



Northville Township

Sanitary Sewer System

Asset Management Plan

November 2018

OHM Advisors®

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Acronyms

AMP – Asset Management Plan or Program
BRE – Business Risk Exposure
CIP – Capital Improvement Plan
CoF – Consequence of Failure
GIS – Geographic Information Systems
LoF – Likelihood of Failure, sometimes used interchangeably with PoF
LOS – Level of Service
MACP – Manhole Assessment Certification Program
MDEQ – Michigan Department of Environmental Quality
NASSCO – National Association of Sewer Service Companies
O&M – Operations and Maintenance
PACP – Pipeline Assessment Certification Program
PoF – Probability of Failure, sometimes used interchangeably with LoF
SAW – Wastewater Asset Management and Wastewater Grant
WWTP – Wastewater Treatment Plant

EXECUTIVE SUMMARY

The wastewater infrastructure system of Northville Township provides a critical service to its residents and businesses, providing the collection and conveyance of wastewater and protecting the local streams and Rouge River by discharging to Western Townships Utilities Authority (WTUA) pipes. Recognizing the importance of this wastewater system, Northville Township initiated a comprehensive assessment of its wastewater infrastructure.

This Asset Management Plan summarizes this assessment and includes key recommendations for future funding levels. This document was prepared using grant funding from the State of Michigan Stormwater, Asset Management and Wastewater (SAW) Grant Program, SAW Grant 1350-01, with a total budget of \$1,358,000 (with an additional Township matching contribution of \$230,000).

The AMP was intended to accomplish the following key goals:

- Provide the Township with a new framework for collecting, organizing, and storing data for their wastewater collection system using the latest available hardware and software.
- Survey key system components to create the Township's Geographic Information System (GIS) database and to make it easy for future generations to access infrastructure data.
- Add information for sewer material type, size, age, and depth to the newly created GIS database.
- Physically evaluate the structural condition of the majority of publicly owned system components, including wastewater sewer pipes, manholes, and pump stations. Store the data in the Township's GIS database.
- Identify long-term operations and maintenance strategies to maintain a reasonable structural condition into perpetuity, including:
 - Regularly-scheduled sewer inspection (televising)
 - Repair and rehabilitation to address structural problems resulting from aging infrastructure
- Provide recommendations for developing a prioritized Capital Improvement Plan (CIP) to be funded through the Township's water and sewer fund.

Mission Statement

One important element to an Asset Management Program (AMP) is a mission statement, which identifies the overarching purpose of the Township’s AMP. The purpose of the Township’s asset management program is summarized by the following mission statement:

We are committed to providing and maintaining high quality wastewater sewer collection services to our existing and future customers in a cost effective manner while protecting human health and the environment.

Asset Management Team Leaders

The Asset Management Team listed in Figure 1 is committed to the asset management mission statement and were instrumental in the progress made and findings outlined in this report. Further questions on the Township’s AMP can be directed to these team members.

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Figure 1: Asset Management Team

Infrastructure Technology & Know-How

The Township has made investments to improve the GIS database mapping their wastewater system with the intent of making it easier for future generations to access infrastructure knowledge.

Asset Inventory

An asset inventory is a list of the Township’s assets and their attributes. The majority of the Township’s wastewater sewer infrastructure, including manholes, wastewater sewers, and pumping stations were inventoried and digitized. The Township has populated the attributes of the inventory using observations in the field while performing condition assessment. This inventory resides in the Township’s GIS, along with critical data for the location, size, material, install date, and condition of each wastewater asset.

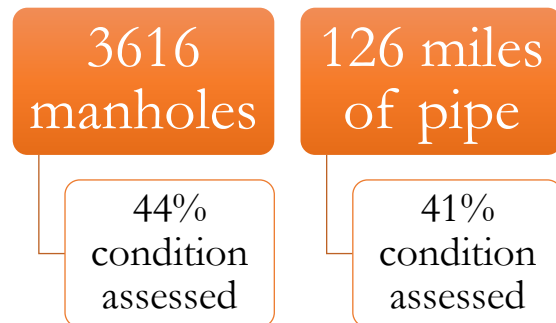


Figure 2 : Portion of Sewer System Assessed

Condition Assessment

With the intent of assessing the majority of the wastewater system, the Township’s wastewater sewer infrastructure (wastewater sewer pipes, manholes and pump stations) has been assessed. The condition of the infrastructure is based on the National Association of Sewer Service Companies (NASSCO) condition grading system, which uses a scale of zero to five. Zero indicates the infrastructure is in very good condition or new, while five indicates the infrastructure is in very poor condition or has already failed. About 44 percent of the 3616-

structure manhole network and about 41% of the approximately 126 miles of wastewater pipe infrastructure has been condition assessed. The assets within the Township’s two pumping stations also inventoried and assessed. The major components inventoried within each station include but are not limited to pumps, check/control valves, motors, level control systems, backup power, structure, wet well, valve vault, and telemetry.

It was also observed that:

- Manhole infrastructure exhibits age-appropriate wear with an average structural rating of 2.1 and an average O&M rating of 1.8. The overall average Probability of Failure is 2.7. Structural manhole defects were predominately related to brickwork. O&M manhole issues were driven by infiltration.
- Sewer infrastructure has an average structural rating 1.8 and average O&M rating of 2.1. Overall the wastewater sewer system exhibits age appropriate wear.
- The infrastructure will continue to degrade over time, for example, even though the average condition of the manhole infrastructure is between a score of 1 (minimal wear and good working) and 2 (moderate wear but still functional) per the 2016-2018 assessment data, a small percent of the infrastructure has a condition rating of 5; this percentage will grow over time.

Criticality and Risk

The investigation leading to the identification of critical sewer infrastructure involved the determination of Business Risk Exposure (BRE), which is identified as the combination of the Probability of Failure (PoF) as well as the Consequence of Failure (CoF) as shown in Figure 3.

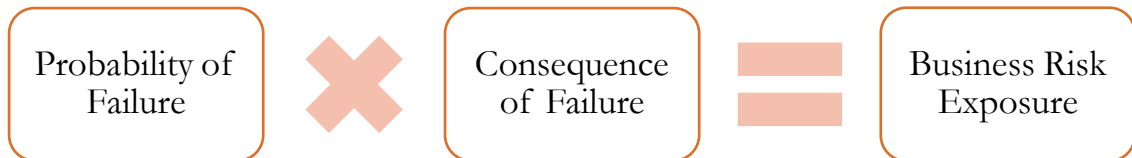


Figure 3 : Risk Equation

The PoF is related to the physical condition of an asset. The CoF focuses on the economic losses and impacts to society due to an asset’s failure. The following factors were combined to determine the consequence of failure for manholes and wastewater sewer:

- Diameter/Size – the relative size of the asset with respect to the rest of the system
- Environment – proximity to sensitive environmental features like Johnson Creek and Middle River Rouge.

For pumping station assets, PoF was based on the condition of the asset while the CoF was determined by the effect of an individual asset failure on system operations.

Level of Service

The Township, in line with its mission statement outlined earlier, adopted Level of Service (LOS) criteria, which it plans to use as guidelines to manage the wastewater sewer system. These LOS criteria's are summarized in Table 1.

Table 1: Summary of Level of Service Criteria

Key Service Criteria	Performance Indicator	Target Level of Service
Flow Capacity	Active Flow Monitoring of the Service Provider Meter	Continue to be consistently below the contractual flow limit with Service Provider Meter
O&M Optimization	Regular Cleaning and Maintenance of the Collection System	Clean and maintain 20% of the system per year
Service Delivery and Customer Communication	Continue to utilize Cityworks Software to Aide in Utility Management and Promote Customer Communication	Respond to customer complaints and requests within one (1) business day
Staff Training	Continue to Hold Regular Training for O&M Staff	Offer five (5) or more different training sessions each year

Revenue Structure and Capital Improvement Plan

The condition assessment helped identify capital improvements that will allow the Township to operate at its maximum potential. Additional long-term operations and maintenance strategies will provide the means to maintain a sound structural condition into perpetuity, including:

- Regularly-scheduled sewer, manhole, and pump station inspection
- Repair and rehabilitation to address structural problems resulting from aging infrastructure

As communities like Northville Township develop and age, the buried infrastructure is deteriorating. The Township should continue to systematically repair, rehabilitate, and/or

replace these aging components so that Township residents and businesses experience a consistent level of service and avoid the following:

- Increased threat of property damage, public health and safety.
- Increased potential for environmental damage.
- Increased potential for impassable roadways due to failed infrastructure.

The revenue structure analysis identified that an initial rate increase of zero percent (0%) for the first year of the CIP followed by an annual rate increase of two percent (2%) per year is needed to support the rising expenses over time. The revenue structure analysis and associated capital improvement projects and O&M strategies, which will continue the Township's AMP, are detailed in a separate document and can be made available to the public upon request.

List of Major Assets

The major assets are approximated in the text below. The full AMP report contains additional details on the distribution of sizes and conditions.

- 3616 manholes
- 126 miles of wastewater sewer ranging from 8 to 24-inch in diameter
- 2 package pump stations

Introduction

In January 2013, Northville Township applied for and received a Round 3 SAW grant from the Michigan Department of Environmental Quality (MDEQ) with a total budget of \$1,358,000 (with an additional Township matching contribution of \$230,000) in order to develop an AMP for the Township’s wastewater system. This report summarizes the findings of wastewater collection system AMP for Northville Township.

The International Infrastructure Management Manual defines the goal of an asset management program as meeting a required Level of Service in the most cost-effective way through the creation, acquisition, operation, maintenance, rehabilitation, and disposal of assets to provide for present and future customers. Such a program entails several components, which are detailed in this report, along with the means by which the Township addressed these components.

A. Mission Statement

The purpose of the Township’s AMP is summarized by the following mission statement:

We are committed to providing and maintaining high quality wastewater sewer collection services to our existing and future customers in a cost effective manner while protecting human health and the environment.

B. Asset Management Team

The team listed in Figure 4 is committed to the asset management mission statement and were instrumental in the progress made and findings outlined in this report. Further questions on the Township’s asset management program can be directed to these team members.

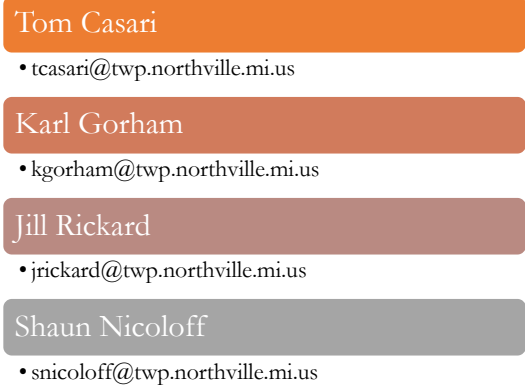


Figure 4 : Asset Management Team

I. Inventory and Condition Assessment

An asset inventory is a list of the Township's assets and their attributes, e.g. unique identifier, location, size, material, etc. This inventory resides in the Township's GIS, which houses infrastructure condition inspection information, as well as work orders associated with individual assets, such as manholes, and sewer pipes. The Township is continuing to edit and update the attributes of the inventory using both as-built data as well as observations in the field while performing maintenance and condition assessment.

The condition assessment of the existing infrastructure was designed to encompass about 40% of the system, which it did.

A. NASSCO Rating System

The National Association of Sewer Service Companies (NASSCO) is a not-for-profit organization setting the industry standard for the rehabilitation of underground utilities. NASSCO's MACP and PACP standardize identification of the type and severity of defects found in manholes and pipelines. The MACP and PACP processes rate the overall, structural, and operations and maintenance (O&M) condition of the assets using a well-established and universal defect coding system. MACP and PACP use the same process with some minor adjustments to length-dependent defects since manholes are usually not as deep as sewer pipes are long. The results are in the industry standard format used by most municipalities and infrastructure assessment professionals.

Manholes and pipes owned by the Township and eligible for SAW funding were targeted for inspection. See Appendix A for illustrations of the Township's wastewater system.

Individual defects were assigned a grade from one through five, with five being the most serious, based on the type and severity of the defect. These grades are predefined by NASSCO in their defect coding system. Because there were often multiple defects per asset, their associated grades were totaled and combined to generate several metrics that are representative of the condition of each pipe segment. An explanation of the metrics are included in Figure 5. The metrics are categorized as: Structural, O&M, and Overall. Structural condition is affected by defects like cracks, fractures, and surface or lining damage. O&M condition is affected by defects like soil/dirt/rock deposits, roots, infiltration, and obstructions. Overall condition metrics combine

both Structural and O&M defects. Appendix A contains maps to illustrate the condition of the assets inspected as part of this AMP.

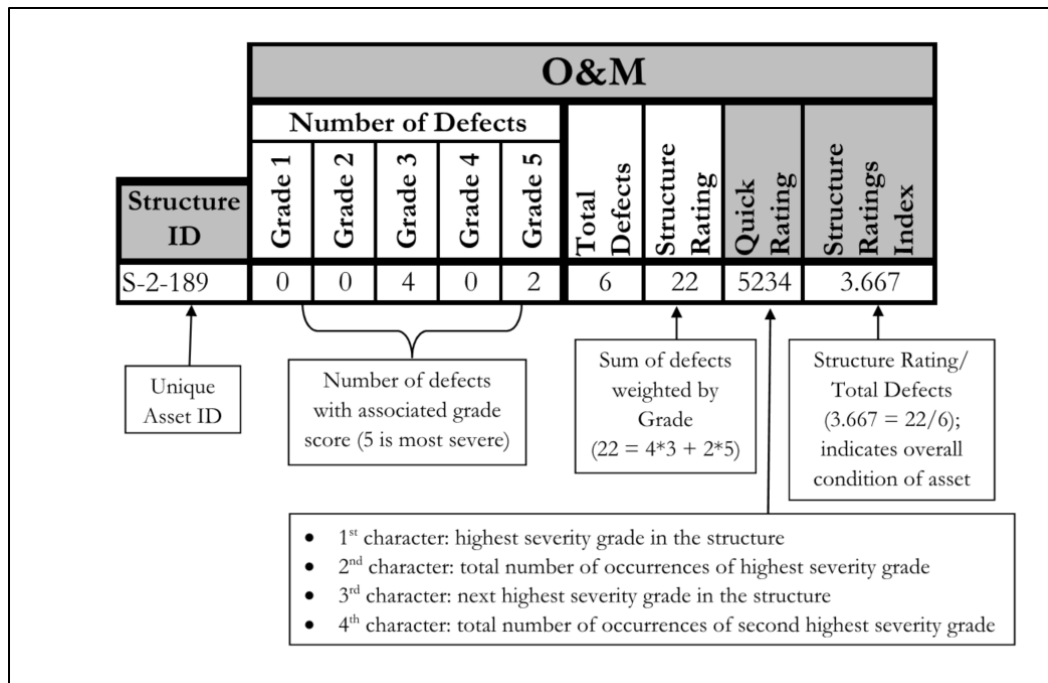


Figure 5: NASSCO Metrics, shown for O&M (same idea for structural and combined metrics)

The Ratings Index indicates the general condition of each inspected asset. The Ratings Indices range from one through five with zero being the best condition as shown in Table 2. The Quick Rating provide a brief summary of the severity of the worst defects in each asset.

Table 2: Condition Rating Index

Ratings Index	Asset Condition
0	No measurable defects
1	New or like new
2	Minimal to Moderate wear but still functional
3	Failure unlikely in near future
4	Failure likely in the foreseeable future
5	Marginal functionality with failure imminent

For the analysis of the manholes and gravity sewer mains, the Overall Quick Rating was used to calculate a probability of failure (PoF) score. The PoF is a one through six rating with a score of six indicating worst condition as shown in Table 3. This metric is used over the ratings index because the ratings index is an average of the scores where the PoF uses the highest defect score. As an example, the ratings index score could be a 2 even though there are defects noted as 4's and 5's. This example indicates that the defect 2's are dominating the score even though there are more significant problems in the structure.

Table 3: Probability of Failure Score

Score	Description
1	Improbable
2	Remote, unlikely but possible
3	Possible
4	Probable, likely
5	Imminent, likely in near future

B. Manholes

There are 3616 manhole structures in the Township’s wastewater collection system, as listed in the GIS. As part of the SAW effort, a detailed condition assessment was performed on 1591 manholes, or 44 percent of the total inventory. The newest pipe was not assessed, due to stipulations on SAW funding. Township records show the wastewater system was installed between 1960 and present, with most manholes installed from 1990 – 2009, with an average installation year of 1988. Figure 6 shows the distribution of install dates. Figure 7 summarizes the average condition ratings of the surveyed manholes. Overall, the inspected Township infrastructure exhibits moderate wear with an average probability of failure condition rating of approximately 2.7.

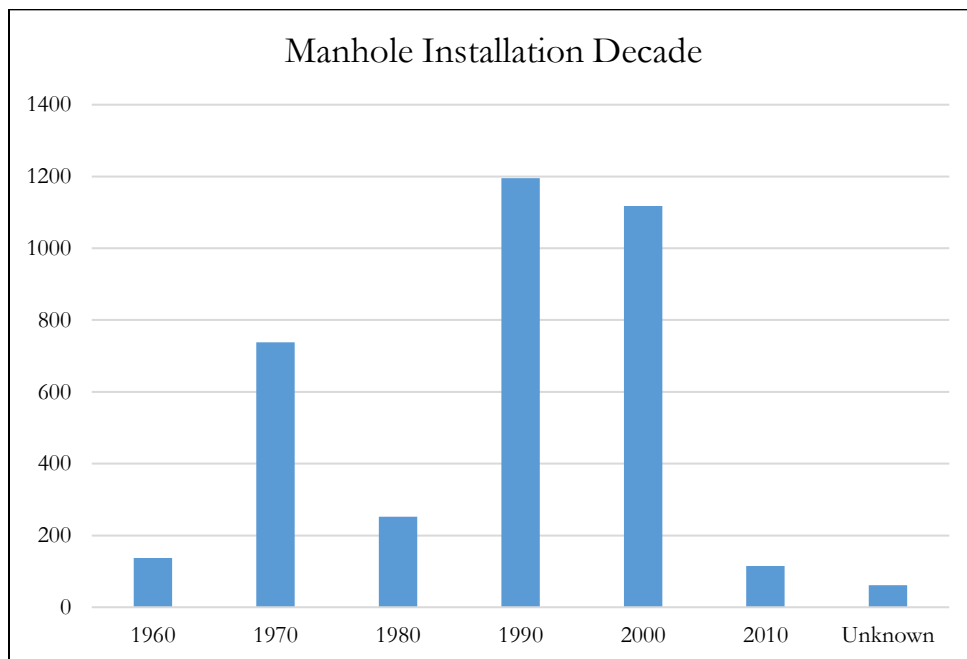


Figure 6: Manhole Installation Decade

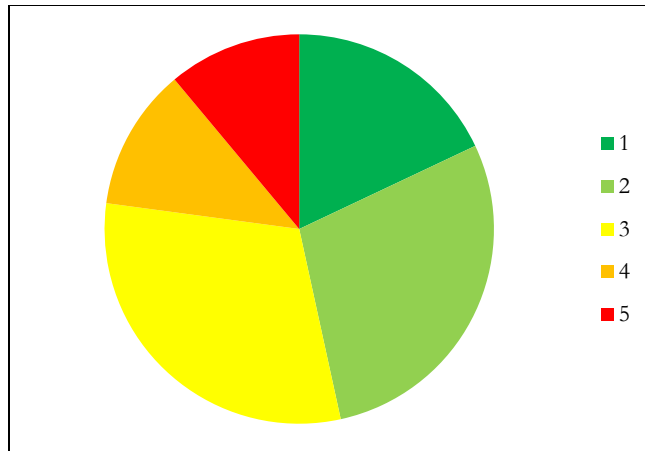


Figure 7: Wastewater Manhole PoF Ratings

Figure 8 shows the distribution of defects seen in inspected manholes. A third of the defects were related to infiltration. Many of these (shown as Grade 1 in the figure) are inactive stains, followed by weepers and a few drippers and runners. NASSCO infiltration codes include stain, dripper, weeper (such as a small continuous stream of water), runner (a somewhat larger stream of water), and gusher (water gushing in). Stain usually indicates the smallest noticeable I&I whereas gusher indicates the largest sources of I&I. Infiltration is induced by cracks or fractures in the manhole, which provide inlets for rainwater and soil to infiltrate into the manholes.

After infiltration, deposits are the next most common defect. Sixty percent of the deposits are attached, mostly encrustation and ragging; and the majority of the rest are settled deposits such as gravel.

The grade 5 surface damage defects are due to visible or projecting manhole reinforcement, where enough concrete has been worn away to reveal the metal reinforcement within.

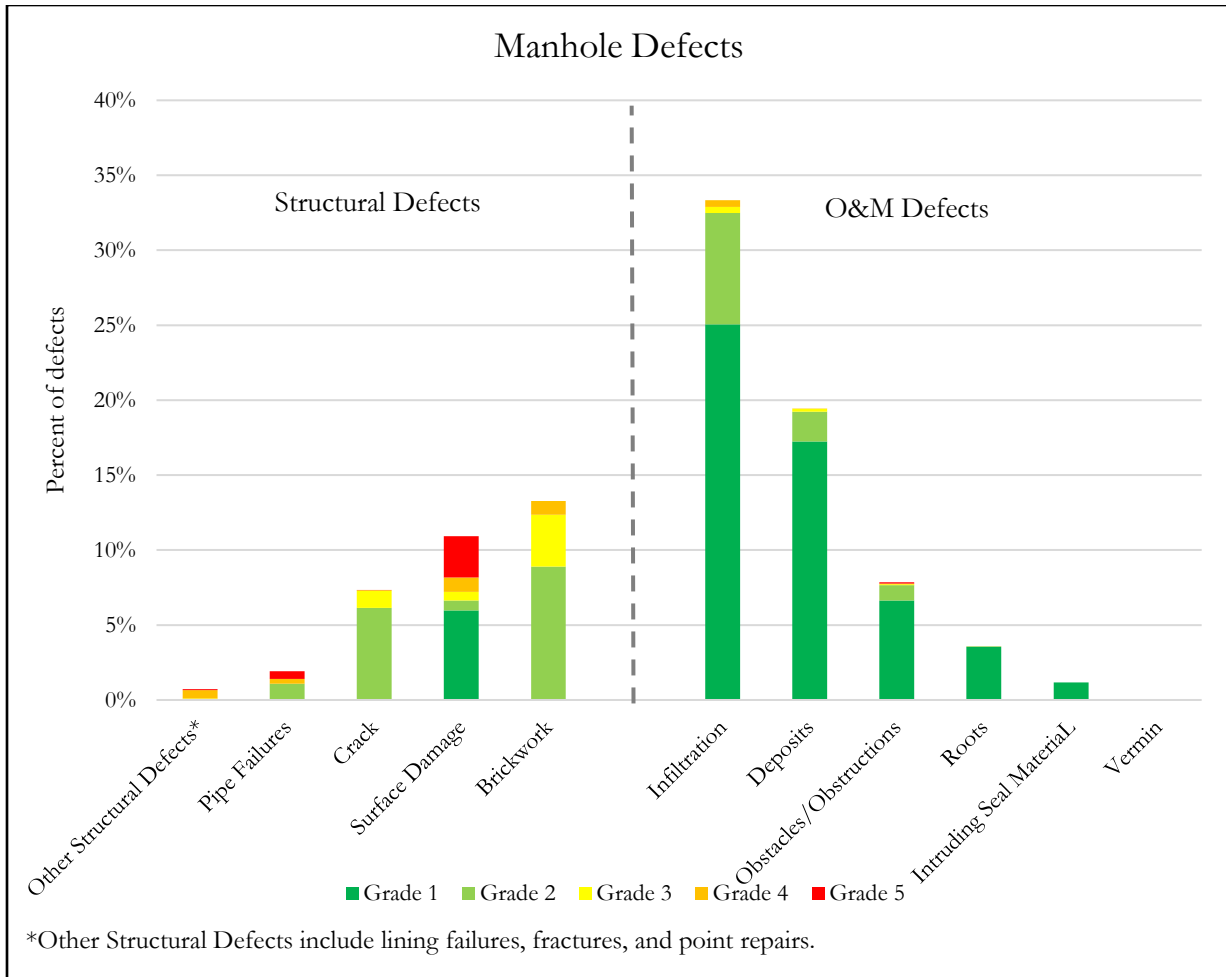


Figure 8: Manhole defects

C. Sanitary Sewer

There are approximately 126 miles of wastewater sewer pipe in the Township’s wastewater collection system, as listed in the GIS, however, as stated in the Executive Summary, 59 miles of sewer were used for the data analysis. Similar to the manholes, most of the system was installed between 1990 and 2009, as illustrated in Figure 9. The average age of the system is 1992. Figure 10 and Figure 11 summarize the wastewater collection system sampled in terms of diameter and material, respectively. Most of the system is made up of 8-inch diameter pipes, and polyvinyl chloride is by far the most common pipe material.

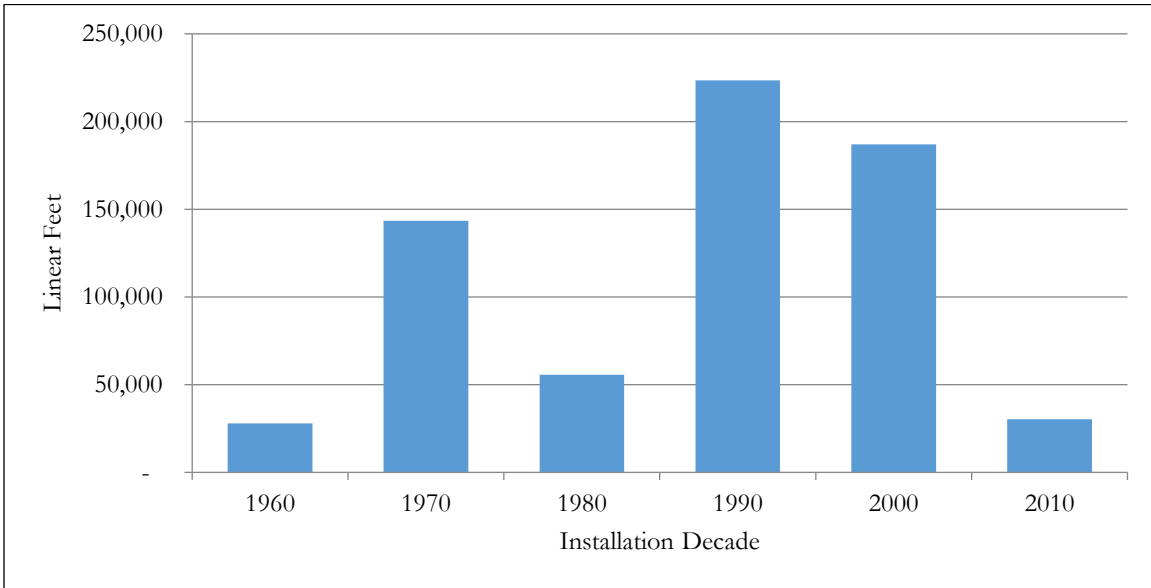


Figure 9: Wastewater Sewer Installation Decade

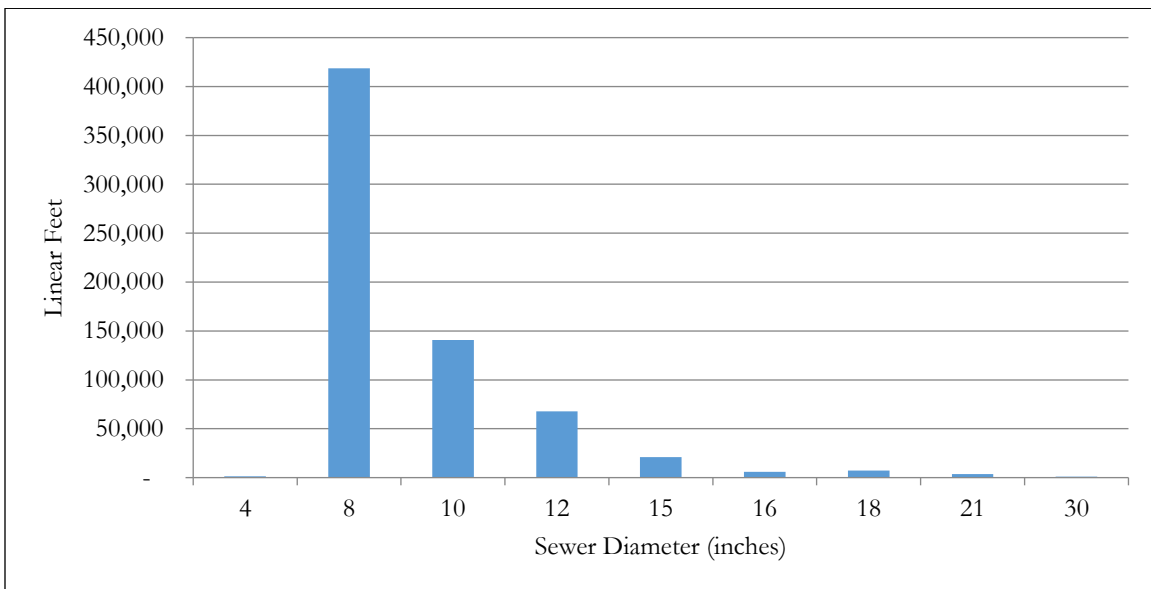


Figure 10: Wastewater Sewer Diameter Inventory

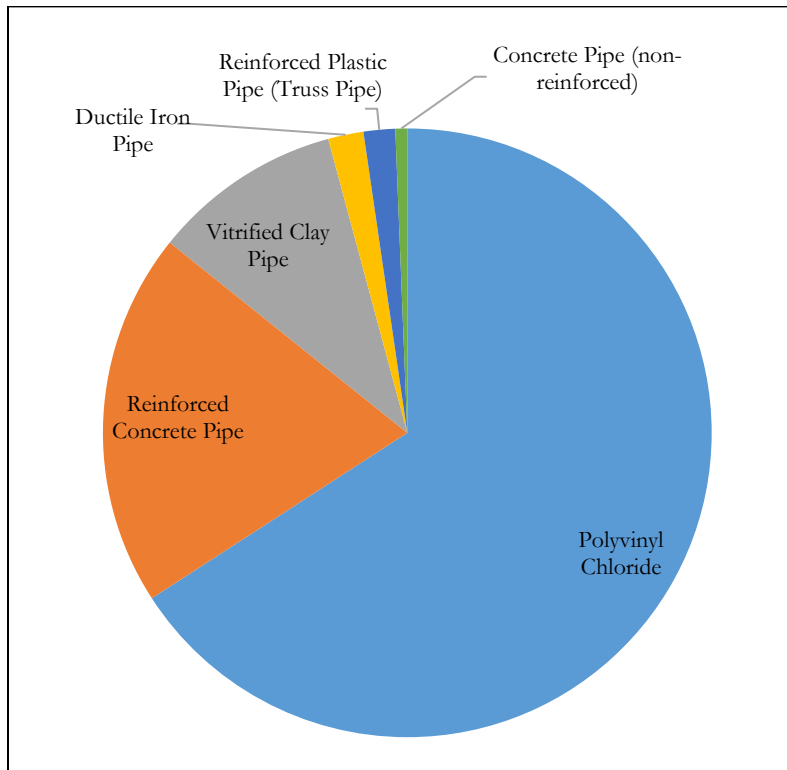


Figure 11: Sewer Material Inventory

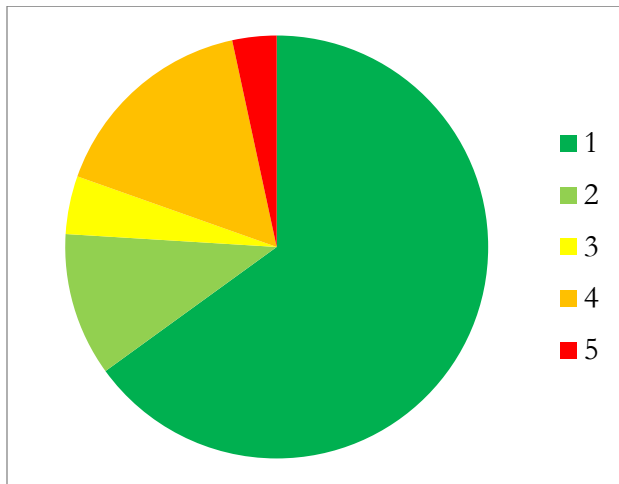


Figure 12: Sewer Structural PoF Ratings

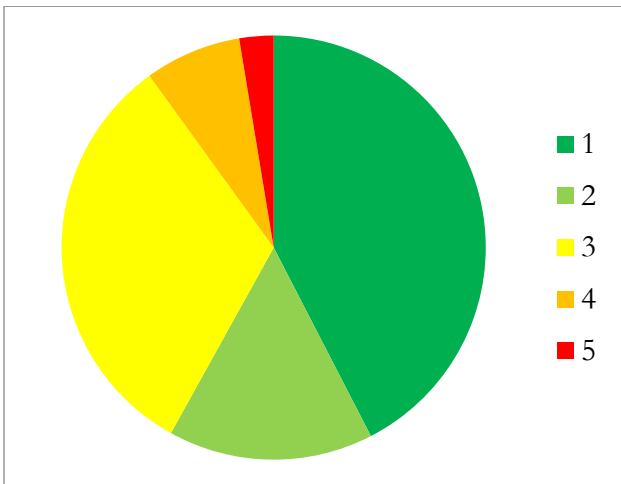


Figure 13: Sewer O&M PoF Ratings

The inspected portion of the system had an average Overall (structural and O&M) rating of 2.5, indicating that the majority of the system is in fair condition. The average structural rating is 1.8, and the overall O&M rating is 2.1. Figure 12 and show a breakdown of Structural and O&M Sewer Ratings, respectively.

Within the inspected portion of the sewer system, approximately 12,000 feet of pipe was deemed to be in need of rehabilitation. This reflects approximately 4% of the inspected system. Table 4 summarizes the structural probability of failure by pipe size for the inspected system. The majority of the 10,556 feet of pipe that had a PoF of 5 or 6 are 8 to 12 inches in diameter, likely because most of the pipes in the system are in this smaller diameter range.

Table 4: Sewer System Structural PoF by Diameter

Diameter (in)	1	2	3	4	5	Total
8	129,144	16,125	7,695	8,240	1,207	162,410
10	52,200	15,099	4,672	25,938	4,427	102,336
12	12,067	1,112	716	11,461	4,922	30,278
15	8,337	1,557	799	2,754	--	13,447
21	427	344	--	1,412	--	2,183
18	968	--	--	817	--	1,785
Total (ft)	203,142	34,237	13,882	50,622	10,556	312,438
Total (mi)	38.47	6.48	2.63	9.59	2.00	59.17

The most predominant structural defects as observed in the wastewater system are visible aggregate surface damage and pipe sags; the most common O&M defects in the surveyed system are attached or settled deposits and roots. Figure 14 depicts the type and number of defects reported in the inspected portion of the wastewater collection system.

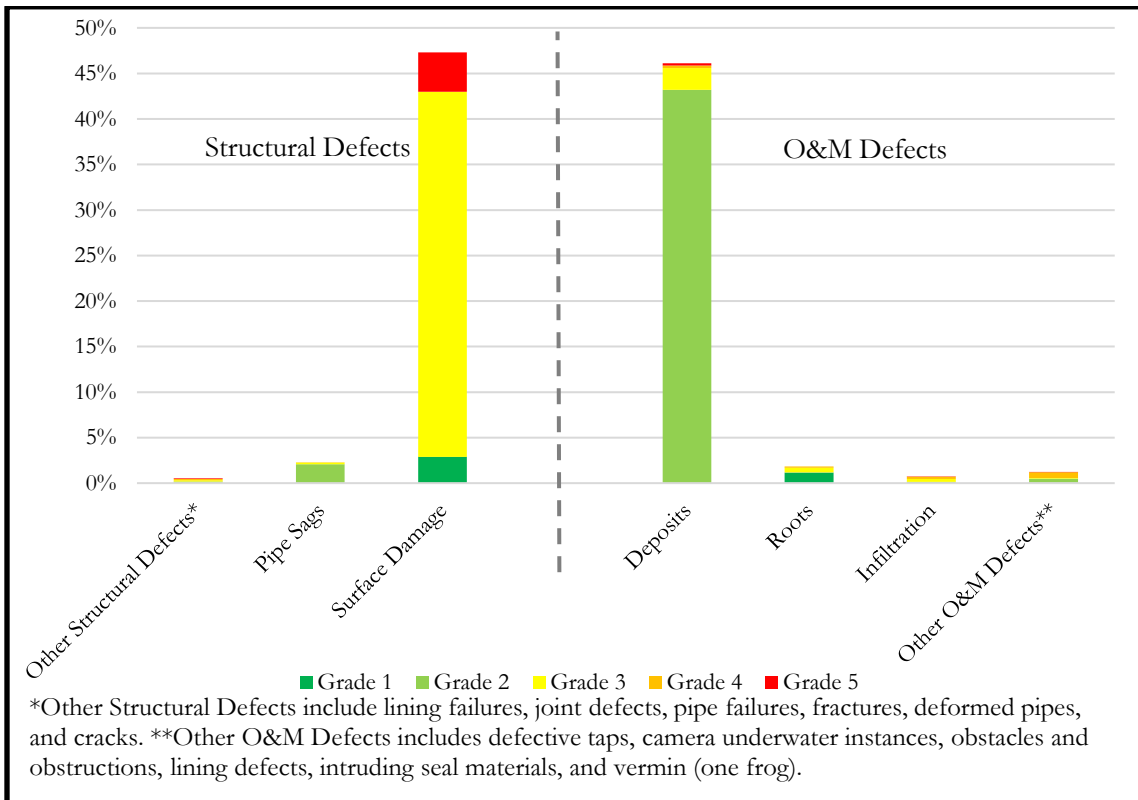


Figure 14: Sanitary Sewer Defects.

D. Pump Stations

There are two pumping stations in Northville Township’s collection system. The assets associated with each station were inventoried and evaluated for condition and criticality. The major components inventoried within each station include but are not limited to pumps, check/control valves, motors, level control systems, backup power, structure, and wet well. Details of the pump station assessment are available in Appendix C.

The current condition of the pump stations assets was assigned based on judgement of and experienced facility design engineers. The condition ratings range from 1 to 5 with 1 being the best condition as shown in Table 5. An asset’s PoF was calculated based on the asset’s percentage of remaining useful life. Together, the asset’s CoF and PoF were used to determine the asset’s BRE.

Table 5: Pump Station Asset Probability of Failure

Ratings Index	Asset Condition
1	Excellent, appears new
2	Good, appropriate wear
3	Average, minor life cycle altering defects
4	Poor, significant wear but functional
5	Very poor, failure of intended function

Based on the inspections, the Township’s pump stations are still relatively young, and no capital improvements are expected in the 5-year short-term horizon. The control systems including PLCs and SCADA are the closest to their expected useful life.

A more detailed document describing the data collection and inventory, field investigations and findings, annual capital reserves and capital improvement plan, and recommendations for Northville Township’s pumping stations is included in Appendix C.

II. Level of Service

The Township identified Level of Service measures that can be used to understand staff and resource priorities. Table 6 summarizes these measures for the Township’s AMP.

Table 6: Level of Service Criteria, Performance Indicator, and Level

Key Service Criteria	Performance Indicator	Target Level of Service
Flow Capacity	Active Flow Monitoring of the Service Provider Meter	Continue to be consistently below the contractual flow limit with Service Provider Meter
O&M Optimization	Regular Cleaning and Maintenance of the Collection System	Clean and maintain 20% of the system per year
Service Delivery and Customer Communication	Continue to utilize Cityworks Software to Aide in Utility Management and Promote Customer Communication	Respond to customer complaints and requests within one (1) business day
Staff Training	Continue to Hold Regular Training for O&M Staff	Offer five (5) or more different training sessions each year

III. Critical Assets

Determining the assets most critical to system operation allows a community to manage risk, support Capital Improvement Plans, and efficiently allocate O&M funds. The two key factors used to determine criticality are PoF and CoF. PoF and CoF are multiplied to determine the BRE as shown in Figure 15 below. Details on the criticality process are available in Appendix B and maps are available in Appendix A.

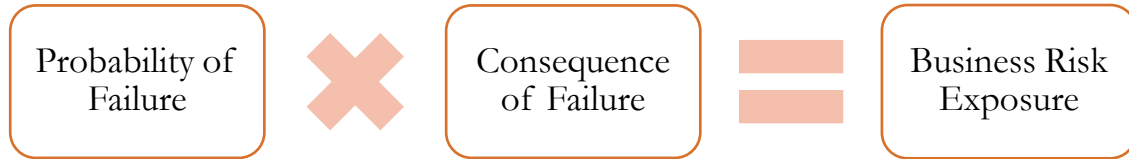


Figure 15: BRE Equation

PoF considers the physical condition or age of an asset and is often based on the Structural MACP or PACP Index Rating. A standardized rating of one through five is assigned to each asset with a score of five indicating worst condition as shown in Table 7.

Table 7: Probability of Failure Score

Score	Description
1	Improbable
2	Remote, unlikely but possible
3	Possible
4	Probable, likely
5	Imminent, likely in near future

CoF encourages a focus on social, environmental, and economic cost impacts. The economic CoF encompasses the impacts of direct and indirect economic losses to the affected organization and third parties due to asset failure. The social consequence represents the impact of society due to asset failure and the environmental consequence of failure considers the impact to ecological conditions occurring as a result of asset failure.

The factors were rated on a one through five scale for each asset. The CoF values for Northville Township’s system are based on pipe diameter as a proxy for the number of people served. On top of pipe diameter, the CoF for sewers in the immediate vicinity of water bodies and critical infrastructure were bumped up. The CoF is described in Table 8, with more detail available in Appendix B.

The following factors were combined to determine the final CoF:

- Diameter/Size – the relative size of the asset with respect to the rest of the system
- Environment – proximity to sensitive environmental features like Johnson Creek and Middle River Rouge.

Table 8: Consequence of Failure

Score	Description
1	Negligible, minor loss of function
2	Minimal or marginal
3	Noticeable, may suspend some operations
4	Critical, temporarily suspends operations
5	Catastrophic disruption

A CIP should incorporate BRE and institutional knowledge, as shown in the flow chart in Figure 18. Institutional knowledge can reveal known problem areas or areas already designated for upcoming projects. Assets are given high, medium, or low priority based on their BRE as shown in Figure 16. Uninspected assets nearing the end of their useful life should be inspected and assessed before potentially unnecessary rehabilitation or replacement funding is allocated. These assets should be given medium priority.

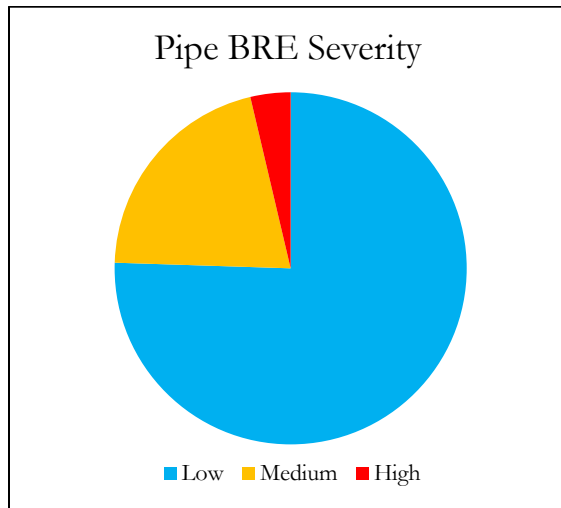


Figure 17: Wastewater Business Risk Exposure

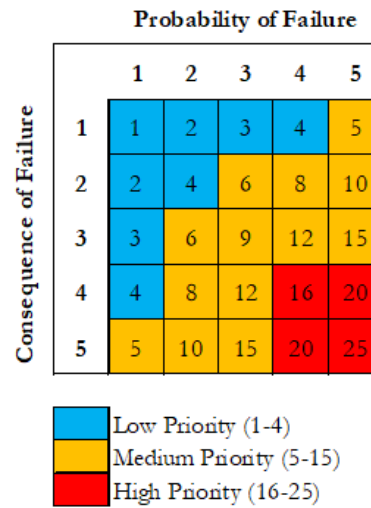


Figure 16: BRE Matrix

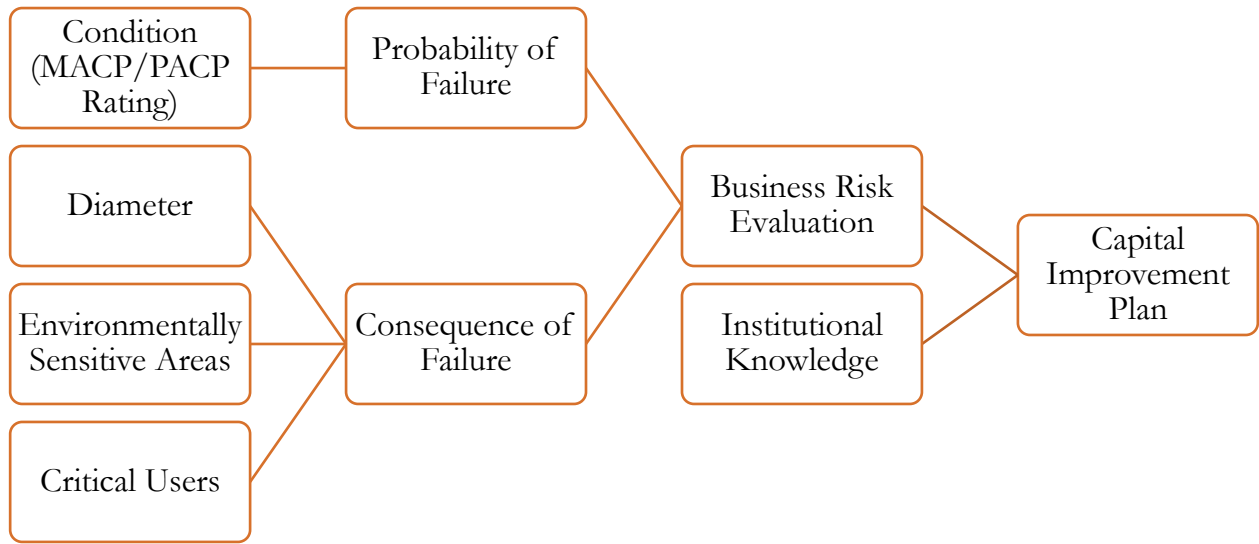


Figure 18: CIP and Risk Flow Chart

IV. Revenue Analysis

The condition assessment helped identify capital improvements that will allow the Township to operate at its maximum potential. Additional long-term operations and maintenance strategies will provide the means to maintain a sound structural condition into perpetuity. The Township also completed a comprehensive revenue structure analysis, which details the rates and charges that will provide sufficient revenues to implement this AMP.

A. Capital Improvement Plan

A CIP is a core component of an AMP and an essential planning tool that allows a community to properly plan for high cost, non-recurring projects. A CIP should detail capital needs related to future/upcoming regulations, major asset replacements, system expansions, system consolidation or regionalization, and improved technology.

Northville Township's CIP for the wastewater collection system is detailed in Appendix D and Figure A-6 in Appendix A. The Capital Improvement Plans will aide in identifying, prioritizing, and implementing capital projects within the Township's wastewater collection system during the next five years.

MACP and PACP Rehabilitation Program:

As part of the SAW Grant, 1591 manholes and 59 miles of pipe were inspected. Based on the reported defects, rehabilitation and restoration recommendations were made. This CIP project proposes to rehabilitate all wastewater manholes and sewers that received a rehabilitation recommendation in the first five years of this CIP. Not all manholes and sewers that recorded a structural or O&M defect received a rehabilitation recommendation and should be inspected regularly as described in the O&M Strategies. The costs below represent the estimated cost of the recommended rehabilitations made for the first five years of this CIP.

I&I Priority Cleaning and Repair	\$375,000
PACP Rehabilitation Recommendations	\$585,000
MACP Rehabilitation Recommendations	\$97,000
Contingency (20%)	\$211,000
Engineering (15%)	\$190,000
Contract Administration (15%)	\$190,000
Total 5-Year PACP & MACP Rehab Costs*:	\$1,649,000

*total does not sum due to rounding

Pump Station Improvements

A condition assessment was conducted on the two pump stations owned by Northville Township. The condition was based on the expected remaining life of the asset being assessed. Replacing material assets within the pump stations are recommended to occur at the end of their

predicted remaining life to mitigate the risk of operating failures. Many assets that are currently operating within the two pump stations are functioning well within their manufacturers expected life and do not need to be replaced in the near future. The PLC and controls system, which typically have shorter expected lives than most other pump station assets will likely need replacement first, six to ten years out. Details of these estimates can be found in Appendix C.

B. O&M Strategies

O&M strategies are an important component of an AMP. With O&M strategies in-place, such as cleaning and inspecting assets, communities can properly budget their funds while maintaining their assets. O&M strategies directly tie into Northville Township’s LOS criteria. Below details the Township’s O&M strategies developed as part of this AMP.

Pipes:

There are approximately 126 miles of pipe in the Northville Township’s wastewater system. This O&M strategy will focus on cleaning and inspecting 20% of the system every five years, and the remaining 80% of the system every ten years. Table 9 summarizes the estimated cleaning and inspection costs used to calculate the annual O&M cost. The cost for O&M could likely be lowered through practices such as televise then clean only if cleaning is needed.

Table 9: Estimated Cleaning and Inspection Costs for Pipes

Diameter (inches)	Cleaning Cost per Foot	Inspection Cost per Foot
6-8	\$ 1.25	\$ 1.50
10-12	\$ 1.70	\$ 1.50
15	\$ 2.00	\$ 2.30
18	\$ 2.80	\$ 2.30
20-24	\$ 3.50	\$ 2.30

Annual O&M Costs: Pipes

Annual Sewer Cleaning Costs:	\$136,000
Annual Sewer Inspection Costs:	\$120,000
Total Annual Cost:	\$256,000

* The cleaning and inspection costs are estimated costs and reflective of public bid lists.

Manholes:

There are approximately 3,600 manholes in Northville Township’s wastewater system. This O&M strategy will focus on inspecting 20% of the systems manholes every five years and the remaining 80% of the manholes every ten years. Using the manhole O&M costs detailed in Table 10 below, the annual costs for manholes would be approximately \$43,200, for 432 manholes (144 on the five-year rotation and 288 on the ten-year rotation).

Table 10: Estimated Manhole Inspection Costs

Manhole	Inspection Cost per Manhole
1	\$ 100.00

Annual O&M Costs: Manholes

Annual Manhole Inspection Cost:	\$43,200
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O&M Strategies Summary

By inspecting 20 percent of the Northville Township wastewater manholes per year, all manholes will be inspected every five years. Cleaning and inspecting 20 percent of the

wastewater system every five years and the remaining 80 percent every tenth year will ensure the entire wastewater system is cleaned and inspected every ten years. The associated costs for the O&M Strategies described above are based on estimated costs that may change during project bidding.

Annual O&M Costs: Total

Total Annual Cost: \$299,200

C. Rate Structure

The Northville Township revenue structure analysis, which details the rates and charges that will provide sufficient revenues to cover the CIP projects and the proposed O&M is included as a separate document in Appendix E. The revenue analysis identified that an initial rate increase of zero percent (0%) in the first year of the CIP followed by an annual rate increase of two percent (2%) per year is needed to support the rising expenses over time.

V. On-Going Data Management

A fully utilized AMP will improve the Township's wastewater system for the Township's future generations. Figure 19 shows that a healthy data management process is an ongoing cycle. The Township's new asset management plan has essentially completed one cycle of the data management process. Even though that initial cycle is complete, it is essential that the Township continue to collect data. Appendix B explains the lay out of the first cycle conducted by OHM. This data management process will aid in the tracking and use of data to cost-effectively manage the Township's wastewater system.

1. Inventory

The Township should continue to populate and complete missing or incorrect data in each asset's attributes. When assets are repaired or replaced and new assets are added, the BRE value can be updated. The Township should assign new unique Facility IDs to new assets in accordance with their current naming convention.

2. Inspection Plan

A portion of the system was condition-assessed in the creation of this AMP, but it will be important to perform ongoing condition assessments of the remaining the system. Eventually you will come back to assets and assess them again. The AMP recommended an initial rate of condition assessment. The Township should develop a plan to inspect assets at this rate. Whether the Township performs the inspections internally or utilizes the help of a contractor, the Township should specify a data format that will integrate with their existing GIS.



Figure 19: Data Management Process Diagram

3. Quality Assurance

Data from the condition assessments will need to be checked for quality, either by the Township or OHM Advisors' staff. The Quality Assurance process should occur throughout the Inventory and Inspection Plan steps, especially while condition assessment is taking place to ensure that the data is of satisfactory quality and in the correct format.

4. Data Integration

After data is checked for quality, it will need to be integrated into the Township's existing systems (e.g. GIS and Cityworks). Significant data rectification and preparation work may need to be performed so that the collected information will transfer into the Township's systems seamlessly. The amount of effort required will depend on the accuracy and format of the inspection data, as well as the status of the existing system database.

5. Data Mining

Once the data is in the Township's systems, OHM Advisors can perform data mining or train Northville Township staff on data mining. OHM Advisors analyzes the data to draw valuable insight from the incoming data. These insights include trends in pipes of certain material, size, age, and location.

6. Immediate Needs Assessment

Use the inspection results to repair/replace assets that are failing and are in need of immediate attention, such as collapsing pipes or other imminent concerns.

7. Long Term Planning

When a new batch of data is added, the Township should check to see if the long term plan still aligns with the results of the updated system deterioration forecasting and O&M and budget optimizations. Long term budgeting and O&M planning should be updated as needed.

If these steps for a data management program are followed and continuously repeated and improved, the Township will be well on its way to leveraging their asset management plan into a truly sustainable and cost-effective infrastructure management program.

Appendix A: Condition Maps

Figure A-1: Overall Wastewater System

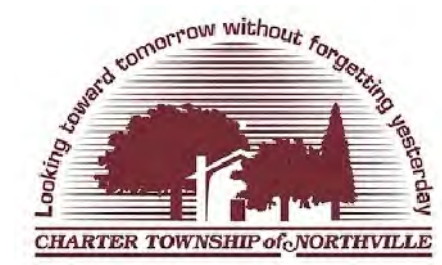
Figure A-2: Probability of Failure

Figure A-3: Consequence of Failure

Figure A-4: Business Risk Exposure

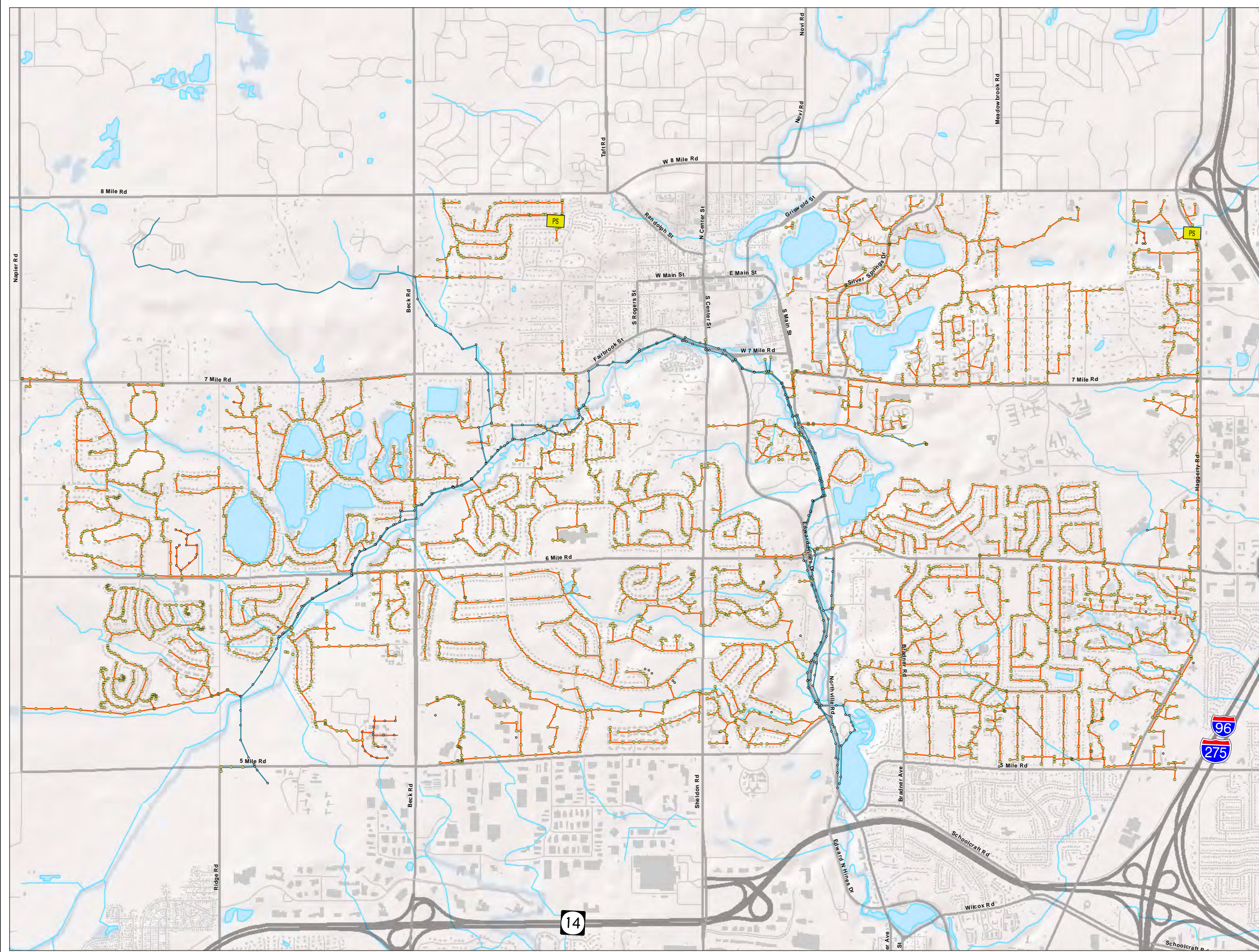
Figure A-5: Infiltration Map

Figure A-6: Capital Improvement Plan Map

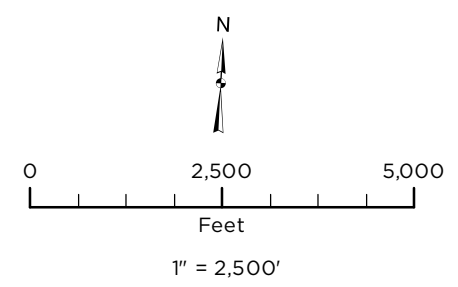


Sanitary Sewer System Map

Figure A-1



- PS Pump Station
- Buildings
- Sanitary Manhole
- Owned By
 - Northville Township
 - Not Owned by Northville Township
- Sanitary Sewer Main
- Owned By
 - Northville Township
 - Not Owned by Northville Township

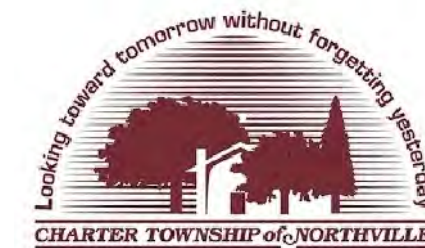


Source: Data provided by Northville Township and OHM Advisors. OHM Advisors does not warrant the accuracy of the data and/or the map. This document is intended to depict the approximate spatial location of the mapped features within the Community and all use is strictly at the user's own risk.

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 IntlFeet

Map Published: September 11, 2018

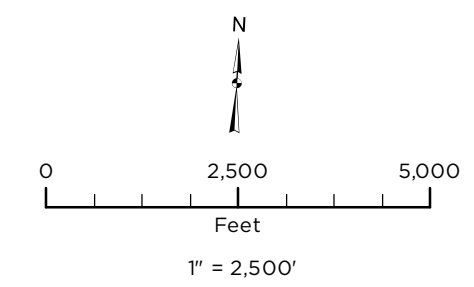




Sanitary Sewer Probability of Failure

Figure A-2

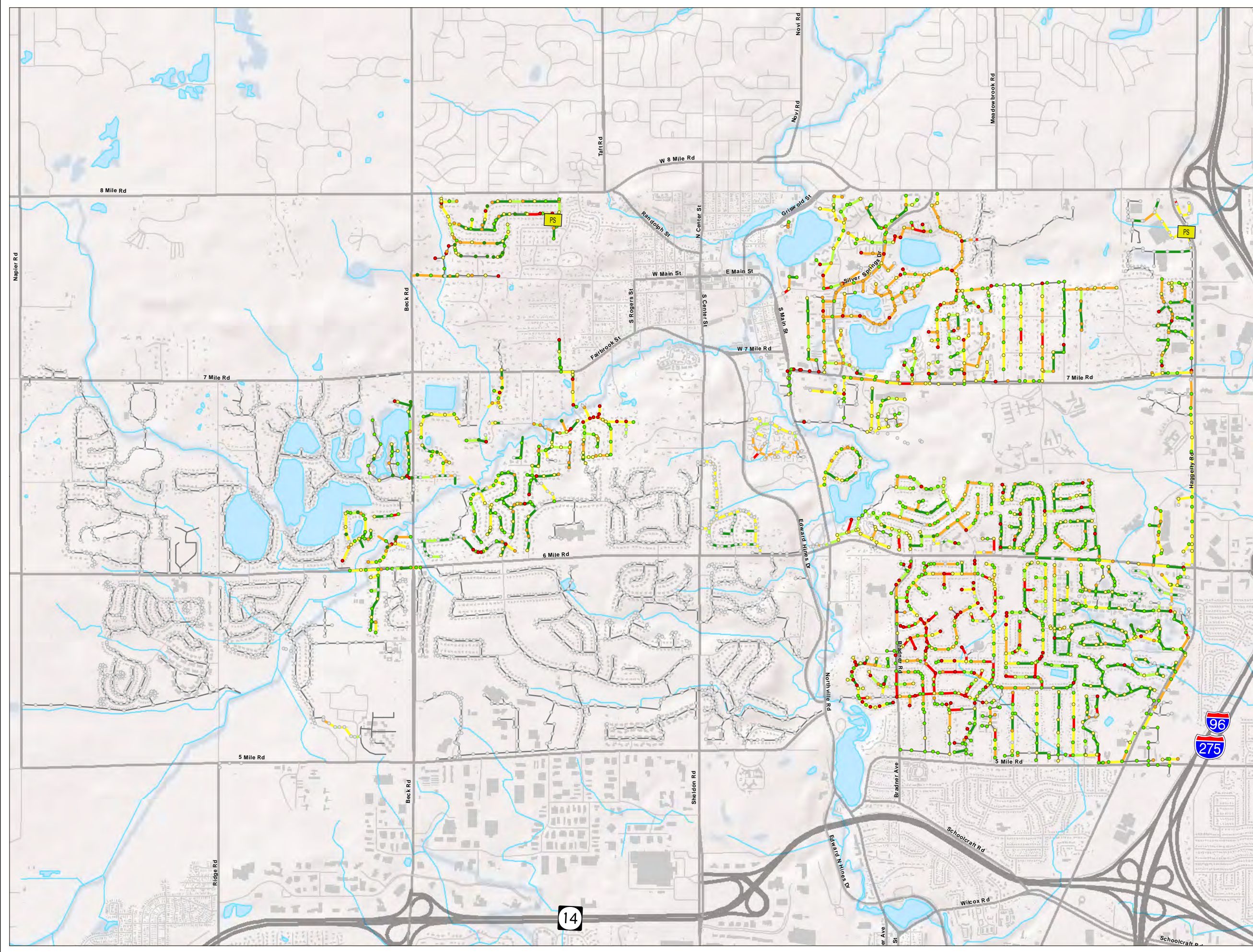
- PS Pump Station
- Buildings
- Sanitary Manhole
- Probability of Failure
 - 5 - Most Likely to Fail
 - 4
 - 3
 - 2
 - 1 - Least Likely to Fail
 - Unrated
- Sanitary Sewer Main
- Probability of Failure
 - 5 - Most Likely to Fail
 - 4
 - 3
 - 2
 - 1 - Least Likely to Fail
 - Unrated

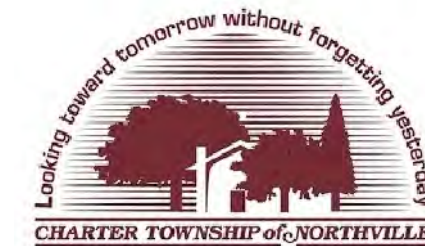


Source: Data provided by Northville Township and OHM Advisors. OHM Advisors does not warrant the accuracy of the data and/or the map. This document is intended to depict the approximate spatial location of the mapped features within the Community and all use is strictly at the user's own risk.

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 IntlFeet

Map Published: September 11, 2018

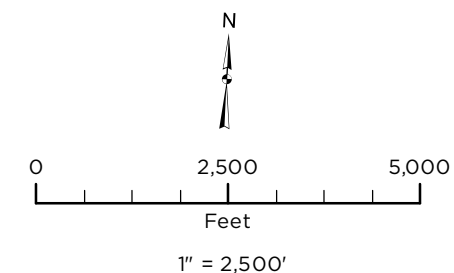




Sanitary Sewer Consequence of Failure

Figure A-3

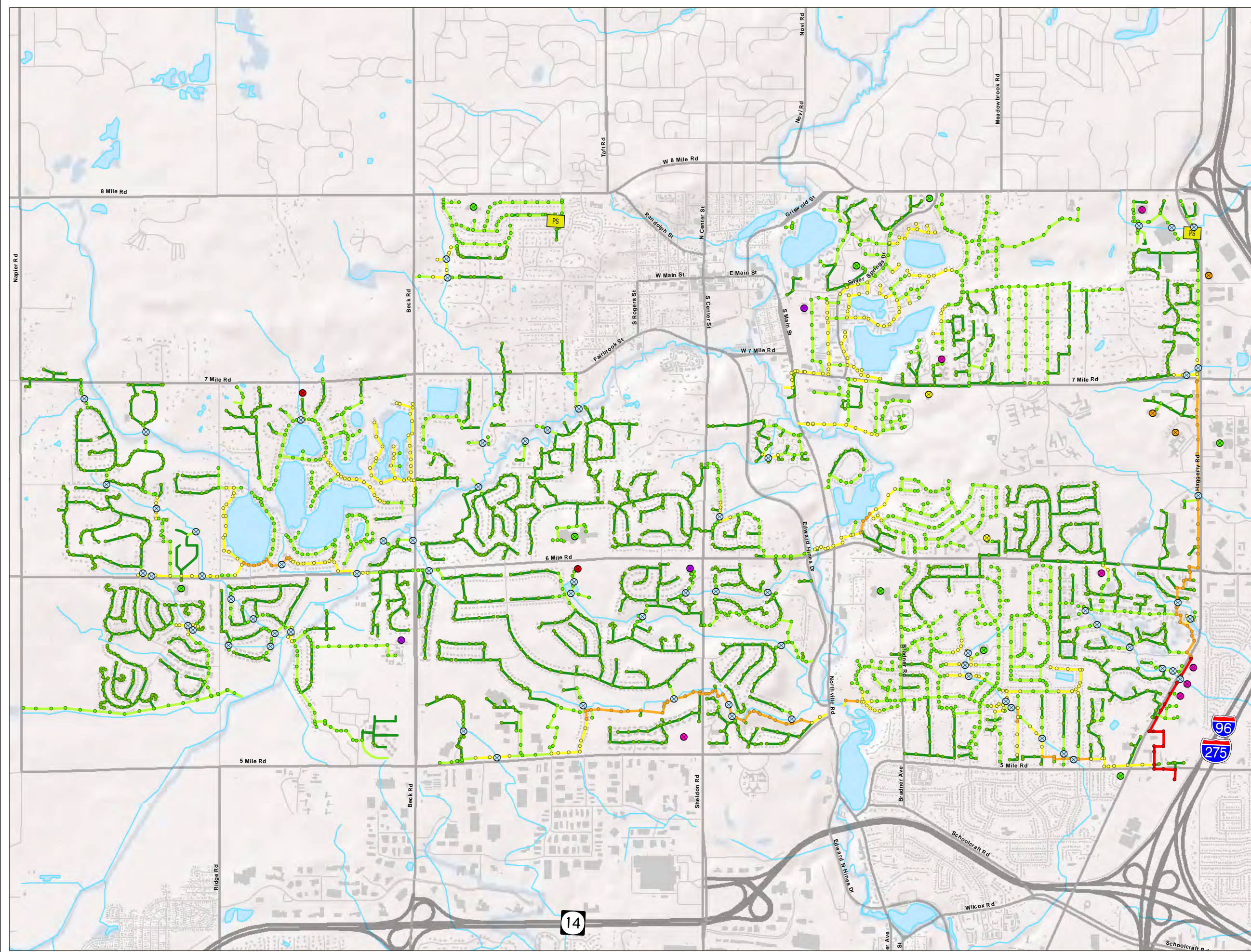
- Assisted Living Facility
 - Fire Station
 - Governmental
 - Medical Complex
 - Police
 - School
 - ⊗ Water Crossing
 - PS Pump Station
 - Buildings
- Sanitary Manhole**
- 5 - Most Critical
 - 4
 - 3
 - 2
 - 1 - Least Critical
- Sanitary Sewer Main**
- 5 - Most Critical
 - 4
 - 3
 - 2
 - 1 - Least Critical

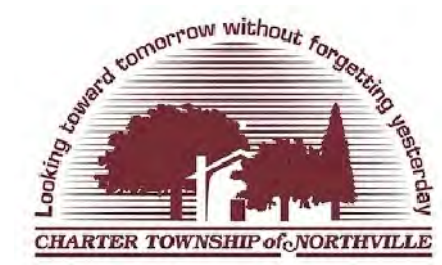


Source: Data provided by Northville Township and OHM Advisors. OHM Advisors does not warrant the accuracy of the data and/or the map. This document is intended to depict the approximate spatial location of the mapped features within the Community and all use is strictly at the user's own risk.

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 IntlFeet

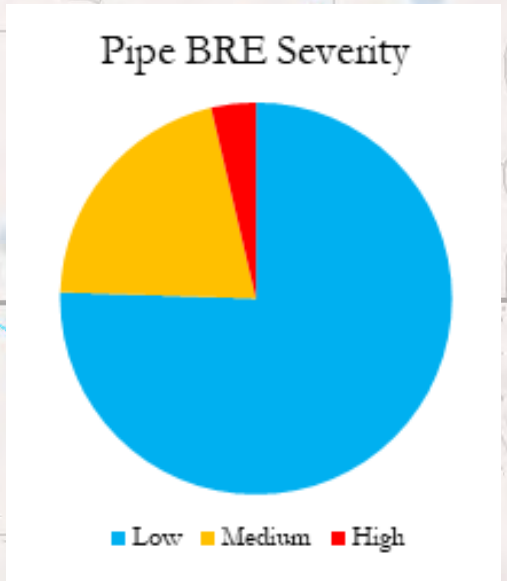
Map Published: September 11, 2018





Sanitary Sewer Business Risk Exposure

Figure A-4

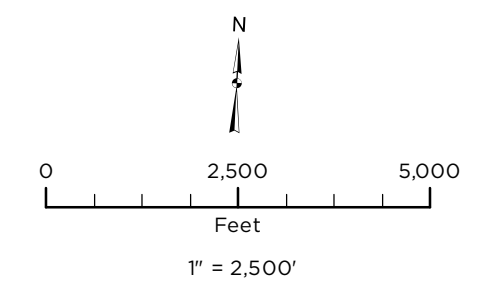


- PS Pump Station
- Buildings
- Sanitary Manhole
- Business Risk Exposure
 - High
 - Medium
 - Low
 - Not assessed
- Sanitary Sewer Main
 - High
 - Medium
 - Low
 - Not assessed

Probability of Failure

		1	2	3	4	5	6
Consequence of Failure	1	1	2	3	4	5	6
	2	2	4	6	8	10	12
	3	3	6	9	12	15	18
	4	4	8	12	16	20	24
	5	5	10	15	20	25	30

	Low Priority (1-3)
	Medium Priority (4-10)
	High Priority (12-30)

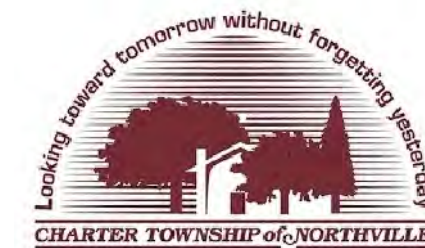


Source: Data provided by Northville Township and OHM Advisors. OHM Advisors does not warrant the accuracy of the data and/or the map. This document is intended to depict the approximate spatial location of the mapped features within the Community and all use is strictly at the user's own risk.

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 IntlFeet

Map Published: September 11, 2018

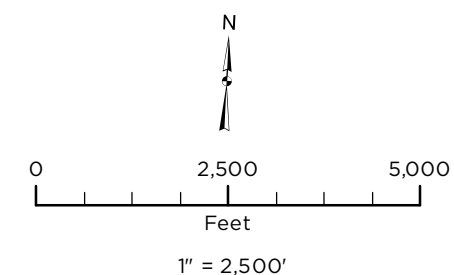




Sanitary Sewer Infiltration

Figure A-5

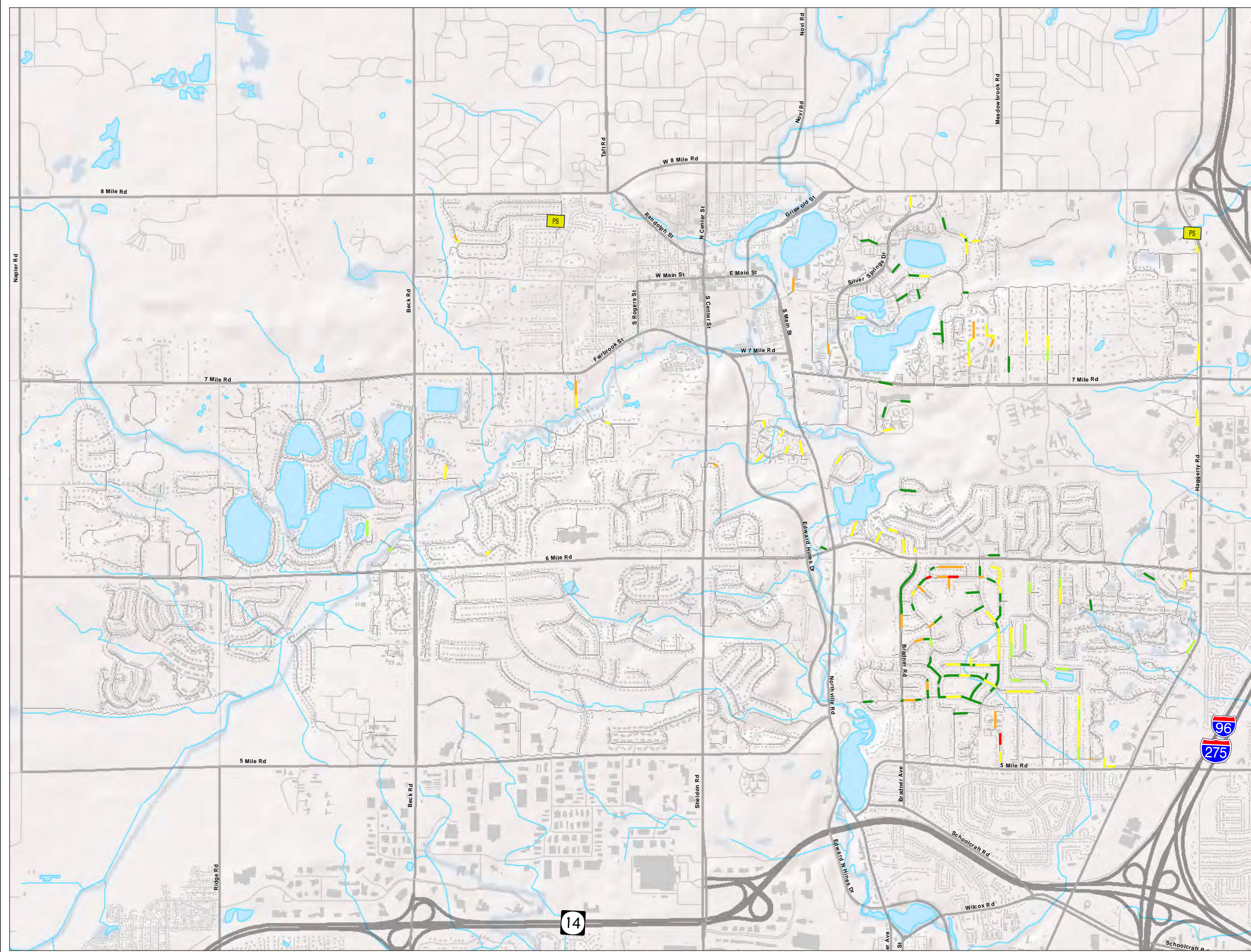
- PS Pump Station
- Sanitary Sewer Main
- Infiltration
- Gusher - Most Severe
- Runner
- Dripper
- Weeper
- Stain - Least Severe
- No Value
- Buildings



Source: Data provided by Northville Township and OHM Advisors. OHM Advisors does not warrant the accuracy of the data and/or the map. This document is intended to depict the approximate spatial location of the mapped features within the Community and all use is strictly at the user's own risk.

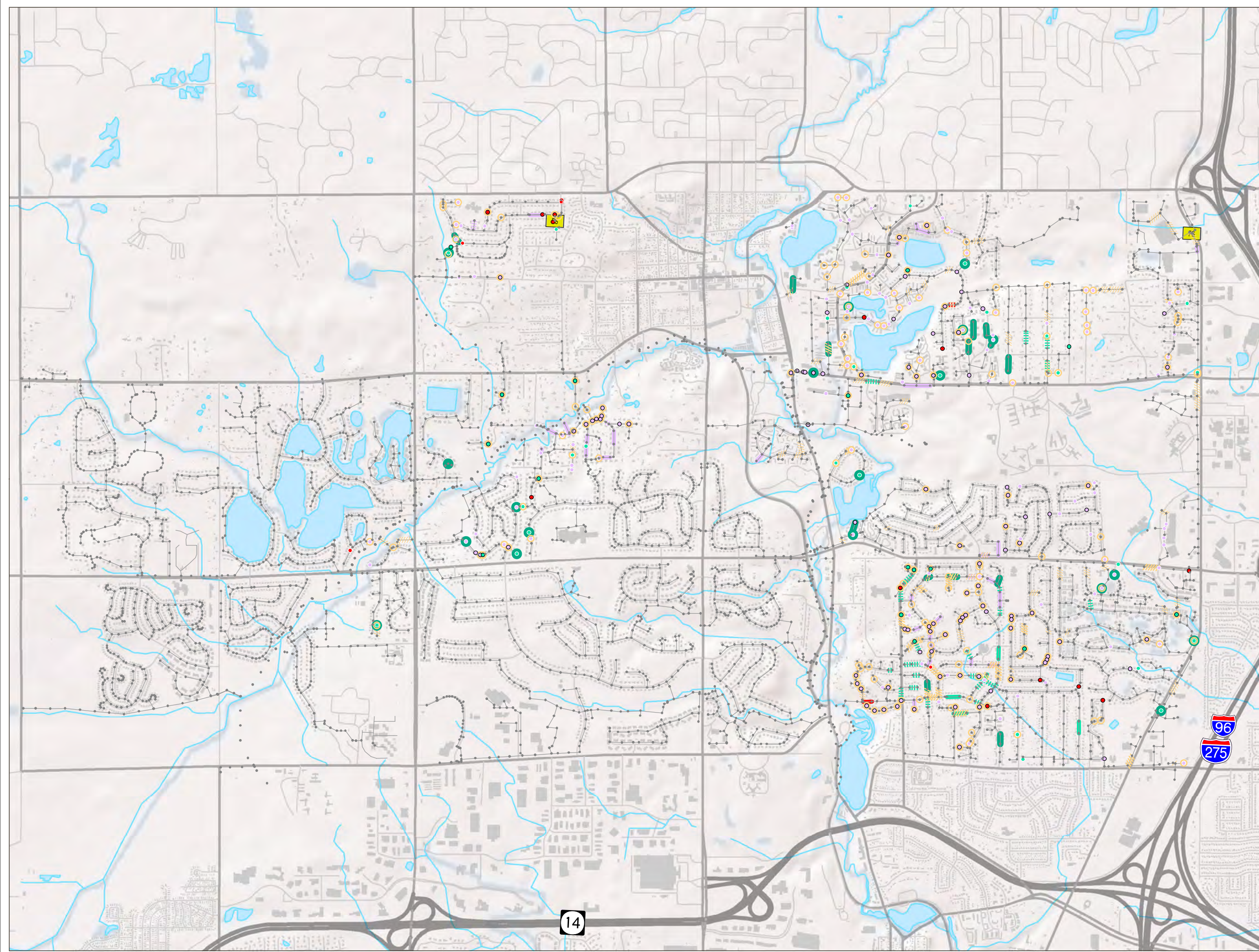
Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 IntlFeet

Map Published: September 11, 2018

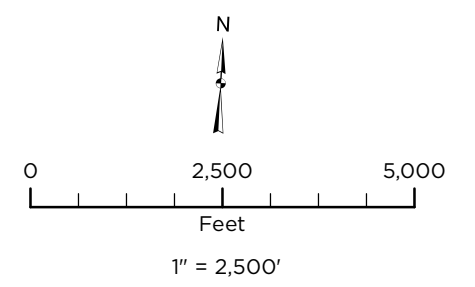




Sanitary Sewer Capital Improvement Plan Map Figure A-6



- PS** Pump Station
- Sanitary Manholes**
 - Sanitary Manhole
 - High Priority Point Repair/Cover Replacement (Y2)
 - High-Priority Lining (Y4-5)
 - High-Priority Structural Repair/Replacement (Y3)
 - Low Priority Point Repair/Cover Replacement (Y6-10)
 - Low-Priority Lining (Y6-10)
 - Low-Priority Structural Repair/Replacement (Y6-10)
 - I&I MH Repairs (Y2)
 - MH Cleaning/Roots (Y1-2)
- Sanitary Sewer Main**
 - Sanitary Sewer Main
 - ▨ High Priority Pipe Cleaning (Y1-2)
 - ▨ Lower Priority Cleaning (Y6-10)
 - ▨ I & I Pipe Repairs (Y1-2)
 - ▨ High Priority Replacement (Y3)
 - ▨ High Priority Lining (Y3-5)
 - ▨ High Priority Grouting & Cutting (Y4-5)
 - ▨ Lower Priority Replacement (Y6-10)
 - ▨ Lower Priority Lining (Y6-10)
 - ▨ Lower Priority Grouting & Cutting (Y6-10)



Source: Data provided by Northville Township and OHM Advisors. OHM Advisors does not warrant the accuracy of the data and/or the map. This document is intended to depict the approximate spatial location of the mapped features within the Community and all use is strictly at the user's own risk.

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 IntlFeet

Map Published: October 23, 2018



Appendix B: Criticality and Business Risk Assessment

Pipe Criticality and Business Risk Assessment

FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
13-SANP-008	5.1	4	20.4	High	01-SANP-011	1	1	1	Low	10-SANP-016	N.A.	1	N.A.	N.A.
13-SANP-139	5.1	4	20.4	High	12-SANP-143	1	1	1	Low	10-SANP-017	N.A.	1	N.A.	N.A.
13-SANP-324	4	5	20	High	12-SANP-146	1	1	1	Low	10-SANP-018	N.A.	1	N.A.	N.A.
13-SANP-393	4	5	20	High	12-SANP-147	1	1	1	Low	10-SANP-019	N.A.	1	N.A.	N.A.
13-SANP-106	4	5	20	High	12-SANP-150	1	1	1	Low	15-SANP-039	N.A.	1	N.A.	N.A.
13-SANP-355	4	5	20	High	13-SANP-291	1	1	1	Low	15-SANP-040	N.A.	1	N.A.	N.A.
14-SANP-195	6	3	18	High	13-SANP-292	1	1	1	Low	15-SANP-041	N.A.	1	N.A.	N.A.
14-SANP-196	6	3	18	High	13-SANP-316	1	1	1	Low	15-SANP-042	N.A.	1	N.A.	N.A.
13-SANP-026	4.1	4	16.4	High	13-SANP-317	1	1	1	Low	15-SANP-043	N.A.	1	N.A.	N.A.
13-SANP-305	4.1	4	16.4	High	13-SANP-318	1	1	1	Low	15-SANP-044	N.A.	1	N.A.	N.A.
13-SANP-009	4	4	16	High	13-SANP-319	1	1	1	Low	15-SANP-045	N.A.	1	N.A.	N.A.
13-SANP-010	4	4	16	High	13-SANP-320	1	1	1	Low	15-SANP-046	N.A.	1	N.A.	N.A.
13-SANP-013	4	4	16	High	01-SANP-172	1	1	1	Low	15-SANP-047	N.A.	1	N.A.	N.A.
13-SANP-014	4	4	16	High	02-SANP-314	1	1	1	Low	15-SANP-048	N.A.	1	N.A.	N.A.
13-SANP-099	4	4	16	High	02-SANP-331	1	1	1	Low	15-SANP-049	N.A.	1	N.A.	N.A.
12-SANP-132	4	4	16	High	02-SANP-332	1	1	1	Low	15-SANP-054	N.A.	1	N.A.	N.A.
12-SANP-133	4	4	16	High	02-SANP-098	1	1	1	Low	15-SANP-055	N.A.	1	N.A.	N.A.
02-SANP-238	5.2	3	15.6	High	02-SANP-100	1	1	1	Low	15-SANP-056	N.A.	1	N.A.	N.A.
14-SANP-104	5.2	3	15.6	High	13-SANP-322	1	1	1	Low	15-SANP-057	N.A.	1	N.A.	N.A.
13-SANP-353	3.1	5	15.5	High	13-SANP-334	1	1	1	Low	15-SANP-058	N.A.	1	N.A.	N.A.
13-SANP-404	3.1	5	15.5	High	14-SANP-008	1	1	1	Low	15-SANP-059	N.A.	1	N.A.	N.A.
02-SANP-242	5.1	3	15.3	High	10-SANP-065	1	1	1	Low	15-SANP-060	N.A.	1	N.A.	N.A.
02-SANP-246	5.1	3	15.3	High	10-SANP-066	1	1	1	Low	15-SANP-061	N.A.	1	N.A.	N.A.
13-SANP-250	5.1	3	15.3	High	13-SANP-054	1	1	1	Low	15-SANP-062	N.A.	1	N.A.	N.A.
14-SANP-115	5.1	3	15.3	High	13-SANP-284	1	1	1	Low	15-SANP-063	N.A.	1	N.A.	N.A.
14-SANP-147	5.1	3	15.3	High	13-SANP-285	1	1	1	Low	15-SANP-064	N.A.	1	N.A.	N.A.
13-SANP-328	3	5	15	High	12-SANP-102	1	1	1	Low	15-SANP-065	N.A.	1	N.A.	N.A.
13-SANP-029	3.4	4	13.6	High	12-SANP-103	1	1	1	Low	15-SANP-068	N.A.	1	N.A.	N.A.
13-SANP-027	3.2	4	12.8	High	12-SANP-104	1	1	1	Low	15-SANP-069	N.A.	1	N.A.	N.A.
13-SANP-229	3.1	4	12.4	High	12-SANP-105	1	1	1	Low	15-SANP-070	N.A.	1	N.A.	N.A.
13-SANP-306	3.1	4	12.4	High	12-SANP-106	1	1	1	Low	15-SANP-071	N.A.	1	N.A.	N.A.
13-SANP-071	3.1	4	12.4	High	12-SANP-107	1	1	1	Low	15-SANP-072	N.A.	1	N.A.	N.A.
12-SANP-134	3.1	4	12.4	High	01-SANP-152	1	1	1	Low	15-SANP-073	N.A.	1	N.A.	N.A.
12-SANP-174	3.1	4	12.4	High	01-SANP-155	1	1	1	Low	15-SANP-074	N.A.	1	N.A.	N.A.
13-SANP-248	4.1	3	12.3	High	01-SANP-005	1	1	1	Low	15-SANP-075	N.A.	1	N.A.	N.A.
14-SANP-097	4.1	3	12.3	High	09-SANP-226	1	1	1	Low	15-SANP-079	N.A.	1	N.A.	N.A.
02-SANP-225	4.1	3	12.3	High	09-SANP-227	1	1	1	Low	15-SANP-080	N.A.	1	N.A.	N.A.
02-SANP-216	4.1	3	12.3	High	09-SANP-231	1	1	1	Low	15-SANP-082	N.A.	1	N.A.	N.A.
02-SANP-142	4.1	3	12.3	High	09-SANP-221	1	1	1	Low	09-SANP-001	N.A.	1	N.A.	N.A.
02-SANP-303	4.1	3	12.3	High	10-SANP-187	1	1	1	Low	09-SANP-003	N.A.	1	N.A.	N.A.
11-SANP-037	4.1	3	12.3	High	10-SANP-188	1	1	1	Low	09-SANP-004	N.A.	1	N.A.	N.A.
12-SANP-049	3	4	12	High	09-SANP-050	1	1	1	Low	09-SANP-005	N.A.	1	N.A.	N.A.
12-SANP-048	3	4	12	High	09-SANP-052	1	1	1	Low	15-SANP-083	N.A.	1	N.A.	N.A.

Pipe Criticality and Business Risk Assessment

FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
12-SANP-074	3	4	12	High	09-SANP-053	1	1	1	Low	15-SANP-084	N.A.	1	N.A.	N.A.
12-SANP-075	3	4	12	High	09-SANP-054	1	1	1	Low	15-SANP-085	N.A.	1	N.A.	N.A.
12-SANP-076	3	4	12	High	09-SANP-055	1	1	1	Low	15-SANP-086	N.A.	1	N.A.	N.A.
12-SANP-077	3	4	12	High	10-SANP-214	1	1	1	Low	15-SANP-087	N.A.	1	N.A.	N.A.
12-SANP-050	3	4	12	High	13-SANP-185	1	1	1	Low	15-SANP-088	N.A.	1	N.A.	N.A.
12-SANP-051	3	4	12	High	09-SANP-222	1	1	1	Low	15-SANP-089	N.A.	1	N.A.	N.A.
12-SANP-052	3	4	12	High	09-SANP-223	1	1	1	Low	15-SANP-090	N.A.	1	N.A.	N.A.
12-SANP-053	3	4	12	High	12-SANP-096	1	1	1	Low	15-SANP-091	N.A.	1	N.A.	N.A.
12-SANP-135	3	4	12	High	09-SANP-232	1	1	1	Low	15-SANP-092	N.A.	1	N.A.	N.A.
12-SANP-083	3	4	12	High	09-SANP-070	1	1	1	Low	15-SANP-093	N.A.	1	N.A.	N.A.
12-SANP-046	3	4	12	High	13-SANP-102	1	1	1	Low	15-SANP-094	N.A.	1	N.A.	N.A.
12-SANP-047	3	4	12	High	13-SANP-103	1	1	1	Low	15-SANP-095	N.A.	1	N.A.	N.A.
12-SANP-057	3	4	12	High	13-SANP-104	1	1	1	Low	15-SANP-096	N.A.	1	N.A.	N.A.
02-SANP-089	4	3	12	High	09-SANP-160	1	1	1	Low	15-SANP-097	N.A.	1	N.A.	N.A.
04-SANP-064	4	3	12	High	13-SANP-001	1	1	1	Low	15-SANP-098	N.A.	1	N.A.	N.A.
10-SANP-059	4	3	12	High	13-SANP-003	1	1	1	Low	15-SANP-100	N.A.	1	N.A.	N.A.
10-SANP-063	4	3	12	High	13-SANP-004	1	1	1	Low	15-SANP-101	N.A.	1	N.A.	N.A.
02-SANP-248	4	3	12	High	09-SANP-035	1	1	1	Low	15-SANP-103	N.A.	1	N.A.	N.A.
02-SANP-249	4	3	12	High	09-SANP-038	1	1	1	Low	15-SANP-104	N.A.	1	N.A.	N.A.
02-SANP-064	4	3	12	High	13-SANP-171	1	1	1	Low	15-SANP-105	N.A.	1	N.A.	N.A.
02-SANP-065	4	3	12	High	13-SANP-174	1	1	1	Low	15-SANP-106	N.A.	1	N.A.	N.A.
02-SANP-198	4	3	12	High	13-SANP-175	1	1	1	Low	15-SANP-109	N.A.	1	N.A.	N.A.
02-SANP-161	4	3	12	High	13-SANP-176	1	1	1	Low	15-SANP-110	N.A.	1	N.A.	N.A.
02-SANP-162	4	3	12	High	13-SANP-177	1	1	1	Low	07-SANP-001	N.A.	1	N.A.	N.A.
02-SANP-077	4	3	12	High	13-SANP-180	1	1	1	Low	07-SANP-002	N.A.	1	N.A.	N.A.
02-SANP-253	4	3	12	High	09-SANP-255	1	1	1	Low	07-SANP-003	N.A.	1	N.A.	N.A.
02-SANP-255	4	3	12	High	01-SANP-069	1	1	1	Low	07-SANP-004	N.A.	1	N.A.	N.A.
14-SANP-137	4	3	12	High	02-SANP-068	1	1	1	Low	01-SANP-110	N.A.	1	N.A.	N.A.
14-SANP-136	4	3	12	High	02-SANP-239	1	1	1	Low	11-SANP-188	N.A.	1	N.A.	N.A.
02-SANP-256	4	3	12	High	02-SANP-265	1	1	1	Low	11-SANP-189	N.A.	1	N.A.	N.A.
02-SANP-257	4	3	12	High	09-SANP-205	1	1	1	Low	10-SANP-180	N.A.	1	N.A.	N.A.
02-SANP-094	4	3	12	High	09-SANP-208	1	1	1	Low	02-SANP-007	N.A.	1	N.A.	N.A.
13-SANP-290	4	3	12	High	12-SANP-112	1	1	1	Low	14-SANP-333	N.A.	1	N.A.	N.A.
02-SANP-251	4	3	12	High	12-SANP-115	1	1	1	Low	16-SANP-195	N.A.	1	N.A.	N.A.
14-SANP-192	4	3	12	High	09-SANP-295	1	1	1	Low	16-SANP-196	N.A.	1	N.A.	N.A.
02-SANP-224	4	3	12	High	13-SANP-259	1	1	1	Low	16-SANP-197	N.A.	1	N.A.	N.A.
02-SANP-143	4	3	12	High	13-SANP-225	1	1	1	Low	16-SANP-198	N.A.	1	N.A.	N.A.
02-SANP-215	4	3	12	High	13-SANP-226	1	1	1	Low	07-SANP-005	N.A.	1	N.A.	N.A.
02-SANP-122	4	3	12	High	13-SANP-227	1	1	1	Low	07-SANP-006	N.A.	1	N.A.	N.A.
02-SANP-125	4	3	12	High	17-SANP-045	1	1	1	Low	07-SANP-007	N.A.	1	N.A.	N.A.
02-SANP-247	4	3	12	High	09-SANP-104	1	1	1	Low	07-SANP-124	N.A.	1	N.A.	N.A.
02-SANP-167	4	3	12	High	09-SANP-106	1	1	1	Low	06-SANP-024	N.A.	1	N.A.	N.A.
02-SANP-196	4	3	12	High	09-SANP-109	1	1	1	Low	06-SANP-025	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
02-SANP-197	4	3	12	High	09-SANP-203	1	1	1	Low	06-SANP-026	N.A.	1	N.A.	N.A.
02-SANP-027	4	3	12	High	12-SANP-078	1	1	1	Low	06-SANP-027	N.A.	1	N.A.	N.A.
02-SANP-028	4	3	12	High	13-SANP-031	1	1	1	Low	17-SANP-091	N.A.	1	N.A.	N.A.
02-SANP-305	4	3	12	High	09-SANP-265	1	1	1	Low	17-SANP-092	N.A.	1	N.A.	N.A.
02-SANP-304	4	3	12	High	13-SANP-230	1	1	1	Low	04-SANP-061	N.A.	1	N.A.	N.A.
02-SANP-126	4	3	12	High	13-SANP-232	1	1	1	Low	07-SANP-106	N.A.	1	N.A.	N.A.
02-SANP-316	4	3	12	High	13-SANP-234	1	1	1	Low	08-SANP-285	N.A.	1	N.A.	N.A.
02-SANP-010	4	3	12	High	09-SANP-219	1	1	1	Low	16-SANP-190	N.A.	1	N.A.	N.A.
02-SANP-184	4	3	12	High	09-SANP-260	1	1	1	Low	18-SANP-077	N.A.	1	N.A.	N.A.
02-SANP-019	4	3	12	High	13-SANP-112	1	1	1	Low	18-SANP-078	N.A.	1	N.A.	N.A.
02-SANP-258	4	3	12	High	13-SANP-113	1	1	1	Low	07-SANP-072	N.A.	1	N.A.	N.A.
02-SANP-189	4	3	12	High	09-SANP-098	1	1	1	Low	07-SANP-073	N.A.	1	N.A.	N.A.
02-SANP-080	4	3	12	High	09-SANP-099	1	1	1	Low	07-SANP-074	N.A.	1	N.A.	N.A.
02-SANP-095	4	3	12	High	09-SANP-100	1	1	1	Low	07-SANP-075	N.A.	1	N.A.	N.A.
02-SANP-038	4	3	12	High	13-SANP-062	1	1	1	Low	07-SANP-076	N.A.	1	N.A.	N.A.
02-SANP-029	4	3	12	High	13-SANP-064	1	1	1	Low	07-SANP-077	N.A.	1	N.A.	N.A.
02-SANP-056	4	3	12	High	13-SANP-084	1	1	1	Low	02-SANP-097	N.A.	1	N.A.	N.A.
11-SANP-124	4	3	12	High	13-SANP-055	1	1	1	Low	13-SANP-335	N.A.	1	N.A.	N.A.
14-SANP-356	6	2	12	High	13-SANP-058	1	1	1	Low	18-SANP-004	N.A.	1	N.A.	N.A.
14-SANP-358	6	2	12	High	12-SANP-009	1	1	1	Low	18-SANP-005	N.A.	1	N.A.	N.A.
14-SANP-175	6	2	12	High	12-SANP-136	1	1	1	Low	18-SANP-006	N.A.	1	N.A.	N.A.
14-SANP-258	6	2	12	High	12-SANP-138	1	1	1	Low	18-SANP-229	N.A.	1	N.A.	N.A.
14-SANP-260	6	2	12	High	12-SANP-139	1	1	1	Low	18-SANP-008	N.A.	1	N.A.	N.A.
14-SANP-261	6	2	12	High	13-SANP-301	1	1	1	Low	18-SANP-009	N.A.	1	N.A.	N.A.
14-SANP-383	6	2	12	High	13-SANP-302	1	1	1	Low	18-SANP-010	N.A.	1	N.A.	N.A.
14-SANP-212	6	2	12	High	13-SANP-308	1	1	1	Low	18-SANP-011	N.A.	1	N.A.	N.A.
14-SANP-315	6	2	12	High	13-SANP-310	1	1	1	Low	18-SANP-012	N.A.	1	N.A.	N.A.
14-SANP-081	6	2	12	High	13-SANP-312	1	1	1	Low	18-SANP-013	N.A.	1	N.A.	N.A.
14-SANP-082	6	2	12	High	10-SANP-189	1	1	1	Low	18-SANP-014	N.A.	1	N.A.	N.A.
14-SANP-083	6	2	12	High	10-SANP-190	1	1	1	Low	18-SANP-015	N.A.	1	N.A.	N.A.
14-SANP-090	6	2	12	High	10-SANP-191	1	1	1	Low	18-SANP-016	N.A.	1	N.A.	N.A.
14-SANP-355	6	2	12	High	17-SANP-059	1	1	1	Low	18-SANP-017	N.A.	1	N.A.	N.A.
14-SANP-124	6	2	12	High	12-SANP-097	1	1	1	Low	15-SANP-111	N.A.	1	N.A.	N.A.
14-SANP-149	6	2	12	High	12-SANP-098	1	1	1	Low	15-SANP-112	N.A.	1	N.A.	N.A.
14-SANP-250	6	2	12	High	12-SANP-101	1	1	1	Low	15-SANP-113	N.A.	1	N.A.	N.A.
14-SANP-084	5.6	2	11.2	High	04-SANP-033	1	1	1	Low	10-SANP-226	N.A.	1	N.A.	N.A.
14-SANP-321	5.6	2	11.2	High	09-SANP-116	1	1	1	Low	15-SANP-149	N.A.	1	N.A.	N.A.
14-SANP-025	5.4	2	10.8	High	09-SANP-117	1	1	1	Low	15-SANP-150	N.A.	1	N.A.	N.A.
14-SANP-352	5.4	2	10.8	High	09-SANP-118	1	1	1	Low	15-SANP-151	N.A.	1	N.A.	N.A.
14-SANP-123	5.4	2	10.8	High	09-SANP-119	1	1	1	Low	15-SANP-152	N.A.	1	N.A.	N.A.
14-SANP-220	5.3	2	10.6	High	09-SANP-120	1	1	1	Low	15-SANP-153	N.A.	1	N.A.	N.A.
14-SANP-398	3.5	3	10.5	High	09-SANP-121	1	1	1	Low	15-SANP-154	N.A.	1	N.A.	N.A.
14-SANP-014	5.2	2	10.4	High	13-SANP-109	1	1	1	Low	15-SANP-155	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
14-SANP-059	5.2	2	10.4	High	08-SANP-270	1	1	1	Low	15-SANP-156	N.A.	1	N.A.	N.A.
14-SANP-022	5.2	2	10.4	High	08-SANP-271	1	1	1	Low	15-SANP-157	N.A.	1	N.A.	N.A.
14-SANP-262	5.2	2	10.4	High	12-SANP-003	1	1	1	Low	15-SANP-158	N.A.	1	N.A.	N.A.
14-SANP-015	5.2	2	10.4	High	12-SANP-004	1	1	1	Low	15-SANP-159	N.A.	1	N.A.	N.A.
14-SANP-122	5.2	2	10.4	High	12-SANP-006	1	1	1	Low	15-SANP-160	N.A.	1	N.A.	N.A.
14-SANP-371	5.2	2	10.4	High	12-SANP-007	1	1	1	Low	15-SANP-161	N.A.	1	N.A.	N.A.
14-SANP-221	5.2	2	10.4	High	10-SANP-103	1	1	1	Low	15-SANP-162	N.A.	1	N.A.	N.A.
14-SANP-256	5.2	2	10.4	High	12-SANP-110	1	1	1	Low	15-SANP-163	N.A.	1	N.A.	N.A.
14-SANP-325	5.1	2	10.2	High	12-SANP-111	1	1	1	Low	11-SANP-159	N.A.	1	N.A.	N.A.
14-SANP-003	5.1	2	10.2	High	09-SANP-161	1	1	1	Low	11-SANP-203	N.A.	1	N.A.	N.A.
14-SANP-013	5.1	2	10.2	High	09-SANP-163	1	1	1	Low	11-SANP-204	N.A.	1	N.A.	N.A.
11-SANP-069	5.1	2	10.2	High	09-SANP-164	1	1	1	Low	11-SANP-216	N.A.	1	N.A.	N.A.
14-SANP-330	5.1	2	10.2	High	09-SANP-166	1	1	1	Low	08-SANP-276	N.A.	1	N.A.	N.A.
13-SANP-184	5.1	2	10.2	High	09-SANP-071	1	1	1	Low	08-SANP-277	N.A.	1	N.A.	N.A.
14-SANP-208	5.1	2	10.2	High	09-SANP-198	1	1	1	Low	08-SANP-278	N.A.	1	N.A.	N.A.
14-SANP-312	5.1	2	10.2	High	09-SANP-201	1	1	1	Low	08-SANP-279	N.A.	1	N.A.	N.A.
04-SANP-082	5.1	2	10.2	High	13-SANP-069	1	1	1	Low	08-SANP-283	N.A.	1	N.A.	N.A.
14-SANP-080	5.1	2	10.2	High	12-SANP-001	1	1	1	Low	08-SANP-284	N.A.	1	N.A.	N.A.
13-SANP-389	5.1	2	10.2	High	12-SANP-002	1	1	1	Low	16-SANP-045	N.A.	1	N.A.	N.A.
13-SANP-373	5.1	2	10.2	High	17-SANP-048	1	1	1	Low	16-SANP-046	N.A.	1	N.A.	N.A.
13-SANP-137	5.1	2	10.2	High	13-SANP-092	1	1	1	Low	16-SANP-047	N.A.	1	N.A.	N.A.
14-SANP-219	5.1	2	10.2	High	09-SANP-112	1	1	1	Low	17-SANP-142	N.A.	1	N.A.	N.A.
14-SANP-385	5.1	2	10.2	High	09-SANP-113	1	1	1	Low	17-SANP-145	N.A.	1	N.A.	N.A.
14-SANP-054	5.1	2	10.2	High	09-SANP-114	1	1	1	Low	17-SANP-146	N.A.	1	N.A.	N.A.
14-SANP-056	5.1	2	10.2	High	09-SANP-115	1	1	1	Low	17-SANP-136	N.A.	1	N.A.	N.A.
13-SANP-212	5.1	2	10.2	High	09-SANP-220	1	1	1	Low	08-SANP-022	N.A.	1	N.A.	N.A.
13-SANP-213	5.1	2	10.2	High	09-SANP-204	1	1	1	Low	10-SANP-072	N.A.	1	N.A.	N.A.
13-SANP-214	5.1	2	10.2	High	13-SANP-142	1	1	1	Low	07-SANP-050	N.A.	1	N.A.	N.A.
13-SANP-357	5.1	2	10.2	High	13-SANP-143	1	1	1	Low	07-SANP-237	N.A.	1	N.A.	N.A.
13-SANP-362	5.1	2	10.2	High	13-SANP-144	1	1	1	Low	07-SANP-049	N.A.	1	N.A.	N.A.
04-SANP-001	5.1	2	10.2	High	13-SANP-145	1	1	1	Low	15-SANP-347	N.A.	1	N.A.	N.A.
14-SANP-127	5.1	2	10.2	High	12-SANP-054	1	1	1	Low	15-SANP-348	N.A.	1	N.A.	N.A.
13-SANP-394	5.1	2	10.2	High	13-SANP-343	1	1	1	Low	14-SANP-332	N.A.	1	N.A.	N.A.
13-SANP-398	5.1	2	10.2	High	13-SANP-344	1	1	1	Low	07-SANP-108	N.A.	1	N.A.	N.A.
01-SANP-076	5.1	2	10.2	High	09-SANP-150	1	1	1	Low	07-SANP-109	N.A.	1	N.A.	N.A.
13-SANP-243	5.1	2	10.2	High	09-SANP-151	1	1	1	Low	15-SANP-252	N.A.	1	N.A.	N.A.
01-SANP-128	5.1	2	10.2	High	09-SANP-152	1	1	1	Low	15-SANP-253	N.A.	1	N.A.	N.A.
01-SANP-134	5.1	2	10.2	High	12-SANP-030	1	1	1	Low	15-SANP-254	N.A.	1	N.A.	N.A.
01-SANP-100	5.1	2	10.2	High	12-SANP-031	1	1	1	Low	15-SANP-255	N.A.	1	N.A.	N.A.
11-SANP-223	5.1	2	10.2	High	12-SANP-032	1	1	1	Low	15-SANP-256	N.A.	1	N.A.	N.A.
13-SANP-329	2	5	10	Medium	12-SANP-087	1	1	1	Low	15-SANP-257	N.A.	1	N.A.	N.A.
14-SANP-287	5	2	10	Medium	12-SANP-088	1	1	1	Low	07-SANP-028	N.A.	1	N.A.	N.A.
02-SANP-005	5	2	10	Medium	12-SANP-089	1	1	1	Low	07-SANP-029	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
14-SANP-109	3.2	3	9.6	Medium	12-SANP-090	1	1	1	Low	07-SANP-030	N.A.	1	N.A.	N.A.
13-SANP-164	4.8	2	9.6	Medium	12-SANP-092	1	1	1	Low	07-SANP-031	N.A.	1	N.A.	N.A.
13-SANP-196	3.1	3	9.3	Medium	09-SANP-039	1	1	1	Low	07-SANP-032	N.A.	1	N.A.	N.A.
13-SANP-247	3.1	3	9.3	Medium	09-SANP-040	1	1	1	Low	07-SANP-033	N.A.	1	N.A.	N.A.
13-SANP-268	3.1	3	9.3	Medium	09-SANP-042	1	1	1	Low	07-SANP-034	N.A.	1	N.A.	N.A.
13-SANP-120	3.1	3	9.3	Medium	09-SANP-043	1	1	1	Low	07-SANP-035	N.A.	1	N.A.	N.A.
13-SANP-121	3.1	3	9.3	Medium	14-SANP-092	1	1	1	Low	18-SANP-111	N.A.	1	N.A.	N.A.
14-SANP-251	3.1	3	9.3	Medium	10-SANP-228	1	1	1	Low	18-SANP-112	N.A.	1	N.A.	N.A.
13-SANP-095	3.1	3	9.3	Medium	12-SANP-157	1	1	1	Low	18-SANP-113	N.A.	1	N.A.	N.A.
11-SANP-104	3.1	3	9.3	Medium	09-SANP-312	1	1	1	Low	18-SANP-114	N.A.	1	N.A.	N.A.
13-SANP-123	2.3	4	9.2	Medium	13-SANP-051	1	1	1	Low	16-SANP-062	N.A.	1	N.A.	N.A.
02-SANP-192	3	3	9	Medium	13-SANP-052	1	1	1	Low	11-SANP-141	N.A.	1	N.A.	N.A.
10-SANP-073	3	3	9	Medium	10-SANP-046	1	1	1	Low	16-SANP-050	N.A.	1	N.A.	N.A.
10-SANP-074	3	3	9	Medium	12-SANP-025	1	1	1	Low	16-SANP-052	N.A.	1	N.A.	N.A.
10-SANP-075	3	3	9	Medium	12-SANP-026	1	1	1	Low	16-SANP-053	N.A.	1	N.A.	N.A.
14-SANP-304	3	3	9	Medium	12-SANP-027	1	1	1	Low	17-SANP-149	N.A.	1	N.A.	N.A.
10-SANP-192	3	3	9	Medium	12-SANP-028	1	1	1	Low	17-SANP-150	N.A.	1	N.A.	N.A.
08-SANP-032	3	3	9	Medium	02-SANP-018	1	1	1	Low	17-SANP-151	N.A.	1	N.A.	N.A.
02-SANP-227	3	3	9	Medium	02-SANP-328	1	1	1	Low	09-SANP-048	N.A.	1	N.A.	N.A.
14-SANP-191	3	3	9	Medium	01-SANP-072	1	1	1	Low	09-SANP-057	N.A.	1	N.A.	N.A.
14-SANP-197	3	3	9	Medium	01-SANP-073	1	1	1	Low	09-SANP-058	N.A.	1	N.A.	N.A.
17-SANP-072	3	3	9	Medium	01-SANP-074	1	1	1	Low	09-SANP-060	N.A.	1	N.A.	N.A.
17-SANP-073	3	3	9	Medium	12-SANP-151	1	1	1	Low	08-SANP-103	N.A.	1	N.A.	N.A.
14-SANP-105	3	3	9	Medium	12-SANP-152	1	1	1	Low	08-SANP-104	N.A.	1	N.A.	N.A.
14-SANP-106	3	3	9	Medium	09-SANP-080	1	1	1	Low	08-SANP-105	N.A.	1	N.A.	N.A.
02-SANP-226	3	3	9	Medium	09-SANP-082	1	1	1	Low	08-SANP-106	N.A.	1	N.A.	N.A.
10-SANP-202	3	3	9	Medium	09-SANP-083	1	1	1	Low	15-SANP-204	N.A.	1	N.A.	N.A.
02-SANP-190	3	3	9	Medium	09-SANP-084	1	1	1	Low	15-SANP-205	N.A.	1	N.A.	N.A.
02-SANP-042	3	3	9	Medium	09-SANP-085	1	1	1	Low	07-SANP-008	N.A.	1	N.A.	N.A.
01-SANP-109	3	3	9	Medium	09-SANP-194	1	1	1	Low	07-SANP-009	N.A.	1	N.A.	N.A.
13-SANP-138	2.2	4	8.8	Medium	12-SANP-095	1	1	1	Low	07-SANP-010	N.A.	1	N.A.	N.A.
09-SANP-029	4.4	2	8.8	Medium	09-SANP-252	1	1	1	Low	07-SANP-011	N.A.	1	N.A.	N.A.
17-SANP-046	4.3	2	8.6	Medium	12-SANP-117	1	1	1	Low	07-SANP-013	N.A.	1	N.A.	N.A.
14-SANP-052	4.3	2	8.6	Medium	12-SANP-118	1	1	1	Low	16-SANP-210	N.A.	1	N.A.	N.A.
17-SANP-250	4.3	2	8.6	Medium	12-SANP-119	1	1	1	Low	08-SANP-185	N.A.	1	N.A.	N.A.
13-SANP-352	2.1	4	8.4	Medium	12-SANP-120	1	1	1	Low	08-SANP-186	N.A.	1	N.A.	N.A.
13-SANP-096	2.1	4	8.4	Medium	12-SANP-153	1	1	1	Low	08-SANP-190	N.A.	1	N.A.	N.A.
14-SANP-335	4.2	2	8.4	Medium	12-SANP-154	1	1	1	Low	15-SANP-215	N.A.	1	N.A.	N.A.
14-SANP-024	4.2	2	8.4	Medium	12-SANP-155	1	1	1	Low	15-SANP-216	N.A.	1	N.A.	N.A.
09-SANP-103	4.2	2	8.4	Medium	13-SANP-073	1	1	1	Low	15-SANP-217	N.A.	1	N.A.	N.A.
02-SANP-301	4.2	2	8.4	Medium	13-SANP-074	1	1	1	Low	15-SANP-218	N.A.	1	N.A.	N.A.
02-SANP-008	4.1	2	8.2	Medium	13-SANP-075	1	1	1	Low	18-SANP-144	N.A.	1	N.A.	N.A.
04-SANP-050	4.1	2	8.2	Medium	13-SANP-076	1	1	1	Low	16-SANP-176	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
10-SANP-099	4.1	2	8.2	Medium	13-SANP-077	1	1	1	Low	16-SANP-177	N.A.	1	N.A.	N.A.
02-SANP-191	4.1	2	8.2	Medium	13-SANP-091	1	1	1	Low	16-SANP-178	N.A.	1	N.A.	N.A.
14-SANP-004	4.1	2	8.2	Medium	13-SANP-158	1	1	1	Low	16-SANP-179	N.A.	1	N.A.	N.A.
14-SANP-005	4.1	2	8.2	Medium	13-SANP-161	1	1	1	Low	16-SANP-180	N.A.	1	N.A.	N.A.
14-SANP-012	4.1	2	8.2	Medium	13-SANP-162	1	1	1	Low	16-SANP-181	N.A.	1	N.A.	N.A.
14-SANP-300	4.1	2	8.2	Medium	13-SANP-163	1	1	1	Low	16-SANP-182	N.A.	1	N.A.	N.A.
14-SANP-277	4.1	2	8.2	Medium	13-SANP-165	1	1	1	Low	16-SANP-183	N.A.	1	N.A.	N.A.
14-SANP-257	4.1	2	8.2	Medium	13-SANP-166	1	1	1	Low	16-SANP-106	N.A.	1	N.A.	N.A.
14-SANP-213	4.1	2	8.2	Medium	10-SANP-111	1	1	1	Low	16-SANP-107	N.A.	1	N.A.	N.A.
13-SANP-385	4.1	2	8.2	Medium	10-SANP-112	1	1	1	Low	17-SANP-065	N.A.	1	N.A.	N.A.
13-SANP-388	4.1	2	8.2	Medium	10-SANP-113	1	1	1	Low	17-SANP-066	N.A.	1	N.A.	N.A.
13-SANP-279	4.1	2	8.2	Medium	10-SANP-115	1	1	1	Low	16-SANP-133	N.A.	1	N.A.	N.A.
13-SANP-135	4.1	2	8.2	Medium	12-SANP-039	1	1	1	Low	16-SANP-134	N.A.	1	N.A.	N.A.
14-SANP-093	4.1	2	8.2	Medium	12-SANP-041	1	1	1	Low	08-SANP-046	N.A.	1	N.A.	N.A.
14-SANP-281	4.1	2	8.2	Medium	12-SANP-042	1	1	1	Low	08-SANP-047	N.A.	1	N.A.	N.A.
04-SANP-048	4.1	2	8.2	Medium	12-SANP-044	1	1	1	Low	08-SANP-048	N.A.	1	N.A.	N.A.
14-SANP-225	4.1	2	8.2	Medium	12-SANP-045	1	1	1	Low	08-SANP-049	N.A.	1	N.A.	N.A.
02-SANP-003	4.1	2	8.2	Medium	04-SANP-035	1	1	1	Low	08-SANP-050	N.A.	1	N.A.	N.A.
01-SANP-136	4.1	2	8.2	Medium	04-SANP-036	1	1	1	Low	08-SANP-051	N.A.	1	N.A.	N.A.
01-SANP-132	4.1	2	8.2	Medium	04-SANP-038	1	1	1	Low	08-SANP-052	N.A.	1	N.A.	N.A.
01-SANP-029	4.1	2	8.2	Medium	12-SANP-080	1	1	1	Low	10-SANP-082	N.A.	1	N.A.	N.A.
01-SANP-031	4.1	2	8.2	Medium	12-SANP-084	1	1	1	Low	10-SANP-083	N.A.	1	N.A.	N.A.
01-SANP-168	4.1	2	8.2	Medium	12-SANP-085	1	1	1	Low	16-SANP-058	N.A.	1	N.A.	N.A.
02-SANP-205	4.1	2	8.2	Medium	12-SANP-086	1	1	1	Low	16-SANP-059	N.A.	1	N.A.	N.A.
11-SANP-035	4.1	2	8.2	Medium	13-SANP-216	1	1	1	Low	16-SANP-060	N.A.	1	N.A.	N.A.
11-SANP-158	2	4	8	Medium	13-SANP-217	1	1	1	Low	16-SANP-061	N.A.	1	N.A.	N.A.
02-SANP-085	4	2	8	Medium	13-SANP-219	1	1	1	Low	09-SANP-034	N.A.	1	N.A.	N.A.
02-SANP-086	4	2	8	Medium	13-SANP-220	1	1	1	Low	07-SANP-016	N.A.	1	N.A.	N.A.
08-SANP-290	4	2	8	Medium	13-SANP-221	1	1	1	Low	07-SANP-019	N.A.	1	N.A.	N.A.
02-SANP-317	4	2	8	Medium	12-SANP-109	1	1	1	Low	07-SANP-020	N.A.	1	N.A.	N.A.
04-SANP-063	4	2	8	Medium	12-SANP-013	1	1	1	Low	07-SANP-021	N.A.	1	N.A.	N.A.
04-SANP-066	4	2	8	Medium	12-SANP-014	1	1	1	Low	07-SANP-022	N.A.	1	N.A.	N.A.
04-SANP-067	4	2	8	Medium	12-SANP-015	1	1	1	Low	07-SANP-023	N.A.	1	N.A.	N.A.
04-SANP-068	4	2	8	Medium	09-SANP-090	1	1	1	Low	07-SANP-024	N.A.	1	N.A.	N.A.
04-SANP-069	4	2	8	Medium	13-SANP-348	1	1	1	Low	07-SANP-025	N.A.	1	N.A.	N.A.
14-SANP-011	4	2	8	Medium	11-SANP-145	1	1	1	Low	07-SANP-026	N.A.	1	N.A.	N.A.
11-SANP-049	4	2	8	Medium	09-SANP-233	1	1	1	Low	17-SANP-167	N.A.	1	N.A.	N.A.
11-SANP-077	4	2	8	Medium	09-SANP-234	1	1	1	Low	17-SANP-168	N.A.	1	N.A.	N.A.
14-SANP-359	4	2	8	Medium	09-SANP-235	1	1	1	Low	17-SANP-169	N.A.	1	N.A.	N.A.
02-SANP-229	4	2	8	Medium	09-SANP-236	1	1	1	Low	17-SANP-170	N.A.	1	N.A.	N.A.
14-SANP-023	4	2	8	Medium	09-SANP-237	1	1	1	Low	10-SANP-166	N.A.	1	N.A.	N.A.
14-SANP-026	4	2	8	Medium	09-SANP-238	1	1	1	Low	09-SANP-207	N.A.	1	N.A.	N.A.
02-SANP-066	4	2	8	Medium	13-SANP-015	1	1	1	Low	16-SANP-118	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
02-SANP-067	4	2	8	Medium	13-SANP-019	1	1	1	Low	16-SANP-121	N.A.	1	N.A.	N.A.
02-SANP-072	4	2	8	Medium	13-SANP-020	1	1	1	Low	14-SANP-265	N.A.	1	N.A.	N.A.
02-SANP-245	4	2	8	Medium	13-SANP-021	1	1	1	Low	14-SANP-266	N.A.	1	N.A.	N.A.
02-SANP-264	4	2	8	Medium	04-SANP-003	1	1	1	Low	13-SANP-258	N.A.	1	N.A.	N.A.
14-SANP-259	4	2	8	Medium	04-SANP-004	1	1	1	Low	14-SANP-379	N.A.	1	N.A.	N.A.
14-SANP-263	4	2	8	Medium	13-SANP-296	1	1	1	Low	08-SANP-070	N.A.	1	N.A.	N.A.
14-SANP-380	4	2	8	Medium	13-SANP-293	1	1	1	Low	09-SANP-061	N.A.	1	N.A.	N.A.
02-SANP-156	4	2	8	Medium	13-SANP-089	1	1	1	Low	09-SANP-062	N.A.	1	N.A.	N.A.
02-SANP-160	4	2	8	Medium	13-SANP-090	1	1	1	Low	09-SANP-063	N.A.	1	N.A.	N.A.
04-SANP-062	4	2	8	Medium	12-SANP-062	1	1	1	Low	16-SANP-083	N.A.	1	N.A.	N.A.
14-SANP-019	4	2	8	Medium	12-SANP-063	1	1	1	Low	16-SANP-084	N.A.	1	N.A.	N.A.
14-SANP-020	4	2	8	Medium	12-SANP-064	1	1	1	Low	16-SANP-085	N.A.	1	N.A.	N.A.
14-SANP-021	4	2	8	Medium	12-SANP-066	1	1	1	Low	16-SANP-086	N.A.	1	N.A.	N.A.
10-SANP-078	4	2	8	Medium	12-SANP-067	1	1	1	Low	16-SANP-088	N.A.	1	N.A.	N.A.
14-SANP-138	4	2	8	Medium	12-SANP-068	1	1	1	Low	09-SANP-107	N.A.	1	N.A.	N.A.
14-SANP-139	4	2	8	Medium	12-SANP-069	1	1	1	Low	09-SANP-268	N.A.	1	N.A.	N.A.
14-SANP-134	4	2	8	Medium	13-SANP-186	1	1	1	Low	09-SANP-269	N.A.	1	N.A.	N.A.
14-SANP-135	4	2	8	Medium	13-SANP-187	1	1	1	Low	16-SANP-101	N.A.	1	N.A.	N.A.
02-SANP-020	4	2	8	Medium	12-SANP-008	1	1	1	Low	18-SANP-040	N.A.	1	N.A.	N.A.
10-SANP-185	4	2	8	Medium	13-SANP-100	1	1	1	Low	18-SANP-041	N.A.	1	N.A.	N.A.
10-SANP-209	4	2	8	Medium	13-SANP-101	1	1	1	Low	18-SANP-042	N.A.	1	N.A.	N.A.
04-SANP-002	4	2	8	Medium	13-SANP-114	1	1	1	Low	18-SANP-043	N.A.	1	N.A.	N.A.
11-SANP-105	4	2	8	Medium	13-SANP-115	1	1	1	Low	18-SANP-044	N.A.	1	N.A.	N.A.
14-SANP-121	4	2	8	Medium	14-SANP-374	1	1	1	Low	18-SANP-098	N.A.	1	N.A.	N.A.
14-SANP-128	4	2	8	Medium	14-SANP-375	1	1	1	Low	18-SANP-099	N.A.	1	N.A.	N.A.
14-SANP-095	4	2	8	Medium	13-SANP-397	1	1	1	Low	18-SANP-100	N.A.	1	N.A.	N.A.
14-SANP-096	4	2	8	Medium	13-SANP-168	1	1	1	Low	18-SANP-101	N.A.	1	N.A.	N.A.
02-SANP-009	4	2	8	Medium	13-SANP-170	1	1	1	Low	18-SANP-104	N.A.	1	N.A.	N.A.
14-SANP-249	4	2	8	Medium	09-SANP-313	1	1	1	Low	16-SANP-135	N.A.	1	N.A.	N.A.
02-SANP-282	4	2	8	Medium	09-SANP-314	1	1	1	Low	16-SANP-136	N.A.	1	N.A.	N.A.
02-SANP-123	4	2	8	Medium	13-SANP-038	1	1	1	Low	16-SANP-137	N.A.	1	N.A.	N.A.
02-SANP-139	4	2	8	Medium	13-SANP-039	1	1	1	Low	16-SANP-138	N.A.	1	N.A.	N.A.
02-SANP-140	4	2	8	Medium	13-SANP-040	1	1	1	Low	16-SANP-139	N.A.	1	N.A.	N.A.
11-SANP-205	4	2	8	Medium	13-SANP-042	1	1	1	Low	18-SANP-223	N.A.	1	N.A.	N.A.
11-SANP-210	4	2	8	Medium	13-SANP-043	1	1	1	Low	18-SANP-224	N.A.	1	N.A.	N.A.
11-SANP-212	4	2	8	Medium	13-SANP-044	1	1	1	Low	18-SANP-184	N.A.	1	N.A.	N.A.
11-SANP-086	4	2	8	Medium	13-SANP-045	1	1	1	Low	18-SANP-183	N.A.	1	N.A.	N.A.
11-SANP-087	4	2	8	Medium	13-SANP-049	1	1	1	Low	18-SANP-186	N.A.	1	N.A.	N.A.
11-SANP-088	4	2	8	Medium	10-SANP-057	1	1	1	Low	18-SANP-185	N.A.	1	N.A.	N.A.
11-SANP-089	4	2	8	Medium	13-SANP-085	1	1	1	Low	18-SANP-205	N.A.	1	N.A.	N.A.
11-SANP-090	4	2	8	Medium	13-SANP-086	1	1	1	Low	18-SANP-182	N.A.	1	N.A.	N.A.
11-SANP-092	4	2	8	Medium	13-SANP-087	1	1	1	Low	18-SANP-181	N.A.	1	N.A.	N.A.
02-SANP-165	4	2	8	Medium	13-SANP-088	1	1	1	Low	18-SANP-166	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
11-SANP-128	4	2	8	Medium	13-SANP-188	1	1	1	Low	18-SANP-199	N.A.	1	N.A.	N.A.
11-SANP-129	4	2	8	Medium	13-SANP-189	1	1	1	Low	18-SANP-200	N.A.	1	N.A.	N.A.
11-SANP-055	4	2	8	Medium	13-SANP-190	1	1	1	Low	18-SANP-201	N.A.	1	N.A.	N.A.
02-SANP-092	4	2	8	Medium	13-SANP-191	1	1	1	Low	18-SANP-202	N.A.	1	N.A.	N.A.
02-SANP-232	4	2	8	Medium	17-SANP-133	1	1	1	Low	18-SANP-203	N.A.	1	N.A.	N.A.
02-SANP-230	4	2	8	Medium	09-SANP-300	1	1	1	Low	18-SANP-228	N.A.	1	N.A.	N.A.
02-SANP-231	4	2	8	Medium	09-SANP-263	1	1	1	Low	18-SANP-230	N.A.	1	N.A.	N.A.
02-SANP-306	4	2	8	Medium	17-SANP-074	1	1	1	Low	18-SANP-231	N.A.	1	N.A.	N.A.
02-SANP-308	4	2	8	Medium	13-SANP-110	1	1	1	Low	18-SANP-232	N.A.	1	N.A.	N.A.
02-SANP-302	4	2	8	Medium	11-SANP-176	1	1	1	Low	18-SANP-175	N.A.	1	N.A.	N.A.
02-SANP-012	4	2	8	Medium	11-SANP-177	1	1	1	Low	18-SANP-204	N.A.	1	N.A.	N.A.
01-SANP-135	4	2	8	Medium	02-SANP-021	1	1	1	Low	15-SANP-353	N.A.	1	N.A.	N.A.
02-SANP-146	4	2	8	Medium	02-SANP-022	1	1	1	Low	13-SANP-032	N.A.	1	N.A.	N.A.
02-SANP-147	4	2	8	Medium	02-SANP-023	1	1	1	Low	10-SANP-006	N.A.	1	N.A.	N.A.
02-SANP-045	4	2	8	Medium	01-SANP-021	1	1	1	Low	10-SANP-007	N.A.	1	N.A.	N.A.
02-SANP-185	4	2	8	Medium	13-SANP-242	1	1	1	Low	10-SANP-008	N.A.	1	N.A.	N.A.
01-SANP-050	4	2	8	Medium	13-SANP-244	1	1	1	Low	17-SANP-232	N.A.	1	N.A.	N.A.
02-SANP-130	4	2	8	Medium	13-SANP-245	1	1	1	Low	17-SANP-233	N.A.	1	N.A.	N.A.
02-SANP-011	4	2	8	Medium	12-SANP-123	1	1	1	Low	13-SANP-224	N.A.	1	N.A.	N.A.
02-SANP-188	4	2	8	Medium	12-SANP-124	1	1	1	Low	17-SANP-088	N.A.	1	N.A.	N.A.
02-SANP-187	4	2	8	Medium	09-SANP-242	1	1	1	Low	17-SANP-089	N.A.	1	N.A.	N.A.
02-SANP-105	4	2	8	Medium	02-SANP-284	1	1	1	Low	17-SANP-090	N.A.	1	N.A.	N.A.
02-SANP-106	4	2	8	Medium	02-SANP-285	1	1	1	Low	13-SANP-276	N.A.	1	N.A.	N.A.
02-SANP-030	4	2	8	Medium	02-SANP-286	1	1	1	Low	09-SANP-280	N.A.	1	N.A.	N.A.
02-SANP-107	4	2	8	Medium	13-SANP-094	1	1	1	Low	10-SANP-169	N.A.	1	N.A.	N.A.
02-SANP-129	4	2	8	Medium	02-SANP-002	1	1	1	Low	10-SANP-170	N.A.	1	N.A.	N.A.
02-SANP-131	4	2	8	Medium	02-SANP-274	1	1	1	Low	10-SANP-171	N.A.	1	N.A.	N.A.
02-SANP-237	4	2	8	Medium	17-SANP-077	1	1	1	Low	10-SANP-172	N.A.	1	N.A.	N.A.
02-SANP-173	4	2	8	Medium	17-SANP-078	1	1	1	Low	10-SANP-173	N.A.	1	N.A.	N.A.
02-SANP-149	4	2	8	Medium	17-SANP-079	1	1	1	Low	10-SANP-174	N.A.	1	N.A.	N.A.
02-SANP-152	4	2	8	Medium	12-SANP-033	1	1	1	Low	10-SANP-175	N.A.	1	N.A.	N.A.
02-SANP-096	4	2	8	Medium	12-SANP-034	1	1	1	Low	09-SANP-267	N.A.	1	N.A.	N.A.
02-SANP-294	4	2	8	Medium	12-SANP-035	1	1	1	Low	09-SANP-279	N.A.	1	N.A.	N.A.
02-SANP-113	4	2	8	Medium	12-SANP-036	1	1	1	Low	13-SANP-233	N.A.	1	N.A.	N.A.
11-SANP-229	4	2	8	Medium	12-SANP-038	1	1	1	Low	16-SANP-163	N.A.	1	N.A.	N.A.
11-SANP-230	4	2	8	Medium	10-SANP-193	1	1	1	Low	16-SANP-165	N.A.	1	N.A.	N.A.
11-SANP-231	4	2	8	Medium	10-SANP-194	1	1	1	Low	16-SANP-166	N.A.	1	N.A.	N.A.
11-SANP-233	4	2	8	Medium	02-SANP-275	1	1	1	Low	16-SANP-167	N.A.	1	N.A.	N.A.
11-SANP-244	4	2	8	Medium	01-SANP-057	1	1	1	Low	08-SANP-018	N.A.	1	N.A.	N.A.
02-SANP-101	4	2	8	Medium	11-SANP-201	1	1	1	Low	08-SANP-019	N.A.	1	N.A.	N.A.
02-SANP-041	4	2	8	Medium	01-SANP-125	1	1	1	Low	06-SANP-001	N.A.	1	N.A.	N.A.
02-SANP-040	4	2	8	Medium	01-SANP-081	1	1	1	Low	11-SANP-002	N.A.	1	N.A.	N.A.
02-SANP-039	4	2	8	Medium	01-SANP-183	1	1	1	Low	11-SANP-003	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
02-SANP-313	4	2	8	Medium	01-SANP-185	1	1	1	Low	18-SANP-158	N.A.	1	N.A.	N.A.
02-SANP-297	4	2	8	Medium	01-SANP-033	1	1	1	Low	02-SANP-292	N.A.	1	N.A.	N.A.
02-SANP-298	4	2	8	Medium	01-SANP-032	1	1	1	Low	18-SANP-079	N.A.	1	N.A.	N.A.
02-SANP-299	4	2	8	Medium	01-SANP-007	1	1	1	Low	18-SANP-080	N.A.	1	N.A.	N.A.
02-SANP-300	4	2	8	Medium	01-SANP-008	1	1	1	Low	06-SANP-009	N.A.	1	N.A.	N.A.
01-SANP-169	4	2	8	Medium	01-SANP-181	1	1	1	Low	16-SANP-078	N.A.	1	N.A.	N.A.
01-SANP-028	4	2	8	Medium	01-SANP-089	1	1	1	Low	09-SANP-097	N.A.	1	N.A.	N.A.
01-SANP-170	4	2	8	Medium	01-SANP-154	1	1	1	Low	17-SANP-035	N.A.	1	N.A.	N.A.
01-SANP-040	4	2	8	Medium	01-SANP-055	1	1	1	Low	17-SANP-228	N.A.	1	N.A.	N.A.
02-SANP-202	4	2	8	Medium	01-SANP-153	1	1	1	Low	17-SANP-229	N.A.	1	N.A.	N.A.
02-SANP-169	4	2	8	Medium	02-SANP-082	1	1	1	Low	15-SANP-283	N.A.	1	N.A.	N.A.
11-SANP-099	4	2	8	Medium	01-SANP-013	1	1	1	Low	15-SANP-284	N.A.	1	N.A.	N.A.
11-SANP-100	4	2	8	Medium	01-SANP-012	1	1	1	Low	15-SANP-285	N.A.	1	N.A.	N.A.
11-SANP-101	4	2	8	Medium	01-SANP-051	1	1	1	Low	15-SANP-286	N.A.	1	N.A.	N.A.
11-SANP-042	4	2	8	Medium	02-SANP-333	1	1	1	Low	16-SANP-191	N.A.	1	N.A.	N.A.
11-SANP-043	4	2	8	Medium	01-SANP-163	1	1	1	Low	16-SANP-192	N.A.	1	N.A.	N.A.
11-SANP-044	4	2	8	Medium	01-SANP-080	1	1	1	Low	16-SANP-194	N.A.	1	N.A.	N.A.
11-SANP-045	4	2	8	Medium	02-SANP-177	1	1	1	Low	17-SANP-036	N.A.	1	N.A.	N.A.
11-SANP-047	4	2	8	Medium	02-SANP-179	1	1	1	Low	17-SANP-037	N.A.	1	N.A.	N.A.
11-SANP-048	4	2	8	Medium	01-SANP-121	1	1	1	Low	13-SANP-108	N.A.	1	N.A.	N.A.
04-SANP-059	3.9	2	7.8	Medium	01-SANP-122	1	1	1	Low	16-SANP-021	N.A.	1	N.A.	N.A.
08-SANP-213	3.9	2	7.8	Medium	01-SANP-123	1	1	1	Low	16-SANP-022	N.A.	1	N.A.	N.A.
02-SANP-081	3.9	2	7.8	Medium	01-SANP-034	1	1	1	Low	16-SANP-023	N.A.	1	N.A.	N.A.
14-SANP-382	3.8	2	7.6	Medium	01-SANP-036	1	1	1	Low	16-SANP-024	N.A.	1	N.A.	N.A.
02-SANP-104	3.8	2	7.6	Medium	02-SANP-296	1	1	1	Low	16-SANP-025	N.A.	1	N.A.	N.A.
02-SANP-221	3.6	2	7.2	Medium	02-SANP-144	1	1	1	Low	16-SANP-026	N.A.	1	N.A.	N.A.
02-SANP-228	2.4	3	7.2	Medium	01-SANP-179	1	1	1	Low	15-SANP-183	N.A.	1	N.A.	N.A.
14-SANP-328	3.5	2	7	Medium	01-SANP-180	1	1	1	Low	13-SANP-300	N.A.	1	N.A.	N.A.
14-SANP-381	3.5	2	7	Medium	01-SANP-035	1	1	1	Low	13-SANP-303	N.A.	1	N.A.	N.A.
02-SANP-186	3.5	2	7	Medium	01-SANP-010	1	1	1	Low	15-SANP-258	N.A.	1	N.A.	N.A.
02-SANP-079	2.3	3	6.9	Medium	01-SANP-171	1	1	1	Low	15-SANP-259	N.A.	1	N.A.	N.A.
13-SANP-366	2.3	3	6.9	Medium	01-SANP-120	1	1	1	Low	17-SANP-054	N.A.	1	N.A.	N.A.
08-SANP-298	2.3	3	6.9	Medium	01-SANP-062	1	1	1	Low	17-SANP-056	N.A.	1	N.A.	N.A.
14-SANP-194	2.3	3	6.9	Medium	01-SANP-067	1	1	1	Low	17-SANP-057	N.A.	1	N.A.	N.A.
11-SANP-197	2.3	3	6.9	Medium	01-SANP-065	1	1	1	Low	18-SANP-052	N.A.	1	N.A.	N.A.
02-SANP-133	2.3	3	6.9	Medium	01-SANP-063	1	1	1	Low	18-SANP-053	N.A.	1	N.A.	N.A.
01-SANP-190	2.3	3	6.9	Medium	01-SANP-064	1	1	1	Low	18-SANP-054	N.A.	1	N.A.	N.A.
02-SANP-338	2.3	3	6.9	Medium	02-SANP-200	1	1	1	Low	18-SANP-055	N.A.	1	N.A.	N.A.
14-SANP-320	3.4	2	6.8	Medium	02-SANP-204	1	1	1	Low	17-SANP-230	N.A.	1	N.A.	N.A.
09-SANP-028	3.4	2	6.8	Medium	01-SANP-178	1	1	1	Low	17-SANP-231	N.A.	1	N.A.	N.A.
11-SANP-161	2.2	3	6.6	Medium	02-SANP-033	1	1	1	Low	13-SANP-336	N.A.	1	N.A.	N.A.
14-SANP-193	2.2	3	6.6	Medium	02-SANP-034	1	1	1	Low	16-SANP-168	N.A.	1	N.A.	N.A.
11-SANP-186	2.2	3	6.6	Medium	02-SANP-035	1	1	1	Low	17-SANP-111	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
14-SANP-326	3.3	2	6.6	Medium	13-SANP-198	1	1	1	Low	17-SANP-112	N.A.	1	N.A.	N.A.
04-SANP-071	3.3	2	6.6	Medium	10-SANP-208	1	1	1	Low	16-SANP-169	N.A.	1	N.A.	N.A.
10-SANP-060	3.3	2	6.6	Medium	02-SANP-335	1	1	1	Low	16-SANP-170	N.A.	1	N.A.	N.A.
10-SANP-062	3.3	2	6.6	Medium	09-SANP-321	1	1	1	Low	16-SANP-171	N.A.	1	N.A.	N.A.
02-SANP-073	3.3	2	6.6	Medium	13-SANP-325	N.A.	5	N.A.	N.A.	16-SANP-172	N.A.	1	N.A.	N.A.
14-SANP-119	3.3	2	6.6	Medium	13-SANP-326	N.A.	5	N.A.	N.A.	16-SANP-173	N.A.	1	N.A.	N.A.
02-SANP-329	3.3	2	6.6	Medium	13-SANP-327	N.A.	5	N.A.	N.A.	16-SANP-174	N.A.	1	N.A.	N.A.
04-SANP-074	3.2	2	6.4	Medium	13-SANP-330	N.A.	5	N.A.	N.A.	16-SANP-175	N.A.	1	N.A.	N.A.
13-SANP-280	3.2	2	6.4	Medium	13-SANP-331	N.A.	5	N.A.	N.A.	08-SANP-109	N.A.	1	N.A.	N.A.
14-SANP-329	3.2	2	6.4	Medium	13-SANP-332	N.A.	5	N.A.	N.A.	18-SANP-050	N.A.	1	N.A.	N.A.
13-SANP-278	3.2	2	6.4	Medium	13-SANP-333	N.A.	5	N.A.	N.A.	18-SANP-051	N.A.	1	N.A.	N.A.
14-SANP-176	3.2	2	6.4	Medium	13-SANP-155	N.A.	5	N.A.	N.A.	08-SANP-029	N.A.	1	N.A.	N.A.
14-SANP-324	3.2	2	6.4	Medium	13-SANP-354	N.A.	5	N.A.	N.A.	09-SANP-069	N.A.	1	N.A.	N.A.
14-SANP-118	3.2	2	6.4	Medium	13-SANP-411	N.A.	5	N.A.	N.A.	18-SANP-018	N.A.	1	N.A.	N.A.
14-SANP-148	3.2	2	6.4	Medium	15-SANP-001	N.A.	4	N.A.	N.A.	08-SANP-099	N.A.	1	N.A.	N.A.
01-SANP-129	3.2	2	6.4	Medium	15-SANP-002	N.A.	4	N.A.	N.A.	16-SANP-093	N.A.	1	N.A.	N.A.
01-SANP-104	3.2	2	6.4	Medium	15-SANP-004	N.A.	4	N.A.	N.A.	16-SANP-094	N.A.	1	N.A.	N.A.
02-SANP-175	3.2	2	6.4	Medium	15-SANP-006	N.A.	4	N.A.	N.A.	16-SANP-095	N.A.	1	N.A.	N.A.
01-SANP-119	3.2	2	6.4	Medium	15-SANP-008	N.A.	4	N.A.	N.A.	16-SANP-096	N.A.	1	N.A.	N.A.
08-SANP-033	2.1	3	6.3	Medium	15-SANP-009	N.A.	4	N.A.	N.A.	13-SANP-111	N.A.	1	N.A.	N.A.
08-SANP-119	2.1	3	6.3	Medium	15-SANP-011	N.A.	4	N.A.	N.A.	16-SANP-109	N.A.	1	N.A.	N.A.
13-SANP-169	2.1	3	6.3	Medium	15-SANP-013	N.A.	4	N.A.	N.A.	16-SANP-110	N.A.	1	N.A.	N.A.
11-SANP-004	2.1	3	6.3	Medium	15-SANP-014	N.A.	4	N.A.	N.A.	15-SANP-296	N.A.	1	N.A.	N.A.
11-SANP-153	2.1	3	6.3	Medium	15-SANP-078	N.A.	4	N.A.	N.A.	15-SANP-297	N.A.	1	N.A.	N.A.
02-SANP-222	2.1	3	6.3	Medium	16-SANP-013	N.A.	4	N.A.	N.A.	15-SANP-298	N.A.	1	N.A.	N.A.
02-SANP-339	2.1	3	6.3	Medium	16-SANP-015	N.A.	4	N.A.	N.A.	15-SANP-299	N.A.	1	N.A.	N.A.
11-SANP-068	3.1	2	6.2	Medium	11-SANP-157	N.A.	4	N.A.	N.A.	15-SANP-300	N.A.	1	N.A.	N.A.
14-SANP-089	3.1	2	6.2	Medium	08-SANP-166	N.A.	4	N.A.	N.A.	15-SANP-301	N.A.	1	N.A.	N.A.
04-SANP-078	3.1	2	6.2	Medium	15-SANP-219	N.A.	4	N.A.	N.A.	15-SANP-302	N.A.	1	N.A.	N.A.
04-SANP-081	3.1	2	6.2	Medium	14-SANP-270	N.A.	4	N.A.	N.A.	15-SANP-303	N.A.	1	N.A.	N.A.
04-SANP-013	3.1	2	6.2	Medium	14-SANP-271	N.A.	4	N.A.	N.A.	15-SANP-304	N.A.	1	N.A.	N.A.
13-SANP-093	3.1	2	6.2	Medium	15-SANP-327	N.A.	4	N.A.	N.A.	16-SANP-125	N.A.	1	N.A.	N.A.
04-SANP-045	3.1	2	6.2	Medium	15-SANP-310	N.A.	4	N.A.	N.A.	16-SANP-126	N.A.	1	N.A.	N.A.
13-SANP-066	3.1	2	6.2	Medium	15-SANP-311	N.A.	4	N.A.	N.A.	16-SANP-127	N.A.	1	N.A.	N.A.
13-SANP-371	3.1	2	6.2	Medium	13-SANP-254	N.A.	4	N.A.	N.A.	16-SANP-128	N.A.	1	N.A.	N.A.
13-SANP-375	3.1	2	6.2	Medium	13-SANP-255	N.A.	4	N.A.	N.A.	16-SANP-129	N.A.	1	N.A.	N.A.
13-SANP-383	3.1	2	6.2	Medium	15-SANP-220	N.A.	4	N.A.	N.A.	16-SANP-130	N.A.	1	N.A.	N.A.
13-SANP-277	3.1	2	6.2	Medium	15-SANP-222	N.A.	4	N.A.	N.A.	16-SANP-131	N.A.	1	N.A.	N.A.
13-SANP-136	3.1	2	6.2	Medium	16-SANP-102	N.A.	4	N.A.	N.A.	16-SANP-132	N.A.	1	N.A.	N.A.
14-SANP-384	3.1	2	6.2	Medium	16-SANP-103	N.A.	4	N.A.	N.A.	13-SANP-337	N.A.	1	N.A.	N.A.
14-SANP-057	3.1	2	6.2	Medium	16-SANP-104	N.A.	4	N.A.	N.A.	13-SANP-338	N.A.	1	N.A.	N.A.
13-SANP-152	3.1	2	6.2	Medium	08-SANP-167	N.A.	4	N.A.	N.A.	16-SANP-186	N.A.	1	N.A.	N.A.
13-SANP-210	3.1	2	6.2	Medium	08-SANP-168	N.A.	4	N.A.	N.A.	16-SANP-187	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
04-SANP-011	3.1	2	6.2	Medium	15-SANP-326	N.A.	4	N.A.	N.A.	06-SANP-006	N.A.	1	N.A.	N.A.
14-SANP-117	3.1	2	6.2	Medium	08-SANP-228	N.A.	4	N.A.	N.A.	06-SANP-007	N.A.	1	N.A.	N.A.
13-SANP-147	3.1	2	6.2	Medium	08-SANP-229	N.A.	4	N.A.	N.A.	06-SANP-008	N.A.	1	N.A.	N.A.
04-SANP-022	3.1	2	6.2	Medium	13-SANP-253	N.A.	4	N.A.	N.A.	04-SANP-028	N.A.	1	N.A.	N.A.
14-SANP-222	3.1	2	6.2	Medium	15-SANP-281	N.A.	4	N.A.	N.A.	04-SANP-029	N.A.	1	N.A.	N.A.
14-SANP-223	3.1	2	6.2	Medium	15-SANP-282	N.A.	4	N.A.	N.A.	04-SANP-030	N.A.	1	N.A.	N.A.
14-SANP-224	3.1	2	6.2	Medium	15-SANP-287	N.A.	4	N.A.	N.A.	04-SANP-031	N.A.	1	N.A.	N.A.
11-SANP-067	3.1	2	6.2	Medium	08-SANP-251	N.A.	4	N.A.	N.A.	04-SANP-032	N.A.	1	N.A.	N.A.
11-SANP-206	3.1	2	6.2	Medium	15-SANP-312	N.A.	4	N.A.	N.A.	04-SANP-034	N.A.	1	N.A.	N.A.
11-SANP-209	3.1	2	6.2	Medium	15-SANP-313	N.A.	4	N.A.	N.A.	08-SANP-102	N.A.	1	N.A.	N.A.
02-SANP-037	3.1	2	6.2	Medium	15-SANP-307	N.A.	4	N.A.	N.A.	07-SANP-239	N.A.	1	N.A.	N.A.
01-SANP-189	3.1	2	6.2	Medium	15-SANP-308	N.A.	4	N.A.	N.A.	07-SANP-238	N.A.	1	N.A.	N.A.
01-SANP-113	3.1	2	6.2	Medium	15-SANP-309	N.A.	4	N.A.	N.A.	07-SANP-051	N.A.	1	N.A.	N.A.
01-SANP-088	3.1	2	6.2	Medium	15-SANP-135	N.A.	4	N.A.	N.A.	17-SANP-128	N.A.	1	N.A.	N.A.
01-SANP-039	3.1	2	6.2	Medium	15-SANP-136	N.A.	4	N.A.	N.A.	17-SANP-129	N.A.	1	N.A.	N.A.
11-SANP-032	3.1	2	6.2	Medium	08-SANP-250	N.A.	4	N.A.	N.A.	17-SANP-130	N.A.	1	N.A.	N.A.
01-SANP-042	3.1	2	6.2	Medium	14-SANP-100	N.A.	4	N.A.	N.A.	17-SANP-131	N.A.	1	N.A.	N.A.
01-SANP-188	3.1	2	6.2	Medium	08-SANP-247	N.A.	4	N.A.	N.A.	17-SANP-132	N.A.	1	N.A.	N.A.
11-SANP-221	3.1	2	6.2	Medium	08-SANP-248	N.A.	4	N.A.	N.A.	16-SANP-071	N.A.	1	N.A.	N.A.
11-SANP-170	3.1	2	6.2	Medium	08-SANP-249	N.A.	4	N.A.	N.A.	16-SANP-072	N.A.	1	N.A.	N.A.
14-SANP-107	2	3	6	Medium	15-SANP-289	N.A.	4	N.A.	N.A.	17-SANP-029	N.A.	1	N.A.	N.A.
11-SANP-152	2	3	6	Medium	15-SANP-290	N.A.	4	N.A.	N.A.	17-SANP-030	N.A.	1	N.A.	N.A.
11-SANP-185	2	3	6	Medium	15-SANP-291	N.A.	4	N.A.	N.A.	17-SANP-031	N.A.	1	N.A.	N.A.
11-SANP-154	2	3	6	Medium	15-SANP-292	N.A.	4	N.A.	N.A.	17-SANP-032	N.A.	1	N.A.	N.A.
10-SANP-097	3	2	6	Medium	11-SANP-156	N.A.	4	N.A.	N.A.	17-SANP-033	N.A.	1	N.A.	N.A.
10-SANP-098	3	2	6	Medium	12-SANP-173	N.A.	4	N.A.	N.A.	17-SANP-034	N.A.	1	N.A.	N.A.
02-SANP-170	3	2	6	Medium	02-SANP-117	N.A.	3	N.A.	N.A.	16-SANP-073	N.A.	1	N.A.	N.A.
10-SANP-095	3	2	6	Medium	04-SANP-053	N.A.	3	N.A.	N.A.	10-SANP-102	N.A.	1	N.A.	N.A.
11-SANP-078	3	2	6	Medium	04-SANP-054	N.A.	3	N.A.	N.A.	10-SANP-104	N.A.	1	N.A.	N.A.
13-SANP-281	3	2	6	Medium	14-SANP-334	N.A.	3	N.A.	N.A.	18-SANP-030	N.A.	1	N.A.	N.A.
10-SANP-058	3	2	6	Medium	17-SANP-070	N.A.	3	N.A.	N.A.	18-SANP-033	N.A.	1	N.A.	N.A.
10-SANP-067	3	2	6	Medium	08-SANP-023	N.A.	3	N.A.	N.A.	10-SANP-132	N.A.	1	N.A.	N.A.
10-SANP-069	3	2	6	Medium	08-SANP-024	N.A.	3	N.A.	N.A.	10-SANP-133	N.A.	1	N.A.	N.A.
10-SANP-070	3	2	6	Medium	08-SANP-025	N.A.	3	N.A.	N.A.	10-SANP-134	N.A.	1	N.A.	N.A.
10-SANP-071	3	2	6	Medium	02-SANP-250	N.A.	3	N.A.	N.A.	10-SANP-135	N.A.	1	N.A.	N.A.
10-SANP-076	3	2	6	Medium	07-SANP-081	N.A.	3	N.A.	N.A.	10-SANP-136	N.A.	1	N.A.	N.A.
10-SANP-077	3	2	6	Medium	08-SANP-256	N.A.	3	N.A.	N.A.	10-SANP-137	N.A.	1	N.A.	N.A.
13-SANP-286	3	2	6	Medium	08-SANP-257	N.A.	3	N.A.	N.A.	10-SANP-138	N.A.	1	N.A.	N.A.
10-SANP-205	3	2	6	Medium	11-SANP-165	N.A.	3	N.A.	N.A.	10-SANP-139	N.A.	1	N.A.	N.A.
14-SANP-302	3	2	6	Medium	11-SANP-166	N.A.	3	N.A.	N.A.	10-SANP-140	N.A.	1	N.A.	N.A.
14-SANP-303	3	2	6	Medium	11-SANP-167	N.A.	3	N.A.	N.A.	10-SANP-141	N.A.	1	N.A.	N.A.
14-SANP-305	3	2	6	Medium	08-SANP-244	N.A.	3	N.A.	N.A.	10-SANP-142	N.A.	1	N.A.	N.A.
14-SANP-309	3	2	6	Medium	08-SANP-245	N.A.	3	N.A.	N.A.	14-SANP-017	N.A.	1	N.A.	N.A.

Pipe Criticality and Business Risk Assessment

FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
10-SANP-215	3	2	6	Medium	14-SANP-272	N.A.	3	N.A.	N.A.	14-SANP-018	N.A.	1	N.A.	N.A.
17-SANP-123	3	2	6	Medium	14-SANP-273	N.A.	3	N.A.	N.A.	16-SANP-054	N.A.	1	N.A.	N.A.
09-SANP-287	3	2	6	Medium	08-SANP-174	N.A.	3	N.A.	N.A.	16-SANP-055	N.A.	1	N.A.	N.A.
13-SANP-083	3	2	6	Medium	08-SANP-175	N.A.	3	N.A.	N.A.	16-SANP-056	N.A.	1	N.A.	N.A.
09-SANP-066	3	2	6	Medium	08-SANP-176	N.A.	3	N.A.	N.A.	16-SANP-057	N.A.	1	N.A.	N.A.
14-SANP-113	3	2	6	Medium	08-SANP-177	N.A.	3	N.A.	N.A.	17-SANP-134	N.A.	1	N.A.	N.A.
09-SANP-139	3	2	6	Medium	17-SANP-069	N.A.	3	N.A.	N.A.	17-SANP-135	N.A.	1	N.A.	N.A.
13-SANP-372	3	2	6	Medium	04-SANP-042	N.A.	3	N.A.	N.A.	10-SANP-093	N.A.	1	N.A.	N.A.
13-SANP-386	3	2	6	Medium	02-SANP-218	N.A.	3	N.A.	N.A.	10-SANP-094	N.A.	1	N.A.	N.A.
13-SANP-387	3	2	6	Medium	04-SANP-055	N.A.	3	N.A.	N.A.	15-SANP-147	N.A.	1	N.A.	N.A.
13-SANP-134	3	2	6	Medium	13-SANP-264	N.A.	3	N.A.	N.A.	15-SANP-148	N.A.	1	N.A.	N.A.
14-SANP-177	3	2	6	Medium	14-SANP-211	N.A.	3	N.A.	N.A.	15-SANP-314	N.A.	1	N.A.	N.A.
04-SANP-026	3	2	6	Medium	04-SANP-056	N.A.	3	N.A.	N.A.	15-SANP-315	N.A.	1	N.A.	N.A.
04-SANP-027	3	2	6	Medium	04-SANP-057	N.A.	3	N.A.	N.A.	15-SANP-316	N.A.	1	N.A.	N.A.
09-SANP-065	3	2	6	Medium	08-SANP-169	N.A.	3	N.A.	N.A.	15-SANP-318	N.A.	1	N.A.	N.A.
10-SANP-216	3	2	6	Medium	08-SANP-170	N.A.	3	N.A.	N.A.	15-SANP-319	N.A.	1	N.A.	N.A.
09-SANP-033	3	2	6	Medium	08-SANP-171	N.A.	3	N.A.	N.A.	15-SANP-320	N.A.	1	N.A.	N.A.
02-SANP-323	3	2	6	Medium	08-SANP-172	N.A.	3	N.A.	N.A.	15-SANP-322	N.A.	1	N.A.	N.A.
02-SANP-324	3	2	6	Medium	08-SANP-173	N.A.	3	N.A.	N.A.	15-SANP-323	N.A.	1	N.A.	N.A.
02-SANP-326	3	2	6	Medium	17-SANP-237	N.A.	3	N.A.	N.A.	10-SANP-143	N.A.	1	N.A.	N.A.
02-SANP-327	3	2	6	Medium	13-SANP-024	N.A.	3	N.A.	N.A.	10-SANP-144	N.A.	1	N.A.	N.A.
02-SANP-262	3	2	6	Medium	13-SANP-223	N.A.	3	N.A.	N.A.	10-SANP-145	N.A.	1	N.A.	N.A.
09-SANP-076	3	2	6	Medium	14-SANP-314	N.A.	3	N.A.	N.A.	10-SANP-146	N.A.	1	N.A.	N.A.
09-SANP-077	3	2	6	Medium	18-SANP-082	N.A.	3	N.A.	N.A.	10-SANP-147	N.A.	1	N.A.	N.A.
09-SANP-197	3	2	6	Medium	18-SANP-083	N.A.	3	N.A.	N.A.	10-SANP-148	N.A.	1	N.A.	N.A.
14-SANP-214	3	2	6	Medium	16-SANP-076	N.A.	3	N.A.	N.A.	10-SANP-149	N.A.	1	N.A.	N.A.
08-SANP-240	3	2	6	Medium	16-SANP-077	N.A.	3	N.A.	N.A.	10-SANP-150	N.A.	1	N.A.	N.A.
08-SANP-241	3	2	6	Medium	08-SANP-252	N.A.	3	N.A.	N.A.	10-SANP-118	N.A.	1	N.A.	N.A.
14-SANP-295	3	2	6	Medium	08-SANP-253	N.A.	3	N.A.	N.A.	10-SANP-119	N.A.	1	N.A.	N.A.
14-SANP-055	3	2	6	Medium	08-SANP-254	N.A.	3	N.A.	N.A.	10-SANP-120	N.A.	1	N.A.	N.A.
10-SANP-109	3	2	6	Medium	08-SANP-255	N.A.	3	N.A.	N.A.	10-SANP-121	N.A.	1	N.A.	N.A.
13-SANP-209	3	2	6	Medium	16-SANP-018	N.A.	3	N.A.	N.A.	13-SANP-072	N.A.	1	N.A.	N.A.
08-SANP-242	3	2	6	Medium	16-SANP-019	N.A.	3	N.A.	N.A.	10-SANP-122	N.A.	1	N.A.	N.A.
09-SANP-091	3	2	6	Medium	16-SANP-020	N.A.	3	N.A.	N.A.	10-SANP-123	N.A.	1	N.A.	N.A.
09-SANP-092	3	2	6	Medium	13-SANP-222	N.A.	3	N.A.	N.A.	10-SANP-124	N.A.	1	N.A.	N.A.
09-SANP-094	3	2	6	Medium	18-SANP-057	N.A.	3	N.A.	N.A.	10-SANP-125	N.A.	1	N.A.	N.A.
13-SANP-364	3	2	6	Medium	17-SANP-071	N.A.	3	N.A.	N.A.	10-SANP-126	N.A.	1	N.A.	N.A.
13-SANP-148	3	2	6	Medium	08-SANP-258	N.A.	3	N.A.	N.A.	10-SANP-127	N.A.	1	N.A.	N.A.
14-SANP-377	3	2	6	Medium	08-SANP-259	N.A.	3	N.A.	N.A.	10-SANP-128	N.A.	1	N.A.	N.A.
10-SANP-096	3	2	6	Medium	08-SANP-031	N.A.	3	N.A.	N.A.	10-SANP-129	N.A.	1	N.A.	N.A.
12-SANP-127	3	2	6	Medium	07-SANP-060	N.A.	3	N.A.	N.A.	10-SANP-130	N.A.	1	N.A.	N.A.
10-SANP-100	3	2	6	Medium	07-SANP-061	N.A.	3	N.A.	N.A.	15-SANP-305	N.A.	1	N.A.	N.A.
10-SANP-159	3	2	6	Medium	07-SANP-062	N.A.	3	N.A.	N.A.	15-SANP-306	N.A.	1	N.A.	N.A.

Pipe Criticality and Business Risk Assessment

FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
10-SANP-160	3	2	6	Medium	08-SANP-149	N.A.	3	N.A.	N.A.	08-SANP-096	N.A.	1	N.A.	N.A.
08-SANP-202	3	2	6	Medium	08-SANP-150	N.A.	3	N.A.	N.A.	08-SANP-097	N.A.	1	N.A.	N.A.
08-SANP-203	3	2	6	Medium	17-SANP-147	N.A.	3	N.A.	N.A.	17-SANP-049	N.A.	1	N.A.	N.A.
08-SANP-204	3	2	6	Medium	11-SANP-001	N.A.	3	N.A.	N.A.	13-SANP-140	N.A.	1	N.A.	N.A.
08-SANP-205	3	2	6	Medium	14-SANP-099	N.A.	3	N.A.	N.A.	07-SANP-236	N.A.	1	N.A.	N.A.
08-SANP-206	3	2	6	Medium	11-SANP-146	N.A.	3	N.A.	N.A.	09-SANP-281	N.A.	1	N.A.	N.A.
08-SANP-207	3	2	6	Medium	07-SANP-036	N.A.	3	N.A.	N.A.	09-SANP-282	N.A.	1	N.A.	N.A.
08-SANP-208	3	2	6	Medium	11-SANP-139	N.A.	3	N.A.	N.A.	09-SANP-283	N.A.	1	N.A.	N.A.
02-SANP-217	3	2	6	Medium	08-SANP-133	N.A.	3	N.A.	N.A.	16-SANP-200	N.A.	1	N.A.	N.A.
10-SANP-199	3	2	6	Medium	08-SANP-134	N.A.	3	N.A.	N.A.	16-SANP-201	N.A.	1	N.A.	N.A.
10-SANP-200	3	2	6	Medium	08-SANP-135	N.A.	3	N.A.	N.A.	16-SANP-202	N.A.	1	N.A.	N.A.
10-SANP-201	3	2	6	Medium	08-SANP-136	N.A.	3	N.A.	N.A.	18-SANP-149	N.A.	1	N.A.	N.A.
11-SANP-094	3	2	6	Medium	08-SANP-151	N.A.	3	N.A.	N.A.	18-SANP-150	N.A.	1	N.A.	N.A.
11-SANP-054	3	2	6	Medium	08-SANP-043	N.A.	3	N.A.	N.A.	18-SANP-151	N.A.	1	N.A.	N.A.
02-SANP-171	3	2	6	Medium	16-SANP-016	N.A.	3	N.A.	N.A.	09-SANP-167	N.A.	1	N.A.	N.A.
01-SANP-126	3	2	6	Medium	16-SANP-017	N.A.	3	N.A.	N.A.	07-SANP-066	N.A.	1	N.A.	N.A.
01-SANP-127	3	2	6	Medium	13-SANP-288	N.A.	3	N.A.	N.A.	07-SANP-067	N.A.	1	N.A.	N.A.
01-SANP-158	3	2	6	Medium	13-SANP-289	N.A.	3	N.A.	N.A.	07-SANP-068	N.A.	1	N.A.	N.A.
01-SANP-144	3	2	6	Medium	18-SANP-059	N.A.	3	N.A.	N.A.	18-SANP-133	N.A.	1	N.A.	N.A.
01-SANP-174	3	2	6	Medium	17-SANP-200	N.A.	3	N.A.	N.A.	18-SANP-134	N.A.	1	N.A.	N.A.
11-SANP-027	3	2	6	Medium	08-SANP-083	N.A.	3	N.A.	N.A.	18-SANP-135	N.A.	1	N.A.	N.A.
11-SANP-028	3	2	6	Medium	08-SANP-084	N.A.	3	N.A.	N.A.	18-SANP-136	N.A.	1	N.A.	N.A.
11-SANP-029	3	2	6	Medium	08-SANP-085	N.A.	3	N.A.	N.A.	18-SANP-137	N.A.	1	N.A.	N.A.
02-SANP-138	3	2	6	Medium	08-SANP-086	N.A.	3	N.A.	N.A.	18-SANP-138	N.A.	1	N.A.	N.A.
01-SANP-093	3	2	6	Medium	08-SANP-087	N.A.	3	N.A.	N.A.	18-SANP-139	N.A.	1	N.A.	N.A.
01-SANP-150	3	2	6	Medium	08-SANP-092	N.A.	3	N.A.	N.A.	18-SANP-140	N.A.	1	N.A.	N.A.
02-SANP-206	3	2	6	Medium	13-SANP-275	N.A.	3	N.A.	N.A.	18-SANP-141	N.A.	1	N.A.	N.A.
11-SANP-056	3	2	6	Medium	14-SANP-283	N.A.	3	N.A.	N.A.	18-SANP-142	N.A.	1	N.A.	N.A.
11-SANP-025	3	2	6	Medium	08-SANP-062	N.A.	3	N.A.	N.A.	18-SANP-143	N.A.	1	N.A.	N.A.
11-SANP-005	3	2	6	Medium	18-SANP-084	N.A.	3	N.A.	N.A.	15-SANP-194	N.A.	1	N.A.	N.A.
11-SANP-006	3	2	6	Medium	08-SANP-246	N.A.	3	N.A.	N.A.	10-SANP-117	N.A.	1	N.A.	N.A.
11-SANP-007	3	2	6	Medium	11-SANP-036	N.A.	3	N.A.	N.A.	15-SANP-195	N.A.	1	N.A.	N.A.
11-SANP-017	3	2	6	Medium	13-SANP-215	N.A.	3	N.A.	N.A.	15-SANP-196	N.A.	1	N.A.	N.A.
11-SANP-222	3	2	6	Medium	11-SANP-123	N.A.	3	N.A.	N.A.	15-SANP-197	N.A.	1	N.A.	N.A.
13-SANP-403	3	2	6	Medium	14-SANP-341	N.A.	3	N.A.	N.A.	15-SANP-198	N.A.	1	N.A.	N.A.
17-SANP-244	3	2	6	Medium	08-SANP-116	N.A.	3	N.A.	N.A.	15-SANP-199	N.A.	1	N.A.	N.A.
02-SANP-340	3	2	6	Medium	08-SANP-117	N.A.	3	N.A.	N.A.	15-SANP-200	N.A.	1	N.A.	N.A.
11-SANP-125	3	2	6	Medium	08-SANP-120	N.A.	3	N.A.	N.A.	15-SANP-201	N.A.	1	N.A.	N.A.
11-SANP-102	3	2	6	Medium	08-SANP-124	N.A.	3	N.A.	N.A.	15-SANP-202	N.A.	1	N.A.	N.A.
11-SANP-171	3	2	6	Medium	08-SANP-125	N.A.	3	N.A.	N.A.	15-SANP-203	N.A.	1	N.A.	N.A.
11-SANP-103	3	2	6	Medium	08-SANP-126	N.A.	3	N.A.	N.A.	10-SANP-176	N.A.	1	N.A.	N.A.
14-SANP-319	2.8	2	5.6	Medium	08-SANP-127	N.A.	3	N.A.	N.A.	07-SANP-094	N.A.	1	N.A.	N.A.
17-SANP-241	2.8	2	5.6	Medium	08-SANP-128	N.A.	3	N.A.	N.A.	07-SANP-095	N.A.	1	N.A.	N.A.

Pipe Criticality and Business Risk Assessment

FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
17-SANP-242	2.8	2	5.6	Medium	08-SANP-129	N.A.	3	N.A.	N.A.	15-SANP-120	N.A.	1	N.A.	N.A.
11-SANP-126	2.8	2	5.6	Medium	18-SANP-058	N.A.	3	N.A.	N.A.	15-SANP-121	N.A.	1	N.A.	N.A.
02-SANP-134	2.7	2	5.4	Medium	07-SANP-086	N.A.	3	N.A.	N.A.	15-SANP-122	N.A.	1	N.A.	N.A.
01-SANP-131	2.7	2	5.4	Medium	07-SANP-087	N.A.	3	N.A.	N.A.	15-SANP-123	N.A.	1	N.A.	N.A.
02-SANP-233	2.7	2	5.4	Medium	07-SANP-088	N.A.	3	N.A.	N.A.	15-SANP-124	N.A.	1	N.A.	N.A.
08-SANP-289	5.3	1	5.3	Medium	13-SANP-149	N.A.	3	N.A.	N.A.	15-SANP-125	N.A.	1	N.A.	N.A.
16-SANP-087	2.6	2	5.2	Medium	13-SANP-150	N.A.	3	N.A.	N.A.	15-SANP-126	N.A.	1	N.A.	N.A.
13-SANP-272	2.6	2	5.2	Medium	14-SANP-144	N.A.	3	N.A.	N.A.	15-SANP-128	N.A.	1	N.A.	N.A.
10-SANP-048	2.6	2	5.2	Medium	10-SANP-165	N.A.	3	N.A.	N.A.	15-SANP-131	N.A.	1	N.A.	N.A.
14-SANP-217	2.6	2	5.2	Medium	02-SANP-219	N.A.	3	N.A.	N.A.	15-SANP-132	N.A.	1	N.A.	N.A.
10-SANP-079	2.6	2	5.2	Medium	14-SANP-141	N.A.	3	N.A.	N.A.	15-SANP-133	N.A.	1	N.A.	N.A.
02-SANP-084	5.1	1	5.1	Medium	08-SANP-196	N.A.	3	N.A.	N.A.	10-SANP-025	N.A.	1	N.A.	N.A.
09-SANP-307	5.1	1	5.1	Medium	08-SANP-197	N.A.	3	N.A.	N.A.	10-SANP-026	N.A.	1	N.A.	N.A.
11-SANP-143	5.1	1	5.1	Medium	08-SANP-198	N.A.	3	N.A.	N.A.	10-SANP-027	N.A.	1	N.A.	N.A.
13-SANP-132	5.1	1	5.1	Medium	08-SANP-199	N.A.	3	N.A.	N.A.	10-SANP-028	N.A.	1	N.A.	N.A.
09-SANP-261	5.1	1	5.1	Medium	14-SANP-102	N.A.	3	N.A.	N.A.	10-SANP-029	N.A.	1	N.A.	N.A.
08-SANP-269	5.1	1	5.1	Medium	07-SANP-083	N.A.	3	N.A.	N.A.	10-SANP-030	N.A.	1	N.A.	N.A.
10-SANP-182	5.1	1	5.1	Medium	07-SANP-084	N.A.	3	N.A.	N.A.	10-SANP-031	N.A.	1	N.A.	N.A.
13-SANP-156	5.1	1	5.1	Medium	02-SANP-059	N.A.	3	N.A.	N.A.	10-SANP-032	N.A.	1	N.A.	N.A.
14-SANP-184	5.1	1	5.1	Medium	02-SANP-060	N.A.	3	N.A.	N.A.	10-SANP-033	N.A.	1	N.A.	N.A.
14-SANP-370	5.1	1	5.1	Medium	02-SANP-061	N.A.	3	N.A.	N.A.	10-SANP-034	N.A.	1	N.A.	N.A.
14-SANP-229	5.1	1	5.1	Medium	10-SANP-131	N.A.	3	N.A.	N.A.	18-SANP-072	N.A.	1	N.A.	N.A.
02-SANP-119	5.1	1	5.1	Medium	02-SANP-058	N.A.	3	N.A.	N.A.	18-SANP-073	N.A.	1	N.A.	N.A.
11-SANP-164	5.1	1	5.1	Medium	11-SANP-214	N.A.	3	N.A.	N.A.	18-SANP-074	N.A.	1	N.A.	N.A.
02-SANP-001	5.1	1	5.1	Medium	11-SANP-198	N.A.	3	N.A.	N.A.	17-SANP-050	N.A.	1	N.A.	N.A.
13-SANP-274	2.5	2	5	Medium	11-SANP-199	N.A.	3	N.A.	N.A.	17-SANP-051	N.A.	1	N.A.	N.A.
14-SANP-114	2.5	2	5	Medium	11-SANP-131	N.A.	3	N.A.	N.A.	17-SANP-052	N.A.	1	N.A.	N.A.
13-SANP-211	2.5	2	5	Medium	01-SANP-108	N.A.	3	N.A.	N.A.	09-SANP-149	N.A.	1	N.A.	N.A.
09-SANP-306	2.5	2	5	Medium	10-SANP-081	N.A.	3	N.A.	N.A.	10-SANP-035	N.A.	1	N.A.	N.A.
13-SANP-358	2.5	2	5	Medium	01-SANP-173	N.A.	3	N.A.	N.A.	10-SANP-036	N.A.	1	N.A.	N.A.
14-SANP-372	2.5	2	5	Medium	01-SANP-198	N.A.	3	N.A.	N.A.	10-SANP-037	N.A.	1	N.A.	N.A.
11-SANP-031	2.5	2	5	Medium	02-SANP-055	N.A.	3	N.A.	N.A.	10-SANP-038	N.A.	1	N.A.	N.A.
02-SANP-046	2.5	2	5	Medium	02-SANP-057	N.A.	3	N.A.	N.A.	10-SANP-039	N.A.	1	N.A.	N.A.
08-SANP-028	5	1	5	Medium	13-SANP-401	N.A.	3	N.A.	N.A.	10-SANP-040	N.A.	1	N.A.	N.A.
10-SANP-206	2.4	2	4.8	Medium	16-SANP-205	N.A.	3	N.A.	N.A.	10-SANP-041	N.A.	1	N.A.	N.A.
13-SANP-151	2.4	2	4.8	Medium	16-SANP-206	N.A.	3	N.A.	N.A.	10-SANP-042	N.A.	1	N.A.	N.A.
14-SANP-216	2.4	2	4.8	Medium	16-SANP-158	N.A.	3	N.A.	N.A.	17-SANP-096	N.A.	1	N.A.	N.A.
02-SANP-195	2.4	2	4.8	Medium	11-SANP-120	N.A.	3	N.A.	N.A.	17-SANP-097	N.A.	1	N.A.	N.A.
01-SANP-130	2.4	2	4.8	Medium	11-SANP-121	N.A.	3	N.A.	N.A.	17-SANP-098	N.A.	1	N.A.	N.A.
01-SANP-041	2.4	2	4.8	Medium	11-SANP-122	N.A.	3	N.A.	N.A.	17-SANP-102	N.A.	1	N.A.	N.A.
01-SANP-207	2.4	2	4.8	Medium	11-SANP-168	N.A.	3	N.A.	N.A.	17-SANP-103	N.A.	1	N.A.	N.A.
02-SANP-116	2.3	2	4.6	Medium	11-SANP-169	N.A.	3	N.A.	N.A.	17-SANP-105	N.A.	1	N.A.	N.A.
14-SANP-357	2.3	2	4.6	Medium	11-SANP-026	N.A.	3	N.A.	N.A.	17-SANP-106	N.A.	1	N.A.	N.A.

Pipe Criticality and Business Risk Assessment

FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
04-SANP-084	2.3	2	4.6	Medium	15-SANP-019	N.A.	2	N.A.	N.A.	17-SANP-107	N.A.	1	N.A.	N.A.
14-SANP-376	2.3	2	4.6	Medium	15-SANP-026	N.A.	2	N.A.	N.A.	17-SANP-108	N.A.	1	N.A.	N.A.
08-SANP-211	2.3	2	4.6	Medium	15-SANP-027	N.A.	2	N.A.	N.A.	17-SANP-148	N.A.	1	N.A.	N.A.
11-SANP-079	2.3	2	4.6	Medium	15-SANP-028	N.A.	2	N.A.	N.A.	18-SANP-061	N.A.	1	N.A.	N.A.
02-SANP-151	2.3	2	4.6	Medium	15-SANP-032	N.A.	2	N.A.	N.A.	18-SANP-062	N.A.	1	N.A.	N.A.
01-SANP-177	2.3	2	4.6	Medium	15-SANP-033	N.A.	2	N.A.	N.A.	18-SANP-063	N.A.	1	N.A.	N.A.
11-SANP-023	2.3	2	4.6	Medium	13-SANP-022	N.A.	2	N.A.	N.A.	18-SANP-064	N.A.	1	N.A.	N.A.
17-SANP-245	2.3	2	4.6	Medium	15-SANP-037	N.A.	2	N.A.	N.A.	16-SANP-038	N.A.	1	N.A.	N.A.
11-SANP-119	2.3	2	4.6	Medium	15-SANP-050	N.A.	2	N.A.	N.A.	16-SANP-039	N.A.	1	N.A.	N.A.
04-SANP-077	2.2	2	4.4	Medium	15-SANP-051	N.A.	2	N.A.	N.A.	14-SANP-091	N.A.	1	N.A.	N.A.
10-SANP-207	2.2	2	4.4	Medium	15-SANP-052	N.A.	2	N.A.	N.A.	18-SANP-021	N.A.	1	N.A.	N.A.
13-SANP-183	2.2	2	4.4	Medium	15-SANP-053	N.A.	2	N.A.	N.A.	18-SANP-022	N.A.	1	N.A.	N.A.
09-SANP-254	2.2	2	4.4	Medium	15-SANP-066	N.A.	2	N.A.	N.A.	18-SANP-023	N.A.	1	N.A.	N.A.
11-SANP-106	2.2	2	4.4	Medium	15-SANP-067	N.A.	2	N.A.	N.A.	18-SANP-024	N.A.	1	N.A.	N.A.
14-SANP-180	2.2	2	4.4	Medium	15-SANP-076	N.A.	2	N.A.	N.A.	08-SANP-072	N.A.	1	N.A.	N.A.
14-SANP-297	2.2	2	4.4	Medium	15-SANP-077	N.A.	2	N.A.	N.A.	08-SANP-073	N.A.	1	N.A.	N.A.
13-SANP-017	2.2	2	4.4	Medium	09-SANP-002	N.A.	2	N.A.	N.A.	07-SANP-027	N.A.	1	N.A.	N.A.
04-SANP-012	2.2	2	4.4	Medium	16-SANP-004	N.A.	2	N.A.	N.A.	07-SANP-048	N.A.	1	N.A.	N.A.
13-SANP-129	2.2	2	4.4	Medium	16-SANP-005	N.A.	2	N.A.	N.A.	17-SANP-018	N.A.	1	N.A.	N.A.
14-SANP-252	2.2	2	4.4	Medium	16-SANP-006	N.A.	2	N.A.	N.A.	17-SANP-019	N.A.	1	N.A.	N.A.
11-SANP-245	2.2	2	4.4	Medium	16-SANP-007	N.A.	2	N.A.	N.A.	10-SANP-053	N.A.	1	N.A.	N.A.
11-SANP-215	2.2	2	4.4	Medium	15-SANP-099	N.A.	2	N.A.	N.A.	08-SANP-017	N.A.	1	N.A.	N.A.
02-SANP-145	2.2	2	4.4	Medium	15-SANP-102	N.A.	2	N.A.	N.A.	17-SANP-137	N.A.	1	N.A.	N.A.
11-SANP-232	2.2	2	4.4	Medium	15-SANP-107	N.A.	2	N.A.	N.A.	15-SANP-280	N.A.	1	N.A.	N.A.
01-SANP-087	2.2	2	4.4	Medium	02-SANP-006	N.A.	2	N.A.	N.A.	18-SANP-045	N.A.	1	N.A.	N.A.
02-SANP-220	2.2	2	4.4	Medium	16-SANP-199	N.A.	2	N.A.	N.A.	18-SANP-046	N.A.	1	N.A.	N.A.
11-SANP-016	2.2	2	4.4	Medium	14-SANP-327	N.A.	2	N.A.	N.A.	18-SANP-047	N.A.	1	N.A.	N.A.
14-SANP-009	4.3	1	4.3	Medium	08-SANP-286	N.A.	2	N.A.	N.A.	18-SANP-048	N.A.	1	N.A.	N.A.
14-SANP-360	4.3	1	4.3	Medium	08-SANP-287	N.A.	2	N.A.	N.A.	18-SANP-049	N.A.	1	N.A.	N.A.
09-SANP-049	4.3	1	4.3	Medium	08-SANP-288	N.A.	2	N.A.	N.A.	14-SANP-098	N.A.	1	N.A.	N.A.
04-SANP-073	2.1	2	4.2	Medium	15-SANP-346	N.A.	2	N.A.	N.A.	15-SANP-223	N.A.	1	N.A.	N.A.
11-SANP-050	2.1	2	4.2	Medium	17-SANP-218	N.A.	2	N.A.	N.A.	15-SANP-224	N.A.	1	N.A.	N.A.
14-SANP-088	2.1	2	4.2	Medium	17-SANP-219	N.A.	2	N.A.	N.A.	15-SANP-225	N.A.	1	N.A.	N.A.
13-SANP-287	2.1	2	4.2	Medium	17-SANP-220	N.A.	2	N.A.	N.A.	11-SANP-075	N.A.	1	N.A.	N.A.
13-SANP-315	2.1	2	4.2	Medium	18-SANP-124	N.A.	2	N.A.	N.A.	11-SANP-076	N.A.	1	N.A.	N.A.
14-SANP-308	2.1	2	4.2	Medium	18-SANP-125	N.A.	2	N.A.	N.A.	16-SANP-040	N.A.	1	N.A.	N.A.
14-SANP-274	2.1	2	4.2	Medium	18-SANP-126	N.A.	2	N.A.	N.A.	16-SANP-041	N.A.	1	N.A.	N.A.
14-SANP-275	2.1	2	4.2	Medium	18-SANP-127	N.A.	2	N.A.	N.A.	16-SANP-042	N.A.	1	N.A.	N.A.
13-SANP-260	2.1	2	4.2	Medium	18-SANP-128	N.A.	2	N.A.	N.A.	16-SANP-043	N.A.	1	N.A.	N.A.
14-SANP-310	2.1	2	4.2	Medium	02-SANP-318	N.A.	2	N.A.	N.A.	16-SANP-044	N.A.	1	N.A.	N.A.
13-SANP-065	2.1	2	4.2	Medium	02-SANP-108	N.A.	2	N.A.	N.A.	15-SANP-118	N.A.	1	N.A.	N.A.
13-SANP-374	2.1	2	4.2	Medium	02-SANP-109	N.A.	2	N.A.	N.A.	15-SANP-119	N.A.	1	N.A.	N.A.
13-SANP-382	2.1	2	4.2	Medium	16-SANP-014	N.A.	2	N.A.	N.A.	10-SANP-020	N.A.	1	N.A.	N.A.

Pipe Criticality and Business Risk Assessment

FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
13-SANP-384	2.1	2	4.2	Medium	08-SANP-280	N.A.	2	N.A.	N.A.	10-SANP-021	N.A.	1	N.A.	N.A.
13-SANP-208	2.1	2	4.2	Medium	08-SANP-281	N.A.	2	N.A.	N.A.	10-SANP-022	N.A.	1	N.A.	N.A.
14-SANP-218	2.1	2	4.2	Medium	08-SANP-282	N.A.	2	N.A.	N.A.	10-SANP-023	N.A.	1	N.A.	N.A.
04-SANP-017	2.1	2	4.2	Medium	16-SANP-048	N.A.	2	N.A.	N.A.	10-SANP-024	N.A.	1	N.A.	N.A.
14-SANP-350	2.1	2	4.2	Medium	14-SANP-087	N.A.	2	N.A.	N.A.	07-SANP-114	N.A.	1	N.A.	N.A.
13-SANP-359	2.1	2	4.2	Medium	17-SANP-140	N.A.	2	N.A.	N.A.	07-SANP-115	N.A.	1	N.A.	N.A.
13-SANP-361	2.1	2	4.2	Medium	17-SANP-141	N.A.	2	N.A.	N.A.	07-SANP-116	N.A.	1	N.A.	N.A.
04-SANP-047	2.1	2	4.2	Medium	17-SANP-143	N.A.	2	N.A.	N.A.	07-SANP-117	N.A.	1	N.A.	N.A.
13-SANP-271	2.1	2	4.2	Medium	17-SANP-144	N.A.	2	N.A.	N.A.	07-SANP-118	N.A.	1	N.A.	N.A.
14-SANP-116	2.1	2	4.2	Medium	08-SANP-108	N.A.	2	N.A.	N.A.	07-SANP-119	N.A.	1	N.A.	N.A.
09-SANP-138	2.1	2	4.2	Medium	08-SANP-295	N.A.	2	N.A.	N.A.	07-SANP-120	N.A.	1	N.A.	N.A.
09-SANP-264	2.1	2	4.2	Medium	14-SANP-331	N.A.	2	N.A.	N.A.	07-SANP-121	N.A.	1	N.A.	N.A.
14-SANP-101	2.1	2	4.2	Medium	14-SANP-346	N.A.	2	N.A.	N.A.	07-SANP-122	N.A.	1	N.A.	N.A.
14-SANP-253	2.1	2	4.2	Medium	14-SANP-347	N.A.	2	N.A.	N.A.	07-SANP-123	N.A.	1	N.A.	N.A.
11-SANP-211	2.1	2	4.2	Medium	01-SANP-102	N.A.	2	N.A.	N.A.	09-SANP-073	N.A.	1	N.A.	N.A.
11-SANP-085	2.1	2	4.2	Medium	02-SANP-047	N.A.	2	N.A.	N.A.	09-SANP-074	N.A.	1	N.A.	N.A.
11-SANP-091	2.1	2	4.2	Medium	02-SANP-048	N.A.	2	N.A.	N.A.	09-SANP-075	N.A.	1	N.A.	N.A.
11-SANP-066	2.1	2	4.2	Medium	02-SANP-049	N.A.	2	N.A.	N.A.	09-SANP-086	N.A.	1	N.A.	N.A.
11-SANP-053	2.1	2	4.2	Medium	02-SANP-111	N.A.	2	N.A.	N.A.	09-SANP-087	N.A.	1	N.A.	N.A.
11-SANP-225	2.1	2	4.2	Medium	02-SANP-112	N.A.	2	N.A.	N.A.	09-SANP-088	N.A.	1	N.A.	N.A.
01-SANP-133	2.1	2	4.2	Medium	18-SANP-115	N.A.	2	N.A.	N.A.	18-SANP-065	N.A.	1	N.A.	N.A.
01-SANP-094	2.1	2	4.2	Medium	18-SANP-116	N.A.	2	N.A.	N.A.	18-SANP-066	N.A.	1	N.A.	N.A.
11-SANP-096	2.1	2	4.2	Medium	18-SANP-117	N.A.	2	N.A.	N.A.	18-SANP-067	N.A.	1	N.A.	N.A.
11-SANP-015	2.1	2	4.2	Medium	18-SANP-118	N.A.	2	N.A.	N.A.	18-SANP-068	N.A.	1	N.A.	N.A.
11-SANP-046	2.1	2	4.2	Medium	16-SANP-051	N.A.	2	N.A.	N.A.	08-SANP-137	N.A.	1	N.A.	N.A.
11-SANP-219	2.1	2	4.2	Medium	18-SANP-145	N.A.	2	N.A.	N.A.	08-SANP-138	N.A.	1	N.A.	N.A.
17-SANP-246	2.1	2	4.2	Medium	17-SANP-152	N.A.	2	N.A.	N.A.	08-SANP-139	N.A.	1	N.A.	N.A.
17-SANP-249	2.1	2	4.2	Medium	18-SANP-146	N.A.	2	N.A.	N.A.	18-SANP-075	N.A.	1	N.A.	N.A.
04-SANP-112	2.1	2	4.2	Medium	10-SANP-213	N.A.	2	N.A.	N.A.	18-SANP-076	N.A.	1	N.A.	N.A.
14-SANP-010	4.2	1	4.2	Medium	15-SANP-206	N.A.	2	N.A.	N.A.	07-SANP-096	N.A.	1	N.A.	N.A.
14-SANP-028	4.2	1	4.2	Medium	07-SANP-012	N.A.	2	N.A.	N.A.	07-SANP-097	N.A.	1	N.A.	N.A.
13-SANP-033	4.2	1	4.2	Medium	07-SANP-014	N.A.	2	N.A.	N.A.	07-SANP-098	N.A.	1	N.A.	N.A.
09-SANP-285	4.2	1	4.2	Medium	08-SANP-156	N.A.	2	N.A.	N.A.	07-SANP-099	N.A.	1	N.A.	N.A.
14-SANP-230	4.2	1	4.2	Medium	08-SANP-157	N.A.	2	N.A.	N.A.	07-SANP-100	N.A.	1	N.A.	N.A.
01-SANP-182	4.2	1	4.2	Medium	08-SANP-158	N.A.	2	N.A.	N.A.	07-SANP-103	N.A.	1	N.A.	N.A.
09-SANP-245	4.2	1	4.2	Medium	08-SANP-159	N.A.	2	N.A.	N.A.	07-SANP-104	N.A.	1	N.A.	N.A.
11-SANP-038	1.4	3	4.2	Medium	08-SANP-160	N.A.	2	N.A.	N.A.	16-SANP-049	N.A.	1	N.A.	N.A.
14-SANP-002	4.1	1	4.1	Medium	08-SANP-161	N.A.	2	N.A.	N.A.	18-SANP-027	N.A.	1	N.A.	N.A.
14-SANP-361	4.1	1	4.1	Medium	08-SANP-162	N.A.	2	N.A.	N.A.	18-SANP-028	N.A.	1	N.A.	N.A.
11-SANP-142	4.1	1	4.1	Medium	08-SANP-163	N.A.	2	N.A.	N.A.	18-SANP-029	N.A.	1	N.A.	N.A.
14-SANP-031	4.1	1	4.1	Medium	08-SANP-164	N.A.	2	N.A.	N.A.	16-SANP-122	N.A.	1	N.A.	N.A.
09-SANP-037	4.1	1	4.1	Medium	08-SANP-187	N.A.	2	N.A.	N.A.	16-SANP-089	N.A.	1	N.A.	N.A.
02-SANP-163	4.1	1	4.1	Medium	08-SANP-188	N.A.	2	N.A.	N.A.	16-SANP-090	N.A.	1	N.A.	N.A.

Pipe Criticality and Business Risk Assessment

FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
01-SANP-090	4.1	1	4.1	Medium	08-SANP-189	N.A.	2	N.A.	N.A.	16-SANP-091	N.A.	1	N.A.	N.A.
12-SANP-011	4.1	1	4.1	Medium	08-SANP-191	N.A.	2	N.A.	N.A.	16-SANP-092	N.A.	1	N.A.	N.A.
09-SANP-105	4.1	1	4.1	Medium	08-SANP-192	N.A.	2	N.A.	N.A.	10-SANP-084	N.A.	1	N.A.	N.A.
12-SANP-072	4.1	1	4.1	Medium	08-SANP-193	N.A.	2	N.A.	N.A.	10-SANP-085	N.A.	1	N.A.	N.A.
13-SANP-283	4.1	1	4.1	Medium	08-SANP-194	N.A.	2	N.A.	N.A.	10-SANP-086	N.A.	1	N.A.	N.A.
14-SANP-311	4.1	1	4.1	Medium	08-SANP-195	N.A.	2	N.A.	N.A.	10-SANP-087	N.A.	1	N.A.	N.A.
13-SANP-061	4.1	1	4.1	Medium	14-SANP-267	N.A.	2	N.A.	N.A.	10-SANP-088	N.A.	1	N.A.	N.A.
13-SANP-391	4.1	1	4.1	Medium	14-SANP-268	N.A.	2	N.A.	N.A.	10-SANP-089	N.A.	1	N.A.	N.A.
12-SANP-005	4.1	1	4.1	Medium	14-SANP-269	N.A.	2	N.A.	N.A.	10-SANP-090	N.A.	1	N.A.	N.A.
14-SANP-181	4.1	1	4.1	Medium	15-SANP-343	N.A.	2	N.A.	N.A.	10-SANP-091	N.A.	1	N.A.	N.A.
02-SANP-015	4.1	1	4.1	Medium	15-SANP-344	N.A.	2	N.A.	N.A.	10-SANP-092	N.A.	1	N.A.	N.A.
02-SANP-016	4.1	1	4.1	Medium	15-SANP-345	N.A.	2	N.A.	N.A.	17-SANP-202	N.A.	1	N.A.	N.A.
09-SANP-195	4.1	1	4.1	Medium	16-SANP-108	N.A.	2	N.A.	N.A.	17-SANP-203	N.A.	1	N.A.	N.A.
09-SANP-253	4.1	1	4.1	Medium	15-SANP-328	N.A.	2	N.A.	N.A.	17-SANP-204	N.A.	1	N.A.	N.A.
13-SANP-218	4.1	1	4.1	Medium	18-SANP-105	N.A.	2	N.A.	N.A.	17-SANP-205	N.A.	1	N.A.	N.A.
14-SANP-186	4.1	1	4.1	Medium	17-SANP-067	N.A.	2	N.A.	N.A.	15-SANP-260	N.A.	1	N.A.	N.A.
14-SANP-159	4.1	1	4.1	Medium	17-SANP-068	N.A.	2	N.A.	N.A.	15-SANP-261	N.A.	1	N.A.	N.A.
14-SANP-289	4.1	1	4.1	Medium	13-SANP-006	N.A.	2	N.A.	N.A.	15-SANP-262	N.A.	1	N.A.	N.A.
12-SANP-060	4.1	1	4.1	Medium	13-SANP-007	N.A.	2	N.A.	N.A.	18-SANP-060	N.A.	1	N.A.	N.A.
12-SANP-061	4.1	1	4.1	Medium	08-SANP-014	N.A.	2	N.A.	N.A.	15-SANP-245	N.A.	1	N.A.	N.A.
14-SANP-369	4.1	1	4.1	Medium	08-SANP-015	N.A.	2	N.A.	N.A.	15-SANP-246	N.A.	1	N.A.	N.A.
02-SANP-120	4.1	1	4.1	Medium	08-SANP-016	N.A.	2	N.A.	N.A.	15-SANP-247	N.A.	1	N.A.	N.A.
11-SANP-151	4.1	1	4.1	Medium	07-SANP-017	N.A.	2	N.A.	N.A.	18-SANP-119	N.A.	1	N.A.	N.A.
11-SANP-058	4.1	1	4.1	Medium	07-SANP-018	N.A.	2	N.A.	N.A.	16-SANP-009	N.A.	1	N.A.	N.A.
01-SANP-052	4.1	1	4.1	Medium	17-SANP-210	N.A.	2	N.A.	N.A.	16-SANP-010	N.A.	1	N.A.	N.A.
11-SANP-202	4.1	1	4.1	Medium	17-SANP-211	N.A.	2	N.A.	N.A.	16-SANP-011	N.A.	1	N.A.	N.A.
02-SANP-309	4.1	1	4.1	Medium	17-SANP-212	N.A.	2	N.A.	N.A.	16-SANP-012	N.A.	1	N.A.	N.A.
02-SANP-312	4.1	1	4.1	Medium	17-SANP-213	N.A.	2	N.A.	N.A.	14-SANP-001	N.A.	1	N.A.	N.A.
01-SANP-184	4.1	1	4.1	Medium	02-SANP-070	N.A.	2	N.A.	N.A.	18-SANP-001	N.A.	1	N.A.	N.A.
02-SANP-062	4.1	1	4.1	Medium	02-SANP-071	N.A.	2	N.A.	N.A.	18-SANP-002	N.A.	1	N.A.	N.A.
11-SANP-008	4.1	1	4.1	Medium	02-SANP-076	N.A.	2	N.A.	N.A.	18-SANP-003	N.A.	1	N.A.	N.A.
11-SANP-009	4.1	1	4.1	Medium	02-SANP-240	N.A.	2	N.A.	N.A.	17-SANP-192	N.A.	1	N.A.	N.A.
09-SANP-244	4.1	1	4.1	Medium	16-SANP-119	N.A.	2	N.A.	N.A.	17-SANP-193	N.A.	1	N.A.	N.A.
13-SANP-011	1	4	4	Medium	16-SANP-120	N.A.	2	N.A.	N.A.	17-SANP-194	N.A.	1	N.A.	N.A.
13-SANP-256	1	4	4	Medium	09-SANP-156	N.A.	2	N.A.	N.A.	17-SANP-195	N.A.	1	N.A.	N.A.
13-SANP-028	1	4	4	Medium	10-SANP-232	N.A.	2	N.A.	N.A.	17-SANP-196	N.A.	1	N.A.	N.A.
13-SANP-252	1	4	4	Medium	11-SANP-194	N.A.	2	N.A.	N.A.	17-SANP-197	N.A.	1	N.A.	N.A.
13-SANP-351	1	4	4	Medium	17-SANP-109	N.A.	2	N.A.	N.A.	14-SANP-047	N.A.	1	N.A.	N.A.
13-SANP-012	1	4	4	Medium	17-SANP-110	N.A.	2	N.A.	N.A.	14-SANP-058	N.A.	1	N.A.	N.A.
13-SANP-400	1	4	4	Medium	14-SANP-209	N.A.	2	N.A.	N.A.	16-SANP-027	N.A.	1	N.A.	N.A.
02-SANP-135	2	2	4	Medium	14-SANP-210	N.A.	2	N.A.	N.A.	16-SANP-028	N.A.	1	N.A.	N.A.
11-SANP-207	2	2	4	Medium	08-SANP-063	N.A.	2	N.A.	N.A.	16-SANP-029	N.A.	1	N.A.	N.A.
11-SANP-208	2	2	4	Medium	08-SANP-064	N.A.	2	N.A.	N.A.	16-SANP-030	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
11-SANP-052	2	2	4	Medium	08-SANP-065	N.A.	2	N.A.	N.A.	16-SANP-031	N.A.	1	N.A.	N.A.
11-SANP-224	2	2	4	Medium	08-SANP-066	N.A.	2	N.A.	N.A.	15-SANP-114	N.A.	1	N.A.	N.A.
02-SANP-136	2	2	4	Medium	08-SANP-067	N.A.	2	N.A.	N.A.	15-SANP-115	N.A.	1	N.A.	N.A.
11-SANP-241	2	2	4	Medium	08-SANP-068	N.A.	2	N.A.	N.A.	16-SANP-032	N.A.	1	N.A.	N.A.
11-SANP-242	2	2	4	Medium	08-SANP-069	N.A.	2	N.A.	N.A.	16-SANP-033	N.A.	1	N.A.	N.A.
11-SANP-243	2	2	4	Medium	08-SANP-140	N.A.	2	N.A.	N.A.	16-SANP-034	N.A.	1	N.A.	N.A.
11-SANP-095	2	2	4	Medium	08-SANP-223	N.A.	2	N.A.	N.A.	16-SANP-035	N.A.	1	N.A.	N.A.
11-SANP-097	2	2	4	Medium	13-SANP-194	N.A.	2	N.A.	N.A.	15-SANP-116	N.A.	1	N.A.	N.A.
11-SANP-218	2	2	4	Medium	13-SANP-195	N.A.	2	N.A.	N.A.	15-SANP-117	N.A.	1	N.A.	N.A.
10-SANP-061	4	1	4	Medium	14-SANP-244	N.A.	2	N.A.	N.A.	13-SANP-078	N.A.	1	N.A.	N.A.
10-SANP-064	4	1	4	Medium	14-SANP-245	N.A.	2	N.A.	N.A.	13-SANP-079	N.A.	1	N.A.	N.A.
02-SANP-063	4	1	4	Medium	04-SANP-058	N.A.	2	N.A.	N.A.	15-SANP-185	N.A.	1	N.A.	N.A.
10-SANP-236	4	1	4	Medium	16-SANP-100	N.A.	2	N.A.	N.A.	15-SANP-191	N.A.	1	N.A.	N.A.
10-SANP-164	4	1	4	Medium	18-SANP-039	N.A.	2	N.A.	N.A.	15-SANP-192	N.A.	1	N.A.	N.A.
10-SANP-049	4	1	4	Medium	18-SANP-093	N.A.	2	N.A.	N.A.	15-SANP-193	N.A.	1	N.A.	N.A.
11-SANP-020	4	1	4	Medium	18-SANP-094	N.A.	2	N.A.	N.A.	16-SANP-114	N.A.	1	N.A.	N.A.
14-SANP-178	4	1	4	Medium	18-SANP-095	N.A.	2	N.A.	N.A.	16-SANP-115	N.A.	1	N.A.	N.A.
10-SANP-183	4	1	4	Medium	18-SANP-096	N.A.	2	N.A.	N.A.	16-SANP-116	N.A.	1	N.A.	N.A.
10-SANP-184	4	1	4	Medium	17-SANP-064	N.A.	2	N.A.	N.A.	13-SANP-153	N.A.	1	N.A.	N.A.
10-SANP-210	4	1	4	Medium	18-SANP-097	N.A.	2	N.A.	N.A.	13-SANP-157	N.A.	1	N.A.	N.A.
14-SANP-228	4	1	4	Medium	18-SANP-102	N.A.	2	N.A.	N.A.	13-SANP-160	N.A.	1	N.A.	N.A.
11-SANP-034	4	1	4	Medium	18-SANP-103	N.A.	2	N.A.	N.A.	15-SANP-241	N.A.	1	N.A.	N.A.
09-SANP-059	3.7	1	3.7	Medium	07-SANP-339	N.A.	2	N.A.	N.A.	15-SANP-242	N.A.	1	N.A.	N.A.
12-SANP-058	3.6	1	3.6	Medium	16-SANP-211	N.A.	2	N.A.	N.A.	15-SANP-243	N.A.	1	N.A.	N.A.
09-SANP-276	3.5	1	3.5	Medium	13-SANP-023	N.A.	2	N.A.	N.A.	15-SANP-244	N.A.	1	N.A.	N.A.
13-SANP-063	3.5	1	3.5	Medium	18-SANP-110	N.A.	2	N.A.	N.A.	08-SANP-055	N.A.	1	N.A.	N.A.
11-SANP-021	1.7	2	3.4	Medium	14-SANP-316	N.A.	2	N.A.	N.A.	11-SANP-080	N.A.	1	N.A.	N.A.
02-SANP-311	3.4	1	3.4	Medium	14-SANP-317	N.A.	2	N.A.	N.A.	10-SANP-167	N.A.	1	N.A.	N.A.
02-SANP-310	3.3	1	3.3	Medium	17-SANP-061	N.A.	2	N.A.	N.A.	08-SANP-110	N.A.	1	N.A.	N.A.
13-SANP-059	3.2	1	3.2	Medium	17-SANP-062	N.A.	2	N.A.	N.A.	18-SANP-085	N.A.	1	N.A.	N.A.
09-SANP-146	3.2	1	3.2	Medium	17-SANP-063	N.A.	2	N.A.	N.A.	18-SANP-086	N.A.	1	N.A.	N.A.
02-SANP-164	3.2	1	3.2	Medium	15-SANP-324	N.A.	2	N.A.	N.A.	18-SANP-087	N.A.	1	N.A.	N.A.
01-SANP-146	3.2	1	3.2	Medium	15-SANP-325	N.A.	2	N.A.	N.A.	18-SANP-088	N.A.	1	N.A.	N.A.
10-SANP-204	3.1	1	3.1	Medium	08-SANP-226	N.A.	2	N.A.	N.A.	18-SANP-089	N.A.	1	N.A.	N.A.
09-SANP-056	3.1	1	3.1	Medium	08-SANP-227	N.A.	2	N.A.	N.A.	18-SANP-090	N.A.	1	N.A.	N.A.
09-SANP-224	3.1	1	3.1	Medium	08-SANP-230	N.A.	2	N.A.	N.A.	18-SANP-091	N.A.	1	N.A.	N.A.
17-SANP-047	3.1	1	3.1	Medium	18-SANP-081	N.A.	2	N.A.	N.A.	18-SANP-092	N.A.	1	N.A.	N.A.
14-SANP-027	3.1	1	3.1	Medium	07-SANP-110	N.A.	2	N.A.	N.A.	06-SANP-003	N.A.	1	N.A.	N.A.
02-SANP-263	3.1	1	3.1	Medium	07-SANP-111	N.A.	2	N.A.	N.A.	06-SANP-004	N.A.	1	N.A.	N.A.
09-SANP-206	3.1	1	3.1	Medium	07-SANP-112	N.A.	2	N.A.	N.A.	06-SANP-005	N.A.	1	N.A.	N.A.
13-SANP-192	3.1	1	3.1	Medium	17-SANP-209	N.A.	2	N.A.	N.A.	15-SANP-329	N.A.	1	N.A.	N.A.
13-SANP-025	3.1	1	3.1	Medium	15-SANP-207	N.A.	2	N.A.	N.A.	16-SANP-111	N.A.	1	N.A.	N.A.
02-SANP-293	3.1	1	3.1	Medium	15-SANP-209	N.A.	2	N.A.	N.A.	16-SANP-112	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
13-SANP-057	3.1	1	3.1	Medium	16-SANP-074	N.A.	2	N.A.	N.A.	16-SANP-113	N.A.	1	N.A.	N.A.
13-SANP-133	3.1	1	3.1	Medium	16-SANP-075	N.A.	2	N.A.	N.A.	15-SANP-331	N.A.	1	N.A.	N.A.
13-SANP-070	3.1	1	3.1	Medium	08-SANP-224	N.A.	2	N.A.	N.A.	15-SANP-332	N.A.	1	N.A.	N.A.
13-SANP-050	3.1	1	3.1	Medium	08-SANP-225	N.A.	2	N.A.	N.A.	15-SANP-333	N.A.	1	N.A.	N.A.
10-SANP-045	3.1	1	3.1	Medium	07-SANP-082	N.A.	2	N.A.	N.A.	15-SANP-334	N.A.	1	N.A.	N.A.
10-SANP-181	3.1	1	3.1	Medium	13-SANP-068	N.A.	2	N.A.	N.A.	15-SANP-335	N.A.	1	N.A.	N.A.
14-SANP-386	3.1	1	3.1	Medium	16-SANP-193	N.A.	2	N.A.	N.A.	15-SANP-336	N.A.	1	N.A.	N.A.
10-SANP-044	3.1	1	3.1	Medium	08-SANP-130	N.A.	2	N.A.	N.A.	15-SANP-337	N.A.	1	N.A.	N.A.
09-SANP-032	3.1	1	3.1	Medium	17-SANP-055	N.A.	2	N.A.	N.A.	15-SANP-338	N.A.	1	N.A.	N.A.
13-SANP-269	3.1	1	3.1	Medium	17-SANP-058	N.A.	2	N.A.	N.A.	15-SANP-339	N.A.	1	N.A.	N.A.
12-SANP-065	3.1	1	3.1	Medium	15-SANP-226	N.A.	2	N.A.	N.A.	15-SANP-340	N.A.	1	N.A.	N.A.
14-SANP-373	3.1	1	3.1	Medium	08-SANP-030	N.A.	2	N.A.	N.A.	15-SANP-341	N.A.	1	N.A.	N.A.
13-SANP-046	3.1	1	3.1	Medium	08-SANP-115	N.A.	2	N.A.	N.A.	15-SANP-342	N.A.	1	N.A.	N.A.
02-SANP-014	3.1	1	3.1	Medium	08-SANP-100	N.A.	2	N.A.	N.A.	18-SANP-034	N.A.	1	N.A.	N.A.
11-SANP-150	3.1	1	3.1	Medium	08-SANP-101	N.A.	2	N.A.	N.A.	18-SANP-035	N.A.	1	N.A.	N.A.
01-SANP-095	3.1	1	3.1	Medium	16-SANP-097	N.A.	2	N.A.	N.A.	10-SANP-227	N.A.	1	N.A.	N.A.
11-SANP-057	3.1	1	3.1	Medium	16-SANP-098	N.A.	2	N.A.	N.A.	07-SANP-079	N.A.	1	N.A.	N.A.
11-SANP-011	3.1	1	3.1	Medium	13-SANP-380	N.A.	2	N.A.	N.A.	07-SANP-080	N.A.	1	N.A.	N.A.
11-SANP-272	3.1	1	3.1	Medium	13-SANP-381	N.A.	2	N.A.	N.A.	14-SANP-071	N.A.	1	N.A.	N.A.
08-SANP-165	1	3	3	Low	18-SANP-056	N.A.	2	N.A.	N.A.	14-SANP-072	N.A.	1	N.A.	N.A.
13-SANP-365	1	3	3	Low	16-SANP-123	N.A.	2	N.A.	N.A.	15-SANP-146	N.A.	1	N.A.	N.A.
13-SANP-262	1	3	3	Low	16-SANP-124	N.A.	2	N.A.	N.A.	16-SANP-063	N.A.	1	N.A.	N.A.
13-SANP-263	1	3	3	Low	13-SANP-339	N.A.	2	N.A.	N.A.	16-SANP-064	N.A.	1	N.A.	N.A.
13-SANP-249	1	3	3	Low	16-SANP-185	N.A.	2	N.A.	N.A.	16-SANP-065	N.A.	1	N.A.	N.A.
08-SANP-132	1	3	3	Low	16-SANP-188	N.A.	2	N.A.	N.A.	16-SANP-066	N.A.	1	N.A.	N.A.
13-SANP-367	1	3	3	Low	08-SANP-296	N.A.	2	N.A.	N.A.	16-SANP-067	N.A.	1	N.A.	N.A.
13-SANP-203	1	3	3	Low	08-SANP-268	N.A.	2	N.A.	N.A.	08-SANP-260	N.A.	1	N.A.	N.A.
13-SANP-204	1	3	3	Low	08-SANP-181	N.A.	2	N.A.	N.A.	08-SANP-261	N.A.	1	N.A.	N.A.
13-SANP-205	1	3	3	Low	08-SANP-182	N.A.	2	N.A.	N.A.	16-SANP-069	N.A.	1	N.A.	N.A.
13-SANP-206	1	3	3	Low	08-SANP-183	N.A.	2	N.A.	N.A.	16-SANP-070	N.A.	1	N.A.	N.A.
13-SANP-207	1	3	3	Low	08-SANP-184	N.A.	2	N.A.	N.A.	09-SANP-089	N.A.	1	N.A.	N.A.
08-SANP-034	1	3	3	Low	18-SANP-031	N.A.	2	N.A.	N.A.	15-SANP-164	N.A.	1	N.A.	N.A.
08-SANP-035	1	3	3	Low	18-SANP-032	N.A.	2	N.A.	N.A.	15-SANP-173	N.A.	1	N.A.	N.A.
08-SANP-036	1	3	3	Low	14-SANP-016	N.A.	2	N.A.	N.A.	15-SANP-174	N.A.	1	N.A.	N.A.
08-SANP-037	1	3	3	Low	15-SANP-317	N.A.	2	N.A.	N.A.	15-SANP-175	N.A.	1	N.A.	N.A.
08-SANP-038	1	3	3	Low	15-SANP-321	N.A.	2	N.A.	N.A.	15-SANP-176	N.A.	1	N.A.	N.A.
08-SANP-039	1	3	3	Low	09-SANP-102	N.A.	2	N.A.	N.A.	15-SANP-177	N.A.	1	N.A.	N.A.
08-SANP-297	1	3	3	Low	13-SANP-202	N.A.	2	N.A.	N.A.	15-SANP-178	N.A.	1	N.A.	N.A.
08-SANP-042	1	3	3	Low	13-SANP-141	N.A.	2	N.A.	N.A.	15-SANP-180	N.A.	1	N.A.	N.A.
08-SANP-118	1	3	3	Low	16-SANP-203	N.A.	2	N.A.	N.A.	18-SANP-069	N.A.	1	N.A.	N.A.
08-SANP-121	1	3	3	Low	16-SANP-204	N.A.	2	N.A.	N.A.	18-SANP-070	N.A.	1	N.A.	N.A.
13-SANP-119	1	3	3	Low	07-SANP-052	N.A.	2	N.A.	N.A.	18-SANP-071	N.A.	1	N.A.	N.A.
14-SANP-108	1	3	3	Low	07-SANP-053	N.A.	2	N.A.	N.A.	15-SANP-238	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
02-SANP-223	1	3	3	Low	07-SANP-054	N.A.	2	N.A.	N.A.	15-SANP-239	N.A.	1	N.A.	N.A.
08-SANP-041	1	3	3	Low	07-SANP-055	N.A.	2	N.A.	N.A.	15-SANP-240	N.A.	1	N.A.	N.A.
08-SANP-300	1	3	3	Low	07-SANP-056	N.A.	2	N.A.	N.A.	17-SANP-189	N.A.	1	N.A.	N.A.
02-SANP-337	1	3	3	Low	07-SANP-057	N.A.	2	N.A.	N.A.	17-SANP-190	N.A.	1	N.A.	N.A.
04-SANP-072	1.5	2	3	Low	07-SANP-058	N.A.	2	N.A.	N.A.	14-SANP-343	N.A.	1	N.A.	N.A.
14-SANP-296	1.5	2	3	Low	07-SANP-059	N.A.	2	N.A.	N.A.	17-SANP-020	N.A.	1	N.A.	N.A.
14-SANP-280	1.5	2	3	Low	07-SANP-063	N.A.	2	N.A.	N.A.	17-SANP-021	N.A.	1	N.A.	N.A.
09-SANP-007	3	1	3	Low	07-SANP-064	N.A.	2	N.A.	N.A.	17-SANP-022	N.A.	1	N.A.	N.A.
09-SANP-009	3	1	3	Low	07-SANP-065	N.A.	2	N.A.	N.A.	17-SANP-023	N.A.	1	N.A.	N.A.
09-SANP-010	3	1	3	Low	17-SANP-026	N.A.	2	N.A.	N.A.	04-SANP-005	N.A.	1	N.A.	N.A.
09-SANP-011	3	1	3	Low	17-SANP-027	N.A.	2	N.A.	N.A.	08-SANP-053	N.A.	1	N.A.	N.A.
09-SANP-012	3	1	3	Low	17-SANP-028	N.A.	2	N.A.	N.A.	04-SANP-025	N.A.	1	N.A.	N.A.
09-SANP-016	3	1	3	Low	10-SANP-217	N.A.	2	N.A.	N.A.	18-SANP-019	N.A.	1	N.A.	N.A.
02-SANP-267	3	1	3	Low	07-SANP-091	N.A.	2	N.A.	N.A.	18-SANP-020	N.A.	1	N.A.	N.A.
12-SANP-141	3	1	3	Low	07-SANP-092	N.A.	2	N.A.	N.A.	15-SANP-143	N.A.	1	N.A.	N.A.
12-SANP-142	3	1	3	Low	07-SANP-093	N.A.	2	N.A.	N.A.	14-SANP-153	N.A.	1	N.A.	N.A.
12-SANP-145	3	1	3	Low	14-SANP-246	N.A.	2	N.A.	N.A.	14-SANP-154	N.A.	1	N.A.	N.A.
14-SANP-007	3	1	3	Low	14-SANP-247	N.A.	2	N.A.	N.A.	14-SANP-155	N.A.	1	N.A.	N.A.
11-SANP-160	3	1	3	Low	15-SANP-129	N.A.	2	N.A.	N.A.	14-SANP-156	N.A.	1	N.A.	N.A.
14-SANP-362	3	1	3	Low	15-SANP-130	N.A.	2	N.A.	N.A.	14-SANP-157	N.A.	1	N.A.	N.A.
14-SANP-363	3	1	3	Low	15-SANP-134	N.A.	2	N.A.	N.A.	14-SANP-158	N.A.	1	N.A.	N.A.
14-SANP-368	3	1	3	Low	08-SANP-147	N.A.	2	N.A.	N.A.	18-SANP-120	N.A.	1	N.A.	N.A.
02-SANP-051	3	1	3	Low	08-SANP-148	N.A.	2	N.A.	N.A.	18-SANP-121	N.A.	1	N.A.	N.A.
13-SANP-131	3	1	3	Low	13-SANP-346	N.A.	2	N.A.	N.A.	18-SANP-122	N.A.	1	N.A.	N.A.
09-SANP-225	3	1	3	Low	13-SANP-347	N.A.	2	N.A.	N.A.	15-SANP-144	N.A.	1	N.A.	N.A.
14-SANP-029	3	1	3	Low	15-SANP-229	N.A.	2	N.A.	N.A.	07-SANP-105	N.A.	1	N.A.	N.A.
14-SANP-030	3	1	3	Low	15-SANP-230	N.A.	2	N.A.	N.A.	16-SANP-117	N.A.	1	N.A.	N.A.
09-SANP-256	3	1	3	Low	15-SANP-231	N.A.	2	N.A.	N.A.	15-SANP-249	N.A.	1	N.A.	N.A.
02-SANP-075	3	1	3	Low	17-SANP-093	N.A.	2	N.A.	N.A.	15-SANP-250	N.A.	1	N.A.	N.A.
02-SANP-174	3	1	3	Low	17-SANP-094	N.A.	2	N.A.	N.A.	15-SANP-251	N.A.	1	N.A.	N.A.
12-SANP-012	3	1	3	Low	17-SANP-095	N.A.	2	N.A.	N.A.	07-SANP-107	N.A.	1	N.A.	N.A.
08-SANP-098	3	1	3	Low	17-SANP-099	N.A.	2	N.A.	N.A.	08-SANP-145	N.A.	1	N.A.	N.A.
09-SANP-108	3	1	3	Low	17-SANP-100	N.A.	2	N.A.	N.A.	08-SANP-146	N.A.	1	N.A.	N.A.
09-SANP-202	3	1	3	Low	17-SANP-101	N.A.	2	N.A.	N.A.	16-SANP-068	N.A.	1	N.A.	N.A.
12-SANP-073	3	1	3	Low	17-SANP-104	N.A.	2	N.A.	N.A.	17-SANP-053	N.A.	1	N.A.	N.A.
12-SANP-079	3	1	3	Low	16-SANP-036	N.A.	2	N.A.	N.A.	14-SANP-146	N.A.	1	N.A.	N.A.
08-SANP-216	3	1	3	Low	16-SANP-037	N.A.	2	N.A.	N.A.	14-SANP-150	N.A.	1	N.A.	N.A.
08-SANP-217	3	1	3	Low	14-SANP-094	N.A.	2	N.A.	N.A.	14-SANP-151	N.A.	1	N.A.	N.A.
08-SANP-218	3	1	3	Low	08-SANP-071	N.A.	2	N.A.	N.A.	14-SANP-152	N.A.	1	N.A.	N.A.
08-SANP-219	3	1	3	Low	08-SANP-074	N.A.	2	N.A.	N.A.	07-SANP-037	N.A.	1	N.A.	N.A.
08-SANP-220	3	1	3	Low	08-SANP-075	N.A.	2	N.A.	N.A.	07-SANP-038	N.A.	1	N.A.	N.A.
10-SANP-168	3	1	3	Low	08-SANP-076	N.A.	2	N.A.	N.A.	07-SANP-039	N.A.	1	N.A.	N.A.
04-SANP-046	3	1	3	Low	08-SANP-077	N.A.	2	N.A.	N.A.	07-SANP-040	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
02-SANP-150	3	1	3	Low	08-SANP-078	N.A.	2	N.A.	N.A.	07-SANP-041	N.A.	1	N.A.	N.A.
08-SANP-026	3	1	3	Low	08-SANP-079	N.A.	2	N.A.	N.A.	07-SANP-042	N.A.	1	N.A.	N.A.
08-SANP-027	3	1	3	Low	08-SANP-080	N.A.	2	N.A.	N.A.	07-SANP-043	N.A.	1	N.A.	N.A.
12-SANP-010	3	1	3	Low	08-SANP-081	N.A.	2	N.A.	N.A.	07-SANP-069	N.A.	1	N.A.	N.A.
13-SANP-299	3	1	3	Low	08-SANP-082	N.A.	2	N.A.	N.A.	07-SANP-070	N.A.	1	N.A.	N.A.
09-SANP-286	3	1	3	Low	14-SANP-129	N.A.	2	N.A.	N.A.	07-SANP-071	N.A.	1	N.A.	N.A.
10-SANP-163	3	1	3	Low	14-SANP-130	N.A.	2	N.A.	N.A.	09-SANP-135	N.A.	1	N.A.	N.A.
13-SANP-390	3	1	3	Low	14-SANP-131	N.A.	2	N.A.	N.A.	17-SANP-227	N.A.	1	N.A.	N.A.
09-SANP-067	3	1	3	Low	14-SANP-132	N.A.	2	N.A.	N.A.	15-SANP-294	N.A.	1	N.A.	N.A.
17-SANP-124	3	1	3	Low	14-SANP-133	N.A.	2	N.A.	N.A.	15-SANP-295	N.A.	1	N.A.	N.A.
17-SANP-126	3	1	3	Low	16-SANP-099	N.A.	2	N.A.	N.A.	15-SANP-349	N.A.	1	N.A.	N.A.
17-SANP-127	3	1	3	Low	17-SANP-234	N.A.	2	N.A.	N.A.	15-SANP-350	N.A.	1	N.A.	N.A.
09-SANP-258	3	1	3	Low	13-SANP-053	N.A.	2	N.A.	N.A.	15-SANP-351	N.A.	1	N.A.	N.A.
09-SANP-199	3	1	3	Low	01-SANP-157	N.A.	2	N.A.	N.A.	15-SANP-352	N.A.	1	N.A.	N.A.
09-SANP-284	3	1	3	Low	02-SANP-260	N.A.	2	N.A.	N.A.	02-SANP-031	N.A.	1	N.A.	N.A.
09-SANP-111	3	1	3	Low	02-SANP-261	N.A.	2	N.A.	N.A.	11-SANP-074	N.A.	1	N.A.	N.A.
13-SANP-237	3	1	3	Low	07-SANP-113	N.A.	2	N.A.	N.A.	13-SANP-041	N.A.	1	N.A.	N.A.
12-SANP-055	3	1	3	Low	07-SANP-078	N.A.	2	N.A.	N.A.	13-SANP-125	N.A.	1	N.A.	N.A.
10-SANP-177	3	1	3	Low	05-SANP-004	N.A.	2	N.A.	N.A.	13-SANP-126	N.A.	1	N.A.	N.A.
02-SANP-322	3	1	3	Low	08-SANP-152	N.A.	2	N.A.	N.A.	13-SANP-127	N.A.	1	N.A.	N.A.
01-SANP-071	3	1	3	Low	08-SANP-153	N.A.	2	N.A.	N.A.	15-SANP-330	N.A.	1	N.A.	N.A.
12-SANP-024	3	1	3	Low	08-SANP-154	N.A.	2	N.A.	N.A.	08-SANP-044	N.A.	1	N.A.	N.A.
09-SANP-078	3	1	3	Low	08-SANP-214	N.A.	2	N.A.	N.A.	08-SANP-045	N.A.	1	N.A.	N.A.
09-SANP-079	3	1	3	Low	08-SANP-155	N.A.	2	N.A.	N.A.	10-SANP-054	N.A.	1	N.A.	N.A.
09-SANP-191	3	1	3	Low	08-SANP-141	N.A.	2	N.A.	N.A.	10-SANP-055	N.A.	1	N.A.	N.A.
09-SANP-192	3	1	3	Low	14-SANP-322	N.A.	2	N.A.	N.A.	10-SANP-056	N.A.	1	N.A.	N.A.
09-SANP-193	3	1	3	Low	16-SANP-145	N.A.	2	N.A.	N.A.	18-SANP-107	N.A.	1	N.A.	N.A.
14-SANP-215	3	1	3	Low	16-SANP-146	N.A.	2	N.A.	N.A.	18-SANP-108	N.A.	1	N.A.	N.A.
14-SANP-046	3	1	3	Low	16-SANP-147	N.A.	2	N.A.	N.A.	14-SANP-142	N.A.	1	N.A.	N.A.
13-SANP-154	3	1	3	Low	16-SANP-148	N.A.	2	N.A.	N.A.	07-SANP-044	N.A.	1	N.A.	N.A.
10-SANP-110	3	1	3	Low	16-SANP-150	N.A.	2	N.A.	N.A.	07-SANP-045	N.A.	1	N.A.	N.A.
12-SANP-081	3	1	3	Low	16-SANP-151	N.A.	2	N.A.	N.A.	07-SANP-046	N.A.	1	N.A.	N.A.
12-SANP-082	3	1	3	Low	16-SANP-152	N.A.	2	N.A.	N.A.	07-SANP-047	N.A.	1	N.A.	N.A.
09-SANP-072	3	1	3	Low	13-SANP-236	N.A.	2	N.A.	N.A.	10-SANP-161	N.A.	1	N.A.	N.A.
14-SANP-182	3	1	3	Low	07-SANP-101	N.A.	2	N.A.	N.A.	15-SANP-210	N.A.	1	N.A.	N.A.
14-SANP-183	3	1	3	Low	07-SANP-102	N.A.	2	N.A.	N.A.	15-SANP-211	N.A.	1	N.A.	N.A.
10-SANP-043	3	1	3	Low	14-SANP-291	N.A.	2	N.A.	N.A.	15-SANP-212	N.A.	1	N.A.	N.A.
09-SANP-026	3	1	3	Low	14-SANP-292	N.A.	2	N.A.	N.A.	15-SANP-213	N.A.	1	N.A.	N.A.
13-SANP-036	3	1	3	Low	08-SANP-292	N.A.	2	N.A.	N.A.	15-SANP-214	N.A.	1	N.A.	N.A.
14-SANP-340	3	1	3	Low	08-SANP-293	N.A.	2	N.A.	N.A.	18-SANP-036	N.A.	1	N.A.	N.A.
09-SANP-133	3	1	3	Low	08-SANP-294	N.A.	2	N.A.	N.A.	18-SANP-037	N.A.	1	N.A.	N.A.
09-SANP-134	3	1	3	Low	14-SANP-387	N.A.	2	N.A.	N.A.	18-SANP-038	N.A.	1	N.A.	N.A.
09-SANP-136	3	1	3	Low	08-SANP-234	N.A.	2	N.A.	N.A.	17-SANP-084	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
10-SANP-203	3	1	3	Low	08-SANP-235	N.A.	2	N.A.	N.A.	17-SANP-085	N.A.	1	N.A.	N.A.
13-SANP-047	3	1	3	Low	08-SANP-236	N.A.	2	N.A.	N.A.	17-SANP-086	N.A.	1	N.A.	N.A.
13-SANP-048	3	1	3	Low	08-SANP-237	N.A.	2	N.A.	N.A.	17-SANP-087	N.A.	1	N.A.	N.A.
13-SANP-122	3	1	3	Low	08-SANP-238	N.A.	2	N.A.	N.A.	16-SANP-140	N.A.	1	N.A.	N.A.
12-SANP-093	3	1	3	Low	08-SANP-239	N.A.	2	N.A.	N.A.	16-SANP-141	N.A.	1	N.A.	N.A.
12-SANP-094	3	1	3	Low	17-SANP-191	N.A.	2	N.A.	N.A.	08-SANP-178	N.A.	1	N.A.	N.A.
12-SANP-122	3	1	3	Low	17-SANP-198	N.A.	2	N.A.	N.A.	17-SANP-038	N.A.	1	N.A.	N.A.
10-SANP-197	3	1	3	Low	17-SANP-199	N.A.	2	N.A.	N.A.	11-SANP-178	N.A.	1	N.A.	N.A.
10-SANP-198	3	1	3	Low	17-SANP-201	N.A.	2	N.A.	N.A.	18-SANP-109	N.A.	1	N.A.	N.A.
11-SANP-149	3	1	3	Low	08-SANP-291	N.A.	2	N.A.	N.A.	17-SANP-138	N.A.	1	N.A.	N.A.
11-SANP-226	3	1	3	Low	14-SANP-050	N.A.	2	N.A.	N.A.	17-SANP-166	N.A.	1	N.A.	N.A.
11-SANP-162	3	1	3	Low	14-SANP-051	N.A.	2	N.A.	N.A.	09-SANP-239	N.A.	1	N.A.	N.A.
01-SANP-097	3	1	3	Low	08-SANP-088	N.A.	2	N.A.	N.A.	17-SANP-039	N.A.	1	N.A.	N.A.
02-SANP-266	3	1	3	Low	08-SANP-089	N.A.	2	N.A.	N.A.	16-SANP-079	N.A.	1	N.A.	N.A.
01-SANP-098	3	1	3	Low	08-SANP-090	N.A.	2	N.A.	N.A.	16-SANP-080	N.A.	1	N.A.	N.A.
11-SANP-010	3	1	3	Low	08-SANP-091	N.A.	2	N.A.	N.A.	16-SANP-081	N.A.	1	N.A.	N.A.
11-SANP-012	3	1	3	Low	08-SANP-093	N.A.	2	N.A.	N.A.	11-SANP-190	N.A.	1	N.A.	N.A.
02-SANP-334	3	1	3	Low	14-SANP-348	N.A.	2	N.A.	N.A.	01-SANP-105	N.A.	1	N.A.	N.A.
09-SANP-246	3	1	3	Low	14-SANP-349	N.A.	2	N.A.	N.A.	02-SANP-273	N.A.	1	N.A.	N.A.
09-SANP-247	3	1	3	Low	14-SANP-353	N.A.	2	N.A.	N.A.	08-SANP-233	N.A.	1	N.A.	N.A.
02-SANP-341	3	1	3	Low	16-SANP-184	N.A.	2	N.A.	N.A.	15-SANP-227	N.A.	1	N.A.	N.A.
01-SANP-206	3	1	3	Low	08-SANP-057	N.A.	2	N.A.	N.A.	16-SANP-105	N.A.	1	N.A.	N.A.
01-SANP-209	3	1	3	Low	08-SANP-058	N.A.	2	N.A.	N.A.	15-SANP-263	N.A.	1	N.A.	N.A.
14-SANP-365	2.9	1	2.9	Low	08-SANP-059	N.A.	2	N.A.	N.A.	15-SANP-264	N.A.	1	N.A.	N.A.
13-SANP-030	2.9	1	2.9	Low	08-SANP-060	N.A.	2	N.A.	N.A.	15-SANP-265	N.A.	1	N.A.	N.A.
14-SANP-298	1.4	2	2.8	Low	08-SANP-061	N.A.	2	N.A.	N.A.	15-SANP-266	N.A.	1	N.A.	N.A.
04-SANP-010	1.4	2	2.8	Low	15-SANP-184	N.A.	2	N.A.	N.A.	15-SANP-267	N.A.	1	N.A.	N.A.
12-SANP-043	2.7	1	2.7	Low	15-SANP-186	N.A.	2	N.A.	N.A.	15-SANP-268	N.A.	1	N.A.	N.A.
09-SANP-030	2.7	1	2.7	Low	15-SANP-187	N.A.	2	N.A.	N.A.	15-SANP-269	N.A.	1	N.A.	N.A.
01-SANP-151	2.7	1	2.7	Low	15-SANP-188	N.A.	2	N.A.	N.A.	15-SANP-270	N.A.	1	N.A.	N.A.
14-SANP-112	1.3	2	2.6	Low	15-SANP-189	N.A.	2	N.A.	N.A.	15-SANP-271	N.A.	1	N.A.	N.A.
12-SANP-113	2.6	1	2.6	Low	15-SANP-190	N.A.	2	N.A.	N.A.	15-SANP-272	N.A.	1	N.A.	N.A.
08-SANP-215	2.6	1	2.6	Low	13-SANP-159	N.A.	2	N.A.	N.A.	15-SANP-273	N.A.	1	N.A.	N.A.
13-SANP-270	2.6	1	2.6	Low	13-SANP-167	N.A.	2	N.A.	N.A.	15-SANP-274	N.A.	1	N.A.	N.A.
02-SANP-236	2.5	1	2.5	Low	08-SANP-054	N.A.	2	N.A.	N.A.	10-SANP-195	N.A.	1	N.A.	N.A.
09-SANP-110	2.5	1	2.5	Low	08-SANP-056	N.A.	2	N.A.	N.A.	10-SANP-196	N.A.	1	N.A.	N.A.
13-SANP-239	2.5	1	2.5	Low	09-SANP-153	N.A.	2	N.A.	N.A.	15-SANP-275	N.A.	1	N.A.	N.A.
12-SANP-059	2.5	1	2.5	Low	09-SANP-154	N.A.	2	N.A.	N.A.	15-SANP-276	N.A.	1	N.A.	N.A.
14-SANP-045	2.4	1	2.4	Low	09-SANP-155	N.A.	2	N.A.	N.A.	15-SANP-277	N.A.	1	N.A.	N.A.
02-SANP-032	2.4	1	2.4	Low	11-SANP-174	N.A.	2	N.A.	N.A.	11-SANP-148	N.A.	1	N.A.	N.A.
10-SANP-080	2.4	1	2.4	Low	15-SANP-165	N.A.	2	N.A.	N.A.	11-SANP-155	N.A.	1	N.A.	N.A.
14-SANP-226	2.4	1	2.4	Low	15-SANP-166	N.A.	2	N.A.	N.A.	11-SANP-051	N.A.	1	N.A.	N.A.
02-SANP-052	2.4	1	2.4	Low	15-SANP-167	N.A.	2	N.A.	N.A.	02-SANP-279	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
02-SANP-181	2.4	1	2.4	Low	15-SANP-168	N.A.	2	N.A.	N.A.	02-SANP-280	N.A.	1	N.A.	N.A.
02-SANP-207	2.4	1	2.4	Low	15-SANP-169	N.A.	2	N.A.	N.A.	02-SANP-281	N.A.	1	N.A.	N.A.
09-SANP-051	2.3	1	2.3	Low	15-SANP-170	N.A.	2	N.A.	N.A.	01-SANP-111	N.A.	1	N.A.	N.A.
13-SANP-173	2.3	1	2.3	Low	15-SANP-171	N.A.	2	N.A.	N.A.	01-SANP-112	N.A.	1	N.A.	N.A.
13-SANP-246	2.3	1	2.3	Low	15-SANP-172	N.A.	2	N.A.	N.A.	02-SANP-268	N.A.	1	N.A.	N.A.
09-SANP-278	2.3	1	2.3	Low	15-SANP-232	N.A.	2	N.A.	N.A.	02-SANP-269	N.A.	1	N.A.	N.A.
13-SANP-060	2.3	1	2.3	Low	15-SANP-233	N.A.	2	N.A.	N.A.	01-SANP-161	N.A.	1	N.A.	N.A.
12-SANP-140	2.3	1	2.3	Low	15-SANP-234	N.A.	2	N.A.	N.A.	01-SANP-044	N.A.	1	N.A.	N.A.
13-SANP-304	2.3	1	2.3	Low	15-SANP-235	N.A.	2	N.A.	N.A.	01-SANP-043	N.A.	1	N.A.	N.A.
12-SANP-091	2.3	1	2.3	Low	15-SANP-236	N.A.	2	N.A.	N.A.	01-SANP-045	N.A.	1	N.A.	N.A.
02-SANP-319	2.3	1	2.3	Low	15-SANP-237	N.A.	2	N.A.	N.A.	01-SANP-046	N.A.	1	N.A.	N.A.
13-SANP-298	2.3	1	2.3	Low	17-SANP-215	N.A.	2	N.A.	N.A.	01-SANP-047	N.A.	1	N.A.	N.A.
14-SANP-227	2.3	1	2.3	Low	17-SANP-216	N.A.	2	N.A.	N.A.	01-SANP-085	N.A.	1	N.A.	N.A.
09-SANP-241	2.3	1	2.3	Low	17-SANP-217	N.A.	2	N.A.	N.A.	01-SANP-084	N.A.	1	N.A.	N.A.
01-SANP-066	2.3	1	2.3	Low	14-SANP-342	N.A.	2	N.A.	N.A.	01-SANP-083	N.A.	1	N.A.	N.A.
02-SANP-203	2.3	1	2.3	Low	17-SANP-024	N.A.	2	N.A.	N.A.	01-SANP-058	N.A.	1	N.A.	N.A.
04-SANP-065	1.1	2	2.2	Low	17-SANP-025	N.A.	2	N.A.	N.A.	01-SANP-156	N.A.	1	N.A.	N.A.
04-SANP-075	1.1	2	2.2	Low	09-SANP-027	N.A.	2	N.A.	N.A.	01-SANP-059	N.A.	1	N.A.	N.A.
14-SANP-301	1.1	2	2.2	Low	17-SANP-186	N.A.	2	N.A.	N.A.	01-SANP-060	N.A.	1	N.A.	N.A.
14-SANP-307	1.1	2	2.2	Low	17-SANP-187	N.A.	2	N.A.	N.A.	01-SANP-015	N.A.	1	N.A.	N.A.
04-SANP-015	1.1	2	2.2	Low	17-SANP-188	N.A.	2	N.A.	N.A.	01-SANP-016	N.A.	1	N.A.	N.A.
04-SANP-094	1.1	2	2.2	Low	08-SANP-122	N.A.	2	N.A.	N.A.	01-SANP-162	N.A.	1	N.A.	N.A.
12-SANP-149	2.2	1	2.2	Low	08-SANP-123	N.A.	2	N.A.	N.A.	01-SANP-101	N.A.	1	N.A.	N.A.
02-SANP-099	2.2	1	2.2	Low	07-SANP-085	N.A.	2	N.A.	N.A.	01-SANP-018	N.A.	1	N.A.	N.A.
02-SANP-050	2.2	1	2.2	Low	07-SANP-089	N.A.	2	N.A.	N.A.	01-SANP-024	N.A.	1	N.A.	N.A.
09-SANP-266	2.2	1	2.2	Low	17-SANP-014	N.A.	2	N.A.	N.A.	01-SANP-193	N.A.	1	N.A.	N.A.
09-SANP-275	2.2	1	2.2	Low	17-SANP-015	N.A.	2	N.A.	N.A.	01-SANP-192	N.A.	1	N.A.	N.A.
09-SANP-277	2.2	1	2.2	Low	09-SANP-301	N.A.	2	N.A.	N.A.	01-SANP-194	N.A.	1	N.A.	N.A.
13-SANP-307	2.2	1	2.2	Low	09-SANP-302	N.A.	2	N.A.	N.A.	01-SANP-191	N.A.	1	N.A.	N.A.
09-SANP-068	2.2	1	2.2	Low	09-SANP-303	N.A.	2	N.A.	N.A.	16-SANP-008	N.A.	1	N.A.	N.A.
12-SANP-100	2.2	1	2.2	Low	14-SANP-285	N.A.	2	N.A.	N.A.	16-SANP-208	N.A.	1	N.A.	N.A.
09-SANP-165	2.2	1	2.2	Low	14-SANP-286	N.A.	2	N.A.	N.A.	16-SANP-209	N.A.	1	N.A.	N.A.
09-SANP-200	2.2	1	2.2	Low	14-SANP-290	N.A.	2	N.A.	N.A.	04-SANP-109	N.A.	1	N.A.	N.A.
13-SANP-082	2.2	1	2.2	Low	13-SANP-265	N.A.	2	N.A.	N.A.	04-SANP-110	N.A.	1	N.A.	N.A.
13-SANP-342	2.2	1	2.2	Low	13-SANP-266	N.A.	2	N.A.	N.A.	04-SANP-111	N.A.	1	N.A.	N.A.
09-SANP-041	2.2	1	2.2	Low	13-SANP-267	N.A.	2	N.A.	N.A.	04-SANP-107	N.A.	1	N.A.	N.A.
09-SANP-046	2.2	1	2.2	Low	08-SANP-142	N.A.	2	N.A.	N.A.	04-SANP-108	N.A.	1	N.A.	N.A.
14-SANP-053	2.2	1	2.2	Low	08-SANP-143	N.A.	2	N.A.	N.A.	18-SANP-187	N.A.	1	N.A.	N.A.
10-SANP-116	2.2	1	2.2	Low	08-SANP-144	N.A.	2	N.A.	N.A.	18-SANP-188	N.A.	1	N.A.	N.A.
14-SANP-174	2.2	1	2.2	Low	09-SANP-157	N.A.	2	N.A.	N.A.	18-SANP-189	N.A.	1	N.A.	N.A.
02-SANP-013	2.2	1	2.2	Low	09-SANP-158	N.A.	2	N.A.	N.A.	18-SANP-190	N.A.	1	N.A.	N.A.
09-SANP-296	2.2	1	2.2	Low	14-SANP-120	N.A.	2	N.A.	N.A.	18-SANP-191	N.A.	1	N.A.	N.A.
02-SANP-025	2.2	1	2.2	Low	14-SANP-125	N.A.	2	N.A.	N.A.	18-SANP-192	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
09-SANP-243	2.2	1	2.2	Low	14-SANP-143	N.A.	2	N.A.	N.A.	18-SANP-193	N.A.	1	N.A.	N.A.
02-SANP-287	2.2	1	2.2	Low	14-SANP-145	N.A.	2	N.A.	N.A.	18-SANP-194	N.A.	1	N.A.	N.A.
12-SANP-037	2.2	1	2.2	Low	13-SANP-146	N.A.	2	N.A.	N.A.	18-SANP-195	N.A.	1	N.A.	N.A.
01-SANP-053	2.2	1	2.2	Low	13-SANP-098	N.A.	2	N.A.	N.A.	18-SANP-196	N.A.	1	N.A.	N.A.
02-SANP-083	2.2	1	2.2	Low	13-SANP-118	N.A.	2	N.A.	N.A.	18-SANP-197	N.A.	1	N.A.	N.A.
12-SANP-144	2.1	1	2.1	Low	14-SANP-378	N.A.	2	N.A.	N.A.	18-SANP-198	N.A.	1	N.A.	N.A.
12-SANP-148	2.1	1	2.1	Low	17-SANP-221	N.A.	2	N.A.	N.A.	18-SANP-219	N.A.	1	N.A.	N.A.
14-SANP-006	2.1	1	2.1	Low	17-SANP-222	N.A.	2	N.A.	N.A.	18-SANP-218	N.A.	1	N.A.	N.A.
14-SANP-367	2.1	1	2.1	Low	17-SANP-223	N.A.	2	N.A.	N.A.	18-SANP-216	N.A.	1	N.A.	N.A.
09-SANP-159	2.1	1	2.1	Low	17-SANP-224	N.A.	2	N.A.	N.A.	18-SANP-217	N.A.	1	N.A.	N.A.
02-SANP-053	2.1	1	2.1	Low	17-SANP-225	N.A.	2	N.A.	N.A.	18-SANP-220	N.A.	1	N.A.	N.A.
02-SANP-054	2.1	1	2.1	Low	17-SANP-226	N.A.	2	N.A.	N.A.	18-SANP-221	N.A.	1	N.A.	N.A.
12-SANP-114	2.1	1	2.1	Low	01-SANP-077	N.A.	2	N.A.	N.A.	18-SANP-222	N.A.	1	N.A.	N.A.
12-SANP-116	2.1	1	2.1	Low	01-SANP-078	N.A.	2	N.A.	N.A.	18-SANP-167	N.A.	1	N.A.	N.A.
10-SANP-050	2.1	1	2.1	Low	11-SANP-061	N.A.	2	N.A.	N.A.	18-SANP-168	N.A.	1	N.A.	N.A.
10-SANP-051	2.1	1	2.1	Low	11-SANP-062	N.A.	2	N.A.	N.A.	18-SANP-169	N.A.	1	N.A.	N.A.
09-SANP-274	2.1	1	2.1	Low	18-SANP-129	N.A.	2	N.A.	N.A.	18-SANP-170	N.A.	1	N.A.	N.A.
17-SANP-075	2.1	1	2.1	Low	18-SANP-130	N.A.	2	N.A.	N.A.	18-SANP-171	N.A.	1	N.A.	N.A.
09-SANP-262	2.1	1	2.1	Low	18-SANP-131	N.A.	2	N.A.	N.A.	18-SANP-207	N.A.	1	N.A.	N.A.
13-SANP-309	2.1	1	2.1	Low	18-SANP-132	N.A.	2	N.A.	N.A.	18-SANP-206	N.A.	1	N.A.	N.A.
13-SANP-311	2.1	1	2.1	Low	18-SANP-106	N.A.	2	N.A.	N.A.	18-SANP-172	N.A.	1	N.A.	N.A.
09-SANP-148	2.1	1	2.1	Low	16-SANP-189	N.A.	2	N.A.	N.A.	18-SANP-173	N.A.	1	N.A.	N.A.
12-SANP-099	2.1	1	2.1	Low	17-SANP-214	N.A.	2	N.A.	N.A.	18-SANP-174	N.A.	1	N.A.	N.A.
13-SANP-238	2.1	1	2.1	Low	07-SANP-090	N.A.	2	N.A.	N.A.	18-SANP-213	N.A.	1	N.A.	N.A.
09-SANP-259	2.1	1	2.1	Low	18-SANP-123	N.A.	2	N.A.	N.A.	18-SANP-212	N.A.	1	N.A.	N.A.
13-SANP-341	2.1	1	2.1	Low	10-SANP-101	N.A.	2	N.A.	N.A.	18-SANP-211	N.A.	1	N.A.	N.A.
12-SANP-029	2.1	1	2.1	Low	10-SANP-162	N.A.	2	N.A.	N.A.	18-SANP-210	N.A.	1	N.A.	N.A.
09-SANP-044	2.1	1	2.1	Low	16-SANP-142	N.A.	2	N.A.	N.A.	18-SANP-209	N.A.	1	N.A.	N.A.
09-SANP-047	2.1	1	2.1	Low	08-SANP-179	N.A.	2	N.A.	N.A.	18-SANP-208	N.A.	1	N.A.	N.A.
12-SANP-156	2.1	1	2.1	Low	08-SANP-180	N.A.	2	N.A.	N.A.	18-SANP-165	N.A.	1	N.A.	N.A.
02-SANP-017	2.1	1	2.1	Low	08-SANP-200	N.A.	2	N.A.	N.A.	18-SANP-214	N.A.	1	N.A.	N.A.
09-SANP-081	2.1	1	2.1	Low	08-SANP-201	N.A.	2	N.A.	N.A.	18-SANP-215	N.A.	1	N.A.	N.A.
10-SANP-114	2.1	1	2.1	Low	01-SANP-030	N.A.	2	N.A.	N.A.	18-SANP-164	N.A.	1	N.A.	N.A.
12-SANP-040	2.1	1	2.1	Low	08-SANP-221	N.A.	2	N.A.	N.A.	18-SANP-163	N.A.	1	N.A.	N.A.
04-SANP-037	2.1	1	2.1	Low	08-SANP-222	N.A.	2	N.A.	N.A.	18-SANP-159	N.A.	1	N.A.	N.A.
14-SANP-160	2.1	1	2.1	Low	14-SANP-248	N.A.	2	N.A.	N.A.	18-SANP-160	N.A.	1	N.A.	N.A.
14-SANP-288	2.1	1	2.1	Low	14-SANP-254	N.A.	2	N.A.	N.A.	18-SANP-162	N.A.	1	N.A.	N.A.
12-SANP-070	2.1	1	2.1	Low	14-SANP-255	N.A.	2	N.A.	N.A.	18-SANP-161	N.A.	1	N.A.	N.A.
12-SANP-158	2.1	1	2.1	Low	01-SANP-002	N.A.	2	N.A.	N.A.	18-SANP-176	N.A.	1	N.A.	N.A.
14-SANP-231	2.1	1	2.1	Low	17-SANP-139	N.A.	2	N.A.	N.A.	18-SANP-177	N.A.	1	N.A.	N.A.
02-SANP-024	2.1	1	2.1	Low	16-SANP-153	N.A.	2	N.A.	N.A.	18-SANP-178	N.A.	1	N.A.	N.A.
09-SANP-240	2.1	1	2.1	Low	02-SANP-212	N.A.	2	N.A.	N.A.	18-SANP-180	N.A.	1	N.A.	N.A.
02-SANP-278	2.1	1	2.1	Low	02-SANP-213	N.A.	2	N.A.	N.A.	18-SANP-179	N.A.	1	N.A.	N.A.

Pipe Criticality and Business Risk Assessment

FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
17-SANP-040	2.1	1	2.1	Low	02-SANP-214	N.A.	2	N.A.	N.A.	18-SANP-225	N.A.	1	N.A.	N.A.
02-SANP-277	2.1	1	2.1	Low	16-SANP-082	N.A.	2	N.A.	N.A.	18-SANP-226	N.A.	1	N.A.	N.A.
01-SANP-014	2.1	1	2.1	Low	14-SANP-085	N.A.	2	N.A.	N.A.	18-SANP-227	N.A.	1	N.A.	N.A.
01-SANP-054	2.1	1	2.1	Low	14-SANP-086	N.A.	2	N.A.	N.A.	09-SANP-270	N.A.	1	N.A.	N.A.
01-SANP-056	2.1	1	2.1	Low	02-SANP-272	N.A.	2	N.A.	N.A.	09-SANP-271	N.A.	1	N.A.	N.A.
02-SANP-044	2.1	1	2.1	Low	15-SANP-278	N.A.	2	N.A.	N.A.	09-SANP-272	N.A.	1	N.A.	N.A.
01-SANP-124	2.1	1	2.1	Low	15-SANP-279	N.A.	2	N.A.	N.A.	09-SANP-248	N.A.	1	N.A.	N.A.
01-SANP-149	2.1	1	2.1	Low	11-SANP-213	N.A.	2	N.A.	N.A.	09-SANP-249	N.A.	1	N.A.	N.A.
01-SANP-068	2.1	1	2.1	Low	02-SANP-166	N.A.	2	N.A.	N.A.	09-SANP-250	N.A.	1	N.A.	N.A.
02-SANP-036	2.1	1	2.1	Low	11-SANP-059	N.A.	2	N.A.	N.A.	09-SANP-251	N.A.	1	N.A.	N.A.
02-SANP-115	1	2	2	Low	11-SANP-060	N.A.	2	N.A.	N.A.	07-SANP-283	N.A.	1	N.A.	N.A.
04-SANP-052	1	2	2	Low	11-SANP-063	N.A.	2	N.A.	N.A.	07-SANP-284	N.A.	1	N.A.	N.A.
04-SANP-051	1	2	2	Low	11-SANP-064	N.A.	2	N.A.	N.A.	12-SANP-163	N.A.	1	N.A.	N.A.
14-SANP-140	1	2	2	Low	11-SANP-065	N.A.	2	N.A.	N.A.	12-SANP-172	N.A.	1	N.A.	N.A.
02-SANP-103	1	2	2	Low	11-SANP-130	N.A.	2	N.A.	N.A.	12-SANP-164	N.A.	1	N.A.	N.A.
04-SANP-070	1	2	2	Low	02-SANP-208	N.A.	2	N.A.	N.A.	12-SANP-165	N.A.	1	N.A.	N.A.
08-SANP-232	1	2	2	Low	02-SANP-209	N.A.	2	N.A.	N.A.	07-SANP-285	N.A.	1	N.A.	N.A.
11-SANP-217	1	2	2	Low	02-SANP-210	N.A.	2	N.A.	N.A.	07-SANP-286	N.A.	1	N.A.	N.A.
13-SANP-282	1	2	2	Low	02-SANP-211	N.A.	2	N.A.	N.A.	07-SANP-294	N.A.	1	N.A.	N.A.
09-SANP-304	1	2	2	Low	01-SANP-075	N.A.	2	N.A.	N.A.	07-SANP-295	N.A.	1	N.A.	N.A.
09-SANP-305	1	2	2	Low	01-SANP-023	N.A.	2	N.A.	N.A.	07-SANP-298	N.A.	1	N.A.	N.A.
10-SANP-068	1	2	2	Low	01-SANP-004	N.A.	2	N.A.	N.A.	07-SANP-299	N.A.	1	N.A.	N.A.
04-SANP-076	1	2	2	Low	01-SANP-001	N.A.	2	N.A.	N.A.	07-SANP-291	N.A.	1	N.A.	N.A.
04-SANP-079	1	2	2	Low	01-SANP-003	N.A.	2	N.A.	N.A.	07-SANP-292	N.A.	1	N.A.	N.A.
04-SANP-080	1	2	2	Low	01-SANP-197	N.A.	2	N.A.	N.A.	07-SANP-296	N.A.	1	N.A.	N.A.
09-SANP-228	1	2	2	Low	01-SANP-070	N.A.	2	N.A.	N.A.	07-SANP-297	N.A.	1	N.A.	N.A.
09-SANP-229	1	2	2	Low	01-SANP-099	N.A.	2	N.A.	N.A.	07-SANP-293	N.A.	1	N.A.	N.A.
14-SANP-306	1	2	2	Low	01-SANP-079	N.A.	2	N.A.	N.A.	07-SANP-317	N.A.	1	N.A.	N.A.
04-SANP-014	1	2	2	Low	01-SANP-020	N.A.	2	N.A.	N.A.	07-SANP-318	N.A.	1	N.A.	N.A.
04-SANP-016	1	2	2	Low	01-SANP-200	N.A.	2	N.A.	N.A.	01-SANP-201	N.A.	1	N.A.	N.A.
13-SANP-105	1	2	2	Low	02-SANP-288	N.A.	2	N.A.	N.A.	12-SANP-160	N.A.	1	N.A.	N.A.
13-SANP-002	1	2	2	Low	01-SANP-116	N.A.	2	N.A.	N.A.	12-SANP-166	N.A.	1	N.A.	N.A.
13-SANP-005	1	2	2	Low	01-SANP-115	N.A.	2	N.A.	N.A.	12-SANP-161	N.A.	1	N.A.	N.A.
14-SANP-276	1	2	2	Low	01-SANP-137	N.A.	2	N.A.	N.A.	12-SANP-162	N.A.	1	N.A.	N.A.
14-SANP-278	1	2	2	Low	01-SANP-138	N.A.	2	N.A.	N.A.	12-SANP-168	N.A.	1	N.A.	N.A.
13-SANP-178	1	2	2	Low	01-SANP-139	N.A.	2	N.A.	N.A.	12-SANP-169	N.A.	1	N.A.	N.A.
13-SANP-181	1	2	2	Low	01-SANP-019	N.A.	2	N.A.	N.A.	12-SANP-170	N.A.	1	N.A.	N.A.
04-SANP-043	1	2	2	Low	02-SANP-178	N.A.	2	N.A.	N.A.	12-SANP-171	N.A.	1	N.A.	N.A.
04-SANP-044	1	2	2	Low	01-SANP-114	N.A.	2	N.A.	N.A.	07-SANP-322	N.A.	1	N.A.	N.A.
02-SANP-069	1	2	2	Low	01-SANP-140	N.A.	2	N.A.	N.A.	07-SANP-323	N.A.	1	N.A.	N.A.
13-SANP-261	1	2	2	Low	01-SANP-141	N.A.	2	N.A.	N.A.	07-SANP-324	N.A.	1	N.A.	N.A.
13-SANP-228	1	2	2	Low	01-SANP-160	N.A.	2	N.A.	N.A.	07-SANP-329	N.A.	1	N.A.	N.A.
13-SANP-193	1	2	2	Low	01-SANP-025	N.A.	2	N.A.	N.A.	07-SANP-330	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
13-SANP-197	1	2	2	Low	01-SANP-026	N.A.	2	N.A.	N.A.	07-SANP-331	N.A.	1	N.A.	N.A.
14-SANP-313	1	2	2	Low	01-SANP-027	N.A.	2	N.A.	N.A.	07-SANP-332	N.A.	1	N.A.	N.A.
08-SANP-231	1	2	2	Low	01-SANP-199	N.A.	2	N.A.	N.A.	07-SANP-333	N.A.	1	N.A.	N.A.
04-SANP-083	1	2	2	Low	01-SANP-142	N.A.	2	N.A.	N.A.	07-SANP-325	N.A.	1	N.A.	N.A.
04-SANP-085	1	2	2	Low	01-SANP-103	N.A.	2	N.A.	N.A.	07-SANP-326	N.A.	1	N.A.	N.A.
13-SANP-067	1	2	2	Low	02-SANP-110	N.A.	2	N.A.	N.A.	07-SANP-327	N.A.	1	N.A.	N.A.
13-SANP-056	1	2	2	Low	12-SANP-167	N.A.	2	N.A.	N.A.	07-SANP-328	N.A.	1	N.A.	N.A.
13-SANP-376	1	2	2	Low	01-SANP-202	N.A.	2	N.A.	N.A.	07-SANP-321	N.A.	1	N.A.	N.A.
13-SANP-377	1	2	2	Low	01-SANP-204	N.A.	2	N.A.	N.A.	07-SANP-319	N.A.	1	N.A.	N.A.
13-SANP-378	1	2	2	Low	01-SANP-203	N.A.	2	N.A.	N.A.	07-SANP-320	N.A.	1	N.A.	N.A.
13-SANP-379	1	2	2	Low	07-SANP-262	N.A.	2	N.A.	N.A.	07-SANP-287	N.A.	1	N.A.	N.A.
13-SANP-199	1	2	2	Low	07-SANP-263	N.A.	2	N.A.	N.A.	07-SANP-288	N.A.	1	N.A.	N.A.
13-SANP-200	1	2	2	Low	07-SANP-264	N.A.	2	N.A.	N.A.	07-SANP-289	N.A.	1	N.A.	N.A.
13-SANP-201	1	2	2	Low	07-SANP-265	N.A.	2	N.A.	N.A.	07-SANP-290	N.A.	1	N.A.	N.A.
13-SANP-080	1	2	2	Low	08-SANP-299	N.A.	2	N.A.	N.A.	07-SANP-300	N.A.	1	N.A.	N.A.
13-SANP-081	1	2	2	Low	01-SANP-205	N.A.	2	N.A.	N.A.	07-SANP-301	N.A.	1	N.A.	N.A.
13-SANP-345	1	2	2	Low	17-SANP-243	N.A.	2	N.A.	N.A.	07-SANP-302	N.A.	1	N.A.	N.A.
09-SANP-196	1	2	2	Low	17-SANP-248	N.A.	2	N.A.	N.A.	07-SANP-303	N.A.	1	N.A.	N.A.
14-SANP-323	1	2	2	Low	13-SANP-405	N.A.	2	N.A.	N.A.	07-SANP-304	N.A.	1	N.A.	N.A.
14-SANP-293	1	2	2	Low	13-SANP-406	N.A.	2	N.A.	N.A.	07-SANP-308	N.A.	1	N.A.	N.A.
14-SANP-294	1	2	2	Low	13-SANP-407	N.A.	2	N.A.	N.A.	07-SANP-307	N.A.	1	N.A.	N.A.
13-SANP-297	1	2	2	Low	13-SANP-408	N.A.	2	N.A.	N.A.	07-SANP-306	N.A.	1	N.A.	N.A.
04-SANP-060	1	2	2	Low	13-SANP-409	N.A.	2	N.A.	N.A.	07-SANP-309	N.A.	1	N.A.	N.A.
14-SANP-279	1	2	2	Low	13-SANP-410	N.A.	2	N.A.	N.A.	07-SANP-310	N.A.	1	N.A.	N.A.
04-SANP-018	1	2	2	Low	14-SANP-399	N.A.	2	N.A.	N.A.	07-SANP-311	N.A.	1	N.A.	N.A.
04-SANP-019	1	2	2	Low	16-SANP-207	N.A.	2	N.A.	N.A.	07-SANP-312	N.A.	1	N.A.	N.A.
04-SANP-020	1	2	2	Low	16-SANP-143	N.A.	2	N.A.	N.A.	07-SANP-313	N.A.	1	N.A.	N.A.
14-SANP-048	1	2	2	Low	16-SANP-144	N.A.	2	N.A.	N.A.	07-SANP-305	N.A.	1	N.A.	N.A.
14-SANP-049	1	2	2	Low	16-SANP-154	N.A.	2	N.A.	N.A.	07-SANP-314	N.A.	1	N.A.	N.A.
14-SANP-351	1	2	2	Low	16-SANP-155	N.A.	2	N.A.	N.A.	07-SANP-315	N.A.	1	N.A.	N.A.
14-SANP-282	1	2	2	Low	16-SANP-156	N.A.	2	N.A.	N.A.	07-SANP-316	N.A.	1	N.A.	N.A.
04-SANP-049	1	2	2	Low	16-SANP-157	N.A.	2	N.A.	N.A.	04-SANP-101	N.A.	1	N.A.	N.A.
08-SANP-243	1	2	2	Low	16-SANP-218	N.A.	2	N.A.	N.A.	04-SANP-095	N.A.	1	N.A.	N.A.
09-SANP-093	1	2	2	Low	11-SANP-127	N.A.	2	N.A.	N.A.	04-SANP-096	N.A.	1	N.A.	N.A.
09-SANP-095	1	2	2	Low	11-SANP-172	N.A.	2	N.A.	N.A.	04-SANP-097	N.A.	1	N.A.	N.A.
09-SANP-096	1	2	2	Low	11-SANP-117	N.A.	2	N.A.	N.A.	04-SANP-098	N.A.	1	N.A.	N.A.
13-SANP-349	1	2	2	Low	11-SANP-118	N.A.	2	N.A.	N.A.	07-SANP-259	N.A.	1	N.A.	N.A.
13-SANP-350	1	2	2	Low	11-SANP-271	N.A.	2	N.A.	N.A.	07-SANP-258	N.A.	1	N.A.	N.A.
13-SANP-356	1	2	2	Low	16-SANP-212	N.A.	2	N.A.	N.A.	07-SANP-257	N.A.	1	N.A.	N.A.
13-SANP-360	1	2	2	Low	16-SANP-213	N.A.	2	N.A.	N.A.	07-SANP-256	N.A.	1	N.A.	N.A.
13-SANP-363	1	2	2	Low	16-SANP-214	N.A.	2	N.A.	N.A.	07-SANP-255	N.A.	1	N.A.	N.A.
14-SANP-344	1	2	2	Low	01-SANP-210	N.A.	2	N.A.	N.A.	07-SANP-254	N.A.	1	N.A.	N.A.
14-SANP-345	1	2	2	Low	01-SANP-213	N.A.	2	N.A.	N.A.	07-SANP-253	N.A.	1	N.A.	N.A.

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FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
13-SANP-016	1	2	2	Low	01-SANP-214	N.A.	2	N.A.	N.A.	07-SANP-240	N.A.	1	N.A.	N.A.
04-SANP-006	1	2	2	Low	08-SANP-301	N.A.	2	N.A.	N.A.	07-SANP-241	N.A.	1	N.A.	N.A.
04-SANP-007	1	2	2	Low	17-SANP-276	N.A.	2	N.A.	N.A.	07-SANP-242	N.A.	1	N.A.	N.A.
04-SANP-008	1	2	2	Low	17-SANP-277	N.A.	2	N.A.	N.A.	07-SANP-245	N.A.	1	N.A.	N.A.
04-SANP-009	1	2	2	Low	17-SANP-278	N.A.	2	N.A.	N.A.	07-SANP-247	N.A.	1	N.A.	N.A.
13-SANP-294	1	2	2	Low	17-SANP-275	N.A.	2	N.A.	N.A.	07-SANP-248	N.A.	1	N.A.	N.A.
13-SANP-295	1	2	2	Low	17-SANP-274	N.A.	2	N.A.	N.A.	07-SANP-249	N.A.	1	N.A.	N.A.
13-SANP-034	1	2	2	Low	07-SANP-342	N.A.	2	N.A.	N.A.	07-SANP-250	N.A.	1	N.A.	N.A.
13-SANP-035	1	2	2	Low	04-SANP-102	N.A.	1	N.A.	N.A.	07-SANP-251	N.A.	1	N.A.	N.A.
04-SANP-041	1	2	2	Low	04-SANP-103	N.A.	1	N.A.	N.A.	07-SANP-252	N.A.	1	N.A.	N.A.
09-SANP-137	1	2	2	Low	04-SANP-104	N.A.	1	N.A.	N.A.	09-SANP-320	N.A.	1	N.A.	N.A.
13-SANP-117	1	2	2	Low	04-SANP-105	N.A.	1	N.A.	N.A.	17-SANP-238	N.A.	1	N.A.	N.A.
13-SANP-395	1	2	2	Low	04-SANP-106	N.A.	1	N.A.	N.A.	17-SANP-239	N.A.	1	N.A.	N.A.
13-SANP-128	1	2	2	Low	04-SANP-099	N.A.	1	N.A.	N.A.	17-SANP-240	N.A.	1	N.A.	N.A.
13-SANP-130	1	2	2	Low	04-SANP-100	N.A.	1	N.A.	N.A.	11-SANP-261	N.A.	1	N.A.	N.A.
04-SANP-023	1	2	2	Low	07-SANP-243	N.A.	1	N.A.	N.A.	17-SANP-251	N.A.	1	N.A.	N.A.
13-SANP-273	1	2	2	Low	07-SANP-244	N.A.	1	N.A.	N.A.	17-SANP-252	N.A.	1	N.A.	N.A.
08-SANP-272	1	2	2	Low	07-SANP-246	N.A.	1	N.A.	N.A.	17-SANP-253	N.A.	1	N.A.	N.A.
08-SANP-273	1	2	2	Low	07-SANP-272	N.A.	1	N.A.	N.A.	17-SANP-254	N.A.	1	N.A.	N.A.
08-SANP-274	1	2	2	Low	07-SANP-271	N.A.	1	N.A.	N.A.	17-SANP-255	N.A.	1	N.A.	N.A.
08-SANP-209	1	2	2	Low	07-SANP-270	N.A.	1	N.A.	N.A.	17-SANP-256	N.A.	1	N.A.	N.A.
08-SANP-210	1	2	2	Low	07-SANP-269	N.A.	1	N.A.	N.A.	17-SANP-257	N.A.	1	N.A.	N.A.
08-SANP-212	1	2	2	Low	07-SANP-268	N.A.	1	N.A.	N.A.	17-SANP-258	N.A.	1	N.A.	N.A.
14-SANP-110	1	2	2	Low	07-SANP-267	N.A.	1	N.A.	N.A.	17-SANP-259	N.A.	1	N.A.	N.A.
02-SANP-118	1	2	2	Low	07-SANP-266	N.A.	1	N.A.	N.A.	01-SANP-208	N.A.	1	N.A.	N.A.
02-SANP-004	1	2	2	Low	07-SANP-273	N.A.	1	N.A.	N.A.	16-SANP-160	N.A.	1	N.A.	N.A.
11-SANP-093	1	2	2	Low	07-SANP-274	N.A.	1	N.A.	N.A.	16-SANP-161	N.A.	1	N.A.	N.A.
11-SANP-144	1	2	2	Low	07-SANP-275	N.A.	1	N.A.	N.A.	16-SANP-162	N.A.	1	N.A.	N.A.
11-SANP-200	1	2	2	Low	07-SANP-276	N.A.	1	N.A.	N.A.	16-SANP-164	N.A.	1	N.A.	N.A.
11-SANP-019	1	2	2	Low	07-SANP-277	N.A.	1	N.A.	N.A.	16-SANP-159	N.A.	1	N.A.	N.A.
01-SANP-038	1	2	2	Low	07-SANP-278	N.A.	1	N.A.	N.A.	16-SANP-215	N.A.	1	N.A.	N.A.
01-SANP-049	1	2	2	Low	07-SANP-279	N.A.	1	N.A.	N.A.	16-SANP-216	N.A.	1	N.A.	N.A.
11-SANP-040	1	2	2	Low	07-SANP-280	N.A.	1	N.A.	N.A.	16-SANP-217	N.A.	1	N.A.	N.A.
02-SANP-194	1	2	2	Low	07-SANP-281	N.A.	1	N.A.	N.A.	11-SANP-262	N.A.	1	N.A.	N.A.
11-SANP-030	1	2	2	Low	07-SANP-282	N.A.	1	N.A.	N.A.	11-SANP-263	N.A.	1	N.A.	N.A.
02-SANP-091	1	2	2	Low	07-SANP-261	N.A.	1	N.A.	N.A.	11-SANP-264	N.A.	1	N.A.	N.A.
11-SANP-227	1	2	2	Low	07-SANP-260	N.A.	1	N.A.	N.A.	11-SANP-265	N.A.	1	N.A.	N.A.
11-SANP-228	1	2	2	Low	15-SANP-015	N.A.	1	N.A.	N.A.	11-SANP-266	N.A.	1	N.A.	N.A.
11-SANP-240	1	2	2	Low	15-SANP-016	N.A.	1	N.A.	N.A.	11-SANP-267	N.A.	1	N.A.	N.A.
02-SANP-172	1	2	2	Low	15-SANP-017	N.A.	1	N.A.	N.A.	11-SANP-268	N.A.	1	N.A.	N.A.
01-SANP-006	1	2	2	Low	15-SANP-020	N.A.	1	N.A.	N.A.	11-SANP-269	N.A.	1	N.A.	N.A.
01-SANP-091	1	2	2	Low	15-SANP-021	N.A.	1	N.A.	N.A.	11-SANP-270	N.A.	1	N.A.	N.A.
01-SANP-092	1	2	2	Low	15-SANP-022	N.A.	1	N.A.	N.A.	15-SANP-354	N.A.	1	N.A.	N.A.

Pipe Criticality and Business Risk Assessment

FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity	FACILITYID	Overall PoF	CoF	BRE	Severity
01-SANP-086	1	2	2	Low	15-SANP-023	N.A.	1	N.A.	N.A.	01-SANP-211	N.A.	1	N.A.	N.A.
11-SANP-024	1	2	2	Low	15-SANP-024	N.A.	1	N.A.	N.A.	01-SANP-212	N.A.	1	N.A.	N.A.
11-SANP-098	1	2	2	Low	15-SANP-025	N.A.	1	N.A.	N.A.	08-SANP-302	N.A.	1	N.A.	N.A.
11-SANP-013	1	2	2	Low	15-SANP-029	N.A.	1	N.A.	N.A.	17-SANP-279	N.A.	1	N.A.	N.A.
11-SANP-014	1	2	2	Low	15-SANP-030	N.A.	1	N.A.	N.A.	17-SANP-271	N.A.	1	N.A.	N.A.
11-SANP-018	1	2	2	Low	15-SANP-031	N.A.	1	N.A.	N.A.	17-SANP-260	N.A.	1	N.A.	N.A.
11-SANP-220	1	2	2	Low	15-SANP-034	N.A.	1	N.A.	N.A.	17-SANP-267	N.A.	1	N.A.	N.A.
14-SANP-364	2	1	2	Low	15-SANP-036	N.A.	1	N.A.	N.A.	17-SANP-269	N.A.	1	N.A.	N.A.
14-SANP-185	2	1	2	Low	16-SANP-001	N.A.	1	N.A.	N.A.	17-SANP-270	N.A.	1	N.A.	N.A.
14-SANP-366	1.9	1	1.9	Low	16-SANP-002	N.A.	1	N.A.	N.A.	17-SANP-268	N.A.	1	N.A.	N.A.
14-SANP-179	1.2	1	1.2	Low	16-SANP-003	N.A.	1	N.A.	N.A.	17-SANP-266	N.A.	1	N.A.	N.A.
12-SANP-121	1.1	1	1.1	Low	10-SANP-001	N.A.	1	N.A.	N.A.	17-SANP-265	N.A.	1	N.A.	N.A.
13-SANP-257	1.1	1	1.1	Low	10-SANP-002	N.A.	1	N.A.	N.A.	17-SANP-264	N.A.	1	N.A.	N.A.
10-SANP-108	1.1	1	1.1	Low	10-SANP-003	N.A.	1	N.A.	N.A.	17-SANP-263	N.A.	1	N.A.	N.A.
09-SANP-147	1.1	1	1.1	Low	10-SANP-004	N.A.	1	N.A.	N.A.	17-SANP-262	N.A.	1	N.A.	N.A.
09-SANP-162	1.1	1	1.1	Low	10-SANP-005	N.A.	1	N.A.	N.A.	17-SANP-261	N.A.	1	N.A.	N.A.
12-SANP-056	1.1	1	1.1	Low	15-SANP-138	N.A.	1	N.A.	N.A.	17-SANP-272	N.A.	1	N.A.	N.A.
01-SANP-061	1.1	1	1.1	Low	15-SANP-139	N.A.	1	N.A.	N.A.	17-SANP-273	N.A.	1	N.A.	N.A.
09-SANP-008	1	1	1	Low	15-SANP-140	N.A.	1	N.A.	N.A.	07-SANP-340	N.A.	1	N.A.	N.A.
09-SANP-013	1	1	1	Low	15-SANP-141	N.A.	1	N.A.	N.A.	07-SANP-341	N.A.	1	N.A.	N.A.
09-SANP-014	1	1	1	Low	15-SANP-142	N.A.	1	N.A.	N.A.	07-SANP-343	N.A.	1	N.A.	N.A.
09-SANP-015	1	1	1	Low	14-SANP-035	N.A.	1	N.A.	N.A.	07-SANP-344	N.A.	1	N.A.	N.A.
09-SANP-017	1	1	1	Low	14-SANP-036	N.A.	1	N.A.	N.A.	07-SANP-345	N.A.	1	N.A.	N.A.
09-SANP-018	1	1	1	Low	10-SANP-009	N.A.	1	N.A.	N.A.	07-SANP-346	N.A.	1	N.A.	N.A.
09-SANP-019	1	1	1	Low	10-SANP-010	N.A.	1	N.A.	N.A.	07-SANP-347	N.A.	1	N.A.	N.A.
09-SANP-020	1	1	1	Low	10-SANP-011	N.A.	1	N.A.	N.A.	07-SANP-348	N.A.	1	N.A.	N.A.
09-SANP-021	1	1	1	Low	10-SANP-012	N.A.	1	N.A.	N.A.	07-SANP-349	N.A.	1	N.A.	N.A.
09-SANP-022	1	1	1	Low	10-SANP-013	N.A.	1	N.A.	N.A.	07-SANP-350	N.A.	1	N.A.	N.A.
09-SANP-023	1	1	1	Low	10-SANP-014	N.A.	1	N.A.	N.A.	07-SANP-351	N.A.	1	N.A.	N.A.
09-SANP-024	1	1	1	Low	10-SANP-015	N.A.	1	N.A.	N.A.	07-SANP-352	N.A.	1	N.A.	N.A.
09-SANP-025	1	1	1	Low	15-SANP-038	N.A.	1	N.A.	N.A.	07-SANP-353	N.A.	1	N.A.	N.A.
01-SANP-009	1	1	1	Low	07-SANP-354	N.A.	1	N.A.	N.A.					

Appendix C: Pump Station Evaluation

Waste Water Vertical Assets: Lift Station Asset Summary

Category	Location	Asset	Quantity	Date Installed	Age (yrs)	Useful Life (yrs)	Remaining Useful Life (yrs)	Estimated Cost to Replace (\$\$)
Lift Station	Beacon	Level trans. - Conductivity probe	1	2014	4	10	6	\$3,000
Lift Station	Beacon	Level trans. - Floats	2	2014	4	10	6	\$1,000
Lift Station	Haggerty	Level trans. - Conductivity probe	1	2014	4	10	6	\$3,000
Lift Station	Haggerty	Level trans. - Floats	2	2014	4	10	6	\$1,000
Lift Station	Beacon	Control Panel PLC/SCADA	1	2014	4	15	11	\$10,000
Lift Station	Beacon	Vent Fan & Louver Class 1 Div 2	1	2014	4	15	11	\$6,000
Lift Station	Beacon	Vent Fan & Louver	1	2014	4	15	11	\$3,000
Lift Station	Beacon	Motor Starter - Soft Start	2	2014	4	15	11	\$4,000
Lift Station	Haggerty	Control Panel PLC/SCADA	1	2014	4	15	11	\$10,000
Lift Station	Haggerty	Vent Fan & Louver	1	2014	4	15	11	\$6,000
Lift Station	Haggerty	Vent Fan & Louver Class 1 Div 2	1	2014	4	15	11	\$3,000
Lift Station	Haggerty	Motor Starter - Soft Start	2	2014	4	15	11	\$4,000
Lift Station	Beacon	Self prime centrifugal	2	2014	4	20	16	\$20,000
Lift Station	Beacon	Transformer	1	2014	4	20	16	\$1,500
Lift Station	Beacon	Unit Heater - Electric	1	2014	4	20	16	\$2,000
Lift Station	Beacon	Unit Heater - Electric Class 1 Div 2	1	2014	4	20	16	\$10,000
Lift Station	Haggerty	Self prime centrifugal	2	2014	4	20	16	\$30,000
Lift Station	Haggerty	Transformer	1	2014	4	20	16	\$1,500
Lift Station	Haggerty	Unit Heater - Electric	1	2014	4	20	16	\$2,000
Lift Station	Haggerty	Unit Heater - Electric Class 1 Div 2	1	2014	4	20	16	\$10,000
Lift Station	Beacon	Generator & ATS	1	2014	4	25	21	\$40,000
Lift Station	Haggerty	Generator & ATS	1	2014	4	25	21	\$40,000
Lift Station	Beacon	Valve - Check	2	2014	4	35	31	\$5,000
Lift Station	Beacon	Valve - Plug	1	2014	4	35	31	\$2,000
Lift Station	Haggerty	Valve - Check	2	2014	4	35	31	\$5,000
Lift Station	Haggerty	Valve - Plug	1	2014	4	35	31	\$2,000
Lift Station	Beacon	Wet Well	1	2014	4	50	46	\$60,000
Lift Station	Haggerty	Wet Well	1	2014	4	50	46	\$60,000
Lift Station	Beacon	Pump Station Building	1	2014	4	60	56	\$180,000
Lift Station	Haggerty	Pump Station Building	1	2014	4	60	56	\$180,000
TOTAL								\$705,000

Year 1	\$0
Year 2	\$0
Year 3	\$0
Year 4	\$0
Year 5	\$0
Years 6-10	\$8,000
Years 11-20	\$123,000

ATTACHMENT C: VERTICAL ASSET CONDITION SCORE, CONSEQUENCE OF FAILURE SCORE, AND BUSINESS RISK

ATTACHMENT C: Vertical Asset Condition Score, Consequence of Failure, and Business Risk for Vertical Assets - Well House, Wells, Water Treatment Plant, and Storage Tank Components												
Category	Location	Asset No.	Asset Name	Condition Rating	Consequence of Failure	Redundancy (Backup)	Risk/ BSE	Quantity	Unit Cost	Cost	2017 Revenue Needed Per Year (\$\$)	
Lift Station	Beacon Woods LS	1	Control Panel PLC/SCADA	2	3	0%	6	1	\$10,000	\$10,000	\$909	
		2	Generator & ATS	1	3	0%	3	1	\$40,000	\$40,000	\$1,905	
		3	Level trans. - Conductivity probe	2	4	0%	8	1	\$3,000	\$3,000	\$500	
		4	Level trans. - Floats	2	4	0%	8	2	\$500	\$1,000	\$167	
		5	Pump Station Building	1	4	0%	4	1	\$180,000	\$180,000	\$3,214	
		6	Self prime centrifugal	2	2	100%	4	2	\$10,000	\$20,000	\$1,250	
		7	Transformer	2	3	0%	6	1	\$1,500	\$1,500	\$94	
		8	Unit Heater - Electric	2	2	0%	4	1	\$2,000	\$2,000	\$125	
		9	Unit Heater - Electric Class 1 Div 2	2	3	0%	6	1	\$10,000	\$10,000	\$625	
		10	Valve - Check	3	2	0%	6	2	\$2,500	\$5,000	\$161	
		11	Valve- Plug	2	1	0%	2	1	\$2,000	\$2,000	\$65	
		12	Vent Fan & Louver Class 1 Div 2	1	2	0%	2	1	\$6,000	\$6,000	\$545	
		13	Vent Fan & Louver	1	2	0%	2	1	\$3,000	\$3,000	\$273	
		14	Motor Starter - Soft Start	2	2	100%	4	2	\$2,000	\$4,000	\$364	
		15	Wet Well	1	4	0%	4	1	\$60,000	\$60,000	\$1,304	
		Haggerty Raod LS	16	Control Panel PLC/SCADA	2	3	0%	6	1	\$10,000	\$10,000	\$909
			17	Generator & ATS	1	3	0%	3	1	\$40,000	\$40,000	\$1,905
			18	Level trans. - Conductivity probe	2	4	0%	8	1	\$3,000	\$3,000	\$500
			19	Level trans. - Floats	2	4	0%	8	2	\$500	\$1,000	\$167
			20	Pump Station Building	1	4	0%	4	1	\$180,000	\$180,000	\$3,214
			21	Self prime centrifugal	2	2	100%	4	2	\$15,000	\$30,000	\$1,875
			22	Transformer	2	3	0%	6	1	\$1,500	\$1,500	\$94
			23	Unit Heater - Electric	2	2	0%	4	1	\$2,000	\$2,000	\$125
			24	Unit Heater - Electric Class 1 Div 2	2	3	0%	6	1	\$10,000	\$10,000	\$625
			25	Valve - Check	3	2	0%	6	2	\$2,500	\$5,000	\$161
			26	Valve - Plug	2	1	0%	2	1	\$2,000	\$2,000	\$65
			27	Vent Fan & Louver	1	2	0%	2	1	\$6,000	\$6,000	\$545
			28	Vent Fan & Louver Class 1 Div 2	1	2	0%	2	1	\$3,000	\$3,000	\$273
			29	Motor Starter - Soft Start	2	2	0%	4	2	\$2,000	\$4,000	\$364
			30	Wet Well	1	4	0%	4	1	\$60,000	\$60,000	\$1,304

Appendix D: Capital Improvement Plan

Northville Township SAW Capital Improvement Plan

A capital improvement plan (CIP) is a central component of an AMP and an essential planning tool allowing a community to plan properly for high cost, non-recurring projects. A CIP should detail capital needs related to future and upcoming regulations, major asset replacements, system expansions, system consolidation or regionalization and improved technology.

The CIP, outlined below, will help Northville Township to identify, prioritize, and implement wastewater collection system projects over five (5), ten (10), and twenty (20) year planning periods. The five-year, 10-year, and 20-year CIP recommendations are summarized in tabular form below. CIP cost estimates are listed in 2018 dollars. The figures below include a 20% contingency; estimated engineering and contract administration costs are listed separately in the table. Figure A-6 shows the recommendations for the five, 10, and 20-year planning horizons.

Infiltration Rehabilitation Program

Within the Township there are segments of sewer pipe with defects that allow infiltration of groundwater into the system. The groundwater that enters the system is currently being treated at the wastewater treatment plant. Treatment of groundwater adds an expense to the Township that may be avoided through rehabilitation of defective pipe segments. This project would rehabilitate pipe segments with rehabilitation recommendations and at least one major infiltration defect (defined as gushers or runners) that allow infiltration of groundwater to the system. Pipes with major infiltration will be targeted for repairs in the first two years of the 5-year CIP.

Estimated cost for known I&I repairs: \$450,000

Pipe Rehab & Repairs

Pipes with structural ratings of five from the 2018 condition assessment will be repaired in the first five years. The others are scheduled for years 6-10.

Total estimated cost for known pipe repairs: \$900,000

Manhole Rehab Program

Manholes with a structural rating of five from the 2018 condition assessment will be repaired in the first five years. The others will be scheduled for years 6-10.

Total estimated cost for critical manholes: \$210,000

Vertical Assets

The pump stations underwent rehab four years ago and the major components are expected to last at least another six years. The level sensors have been scheduled for upgrade in the out years of the 10-year CIP, and other components as listed in Appendix C are anticipated for upgrade in the 20-year CIP.

Total estimated cost for vertical assets: \$160,000

Northville Township Sanitary Sewer Asset Management Plan: 20-Year Capital Improvement Plan Cost Summary								
CIP Year	1	2	3	4	5	1-5	6-10	11-20
Date Year	2019	2020	2021	2022	2023	2019-2023	2024-2029	2030-2039
I&I Priority	\$211,263	\$163,646	\$0	\$0	\$0	\$374,908	\$0	\$0
Pipe Lining, Spot & Full	\$200,000	\$28,617	\$0	\$0	\$0	\$228,617	\$0	\$0
Pipe Grouting, Cutting	\$0	\$123,629	\$0	\$0	\$0	\$123,629	\$0	\$0
Pipe Cleaning (Normal & Heavy)	\$11,263	\$0	\$0	\$0	\$0	\$11,263	\$0	\$0
MH Repairs	\$0	\$11,400	\$0	\$0	\$0	\$11,400	\$0	\$0
MH Cleaning	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pipe Repair & Rehab	\$5,000	\$55,753	\$164,282	\$156,738	\$203,209	\$584,981	\$161,992	\$0
Remove and Replace	\$0	\$0	\$24,282	\$0	\$0	\$24,282	\$16,947	\$0
Lining	\$5,000	\$35,000	\$140,000	\$156,738	\$156,738	\$493,475	\$90,637	\$0
Grouting, Cutting	\$0	\$0	\$0	\$0	\$46,471	\$46,471	\$32,507	\$0
Cleaning (Normal & Heavy)	\$0	\$19,948	\$0	\$0	\$0	\$19,948	\$21,820	\$0
Lateral Cutting	\$0	\$500	\$0	\$0	\$0	\$500	\$0	\$0
Letter to Customer(s)	\$0	\$305	\$0	\$0	\$0	\$305	\$80	\$0
Manhole Repair & Rehab	\$0	\$0	\$0	\$0	\$97,100	\$97,100	\$76,450	\$0
Structural Repair/Replacement	\$0	\$0	\$0	\$0	\$13,300	\$13,300	\$4,000	\$0
Point Repair/Cover Replacement	\$0	\$0	\$0	\$0	\$27,650	\$27,650	\$24,050	\$0
Lining	\$0	\$0	\$0	\$0	\$54,500	\$54,500	\$46,750	\$0
Cleaning (Normal & Heavy) & Roots	\$0	\$0	\$0	\$0	\$1,650	\$1,650	\$1,650	\$0
Vertical Assets	\$0	\$0	\$0	\$0	\$0	\$0	\$8,000	\$123,000
20% Contingency	\$43,253	\$43,880	\$32,856	\$31,348	\$60,062	\$211,398	\$49,288	\$24,600
Subtotal	\$259,515	\$263,278	\$197,138	\$188,085	\$360,371	\$1,268,387	\$295,730	\$147,600
15% Engineering	\$38,927	\$39,492	\$29,571	\$28,213	\$54,056	\$190,258	\$44,360	\$22,140
15% Contract Administration	\$38,927	\$39,492	\$29,571	\$28,213	\$54,056	\$190,258	\$44,360	\$22,140
Total	\$337,370	\$342,261	\$256,280	\$244,511	\$468,482	\$1,648,903	\$384,449	\$191,880

Note: All estimates are in 2018 dollars.

Appendix E: Rate Study



RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING



C. HEIDI GREYER
DIRECTOR

June 20, 2018

RECEIVED

JUN 25 2018

CHARTER TWP OF NORTHVILLE
BUILDING DEPARTMENT

Mr. Thomas Casari
Charter Township of Northville
44405 Six Mile Road
Northville, Michigan 48168

Dear Mr. Casari:

SUBJECT: Stormwater, Asset Management, Wastewater (SAW)
Charter Township of Northville
SAW Grant Project Number 1350-01

We have reviewed the information contained in the rate methodology dated May 24, 2018. It has been demonstrated that significant progress has been made, as determined by the department, toward achieving the funding structure necessary to implement the program.

Accordingly, the applicant has fulfilled the significant progress requirement and complies with Section 5204e(3)(a), Part 52, Clean Water Assistance, of the Natural Resource and Environmental Protection Act, 1994 PA 451, as amended.

If there are any questions regarding approval of the rate methodology, please contact Mr. Robert Schneider in the Revolving Loan Section, Drinking Water and Municipal Assistance Division, by phone at 517-388-6466, or by mail at DEQ, P.O. Box 30817, Lansing, Michigan 48909-8311.

Sincerely,

Sonya T. Butler, Section Manager
Revolving Loan Section
Drinking Water and Municipal Assistance Division
517-284-5433

cc: Ms. Mary G. Martin, Executive Director, Michigan Finance Authority
Ms. Karen Nickols, DEQ

Charter Township of Northville
Sanitary Sewer Collection System

Rate Methodology

SAW Grant Project: 1350-01

May 23, 2018

Introduction

The Charter Township of Northville was established as a Charter Township in 1985 by a resolution vote of the Township Board. The Township Board of Trustees is a seven person elected board. Of the seven board members, one is a full-time position: Clerk. The Township Manager is the Chief Administrative Officer of the Township.

The Township is located in the northwest corner of Wayne County, immediately to the west of the City of Livonia. The Township has an area of 16.4 square miles with its east boundary just west of the I-275 corridor. Beside a substantial residential base within the Township, there is a significant employment base in research facilities, retail and service establishments.

The Township has an area wide sanitary sewer system which is connected to the Western Townships Utilities Authority (WTUA). The Township's collection system consists of 125 miles of sanitary sewer ranging in size from 6-inch through 30-inch diameter, 3,421 manholes and two pump stations. The system serves approximately 8,220 residential, commercial, and industrial customers (i.e. invoiced accounts). The Township collection system transports flows to WTUA which in turn transports our flows along with Plymouth Township and Canton Township to the Ypsilanti Communities Utilities Authority (YCUA) for treatment and eventual discharge to the Lower Rouge River.

Revenue Support System

The purpose of this Revenue Support System is to present the rate methodology that the township employs to assure collection of sufficient revenues to support the sanitary sewer system's operations, maintenance and replacement (OM&R) expenses.

In a continuing effort to meet and/or exceed an acceptable level of service for residents and businesses in Northville Township who are connected to the sanitary sewer system, the Township Board of Trustees approved the SAW Grant Authorizing Resolution on November 21, 2013. This resolution established Northville's intent to seek grant funding for the purpose of preparing an asset management system for the township's sanitary sewer system.

On September 17, 2015 the township was notified by the Department of Environmental Quality (DEQ) that the SAW grant application was approved and that the grant would be awarded in November, 2015. Although some sewer cleaning had already occurred, the majority of the work began in 2016. We are scheduled to complete our grant obligations by November of this year.

Water and Sewer Fund – Rate History

From 2008 to 2014, cash reserves totaling over \$27 million were used to subsidize operating activities of the Water & Sewer Fund. In addition, the Township relied on the collection of connection fees to offset customer water & sewer rates.

- Concerned with this decline and recognizing the importance of no longer using “reserves or connection fees” to offset future rates, the township Board in 2014 took action and adopted a rate design that incorporated both a fixed meter and consumption charge to offset the decreased predictability and increased volatility of relying on a variable based water and sewer rate structure.
- Since adopting the “fixed/consumption” rate methodology back in 2014, the net cash used in operating activities since 2013 has declined dramatically as shown in the table below.

Northville Township

Water and Sewer Cash Flow Analysis

	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>
Cash Flows from Operating & Capital Activities					
Net cash used in operating activities	(\$4,405,698)	(\$3,106,876)	(2,973,103)	(\$1,993,813)	(\$841,730)
Purchase of capital assets & related debt	(2,365,696)	(1,136,884)	(773,298)	(599,714)	(1,067,320)
Other	<u>756,887</u>	<u>1,212,069</u>	<u>755,107</u>	<u>844,063</u>	<u>394,759</u>
Net cash used in operating & capital act.	(\$6,014,507)	(3,031,691)	(2,991,294)	(1,749,464)	(1,514,291)
Cash Flows collection of connection fees	<u>2,157,826</u>	<u>1,278,477</u>	<u>1,697,515</u>	<u>959,325</u>	<u>2,246,721</u>
Net (Decrease) / Increase in Cash & Inv.	(3,856,681)	(1,753,214)	(1,293,779)	(790,139)	732,430

Capital Replacement Reserve

The Water & Sewer Fund Capital Replacement Reserve account had a balance of \$11,152,092 as of the fiscal year ended December 31, 2016. Capital asset acquisition in enterprise funds including vehicles, etc. is accounted for using the flow of economic resources method. Amounts disbursed for the acquisition of capital assets are not recorded as an expense. Instead, the appropriate property, plant, or equipment asset account is debited on the purchase. Depreciation expense is recorded as an expense to reflect the allocation of the cost of the assets to operations over the service life of the asset.

The key Capital Replacement Funding principle is that the money is collected and segregated, over a period of time, to cover the repair or replacement cost of existing common elements; that is, capital assets already in existence (for example, water and sewer infrastructure systems, etc.). Capital Replacement Funds are part of a long-term financial plan, which helps:

- Strengthen the community’s fiscal health
- Provides stability to avoid large spikes in future assessments or rate increases

User charges and fees will be computed based on current year operating expenses and debt service requirements and annual contribution/replenishment of the capital replacement reserve.

The Capital Replacement Reserve for the Water & Sewer Fund is targeted at 10-25% of the current fair market value of water and sewer infrastructure assets. Cash and investment balances for operations will be computed based on a minimum of two months expenditures plus planned capital improvement projects for the year.

Northville Township

W&S Replacement Reserve Analysis

	Actual 2015	Actual 2016	Actual 2017	Estimated 2018
Reserve Balances:				
Starting reserve	\$ 15,127,717	\$ 12,457,921	\$ 11,152,092	\$ 11,544,090
Reserve Adjustments:				
Reduction of replacement reserves	(1,679,324)	(790,139)	(841,730)	-
Cost of capital improvements	(447,244)	(46,597)	(489,714)	(45,000)
WTUA CIP	(367,447)	(148,528)	(6,830)	(1,500,000)
Collection of connection fees	-	-	2,246,721	1,585,000
Other (includes proceeds from maturities of investments)	(175,781)	(320,565)	(516,449)	-
Reserve balances, ending	<u>\$ 12,457,921</u>	<u>\$ 11,152,092</u>	<u>\$ 11,544,090</u>	<u>\$ 11,584,090</u>
Low Range (10%) - Benchmark		\$ 5,074,092		
High Range (25%) - Benchmark		\$ 12,685,230		
Infrastructure assets, December 31, 2017	\$ 50,740,921			
(Shortfall)/Overage - Compared to High Range		\$ (227,309)		

** The rate model assumes the use of \$2.4 million in reserves during 2017. Beginning in 2018, reserves are no longer used to offset rates

Cash & Investments Analysis:	Actual	Actual	Actual	Actual	Estimated
Fiscal Year End	2014	2015	2016	2017	2018
Cash & Investments	\$ 768,147	\$ 2,144,164	\$ 2,659,854	\$ 3,000,286	\$ 3,276,684
Replacement Reserve	15,127,717	12,457,921	11,152,092	11,544,090	11,584,090
Total	<u>\$ 15,895,864</u>	<u>\$ 14,602,085</u>	<u>\$ 13,811,946</u>	<u>\$ 14,544,376</u>	<u>\$ 14,860,774</u>

Revenue Requirement Plan Assumptions

- **Great Lakes Water Authority FY 2017 and 2018 Budget.** The four year financial plan assumes GLWA suburban wholesale rates will increase annually as outlined in the GLWA FY 2017 and 2018 approved budget by 4.3% (see attached GLWA Budget-at-a-glance). In addition, GLWA's future sewer system charges are estimated to increase annually at a rate of 4.9%. This assumption has been applied to both Wayne County and YCUA sewage treatment costs.
- Revenue sources assume collection of connection fees after 2017 will not be used to offset revenue requirements.

**2017 & 2018 Board Resolutions Setting
Rates in Accordance with Rate Model
And Methodology**

RESOLUTION 2017-068

At a regular meeting of the Board of Trustees of the Charter Township of Northville, held on Thursday, May 18, 2017 at 7:00 p.m. at the Northville Township Hall, the following information was offered:

WHEREAS: The Charter Township of Northville through its Code of Ordinances, Section 139, has empowered itself to acquire, construct, operate and maintain a water supply system and a sanitary sewage collection system; and,

WHEREAS: By Section 139-7 and 139-15 the Charter Township of Northville may establish rates to operate said systems; and,

WHEREAS: certain rates must reflect actual costs or usage and consumption including costs related to administration, construction, maintenance and replacement to the systems; and,

WHEREAS: The cost to finance said system demonstrates the need to increase the water and sewer rates by increasing the consumption rate component of the current rate structure; and,

NOW, THEREFORE, BE IT RESOLVED: Upon a motion by Treasurer Banner and a second by Trustee Shadko that the following rates shall be implemented as the rates of the Sanitary Sewer Collection System pursuant to Section 139-7 and the Water Supply System pursuant to Section 139-15 for all bills rendered after July 1, 2017.

<u>Meter Size</u>	<u>Annual Cost</u>	<u>Monthly Fixed Rate Water</u>	<u>Monthly Fixed Sewer</u>	<u>Monthly Total Fixed Rate</u>
1"	\$ 365.05	\$ 17.97	\$ 12.45	\$ 30.42
1.5"	\$ 821.37	\$ 40.43	\$ 28.01	\$ 68.45
2"	\$ 1,460.21	\$ 71.88	\$ 49.80	\$ 121.68
3"	\$ 3,285.48	\$ 161.74	\$ 112.05	\$ 273.79
4"	\$ 5,840.85	\$ 287.54	\$ 199.20	\$ 486.74
10"	\$ 36,505.28	\$ 1,797.09	\$ 1,245.01	\$ 3,042.11

Consumption Rate Water: \$6.53 per Thousand Gallons
 Metered Consumption Sewer: \$4.75 per Thousand Gallons
 Non-Metered Sewer (Flat Rate): \$120.49 per Bi-Monthly Billing

AYES: Nix, Banner, Allen, Heath, Herrmann, Shadko
NAYS: None
ABSENT: Hillebrand

RESOLUTION DECLARED ADOPTED:

I, Sue A. Hillebrand, Clerk of the Charter Township of Northville, County of Wayne, State of Michigan, do hereby certify that the foregoing is a true and complete copy of a resolution of action approved by the Board of Trustees at their regular meeting held on May 18, 2017 at 44405 Six Mile Road, Northville, Michigan 48168.



Sue A. Hillebrand, M.M.C.

RESOLUTION 2018-058

At a regular meeting of the Board of Trustees of the Charter Township of Northville, held on Thursday, May 17, 2018 at 7:00 p.m. at the Northville Township Hall, the following information was offered:

WHEREAS: The Charter Township of Northville through its Code of Ordinance, Section 139, has empowered itself to acquire, construct, operate and maintain a water supply system and a sanitary sewage collection system; and,

WHEREAS: By Section 1396-7 and 139-15 the charter Township of Northville may establish rates to operate said systems; and,

WHEREAS: Certain rates must reflect actual costs or usage and consumption including costs related to administration, construction, maintenance and replacement to the systems; and,

WHEREAS: The Cost to finance said system demonstrates the need to increase the water and sewer rates by increasing the consumption rate component of the current rate structure; and,

NOW, THEREFORE, BE IT RESOLVED: That the following rates shall be implemented as the rates of the Sanitary Sewer Collection System pursuant to Section 139-7 and the Water Supply System pursuant to Section 139-15 for all bills rendered after July 1, 2018; and,

Meter Size	Annual Cost	Monthly Fixed Rate Water	Monthly Fixed Rate Sewer	Monthly Total Fixed Rate
1"	\$ 365.05	\$ 17.97	\$ 12.45	\$ 30.42
1.5"	\$ 821.37	\$ 40.43	\$ 28.01	\$ 68.45
2"	\$ 1,460.21	\$ 71.88	\$ 49.80	\$ 121.68
3"	\$ 3,285.48	\$ 161.74	\$ 112.05	\$ 273.79
4"	\$ 5,840.85	\$ 287.54	\$ 199.20	\$ 486.74
10"	\$ 36,505.28	\$ 1,797.09	\$ 1,245.01	\$ 3,042.11

Consumption Rate Water: \$6.53 per Thousand Gallons
Metered Consumption Sewer: \$5.09 per Thousand Gallons
Non-metered Sewer (Flat Rate): \$120.49 per Bi-Monthly Billing

NOW, THEREFORE, BE IT FURTHER RESOLVED: Upon a motion by Trustee Herrmann to approve the 2018 proposed Water & Sewer Rate Resolution, second by Treasurer Banner.

AYES: Nix, Hillebrand, Banner, Allen, Heath, Herrmann, Shadko
NAYS: None

RESOLUTION DECLARED ADOPTED:

I, Sue A. Hillebrand, Clerk of the Charter Township of Northville, County of Wayne, State of Michigan, do hereby certify that the foregoing is a true and complete copy of a resolution of action approved by the Board of Trustees at their regular meeting held on May 17, 2018 at 44405 Six Mile Road, Northville, Michigan 48168.



Sue A. Hillebrand, M.M.C.