

EXAMPLE FISCAL SUSTAINABILITY PLAN

**MAIN STREET PUMP STATION & FORCE MAIN
IMPROVEMENTS PROJECT**

ANYTOWN, IN

**PREPARED:
JANUARY 2016**

1 INTRODUCTION

This Fiscal Sustainability Plan (FSP) has been prepared for the Main Street Pump Station Improvements Project (Project) for the City of Anytown, Indiana. The purpose of this document is to assist the City's wastewater utility with comprehensive fiscal planning for the long-term management of the assets associated with the Project.

The Project includes improvements to facility components which are past their useful life and are in need of replacement. The scope of the Project includes the following:

- Replacement of three (3) 4.0 million gallon per day (MGD) pumps.
- Replacement of pump station flow meter and controls including local control panel (LCP), human machine interface (HMI), programmable logic control (PLC) and supervisory control and data acquisition (SCADA) system.
- Replacement of 10,000 linear feet of 24-inch ductile iron force main.

This FSP provides a fiscal plan for the maintenance, repair, and replacement of the Main Street Pump Station's assets over a 20-year planning period. The FSP is considered a living document and will be updated each year to reflect current conditions of these assets.

2 ASSET INVENTORY, CONDITION & PERFORMANCE

The Main Street Pump Station is an 8.0 MGD pump station with a 10,000 linear foot, 24-inch ductile iron force main discharging to a large-diameter collector in the City's gravity sewer system. The total cost funded by an SRF loan for this project is \$1,515,500.

The Asset Management Workbook Tool, available on the SRF website, was used in the development of this FSP. The following tables, which are generated by the Asset Management Workbook, are included as attachments to this FSP:

- Table 1 – Asset Inventory
- Table 2 – Asset Rating
- Table 3 – Replacement and/or Rehabilitation Expenses
- Table 4 – Improvement Expenses

2.1 INVENTORY OF CRITICAL ASSETS

An inventory of critical assets is attached as Table 1 from the FSP Workbook Tool. The Main Street Pump Station's critical assets, as listed in Table 1, include: three 4.0 MGD pumps (two running, one standby) with associated piping and appurtenances, two multi-rake screens, two screenings conveyors, instrumentation and controls, electrical components, gas monitoring system, odor control system, HVAC system, bridge crane, backup generator, concrete wet well, masonry building, 24-inch ductile iron pipe (DIP) force main, and five combination air valves. A map of the Main Street Pump Station and force main is provided in Figure 1.

Table 2 from the FSP Workbook Tool provides guidance for rating the condition, probability of failure, and consequence of failure for each asset. Ratings and remaining useful life for each asset were selected based on physical inspection, consultation with equipment manufacturers, references to operation & maintenance manuals, and past experience with similar assets. Ratings were entered into Table 1 to determine each asset’s criticality. Assets with a remaining useful life of 20 years or less are summarized in the following Criticality Table:

ASSET CRITICALITY TABLE

Asset	Condition Rating	Probability of Failure (PoF)	Consequence of Failure (CoF)	Criticality ¹ (PoF x CoF)
VFDs	3	3	3	9 – Important, not Critical
Plug Valves	2	3	3	9 - Important, not Critical
Check Valves	2	3	3	9 - Important, not Critical
Electrical, MCCs	2	2	4	8 – Not Critical
Air Valves ²	1	2	3	6– Not Critical
Multi-Rake Screen No. 1	2	2	3	6 – Not Critical
Multi-Rake Screen No. 2	2	2	3	6 – Not Critical
Screenings Conveyor No. 1	2	2	3	6 – Not Critical
Screenings Conveyor No. 2	2	2	3	6 – Not Critical
Screenings Compactor	2	2	3	6 - Not Critical
Odor Control System	2	2	3	6 - Not Critical
HVAC System	2	2	2	4 - Not Critical
Gas Monitoring System	2	2	2	4 - Not Critical
Back-up Generator and Automatic Transfer Switch	2	2	2	4 - Not Critical
Controls (LCP with HMI, PLC and SCADA system) ²	1	1	4	4 – Not Critical
Flow Meter ²	1	1	1	1 - Not Critical

1. Table is sorted by Criticality, in descending order, whereby items of highest Criticality are listed first.

2. Replaced as part of this project.

2.2 LEVEL OF SERVICE

The Main Street Pump Station is a major facility in the collection system and must function at all times. It includes a standby pump and back-up generator for redundancy and the SCADA system provides remote control and continuous monitoring.

3 EVALUATION OF WATER AND ENERGY CONSERVATION EFFORTS

Water and energy conservation measures that were incorporated into the Project include the following:

- Replacement of the three (3) existing pumps with higher-efficiency pumping equipment.
- Replacement of the existing pump station controls to improve efficiency, including a new LCP with HMI, PLC, and SCADA system.

The installation of higher-efficiency pumps will reduce operational costs and extend the useful life of the pump equipment. The new pump station controls will provide operational flexibility and accessibility to real-time monitoring data. This will improve the ability for facility operators to make modifications, when necessary, to optimize the operation and improve the efficiency of the Main Street Pump Station and to monitor the facility for preventative maintenance needs to extend the life of the equipment.

4 ASSET MANAGEMENT & FISCAL PLANNING

4.1 PLAN FOR REPLACEMENT, REHABILITATION, AND IMPROVEMENT OF PROJECT ASSETS

The attached Table 3 and Table 4 from the FSP Workbook Tool summarize the assets scheduled for replacement, rehabilitation, or improvement over a 20-year planning period. The purpose of these tables is to establish a current year budget to cover future anticipated expenses for the management of the Main Street Pump Station’s assets. Costs were estimated based on original equipment costs adjusted for inflation. These expenses are summarized in the following Replacement, Rehabilitation, and Improvement Expenses Table:

REPLACEMENT, REHABILITATION, AND IMPROVEMENT EXPENSES TABLE

Description	Need	Year Needed ¹	Cost
Add Pump No. 4	Increase capacity for future expansion.	2025	\$60,000
Add VFD for Pump No. 4	Increase capacity for future expansion.	2025	\$13,500
Replace Controls (LCP with HMI, PLC and SCADA system)	Equipment reaching end of useful life.	2025	\$41,000
Replace Plug Valves	Valves reaching end of useful life.	2026	\$30,000
Replace Check Valves	Valves reaching end of useful life.	2026	\$24,000
Upgrade MCCs and Electrical System	Equipment reaching end of useful life.	2026	\$90,000
Replace Screen No. 1	Equipment reaching end of useful life.	2029	\$170,000
Replace Screen No. 2	Equipment reaching end of useful life.	2029	\$170,000
Replace Conveyor No. 1	Equipment reaching end of useful life.	2029	\$30,000
Replace Conveyor No. 2	Equipment reaching end of useful life.	2029	\$30,000
Replace Compactor	Equipment reaching end of useful life.	2029	\$35,000
Replace VFDs	Equipment reaching end of useful life.	2029	\$40,000
Replace Gas Monitoring System	Equipment reaching end of useful life.	2029	\$25,000
Replace HVAC System	Equipment reaching end of useful life.	2029	\$35,000
Replace Odor Control System	Equipment reaching end of useful life.	2029	\$40,000
Replace Back-up Generator & Automatic Transfer Switch	Equipment reaching end of useful life.	2029	\$110,000
Replace (5) Air Valves	Valves reaching end of useful life.	2030	\$12,500

1. Table is sorted by year anticipated for replacement, rehabilitation, and/or improvement.

4.2 FISCAL PLANNING

The purpose of a fiscal plan for the replacement, rehabilitation and improvement expenses of the Main Street Pump Station is to ensure these expenses are incorporated into the City’s annual budget and

future rate determinations so that sufficient funding is available when needed. A combination of the following funding mechanisms is proposed to accumulate funds for future expenses for the Main Street Pump Station:

- Annual Revenues
- Increasing Utility Rates
- Municipal Bonds
- State-Revolving Fund Loans

The City worked with its rate consultant to develop a rate methodology to fund future capital expenses for the Main Street Lift Station. The purpose of this fund is for future replacement of the equipment financed by the SRF loan as part of this Project. These funds were incorporated into the City’s current rate study.

Since the screens and conveyors are larger-cost items currently planned to be replaced in the same year, a low-interest loan, such as an SRF loan, or a municipal bond is proposed to fund those capital expenses. The remaining planned capital expenses were incorporated into the rate adjustment that was implemented as a result of the rate study performed for this Project. Therefore, funding for these expenses should be available within the City’s annual utility operating budget. However, the City’s rate study should be reviewed annually to ensure that sufficient revenues are available.

Proposed funding mechanisms for the replacement, rehabilitation, and improvement expenses for the Main Street Pump Station are summarized in the following Fiscal Planning Table:

FISCAL PLANNING TABLE

Description	Funding Source	Alternative Funding Source
Add Pump No. 4	Reserve Revenues	Increase Utility Rates
Add VFD for Pump No. 4	Reserve Revenues	Increase Utility Rates
Replace Controls (LCP with HMI, PLC and SCADA system)	Reserve Revenues	Increase Utility Rates
Replace Plug Valves	Reserve Revenues	Increase Utility Rates
Replace Check Valves	Reserve Revenues	Increase Utility Rates
Upgrade MCCs and Electrical System	Reserve Revenues	Increase Utility Rates
Replace Screen No. 1	Low-Interest Loan	Municipal Bond
Replace Screen No. 2	Low-Interest Loan	Municipal Bond
Replace Conveyor No. 1	Low-Interest Loan	Municipal Bond
Replace Conveyor No. 2	Low-Interest Loan	Municipal Bond
Replace Compactor	Low-Interest Loan	Municipal Bond
Replace VFDs	Low-Interest Loan	Municipal Bond
Replace Gas Monitoring System	Reserve Revenues	Municipal Bond
Replace HVAC System	Reserve Revenues	Municipal Bond
Replace Odor Control System	Reserve Revenues	Municipal Bond
Replace Back-up Generator & Automatic Transfer Switch	Low-Interest Loan	Municipal Bond
Replace (5) Air Valves	Reserve Revenues	Increase Utility Rates

FIGURE 1
MAIN STREET PUMP STATION & FORCE MAIN



Asset Inventory

Table 1

Facility Name:	Main Street Pump Station
Current Plan Year:	2015

Directions:

- A. List assets
- B. Enter asset information
- C. To add more assets use insert function and add rows then copy first asset row to new rows to transfer formulas
- D. Enter information in yellow cells
- E. Remaining cells will calculate automatically.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Collection Assets	Capacity / Size	Material	Manufacturer	Tag Number (Optional)	Original Cost	Current SRF Project Cost	Replacement Cost	Year Installed	Expected Useful Life in Years	Remaining Useful Life in Years	Condition	Probability of Failure	Consequence of Failure	Criticality
Force Main	24", 10,000 LF	DIP			\$1,250,000	\$1,250,000	\$1,250,000	2015	50	50	1	2	5	10
Air Valve Manholes (5)	6' diameter	Concrete			\$20,000	\$20,000	\$20,000	2015	50	50	1	2	2	4
Combination Air Valves (5)		SS			\$12,500	\$12,500	\$12,500	2015	15	15	1	2	3	6
Enter asset														0
Enter asset														0
Enter asset														0
Collection Assets Subtotal					\$1,282,500	\$1,282,500	\$1,282,500							

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Treatment Assets	Capacity / Size	Material	Manufacturer	Tag Number (Optional)	Original Cost	Current SRF Project Cost	Replacement Cost	Year Installed	Expected Useful Life in Years	Remaining Useful Life in Years	Condition	Probability of Failure	Consequence of Failure	Criticality
Main Street Pump Station				1000										
Raw Sewage Pump No. 1	4.0 MGD	CI	Flygt	1010	\$60,000	\$60,000	\$60,000	2015	25	25	1	1	4	4
Raw Sewage Pump No. 2	4.0 MGD	CI	Flygt	1020	\$60,000	\$60,000	\$60,000	2015	25	25	1	1	4	4
Raw Sewage Pump No. 3	4.0 MGD	CI	Flygt	1030	\$60,000	\$60,000	\$60,000	2015	25	25	1	1	4	4
Electrical, MCCs		NA	Various	1040	\$60,000		\$90,000	1996	30	11	2	2	4	8
VFD's		NA	Allen-Bradley	1050	\$30,000		\$40,000	2009	20	14	3	3	3	9
Controls (LCP with HMI, PLC and SCADA telemetry system)		NA	Flygt	1060	\$41,000	\$41,000	\$41,000	2015	10	10	1	1	4	4
Multi Rake Screen No. 1	8.0 MGD	SS	Headworks	1070	\$140,000		\$170,000	2009	20	14	2	2	3	6
Multi Rake Screen No. 2	8.0 MGD	SS	Headworks	1080	\$140,000		\$170,000	2009	20	14	2	2	3	6
Screenings Conveyor No. 1	12 cf/hr	SS	Headworks	1090	\$25,000		\$30,000	2009	20	14	2	2	3	6
Screenings Conveyor No. 2	12 cf/hr	SS	Headworks	1100	\$25,000		\$30,000	2009	20	14	2	2	3	6
Screenings Compactor	NA	SS	Headworks	1110	\$27,000		\$35,000	2009	20	14	2	2	3	6
Gas Monitoring System	NA	NA	MSA Inst.	1120	\$20,000		\$25,000	2009	20	14	2	2	2	4
HVAC System	3360 cfm	NA	Greenheck	1130	\$27,000		\$35,000	2009	20	14	2	2	2	4
Odor Control System	1000 cfm	Aluminum	Purafil	1140	\$32,000		\$40,000	2009	20	14	2	2	3	6
Bridge Crane	5 ton	Steel	Whiting	1150	\$22,000		\$30,000	1996	40	21	2	3	2	6
Plug Valves (6)	12"	CI	Duzurik	1160	\$24,000		\$30,000	1996	30	11	2	3	3	9
Check Valves (3)	12"	CI	Duzurik	1170	\$18,000		\$24,000	1996	30	11	2	3	3	9
Flow Meter	16"	CI	Krohne	1180	\$12,000	\$12,000	\$12,000	2015	20	20	1	1	1	1
Station Piping System	12" and 16"	DI			\$50,000		\$65,000	1996	50	31	2	1	4	4
Back-up Generator and Automatic Transfer Switch	250 kW / 600 A	NA	MacAllister	1190	\$85,000		\$110,000	2009	20	14	2	2	2	4
Concrete Structure (below grade)	NA	concrete			\$175,000		\$200,000	1996	50	31	2	1	5	5
Building	600 sf	masonry			\$150,000		\$195,000	1996	50	31	2	1	4	4
Enter asset														
Enter asset														
Enter asset														
Treatment Assets Subtotal					\$1,283,000	\$233,000	\$1,552,000							
Total of All Collection and Treatment Assets					\$2,565,500		\$2,834,500							
Total Current SRF Project Cost							\$1,515,500							

Asset Rating Table 2

Column L	
Condition Assessment	
Condition Rating	Description
5	Unserviceable/End of useful life - Over 50% of asset requires replacement
4	Significant Deterioration - 20-40% requires renewal/upgrade
3	Moderate Deterioration - 10-20% requires significant maintenance
2	Minor Deterioration - Requires minor maintenance
1	New or Excellent Condition - Only normal maintenance required

Column M	
Probability of Failure	
Performance Rating	Description
5	Imminent - Likely to occur in the life of the item
4	Probable - Will occur several times in the life of an item
3	Occasional - Likely to occur some- time in the life of an item
2	Remote - Unlikely but possible to occur in the life of an item
1	Improbable - So unlikely, it can be assumed occurrence may not be experienced

Column N	
Consequence of Failure	
Performance Rating	Description
5	Catastrophic disruption
4	Major disruption
3	Moderate disruption
2	Minor disruption
1	Insignificant disruption

* consider safety/social, economic/financial, environmental

Replacement and/or Rehabilitation Expenses

Table 3

Directions:

A. List assets to be replaced or rehabilitated
B. Determine how long before action must take place
C. Enter cost to replace or rehabilitate
D. Enter "C" in column D for large replacement expenses that would be funded as a capital project separate from the reserve money set aside each year.
E. To add more replacement expenses, use insert function and add rows then copy first line item row to new rows to transfer formulas
F. Enter information in yellow cells
G. Remaining cells will calculate automatically.

Guidance Note:

Include items here that will need to be replaced during the normal course of operating the system.
Include only the items from the Asset Inventory (Table 1) with a remaining useful life less than 20 years.

A	B	C	D	E	F
Projects	Remaining Useful Life in Years	Replacement Cost	R = Use Reserve C = Capital Expense	Reserve Required Each Year	Future Capital Funds Required
Replace Air Valves	15	\$ 12,500	R	\$ 833	\$ -
Replace Multi Rake Screen No. 1	14	\$ 170,000	C	\$ -	\$ 170,000
Replace Multi Rake Screen No. 2	14	\$ 170,000	C	\$ -	\$ 170,000
Replace Screenings Conveyor No. 1	14	\$ 30,000	C	\$ -	\$ 30,000
Replace Screenings Conveyor No. 2	14	\$ 30,000	C	\$ -	\$ 30,000
Replace Screenings Compactor	14	\$ 35,000	C	\$ -	\$ 35,000
Replace MCCs and Electrical Upgrades	11	\$ 90,000	R	\$ 8,182	\$ -
Replace VFDs	14	\$ 40,000	R	\$ 2,857	\$ -
Replace Back-up Generator and Automatic Transfer Switch	14	\$ 110,000	R	\$ 7,857	\$ -
Replace Gas Monitoring System	14	\$ 25,000	R	\$ 1,786	\$ -
Replace HVAC System	14	\$ 35,000	R	\$ 2,500	\$ -
Replace Odor Control System	14	\$ 40,000	R	\$ 2,857	\$ -
Replace Plug Valves (6)	11	\$ 30,000	R	\$ 2,727	\$ -
Replace Check Valves (3)	11	\$ 24,000	R	\$ 2,182	\$ -
Controls (LCP with HMI, PLC and SCADA telemetry system)	10	\$ 41,000	R	\$ 4,100	\$ -
Enter asset to be replaced	0	\$ -	R	\$ -	\$ -
Enter asset to be replaced	0	\$ -	R	\$ -	\$ -
Enter asset to be replaced	0	\$ -	R	\$ -	\$ -
Total Replacement Expenses Required in the Current Year				\$ 35,881	
Total Future Capital Funds Required					\$ 435,000

Improvement Expenses

Table 4

Directions:

A. List projects to be completed
B. Determine how long before the project must begin
C. Enter the total projected cost of the project
D. Enter "C" in column D for large replacement expenses that would be funded as a capital project separate from the reserve money set aside each year.
E. To add more improvement expenses, use insert function and add rows then copy first row to new rows to transfer formulas
F. Enter information in yellow cells.
G. Remaining cells will calculate automatically.

Guidance Note:

<p>Include improvements here which are related to:</p> <ol style="list-style-type: none"> 1. Future/upcoming regulations 2. Major asset replacement, such as structures, tanks, or interceptors 3. System expansion to provide additional capacity or service area 4. System consolidation or regionalization 5. Improved technology to replace obsolete technology 6. Climate resiliency <p>Include only projects expected to occur within the next 20 years.</p>
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A	B	C	D	E	F
Projects	Years Until Project Must Begin	Cost	R = Use Reserve C = Capital Expense	Reserve Required Each Year	Future Capital Funds Required
Add Raw Sewage Pump No. 4	10	\$ 60,000	R	\$ 6,000	\$ -
Add VFD for Pump No. 4	10	\$ 13,500	R	\$ 1,350	\$ -
Enter project	0	\$ -	R	\$ -	\$ -
Enter project	0	\$ -	R	\$ -	\$ -
Enter project	0	\$ -	R	\$ -	\$ -
Enter project	0	\$ -	R	\$ -	\$ -
Enter project	0	\$ -	R	\$ -	\$ -
Enter project	0	\$ -	R	\$ -	\$ -
Enter project	0	\$ -	R	\$ -	\$ -
Enter project	0	\$ -	R	\$ -	\$ -
Enter project	0	\$ -	R	\$ -	\$ -
Total Improvement Expense Required in the Current Year				\$ 7,350	
Total Future Capital Funds Required					\$ -