February 2024
856730

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Pump Stations Evaluation

Gun Plain Charter Township

Gun Plain
CHARTER TOWNSHIP

800.494.5202 | www.fveng.com

Contents

Appendices

Project Description & Background

Gun Plain Charter Township owns and operates the sanitary sewer system within the jurisdictional boundaries of the township. The system is primarily located around Lake Doster but there are also several separate sewer systems in other parts of the Township. All the wastewater collected in the Township's sewer flows to the City of Plainwell and is treated by the City's wastewater treatment system.

It has come to the attention of Township leaders that the reliability of the system is being questioned. The sewer system is getting old and some of the pump stations are showing signs of deterioration. To proactively address the situation before it turns into an emergency repair, the Township commissioned this evaluation to better understand the scale and cost of the needed improvements.

The Township has 14 Pump Stations and 14 Grinder Stations within the existing sewer system.

Before we get into the technical details of this report it is important to clarify some terminology that is used. There are two terms, (Pump Station and Grinder Station) that have been used interchangeably in the record drawings and other documentation. Additionally, some pump station numbers, and their addresses have been skipped or otherwise misrepresented in various other documents. For the purposes of this report, we have defined the infrastructure to be evaluated using the following numbers, and addresses. The infrastructure has also been defined using the following terms and definitions:

Pump Station: Refers to a duplex pumping system that serve multiple homes. There are two pumps within each Pump Station. These may be either non-clog or grinder style pumps.

- Pump Station #1: 381 M-89 at the Silver Creek crossing.
- Pump Station #2: 210 Golf View Drive.
- Pump Station #3: 117 South Lake Doster Drive.
- Pump Station #4: 161 South Lake Doster Drive.
- Pump Station #5: 318 Midlakes Drive.
- Pump Station #6: 150 Parkway Street.
- Pump Station #7: 327 Highland Court.
- Pump Station #8: 307 Blarney Lane.
- Pump Station #9: 374 Shangri-La Circle.
- Pump Station #10: 15070 Doster Road.
- Pump Station #11: 429 Midlakes Drive/26 Drake.
- Pump Station #12: 210 Hestia Drive.
- Pump Station #13: Does Not Exist.
- Pump Station #14: 617 10th Street.
- Pump Station #15: 672 Edwards Street.

Grinder Station: Refers to duplex and a few simplex pumping systems that serve a small number of homes, typically one or two homes. These Grinder Stations use only grinder style pumps. Below is a list of the Grinder Stations, their number, simplex/duplex, and address:

- Grinder Station #1: Does Not Exist
- Grinder Station #2: Duplex, 177 South Lake Doster Drive.
- Grinder Station #3: Duplex, 319 Horseshoe Court.
- Grinder Station #4: Duplex, 311 Horseshoe Court.
- Grinder Station #5: Duplex, 335 Lakeview Lane.
- Grinder Station #6: Simplex, 336 1/2 Horseshoe Court.
- Grinder Station #7: Duplex, 363 Horseshoe Court.
- Grinder Station #8: Duplex, 343 Bayview Lane.
- Grinder Station #9: Simplex, 332 Bayview Lane.
- Grinder Station #10: Duplex, 336 Bayview Lane.
- Grinder Station #11: Duplex, 333 ½ Bayview Lane.
- Grinder Station #12: Duplex, 75 South Lake Doster Drive.
- Grinder Station #13: Duplex, 327 Highland Court.
- Grinder Station #14: Duplex, 347 Highland Court.

- Grinder Station #15: Duplex, 353 Highland Court.

Review of Existing Documentation

Record Drawings

The following record drawings were obtained and reviewed as part of this study:

- 1977 Sanitary Drain contracts A & B
  - These drawings include Pump Stations #1 through #8 and in general are the westerly portion of the Lake Doster sewer system. This also includes the pump station and forcemain string that outlets the wastewater to the City of Plainwell's system.
  - Grinder Stations within this collection system.
- 1980 Sanitary Drain 2
  - These drawings include the gravity flow sewer in Golf View Drive and Country Lake Boulevard
- 1999 Upper Lake Doster II
  - These drawings include pump stations #9 through #12 and in general are the east and north sides of Lake Doster.
  - Grinder Stations within this collection system.

Notably absent drawings:

- South Fork Drive and Logan Parkway Drawings
  - We understand the sewer system in this section is privately owned and therefore not part of the municipal system, but it still discharges into the municipal system upstream of Pump Station #3.
- The Sewer system connected to Pump stations #14 & #15.

One significant difference between the record drawings and what was actually constructed is the presence of separate valve chambers on Pump Stations #4 through #8. The original design called for separate valve chambers however the original contractors built the valves inside the wetwells instead of constructing separate valve chambers.

Flow Meter Data

Flow meters are installed at Pump Stations #1 (Lake Doster) and #14 (10th Street). Data from these meters was analyzed for the period from December 21, 2022, through November 16, 2023 to calculate the relative influence of infiltration and inflow (I&I). I&I is the amount of clean water that is entering the sewer system that shouldn't be there.

Lake Doster System

During the period analyzed, an average flow of 35,970 gallons per day was measured by the flow meters. The sewer system currently serves 281 Residential Equivalency Units (REU's). With an assumed average of 2.5 people per REU and 50 gallons of wastewater generated by each person. Therefore, the calculations would predict a flow of 35,125 gallons per day. Due to these flow numbers being so close to one another, we can conclude that there is very little I/I within the Lake Doster collection system.

It should also be noted that measured flow during the period from January to March averaged 34,034 gpd while the average flow from June to August was 37,098 gpd. The consistency of the numbers indicates that few homes are vacated during the winter months.

North 10th Street System

Similar to the analysis conducted for Lake Doster system, we noted that the system had an average measured flow of 9,805 gallons per day. With the 42 REU's connected to this system, the average wastewater generation expected should be about 5,250 gallons per day. Given the large gap in these numbers we can assume that about half the flow within this collection system is clean water from I&I.

Field Evaluations

Field evaluation of Pump Stations #1 through #15 as well as Grinder Stations 5, 7, 8, 10, 13 & 14 were performed according to typical industry standards. Evaluation forms for each Station evaluated can be found in Appendix A. The evaluation included pump drawdown tests as well as visual inspections of the piping, control panels and other station components.

Before the evaluations were conducted it was agreed by all parties that because the14 Grinder Stations are all the same age and in approximately the same condition that it would be most cost efficient to conduct evaluations at only six stations. The six selected included the two that were thought to be in the worst condition, the two that were thought to be in the best condition and then the remaining two were selected at random. In general, the conditions found at the Grinder Stations was what we expected and very similar among the six evaluated. Our recommendations for all 14 grinder stations are based on the interpolation of the findings from the six evaluations conducted.

Station Component Observations

The observations and recommendations made are organized in the section below by component rather than by Station number. The detailed cost estimate in Appendix B is organized by Station number.

Control Panels

Pump Stations #2 through #8 and all 14 Grinder Stations

Many of the existing control panels on the Pump stations as well as Grinder Stations are original to their late 1970's construction. The panels have been maintained over the years and as various individual components failed, they were to replaced as needed. However, the control panels are well beyond their life expectancy and should be replaced. Significant irreplaceable deficiencies include:

- Some of the components in the control panels are no longer available to purchase. Alternative products and *work arounds* have been implemented to keep the stations in operation.
- Many of the control panel supports are attached directly to the pump station lids. The lids have rusted to the point that they can no longer support the control panel and they are now in jeopardy of falling over.
- The location of the control panels relative to the wetwells no longer meets code. Line voltage in the presence of gasses produced by wastewater have the potential for fire and explosion.

Recommendations:
Replace the control panels in their entirety at each station. At Pump Stations #4 through #8 and all 14 Grinder Stations, the control panel support structure is integral to the wetwell cover and hatch. The cover and hatch are also recommended for replacement stated elsewhere in this report.

Pump Stations #9 through #12 and #15

These control panels are also original to their initial construction in about the year 2000. They are showing their age but generally appear to be in good shape. They still have a few years of functional life left within them, and their replacement is not warranted at this time. However, as components within them begin to fail with increasing frequency a decision will need to be made as to whether it is more cost efficient to continue replacing parts or just replace the panel.

Recommendations: No immediate improvements needed.

Stations #1 and #14

The control panels in these stations are relatively new. The Pump Station #1 control panel was replaced recently but the date could not be determined. Pump Station #14's was replaced in 2012. No improvements are recommended to either of these control panels.

Pumps

Pumps are the component in Stations that have the shortest expected life due to the normal wear and tear from their moving parts. The expected life of a pump is generally considered to be 10-15 years. We understand the pumps throughout all the Township's stations are at different points within their expected life. The below recommendations are based on conditions at the time of the evaluations and should be briefly reevaluated if a larger infrastructure improvement project is implemented.

Pump Stations #4 through #8 and all 14 Grinder Stations

We recommend all the pumps in these Stations be replaced. Some of these existing pumps may have some useful life left within them and if so, can be shelved as spare parts. We base this recommendation on other recommendations within the report that include complete replacement of the piping within these stations and the observation that many of the pump guiderails have failed and those that haven't failed yet are about to. Replacing the pumps, guiderails and all the piping at the same time is the appropriate plan of action.

All other Stations

No pump problems are known to exist.

Bypass Connections

Bypass connections are comprised of piping and valve configurations that allow the wastewater to be pumped through a hose to a waiting truck in the case of maintenance needs such as a broken forcemain. They can also be used in the case of a complete failure of a control panel from something like a lightning strike. A portable pump can be used to pump out of the wetwell and into the bypass connection. Bypass connections are now standard for new pump station construction and would likely be required by the State when modifications are made to existing pump stations. The below identifies the bypass connection needs at each of the Pump Stations.

- Pump Station #1: Bypass connection already in place, no improvement needed.
- Pump Station #2: Undetermined because the valve chamber could not be accessed. However, the original construction drawings show a bypass connection was originally designed. For the purposes of this report a bypass connection is assumed to exist and is functional.
- Pump Station #3: Undetermined because the valve chamber could not be accessed. However, the original construction drawings show a bypass connection was originally designed. For the purposes of this report a bypass connection is assumed to exist and is functional.
- Pump Stations #4 through #8: As noted above the original design of these stations called for valve chambers that contained bypass connections. However, the valve chambers were never constructed and therefore the bypass connections do not exist. We recommend adding bypass connections to these pump stations.
- Pump station #9: Undetermined because the valve chamber could not be accessed. However, the original construction drawings show a bypass connection was originally designed. For the purposes of this report a bypass connection is assumed to exist and is functional.
- Pump station #10: Undetermined because the valve chamber could not be accessed. However, the original construction drawings show a bypass connection was originally designed. For the purposes of this report a bypass connection is assumed to exist and is functional.
- Pump Station #11: Bypass connection already in place, no improvement needed.
- Pump Station #12: Bypass connection already in place, no improvement needed.

- Pump Station #14: Bypass connection already in place but should be improved to replace the missing hose quick connect fitting.
- Pump Station #15: Bypass connection already in place, no improvement needed.

Valves and Piping in the Wetwell and Valve Chambers

Pump Stations #1 through #3 and #9 through #15

The pipes, valves, guiderails, and other significant components that could be visually accessed from the surface all appear to be functional and in decent shape. They are likely all original to their construction. Valves were not operated due the need for confined space entry to access them. Based on the operator's verbal statements, we understand all valves are operable their replacement is not needed.

The existing paint of each of these piping systems is failing and rust has formed on every pipe and valve. We recommend all exposed piping and valving in the wetwells, valve chambers and the meter chamber be repainted to prolong their longevity.

Pump Stations #4 through #8 and all 14 Grinder Stations

Each of these Stations were constructed using galvanized steel pipe and valves. These piping systems have rusted and have been failing. As they fail, they have been patched with PVC pipe and valving systems. Additionally, the buried forcemain immediately outside of the Stations is also galvanized steel pipe for a few feet before it is connected to the buried PVC forcemain.

Similarly, the pump guiderails were originally constructed of galvanized steel pipe and fittings. They have corroded and many have failed.

We recommend all the piping in these stations be replaced including the buried portion of the forcemain outside of the station with PVC pipe and valves. Guiderails and their connection systems should be replaced with non-corrodible material.

Portable Generator Access

Pump station #1 is the only pump station to have an existing permanent on-site generator. The remaining pump stations rely on the use of portable generators which must be brought to the site and plugged in to maintain pumping operations. Several pump stations are located a significant distance from the roadway requiring either a vehicle to drive across lawns or the generator be hand carried/rolled to the pump station. During the winter when snow is on the ground, this becomes nearly impossible. Additionally, we understand that many of the homes have personal generators to provide power to their homes when utility power is lost. In this situation, the home's water well will continue to operate as the home generates wastewater and send that wastewater to the pump station even if the portable generator at the station has not yet been set up leading to potential overflows. The need to rely on a portable generator makes operations time consuming and expensive. We recommend improvements be made to lessen the operations burden in this regard, which also adds reliability to the system and reduces the chance of a pump station overflow into the lake.

Permanent Generators

We recommend permanent generators be added to pump stations #2 & #3 because both of these stations pump 100% of the flow from Lake Doster just as Pump Station #1 does.

Remote Plugs for Portable Generators

We recommend that Pump Stations 4-15 have generator plugs installed adjacent to edge of the road or within easy vehicle access. As an example, pump station #4 is located 200 feet from S Lake Doster Drive. We recommend a generator plug and accompanying switch gear be installed directly adjacent to the roadway. This would allow a trailer mounted generator to be parked on the road shoulder and plugged into this receptacle to operate the pump station. We recommend:

- PS#4: Add a remote receptacle.
- PS#5: Already adjacent to the road, no change.
- PS#6: Already adjacent to the road, no change.
- PS#7: Add a remote receptacle.
- PS#8: Already adjacent to the road, no change.
- PS#9: Already adjacent to the road, no change.
- PS#10: Already adjacent to the road, no change.
- PS#11: A remote generator receptacle already exists, no change.
- PS#12: Add a remote receptacle.
- PS#14: Already adjacent to the road, no change.
- PS#15: Construct a driveway typical of pump stations so a vehicle can access the existing generator receptacle.

Each of the 14 Grinder Stations serve a small number of homes compared to the Pump Stations identified above. Most of the Grinder Stations are in locations that would also require a generator to be hand carried to its location. However, the volume of wastewater from the grinder stations is relatively small in comparison to the Pump Stations and may not justify the expense of adding a remote generator receptacle. We haven't recommended remote receptacles for the Grinder Stations in this report due to cost concerns, however, if the Township staff, the residents, or the operations staff prefer that they be installed, we fully support that action.

Wetwell Structure Condition

Wetwells are exposed to corrosion inducing gasses throughout their lifetime and often exhibit degradation of their concrete. This section reviews and address deficiencies found through our field investigations. It is noted that our field assessment was limited to what can be seen from the surface, we did not enter the wetwells. Further, portions of the wetwell are under water and not visible, therefore our observations may not identify all deficiencies that exist.

All Grinder Stations

All 14 Grinder Station wetwells are constructed of fiberglass and are therefore not subject to corrosion. The only defects found were at the location where the pump discharge pipe penetrates the fiberglass structure. In some of these situations, the hole through the fiberglass needs to be repaired to provide a full seal. As stated elsewhere in this report, it is our recommendation to replace all the pipes in the Grinder Stations and the hole should be repaired when that work is completed.

Pump Stations #1, #2, #3, #9, #12 and #15

Unless it is further discussed below, the wetwell appears to be in acceptable condition with no major defects noted. As part of the other work recommended in this report, the pump stations will need to be taken out of service for a time. While that is done, we recommend all the wastewater be removed to the wetwell bottom, the structure pressure washed and inspected from the inside using confined space entry equipment. If defects are found after pressure washing or below the normal water surface, they should be repaired at that time. If there are significant defects found, consideration should be given to having the wetwell lined.

Pump Station #4

The concrete has significant cracking near where the gravity pipes enter the wetwell. Based on the width of the cracks, its possible chunks of concrete may fall off into the wetwell bottom. The concrete should be repaired by removing the deficient concrete, using cement mortar to replace the damaged sections, and lining the entire wetwell.

Pump station #5

A section of the concrete wetwell wall appears to be splitting open and chunks of concrete are falling to the bottom. The area in question is between the two discharge pipes as they exit the wetwell appear to be connected to the pipes penetrating the wetwell. The concrete should be repaired by removing the deficient concrete, using cement mortar to replace the damaged sections, and lining the entire wetwell.

Pump station #6
Some of the joints in the precast concrete are deteriorating and pieces are falling off. A joint exists where the two pump discharge pipes exit the wetwell that has significantly deteriorated. The concrete should be repaired by removing the deficient concrete, using cement mortar to replace the damaged sections, and lining the entire wetwell.

Pump station #7
This wetwell has a precast concrete joint with significant root intrusion. The roots are growing through the concrete joint seeking nutrients in the wastewater. The roots should be removed, the crack repaired using cement mortar to replace the damaged section and lining the entire wetwell.

Pump station #8
This wetwell has been lined in the past. The wetwell should still be pressure washed and inspected below the water surface as identified above however no defects were visibly noted other than an unexplained rust stain below one of the precast concrete joints.

Pump station #10
This wetwell has some concrete deterioration at the points where the pipes penetrate the wetwell. The concrete should be repaired by removing the deficient concrete, using cement mortar to replace the damaged sections, and lining the entire wetwell.

Pump station #11
The entire bottom section of this wetwell is deficient. Roots are visible protruding through cracks, signs of significant infiltration are present and concrete spauling humps appear to be present. All these deficiencies should be removed, pressurized grouting applied seal the joints and deficiencies repaired using cement mortar to replace the damaged sections and lining the entire wetwell.

Pump station #14
This wetwell appears to have minor concrete surface degradation from a point that appears to be the groundwater level down to the water surface. The damage appears to be related to water naturally weeping through the concrete and causing the interior surface to degrade. After pressure washing the surface and inspecting, the entire wetwell should be lined.

Valve Chambers
Valve chambers exist on 9 of the 14 Pump Stations, specifically on stations #1-#3 and #9-#15. During our field evaluations we were not able to access the valve chambers at Pump Stations #2, #3, #9, & #10 for various reasons. Access to these valve chambers should be arranged and full inspections made.

Some valve chambers were full of rainwater and others were mostly dry. Wet conditions are not bad for valve chambers in general because the components within them are made to operate in submerged conditions with two exceptions:

Valve Chamber at Pump Station #1
The valve chamber has about 2’ of water in it. A drainpipe appears to be present but is set high and cannot fully drain the valve chamber. Besides the pipe and valves in the valve chamber there is also a flow meter. Flow meters are also made to operate in submerged conditions, however, in our experience submerged flow meters can be problematic. We recommend repositioning the drainpipe lower or installing a sump pump in this valve chamber to fully drain the valve chamber and keep the flow meter out of the water. There also appears to be an unused electrical panel on the wall of this valve chamber. This old panel should be removed.

Painting the Pipes

As stated elsewhere in this report, the piping in the valve chamber should be repainted to add increase their longevity. Currently the pipes are underwater and the ductile iron pipes are rusting. If the valve chambers continue to operate in a submerged or partially submerged condition, painting the piping is especially important.

Hatches and access Manhole Covers

Each of the wetwells and valve chambers have access hatches that allow access into them. These hatches deteriorate over time, and some are in need of attention as identified below. In addition to the below, we also recommend safety grates be installed on each of the hatches larger than 36” x 36”.

Pump Station #1
Wetwell: Hatch: The hinges are rusted making it difficult to open and its locking hasp is broken. The hatch should be replaced.
Valve Chamber Manhole Cover: No Improvements needed.

Pump Station #2
Wetwell: Hatch: No Improvements needed.
Valve Chamber Manhole Cover: Buried and inaccessible. Removed soil covering cover and dislodge from its frame.

Pump Station #3
Wetwell: Hatch: The hinges and frame are deteriorating. The hatch should be replaced.
Valve Chamber Manhole Cover: Manhole cover could not be removed from its frame. Dislodge from its frame, clean the surfaces and make usable again.

Pump stations #4-#8 and all 14 Grinder Stations: The hatches on these stations have all deteriorated and should be replaced with a similar model that acts as a wetwell top and a hatch.

Pump Station #9
Wetwell: Hatch: No Improvements needed.
Valve Chamber Hatch: Could not access. Restore existing hatch to be accessible.

Pump Station #10
Wetwell: Hatch: No Improvements needed.
Valve Chamber Hatch: Could not access. Restore existing hatch to be accessible.

Pump Station #11
Wetwell: Hatch: No Improvements needed.
Valve Chamber Hatch: No Improvements needed.

Pump Station #12
Wetwell: Hatch: No Improvements needed.
Valve Chamber Hatch: No Improvements needed.

Pump Station #14
Wetwell: Hatch: No Improvements needed.
Valve Chamber Hatch: No Improvements needed.
Meter Manhole Cover: No Improvements needed.

Pump Station #15
Wetwell: Hatch: No Improvements needed.
Valve Chamber Hatch: No Improvements needed.

Miscellaneous

Several items of repair were noted that do not fit in any of the specific headings listed above. They are described as follows:

PS#1

- The generator exterior enclosure is showing significant rust spots and should be repainted or replaced.
- Vegetation has grown up and is starting to overtake the generator and control panel. Vegetation should be trimmed back significantly and weed killer applied.
- The wetwell vent is rusty and should be repainted.

PS#2

- During our field evaluation, we found pump #1 to be in the “off” position, running it in ‘hand” mode it appeared to operate as intended. The display would not allow it to be switched into “auto” mode. This is potentially a display error, or the pumps may not be alternating properly. Either way it is likely that pump #1 is not running in normal operation.
- Vegetation has grown up and is starting to overtake the station. It should be trimmed back and weed killer applied.
- The wetwell vent has a hole rusted through it and its paint is no longer protecting it. The vent should be replaced.

PS#3

- Vegetation has grown up and is starting to overtake the station. It should be trimmed back and weed killer applied.
- The wetwell vent is rusty and should be repainted.

PS#4

- Vegetation and homeowner stored equipment (a canoe) make this station difficult to access. The vegetation should be removed, and the canoe stored elsewhere.

PS#5

- Vegetation has grown up and is starting to overtake the station. It should be trimmed back and weed killer applied.

PS#6

- Pump #2 was not working during our field evaluation.

PS#7

- Pump #2 was not working during our field evaluation.

PS#9

- The wetwell vent is rusty and should be repainted.
- Vegetation has grown up and is starting to overtake the station. It should be trimmed back and weed killer applied.

PS#11

- The bottom of the control panel is significantly rusty. The entire panel should be cleaned up and repainted to reduce future corrosion.
- Nearby ground surface slopes towards the station. Grades should be adjusted to direct water away from the station.
- Vegetation has grown up and is starting to overtake the station. It should be trimmed back and weed killer applied.

PS#12

- The control panel has a slight lean. Reattach it to the concrete foundation with shims to make it plumb.

- Vegetation has grown up and is starting to overtake the station. It should be trimmed back and weed killer applied.

PS#14

- The concrete surrounding the structure is settling and has weeds growing in the cracks. The weeds should be removed, and herbicide applied to keep the cracks from widening.
- This station should have a paved driveway added off of 10th Street so maintenance vehicles can park off the roadway.

PS#15

- The wetwell vent is rusty and should be repainted.
- Replace the pump lift cables with stainless steel chains.

Permitting

Several permits will be required to build the project and would be needed at various times throughout the project. A brief description of each anticipated permit is discussed below.

Part 41

This permit issued by the State is for the construction of wastewater infrastructure. It would be applied for at the conclusion of design and before bidding. We have found that recent applications for this permit are taking up to 6 months to obtain for to unspecified reasons.

Joint Permit

The joint permit is a combination of several permits that are needed and are detailed below.

Part 31: Floodplain

This permit will be needed if any of the proposed work is below the floodplain elevation of the Lake Doster drainage system. As of this writing we do not anticipate the need for a floodplain permit, but it's listed here for sake of clarity.

Part 301: Inland Lakes and Streams

The project is within 500' of open water therefore this permit is necessary.

Allegan County Road Commission

Parts of the project may be within and alongside roads that are under the County jurisdiction. Allegan County Road Commission has a permit system that will need to be followed in order to use their right-of-way.

Allegan County Soil Erosion and Sedimentation Control (SESC)

Allegan County is the authorized agent for SESC associated with construction projects in this area. They will require a permit be issued and will periodically inspect the project site during construction for compliance.

State of Michigan SESC (Notice of Coverage)

The State of Michigan also issues an SESC permit for projects that disturb more than five acres. This permit is usually enforced by the local authorized agent (in this case the County)

Local Trade Permits (Electrical, Plumbing, etc…)

At the time of construction, local trade permits would be issued to the Contractor for construction of the various trades at the pump station and decommissioning the old pump station. These permits often come with regular trade inspections and occupancy permits at project completion.

Cost

Detailed Cost Estimate

A detailed cost estimate is presented in Appendix B. All project costs are in estimated 2023 construction dollars. At the time of this writing, inflation on construction projects is approximately 8% to 10% per year. As this project progresses into funding, design, and construction phases, project leaders should factor estimated inflation into the overall budget based on when the project is scheduled to be constructed.

Potential Funding Sources

Several options for funding a project this size and type are available for consideration. Most of these sources are primarily based on loans but a grant may possible as well. We recommend the Township base future decisions about moving this project to the next phase with the assumption that the project is funded by a loan rather than a grant.

Clean Water State Revolving Fund (CWSRF)

The State of Michigan has a revolving loan program (sometimes with a grant component) to assist communities in financing wastewater projects such as the project considered in this report. These grants monies are ***highly*** competitive and most go to communities with the lowest income. The State offers this funding source once a year.

For the last several years all loan money in this program has been allocated to applying communities, likely due to the possible grant attached to the loan. However, this program has for many years had loan money go unused. We anticipate that when the Township is ready to move forward with the project the program will have refreshed and will once again have cash to loan. The loan takes the form of municipal bonds which currently have government subsidized rates of approximately 1.875% with a term ranging from 20 to 40 years.

The application process is quite lengthy and complex. The next application cycle starts in the fall of 2024 with the notice of Intent To Apply (ITA) due November 1, 2024. Followed by a full Project Plan due June 30, 2025. The State will announce which projects they will fund during the Fall of 2025 with construction of those improvements in the 2026, or possibly the 2027, construction season.

United States Department of Agriculture – Rural Development (RD)

The federal government offers funding for projects such as the project considered in this study through RD. Each year Michigan's office of RD gets a grant funding pool that is also ***highly*** sought after. Additionally, they offer loans from an extensive loan pool. Applications can be submitted at any time of the year, and it will take about 6 months to prepare the application. The loan takes the form of municipal bonds which currently have government subsidized rates of approximately 3.5% with a 40-year term.

Self-Initiated Municipal Bonds

The Township can pursue self-initiated municipal bonds without the hassle of federal and state loan administration bureaucratic paperwork that the CWSRF and RD programs require. However, these bonds would not have government subsidized interest rates. These bonds currently have an interest rate of approximately 4.5% and a have a 20-year term.

Other Funding Sources

From time to time, various state and federal agencies offer funding sources for projects such as the one considered in this report. F&V continually watches for these funding sources and communicates with our client's the kind of projects they want to fund to see if there is a fit.

We would also like to note that there are some other highly competitive funding sources that can be pursued. However, these programs have terms and requirements that make them less favorable than those mentioned above. These programs are better discussed in person.

Schedule

After the funding source is secured, which can be a considerably long process depending on the source, the project would progress through typical project cycles including Design, Client Review, Permitting, Bidding, Construction, and Start-up, estimated duration of each is identified below.

Phase	Duration
Design	3 Months
Client Review	1 Month
Permitting	3 Months*
Bidding	1 Month
Construction	12 Months
Start-Up	1 Months
Total:	**21 months** (approx. 1.75 years from the beginning of Design Phase)

*F&V has no control over the duration government agencies take to review and permit projects. Actual duration may vary considerably.

Appendix A: Station Evaluation Forms

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/24/2023

Lift Station Number: LS #1

Lift Station Location: M-89 (Allegan St)

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction: 1977

Section 2: Wet Well

A.	Material of wet well walls:	[Concrete]	Fiberglass	Steel	Other	
B.	Condition of wet well walls:	Excellent	Good	[Fair]	Poor	Very Poor
C.	Condition of pump removal guides:	Excellent	[Good]	Fair	Poor	Very Poor
D.	Condition of pump lift chain:	Excellent	[Good]	Fair	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	Good	[Fair]	Poor	Very Poor
F.	Material of wet well top:	[Concrete]	Fiberglass	Steel	Other	
G.	Condition of wet well top:	Excellent	[Good]	Fair	Poor	Very Poor
H.	Condition of access hatches:	Excellent	Good	Fair	[Poor]	Very Poor
I.	Is wet well vented?	[Yes]	No			
J.	Amount of grease/scum/debris build-up on water surface:		None	[Minimal]	Moderate	Significant

K. Grease ring/water level staining above pipe invert? Yes [No]

L. Size of wet well: 8 foot dia.

M. Rim to bottom of wet well: 15.8 feet

N. Rim to invert: 7.4 feet

O. Notes: Wet well access hatch is difficult to open and hinges are rusting.

Section 3: Valve Chamber N/A

A.	Material of valve chamber wall:	[Concrete]	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	[Good]	Fair	Poor	Very Poor
C.	Material of valve chamber top:	[Concrete]	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	[Good]	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	[Fair]	Poor	Very Poor

F. Notes: Manhole cover difficult to remove. A couple feet of water in chamber.

Section 4: Valves

A.	Do check valves exist?	[Yes]	No				
B.	Do shut off valves exist?	[Yes]	No				
C.	Does the station have a bypass connection?	[Yes]	No				
	a. Size of bypass connection:	Unknown					
	b. Material of bypass connection:	Ductile Iron	PVC	Cast Iron	[Other]	Unknown	

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make	Sulzer	Sulzer

Model No.	ABS XFP PE1-PE3	ABS XFP PE1-PE3
Run time (hours)	534.9	496.4
Design point	350 gpm @ 110' TDH	350 gpm @ 110' TDH
Drawdown Results	485.0 gpm	428.6 gpm

B. Source of pump information: [O&M Manual] [Record Drawings] [O&M Staff (verbal)] Other _____

C. Are pumps noisy or vibrating? [Yes] [No]

D. Swirl in wet well while pump operates? [Yes] [No] N/A

E. Does the station have a flow meter? [Yes] No

a. If so, type and size of meter: Bailey Fischer Porter, unknown size

Section 6: Electrical

A. Service power: 120 [208] [480 Volts] 1 phase [3 phase]

B. Is surge protection provided? [Yes] No

C. Seal off fittings provided between the wet well and electrical/ control panel? [Yes] No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? [Yes] No

Section 7: Generator

A. Is there an on-site generator? [Yes] No

a. Size of on-site generator? Unknown.

B. Transfer Switch: [Automatic] [Manual]

C. Is there a generator receptacle? [Yes] No

D. Fuel Source: [Natural Gas] Propane Diesel

E. Generator Hours: Unknown.

F. Condition of generator and ancillary equip: Excellent Good [Fair] Poor Very Poor

G. Notes: Station has both an on-site generator and generator recepticle. Unable to run/test generator at time of visit.

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent [Good] Fair Poor Very Poor

B. How many float switches are installed? Four.

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) None.

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) VFD.

F. Station alarm:

Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Sensaphone, local.

Section 9: Forcemain

A. Forcemain material: [Ductile Iron] PVC Concrete Cast Iron Steel Other _____

B. Forcemain size (in): 4 inch.

Section 10: Site

A. Positive drainage away from station? Yes [No]

B. Site maintained? [Yes] No

C. Can the site be easily accessed for maintenance? [Yes] No

D. Is the station locked? Yes [No]

E. Noticeable odor issues? Yes [No]

F. Notes: Control panel is locked but lift station hatch not locked due to broken hasp.

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/24/2023

Lift Station Number: LS #2

Lift Station Location: Country Club Blvd

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction: 1977

Section 2: Wet Well

A.	Material of wet well walls:	**Concrete**	Fiberglass	Steel	Other	
B.	Condition of wet well walls:	Excellent	**Good**	Fair	Poor	Very Poor
C.	Condition of pump removal guides:	Excellent	**Good**	Fair	Poor	Very Poor
D.	Condition of pump lift chain:	Excellent	**Good**	Fair	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	Good	**Fair**	Poor	Very Poor
F.	Material of wet well top:	**Concrete**	Fiberglass	Steel	Other	
G.	Condition of wet well top:	Excellent	**Good**	Fair	Poor	Very Poor
H.	Condition of access hatches:	Excellent	**Good**	Fair	Poor	Very Poor
I.	Is wet well vented?	**Yes**	No			
J.	Amount of grease/scum/debris build-up on water surface:		**None**	Minimal	Moderate	Significant
K.	Grease ring/water level staining above pipe invert?				Yes	**No**

L. Size of wet well: 8 foot dia.

M. Rim to bottom of wet well: 18.7 feet.

N. Rim to invert: 9.7 feet.

Section 3: Valve Chamber N/A

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor

D. Notes: Valve chamber is buried and inaccessible.

Section 4: Valves

A.	Do check valves exist?	Yes	No			
B.	Do shut off valves exist?	Yes	No			
C.	Does the station have a bypass connection?	Yes	No			
	a. Size of bypass connection:					
	b. Material of bypass connection:	Ductile Iron	PVC	Cast Iron	Other	

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make	Pentair Myers	Pentair Myers
Model No.	4VH150M4-43	4VH150M4-43

Run time (hours)	13426.9	10429.8
Design point	370 gpm @ 70' TDH	370 gpm @ 70 TDH
Drawdown Results	376.0 gpm	391.0 gpm

B. Source of pump information: [O&M Manual] [Record Drawings] [O&M Staff (verbal)] Other _____

C. Are pumps noisy or vibrating? Yes [No]

D. Swirl in wet well while pump operates? Yes [No] N/A

E. Does the station have a flow meter? Yes [No]

a. If so, type and size of meter: _____

Section 6: Electrical

A. Service power: 120 208 [480 Volts] 1 phase [3 phase]

B. Is surge protection provided? Yes [No]

C. Seal off fittings provided between the wet well and electrical/ control panel? [Yes] No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? [Yes] No

Section 7: Generator

A. Is there an on-site generator? Yes [No]

a. Size of on-site generator? _____

B. Transfer Switch: Automatic [Manual]

C. Is there a generator receptacle? [Yes] No

D. Fuel Source: Natural Gas Propane Diesel

E. Generator Hours: _____

F. Condition of generator and ancillary equip: Excellent Good [Fair] Poor Very Poor

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent Good [Fair] Poor Very Poor

B. How many float switches are installed? Three.

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) Probe.

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) Relay logic.

F. Station alarm:

Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Sensaphone, local.

Section 9: Forcemain

A. Forcemain material: [Ductile Iron] PVC Concrete Cast Iron Steel Other _____

B. Forcemain size (in): 4 inch.

Section 10: Site

A. Positive drainage away from station? [Yes] No

B. Site maintained? [Yes] No

C. Can the site be easily accessed for maintenance? [Yes] No

D. Is the station locked? [Yes] No

E. Noticeable odor issues? [Yes] No

F. Notes: Some trees were surrounding the site, and thus may affect maintenance.

General Remarks:

Probe display shows pump 1 was off. Running in hand mode pump appeared to perform good. Display would only switch between hand and off. Possible error with display or pumps are not alternating.

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/23/2023

Lift Station Number: LS #3

Lift Station Location: S. Lake Doster Dr

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction: 1977

Section 2: Wet Well

A.	Material of wet well walls:	**Concrete**	Fiberglass	Steel	Other	
B.	Condition of wet well walls:	Excellent	**Good**	Fair	Poor	Very Poor
C.	Condition of pump removal guides:	Excellent	**Good**	Fair	Poor	Very Poor
D.	Condition of pump lift chain:	Excellent	**Good**	Fair	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	Good	**Fair**	Poor	Very Poor
F.	Material of wet well top:	**Concrete**	Fiberglass	Steel	Other	
G.	Condition of wet well top:	Excellent	**Good**	Fair	Poor	Very Poor
H.	Condition of access hatches:	Excellent	Good	Fair	**Poor**	Very Poor
I.	Is wet well vented?	**Yes**	No			
J.	Amount of grease/scum/debris build-up on water surface:		None	**Minimal**	Moderate	Significant
K.	Grease ring/water level staining above pipe invert?				Yes	**No**

L. Size of wet well: 8 foot dia.

M. Rim to bottom of wet well: 19.6 feet.

N. Rim to invert: 8.6 feet and 12.5 feet.

Section 3: Valve Chamber N/A

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor

D. Notes: Unable to remove manhole cover to access.

Section 4: Valves

A.	Do check valves exist?		Yes	No		
B.	Do shut off valves exist?		Yes	No		
C.	Does the station have a bypass connection?		Yes	No		
	a. Size of bypass connection:					
	b. Material of bypass connection:		Ductile Iron	PVC	Cast Iron	Other

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make	ABS	ABS
Model No.		

Run time (hours)	12235.5	16086.9
Design point	220 gpm @ 85' TDH	220 gpm @ 85' TDH
Drawdown Results	240.6 gpm	289.5 gpm

B.	Source of pump information:	O&M Manual	Record Drawings	O&M Staff (verbal)	Other	
C.	Are pumps noisy or vibrating?		Yes	No		
D.	Swirl in wet well while pump operates?		Yes	No	N/A	
E.	Does the station have a flow meter?		Yes	No		
	a. If so, type and size of meter:					

Section 6: Electrical

A.	Service power:	120	208	480 Volts	1 phase	3 phase		
B.	Is surge protection provided?		Yes	No				
C.	Seal off fittings provided between the wet well and electrical/ control panel?					Yes	No	
D.	Are electrical/ control panels located within 3' of wet well hatch or 5' of vent?					Yes	No	
E.	Notes:	Vent is too close to panel.						

Section 7: Generator

A.	Is there an on-site generator?	Yes	No			
	a. Size of on-site generator?					
B.	Transfer Switch:	Automatic	Manual			
C.	Is there a generator receptacle?	Yes	No			
D.	Fuel Source:	Natural Gas	Propane	Diesel		
E.	Generator Hours:					
F.	Condition of generator and ancillary equip:		Excellent	Good	Fair	Poor	Very Poor

Section 8: Pump and Motor Controls

A.	Condition of control panel:	Excellent	Good	Fair	Poor	Very Poor	
B.	How many float switches are installed?	Five.					
C.	Other level sensors (ultrasonic, radar, pressure transducer, bubbler)	None.					
D.	Pump controls (relay logic, PLC-based, VFD, proprietary controller)	Relay logic.					
F.	Station alarm:						
	Alarm telemetry (autodialer, radio, cell phone, SCADA, none)	Sensaphone, local.					

Section 9: Forcemain

A.	Forcemain material:	Ductile Iron	PVC	Concrete	Cast Iron	Steel	Other	
B.	Forcemain size (in):	4 inch						

Section 10: Site

A.	Positive drainage away from station?	Yes	No
B.	Site maintained?	Yes	No
C.	Can the site be easily accessed for maintenance?	Yes	No
D.	Is the station locked?	Yes	No
E.	Noticeable odor issues?	Yes	No

General Remarks:

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/23/2023

Lift Station Number: LS #4

Lift Station Location: South Doster Drive

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction: _____

Section 2: Wet Well

A.	Material of wet well walls:	[Concrete]	Fiberglass	Steel	Other	
B.	Condition of wet well walls:	Excellent	Good	Fair	[Poor]	Very Poor
C.	Condition of pump removal guides:	Excellent	[Good]	Fair	Poor	Very Poor
D.	Condition of pump lift chain:	Excellent	[Good]	Fair	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	[Good]	Fair	Poor	Very Poor
F.	Material of wet well top:	Concrete	Fiberglass	[Steel]	Other	
G.	Condition of wet well top:	Excellent	Good	[Fair]	Poor	Very Poor
H.	Condition of access hatches:	Excellent	Good	[Fair]	Poor	Very Poor
I.	Is wet well vented?	Yes	[No]			
J.	Amount of grease/scum/debris build-up on water surface:		[None]	Minimal	Moderate	Significant
K.	Grease ring/water level staining above pipe invert?				Yes	[No]
L.	Size of wet well:	4 foot dia.				
M.	Rim to bottom of wet well:	9.2 feet				
N.	Rim to invert:	5.4 feet				

Section 3: Valve Chamber [N/A]

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	_____
	a. If steel, is cathodic protection is provided?			_____		
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	_____
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?	[Yes]	No			
B.	Do shut off valves exist?	[Yes]	No			
C.	Does the station have a bypass connection?	Yes	[No]			
	a. Size of bypass connection:	_____				
	b. Material of bypass connection:	Ductile Iron	PVC	Cast Iron	Other	_____

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make		
Model No.		
Run time (hours)	7781.8	23618.3

Design point	Unknown	Unknown
Drawdown Results	43.2 gpm	No test performed

B. Source of pump information: O&M Manual | Record Drawings | O&M Staff (verbal) | Other _____

C. Are pumps noisy or vibrating? Yes | No

D. Swirl in wet well while pump operates? Yes | No | N/A

E. Does the station have a flow meter? Yes | No

a. If so, type and size of meter: _____

Section 6: Electrical

A. Service power: 120 | 240 | 480 Volts | 1 phase | 3 phase

B. Is surge protection provided? Yes | No

C. Seal off fittings provided between the wet well and electrical/ control panel? Yes | No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? Yes | No

Section 7: Generator

A. Is there an on-site generator? Yes | No

a. Size of on-site generator? _____

B. Transfer Switch: Automatic | Manual | None

C. Is there a generator receptacle? Yes | No

D. Fuel Source: Natural Gas | Propane | Diesel

E. Generator Hours: _____

F. Condition of generator and ancillary equip: Excellent | Good | Fair | Poor | Very Poor

G. Notes: Generator ancillary equipment not accessible during winter.

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent | Good | Fair | Poor | Very Poor

B. How many float switches are installed? Five.

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) None.

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) Relay logic.

F. Station alarm:

Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Sensaphone.

Section 9: Forcemain

A. Forcemain material: Ductile Iron | PVC | Concrete | Cast Iron | Steel | Other _____

B. Forcemain size (in): 1.25 inch

Section 10: Site

A. Positive drainage away from station? Yes | No

B. Site maintained? Yes | No

C. Can the site be easily accessed for maintenance? Yes | No

D. Is the station locked? Yes | No

E. Noticeable odor issues? Yes | No

F. Notes: Trees, canoe, etc. make accessibility to site difficult.

General Remarks:

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/23/2023

Lift Station Number: LS #5

Lift Station Location: Midlakes Blvd

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction:

Section 2: Wet Well

A.	Material of wet well walls:	**Concrete**	Fiberglass	Steel	Other	
B.	Condition of wet well walls:	Excellent	Good	Fair	**Poor**	Very Poor
C.	Condition of pump removal guides:	Excellent	Good	Fair	Poor	**Very Poor**
D.	Condition of pump lift chain:	Excellent	**Good**	Fair	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	Good	**Fair**	Poor	Very Poor
F.	Material of wet well top:	Concrete	Fiberglass	**Steel**	Other	
G.	Condition of wet well top:	Excellent	Good	Fair	**Poor**	Very Poor
H.	Condition of access hatches:	Excellent	Good	Fair	**Poor**	Very Poor
I.	Is wet well vented?	Yes	**No**			
J.	Amount of grease/scum/debris build-up on water surface:		**None**	Minimal	Moderate	Significant
K.	Grease ring/water level staining above pipe invert?				Yes	**No**
L.	Size of wet well:	4 foot dia.				
M.	Rim to bottom of wet well:	13.8 feet				
N.	Rim to invert:	11.1 feet				
O.	Notes:	Pump lift chains: one stainless and good condition, one coated and poor condition.				

Section 3: Valve Chamber **N/A**

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?	**Yes**	No			
B.	Do shut off valves exist?	**Yes**	No			
C.	Does the station have a bypass connection?	Yes	**No**			
	a. Size of bypass connection:					
	b. Material of bypass connection:	Ductile Iron	PVC	Cast Iron	Other	

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make	Myers	Myers
Model No.	WG20	WG20

Run time (hours)	20487.4	12622.6
Design point	15 gpm @ 55' TDH	15 gpm @ 55' TDH
Drawdown Results	23.5 gpm	No test performed

B. Source of pump information: O&M Manual | Record Drawings | O&M Staff (verbal) | Other _____

C. Are pumps noisy or vibrating? Yes | No

D. Swirl in wet well while pump operates? Yes | No | N/A

E. Does the station have a flow meter? Yes | No

a. If so, type and size of meter: _____

Section 6: Electrical

A. Service power: 120 | 240 | 480 Volts | 1 phase | 3 phase

B. Is surge protection provided? Yes | No

C. Seal off fittings provided between the wet well and electrical/ control panel? Yes | No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? Yes | No

Section 7: Generator

A. Is there an on-site generator? Yes | No

a. Size of on-site generator? _____

B. Transfer Switch: Automatic | Manual | None

C. Is there a generator receptacle? Yes | No

D. Fuel Source: Natural Gas | Propane | Diesel

E. Generator Hours: _____

F. Condition of generator and ancillary equip: Excellent | Good | Fair | Poor | Very Poor

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent | Good | Fair | Poor | Very Poor

B. How many float switches are installed? Five

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) None

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) Relay logic

F. Station alarm:

Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Local

Section 9: Forcemain

A. Forcemain material: Ductile Iron | PVC | Concrete | Cast Iron | Steel | Other _____

B. Forcemain size (in): 1.5 inch

Section 10: Site

A. Positive drainage away from station? Yes | No

B. Site maintained? Yes | No

C. Can the site be easily accessed for maintenance? Yes | No

D. Is the station locked? Yes | No

E. Noticeable odor issues? Yes | No

General Remarks:

_____

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/23/2023

Lift Station Number: LS #6

Lift Station Location: Parkway Drive

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction: _____

Section 2: Wet Well

A.	Material of wet well walls:	[Concrete]	Fiberglass	Steel	Other	
B.	Condition of wet well walls:	Excellent	Good	Fair	[Poor]	Very Poor
C.	Condition of pump removal guides:	Excellent	[Good]	Fair	Poor	Very Poor
D.	Condition of pump lift chain:	[Excellent]	Good	Fair	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	[Good]	Fair	Poor	Very Poor
F.	Material of wet well top:	Concrete	Fiberglass	[Steel]	Other	
G.	Condition of wet well top:	Excellent	Good	[Fair]	Poor	Very Poor
H.	Condition of access hatches:	Excellent	Good	[Fair]	Poor	Very Poor
I.	Is wet well vented?	[Yes]	No			
J.	Amount of grease/scum/debris build-up on water surface:		None	[Minimal]	Moderate	Significant
K.	Grease ring/water level staining above pipe invert?				Yes	[No]
L.	Size of wet well:	4 foot dia.				
M.	Rim to bottom of wet well:	11.2 feet				
N.	Rim to invert:	9.2 feet				
O.	Notes:	Wet well is vented through a hole in the top of the cover.				

Section 3: Valve Chamber [N/A]

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	_____
	a. If steel, is cathodic protection is provided?			_____		
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	_____
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?	[Yes]	No			
B.	Do shut off valves exist?	[Yes]	No			
C.	Does the station have a bypass connection?	Yes	[No]			
	a. Size of bypass connection:	_____				
	b. Material of bypass connection:	Ductile Iron	PVC	Cast Iron	Other	_____

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make	Myers	Myers
Model No.	WG20	WG20

Run time (hours)	13863.3	10405.8
Design point	14 gpm @ 55' TDH	14 gpm @ 55' TDH
Drawdown Results	7.52 gpm	No test performed

B. Source of pump information: O&M Manual | Record Drawings | **O&M Staff (verbal)** | Other _____

C. Are pumps noisy or vibrating? Yes | **No**

D. Swirl in wet well while pump operates? Yes | **No** | N/A

E. Does the station have a flow meter? Yes | **No**

a. If so, type and size of meter: _____

F. Notes: Pump two not working. Did not perform drawdown test.

Section 6: Electrical

A. Service power: 120 | **240** | 480 Volts | **1 phase** | 3 phase

B. Is surge protection provided? Yes | **No**

C. Seal off fittings provided between the wet well and electrical/ control panel? **Yes** | No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? Yes | **No**

Section 7: Generator

A. Is there an on-site generator? Yes | **No**

a. Size of on-site generator? _____

B. Transfer Switch: Automatic | Manual | **None**

C. Is there a generator receptacle? **Yes** | No

D. Fuel Source: Natural Gas | Propane | Diesel

E. Generator Hours: _____

F. Condition of generator and ancillary equip: Excellent | **Good** | Fair | Poor | Very Poor

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent | Good | **Fair** | Poor | Very Poor

B. How many float switches are installed? Five

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) None

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) Relay logic

F. Station alarm:

Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Local

Section 9: Forcemain

A. Forcemain material: Ductile Iron | **PVC** | Concrete | Cast Iron | Steel | Other _____

B. Forcemain size (in): 3 inch

Section 10: Site

A. Positive drainage away from station? **Yes** | No

B. Site maintained? **Yes** | No

C. Can the site be easily accessed for maintenance? **Yes** | No

D. Is the station locked? **Yes** | No

E. Noticeable odor issues? Yes | **No**

General Remarks:

155 Parkway lateral backs up quickly if water level backs up into gravity. Per Rico, no backflow preventor on line.

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/23/2023

Lift Station Number: LS #7

Lift Station Location: Highland Drive

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction: _____

Section 2: Wet Well

A.	Material of wet well walls:	[Concrete]	Fiberglass	Steel	Other	
B.	Condition of wet well walls:	Excellent	Good	[Fair]	Poor	Very Poor
C.	Condition of pump removal guides:	Excellent	Good	[Fair]	Poor	Very Poor
D.	Condition of pump lift chain:	Excellent	Good	[Fair]	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	Good	[Fair]	Poor	Very Poor
F.	Material of wet well top:	Concrete	Fiberglass	[Steel]	Other	
G.	Condition of wet well top:	Excellent	Good	[Fair]	Poor	Very Poor
H.	Condition of access hatches:	Excellent	[Good]	Fair	Poor	Very Poor
I.	Is wet well vented?	Yes	[No]			
J.	Amount of grease/scum/debris build-up on water surface:		[None]	Minimal	Moderate	Significant

K. Grease ring/water level staining above pipe invert? Yes [No]

L. Size of wet well: 4 foot dia.

M. Rim to bottom of wet well: 18.0 feet

N. Rim to invert: 14 feet, 5.4 feet, 2.6 feet

O. Notes: Roots at joint of wet well walls; one stainless pump lift chain, other chain not stainless

Section 3: Valve Chamber [N/A]

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	_____
	a. If steel, is cathodic protection is provided?			_____		
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	_____
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?	[Yes]	No			
B.	Do shut off valves exist?	[Yes]	No			
C.	Does the station have a bypass connection?	Yes	[No]			
	a. Size of bypass connection:	_____				
	b. Material of bypass connection:	Ductile Iron	PVC	Cast Iron	Other	_____

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make	Myers	Myers
Model No.	WG20	WG20

Run time (hours)	16854.1	20386.6
Design point	28 gpm @ 57' TDH	28 gpm @ 57' TDH
Drawdown Results	9.4 gpm	No testing performed

B. Source of pump information: O&M Manual | Record Drawings | O&M Staff (verbal) | Other _____

C. Are pumps noisy or vibrating? Yes | No

D. Swirl in wet well while pump operates? Yes | No | N/A

E. Does the station have a flow meter? Yes | No

a. If so, type and size of meter: _____

F. Notes: Pump #2 not working.

Section 6: Electrical

A. Service power: 120 | 240 | 480 Volts | 1 phase | 3 phase

B. Is surge protection provided? Yes | No

C. Seal off fittings provided between the wet well and electrical/ control panel? Yes | No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? Yes | No

Section 7: Generator

A. Is there an on-site generator? Yes | No

a. Size of on-site generator? _____

B. Transfer Switch: Automatic | Manual | None

C. Is there a generator receptacle? Yes | No

D. Fuel Source: Natural Gas | Propane | Diesel

E. Generator Hours: _____

F. Condition of generator and ancillary equip: Excellent | Good | Fair | Poor | Very Poor

G. Notes: The location of the generator receptacle is by the lake, making it difficult to access.

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent | Good | Fair | Poor | Very Poor

B. How many float switches are installed? Five

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) None

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) Relay logic

F. Station alarm:

Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Local

Section 9: Forcemain

A. Forcemain material: Ductile Iron | PVC | Concrete | Cast Iron | Steel | Other _____

B. Forcemain size (in): 1.25 inch

C. Notes: Galvanized steel

Section 10: Site

A. Positive drainage away from station? Yes | No

B. Site maintained? Yes | No

C. Can the site be easily accessed for maintenance? Yes | No

D. Is the station locked? Yes | No

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/23/2023

Lift Station Number: LS #8

Lift Station Location: Blarney Lane

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction:

Section 2: Wet Well

A.	Material of wet well walls:	[Concrete]	Fiberglass	Steel	Other	
B.	Condition of wet well walls:	Excellent	Good	Fair	[Poor]	Very Poor
C.	Condition of pump removal guides:	Excellent	Good	Fair	[Poor]	Very Poor
D.	Condition of pump lift chain:	Excellent	[Good]	Fair	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	Good	Fair	[Poor]	Very Poor
F.	Material of wet well top:	Concrete	Fiberglass	[Steel]	Other	
G.	Condition of wet well top:	Excellent	Good	[Fair]	Poor	Very Poor
H.	Condition of access hatches:	Excellent	Good	[Fair]	Poor	Very Poor
I.	Is wet well vented?	Yes	[No]			
J.	Amount of grease/scum/debris build-up on water surface:		None	[Minimal]	Moderate	Significant

K. Grease ring/water level staining above pipe invert? Yes [No]

L. Size of wet well: 4 foot dia.

M. Rim to bottom of wet well: 14.5 feet

N. Rim to invert: 8.1 feet, 10.3 feet

Section 3: Valve Chamber [N/A]

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?	[Yes]	No			
B.	Do shut off valves exist?	[Yes]	No			
C.	Does the station have a bypass connection?	Yes	[No]			
	a. Size of bypass connection:					
	b. Material of bypass connection:	Ductile Iron	PVC	Cast Iron	Other	

D. Notes: Pump 1 shut off valve in okay condition, pump 2 shut off valve non-functioning.

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make	Myers	Myers
Model No.	WG20	WG20

Run time (hours)	11104.4	15833.9
Design point	15 gpm @ 70' TDH	15 gpm @ 70' TDH
Drawdown Results	No testing performed	16.0 gpm

B.	Source of pump information:	O&M Manual	Record Drawings	O&M Staff (verbal)	Other	
C.	Are pumps noisy or vibrating?		Yes	No		
D.	Swirl in wet well while pump operates?		Yes	No	N/A	
E.	Does the station have a flow meter?		Yes	No		
	a. If so, type and size of meter:					

Section 6: Electrical

A.	Service power:	120	240	480 Volts	1 phase	3 phase	
B.	Is surge protection provided?		Yes	No			
C.	Seal off fittings provided between the wet well and electrical/ control panel?				Yes	No	
D.	Are electrical/ control panels located within 3' of wet well hatch or 5' of vent?				Yes	No	

Section 7: Generator

A.	Is there an on-site generator?		Yes	No			
	a. Size of on-site generator?						
B.	Transfer Switch:		Automatic	Manual	None		
C.	Is there a generator receptacle?		Yes	No			
D.	Fuel Source:		Natural Gas	Propane	Diesel		
E.	Generator Hours:						
F.	Condition of generator and ancillary equip:			Excellent	Good	Fair	Poor	Very Poor

Section 8: Pump and Motor Controls

A.	Condition of control panel:	Excellent	Good	Fair	Poor	Very Poor	
B.	How many float switches are installed?	Five					
C.	Other level sensors (ultrasonic, radar, pressure transducer, bubbler)	None					
D.	Pump controls (relay logic, PLC-based, VFD, proprietary controller)	Relay logic					
F.	Station alarm:						
	Alarm telemetry (autodialer, radio, cell phone, SCADA, none)	Local					

Section 9: Forcemain

A.	Forcemain material:	Ductile Iron	PVC	Concrete	Cast Iron	Steel	Other	
B.	Forcemain size (in):	1.25 inch						
C.	Notes:	Galvanized steel.						

Section 10: Site

A.	Positive drainage away from station?	Yes	No
B.	Site maintained?	Yes	No
C.	Can the site be easily accessed for maintenance?	Yes	No
D.	Is the station locked?	Yes	No
E.	Noticeable odor issues?	Yes	No

General Remarks:

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/23/2023

Lift Station Number: LS #9

Lift Station Location: Shangri-La Circle

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction:

Section 2: Wet Well

A.	Material of wet well walls:	[Concrete]	Fiberglass	Steel	Other	
B.	Condition of wet well walls:	Excellent	Good	[Fair]	Poor	Very Poor
C.	Condition of pump removal guides:	Excellent	[Good]	Fair	Poor	Very Poor
D.	Condition of pump lift chain:	Excellent	[Good]	Fair	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	Good	[Fair]	Poor	Very Poor
F.	Material of wet well top:	[Concrete]	Fiberglass	Steel	Other	
G.	Condition of wet well top:	Excellent	Good	[Fair]	Poor	Very Poor
H.	Condition of access hatches:	Excellent	[Good]	Fair	Poor	Very Poor
I.	Is wet well vented?	[Yes]	No			
J.	Amount of grease/scum/debris build-up on water surface:		[None]	Minimal	Moderate	Significant
K.	Grease ring/water level staining above pipe invert?				Yes	[No]
L.	Size of wet well:	7 foot dia.				
M.	Rim to bottom of wet well:	20.7 feet				
N.	Rim to invert:	13 feet and 13 feet				

Section 3: Valve Chamber N/A

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor
F.	Notes:	Unable to unlock to assess.				

Section 4: Valves

A.	Do check valves exist?		Yes	No		
B.	Do shut off valves exist?		Yes	No		
C.	Does the station have a bypass connection?		Yes	No		
	a. Size of bypass connection:					
	b. Material of bypass connection:		Ductile Iron	PVC	Cast Iron	Other

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make	Flygt	Flygt
Model No.	3140.090-6103	3140.090-6103

Run time (hours)	4698.8	4983.1
Design point	200 gpm @ 76' TDH	200 gpm @ 76' TDH
Drawdown Results	230.3 gpm	230.3 gpm

B. Source of pump information: [O&M Manual] Record Drawings O&M Staff (verbal) Other _____

C. Are pumps noisy or vibrating? Yes [No]

D. Swirl in wet well while pump operates? Yes [No] N/A

E. Does the station have a flow meter? Yes [No]

a. If so, type and size of meter: _____

Section 6: Electrical

A. Service power: 120 240 [480 Volts] 1 phase [3 phase]

B. Is surge protection provided? [Yes] No

C. Seal off fittings provided between the wet well and electrical/ control panel? [Yes] No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? Yes [No]

Section 7: Generator

A. Is there an on-site generator? Yes [No]

a. Size of on-site generator? _____

B. Transfer Switch: Automatic [Manual]

C. Is there a generator receptacle? Yes [No]

D. Fuel Source: Natural Gas Propane Diesel

E. Generator Hours: _____

F. Condition of generator and ancillary equip: Excellent [Good] Fair Poor Very Poor

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent Good [Fair] Poor Very Poor

B. How many float switches are installed? Five

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) None

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) Relay logic

F. Station alarm:

Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Sensaphone, local

G. Notes: Control panel concrete pad as settled.

Section 9: Forcemain

A. Forcemain material: [Ductile Iron] PVC Concrete Cast Iron Steel Other _____

B. Forcemain size (in): 4 inch

Section 10: Site

A. Positive drainage away from station? Yes [No]

B. Site maintained? [Yes] No

C. Can the site be easily accessed for maintenance? [Yes] No

D. Is the station locked? [Yes] No

E. Noticeable odor issues? Yes [No]

General Remarks:

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/23/2023

Lift Station Number: LS #10

Lift Station Location: Doster Road

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction:

Section 2: Wet Well

A.	Material of wet well walls:	[Concrete]	Fiberglass	Steel	Other	
B.	Condition of wet well walls:	Excellent	Good	Fair	Poor	[Very Poor]
C.	Condition of pump removal guides:	Excellent	[Good]	Fair	Poor	Very Poor
D.	Condition of pump lift chain:	Excellent	[Good]	Fair	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	[Good]	Fair	Poor	Very Poor
F.	Material of wet well top:	[Concrete]	Fiberglass	Steel	Other	
G.	Condition of wet well top:	Excellent	[Good]	Fair	Poor	Very Poor
H.	Condition of access hatches:	Excellent	[Good]	Fair	Poor	Very Poor
I.	Is wet well vented?	[Yes]	No			
J.	Amount of grease/scum/debris build-up on water surface:		None	[Minimal]	Moderate	Significant
K.	Grease ring/water level staining above pipe invert?				Yes	[No]

L. Size of wet well: 7 foot dia.

M. Rim to bottom of wet well: 27.0 feet

N. Rim to invert: 10.7 feet and 19.4 feet

O. Notes: Top two sections of wet well walls are in fair condition.

Section 3: Valve Chamber N/A

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor

F. Notes: Unable to unlock to assess.

Section 4: Valves

A.	Do check valves exist?		Yes	No		
B.	Do shut off valves exist?		Yes	No		
C.	Does the station have a bypass connection?		Yes	No		
	a. Size of bypass connection:					
	b. Material of bypass connection:		Ductile Iron	PVC	Cast Iron	Other

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make	Flygt	Flygt

Model No.	CP-3140	CP-3140
Run time (hours)	3888	4070.2
Design point	165 gpm @ 96' TDH	165 gpm @ 96' TDH
Drawdown Results	178.5 gpm	172.7 gpm

B. Source of pump information: O&M Manual | **Record Drawings** | O&M Staff (verbal) | Other _____

C. Are pumps noisy or vibrating? Yes | **No**

D. Swirl in wet well while pump operates? Yes | **No** | N/A

E. Does the station have a flow meter? Yes | **No**

a. If so, type and size of meter: _____

Section 6: Electrical

A. Service power: 120 | 208 | **480 Volts** | 1 phase | **3 phase**

B. Is surge protection provided? **Yes** | No

C. Seal off fittings provided between the wet well and electrical/ control panel? **Yes** | No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? **Yes** | No

Section 7: Generator

A. Is there an on-site generator? Yes | **No**

a. Size of on-site generator? _____

B. Transfer Switch: Automatic | **Manual**

C. Is there a generator receptacle? **Yes** | No

D. Fuel Source: Natural Gas | Propane | Diesel

E. Generator Hours: _____

F. Condition of generator and ancillary equip: Excellent | **Good** | Fair | Poor | Very Poor

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent | Good | Fair | **Poor** | Very Poor

B. How many float switches are installed? Five

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) None

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) Relay logic

F. Station alarm:

Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Sensaphone, local

G. Notes: The control panel is on uneven ground and is slightly tilted.

Section 9: Forcemain

A. Forcemain material: **Ductile Iron** | PVC | Concrete | Cast Iron | Steel | Other _____

B. Forcemain size (in): 4 inch

Section 10: Site

A. Positive drainage away from station? Yes | **No**

B. Site maintained? **Yes** | No

C. Can the site be easily accessed for maintenance? Yes | **No**

D. Is the station locked? **Yes** | No

E. Noticeable odor issues? Yes | **No**

F. Notes: The entrance to the site is steep with no gravel, difficult to traverse.

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/24/2023

Lift Station Number: LS #11

Lift Station Location: Midlakes Drive

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction:

Section 2: Wet Well

A.	Material of wet well walls:	[Concrete]	Fiberglass	Steel	Other	
B.	Condition of wet well walls:	Excellent	Good	Fair	Poor	[Very Poor]
C.	Condition of pump removal guides:	Excellent	[Good]	Fair	Poor	Very Poor
D.	Condition of pump lift chain:	Excellent	[Good]	Fair	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	[Good]	Fair	Poor	Very Poor
F.	Material of wet well top:	[Concrete]	Fiberglass	Steel	Other	
G.	Condition of wet well top:	Excellent	[Good]	Fair	Poor	Very Poor
H.	Condition of access hatches:	Excellent	[Good]	Fair	Poor	Very Poor
I.	Is wet well vented?	[Yes]	No			
J.	Amount of grease/scum/debris build-up on water surface:		None	[Minimal]	Moderate	Significant
K.	Grease ring/water level staining above pipe invert?				Yes	[No]
L.	Size of wet well:	6 foot dia.				
M.	Rim to bottom of wet well:	12.1 feet				
N.	Rim to invert:	5.5 feet and 5.5 feet				

Section 3: Valve Chamber N/A

A.	Material of valve chamber wall:	[Concrete]	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	[Good]	Fair	Poor	Very Poor
C.	Material of valve chamber top:	[Concrete]	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	[Good]	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	[Good]	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?		[Yes]	No		
B.	Do shut off valves exist?		[Yes]	No		
C.	Does the station have a bypass connection?		[Yes]	No		
	a. Size of bypass connection:	4 inch				
	b. Material of bypass connection:		[Ductile Iron]	PVC	Cast Iron	Other
D.	Notes:	Valve chamber was full of water. Water was pumped out for observation.				

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make	Flygt	Flygt
Model No.	CP-3127	CP-3127

Run time (hours)	3310.1	5978.3
Design point	125 gpm @ 59' TDH	125 gpm @ 59' TDH
Drawdown Results	143.8 gpm	133.2 gpm

B. Source of pump information: O&M Manual | Record Drawings | O&M Staff (verbal) | Other _____

C. Are pumps noisy or vibrating? Yes | No

D. Swirl in wet well while pump operates? Yes | No | N/A

E. Does the station have a flow meter? Yes | No

a. If so, type and size of meter: _____

Section 6: Electrical

A. Service power: 120 | 208 | 480 Volts | 1 phase | 3 phase

B. Is surge protection provided? Yes | No

C. Seal off fittings provided between the wet well and electrical/ control panel? Yes | No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? Yes | No

Section 7: Generator

A. Is there an on-site generator? Yes | No

a. Size of on-site generator? _____

B. Transfer Switch: Automatic | Manual

C. Is there a generator receptacle? Yes | No

D. Fuel Source: Natural Gas | Propane | Diesel

E. Generator Hours: _____

F. Condition of generator and ancillary equip: Excellent | Good | Fair | Poor | Very Poor

G. Notes: Generator receptacle near road, transfer switch near panel, much further away from the road, causing maintenance difficulties.

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent | Good | Fair | Poor | Very Poor

B. How many float switches are installed? Five

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) None

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) Relay logic

F. Station alarm:

Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Sensaphone, local

G. Notes: Bottom of control panel is rusted.

Section 9: Forcemain

A. Forcemain material: Ductile Iron | PVC | Concrete | Cast Iron | Steel | Other _____

B. Forcemain size (in): 4 inch

Section 10: Site

A. Positive drainage away from station? Yes | No

B. Site maintained? Yes | No

C. Can the site be easily accessed for maintenance? Yes | No

D. Is the station locked? Yes | No

E. Noticeable odor issues? Yes | No

F. Notes: Drainage slopes towards site, brush over valve chamber and far away from road, making maintenance difficult.

General Remarks:

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/23/2023

Lift Station Number: LS #12

Lift Station Location: Hestia Street

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction: _____

Section 2: Wet Well

A.	Material of wet well walls:	[Concrete]	Fiberglass	Steel	Other	
B.	Condition of wet well walls:	Excellent	Good	[Fair]	Poor	Very Poor
C.	Condition of pump removal guides:	Excellent	[Good]	Fair	Poor	Very Poor
D.	Condition of pump lift chain:	Excellent	[Good]	Fair	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	Good	[Fair]	Poor	Very Poor
F.	Material of wet well top:	[Concrete]	Fiberglass	Steel	Other	
G.	Condition of wet well top:	Excellent	[Good]	Fair	Poor	Very Poor
H.	Condition of access hatches:	Excellent	[Good]	Fair	Poor	Very Poor
I.	Is wet well vented?	[Yes]	No			
J.	Amount of grease/scum/debris build-up on water surface:		None	[Minimal]	Moderate	Significant
K.	Grease ring/water level staining above pipe invert?				Yes	[No]
L.	Size of wet well:	6 foot dia.				
M.	Rim to bottom of wet well:	13.8 feet				
N.	Rim to invert:	5.1 feet				

Section 3: Valve Chamber

N/A

A.	Material of valve chamber wall:	[Concrete]	Fiberglass	Steel	Other	_____
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	[Good]	Fair	Poor	Very Poor
C.	Material of valve chamber top:	[Concrete]	Fiberglass	Steel	Other	_____
D.	Condition of valve chamber top:	Excellent	[Good]	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	[Good]	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?	[Yes]	No			
B.	Do shut off valves exist?	[Yes]	No			
C.	Does the station have a bypass connection?	[Yes]	No			
	a. Size of bypass connection:	4 inch				
	b. Material of bypass connection:	[Ductile Iron]	PVC	Cast Iron	Other	_____

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make	Flygt	Flygt
Model No.	CP-3127	CP-3127
Run time (hours)	6001.3	3523.8

Design point	110 gpm @ 71' TDH	110 gpm @ 71' TDH
Drawdown Results	110 gpm	No test performed

B. Source of pump information: O&M Manual | **Record Drawings** | O&M Staff (verbal) | Other _____

C. Are pumps noisy or vibrating? Yes | **No**

D. Swirl in wet well while pump operates? Yes | **No** | N/A

E. Does the station have a flow meter? Yes | **No**

a. If so, type and size of meter: _____

F. Notes: Run time hours on pump #1 when pump #2 was pulled on 8/23/23: 5429.9.

Section 6: Electrical

A. Service power: 120 | **240** | 480 Volts | **1 phase** | 3 phase

B. Is surge protection provided? **Yes** | No

C. Seal off fittings provided between the wet well and electrical/ control panel? **Yes** | No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? **Yes** | No

Section 7: Generator

A. Is there an on-site generator? Yes | **No**

a. Size of on-site generator? _____

B. Transfer Switch: Automatic | **Manual**

C. Is there a generator receptacle? **Yes** | No

D. Fuel Source: Natural Gas | Propane | Diesel

E. Generator Hours: _____

F. Condition of generator and ancillary equip: Excellent | **Good** | Fair | Poor | Very Poor

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent | Good | **Fair** | Poor | Very Poor

B. How many float switches are installed? Five

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) None

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) VFD converting to three phase, relay logic

F. Station alarm:

Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Sensaphone

G. Notes: Control panel leaning slightly.

Section 9: Forcemain

A. Forcemain material: **Ductile Iron** | PVC | Concrete | Cast Iron | Steel | Other _____

B. Forcemain size (in): 4 inch

Section 10: Site

A. Positive drainage away from station? Yes | **No**

B. Site maintained? Yes | **No**

C. Can the site be easily accessed for maintenance? Yes | **No**

D. Is the station locked? Yes | **No**

E. Noticeable odor issues? Yes | **No**

General Remarks:

Steep hill leading up to lift station makes maintenance difficult.

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/24/2023

Lift Station Number: LS #14

Lift Station Location: Highway A-45

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction:

Section 2: Wet Well

A.	Material of wet well walls:	[Concrete]	Fiberglass	Steel	Other	
B.	Condition of wet well walls:	Excellent	Good	Fair	[Poor]	Very Poor
C.	Condition of pump removal guides:	Excellent	Good	[Fair]	Poor	Very Poor
D.	Condition of pump lift chain:	Excellent	[Good]	Fair	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	[Good]	Fair	Poor	Very Poor
F.	Material of wet well top:	[Concrete]	Fiberglass	Steel	Other	
G.	Condition of wet well top:	Excellent	[Good]	Fair	Poor	Very Poor
H.	Condition of access hatches:	Excellent	[Good]	Fair	Poor	Very Poor
I.	Is wet well vented?	[Yes]	No			
J.	Amount of grease/scum/debris build-up on water surface:		[None]	Minimal	Moderate	Significant
K.	Grease ring/water level staining above pipe invert?				Yes	[No]
L.	Size of wet well:	6 foot dia.				
M.	Rim to bottom of wet well:	16.7 feet				
N.	Rim to invert:	10.0 feet and 8.8 feet				

Section 3: Valve Chamber N/A

A.	Material of valve chamber wall:	[Concrete]	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	[Good]	Fair	Poor	Very Poor
C.	Material of valve chamber top:	[Concrete]	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	[Good]	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	[Good]	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?	[Yes]	No			
B.	Do shut off valves exist?	[Yes]	No			
C.	Does the station have a bypass connection?	[Yes]	No			
	a. Size of bypass connection:	4 inch				
	b. Material of bypass connection:	[Ductile Iron]	PVC	Cast Iron	Other	
D.	Notes:	Bypass connection missing cap.				

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make	Liberty	Liberty
Model No.	LSG200/LSGX200	LSG200/LSGX200

Run time (hours)	2172.2	1324.2
Design point	Unknown	Unknown
Drawdown Results	61.3 gpm	71.9 gpm

B. Source of pump information: [O&M Manual] Record Drawings O&M Staff (verbal) Other _____

C. Are pumps noisy or vibrating? Yes [No]

D. Swirl in wet well while pump operates? Yes [No] N/A

E. Does the station have a flow meter? [Yes] No

a. If so, type and size of meter: Rosemont, size unknown.

F. Notes: Flow meter reading Pump 1: 65 gpm
Flow meter reading Pump 2: 73 gpm

Section 6: Electrical

A. Service power: 120 [240] 480 Volts 1 phase [3 phase]

B. Is surge protection provided? [Yes] No

C. Seal off fittings provided between the wet well and electrical/ control panel? [Yes] No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? [Yes] No

Section 7: Generator

A. Is there an on-site generator? Yes [No]

a. Size of on-site generator? _____

B. Transfer Switch: Automatic Manual [None]

C. Is there a generator receptacle? Yes [No]

D. Fuel Source: Natural Gas Propane Diesel

E. Generator Hours: _____

F. Condition of generator and ancillary equip: Excellent Good Fair Poor Very Poor

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent [Good] Fair Poor Very Poor

B. How many float switches are installed? Four

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) None

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) Relay logic

F. Station alarm:
Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Sensaphone, local

Section 9: Forcemain

A. Forcemain material: Ductile Iron [PVC] Concrete Cast Iron Steel Other _____

B. Forcemain size (in): 2 inch

C. Notes: Forcemain changes to 4 inch ductile iron in valve chamber.

Section 10: Site

A. Positive drainage away from station? [Yes] No

B. Site maintained? [Yes] No

C. Can the site be easily accessed for maintenance? [Yes] No

D. Is the station locked? [Yes] No

E. Noticeable odor issues? Yes [No]

General Remarks:

Concrete around structures is sinking.

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/24/2023

Lift Station Number: LS #15

Lift Station Location: Edward Dr

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction:

Section 2: Wet Well

A.	Material of wet well walls:	[Concrete]	Fiberglass	Steel	Other	
B.	Condition of wet well walls:	Excellent	[Good]	Fair	Poor	Very Poor
C.	Condition of pump removal guides:	Excellent	[Good]	Fair	Poor	Very Poor
D.	Condition of pump lift chain:	Excellent	Good	[Fair]	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	Good	[Fair]	Poor	Very Poor
F.	Material of wet well top:	[Concrete]	Fiberglass	Steel	Other	
G.	Condition of wet well top:	Excellent	[Good]	Fair	Poor	Very Poor
H.	Condition of access hatches:	Excellent	[Good]	Fair	Poor	Very Poor
I.	Is wet well vented?	[Yes]	No			
J.	Amount of grease/scum/debris build-up on water surface:		None	Minimal	[Moderate]	Significant
K.	Grease ring/water level staining above pipe invert?				Yes	[No]
L.	Size of wet well:	5 foot dia.				
M.	Rim to bottom of wet well:	17.3 feet				
N.	Rim to invert:	12.6 feet				
O.	Notes:	Pump lift chains are cables, not chains.				

Section 3: Valve Chamber N/A

A.	Material of valve chamber wall:	[Concrete]	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	[Good]	Fair	Poor	Very Poor
C.	Material of valve chamber top:	[Concrete]	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	[Good]	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	[Good]	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?	[Yes]	No			
B.	Do shut off valves exist?	[Yes]	No			
C.	Does the station have a bypass connection?	[Yes]	No			
	a. Size of bypass connection:	4 inch				
	b. Material of bypass connection:	[Ductile Iron]	PVC	Cast Iron	Other	

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make	Myers	Myers
Model No.		

Run time (hours)	8762.6	8226.2
Design point	Unknown	Unknown
Drawdown Results	57.3 gpm	54.3 gpm

B. Source of pump information: [O&M Manual] Record Drawings [O&M Staff (verbal)] Other _____

C. Are pumps noisy or vibrating? Yes [No]

D. Swirl in wet well while pump operates? Yes [No] N/A

E. Does the station have a flow meter? Yes [No]

a. If so, type and size of meter: _____

Section 6: Electrical

A. Service power: 120 [240] 480 Volts [1 phase] 3 phase

B. Is surge protection provided? [Yes] No

C. Seal off fittings provided between the wet well and electrical/ control panel? [Yes] No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? Yes [No]

Section 7: Generator

A. Is there an on-site generator? Yes [No]

a. Size of on-site generator? _____

B. Transfer Switch: Automatic [Manual]

C. Is there a generator receptacle? [Yes] No

D. Fuel Source: Natural Gas Propane Diesel

E. Generator Hours: _____

F. Condition of generator and ancillary equip: Excellent [Good] Fair Poor Very Poor

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent [Good] Fair Poor Very Poor

B. How many float switches are installed? Three

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) Probe

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) Relay logic

F. Station alarm:

Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Sensaphone, local

Section 9: Forcemain

A. Forcemain material: [Ductile Iron] PVC Concrete Cast Iron Steel Other _____

B. Forcemain size (in): 4 inch

Section 10: Site

A. Positive drainage away from station? [Yes] No

B. Site maintained? [Yes] No

C. Can the site be easily accessed for maintenance? [Yes] No

D. Is the station locked? [Yes] No

E. Noticeable odor issues? Yes [No]

General Remarks:

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/24/2023

Lift Station Number: GS #5

Lift Station Location: Lakeview Lane

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction:

Section 2: Wet Well

A.	Material of wet well walls:	Concrete	**Fiberglass**	Steel	Other	
B.	Condition of wet well walls:	Excellent	**Good**	Fair	Poor	Very Poor
C.	Condition of pump removal guides:	Excellent	**Good**	Fair	Poor	Very Poor
D.	Condition of pump lift chain:	Excellent	**Good**	Fair	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	Good	**Fair**	Poor	Very Poor
F.	Material of wet well top:	Concrete	Fiberglass	**Steel**	Other	
G.	Condition of wet well top:	Excellent	Good	**Fair**	Poor	Very Poor
H.	Condition of access hatches:	Excellent	Good	**Fair**	Poor	Very Poor
I.	Is wet well vented?	Yes	**No**			
J.	Amount of grease/scum/debris build-up on water surface:		None	**Minimal**	Moderate	Significant

K. Grease ring/water level staining above pipe invert? Yes **No**

L. Size of wet well: 3 foot dia.

M. Rim to bottom of wet well: 9.3 feet

N. Rim to invert: 4.5 feet and 3.7 feet

O. Notes: Removal guides and lift chains were recently replaced; access hatch has new hinges but lock is broken.

Section 3: Valve Chamber **N/A**

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?	**Yes**	No
B.	Do shut off valves exist?	**Yes**	No
C.	Does the station have a bypass connection?	Yes	**No**
	a. Size of bypass connection:		
	b. Material of bypass connection:	Ductile Iron	PVC	Cast Iron	Other

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make		

Model No.		
Run time (hours)	11452	6695.6
Design point	Unknown	Unknown
Drawdown Results	No test performed	14.8 gpm

B.	Source of pump information:	O&M Manual	Record Drawings	O&M Staff (verbal)	Other	
C.	Are pumps noisy or vibrating?		Yes	No		
D.	Swirl in wet well while pump operates?		Yes	No	N/A	
E.	Does the station have a flow meter?		Yes	No		
	a. If so, type and size of meter:					

Section 6: Electrical

A.	Service power:	120	240	480 Volts	1 phase	3 phase	
B.	Is surge protection provided?		Yes	No			
C.	Seal off fittings provided between the wet well and electrical/ control panel?				Yes	No	
D.	Are electrical/ control panels located within 3' of wet well hatch or 5' of vent?				Yes	No	

Section 7: Generator

A.	Is there an on-site generator?		Yes	No			
	a. Size of on-site generator?						
B.	Transfer Switch:		Automatic	Manual	None		
C.	Is there a generator receptacle?		Yes	No			
D.	Fuel Source:		Natural Gas	Propane	Diesel		
E.	Generator Hours:						
F.	Condition of generator and ancillary equip:			Excellent	Good	Fair	Poor	Very Poor

Section 8: Pump and Motor Controls

A.	Condition of control panel:	Excellent	Good	Fair	Poor	Very Poor	
B.	How many float switches are installed?	Five					
C.	Other level sensors (ultrasonic, radar, pressure transducer, bubbler)	None					
D.	Pump controls (relay logic, PLC-based, VFD, proprietary controller)	Relay logic					
F.	Station alarm:						
	Alarm telemetry (autodialer, radio, cell phone, SCADA, none)	Local					

Section 9: Forcemain

A.	Forcemain material:	Ductile Iron	PVC	Concrete	Cast Iron	Steel	Other	HDPE
B.	Forcemain size (in):	1.25 inch						
C.	Notes:	HDPE appears to be 1 inch dia.						

Section 10: Site

A.	Positive drainage away from station?	Yes	No
B.	Site maintained?	Yes	No
C.	Can the site be easily accessed for maintenance?	Yes	No
D.	Is the station locked?	Yes	No
E.	Noticeable odor issues?	Yes	No
F.	Notes:	Wet well is not locked, but utility box is locked.	

General Remarks:

Discharge penetration through wall appears to be leaking.

Categorized by Perceptive as one of the better condition grinder stations.

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/24/2023

Lift Station Number: GS #7

Lift Station Location: Bayview Lane

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction:

Section 2: Wet Well

A.	Material of wet well walls:	Concrete	**Fiberglass**	Steel	Other	
B.	Condition of wet well walls:	Excellent	Good	**Fair**	Poor	Very Poor
C.	Condition of pump removal guides:	Excellent	Good	Fair	Poor	**Very Poor**
D.	Condition of pump lift chain:	Excellent	Good	**Fair**	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	Good	Fair	**Poor**	Very Poor
F.	Material of wet well top:	Concrete	Fiberglass	**Steel**	Other	
G.	Condition of wet well top:	Excellent	Good	**Fair**	Poor	Very Poor
H.	Condition of access hatches:	Excellent	Good	Fair	**Poor**	Very Poor
I.	Is wet well vented?	Yes	**No**			
J.	Amount of grease/scum/debris build-up on water surface:		None	**Minimal**	Moderate	Significant

K.	Grease ring/water level staining above pipe invert?	Yes	**No**
L.	Size of wet well:	3 foot dia.	
M.	Rim to bottom of wet well:	7.2 feet	
N.	Rim to invert:	3.7 feet and 4.1 feet	
O.	Notes:	Pump removal guides are rusted over; one pump lift chain was replaced recently with stainless steel chain; wet well top and access hatches are rusted over.	

Section 3: Valve Chamber **N/A**

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?	**Yes**	No			
B.	Do shut off valves exist?	**Yes**	No			
C.	Does the station have a bypass connection?	Yes	**No**			
	a. Size of bypass connection:					
	b. Material of bypass connection:	Ductile Iron	PVC	Cast Iron	Other	
D.	Notes:	Shutoff valves are rusted.				

Section 5: Equipment

A.		Pump No. 1	Pump No. 2

Make		
Model No.		
Run time (hours)	11078.5	19695.7
Design point	Unknown	Unknown
Drawdown Results	13.8 gpm	No test performed

B. Source of pump information: O&M Manual | Record Drawings | O&M Staff (verbal) | Other _____

C. Are pumps noisy or vibrating? Yes | No

D. Swirl in wet well while pump operates? Yes | No | N/A

E. Does the station have a flow meter? Yes | No

a. If so, type and size of meter: _____

F. Notes: Only pump one swirling while operating.

Section 6: Electrical

A. Service power: 120 | 240 | 480 Volts | 1 phase | 3 phase

B. Is surge protection provided? Yes | No

C. Seal off fittings provided between the wet well and electrical/ control panel? Yes | No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? Yes | No

Section 7: Generator

A. Is there an on-site generator? Yes | No

a. Size of on-site generator? _____

B. Transfer Switch: Automatic | Manual | None

C. Is there a generator receptacle? Yes | No

D. Fuel Source: Natural Gas | Propane | Diesel

E. Generator Hours: _____

F. Condition of generator and ancillary equip: Excellent | Good | Fair | Poor | Very Poor

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent | Good | Fair | Poor | Very Poor

B. How many float switches are installed? Five

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) None

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) Relay logic

F. Station alarm:

Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Local

G. Notes: Control panel is slightly unstable/wobbles.

Section 9: Forcemain

A. Forcemain material: Ductile Iron | PVC | Concrete | Cast Iron | Steel | Other _____

B. Forcemain size (in): 1.25 inch

C. Notes: Galvanized steel.

Section 10: Site

A. Positive drainage away from station? Yes | No

B. Site maintained? Yes | No

C. Can the site be easily accessed for maintenance? Yes | No

D.	Is the station locked?	Yes	No
E.	Noticeable odor issues?	Yes	No
F.	Notes:	Site in not easily accessible due to distance from road.	

General Remarks:

Categorized by Perceptive as one of the moderate condition grinder stations.

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/24/2023

Lift Station Number: GS #8

Lift Station Location: Bayview Lane

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction:

Section 2: Wet Well

A.	Material of wet well walls:	Concrete	**Fiberglass**	Steel	Other	
B.	Condition of wet well walls:	Excellent	Good	**Fair**	Poor	Very Poor
C.	Condition of pump removal guides:	Excellent	Good	Fair	Poor	**Very Poor**
D.	Condition of pump lift chain:	Excellent	Good	**Fair**	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	Good	Fair	Poor	**Very Poor**
F.	Material of wet well top:	Concrete	Fiberglass	**Steel**	Other	
G.	Condition of wet well top:	Excellent	Good	Fair	**Poor**	Very Poor
H.	Condition of access hatches:	Excellent	Good	Fair	**Poor**	Very Poor
I.	Is wet well vented?	Yes	**No**			
J.	Amount of grease/scum/debris build-up on water surface:		**None**	Minimal	Moderate	Significant
K.	Grease ring/water level staining above pipe invert?				Yes	**No**
L.	Size of wet well:	3 foot dia.				
M.	Rim to bottom of wet well:	5 feet				
N.	Rim to invert:	3.4 feet and 2.7 feet				
O.	Notes:	Pump lift chains are slightly rusted and hinge on access hatch is broken.				

Section 3: Valve Chamber **N/A**

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?		**Yes**	No		
B.	Do shut off valves exist?		**Yes**	No		
C.	Does the station have a bypass connection?		Yes	**No**		
	a. Size of bypass connection:					
	b. Material of bypass connection:	Ductile Iron	PVC	Cast Iron	Other	
D.	Notes:	Shut off valves are rusted over.				

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make		

Model No.		
Run time (hours)	6334.6	10185.6
Design point	Unknown	Unknown
Drawdown Results	16.9 gpm	No test performed

B. Source of pump information: O&M Manual | Record Drawings | O&M Staff (verbal) | Other _____

C. Are pumps noisy or vibrating? Yes | No

D. Swirl in wet well while pump operates? Yes | No | N/A

E. Does the station have a flow meter? Yes | No

a. If so, type and size of meter: _____

Section 6: Electrical

A. Service power: 120 | 240 | 480 Volts | 1 phase | 3 phase

B. Is surge protection provided? Yes | No

C. Seal off fittings provided between the wet well and electrical/ control panel? Yes | No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? Yes | No

Section 7: Generator

A. Is there an on-site generator? Yes | No

a. Size of on-site generator? _____

B. Transfer Switch: Automatic | Manual | None

C. Is there a generator receptacle? Yes | No

D. Fuel Source: Natural Gas | Propane | Diesel

E. Generator Hours: _____

F. Condition of generator and ancillary equip: Excellent | Good | Fair | Poor | Very Poor

G. Notes: Generator ancillary equipment is inaccessible, being that there is a steep drop off from road to panel.

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent | Good | Fair | Poor | Very Poor

B. How many float switches are installed? Five

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) None

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) Relay logic

F. Station alarm:

Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Local

Section 9: Forcemain

A. Forcemain material: Ductile Iron | PVC | Concrete | Cast Iron | Steel | Other _____

B. Forcemain size (in): 1.25 inch

C. Notes: Galvanized steel.

Section 10: Site

A. Positive drainage away from station? Yes | No

B. Site maintained? Yes | No

C. Can the site be easily accessed for maintenance? Yes | No

D. Is the station locked? Yes | No

E. Noticeable odor issues? Yes No

F. Notes: Site is on a large hill. Homeowner poured a concrete ring in place around wet well, making accessibility difficult.

General Remarks:

Categorized by Perceptive as one of the worst condition grinder stations.

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/24/2023

Lift Station Number: GS #10

Lift Station Location: Bayview Lane

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction:

Section 2: Wet Well

A.	Material of wet well walls:	Concrete	**Fiberglass**	Steel	Other	
B.	Condition of wet well walls:	Excellent	Good	**Fair**	Poor	Very Poor
C.	Condition of pump removal guides:	Excellent	Good	**Fair**	Poor	Very Poor
D.	Condition of pump lift chain:	Excellent	**Good**	Fair	Poor	Very Poor
E.	Condition of discharge piping:	Excellent	Good	Fair	**Poor**	Very Poor
F.	Material of wet well top:	Concrete	Fiberglass	**Steel**	Other	
G.	Condition of wet well top:	Excellent	Good	**Fair**	Poor	Very Poor
H.	Condition of access hatches:	Excellent	Good	Fair	**Poor**	Very Poor
I.	Is wet well vented?	Yes	**No**			
J.	Amount of grease/scum/debris build-up on water surface:		**None**	Minimal	Moderate	Significant
K.	Grease ring/water level staining above pipe invert?				Yes	**No**
L.	Size of wet well:	3 foot dia.				
M.	Rim to bottom of wet well:	6 feet				
N.	Rim to invert:	3.6 feet and 3.2 feet				
O.	Notes:	Roots around invert of wet well; vertical section of pump removal guides were replaced, however, top section is rusted over; pump lift chain is newer and stainless steel; wet well top and access hatches are rusting over; access hatch has a broken hinge.				

Section 3: Valve Chamber **N/A**

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?		**Yes**	No		
B.	Do shut off valves exist?		**Yes**	No		
C.	Does the station have a bypass connection?		Yes	**No**		
	a. Size of bypass connection:					
	b. Material of bypass connection:	Ductile Iron	PVC	Cast Iron	Other	
D.	Notes:	Shut off valves are rusted over.				

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make		
Model No.		
Run time (hours)	1454.8	13587
Design point	Unknown	Unknown
Drawdown Results	No test performed	22.7 gpm

B. Source of pump information: O&M Manual | Record Drawings | O&M Staff (verbal) | Other _____

C. Are pumps noisy or vibrating? Yes | No

D. Swirl in wet well while pump operates? Yes | No | N/A

E. Does the station have a flow meter? Yes | No

a. If so, type and size of meter: _____

F. Notes: Both pumps have swirling during operation.

Section 6: Electrical

A. Service power: 120 | 240 | 480 Volts | 1 phase | 3 phase

B. Is surge protection provided? Yes | No

C. Seal off fittings provided between the wet well and electrical/ control panel? Yes | No

D. Are electrical/ control panels located within 3' of wet well hatch or 5' of vent? Yes | No

Section 7: Generator

A. Is there an on-site generator? Yes | No

a. Size of on-site generator? _____

B. Transfer Switch: Automatic | Manual | None

C. Is there a generator receptacle? Yes | No

D. Fuel Source: Natural Gas | Propane | Diesel

E. Generator Hours: _____

F. Condition of generator and ancillary equip: Excellent | Good | Fair | Poor | Very Poor

G. Notes: Generator ancillary equipment not easily accessible.

Section 8: Pump and Motor Controls

A. Condition of control panel: Excellent | Good | Fair | Poor | Very Poor

B. How many float switches are installed? Five

C. Other level sensors (ultrasonic, radar, pressure transducer, bubbler) None

D. Pump controls (relay logic, PLC-based, VFD, proprietary controller) Relay logic

F. Station alarm:

Alarm telemetry (autodialer, radio, cell phone, SCADA, none) Local

G. Notes: Control panel is wobbly.

Section 9: Forcemain

A. Forcemain material: Ductile Iron | PVC | Concrete | Cast Iron | Steel | Other _____

B. Forcemain size (in): 1.25 inch

C. Notes: 90 degree bend is pvc; forcemain is galvanized steel.

Section 10: Site

A.	Positive drainage away from station?	Yes	No
B.	Site maintained?	Yes	No
C.	Can the site be easily accessed for maintenance?	Yes	No
D.	Is the station locked?	Yes	No
E.	Noticeable odor issues?	Yes	No
F.	Notes:	Site is overgrown with plants; not easily accessible due to steep hill; control panel is locked but hatch lock is broken.	

General Remarks:

Categorized by Perceptive as one of the worst condition grinder stations.

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/24/2023

Lift Station Number: GS #13

Lift Station Location: Highland Court

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction:

Section 2: Wet Well

A.	Material of wet well walls:	Concrete	**Fiberglass**	Steel	Other	
B.	Condition of wet well walls:	Excellent	**Good**	Fair	Poor	Very Poor
C.	Condition of pump removal guides:	Excellent	Good	Fair	Poor	**Very Poor**
D.	Condition of pump lift chain:	Excellent	Good	Fair	Poor	**Very Poor**
E.	Condition of discharge piping:	Excellent	Good	Fair	**Poor**	Very Poor
F.	Material of wet well top:	Concrete	Fiberglass	**Steel**	Other	
G.	Condition of wet well top:	Excellent	Good	**Fair**	Poor	Very Poor
H.	Condition of access hatches:	Excellent	Good	Fair	Poor	**Very Poor**
I.	Is wet well vented?	Yes	**No**			
J.	Amount of grease/scum/debris build-up on water surface:		None	**Minimal**	Moderate	Significant
K.	Grease ring/water level staining above pipe invert?				Yes	**No**
L.	Size of wet well:	3 foot dia.				
M.	Rim to bottom of wet well:	6.1 feet				
N.	Rim to invert:	3.8 feet and 3.4 feet				
O.	Notes:	One pump removal guide is missing, one is rusted over; access hatch is rusted over and has a hole in the top.				

Section 3: Valve Chamber **N/A**

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	
	a. If steel, is cathodic protection is provided?					
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?		**Yes**	No		
B.	Do shut off valves exist?		**Yes**	No		
C.	Does the station have a bypass connection?		Yes	**No**		
	a. Size of bypass connection:					
	b. Material of bypass connection:	Ductile Iron	PVC	Cast Iron	Other	

Section 5: Equipment

A.

	Pump No. 1	Pump No. 2
Make		

Model No.		
Run time (hours)	18078.8	21550.7
Design point	Unknown	Unknown
Drawdown Results	20.1 gpm	No test performed

B.	Source of pump information:	O&M Manual	Record Drawings	O&M Staff (verbal)	Other	
C.	Are pumps noisy or vibrating?		Yes	No		
D.	Swirl in wet well while pump operates?		Yes	No	N/A	
E.	Does the station have a flow meter?		Yes	No		
	a. If so, type and size of meter:					
F.	Notes:	Some swirling on pump 2 only.				

Section 6: Electrical

A.	Service power:	120	240	480 Volts	1 phase	3 phase
B.	Is surge protection provided?	Yes	No			
C.	Seal off fittings provided between the wet well and electrical/ control panel?				Yes	No
D.	Are electrical/ control panels located within 3' of wet well hatch or 5' of vent?				Yes	No

Section 7: Generator

A.	Is there an on-site generator?	Yes	No				
	a. Size of on-site generator?						
B.	Transfer Switch:	Automatic	Manual	None			
C.	Is there a generator receptacle?	Yes	No				
D.	Fuel Source:	Natural Gas	Propane	Diesel			
E.	Generator Hours:						
F.	Condition of generator and ancillary equip:		Excellent	Good	Fair	Poor	Very Poor

Section 8: Pump and Motor Controls

A.	Condition of control panel:	Excellent	Good	Fair	Poor	Very Poor
B.	How many float switches are installed?	Five				
C.	Other level sensors (ultrasonic, radar, pressure transducer, bubbler)	None				
D.	Pump controls (relay logic, PLC-based, VFD, proprietary controller)	Relay logic				
F.	Station alarm:					
	Alarm telemetry (autodialer, radio, cell phone, SCADA, none)	Local				
G.	Notes:	Control panel wobbles.				

Section 9: Forcemain

A.	Forcemain material:	Ductile Iron	PVC	Concrete	Cast Iron	Steel	Other
B.	Forcemain size (in):	1.25 inch					
C.	Notes:	Galvanized steel.					

Section 10: Site

A.	Positive drainage away from station?	Yes	No
B.	Site maintained?	Yes	No
C.	Can the site be easily accessed for maintenance?	Yes	No
D.	Is the station locked?	Yes	No

E. Noticeable odor issues? Yes [ ] No [ ]

F. Notes: The site is surrounded by trees and bushes, making it difficult to maintain. Site is far from the road, making it difficult to access.

General Remarks:

Large trees and bushes surrounding site. Roots are surrounding one of the inverts.

Categorized by Perceptive as one of the worst condition grinder stations.

Photographs

- [ ] Assessment form showing name of lift station
- [ ] Site
- [ ] Wet well top
- [ ] Valve vault top

- [ ] Electric service meter
- [ ] Transfer switch
- [ ] Disconnect switch
- [ ] Permanent generator
- [ ] Control panel exterior
- [ ] Control panel interior - backplane
- [ ] Control panel interior - face of door
- [ ] Seal off fittings (conduits to wet well)

- [ ] Wet well hatch door & frame
- [ ] Pump guide rails
- [ ] Wet well interior
- [ ] Pump nameplate
- [ ] Pump & motor
- [ ] Pump discharge piping
- [ ] Valve vault hatch door & frame
- [ ] Valve vault valves
- [ ] Bypass connection
- [ ] Bypass valve

LIFT STATION ASSESSMENT FORM

Client: Gun Plain Township Date: 10/24/2023

Lift Station Number: GS #14

Lift Station Location: Highland Court

Evaluators: Danell Smith and Emma McDonald

Section 1: General Information

A. Year of Construction: _____

Section 2: Wet Well

A.	Material of wet well walls:	Concrete	**Fiberglass**	Steel	Other	
B.	Condition of wet well walls:	Excellent	**Good**	Fair	Poor	Very Poor
C.	Condition of pump removal guides:	Excellent	Good	Fair	Poor	**Very Poor**
D.	Condition of pump lift chain:	Excellent	Good	Fair	**Poor**	Very Poor
E.	Condition of discharge piping:	Excellent	Good	Fair	**Poor**	Very Poor
F.	Material of wet well top:	Concrete	Fiberglass	**Steel**	Other	
G.	Condition of wet well top:	Excellent	Good	Fair	**Poor**	Very Poor
H.	Condition of access hatches:	Excellent	Good	Fair	Poor	**Very Poor**
I.	Is wet well vented?	Yes	**No**			
J.	Amount of grease/scum/debris build-up on water surface:		None	Minimal	**Moderate**	Significant
K.	Grease ring/water level staining above pipe invert?				**Yes**	No

L. Size of wet well: 3 foot dia.

M. Rim to bottom of wet well: 6.3 feet

N. Rim to invert: 2.4 feet and 3.3 feet

O. Notes: Pump removal guides are rusted over; one pump lift chain was replaced with stainless steel, one not and in poor condition; access hatch is completely broken off.

Section 3: Valve Chamber **N/A**

A.	Material of valve chamber wall:	Concrete	Fiberglass	Steel	Other	_____
	a. If steel, is cathodic protection is provided?			_____		
B.	Condition of valve chamber wall:	Excellent	Good	Fair	Poor	Very Poor
C.	Material of valve chamber top:	Concrete	Fiberglass	Steel	Other	_____
D.	Condition of valve chamber top:	Excellent	Good	Fair	Poor	Very Poor
E.	Condition of access hatches:	Excellent	Good	Fair	Poor	Very Poor

Section 4: Valves

A.	Do check valves exist?		**Yes**	No		
B.	Do shut off valves exist?		**Yes**	No		
C.	Does the station have a bypass connection?		Yes	**No**		
	a. Size of bypass connection:		_____			
	b. Material of bypass connection:	Ductile Iron	PVC	Cast Iron	Other	_____

Section 5: Equipment

A.		Pump No. 1	Pump No. 2

Make		
Model No.		
Run time (hours)	15530.5	6347.8
Design point	Unknown	Unknown
Drawdown Results	No test performed	14.8 gpm

		O&M Manual	Record Drawings	O&M Staff (verbal)	Other
B.	Source of pump information:				
C.	Are pumps noisy or vibrating?		Yes	No	
D.	Swirl in wet well while pump operates?		Yes	No	N/A
E.	Does the station have a flow meter?		Yes	No	
	a. If so, type and size of meter:				

Section 6: Electrical

A.	Service power:	120	240	480 Volts	1 phase	3 phase
B.	Is surge protection provided?	Yes	No			
C.	Seal off fittings provided between the wet well and electrical/ control panel?				Yes	No
D.	Are electrical/ control panels located within 3' of wet well hatch or 5' of vent?				Yes	No

Section 7: Generator

A.	Is there an on-site generator?	Yes	No				
	a. Size of on-site generator?						
B.	Transfer Switch:	Automatic	Manual	None			
C.	Is there a generator receptacle?	Yes	No				
D.	Fuel Source:	Natural Gas	Propane	Diesel			
E.	Generator Hours:						
F.	Condition of generator and ancillary equip:		Excellent	Good	Fair	Poor	Very Poor
G.	Notes:	Generator ancillary equipment not easily accessible.					

Section 8: Pump and Motor Controls

A.	Condition of control panel:	Excellent	Good	Fair	Poor	Very Poor
B.	How many float switches are installed?	Five				
C.	Other level sensors (ultrasonic, radar, pressure transducer, bubbler)	None				
D.	Pump controls (relay logic, PLC-based, VFD, proprietary controller)	Relay logic				
F.	Station alarm:					
	Alarm telemetry (autodialer, radio, cell phone, SCADA, none)	Local				

Section 9: Forcemain

A.	Forcemain material:	Ductile Iron	PVC	Concrete	Cast Iron	Steel	Other	
B.	Forcemain size (in):	1.25 inch						
C.	Notes:	Galvanized steel.						

Section 10: Site

A.	Positive drainage away from station?	Yes	No
B.	Site maintained?	Yes	No
C.	Can the site be easily accessed for maintenance?	Yes	No
D.	Is the station locked?	Yes	No

E. Noticeable odor issues? Yes No

F. Notes: Trees surrounding wet well; site is far from road, making accessibility difficult; wet well hatch has broken lock, however, cabinet is locked.

General Remarks:

Categorized by Perceptive as one of the worst condition grinder stations.

Appendix B: Detailed Cost Estimate

Gun Plain Charter Township

Engineer's Estimate of Project Costs**

Pump Station Evaluation

FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

Project: 862370
Date: 12.21.23
By: SMB

WORK DESCRIPTION		ESTIMATED AMOUNT
Pump Station #1		
Paint Piping in the Wetwell and Valve Chamber		$ 20,000
Pressure Wash & Inspect Wetwell		$ 3,000
Improve Valve Chamber Drain		$ 5,000
New Wetwell Hatch		$ 7,000
Add Hatch Safety Grate on the Wetwell Hatch		$ 6,000
Repaint/Replace the Generator Enclosure		$ 6,000
Repaint the Wetwell Vent		$ 1,000
	Subtotal:	$ 48,000
Pump Station #2		
Paint Piping in the Wetwell and Valve Chamber		$ 20,000
Add a Permanent Portable Generator		$ 60,000
Pressure Wash & Inspect Wetwell		$ 3,000
Replace the Wetwell Vent		$ 2,000
Add Hatch Safety Grate on the Wetwell Hatch		$ 6,000
	Subtotal:	$ 91,000
Pump Station #3		
Paint Piping in the Wetwell and Valve Chamber		$ 20,000
Add a Permanent Portable Generator		$ 60,000
Pressure Wash & Inspect Wetwell		$ 3,000
Repaint the Wetwell Vent		$ 1,000
Add Hatch Safety Grate on the Wetwell Hatch		$ 6,000
	Subtotal:	$ 90,000
Pump Station #4		
Pipes & Valves to Ex. PVC Forcemain		$ 30,000
Pumps & Guiderails		$ 25,000
Control Panel		$ 30,000
Bypass Connection		$ 6,000
Add a Remote Portable Generator Receptacle		$ 10,000

WORK DESCRIPTION		ESTIMATED AMOUNT
Pressure Wash & Inspect Wetwell		$ 3,000
Repair Wetwell Surface Defects and Line Entire Wetwell		$ 25,000
New Wetwell Hatch		$ 7,000
	Subtotal:	$ 136,000
Pump Station #5		
Pipes & Valves to Ex. PVC Forcemain		$ 30,000
Pumps & Guiderails		$ 25,000
Control Panel		$ 30,000
Bypass Connection		$ 6,000
Pressure Wash & Inspect Wetwell		$ 3,000
Repair Wetwell Surface Defects and Line Entire Wetwell		$ 25,000
New Wetwell Hatch		$ 7,000
	Subtotal:	$ 126,000
Pump Station #6		
Pipes & Valves to Ex. PVC Forcemain		$ 30,000
Pumps & Guiderails		$ 25,000
Control Panel		$ 30,000
Bypass Connection		$ 6,000
Pressure Wash & Inspect Wetwell		$ 3,000
Repair Wetwell Surface Defects and Line Entire Wetwell		$ 25,000
New Wetwell Hatch		$ 7,000
	Subtotal:	$ 126,000
Pump Station #7		
Pipes & Valves to Ex. PVC Forcemain		$ 30,000
Pumps & Guiderails		$ 25,000
Control Panel		$ 30,000
Bypass Connection		$ 6,000
Add a Remote Portable Generator Receptacle		$ 10,000
Pressure Wash & Inspect Wetwell		$ 3,000
Repair Wetwell Surface Defects and Line Entire Wetwell		$ 25,000
New Wetwell Hatch		$ 7,000
	Subtotal:	$ 136,000
Pump Station #8		
Pipes & Valves to Ex. PVC Forcemain		$ 30,000
Pumps & Guiderails		$ 25,000
Control Panel		$ 30,000
Bypass Connection		$ 6,000
Pressure Wash & Inspect Wetwell		$ 3,000
New Wetwell Hatch		$ 7,000
	Subtotal:	$ 101,000
Pump Station #9		
Paint Piping in the Wetwell and Valve Chamber		$ 20,000

WORK DESCRIPTION		ESTIMATED AMOUNT
Pressure Wash & Inspect Wetwell		$ 3,000
Repaint the Wetwell Vent		$ 1,000
Add Hatch Safety Grates on the Wetwell and Valve Chamber		$ 12,000
	Subtotal:	$ 36,000
Pump Station #10		
Paint Piping in the Wetwell and Valve Chamber		$ 20,000
Pressure Wash & Inspect Wetwell		$ 3,000
Repair Wetwell Surface Defects and Line Entire Wetwell		$ 25,000
Add Hatch Safety Grates on the Wetwell and Valve Chamber		$ 12,000
	Subtotal:	$ 60,000
Pump Station #11		
Paint Piping in the Wetwell and Valve Chamber		$ 20,000
Pressure Wash & Inspect Wetwell		$ 3,000
Repair Wetwell Surface Defects and Line Entire Wetwell		$ 25,000
Repaint the Control Cabinet		$ 3,000
Adjust Grading/Drainage		$ 4,000
Add Hatch Safety Grates on the Wetwell and Valve Chamber		$ 12,000
	Subtotal:	$ 67,000
Pump Station #12		
Paint Piping in the Wetwell and Valve Chamber		$ 20,000
Add a Remote Portable Generator Receptacle		$ 10,000
Pressure Wash & Inspect Wetwell		$ 3,000
Reattach the Control Panel Plumb		$ 2,000
Add Hatch Safety Grates on the Wetwell and Valve Chamber		$ 12,000
	Subtotal:	$ 47,000
Pump Station #14		
Paint Piping in the Wetwell and Valve Chamber		$ 20,000
Repair Bypass Connection		$ 1,000
Pressure Wash & Inspect Wetwell		$ 3,000
Repair Wetwell Surface Defects and Line Entire Wetwell		$ 25,000
Add a Driveway		$ 10,000
Add Hatch Safety Grates on the Wetwell and Valve Chamber		$ 12,000
	Subtotal:	$ 71,000
Pump Station #15		
Paint Piping in the Wetwell and Valve Chamber		$ 20,000
Pressure Wash & Inspect Wetwell		$ 3,000
Repaint the Wetwell Vent		$ 1,000
Replace the Pump Lift Cables with Chains		$ 2,000
Add Hatch Safety Grates on the Wetwell and Valve Chamber		$ 12,000
	Subtotal:	$ 38,000

WORK DESCRIPTION		ESTIMATED AMOUNT
Each Grinder Station		
Pipes & Valves to Ex. PVC Forcemain	$ 30,000	
Pump(s) & Guiderails	$ 25,000	
Control Panel	$ 30,000	
Pressure Wash & Inspect Wetwell	$ 3,000	
New Wetwell Hatch	$ 5,000	
Sutotal Each Grinder Station:	$ 93,000	
Subtotal for All 14 Grinder Stations:		$ 1,302,000
Total Estimated Construction Cost:		**$ 2,475,000**
Design & Construction Engineering (~18%):		$450,000
Project Contingencies (~20%):		$500,000
Total Estimated Project Cost (Rounded):		**$ 3,400,000**

***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.*