

BASIN 4 INTERCEPTOR PROJECT, CITY OF NEW ALBANY

Summary

- The Basin 4 Interceptor project includes improvements to the City's collection system to reduce infiltration and inflow (I/I) and ultimately reduce energy consumption at the City's wastewater treatment facility. The proposed project includes the replacement of the existing interceptor sewer with the installation of approximately 6,760 feet of sewer line.
- The estimated SRF Loan amount is 7,400,000.
- **The GPR Energy Efficiency amount for this project is \$1,027,806.20: \$1,023,179.20 for construction costs based on the bid amount and \$4,627 for planning (design not funded through SRF).** The GPR costs for this project equates to approximately 14% of the total loan amount. All GPR costs for this project fit into the Energy Efficiency category.
- The total GPR amount for all projects under this SRF Loan is \$5,061,646.70, or 68% of the total loan amount.

Background

- The presence of I/I in the City's collection system has resulted in higher energy costs associated with pumping and treating the additional flow.
- System modeling and flow monitoring of the project area has shown a peaking factor of 8.3, which is more than twice the typical design peaking factor. The high peak flows result in surcharging and an increased risk of sanitary sewer overflows in the existing interceptor. The high peaking factor indicates a significant source of I/I within the system.
- Over the years, I/I has increased along with the number of customers using the system. The Basin 4 Interceptor has been observed surcharging during rain events. The Basin 4 Interceptor at its existing capacity is not adequate to handle the peak flows based on the existing and future needs.

Energy Efficiency Discussion

- I/I removed by the proposed project was calculated based on the methods established in the Robert E. Lee Flow Monitoring Analysis memo prepared by Clark Dietz, Inc. This document was prepared in January 2009 and in accordance with formulas and procedures included in the City's Consent Decree and Memorandum of Understanding for quantifying I/I removal resulting from capital improvements to the sewer system.
- Using the flow monitoring analysis noted above, statistical analysis of rainfall events, the anticipated reduction of I/I resulting from the proposed project is estimated to be 25.2 million gallons per year or 600,500 gallons per day per rainfall event.
- The reduction in I/I corresponds to a cost savings at the wastewater treatment plant due to a reduction in the flows to be treated. The estimated cost savings is \$22,700 per year based upon a treatment operations and maintenance cost of \$0.90/1000 gal. Of this cost savings, approximately 25% are attributed to energy savings, or approximately \$5,700. In addition to the energy savings at the plant, there would be energy savings in the collection system since less flow would need to be pumped.

- The 25.2 million gallons per year of I/I removed is equivalent to an average daily flow of 69,000 gpd. Treatment capacity at the WWTP being utilized by the current I/I entering the system comes at a cost to the City that will be mitigated as a part of this project. Treatment capacity is estimated to be valued at \$15 per gallon of average flow.
- The table below summarizes the Present Worth Costs associated with the proposed project and an alternative solution of treating the I/I flow and expanded plant capacity. The analysis shows that the proposed project is cost effective.
- The payback period is 45 years which is less than the useful life of the new sewers.

COST EFFECTIVE ANALYSIS		
	Basin 4 Interceptor Project	Alternative-Treat I/I Flows and Expand WWTP Capacity
Capital Cost	\$1,028,000	\$1,035,000
Annual O & M Costs Associated with I/I Treatment	-\$23,000	\$0
Present Worth of O & M Costs (3%, 20 Years)	-\$342,000	\$0
Total Present Worth Cost	\$686,000	\$1,035,000

Conclusion

- The proposed project will result in annual energy cost savings of \$5,700 associated with wastewater treatment.
- The proposed project will immediately result in creating capacity at the WWTP valued at \$1,035,000.
- The proposed project is cost effective.
- The payback period is 45 years which is less than the useful life of the proposed sewers and manholes.
- The proposed project is effective in that it provides for the elimination of SSOs and a present worth cost that is equivalent to 66% of the alternative present worth cost.

Reference Material – Green Project Reserve Sustainability Incentive Business Case, Amended Capacity Assurance Plan System Improvements, Basin 4 Interceptor Project, City of New Albany, Indiana, dated December 2010, prepared by Clark Dietz, Inc.