

COWAN LAKE SEWER PROJECT ENGINEERING SERVICES



Submitted to:
Grattan Township

July 30, 2018
P14082



July 30, 2018

Frank Force, Supervisor
Grattan Township
12050 Old Belding Road
Belding, MI 48809

RE: Cowan Lake Sewer Project

Dear Mr. Force:

We are very excited for this opportunity to support Grattan Township and the Cowan Lake area with extending sewers around the lake. Providing sewer service to 64 homes and 11 lots around one of your most popular lakes will help solve health concerns about failed or failing septic systems and high water table conditions and improve the lake quality.

Congratulations on the award of a SQUIF Grant for the project. Fleis & VandenBrink (F&V) is an expert at successfully finding grants and loans to make projects more feasible. This is a huge benefit to the Township since we are very familiar with the grant agencies, their procedures, and their staff. Over the last 25 years, we have assisted our clients with grants and low-interest loan financing projects totaling \$0.6 billion dollars. Recently, we assisted five clients with obtaining MEDC ICE grants to fund their wastewater improvement projects in addition to our dozens of projects working with MDEQ on their SQUIF, SRF, and DWRF programs.

F&V designed the first sewer project around a lake using a SQUIF grant in Orleans Township. We have assisted nearly 50 communities in Michigan and Indiana with their sewer and wastewater projects in the last decade, dozens of which feed into lagoon systems. This experience recently helped us win a similar project in Golden Township (Oceana County) for the Silver Lake Sanitary Sewer project. Despite a previous firm completing the study, the board liked our fresh look, creative ideas, and experience.

Further highlights of F&V include:

FAMILIARITY WITH YOUR SYSTEM AND PREVIOUS WORK COMPLETED

We can hit the road running and are totally familiar with your previous studies, the grant program, and the challenges of your project. We reviewed the 2016 Report, the letter update to the report, grant application, Exhibits furnished by you, toured the project area, met with you a couple of times, talked to your operator, and attended a couple of your Board Meetings to become familiar with your goals and project.

Obviously our first task would be a start-up meeting with you and your designated committee to further refine issues, concerns, and procedures so we meet your needs. Our experience will optimize the existing treatment system without jeopardizing capacity or effecting the current plant's efficient operations.

Based on our approach, we can meet your schedule of 2020 commissioning.

2960 Lucerne Drive SE
Grand Rapids, MI 49546
P: 616.977.1000
F: 616.977.1005
www.fveng.com

DESIGNS ARE CRITIQUED BY OPERATORS FOR BEST EFFICIENCIES

We have a sister company, F&V Operations (FVOP), that have numerous staff with experience in operations of sewer systems on lake settings and wastewater treatment plants. We will work closely with your operation staff but will also get input from our operations staff in providing the most cost-efficient design for the Township.

We look forward to reviewing our approach in more detail. Feel free to contact us with any questions.

Sincerely,

FLEIS & VANDENBRINK

A handwritten signature in blue ink, appearing to read "Steve M. Bishop", is positioned above the printed name.

Steve Bishop, PE
Project Manager



TABLE OF CONTENTS

SECTION 1:	FIRM INTRODUCTION
SECTION 2:	STATEMENT OF UNDERSTANDING / SCOPE OF WORK / SCHEDULE
SECTION 3:	PROJECT TEAM
SECTION 4:	PROJECT EXPERIENCE AND REFERENCES
SECTION 5:	ADDITIONAL INFORMATION <ul style="list-style-type: none">▪ Exceptions/deviances from the specifications▪ Signed statement of compliance with specifications▪ Insurance
SECTION 6:	PROFESSIONAL FEES



FIRM INTRODUCTION



F&V was established in 1993 by two friends and civil engineers - Larry Fleis and Steve Vanden Brink. The firm currently boasts a staff of 200 professionals who carry on the tradition Larry and Steve started of hiring good people, doing good work and having good client relationships.

We build relationships by being good listeners, hearing your concerns and issues before starting a project. We also try to get a thorough understanding of your goals and critical success factors.

Clients like our technical expertise, responsiveness and working relationship that puts them at ease. Working together on custom-fit solutions, we help deliver results and award-winning projects as promised – on time and on budget.

Our team is made up of engineers, architects, water resource specialists, landscape architects, geologists, environmental scientists, surveyors, GIS specialists, inspectors, field technicians, construction managers, professional emergency managers, operations specialists, and administrative support.

CORPORATION

Fleis & VandenBrink Engineering, Inc. (F&V) was established in January of 1993 as a firm of Professional Consulting Engineers.

F&V currently operates as a Corporation in the States of Michigan and Indiana.

NUMBER OF EMPLOYEES

210

ANNUAL REVENUE

Over the past five years, F&V has completed more than 1,500 projects totaling over \$68 million. We currently have a backlog of more than \$25 million in engineering and operations services.

CORPORATE OFFICE

2960 Lucerne Drive, SE
Grand Rapids, MI 49546
P: 616.977.1000
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ADDITIONAL INFORMATION

Years in Business: 25

Larry Fleis, PE: Chairman of the Board

Paul Galdes, PE: President

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STATEMENT OF UNDERSTANDING / SCOPE OF WORK / SCHEDULE

OUR UNDERSTANDING OF YOUR PROJECT

We understand that Grattan Township and the Cowan Lake property owners have discussed the desire and need to construct a sanitary sewer around Cowan Lake for many years. Recent events, including a grant from the state, have increased interest in constructing the project.

The Fleis & VandenBrink (F&V) team has spent considerable time to study the challenges and understand your goals for this project. We reviewed the 2016 Cowan Lake Sewer Feasibility Study Report, the letter update to the report, grant application, exhibits furnished the Township, toured the project area, met with the Township, talked to your operator, and attended a couple of your board meetings. In addition to the familiarity with the work completed to date, the F&V team will provide fresh eyes on the project with ideas of potential cost savings.

The existing Grattan wastewater system consists of a combination of gravity and pressure sewers discharging to a wastewater treatment lagoon.

The October 2016 Feasibility Study considered several types of wastewater collection systems to serve Cowan Lake as well as different treatment options. A recent letter written to the Township narrowed the choices. Since then the Township selected:

- A grinder pump/pressure sewer system
- Wastewater Treatment at the existing Grattan Township Wastewater Treatment Plant

Each of the 64 homes around Cowan Lake in Grattan Township would have individual grinder pump stations. The individual grinder pump stations would discharge into a small diameter forcemain joining its neighbors which would eventually discharge into a municipal pump station.

The new forcemain will pump to a new pump station that will need to be located in an easement near the southeast corner of 10 Mile Road and Cowan Lake Road. The pump station would pump through a forcemain routed easterly along 10 Mile Road, southeasterly along Lessiter, Jenks, McArthur, and Mac Drive to the existing Pump Station #1 located near Big Pine Island Lake.

Pump Station #1 will not need to be improved other than to allow the added piping connection from the new Cowan Lake pump station.

The existing Grattan Wastewater Treatment Facility will need to be upgraded/improved to receive the additional flow. The proposed improvements include the addition of another spray irrigation field along the easterly side of the existing treatment lagoons.

PROJECT FUNDING

Grattan Township received a Strategic Water Quality Initiatives (SQUIF) grant from the State of Michigan for 50% of the project cost up to a maximum grant of \$2M. The grant program is intended for projects that “address a substantial public risk from treatment system failure.” The remainder of the project costs would be funded by the Township through a municipal bond to be repaid via special assessments to the property owners that receive the benefit of the sewer system.

F&V has experience with the SQUIF funding. Our firm managed the first SQUIF funded project for sewer around a lake several years ago. Orleans Township received the grant to partially fund the sewer system around Long Lake and F&V managed the design and construction engineering associated with the project. Steve Bishop, our proposed project manager, also managed the Long Lake project.

Our F&V team is also very familiar with other MDEQ programs particularly the DWRF and SRF programs which are similar to the SQUIF Program

We are not sure if you are aware, but recently the State of Michigan rescinded the requirement for prevailing wages associated with the SQUIF grant that would apply to the construction workers that build the project. Grattan's SQUIF Grant was awarded before the State rescinded the prevailing wage requirement.

As of this writing, it is unclear whether prevailing wages will continue to be required for this project. We can assist the Township in trying to get the prevailing wage requirements removed, if desired. F&V's



opinion of project costs include the consideration of prevailing wages, administration of the payroll review, and on-site wage rate interviews in our proposed fee.

SEWER ASSESSMENT DISTRICT

We understand the Township is well under way on the special assessment process. The two public hearings are set for July 30th and August 27th. It is expected that the Sewer Assessment role will be set prior to the anticipated authorization of the engineering agreement. We plan to be in the audience for the hearings.

F&V has not included fees associated with assisting the Township in the special sewer assessment district.

GRATTAN AND OAKFIELD TOWNSHIPS

Cowan Lake spans across two townships. The residents south of 10 Mile Road (projected due west) are in Grattan Township and those north of 10 Mile are in Oakfield Township. Although Oakfield Township has expressed interest in joining the Grattan sewer system, they have not joined the sewer district yet. As defined in your RFP, this proposal includes work associated with the 64 homes and vacant lots within Grattan Township. Oakfield Township could easily be added to the project when desired.

F&V has extensive experience with projects that involve multi-governmental jurisdictions. We understand the added complexities and sometimes politics associated with these situations.

Should Oakfield Township and its 28 or so homes around Cowan Lake continue to express interest in the extension of the sewer to serve their Cowan Lake residents, we can work with both communities in developing a combined sewer district into one project and provide other support such as a sewer use agreement and sewer ordinance.

EASEMENTS AND ON-SITE GRINDER STATION INSTALLATION

We understand the Township has not made a final decision whether the on-site grinder station installation will be completed as part of the project or whether this would be completed by the individual homeowners. However, the property owners will own and maintain the grinder stations.

As directed by the Township, the engineering fees associated with the on-site grinder stations constructed as part of the project are shown separately in the fee section of this proposal as an alternate item.

Since the design/specification of the grinder stations are an integral part of the larger system, the design/specification of the grinder stations must be completed regardless of who installs them and is included in our base fee. However, the construction engineering fee would be increased if the grinder stations were constructed by the Township's contractor.

We feel permanent easements from each property owner should be obtained that match the final location of the Grinder Pump Unit and the individual forcemain route that connects to the Township's forcemain. It is in the Township's best interest to be able to have appropriate legal access to the individual Grinder Pump Units whether they are installed by the Township's Contractor or the homeowner's contractor.

One of the easier ways we have done it in the past is to have the property owner provide an easement at the same time they take out a permit to connect to the sewer system. This could be done after the public sewer main line is constructed. The homeowner submits a permit application to the Township to connect to the sewer system. As part of the application, the homeowner grants a permanent and any needed temporary easement to allow the Township to have access to the system after it is built and if constructed and maintained by the Township, the right for the Township to construct and/or maintain the grinder pump and forcemain.

One of the harder ways is for the Township to obtain each individual easement by contacting each individual property owner.

We have included fees to prepare the template for the permanent/temporary easement documents. The acquisition of the easements and costs of obtaining the easements are not included in our fee.

One permanent easement for a pump station is likely. The municipal pump station proposed near the southeast corner of 10 Mile and Cowan Lake Drive will require a permanent easement and we have included preparation of the easement exhibit in our fee. Costs for obtaining the easement are not included in our fee.

A second permanent easement may be necessary if the Township decides to proceed with the well that would be used to fill the fire trucks. The fees to write this easement are included in the alternative fee for the well, but costs to obtain the easement are not included.

WASTEWATER TREATMENT SYSTEM IMPROVEMENTS

Improvements at the Township's existing wastewater treatment facility will need to accommodate the additional flow from the proposed Cowan Lake sewer system.

The Township's stabilization lagoon treatment system is authorized to spray irrigate treated sanitary sewage under a Rule 2218 groundwater discharge permit. This permit does not establish limitation on influent flow, but rather sets both a maximum land irrigation rate of 241,190 gallons/day and an annual aggregate volume of 30,000,000 gallons.

Treated effluent is intended to be spray-irrigated to crop land for beneficial nutrient recycling of nitrogen and phosphorus. To maintain that irrigation does not exceed the agronomic uptake rates for the field crops, irrigation is also limited to 0.4 inches per day and 2.35 inches per week. Effluent application is intended for frost-free growing seasons and is restricted to the 6-month period between May 1 and October 31.

Although not detailed in the Township's RFP, the related reports for this proposed project identify the need for additional irrigation capacity to handle the increased flows from the proposed Cowan Lake sanitary sewer system. A reserve irrigation area of approximately 7 to 8 acres has been identified to the east of the existing Lagoon Cell No 1. We understand that this reserve irrigation area has not been evaluated for land application of treated sanitary effluent.

Our proposal includes engineering fees to provide design and construction services associated with "expansion or modification to the existing irrigation site for the Grattan Sewer System."

We also want to note that expansion of the effluent irrigation system will require an amended discharge permit from the Michigan Department of Environmental Quality (MDEQ). If not already completed, this permit amendment will likely require the following for review and approval by the MDEQ:

- Basis of design
- Discussion of alternatives
- Wastewater characterization
- Hydro-geological study
- Groundwater monitoring and discharge management plans

After the required documents for the amended discharge permit, MDEQ review may require between 90 and 180 days for final approval.

In our engineering fee section, we provided a budget for the professional services and fees that would be anticipated to prepare the discharge permit amendment.

A key component of MDEQ's approval for the amended discharge permit will be a demonstration that the treatment capacity of the existing stabilization lagoon system is adequate to handle the increased flow and loading associated with the Cowan Lake sanitary sewer system.

The provided engineering reports indicate that the existing stabilization lagoon system has adequate capacity to accept and treat the proposed flows and loadings with aeration/mixing additions. Based on our review of the authorized SQUIF grant and Township's RFP, the engineering services were not requested to complete the aeration system upgrades.

F&V has provided a budget of the engineering fees associated with design and construction of aeration system improvements, should such services be requested.

ODOR

The project will consist of 4.7 miles of forcemain. Raw wastewater traveling through long forcemains will take a considerable amount of time to travel through it. Raw wastewater will turn septic after a period of time resulting in potential odors at the forcemain discharge point at Big Pine Island Lake. If enough time goes by, the wastewater turns septic and hydrogen sulfide will be released from the wastewater and may produce an objectionable smell around this pump station as well as potential increased corrosion.

Several options exist to control the smell such as chemical additives to the wastewater and/or air filters. Other alternatives also exist such as extending the forcemain to the wastewater treatment plant where smells are less of a concern due to it being a less populated area.

As we progress through the design of this project, we will analyze whether odor may be a great enough concern to induce mitigation. If the need arises, we will work with the Township to develop a plan to address the odor appropriately.

WATER WELL AND GENERATORS

As identified in the request for proposals, we have included a budget for design and construction engineering of a water well for use to fill fire trucks and permanently installed back-up generators at the Cowan Lake pump station and at Pump Station #1 at Big Pine Island Lake. The generators would be powered by natural gas and used to supply electrical power to the pump stations in the event of a utility power outage

We understand the water well would be a non-potable well located near Cowan Lake and accessible by a tanker fire truck. The on/off control of the well would be a lockable manual switch located near the well that would allow firefighters to connect a fire hydrant to the truck via hoses.

PROJECT COST ESTIMATE

As requested, we prepared a project cost estimate for this project and included it in this proposal.

One of the challenges of our times is that contractors are extremely busy. The other major challenge is that cost of materials is changing or may have further changes particularly with recent tariff discussions. Communities are experiencing both situations: we are typically seeing less bidders because contractors are busy and we have seen price increases in materials. The question becomes what will be the situation when this project goes out for bid?

The included cost estimate includes a contingency for these situations, but the estimate will be updated at the time of bidding.

F&V has great success in cost control on projects such as yours. We are proud to say that construction “extras” on F&V projects have averaged less than 1% of the as-bid costs.

SCHEDULE

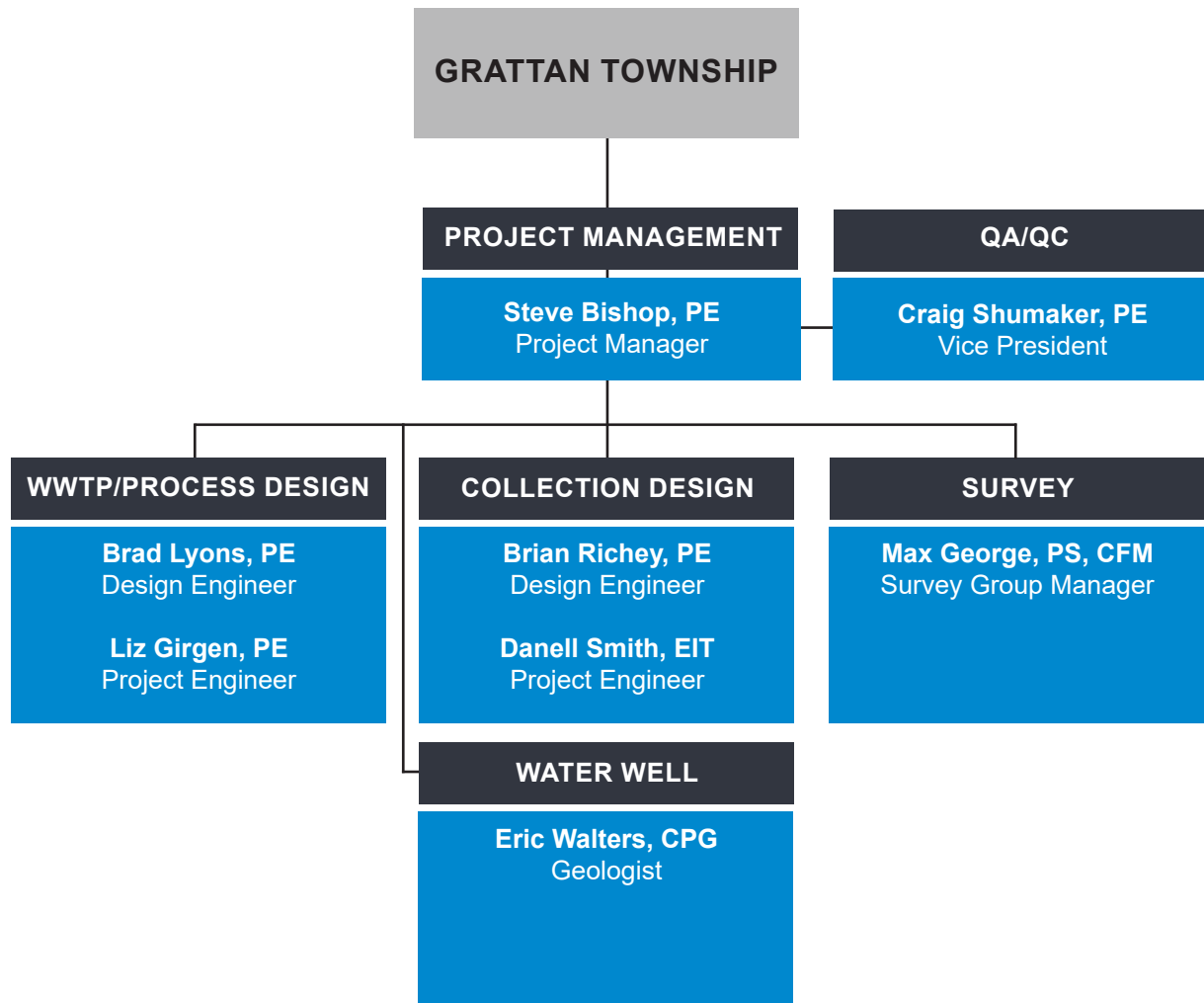
F&V proposes the following schedule. We will work with the Township to adjust any deadlines, if needed.

Task	Timeline
Authorization of F&V to proceed	September 1, 2018
Design	September 2018 to December 2019
Grattan Twp. Review of Draft Design	December 2018
Finalize Design	January 2019
Permitting	February 2019
Bidding*	March 2019
Grattan Twp. Signs Construction Agreements	April 2019
Construction	May 2019 to November 2019
Grattan Twp. Acceptance of System	December 2019

**Assumes easement and property rights and permits are secured*



PROJECT TEAM



PROFESSIONAL BIO

Steve has over 25 years' experience as a project engineer and manager, providing civil engineering for municipal, private and institutional clients. He specializes in infrastructure, utility and transportation projects. Steve manages all aspects of projects, including master planning, funding, design, bidding and construction engineering.



STEVE BISHOP, PE
Project Manager, Associate



sbishop@fveng.com
616.540.3617



BS Civil Engineering
Michigan State University



Professional Engineer
Michigan (No. 6201043299)
Indiana (No. PE 11800096)

FEATURED EXPERIENCE

Sewer and Lagoon Improvements - Orleans Township

Project manager for the planning, funding, design, and construction engineering associated with sanitary sewer service around Long Lake in Orleans Township. Project improved lake water quality caused by failing septic systems, by improving individual grinder stations with common forcemain, gravity sewers, and municipal pump stations. Infrastructure improvements included a 9-acre lagoon treatment facility, five miles of gravity sewer and forcemain, seven municipal pump stations and dozens of individual home grinder stations.

Gurnsey Lake Forcemain Extension - Southwest Barry County Sewer & Water Authority, Hope Township

Project manager for the design of a 3.2 mile long sanitary forcemain extension in Hope Township to serve the residents on Guernsey Lake. This project extended the existing Septic Tank Effluent Pump (STEP) forcemain system to 90 residents around Guernsey Lake with the built-in capacity for an additional 135 homes.

Sanitary Sewer and Pump Station Improvements - Sand Lake

Project engineer providing design, bidding, and construction engineering support for wastewater system improvements, including sanitary sewer lining, a new submersible pump station, the rehabilitation of a second submersible pump station, sewer cleaning, sewer televising, and bypass pumping. This \$3M project was funded by Rural Development.

Long Lake Forcemain Extension - Southwest Barry County Sewer & Water Authority, Hope Township

Project manager during the design of 9.1 miles of sanitary forcemain in Hope Township to serve the residents around Long and Cloverdale Lakes. This project extended the existing Septic Tank Effluent Pump (STEP) forcemain system to 350 homes.

Forcemain Study - Pennock Hospital, Hastings

Project manager for a feasibility study to transport wastewater from Pennock Hospital to the wastewater treatment system of Southwest Barry County Sewer and Water Authority. The hospital was considering moving from their present site and F&V assisted in providing feasibility analysis and estimated costs for utility planning.

PROFESSIONAL BIO

With nearly 30 years of diverse experience covering nearly every aspect of municipal engineering, he has served as the principal project manager on numerous projects. Craig's extensive background skills include designing projects for water and wastewater treatment plants, sanitary and storm sewer collection systems, bridges, dams, roads, trails, and landfills.

His wide range of experience and skills give Craig the necessary qualities to perform QA/QC reviews for all projects. As Vice President, he is part of our corporate planning structure to help ensure the company continues to grow in a positive manner while being a role model for other engineering and architectural firms.



CRAIG SHUMAKER, PE
Vice President



cshumaker@fveng.com
269.373.7516



BS Civil Engineering
Michigan Technological
University



Professional Engineer
Michigan (No. 6201040113)

FEATURED EXPERIENCE

USDA Sewer Feasibility Study - Oshtemo Charter Township

Principal-in-charge for reviewing the Township sewer extension plan and completing a feasibility study establishing need and cost, utilizing USDA Rural Development funding. Completed a USDA application and discussed funding availability with USDA. Worked closely with the USDA and developed a three-phase project that coordinated well with USDA's ability to fund the project and meet the Township's needs. The project application was accepted and is currently awaiting funding.

Wastewater System Capacity Enhancement - Colon

Project manager for the design and construction of the Village's WWTF. Project includes cleaning and televising sanitary sewer, 8 and 10 inch slip lining/CIPP, service lateral repairs, manhole repair/plugging, 12 inch discharge piping, discharge control structure, valving, sanitary sewer manholes, 12, 15 and 18 inch storm sewer piping, catch basins, storm manholes, road reconstruction, restoration and all related work. CDBG ICE funded.

New Collections System, Phase I/II - Billings Township

Client manager during conceptual development, design and construction of gravity sewer collection and transmission system. RD funded.

Wastewater System Improvements - Quincy

Client manager for design of Quincy Grange, Brown, Briggs, and Main Lake Boulevard lift station replacements. Lagoon aeration system replacement with diffused air, addition of fine screen, chemical feed rehabilitation and existing building renovation.

Craig's sanitary sewer experience also includes the following:

- Collection System and Rehabilitation, Standish
- Collection System and Transmission System, Burr Oak
- Sanitary Sewer Extensions, Three Rivers
- Lift Station & Collection System Improvements, Harrison



PROFESSIONAL BIO

Brad is a civil engineer with 31 years of experience in a wide range of in municipal, water/wastewater, commercial and residential markets including evaluation, budgeting, design, permitting, construction, and project start-up. He has served in various roles with responsibilities including detailed layout and design, project management, quality control, staff oversight and mentoring, business development and client relations.

BRAD LYONS, PE
Design Engineer



BLyons@fveng.com
616.977.1672



BS Civil Engineering
Wayne State University



Professional Engineer
Michigan (No. 62035583)
Indiana (No. 11012114)

FEATURED EXPERIENCE

Water and Wastewater Permitting Assistance - Allegan County

As the consulting engineer to Allegan County Facilities Management Department for more than 15 years, provided ongoing operation and permitting assistance for both water production and wastewater treatment systems at their Dumont Lake complex. Projects include preparing a Water Reliability Study and hydraulic model for their water production and storage facilities, permitting support for reauthorization of the County's groundwater discharge permit, a discharge management plan for their spray irrigation system, O&M manual updates, utility mapping, and on-call review of operation concerns and questions with County staff.

Wastewater Treatment Plant - Cedar Springs

Process engineer responsible for evaluation and design of a 1.2 mgd sequencing batch reactor treatment system, which was designed to replace the original stabilization lagoon system and meet cold water (5°C) nutrient reduction prior to effluent discharge at a State-protected trout stream. The treatment processes included chemical feed systems for enhanced phosphorus reduction and rapid sand infiltration basins with an engineered underdrain system to ensure effluent quality.

Water and Wastewater Consultation - Cedar Lake

Project manager providing a wide range of on-call engineering, permitting and construction support services to Great Lakes Adventist Academy (a residential high school complex) for their water and wastewater systems, including watermain extensions, sanitary pump station improvements, emergency lagoon structure repairs, effluent discharge permit reauthorization, and updates to both their discharge management plan and O&M manual.

Water Treatment Plant - Frenchtown Charter Township

Process engineer and project manager responsible for planning, design and construction of a new 4.0 mgd water treatment, ground storage, and high service pumping facility. The treatment process included ozonation for seasonal taste and odor problems associated with Lake Erie waters, followed by clarification, filtration, and disinfection prior to discharge via high service pumps into the existing distribution system.

PROFESSIONAL BIO

Liz has 4 years of experience in environmental engineering. She has experience conducting Energy Audits to reduce energy use, implementing foam recycling procedure to reduce waste production, developing a Heat Relief Procedure, and assisting with Toxics Release Inventory to fulfill EPA reporting requirements. She has designed water and wastewater treatment systems for municipal use, and redesigned water distribution systems to resolve system deficiencies.



LIZ GIRGEN, EIT
Project Engineer



lgirgen@fveng.com
616.965.8773



BS Environmental Engineering
University of Michigan



Certificate of Sustainability

FEATURED EXPERIENCE

SAW Projects – Various

Engineer-in-training for current SAW Asset Management Plans (AMP) of varying degree and components of stormwater and wastewater collection systems and lift station facilities. Common core project details include sewer televising and cleaning, inventory, condition assessment, data analysis, GIS, modeling and review of system, CIP documentation, review of future needs and the review of revenue and user rates. Current projects include:

- Branch County
- City of Reed City
- Big Creek Mentor Utility Authority
- Village of Carleton
- Beecher Metropolitan District

WWTP Feasibility Study - Caledonia

Engineer-in-training for the Feasibility study to review alternatives to meet the short and long term wastewater treatment needs for the service area.

Water System Asset Management Plan

Engineer-in-training for preparing an water system asset management plan for various communities to meet MDEQ requirements with Jan 1, 2018 deadline.

Mass Flow Monitoring - Berlin Charter Township

Environmental engineer-in-training for the Mass Flow Monitoring (MFM) of Berlin's sewers to remove I/I. The MFM measurement and analysis process pinpointed cost-effective I/I reduction improvements, leading to \$2.25 million in cost savings by knowing where the big I/I problems were and fixing only the high-priority segments. Together with sewer rehabilitation design by Hennessey Engineers we reduced I/I by over 80% and flows to the WWTP by 50%. The project won a 2016 ACEC Honorable Conceptor Award for Engineering.



PROFESSIONAL BIO

Brian has over five years of experience in municipal engineering and site development. He has experience maintaining GIS data of public utility infrastructure, project management, and plan review with some experience in Auto-CAD design. Brian has experience with the inspection and project management for site development and transportation projects.

BRIAN RICHEY, PE
Project Engineer



BRichey@fveng.com
616.942.3625



BS Civil Engineering
Michigan State University



Professional Engineer
Michigan (No. 6201065244)

FEATURED EXPERIENCE

Water, Sewer, and Storm Utilities GIS Database - Mooresville

Civil engineer updating and maintaining the information and data being inputted to the map displaying all utilities for the town. Importing CAD drawings with the As-built data provided by the client to match what is in the field, also verifying what is in the field by GPS collection.

Sewer Improvement Project - Mooresville

Civil engineer managing the project, setting up the contract and ensuring all aspects of the project are designed and built to the Land Development Standards of Town of Mooresville. Project consists of installing new 8" sanitary sewer in the downtown area of Mooresville, where traffic control is a major concern. Project is on-going and will continue for another four to five weeks.

SAW Asset Management Program Development

Engineer-in-training for development of asset management programs for storm, wastewater and water, including asset inventory, condition assessment, and capital improvement plans. Coordinated efforts with collection system programs to develop five and 20 year CIPs and worked with rate consultants to develop affordable and sustainable programs. Clients include:

- City of Albion
- City of Belding
- City of Harrison
- Village of Howard City
- Village of Shelby

Water Well and Radio Based SCADA System - KLSWA

Engineer-in-training for the design of two VFC water wells in preparation of the client taking the ground storage tank out of service while it is being repaired.



PROFESSIONAL BIO

Danell has 3 years of civil engineering experience. Her experience lies in infrastructure and transportation design for MDOT and municipal and private clients. She is also very component in wastewater collection and analysis, as well as stormwater management and design.

DANELL SMITH, EIT
Project Engineer



dsmith@fveng.com
616.965.8783



BS Civil Engineering
Michigan State University



MSU - SWE
MSU - Engineers without
Borders

FEATURED EXPERIENCE

Battle Creek Area Sewer - Pennfield Township

Engineer-in-training for the Battle Creek Area wastewater system alternatives feasibility study.

Market Street Pump Station - Sturgis

Engineer-in-training for the design of a new pump station and forcemain to replace the existing at the Market Street Pump Station.

Water Well and Radio Based SCADA System - KLSWA

Engineer-in-training for the design of two VFC water wells in preparation of the client taking the ground storage tank out of service while it is being repaired.

SAW Asset Management Program Development

Engineer-in-training for development of asset management programs for storm, wastewater and water, including asset inventory, condition assessment, and capital improvement plans. Coordinated efforts with collection system programs to develop five and 20 years CIPs and worked with rate consultants to develop affordable and sustainable programs. Clients include:

- City of Springfield
- City of Scottville
- City of Three Rivers
- Village of Breedsville
- Kalamazoo Lake Sewer and Water Authority

Day Drive Reconstruction - Three Rivers

Project engineer for this 1,000 foot long roadway reconstruction project, including sanitary and storm sewer improvements. This previously asphalt road was reconstructed as a concrete road to accommodate the industry in the area that subjects the roadway to the loading and turning movements of trucking for heavy industrial usage.

PROFESSIONAL BIO

Max leads our survey group and provides assistance with project management, research, planning, drafting and fieldwork. He is an expert in a wide range of survey projects and surveying methods. These include remonumentation of public land corners; ALTA surveys; boundary and topographic surveys for site and road design; land division including plats, PUDS, condominiums and related exhibit documents; construction staking; FEMA elevation certificates and letters of map amendment; ground penetrating radar, 3D scanning and hydrographic surveys.



MAX GEORGE, PS, CFM
Survey Group Manager



mgeorge@fveng.com
616.942.3608



BS Land Surveying
Michigan Technological
University



Professional Surveyor
Michigan (No. 4001053443)
Indiana (No. LS20900166)

FEATURED EXPERIENCE

Gurnsey Lake Forcemain Extension - Southwest Barry County Sewer & Water Authority, Hope Township
Survey group manager or the design of a 3.2 mile long sanitary forcemain extension in Hope Township to serve the residents on Guernsey Lake. This project extended the existing Septic Tank Effluent Pump (STEP) forcemain system to 90 residents around Guernsey Lake with the built-in capacity for an additional 135 homes.

Market Street Pump Station Improvements - Sturgis

Survey group manager for the surveying related to the design and construction for replacement of the Market Street Pump Station. Improvements included new 66 feet of 10 inch influent gravity sewer, 814 feet of six-inch forcemain, new duplex submersible pumps, control panel, VFDs, alarm telemetry, provisions for bypass pumping and manual transfer switch for connection to a portable backup emergency generator. The project won the APWA-SW MI "2018 Project of the Year" in the emergency/disaster preparedness category.

Mercy Health Survey - Mercy Health Partners, Muskegon

Survey group manager overseeing surveying services for design purposes on a \$271M, 267-bed medical center after Mercy Health Systems decided to consolidate three in-patient medical facilities into one acute care facility. The surveys - ALTA, boundary, topographic and base flood elevations - covered a larger area including the existing hospital's site, adjacent building sites and wetland areas.

Sanitary Sewer and Waste Water Treatment Facility Design - Worth Township

Survey group manager responsible for the Aerial mapping, survey control network, supplemental topographic surveys and property surveys for the design of a new sanitary sewer collection system and treatment facility. The project area encompassed roughly six square miles. Significant tasks included using GPS to establish ground control for the aerial mapping and Hydrographic surveys of the Lake Huron bottom up to a mile offshore.

Street and Utility Improvements - Saugatuck

Survey manager responsible for the mapping, right-of-way determination, easement preparation, and construction layout of this \$3.2M street and utility improvement project. Project included 11,300 feet of road reconstruction, 9,500 feet of storm sewer, 6,700 feet of watermain, and 3,000 feet of sanitary sewer.



PROFESSIONAL BIO

Eric has over 20 years of experience working on numerous clean-up investigations, groundwater remediation systems, Part 201/213 compliance, wellhead protection studies and community drinking water supply well projects throughout the Midwest. His training has a strong emphasis on project management and accurate data collection for compliance, interpolation, evaluation and system operations.

Eric has experience managing remedial operations projects, designing, installing and operating soil vapor extraction, air strippers, permeability testing equipment, and de-watering systems. He prepared and managed IS/ID & EER environmental contracts with MDEQ/DTMB, regulatory compliance reports, construction management, hydrogeological studies, assessment reports, environmental project plans, and corrective action plans.



ERIC WALTERS, CPG
Geologist



ewalters@fveng.com
616.942.3642



BS Field Hydrogeology
Western Michigan University



Professional Geologist
(No. 10961)

FEATURED EXPERIENCE

Wastewater Treatment Facility - Sand Lake

Project manager responsible for conducting subsurface investigations, monitor well installations, Low Flow Sampling, groundwater modeling, exfiltration studies, aquifer pump testing, contaminant delineation and environmental compliance reporting for the municipal waste water treatment lagoon system.

Wastewater Treatment Facility - Bloomingdale

Project manager responsible for conducting subsurface investigations, monitor well installations, Low Flow Sampling, groundwater modeling, exfiltration studies, aquifer pump testing, contaminant delineation and environmental compliance reporting for the municipal waste water treatment lagoon system.

Wastewater Treatment Facility - Northport

Project Manager responsible for conducting subsurface investigations, geotechnical, monitor well installations, Low Flow Sampling, groundwater modeling, exfiltration studies, aquifer pump testing for a newly designed municipal waste water treatment facility.

Wastewater Treatment Facility - Saranac,

Project manager responsible for conducting subsurface investigations, monitor well installations, Low Flow Sampling, groundwater modeling, aquifer pump testing, contaminant delineation, groundwater/surface water mixing calculations, and environmental compliance reporting for the municipal waste water treatment lagoon system.

Wastewater Treatment Lagoons - Manton

Project manager responsible for conducting subsurface investigations, monitor well installations, Low Flow Sampling, groundwater modeling, aquifer pump testing, contaminant delineation and environmental compliance reporting for the municipal waste water treatment lagoon system and spray irrigation area.



PROJECT EXPERIENCE AND REFERENCES



SEWER AND LAGOON IMPROVEMENTS

Orleans Township, MI

PROJECT INFORMATION

Date Completed: 2005
Engineering fee: \$692,000
Construction Cost: \$3,600,000
Total Cost: \$4,300,000

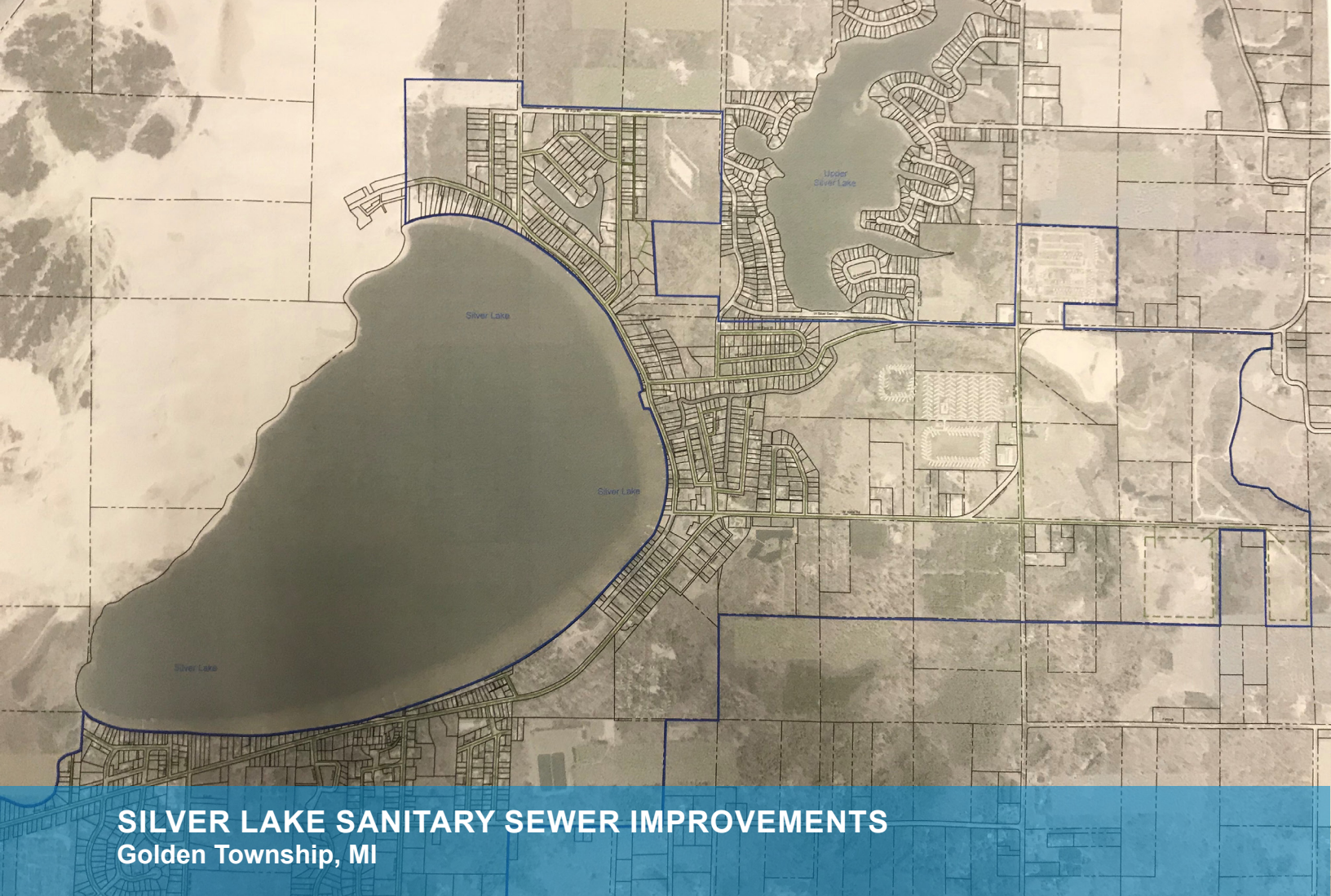
REFERENCE

James Patrick, Supervisor
P: 616.761.3475
jpatorl@pathwaynet.com

F&V assisted the Township with planning, funding, design and construction engineering associated with sanitary sewer service around Long Lake in Orleans Township, Ionia County. The objective of the project was to improve lake water quality caused by failing septic systems. This sewer system utilized a combination of collection systems including individual grinder stations with common forcemain, gravity sewers, and municipal pump stations. Infrastructure improvements included a 9-acre lagoon treatment facility, five miles of gravity sewer and forcemain, seven municipal pump stations and dozens of individual home grinder stations.

One interesting aspect of this project is that F&V's work included a land swap with the Michigan DNR and Orleans Twp. for property to build the wastewater treatment plant. F&V was involved with the negotiations associated with the land swap as well as locating and purchase of property in the upper peninsula used in the swap. Additionally a large number of easements were required and F&V assisted with the creating easement documents, negotiations with land owners and when needed expert testimony associated with eminent domain proceedings.

This \$4.3M project was assessed to approximately 400 residents that connected to the system. F&V was intimately involved with assembling the assessment roll and public hearings associated with the assessments. The project was funded by Rural Development grants and loans and a Clean Michigan Initiative grant.



SILVER LAKE SANITARY SEWER IMPROVEMENTS

Golden Township, MI

PROJECT INFORMATION

Date Completed: Antic. Late 2020

Total Cost: \$20,000,000

REFERENCE

Carl Fuehring, Supervisor

P: 231.873.3119

The Silver Lake area is a highly desired tourist and summer destination area largely driven by off-road-vehicle recreation in the Silver Lake Sand Dunes State Park. The Silver Lake population soars to 25,000 in the summer compared to just 300 in the winter. Golden Township decided to construct a sewer system for its residents around Silver Lake to accommodate its every-changing populations. The Township had been working with an engineer but after a thorough qualification and reference based selection process, decided to dismiss the previous engineer in June 2018 and engage F&V for the project.

F&V is currently providing design and construction engineering services for the project, which consists of servicing an area approximately 2.3 square miles that will generate approximately 500,000 gallons of wastewater per day. Each home will be serviced by a Septic Tank Effluent Pump (STEP) system that will collectively transport the wastewater to a new wastewater treatment plant. The collection system will consist of approximately 15 miles of sewers serving about 900 homes and businesses. This \$23M project is currently scheduled to be operational at the end of 2020.

The coordination of construction activities will need to coincide with the summer tourist season because the size of the project dictates that at least a portion of construction to take place during summer months. Managing safety of the public and heavy underground construction is a critical success factor that will be a dominant force throughout the project to minimize affects to residents and tourists.



WASTEWATER SYSTEM IMPROVEMENTS

Fife Lake, MI

PROJECT INFORMATION

Date Completed: 2017
Construction Cost: \$6.5M

REFERENCE

Lisa Leedy
231.632.5752
lisaleedy@gmail.com

As the result of a 2013 Condition Assessment completed by F&V, the Fife Lake Area Utility Authority (FLAUA) board discovered that significant improvements were necessary to keep the system in compliance with MDEQ requirements. Of particular concern were failing pump stations, a failing lagoon liner, lack of emergency alarms at 14 pump stations, and inflow/infiltration in the collection system resulting in increased operations and maintenance costs and reduction of capacity for wastewater. F&V assisted FLAUA with applications for a Stormwater, Asset Management, and Wastewater (SAW) grant and a USDA grant and low interest loan.

Improvements in the \$6.5M project included:

- Replacing three Grinder Pump stations with gravity sewer
- Rehabilitating seven flooded suction pump stations
- Installing a system wide SCADA system
- Sewer repairs and manhole rehabilitation to reduce inflow and infiltration
- WWTF Reconstruction included a new WWTF building, reconstruction of the aerated lagoons, new blower aeration system, irrigation system and pump station improvements



WASTEWATER TREATMENT AND COLLECTION SYSTEM IMPROVEMENTS Northport, MI

PROJECT INFORMATION

Date Completed: 2008

Construction Cost: \$4.27 million

F&V prepared a Sewer Needs & Feasibility Study for the community around the Village of Northport. The work included a detailed Needs analysis presenting environmental and economic impacts of the un-sewered community. The study also included evaluation of numerous wastewater collection, treatment and discharge scenarios with budgetary costs. F&V went on to prepare an MDNRE State Revolving Fund (SRF) Project Plan to obtain funding for the project.

This SRF project included a new Moving Bed Bio-film Reactor (MBBR) Wastewater Treatment Facility, along with several miles of new collection system and pump stations. F&V's recommendation to utilize this advanced treatment system provides a highly effective and expandable treatment system on a hillside and utilizes two existing lagoons that had been donated from a local hospital.

The plant is the first MBBR to be in used in the State of Michigan, and the first in the world to incorporate a primary lagoon for de-nitrification. GPSx Dynamic process modeling was used to confirm the process feasibility. The wastewater treatment plant provides year-round service to the community of Northport to protect the

surrounding groundwater and surface water of Lake Michigan. The MBBR media facilitates crucial bacteria growth that normally requires large areas in a relatively small footprint.

Year-round effluent quality has been very good even during winter months when wastewater temperatures drop to 35-40 deg. F. Results through spring of 2011 show BOD-5, ammonia-nitrogen and phosphorus averaging 4 mg/L, 1.3 mg/L and 0.2 mg/L, respectively.

This facility is set-up to disinfect the effluent should discharge to nearby surface waters be needed in the future.

Along with the treatment facility, F&V designed several miles of a sewer collection system that has both gravity sewers in some parts of the Village pressure system where terrain did not allow the gravity system. The pressure sewer service connections were directionally drilled utilizing HDPE force mains and service connections with individual grinder pumps located at each house.

F&V was responsible for all engineering aspects for the evaluation of alternatives, design of the project and oversight of the construction. F&V assisted on the negotiations with the MDEQ for a difficult groundwater discharge permit for the WWTF. F&V also assisted on startup and training procedures and prepared the operations and maintenance manuals.

Along with the treatment facility, F&V designed an all new collection system that eliminated approximately 509 individual septic tanks. The collection system included both gravity sewers and a pressure system where required due to undulating terrain. The gravity collection system included: 40,500 feet of 8-inch and 10-inch diameter pipe, two lift stations with capacity ranging from 170 to 500 gpm and 4,800 feet of 4-inch to 8-inch diameter force main that conveys the wastewater to the WWTF. The low-pressure sewer system consists of 150 individual grinder pump systems installed at each residence. The flow from the grinder pump systems is conveyed through approximately 25,300 feet of 2-inch to 4-inch diameter low-pressure force mains. A booster pump station was needed at the mid-point. The pressure sewer service connections were directionally drilled utilizing HDPE force mains and service connections with individual grinder pumps located at each house.





GURNSEY LAKE FORCEMAIN EXTENSION

Barry County, MI

PROJECT INFORMATION

Date Completed: 2015
Design Fee: \$34,800

REFERENCE

Scott Monroe
P: 269.623.3401
SWBCSWA@mei.net

F&V provided design and permitting services for the extension of the Authority's Septic Tank Effluent Pump (STEP) wastewater collection system to serve the Gurnsey Lake residents. The a 3.2 mile long sanitary forcemain extension in Hope Township is an extension onto a previous F&V Design of the STEP system serving the residents on Long Lake. The new forcemain provides connections for 90 homes with expansion capabilities for another 135 homes. This project was initiated by a petition from the residents around Gurnsey Lake. F&V worked with the Authority providing cost estimates and active participation in the public hearings to make this a successful specially assessed project.



WASTEWATER TREATMENT FACILITY IMPROVEMENTS

Sand Lake, MI

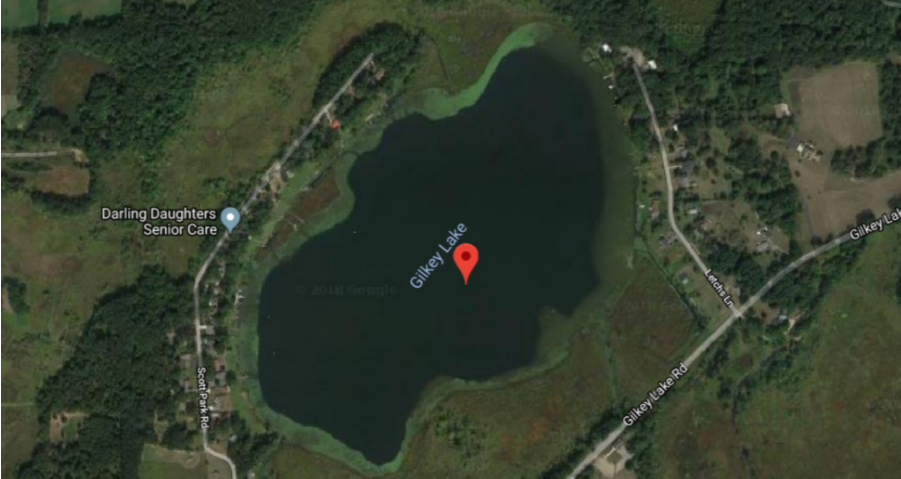
PROJECT INFORMATION

RD Grant: \$1.18 Million
RD Loan: \$1.49 Million

REFERENCE

Jerry Dines
616.636.8854
DPW@villageofsandlake.org

F&V provided the study, design, bidding, and construction engineering for emergency repairs of a failed lagoon as well as comprehensive wastewater system improvements. Improvements included sewer lining, sewer replacement, lift station rehabilitation, lift station replacement, lagoon improvements, new transfer structures, new discharge facilities, and related work.



GILKEY LAKE FORCEMAIN EXTENSION

Barry County, MI

PROJECT INFORMATION

Date Completed: 2014

Design Fee: \$15,000

REFERENCE

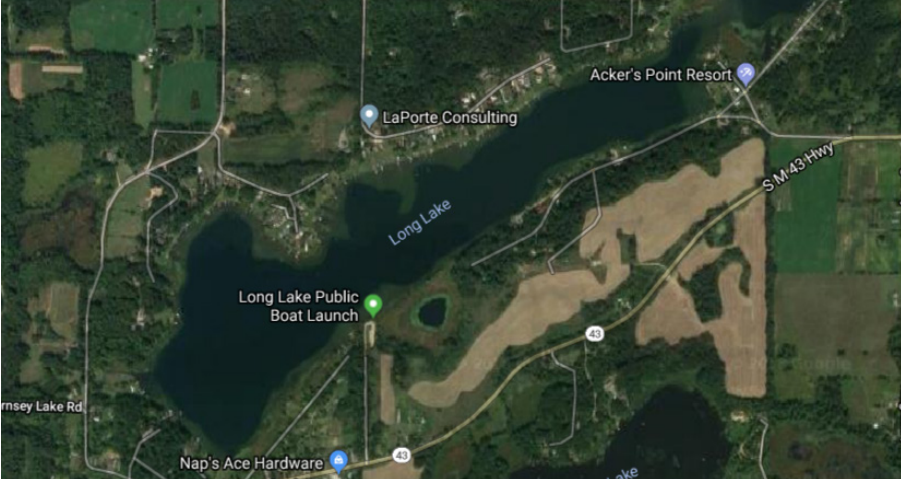
Scott Monroe

P: 269.623.3401

SWBCSWA@mei.net

F&V provided the design and MDEQ permitting of a 1.5 mile long sanitary forcemain extension in Barry Township to serve the residents on Gilkey Lake. This project extended the existing Septic Tank Effluent Pump (STEP) forcemain system to 60 residents around Gilkey Lake with the built-in capacity for an additional 115 homes.

Project also included directional drilling.



LONG LAKE FORCEMAIN EXTENSION

Barry County, MI

PROJECT INFORMATION

Date Completed: 2007

REFERENCE

Scott Monroe

P: 269.623.3401

SWBCSWA@mei.net

F&V provided the design of 9.1 miles of sanitary forcemain in Hope Township to serve the residents around Long and Cloverdale Lakes. This project extended the existing Septic Tank Effluent Pump (STEP) forcemain system to 350 existing residences around the system of lakes with the built-in capacity for an additional 330 homes.



ADDITIONAL INFORMATION

- Exceptions/deviances from the specifications
- Signed statement of compliance with specifications
- Insurance

EXCEPTIONS/DEVIANCES FROM THE SPECIFICATIONS

F&V accepts the specifications and proposes no exceptions or deviations.

SIGNED STATEMENT OF COMPLIANCE WITH SPECIFICATIONS

F&V will comply with the specifications, as stated above.



Steve Bishop, PE - Project Manager

INSURANCE

A copy of our insurance is provided on the following page.



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
4/20/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Olivier-VanDyk Insurance Agency 2780 44th Street SW Wyoming MI 49519	CONTACT NAME: Jill Wierenga	
	PHONE (A/C, No, Ext): 616-454-0800	FAX (A/C, No): 616-454-7100
	E-MAIL ADDRESS: jillw@ovdinsurance.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : Hanover Insurance Companies	22292
	INSURER B : SELECTIVE INS CO OF AMER	12572
	INSURER C : Accident Fund National Ins Co	12305
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** 1183438792 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
B	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC			S2321804	4/1/2018	4/1/2019	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
B	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS			S2321804	4/1/2018	4/1/2019	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
B	UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$ 0-			S2321804	4/1/2018	4/1/2019	EACH OCCURRENCE \$ 10,000,000 AGGREGATE \$ 10,000,000 \$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	WCV6163216	4/1/2018	4/1/2019	<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
A	Professional Liability Contractor's Pollution			LHI9501310-06	4/1/2018	4/1/2019	Per Claim 4,000,000 Aggregate 5,000,000 Retroactive Date 01/12/1993

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)
Engineering & Architectural Services
Umbrella Liability does not extend over the Professional/Pollution Liability policies.

CERTIFICATE HOLDER

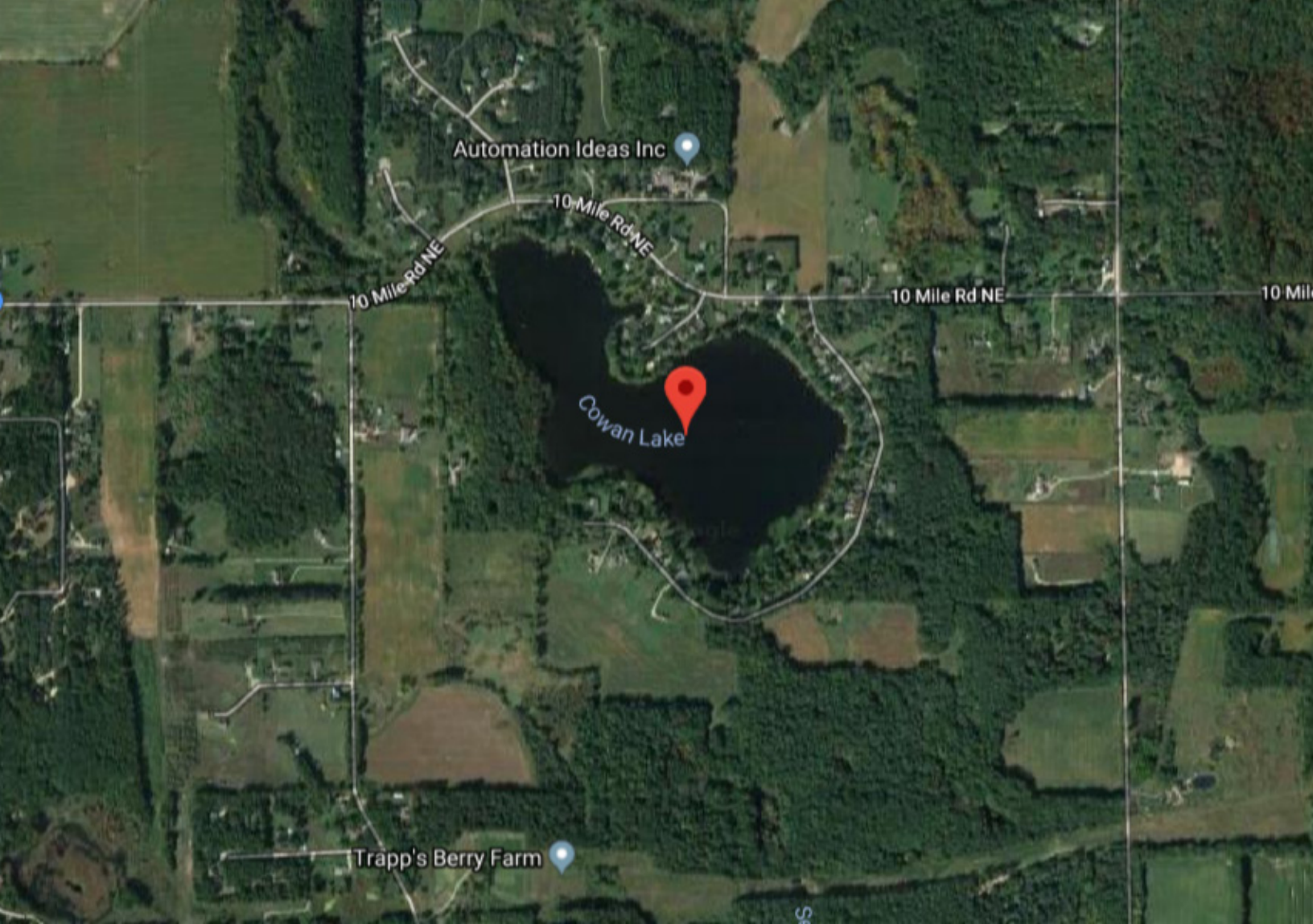
CANCELLATION

***FOR
INSURANCE
PURPOSES
ONLY ***

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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PROFESSIONAL FEES

ENGINEERING FEES

We propose to complete the scope of engineering work as described herein and in accordance with the Township's Request for Proposals dated June 18, 2018 for the below lump sum fees:

Base Project Fee

Design Engineering	\$172,000
Bidding	\$3,000
Construction Engineering - Administration	\$43,000
Construction Engineering - On-Site RPR	\$113,500*
Total	\$331,500

Alternate Project Fees

Alternate A – Water Well	\$9,000
Alternate B – Generators	\$3,500
Alternate C – Public Installation of On-Site Systems	\$39,500**
Alternate D – MDEQ Discharge Permit Amendments <ul style="list-style-type: none">▪ Basis of Design for Treatment and Discharge System▪ Review of Alternatives and Description of Operations▪ Wastewater Characterization (existing and proposed)▪ Hydro-Geological Study (including phosphorus adsorption capacity analysis)▪ Groundwater Monitoring and Discharge Management Plans	\$52,000
Alternate E - Aeration System Evaluations and Upgrades <ul style="list-style-type: none">▪ Evaluation of Existing Aeration and Mixing Equipment▪ Analysis of Aeration System Alternatives & Review with Township▪ Assist with MDEQ Permitting▪ Design and Bidding Documents▪ Construction Assistance and Observation	\$32,000

* As of this writing, the duration of construction has not been determined and likely won't be fully known until after the design is complete and a construction contractor is established. For the purposes of this proposal and to determine an engineering fee associated with construction engineering, we have estimated a construction duration of 24 weeks (24 weeks at 45 hours per week of on-site Resident Project Representative time). Should construction duration differ, our On-Site RPR fees would be adjusted by \$4,700 per week (down or up).

** The design and specification of the grinder pumping systems must be completed in order for the State to properly evaluate the project and issue a Part 41 permit. Therefore the fee for this work is included in the Design Engineering fee. Creation of individual temporary grading easements for the Township to secure signatures, is included in this Alternate C fee. Also included in the Alternate C fee is an additional 8 weeks (at 45 hours per week) of On-Site RPR fees for the anticipated construction duration of the grinder pumps, controls, connection pipe and appurtenances. As mentioned above, if construction duration should differ from that included in this proposal, our fees will adjust based on actual construction duration.

PROJECT COSTS

As requested in the Request for Proposals, we have completed a pre-design project cost estimate and included it in this section proposal.

Grattan Township

Engineer's Estimate of Project Costs** Cowan Lake Sanitary Sewer



Project: P14082
Date: 7/30/2018
By: SMB

Estimated costs inflated to anticipated 2019 dollars

ITEM	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	ESTIMATED UNIT PRICE	ESTIMATED AMOUNT
Base Project:					
<u>Collection System:</u>					
1	General Conditions, Bonds, and Insurances, Max. 5%	Lump Sum	1	\$ 85,000	\$ 85,000
2	Pre-Construction Video Survey	Lump Sum	1	\$ 15,000	\$ 15,000
3	Traffic Control	Lump Sum	1	\$ 20,000	\$ 20,000
4	Soil Erosion Control	Lump Sum	1	\$ 15,000	\$ 15,000
5	2" Forcemain w/ Tracer Wire	Ft	3,200	\$ 32	\$ 102,400
6	2" Terminal End Forcemain Clean-out	Each	3	\$ 1,800	\$ 5,400
7	3" Forcemain w/ Tracer Wire	Ft	3,800	\$ 38	\$ 144,400
8	3" Air release Valve	Each	1	\$ 5,500	\$ 5,500
9	3" Forcemain Clean-Out	Each	2	\$ 4,500	\$ 9,000
10	Cowan Lake Municipal Pump Station	Lump Sum	1	\$ 250,000	\$ 250,000
11	4" Forcemain w/ Tracer Wire	Ft	18,200	\$ 45	\$ 819,000
12	4" Air release Valve	Each	7	\$ 6,000	\$ 42,000
13	4" Forcemain Clean-Out	Each	18	\$ 5,000	\$ 90,000
14	Forcemain Connection to Existing Pump Station	Lump Sum	1	\$ 15,000	\$ 15,000
15	County Road Right-of-Way Grass Restoration	Ft	18,200	\$ 5	\$ 91,000
<u>Wastewater Treatment Plant:</u>					
1	Tree Clearing/Grubbing for Irrigation Field and Access Road	Day	10	\$ 2,500	\$ 25,000
2	Irrigation Piping (Directionally Bored and Trenched)	Ft	1,800	\$ 38	\$ 68,400
3	Irrigation System and Controls	Ac	7	\$ 6,000	\$ 42,000
4	Electrical (conduit, cables and services)	LS	1	\$ 15,000	\$ 15,000
5	Underdrains (Trenched)	Ft	6,000	\$ 15	\$ 90,000
				Total Estimated Base Construction Cost (Rounded):	\$ 1,950,000
				Allowance for Engineering, Administration, Legal, Easements, etc... (~30%):	\$585,000
				Project Contingencies (~10%):	\$253,500
				Total Estimated Project Base Cost (Rounded):	\$ 2,800,000
Alternate A- Water Well:					
1	Drilling, Casing, Screen, Development & Testing (lab and capacity)	Lump Sum	1	\$ 12,000	\$ 12,000
2	Submersible Pump, Pitless Adaptor, Electrical, Permits, Hydrant. Etc...	Lump Sum	1	\$ 9,500	\$ 9,500
				Allowance for Engineering, Administration, Legal, Easements, etc... :	\$ 15,000
				Contingencies (~10%):	\$ 3,650
				Alternate A - Estimated Total Cost (Rounded):	\$ 40,000
Alternate B- Generators:					
1	Generator & Controls at the Cowan Lake Pump Station	Lump Sum	1	\$ 60,000	\$ 60,000
2	Generator & Controls at Pump Station #1	Lump Sum	1	\$ 50,000	\$ 50,000
				Allowance for Engineering, Administration, Legal, Easements, etc... (~10%):	\$ 11,000
				Contingencies (~10%):	\$ 12,100
				Alternate B - Estimated Total Cost (Rounded):	\$ 133,000
Alternate Task C - Public Installation of On-Site Systems					
1	4" or 6" Gravity Sanitary Lateral (40' per home)	Ft	2,560	\$ 36	\$ 92,160
2	Grinder Pump Module with Control Panel (Materials Only)	Each	64	\$ 3,800	\$ 243,200
3	Grinder Pump Module Installation	Each	64	\$ 2,800	\$ 179,200
4	Residential Electrical Panel Upgrade (~10% of homes)	Each	6	\$ 800	\$ 4,800
5	Abandon Existing Septic System	Each	64	\$ 800	\$ 51,200
6	1 1/4" Service Lead w/curb stop and check valve (130' per Connection)	Ft	8,320	\$ 30	\$ 249,600
7	Residential Lawn Repair	Each	64	\$ 700	\$ 44,800
				Allowance for Engineering, Administration, Legal, Easements, etc... :	\$ 40,000
				Contingencies (~10%):	\$ 90,496
				Alternate C - Estimated Total Cost (Rounded):	\$ 1,000,000

** The Design Professional has no control over costs or the price of labor, equipment or materials, or over the Contractor's method of pricing. Bid prices may vary significantly based on these factors and market conditions at time of bid.

