Tunnel Works

Tunnel Works Program Frequently Asked Questions

City Utilities operates the largest municipally-owned wastewater collection and treatment system in Indiana. The system serves 161 square miles and includes 1,014 miles of sanitary sewer lines, 365 miles of combined sewer lines and 610 miles of stormwater-only pipes. Fort Wayne's Water Pollution Control (sewage treatment) Plant on Dwenger Avenue east of North Anthony Boulevard has a capacity to treat up to 85 million gallons of wastewater per day (MGD) during wet weather.

Keeping the sewer system operating to serve customers and to meet regulatory requirements requires ongoing maintenance, repair, replacement and expansion of sewer system components. Operations, maintenance and improvements to the sewer system are funded entirely by user fees collected from sewer utility customers in Fort Wayne and surrounding areas. City Utilities does not receive any income from taxes. City Utilities does not make a profit. All revenue collected through customer rates and charges is reinvested in running the system, increasing capacity and repairing or replacing aging infrastructure.

How we got here - Fort Wayne's Consent Decree

Fort Wayne is under a federal court order to greatly reduce the amount of combined sewage going into our rivers each year, to reduce sewage that backs up into homes during wet weather events, to eliminate discharges from sanitary sewers and to enhance the sewer system's reliability through ongoing operation and maintenance, repair, rehabilitation and replacement. Fort Wayne negotiated with the US Environmental Protection Agency (US EPA), the Indiana Department of Environmental Management (IDEM) and the United States Department of Justice for more than ten years before an agreement was reached in late 2007 that governs how City Utilities will reduce discharges from the combined sewer system into our rivers during wet weather. The agreement – incorporated into a federal Consent Decree that is enforced by a federal court – is a result of the Clean Water Act.

When Fort Wayne's combined sewer system was designed and built, it was state-of-the-art. Discharges from the sewer system were allowed when the sewer system became overloaded with rainwater and, exceeded the capacity of pipes to carry the flow or the capacity of the sewage treatment plant to treat it all. As our country became more environmentally conscious, laws and regulations changed and overflows from combined sewer system were no longer an accepted practice.

Fort Wayne's Consent Decree requires City Utilities to reduce the number of overflow events from the combined sewer system from 71 times in a typical year to just four times per year on the St. Marys and Maumee Rivers. The operation, construction and green infrastructure program to which the City agreed must be completed by 2025 (18-years from the time the agreement was reached).

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Q: What is the tunnel all about?

A: The *Tunnel Works* Program represents a major part of Fort Wayne's efforts to implement the 2008 Long-Term Control Plan and associated Consent Decree with the US Environmental Protection Agency. The premier project - the deep rock tunnel - will be constructed in the bedrock deep below the city, the tunnel will collect and transport sewage from the combined sewer system to the sewage treatment plant that would otherwise overflow into the St. Marys and Maumee Rivers when it rains.

Q: Why is the tunnel needed? What are combined sewers?

A: Like many cities in the United States, portions of the City of Fort Wayne use a single pipe system to carry a combination of sanitary sewage and stormwater. During dry weather, the pipe capacity is adequate to carry sanitary flows to the sewage treatment plant. When it rains, the added stormwater can overwhelm these combined sewer lines and the system discharges combined sewage and stormwater through a number of outfall locations to the rivers. The *Tunnel Works* Program, together with other key parts of the Long-Term Control Plan, will reduce the number of times combined sewer overflows occur in a typical year from about 71 times to just 4 times on the St. Marys and Maumee Rivers. Investment in the *Tunnel Works* Program will improve river water quality and benefit Fort Wayne and surrounding areas for generations to come.

Q: Why do our sewers discharge sewage into the rivers? Were the sewers designed this way or are they broken?

A: Originally when cities such as Fort Wayne developed, they only had storm sewers to carry rainwater away from neighborhoods and to the rivers. When indoor plumbing became common, sanitary facilities were connected to these existing stormwater sewers and all of the sewage from homes and businesses that did not have on-site treatment (septic systems) went directly to the rivers. In 1940, Fort Wayne built its first Water Pollution Control Plant to treat sanitary sewage, and interceptor sewers were built to carry the sanitary sewage to the plant. But during wet weather, the sewers still discharged some of this combined sanitary sewage and stormwater to the rivers when too much flow would have overwhelmed the plant and caused sewage to back up into streets and homes. Combined sewers were considered state of the art for sewer design until the early 1970's when the Clean Water Act prohibited further combined sewer construction. Since the early 1990's, combined sewer communities have been mandated by federal law to begin reducing the impacts of combined sewer overflows (CSOs) on rivers and streams because of the threats they pose to human health and wildlife. In April 2008, Fort Wayne formalized its agreement with the federal government for how the combined sewer system would be improved.

Q: What will the tunnel and associated sewers actually do?

A: During dry weather, sanitary sewage from the combined sewer area will continue to be carried through existing sewer lines to the sewage treatment plant to be treated. During rain or heavy snow melt events (known as "wet weather") the tunnel will collect and transport the combined sanitary sewage and stormwater runoff, that would otherwise be discharged to the St. Marys and Maumee Rivers, to the sewage treatment plant.

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Q: How will sewage get into the tunnel?

A: A few new "nearsurface" consolidation sewers and structures called "drop shafts" will be built to direct the combined sewage into the tunnel. The combined sewage will travel through the tunnel to the sewage treatment plant where it will be stored temporarily and treated after the wet weather event is over and when the plant has sufficient capacity

The tunnel is a piece of a three part strategy to reduce the amount of combined sewage being discharged to the rivers by 1) separating some sewers to remove stormwater, 2) collecting and transporting more combined sewage to the sewage treatment plant, and 3) treating more of the combined sewage at the plant.

Q: Where will the tunnel be located?

A: The tunnel system will begin at the existing sewage treatment plant, which is located on the Maumee River east of North Anthony Boulevard. It will run generally parallel to the Maumee River along downtown, cross Sweeney Park, and then parallel to the St. Marys River. It will end near Foster Park.

Q: How long and how deep will the tunnel be? How about the connecting sewers?

A: The main tunnel will be approximately five (5) miles long and will be located approximately 150-200 feet deep in the bedrock under Fort Wayne. As part of the larger *Tunnel Works* Program, approximately a mile of consolidation sewers will also be constructed. Consolidation sewers are near surface sewers that will collect combined sewage from the existing sewer system and connect to drop shafts that will direct the combined sewage into the tunnel. There will be nine (9) drop shafts, between 4-8 feet in diameter, constructed near existing combined sewer overflow locations. There will also be approximately two (2) miles of relief sewer connected to the south end of the tunnel that will be shallower and smaller in diameter.

Q: How long will it take to build?

A: Construction of the main tunnel will take approximately two (2) years, but the entire system, including all connecting pipes, could take up to six (6) years to complete. For the entire system to operate (bring the combined flows to the main tunnel), construction of the drop shafts and consolidation sewers, must be completed.

Q: When will construction begin?

A: The design work began in 2014 and will take about three (3) years to fully complete. Construction of the tunnel is expected to begin in 2017 and will be completed by 2023. Construction surrounding the Foster Park relief sewer may extend to 2025.

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Q: How will the tunnel be built?

A: The five (5) mile long portion of the tunnel will be approximately 150-250 feet deep and will be dug using an underground tunnel boring machine or TBM. The machine will be put in place through a large opening at one end of the tunnel, called a working shaft, and will travel underground to the other end. After the tunnel is dug, a concrete liner will be put in place. The finished tunnel will have an inside diameter of 16 feet.

There will be two (2) miles of relief sewer at the south end of the tunnel that will be shallower and smaller in diameter and will be constructed using traditional "open cut" methods. A trench will be dug at the depth needed for the pipe. Pipe will be laid at the bottom of the trench. The trench will be refilled using stone around and above the pipe with soil added on top of that. Any above ground disturbance will be restored as it was prior to the construction. For example, a portion of the pipe will be located under the Foster Park golf course; however, when construction is complete, the golf course will be restored as a golf course for future use by the public.

Deep drop shafts will be constructed to direct combined sewage that was collected from the near surface consolidation sewers into the tunnel. These drop shafts will be constructed from the ground surface to the depth of the tunnel by digging through the soft soils using a traditional excavation but then specialized drilling methods will need to be used to get through the rock to the final depth, thus connecting the drop shafts to the tunnel. The consolidation sewers that will connect to the drop shafts will be constructed using traditional "open cut" methods or trenchless technologies.

Q: How will this project help the rivers?

A: Combined sewers -- such as those that serve about one third of Fort Wayne -- discharge a mixture of sanitary sewage and stormwater runoff to the rivers when it is raining or snow is melting. These discharges affect the rivers and can pose a health risk for people who come in contact with the rivers for a period of time after a combined sewer overflow (CSO) event. Combined sewage also has negative impacts on wildlife and the overall ecology of the rivers. The tunnel project will collect and transport the combined sewage to the sewage treatment plant, thus reducing amount of combined sewage and the pollutants entering the rivers by 90%.

Q: What kind of disruption should I expect?

A: In some neighborhoods south of the Maumee and east of the St. Marys River, construction of near surface consolidation sewers will be taking place that will connect existing sewers to the tunnel. These new sewers will be constructed by traditional "open cut" methods and will entail the same degree of disruption as a normal sewer construction project, such as traffic detours, construction noise and truck traffic.

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Q: What kind of disruption should I expect? *(Continued)*

A: Also, at approximately 9 locations along the route of the tunnel, drop shafts will be constructed to drop the combined sewage from the consolidation sewers into the tunnel during wet weather when the tunnel is being used. At these drop shaft sites construction activities could be disruptive due to construction noise or truck traffic. As design progresses more meetings will be organized with local residents and businesses to discuss how to best manage construction. Of course, areas will be restored upon completion of construction. Construction of the tunnel itself will cause very little disruption on the surface. There will be increased truck traffic around the working shaft at the sewage treatment plant as soil and bedrock removed by the tunnel boring machine is trucked away and there will be other typical construction traffic. The tunneling machine will hardly be noticeable while the tunnel is being dug. The machine will not create noise or any noticeable vibration.

Q: How much is City Utilities investing in the *Tunnel Works* Program?

A: The estimated construction cost for the tunnel, drop shafts, near surface consolidation sewers relief sewer and pumping station is approximately $150 million dollars. The cost of Fort Wayne's entire Long-Term Control Plan is approximately $240 million (2005 dollars).

Q: What else is being done to improve river quality?

A: The tunnel is the largest single project in the City's plan to reduce combined sewer overflows and improve river water quality. In addition to building the tunnel to collect and transport more sewage to the sewage treatment plant, City Utilities has invested approximately $50 million to increase the capacity of the sewage treatment plant to treat sewage and to store combined sewage during wet weather for treatment later. In many neighborhoods that have combined sewers, new sewers to collect and transport just stormwater have been built. In these areas, street inlets and other structures that handle stormwater have been connected to the new storm sewers so that the rainwater does not go into the combined sewers – causing them to become overloaded and discharge to the rivers. These neighborhood "sewer separation" projects have the added benefit of reducing the likelihood of sewage backing up in basements – thus providing an added benefit for the money being invested. City Utilities also conducts a variety of public education programs, contractor trainings, updates to technical standards, and routine water quality monitoring programs, All of these efforts are part of a comprehensive strategy to improve river water quality.

Q: What are you doing to improve the St. Joseph River - why is it not mentioned as part of this project?

A: The tunnel project is being designed to collect combined sewage that would otherwise overflow into the St. Marys and Maumee Rivers from neighborhoods primarily south of the Maumee and along the St. Marys River. While there are sewers that overflow into the St. Joseph River, they have been addressed through projects being done north of the Maumee River. Projects done in areas around the St. Joseph River include the construction of new storm sewers in many neighborhoods and the addition of a new relief sewer to carry more sewage to the sewage treatment plant.

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Q: How can I stay informed about the tunnel project?

A: The best way to stay informed about the progress of the *Tunnel Works* Program and public meetings or other events is to sign up for the City Utilities enews at fortwaynetunnel.org.

Q: How is City Utilities paying for the design and construction of the *Tunnel Works?*

A: After City Utilities entered into an agreement with the US EPA and IDEM for how combined sewer overflows to the City's rivers would be reduced, Mayor Tom Henry convened a Clean Rivers Task Force of community business leaders, local elected officials and citizens to consider alternatives for funding all of the $240 million Long-Term Control Plan (in 2005 dollar value) and other sewer system improvements that would be needed – including the *Tunnel Works* Program. The Task Force considered a variety of funding options including seeking enabling legislation for a local option income tax, property taxes, sales taxes, federal grants-in-aid, state assistance, community trust funds, gaming revenue or stormwater fees.

The Task Force felt that it would be important to use a mix of revenues to fund the investments in the sewer system needed to comply with federal regulatory mandates instead of relying solely on revenues of the sewer utility, but acknowledged that sewer utility user fees would be an integral part of any overall funding scenario and would likely be the source of funds for early phases of the plan. The Task Force further acknowledged that several of the alternative methods for financing components of the plan would require action by other levels of government and therefore would take some time to gain the necessary local authority to implement. The Task Force also stated a belief that when seeking federal and state funding options, it would be essential for Fort Wayne to demonstrate that it has been willing to take on a measurable share of the financial burden itself.

The Task Force encouraged City Utilities to seek financial assistance from state and federal governments and City Utilities continues to do so, even though obtaining such assistance is an uphill battle and no grant programs currently exist to help communities such as Fort Wayne with implementing federal clean water mandates.

City Utilities will borrow funds from a State Revolving Fund to cover the costs of the tunnel. This will be repaid over the term of the loan with revenue generated by sewer utility rates.