvements and see the project through construction. The project required coordination and review by NWWSD, Eastwood Schools and their engineer for the school expansion, and the Village of Pemberville.

The project consisted of a 165 gpm submersible package pump station, chemical feed for odor control, and over 2 miles of 4” force main. Once the force main reached Pemberville’s corporation line, there was a metering manhole and then approximately half a mile in 8” gravity sewer, including manholes, that was located along a railroad right-of-way to its point of connection in the village’s existing sanitary sewer collection system. Most of the force main was directionally drilled due to other utility locations. The force main was also jack and bored in a casing pipe under the railroad.

Construction Cost
• $810,147

Completed – Fall of 2016

FORD ROAD FORCE MAIN REPLACEMENT NORTHWESTERN WATER & SEWER DISTRICT

The Ford Road force main project consisted of replacing the existing 12-inch asbestos-concrete pipe with new 16-inch PVC. The force main extended 8,900 lineal feet across the City of Perrysburg, Ohio, Wood County. New technology using fusible PVC pipe for the 5,400 lineal feet of horizontal directional drilling was installed. This project was Phase II of III for improving capacities for the District.

Project Cost
• $900,000

Completed
• 2008
OTTAWA COUNTY, ERIE TOWNSHIP SANITARY SEWERS, PHASE 1

PDG worked with the Erie Township Trustees and Ottawa County Sanitary Engineer to develop a general plan to provide sanitary sewers for the unsewered areas of the township. The County decided to move forward with the first phase of improvements, a detailed design for the construction of a sanitary sewer collection system. PDG completed the unsewered area engineering evaluation and report in 2014, and assisted Ottawa County with applications for funding assistance for design and construction from USACOE and STAG.

The existing method of wastewater treatment was by individual on-site septic systems, which had been identified by the Ottawa County Health Department (OCHD) as a failed system. Bacteria testing in the storm sewers and Lake Erie was completed by the OCHD, and levels were identified that exceed water quality standards for public use on the shores of Lake Erie.

The PDG report recommended a gravity sewer collection system and pump station be constructed in the Asher Beach area of Erie Township. The existing on-site septic systems will be abandoned and the new sewer collection system will collect the wastewater from each service connection and will flow by gravity to a pump station that will deliver the wastewater to the City of Port Clinton for treatment.

The gravity sanitary sewer collection system in Erie Township included approximately 4,100 LF of PVC sanitary sewers, manholes, laterals, restoration, pump station and 60 LF of 6” force main to the Port Clinton collection. The project was funded by USACOE and STAG.

Project Costs
- Engineers Estimate $1.1M
- Construction Cost $986,200

Schedule
- Professional Services 2014-2017
- Construction 2018

Funding Sources
- USACOE $1,067,885
- STAG Grant $74,202
- OPWC 0% Loan

WIGHTMANS GROVE, SANDUSKY COUNTY

The Wightmans Grove area of Riley Township, Sandusky County, was issued Findings and Orders to develop a General Plan for sanitary sewer service to eliminate their failing septic tanks.

PDG was contracted to plan, design, and construct a gravity sanitary sewer collection system, pump station and a regionally located wastewater treatment facility for the 75 residences.

The treatment plant design is such that this would be Phase 1 and additional phases can be added as additional areas are served and pumped to the regional WWTP.

Project Elements:
- 4,400 LF of 8” gravity sanitary sewer
- 21 manholes
- 11,200 LF of 4” force main
- 120 GPM above ground self-priming pump station
- 20,000 GPD extended aeration treatment plant including trash trap, flow equalization, aerations tanks, clarifier, sludge holding tank, fixed media filter and chlorine contact tank.

Preliminary Engineer’s Estimate
- $1,811,000

Anticipated Funding
- CDBG
- OWDA Unsewered Communities Grant
- OEPA-WPCLF Loan (0% for 30 years)

Schedule
- Professional Services 2016-2018
- Construction Services: Estimated to begin January 2019

BAIRDSTOWN SANITARY SEWER AND BLOOMDALE WWTP

PDG provided design and construction engineering for the installation of sanitary sewers, 2 pump stations and a new oxidation ditch WWTP in Bloomdale that would be able to handle Bloomdale’s existing flow and add the flow from the unsewered community of Bairdstown.

Project Elements:
- 6,800 LF of 8” gravity sanitary sewer
- 27 manholes
• 15,500 LF of 4” force main, including 2 railroad crossings
• Two (2) 90 GPM submersible pump stations
• 100,000 GPD oxidation ditch WWTP including a screening building, oxidation ditch, 2 clarifiers, sludge holding tank, sludge drying bed and an administration building.

**Engineers Estimate**
- Contract A (gravity sewers, pump stations and force main) $2,216,000
- Contract B (WWTP) $3,674,000

**Bid Amounts**
- Contract A $1,985,438
- Contract B $3,020,000

**Schedule**
- Completed 2017

**Funding Sources**
- OEPA – WPCLF Principal Forgiveness ($3.49M)
- CDBG
- OWDA Unsewered Communities Grant

### DELTA SANITARY SEWER IMPROVEMENTS
PDG was hired to provide planning and design services to intercept and store combined sewer overflows for subsequent treatment at the wastewater treatment plant as required by the Ohio CSO policy.

**Project elements**
- 3,500 l.f. of 8-inch through 42-inch gravity sewer
- 20 Manholes
- 1,800 l.f. of 6-inch diameter service connections
- 7 individual home grinder pumps
- 500 l.f. of 2-inch diameter force main
- 2,300 l.f. of 8-inch diameter force main
- 3 submersible pump station upgrades
- 1,700 l.f. of 12-inch through 24-inch diameter storm sewers
- Curb replacement
- Total street reconstruction
- 5 million gallon earthen equalization basin with mixers and aerators

**Project Cost**
- $4.9 Million
- Completed 2017

### DANBURY TOWNSHIP SANITARY PUMP STATION REHABILITATION AND ODOR/CORROSION CONTROL PROJECT - OTTAWA COUNTY
The Danbury Township pump station project consisted of rehabilitating three (3) existing Ottawa County wet well/dry well pump stations with new pumps, piping, valves, controls, telemetry and cathodic protection at a project cost of $1,110,000. Two of these stations are duplex stations and the third is a triplex pump station. Each pump station was outfitted with a pump around as well as the standby power generators. Pump sizes range from 700 gpm to 2,500 gpm dry well pumps. Pump stations have a capacity of 1 MGD, 3 MGD and 5.8 MGD during wet weather flow and have VFD controls to reduce flow rates during lower flow periods. The telemetry system allows the flow control system to be adjusted remotely from the WWTP to match the incoming flow. An automatic level system matched with the variable frequency drives allows the pump speeds to be adjusted to maintain optimum pump operation. Included with this pump station rehabilitation project was an odor control and corrosion protection project. This included two (2) permanent chemical feed stations and a bulk storage tank to dispense odor/corrosion control chemicals. This portion of the project was important to reduce odor complaints from long force main discharges and to lengthen the life of concrete structures.

**Project Cost** $500,000
- Completed 2006

### DEGRAFF PUMP STATION REHABILITATION AND FORCE MAIN
The Village of DeGraff owns, operates and maintains the wastewater collection system. Wastewater is transported via a force main and pump station to the jointly owned Quincy-DeGraff Wastewater Treatment Plant in Quincy, Ohio.

The Village’s pump station and force main are old, deteriorating and need to be replaced. The pump station and force main have repeatedly failed resulting in raw sewage backups into homeowners’ basements and raw sewage discharges to the Great Miami River. The force main and pump station was constructed in 1989. The force main was originally a 6-inch line; however, the easterly portion of it was relocated and up sized to an 8-inch line in 1992.
PDG was hired to design the improvements including upgrading the existing pump station pumps, controls and electrical system, and construction of 13,000 lineal feet of 8-inch force main installed by directional drill and 1,700 lineal feet of 8-inch force main installed by open cut construction.

**Project Cost**
- $718,250

**Completed**
- 2017

**OAK HARBOR CSO ABATEMENT PROJECT**

Project consists of approximately 5,000 lineal feet of trunk sewer interceptor adjacent to the Portage River in Oak Harbor. The sewer is 27- to 60-inch diameter.

The project also includes the construction of a large pump station to divert flows from the influent of the wastewater plant to a storage lagoon. The pump station can pump 15,000 gallons per minute. The pump station contains screening facilities for protection of the pumps.

The project was designed to reduce the number of overflow events in quantity and occurrence by diverting flow from the existing combined sewer overflows through an interceptor. The interceptor was routed through the downtown and residential areas to the wastewater plant. Construction of this project required a considerable effort under large rainfall events, flow in excess of the carrying capacity of the existing sewer is diverted to the new sewer. This flow is pumped into storage and released into the plant at a controlled rate for treatment.

**Complete 2008**

**NEWCOMERSTOWN WASTEWATER TREATMENT PLANT IMPROVEMENTS**

Prime consultant for the design, construction and startup of improvements to the Village’s 1.25 MGD wastewater treatment plant including influent self-priming type variable speed raw sewage pumps and controls with a total pumping capacity of 3.25 MGD.

**Project Cost** $4.5 million

**NEW LEXINGTON PUMP STATION IMPROVEMENTS**

Prime consultant for the design and construction of the City’s main influent pump station to its wastewater treatment plant. The improvements include the installation of four self-priming type variable speed pumps with total pumping capacity of 5.4 MGD, screening improvements, masonry concrete block building, 3,000 feet of 21-inch diameter gravity sewer and miscellaneous control and electrical work.

**Project Cost $900,000**

**OAK HARBOR WASTEWATER TREATMENT PLANT PUMP STATION IMPROVEMENTS**

Prime consultant for the design and construction of the replacement of four influent pumps to the Village’s wastewater treatment plant. The improvements include the installation of four self-priming type raw sewage pumps, variable drives and miscellaneous control and electrical work.

**Project Cost $160,000**

**ELYRIA–TURNER STREET PUMP STATION AND SEWER IMPROVEMENTS**

This project included a new pump station located at West 3rd Street and Turner Street and connecting to a 54” interceptor sewer. The grade from West River Road allowed for the construction of a future gravity sewer, but used a force main to eliminate the costly construction process of digging the necessary deep trenches and placing manholes. The project area is a highly developed, old residential area adjacent to the Black River.

**Project Elements**
- Below grade, suction lift pump station and 3,700 feet of 8” and 12” sanitary sewers, force main and service lateral reconnections
- Waterlines under 8” were replaced and the roads were reconstructed
- Complex construction due to combined sewers and an inverted siphon replacement
- Project was necessitated by the OEPA approved Long Term Control Plan

**Project cost** $1.9 Million
GOOD HOPE SANITARY SEWER & WWTP

PDG provided design, construction engineering and construction observation for the installation of sanitary sewers, a pump station and a package WWTP for the unsewered rural community of Good Hope in southeastern Fayette County.

Project Elements
- 7,700 lineal feet of 8” gravity sanitary sewer
- 75 GPM package submersible pump station
- 32,000 GPD package wastewater treatment plant
- Trash trap, flow equalization, aeration tanks, two clarifiers, sludge holding, a fixed media tank and 1,350 square feet of surface sand filters and appurtenances
- Stand-by power to run the WWTP and pump station
- 525 lineal feet of 4” force main
- 29 manholes ranging in depth of 7 to 21 vertical feet
- 4,000 lineal feet of 6” sanitary service laterals to right-of-way serving 100 individual users.

Cost
- $2 million

Schedule
- Completed October 2012

WALBRIDGE WASTEWATER COLLECTION SYSTEM IMPROVEMENTS

Prime consultant for the design and construction of wastewater collection system improvements, including the replacement of an overloaded regional pumping station.

Project Cost $3.1 million

BATES ROAD PUMP STATION REPLACEMENT

Primed consultant for the design and construction of wastewater collection system improvements, including the replacement of an overloaded regional pumping station.

Project Cost $4 million

SHELBY WASTEWATER TREATMENT PLANT IMPROVEMENTS

Prime consultant for the design and construction of wastewater collection system improvements, including the replacement of an overloaded regional pumping station.

Project Cost $4 million

DESIGN CONSULTANT, IN COOPERATION WITH KROCKA AND ASSOCIATES, FOR THE UPGRADING AND EXPANSION OF THE CITY’S 2.5 MGD WASTEWATER TREATMENT PLANT, INCLUDING ASSOCIATED METERING AND PUMPING FACILITIES.

Project Cost $3.2 million

GIBSONBURG WASTEWATER COLLECTION AND TREATMENT IMPROVEMENTS

Prime consultant for the design and construction of improvements to the Village’s 330,000 gpd wastewater system, including new pumping facilities, influent sewage pumps, and screw pumps with 14 mgd peak pumping capacity.

Project Cost $4 million

BATES ROAD PUMP STATION REPLACEMENT

NORTHWESTERN WATER & SEWER DISTRICT

The Bates Road pump station project consisted of retrofitting the existing wetwell/drywell, suction lift pump station with submersible pump station with an above ground valve package. New flow meter and telemetry upgrades were included to assist in collecting accurate flow data.

Project Cost $286,000
Completed 2007