



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



KEITH CREAGH  
DIRECTOR

May 9, 2016

TO: All Interested Citizens, Organizations, and Government Agencies

SUBJECT: FINDING OF NO SIGNIFICANT IMPACT  
**Macomb County Wastewater Disposal District  
Chemical Addition Station  
State Revolving Fund Project No. 5568-01**

The purpose of this notice is to seek public input and comment on a preliminary decision by the Michigan Department of Environmental Quality (DEQ) that an Environmental Impact Statement (EIS) is not required to implement recommendations discussed in the attached Environmental Assessment of a wastewater project plan submitted by the applicant mentioned above.

#### **HOW WERE ENVIRONMENTAL ISSUES CONSIDERED?**

Part 53, Clean Water Assistance, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, being Sections 324.5301 to 324.5316 of the Michigan Compiled Laws Annotated, requires the DEQ to evaluate all environmental implications of a proposed wastewater project. The DEQ has done this by incorporating a detailed analysis of the environmental effects of the proposed alternatives in its review and approval process. A project plan containing information on environmental impacts was prepared by the municipality and reviewed by the State. The DEQ has prepared the attached Environmental Assessment and found that the proposed project does not require the preparation of an EIS.

#### **WHY IS AN EIS NOT REQUIRED?**

Our environmental review concluded that no significant environmental impacts would result from the proposed action. Any adverse impacts have either been eliminated by changes in the project plan or will be reduced by the implementation of the mitigative measures discussed in the attached Environmental Assessment.

#### **HOW DO I GET MORE INFORMATION?**

A map depicting the location of the proposed project is attached. This information is also available on our website at [www.michigan.gov/cleanwaterrevolvingfund](http://www.michigan.gov/cleanwaterrevolvingfund) under "Related Links." The Environmental Assessment presents additional information on the project, alternatives that were considered, impacts of the proposed action, and the basis for our decision. Further information can be obtained by calling or writing one of the contact people listed below.

### HOW DO I SUBMIT COMMENTS?

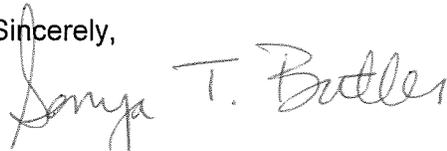
Any comments supporting or disagreeing with this preliminary decision should be submitted to me at DEQ, Office of Drinking Water and Municipal Assistance, Revolving Loan Section, Constitution Hall, P.O. Box 30241, Lansing, Michigan 48909-7741. We will not take any action on this project plan for 30 calendar days from the date of this notice in order to receive and consider any comments.

### WHAT HAPPENS NEXT?

In the absence of substantive comments during this period, our preliminary decision will become final. The applicant will then be eligible to receive loan assistance from this Agency to construct the proposed project.

Any information you feel should be considered by the DEQ should be brought to our attention. If you have any questions, please contact Ms. Debra Foye, the project manager, at 517-284-5407, or you may contact me. Your interest in this process and the environment is appreciated.

Sincerely,

A handwritten signature in cursive script that reads "Sonya T. Butler".

Sonya T. Butler, Chief  
Revolving Loan Section  
Office of Drinking Water and Municipal Assistance  
517-284-5433

Attachments

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Macomb County Wastewater Disposal District  
Chemical Addition Station  
State Revolving Fund (SRF)  
Environmental Assessment  
May 2016

### PROJECT IDENTIFICATION

**Applicant:** Macomb County Wastewater Disposal District

**Authorized Representative:** Mr. William Misterovich, Chief Deputy,  
Macomb County Public Works Commissioner

**Address:** 21777 Dunham Road  
Clinton Township, Michigan 48036

**Project No.:** 5568-01

### PROJECT SUMMARY

The Macomb County Wastewater Disposal District (MCWDD) is seeking to mitigate hydrogen sulfide (H<sub>2</sub>S) corrosion of the deep interceptor/tunnel system and control odor releases. Conditions in the sewers create an environment where H<sub>2</sub>S oxidizes and converts into sulfuric acid, which affects the existing concrete piping and the overall integrity of the interceptor sewers. The purpose of the project is to install a chemical addition station near the 21 Mile Road and Interstate 94 intersection to reduce the sulfuric acid and H<sub>2</sub>S levels in the sewers (see Figure 1). The project is proposed to take place in the fall of 2016.

The estimated project cost for the selected alternative is \$2,669,640. The MCWDD has chosen to seek a low-interest loan through the state of Michigan's SRF program, administered by the Michigan Department of Environmental Quality (DEQ). Using an average flow of 250 gallons per day, or 91,250 gallons per year, per household, the estimated average annual debt requirement and operation and maintenance (O&M) costs, an increase of \$1.83 per year per household is needed to fund the debt service for these improvements.

The MCWDD has applied for and received two SRF/Strategic Water Quality Initiatives Fund (S2) grants totaling \$460,339, which aided in the planning of this project and the previous SRF project No. 5540-01. Approximately \$126,210 in design costs will be offset by a DEQ Stormwater, Asset Management, and Wastewater grant, project No. 1130-01.

### PROJECT BACKGROUND

The study area of this project includes the MCWDD, which services the following communities:

1. Lenox Township
2. City of New Haven
3. Chesterfield Township
4. Harrison Township
5. Clinton Township
6. Washington Township
7. City of Utica
8. Shelby Township
9. Macomb Township
10. City of Sterling Heights
11. City of Fraser

According to the Southeast Michigan Council of Governments (SEMCOG) 2008 data, the current land use in the study area is predicted to be: 43.0 percent single-family residential homes; 1.8 percent multiple-family residential homes; 5.9 percent commercial; 6.4 percent industrial zones; and 5.9 percent for government and institutional developments. The remaining land uses include: 15 percent agriculture; 13.1 percent transportation, communication and utilities; 7.5 percent park, recreation, and open space; and 1.4 percent water.

The MCWDD provides sewage transport to communities in Macomb County through a system of large wastewater interceptor sewers owned by the Oakland Macomb Interceptor Drain Drainage District and the Macomb Interceptor Drain Drainage District. Overall, the service to the MCWDD consists of 42 miles of interceptor sewers and 26 Macomb County metering stations. Interceptors serving the MCWDD consist of the Macomb Interceptor Drain (MID), the Oakland-Macomb Interceptor Drain (OMID), and the North Gratiot Interceptor (NGI). All of the flows from the MCWDD converge at the Edison Corridor, which conveys the raw sanitary sewage to the Northeast Pumping Station in Wayne County. Much of the interceptor system was constructed in the 1970s to connect the northern half of Macomb County to the Detroit Water and Sewerage Department (DWSD) sanitary sewer system. The DWSD managed, operated, and maintained these sewers until ownership was transferred to the Oakland-Macomb Interceptor Drain Drainage District on October 22, 2009, and to the Macomb Interceptor Drain Drainage District on September 2, 2010.

In 2006, the DWSD contracted the services of NTH Consultants to inspect interceptor sewer pipes within the MCWDD. The results of the inspections and recommendations were published in a report titled *Sewer Condition Assessment Inspection; DWSD Construction Contracts PCI 13, 14, 15B, 15C, 24, 25, 42A, and 45*. In addition to defects involving leakage of groundwater into the system, these inspections noted several areas that had been subjected to concrete corrosion associated with the presence of H<sub>2</sub>S, which is often the primary cause of odor emissions and complaints in wastewater collection systems. The gas combines with condensed moisture on the crown of the pipe, where it is biologically oxidized to corrosive sulfuric acid.

In March 2011, the Office of the Macomb County Public Works Commissioner (OMCPWC) and the Oakland County Water Resources Commissioner (OCWRC) collaborated on a project and prepared a report, *Corrosion Identification and Control Study – Oakland Macomb Interceptor Drain & Macomb Interceptor Drain* to identify and formulate solutions to corrosion in the MCWDD's interceptors. Concerns had been raised with possible H<sub>2</sub>S corrosion of the deep interceptor/tunnel system, and resultant odors escaping from the interceptor system have been an issue at multiple locations. The report noted that they observed levels of H<sub>2</sub>S in the Lakeshore Interceptor, 15 Mile Road Interceptor, Romeo Arm, and Garfield Arm of the MCWDD were problematic. Corrosion in the piping was modeled and it was estimated that 0.18 to 0.29 inches of pipe wall were being eaten away per year. Without steps taken to mitigate the corrosion, the resulting damage could cost tens of millions of dollars in repairs.

With S2 grant funding assistance, the OMCPWC built upon the corrosion study recommendations and further evaluated the impact that chemical addition and ventilation would have on the MCWDD interceptors. Using dosing pumps and a chemical trailer, iron salt (ferrous chloride) solution was added at the upper end of the Lakeshore Interceptor in September and October of 2011. Sulfuric acid and H<sub>2</sub>S reduction results were 70 percent to 85 percent, leading to the development of an SRF project plan to construct a permanent chemical dosing facility at the upper end of the Lakeshore Interceptor.

## **PROPOSED PROJECT**

Based on recommendations from the March 2011 report and with the further evaluations performed using the S2 grant, a biofilter ventilation system has already been installed near the 15 Mile Road and Garfield Road location, and a chemical means of controlling H<sub>2</sub>S will be installed at the upper end of the Lakeshore Interceptor. The chemical injection system is covered in the following sections.

## **ALTERNATIVES CONSIDERED**

Several alternatives were considered including No Action, Optimum Performance of Existing Facilities, and five options within the Regional Alternative: Complete Replacement of Sewer Tunnels, Relining of Garfield and Romeo Arm Interceptors, Repair of Tunneling and Infrastructure as Needed, Permanent Chemical Dosing Facility, and Biofilter Ventilation System.

- No Action

This alternative would allow for the continued accelerated deterioration and premature failure of the interceptor sewers, manholes, meter pits, and other sewer infrastructure in the MCWDD. Removing H<sub>2</sub>S from the system would help to increase the longevity of the infrastructure and thus reduce the frequency of costly maintenance, repair, or replacement costs. With no other means to economically transport these flows, performing repairs and replacement is a significant problem facing the OMCPWC.

- Optimum Performance of Existing Facilities

Communities contributing wastewater flows into the MCWDD interceptors discharge different levels of H<sub>2</sub>S. An H<sub>2</sub>S monitoring system to quantify the H<sub>2</sub>S contribution of each community would be costly and cumbersome. Apportioning various levels of responsibility and assessing the communities contributing to the H<sub>2</sub>S problem, enforcement of mandates to reduce H<sub>2</sub>S contributions from specific metering areas, high operations and maintenance costs at the individual metering areas, and continual oversight on each contributor are the main difficulties in implementing this approach. Also, there are no practical means of keeping wastewater temperatures lowered to slow the biological processes that lead to the formation of H<sub>2</sub>S.

- Regional Alternatives

- ❖ Option A – Complete Replacement of Sewer Tunnels

This option would involve the complete removal of existing sewer piping and manhole replacement with corrosion-resistant pipe and manholes. The H<sub>2</sub>S odor problem would not be solved with this option. With the depth, size, and proximity to roads, residences, and businesses, the logistical means of the complete replacement of these sewers would be extremely complex and cost prohibitive.

- ❖ Option B – Relining of Lakeshore Interceptor

This approach would address the pipe degradation due to H<sub>2</sub>S corrosion and provide a long-lasting solution to the corrosion problem. However, this option is cost prohibitive and would not solve the odor issue associated with H<sub>2</sub>S.

❖ Option C – Repair of Tunneling and Infrastructure as Needed

This option involves the periodic repair of corroded portions of the interceptors and manholes within the Lakeshore and 15 Mile Road Interceptors. Each repair is an involved process that includes a number of necessary labor related tasks, taking into account depth, size of pipe, and the proximity to roads and affected users. The cost of each repair would then need to be multiplied by approximately 10 miles of unprotected concrete sewer requiring repair over time. Using estimates from previous MCWDD studies, the estimated cost to spot repair corroded concrete and protect it from further corrosion is estimated to be \$75 to \$130 per square foot.

❖ Option D – Permanent Chemical Dosing Facility

This option would reduce the sulfuric acid and  $H_2S$  levels in the sewers. Iron salts, such as ferrous chloride, can be “overdosed” at the injection point to allow the excess iron to reduce levels further downstream. Similarly, nitrate can be used to promote biological oxidation to prevent the generation of sulfuric acid.

Based on the recommendations of the chemical dosing study, approximately 750 gallons per day of ferrous chloride solution would need to be injected at the upstream end of the Lakeshore Interceptor to treat the sulfuric acid generated in the North Gratiot Interceptor, Lakeshore Interceptor, and the Clintondale force main. At a unit cost of \$0.30 per gallon, chemical cost would be approximately \$225 per day, or \$82,125 per year.

❖ Option E – Biofilter Ventilation System

There are several possible means of reducing corrosion in the Lakeshore and 15 Mile Road Interceptors through ventilation: Chemical Scrubbers, Carbon Adsorbers, Biotrickling Filters, and Biofilters.

Chemical scrubbers are wet chemical packed towers that treat odor by the absorption of odorous compounds from the gas stream into droplets of a chemical solution. Chemical adsorbers use carbon media to trap the odorous compounds on the surface of the carbon. Biotrickling filters are biological reactors that remove odors from airstreams. It functions similar to the chemical scrubbers, except the chemical solution has been replaced by a neutral pH bio-active solution. Biofilters absorb and oxidize odorous compounds using microorganisms growing in a soil or compost substrate.

Though the use of the biofilter to control  $H_2S$  in a vapor phase process was determined to be the best option for most interceptors in the MCWDD, it is not effective to treat corrosion in the force main portions of the 15 Mile Road Interceptor. In a force main, there is little headspace available for the ventilation system to extract the necessary air, and even if 100 percent effective prior to this section of sewer, sulfuric acid levels may still be present in the water and rise within the force main portion due to its anaerobic environment. Corrosive  $H_2S$  could form in the manhole areas and the outfall points of the force main where the sulfuric acid could oxidize to  $H_2S$ .

Option D, Permanent Chemical Dosing Facility at the upper end of the Lakeshore Interceptor, was the selected alternative. Installation of the chemical dosing facility will treat much of the incoming sources of sulfuric acid-laden wastewater. The Chemical Addition Station will be installed on Parcel 09-32-127-033 in Chesterfield Township, off of 21 Mile Road between Sugarbush Road and Anchor Drive (see Figure 1, current project location). This station was originally proposed to be built at the previous project location. A monitoring system will measure sulfuric acid and H<sub>2</sub>S levels throughout the year in order to make dosing adjustments as needed. Two 10,000-gallon storage tanks will be located below ground to limit the visibility and exposure of the chemical storage tanks. Table 1 shows the present worth comparison of the principle alternatives. The total present worth is calculated by adding present worth capital costs, O&M costs, escalating expenditures for energy costs, and subtracting the salvage value.

**Table 1 - Present Worth Comparison of Principle Alternatives**

Component (Total Project)	Option A - Replacement	Option B - Relining	Option C - Repair as Needed	Option D - Chemical Dosing
Present Worth Capital Cost	\$34,456,341	\$12,530,998	\$7,025,861	\$1,405,015
O&M Cost	\$38,600	\$38,600	\$38,600	\$289,497
Escalating Expenditures – Energy Costs	\$329,607	\$329,607	\$329,607	\$2,472,054
Present Worth Salvage Value	\$13,782,536	\$5,012,399	\$2,810,344	\$562,006
Total Present Worth	\$21,042,012	\$7,886,806	\$4,583, 724	\$3,604,560

Project Cost and Construction Schedule

The project's total cost is estimated to be \$2,669,640 including construction, legal, engineering, and financial costs. The work is expected to begin in October of 2016 and completed in December of 2017. The project cost breakdown is shown in Table 2.

**Table 2 - Project Cost Breakdown**

Project Item	Estimated Cost
Construction	\$2,053,570
Survey, Engineering, Geotechnical, Admin, and Staking	\$513,392
Legal, Bonding, and Permitting	\$102,678
<b>Total Project Cost</b>	<b>\$2,669,640</b>

User Cost

The proposed SRF project will be financed through a sewer rate increase to cover the cost associated with the capital improvements. Using an average flow of 250 gallons per day, or 91,250 gallons per year, per household, the estimated average annual debt requirement is

about \$0.96 for the Chemical Addition Station. The total increase per household based on the annual O&M costs for the facility is approximately \$0.87. The total increase per household per year will be approximately \$1.83.

## **IMPACT OF THE PROJECT**

### Water Quality

There are currently no known nonpoint sources of pollution in the MCWDD. There are areas within the northern portions of the MCWDD that are currently on septic systems; however, there are no improvements proposed as part of this project to provide public sewers to those areas. No court orders, nor federal or state enforcement orders involving the county or any of its municipal customers have been issued regarding the rehabilitation or repair of the affected interceptors.

There are no known areas of soil contamination existing within the proposed project site.

Wetland inventories of the specific project site show while there are wetlands present, they are not regulated wetlands due to their size, quality, and proximity to water; therefore, a permit to fill these areas is not required. The project site is not in a 100-year floodplain. The proposed project area is near public rights-of-way for easy accessibility.

The two 10,000-gallon fiberglass reinforced plastic double-walled tanks will be equipped with a leak detection system and double-walled pipe will be used.

This project is also under review by the SEMCOG regarding any potential impacts of the proposed project. No impacts to the regional plan for the area are anticipated.

### Construction Impacts

Minimal impacts are expected due to construction during this project. Dust, noise, and emissions from equipment will be minimal, temporary, and mitigated as appropriate. Soil erosion and sedimentation control measures, as well as local permits, will be required and followed during all construction activities. Spoils resulting from construction will either serve as backfill where appropriate or be removed from the site and replaced with clean, compacted fill. The removal of existing scrub vegetation, including clearing, grubbing, and final grading, will be needed for the construction of the proposed chemical dosing facility. Some existing trees on-site will be impacted.

A consultation under the Endangered Species Act was performed for the current project location, and it was concluded that the species and critical habitat are not present. Threatened species for Macomb County include the Indiana bat, Northern long-eared bat, rufa red knot shorebird, and the Eastern massasauga snake. Overall, the site lacks critical habitat for all listed threatened species. The project will take place in an urban location, and the site is surrounded by established multiple/single-family residential area with paved streets and utility easements.

Minor traffic control will be needed for construction ingress/egress onto 21 Mile Road, but will not impact access to any adjacent residential properties.

The State Historic Preservation Office was contacted and it was determined that there would be no historic properties affected within the project area as a result of this project.

### Cumulative or Secondary Impacts

No changes in development rate, population density, or land-use type are anticipated as a result of this project. No comments regarding impacts were received from federal recognized Native American tribes who may have had a presence in the area.

### **PUBLIC PARTICIPATION**

A public hearing on the project was advertised, held, and recorded according to SRF program guidelines. The hearing was advertised on May 23, 2012, in the *Fraser-Clinton Chronicle*, the *Mt. Clemens-Clinton-Harrison Journal*, the *Shelby-Utica News*, and the *Sterling Heights Sentry*. The hearing was held June 25, 2012, at the Office of the Macomb County Public Works Commissioner, 21777 Dunham Road, Clinton Township, Michigan, at 7 p.m. An overview of the project was presented to those in attendance. Questions asked during the hearing were answered at the hearing. Clarifications were made regarding the useful lives of the project and its components. The total useful life was stated to be 50 years, while individual components will have useful lives of 20 years. Replacement of the components is considered to be part of the yearly O&M costs.

The MCWDD resolution adopting the final project plan was passed on June 25, 2012.

### **REASONS FOR CONCLUDING NO SIGNIFICANT IMPACTS**

The MCWDD is seeking to mitigate hydrogen sulfide corrosion plaguing the Macomb County operated interceptors serving the MCWDD through the addition of ferrous chloride into the Lakeshore and 15 Mile Road Interceptors. This work will be restricted to a single property in Chesterfield Township where a chemical addition system will be installed and integrated into the interceptor system. The direct, indirect, and cumulative impacts are minimal, and proper construction practices will be followed and permits obtained to mitigate possible impacts. Water quality within the study area should not be adversely affected.

Questions regarding this Environmental Assessment should be directed to:

Ms. Sonya T. Butler, Chief  
Revolving Loan Section  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
P.O. Box 30241  
Lansing, Michigan 48909-7741  
Telephone: 517-284-5433  
E-Mail: [butlers2@michigan.gov](mailto:butlers2@michigan.gov)

Figure 1: Project Location

