



THE ROUGE RIVER PROJECT
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River Rouge CSO Retention Basin

A publication of the Wayne County Rouge River National Wet Weather Demonstration Project

Information Date: May 2003

Objective

The River Rouge CSO project seeks to control CSO discharges and to meet applicable requirements including water quality standards.



City of River Rouge CSO Control Facility

Owner

City of River Rouge, Michigan

Location

The facility is located at the northwest corner of Jefferson Avenue and Victoria Street in the City of River Rouge, Michigan. The receiving water is the Rouge River.

Dates

Planning Start Date	February 1994
Design Start Date	November 1994
Construction Start Date	December 1995
Operation Start Date	August 2002

Construction Cost

\$25,800,000 - as of May 2003

Demonstration Aspects

- Design for the 10-year/1 hour storm event with 30 minutes detention time.
- 2 compartments with total volume of 5.2 million gallons. The basin compartments operate in series with the lower compartment filling first followed by the upper. Basin to be dewatered over 30 hours.
- First flush to lower chamber.
- Presettled wastewater, which has been transferred and stored in the upper chamber, will be used to flush the lower chamber.
- An extensive monitoring program to demonstrate basin performance.

Project Highlights

- Serves an area of 929 acres.
- Eliminates 1 CSO outfall.
- Both a wastewater pumping station and a retention treatment basin.
- Gravity wastewater flow to the lower chamber.
- Three submersible pumps each with a capacity of 2,500 gpm at 85 feet TDH to transport sanitary sewage from lower chamber to Wayne County Interceptor.
- Six vertical mixed flow pumps, each with a capacity of 51,200 gpm at 30 feet TDH to transfer flow from lower to upper chamber.
- Sodium hypochlorite disinfection system designed for 10 mg/l feed rate and 1 mg/l

target residual for a peak flow rate of treated effluent of 570 cfs.

- Bar screens for floatables control at the effluent
- Peak overflow rate of 25,736 gpd/sq. ft.
- Wet scrubber odor control system

Basin Treatment Results

The Michigan Department of Environmental Quality (MDEQ) has established a process for analyzing the effectiveness of the CSO Demonstration Basins to assess compliance with the NPDES permits and with the Phase II and III control requirements. (See *April 28, 1999 communication from MDEQ that establishes the process*). Each completed basin will undergo a two-year evaluation to assess its treatment performance and to monitor instream impacts of its discharge. (For more detailed information about these studies and related information see *Technical Papers and Professional Presentations on CSO Treatment Program and CSO Technical Reports-Monitoring and Other*)

The River Rouge CSO Retention Basin evaluation is still under way. When that evaluation is completed a detailed report of the process and the findings will be prepared. The results will be factored in with the other information gathered by the Rouge Project. Based upon the preliminary data, it is anticipated that the results of that evaluation will not be different than what has been shown in the six evaluations completed to date. The results of those evaluations are discussed below.

As part of the MDEQ established review process, the Rouge Watershed CSO Workgroup has developed two documents that summarize information on all six of the basins that have completed their evaluation process. See *“Physical Characteristics of Treated Effluent from Demonstration CSO Facilities (Draft), July 31, 2000”* and *“Preliminary Hydrologic Comparison of Demonstration CSO Facilities, August 12, 1999”*. **The information in those reports should be considered preliminary information on CSO facility performance**

subject to revision based upon more complete data and upon the evaluation by the Rouge Watershed CSO Workgroup.

Environmental Results

The MDEQ has concluded that the all six of the CSO treatment facilities that have completed their evaluations are currently meeting the Phase II criteria. MDEQ stated “...the data demonstrate that these facilities are capable of: 1) protecting public health, and 2) eliminating raw sewage, across the range of storms monitored, when operated correctly.” (See June 9, 2000 Letter of Approval for *Phase II Review-Acacia Park CSO Retention Treatment Basin*, and for *Phase II Review-Birmingham CSO Retention Treatment Basin*, and for *Phase II Review-Bloomfield Village CSO Retention Treatment Basin*. See August 7, 2000 Letter of Approval for *Phase II Review-Inkster CSO Retention Treatment Basin*, and *Phase II Review-Dearborn Heights CSO Retention Treatment Basin*, and *Phase II Review-Redford Township CSO Retention Treatment Basin*). The following summarizes some of the key conclusions of the Rouge Watershed CSO Workgroup that support the determination by MDEQ:

1. Public health protection is achieved by disinfection (through the use of sodium hypochlorite) of the influent flows in order to reduce the presence of organisms in the discharge.
2. The elimination of raw sewage at the Rouge CSO facilities includes screening, skimming and settling of the flow. Screens contribute to the removal of larger debris from the flow.
3. Baffle walls installed in each facility help facilitate removal of floating materials, capturing these materials in the basin for removal during dewatering.
4. The facilities were designed to allow for sedimentation to occur for the removal of heavy solids. The ability of the facilities to achieve removal of solids is typically related to the surface overflow rate and weir loading rate.
5. Elimination of raw sewage is determined by the elimination of sanitary trash from the

facility effluent as measured by visual observation of what is captured in 6 mm mesh nets in the facility outfalls.

The operation of the CSO control facilities is critical to their overall success. Some very important information on the operating experience of these CSO control facilities can be viewed in a paper prepared on this topic. (See *Operation Experience with Large CSO Control Facilities*).

Emerging Information on CSO Facility Performance

The Rouge Watershed CSO Workgroup will compile the information on success of the individual CSO control basins in meeting the Phase II and Phase III Criteria for Success. The instream impacts of the discharge from the CSO basins is very important to any determination made by MDEQ. After assessing all available data, including recommendations from the Rouge Watershed CSO Workgroup, MDEQ will draw conclusions on what level of treatment from these basins should be considered adequate. The CSO Workgroup has not completed its evaluation yet. It expects to do so by the end of this calendar year. Preliminary information and conclusions are starting to emerge as discussed below. **The information below should be considered preliminary emerging information on CSO facility impacts on the receiving stream and is subject to revision based upon more complete data and upon the full evaluation of the CSO Workgroup.**

1. For six storm events, the treated effluent from the Oakland County CSO basins never caused the instream dissolved oxygen to fall below the MDEQ instream standard of 5 mg/l or below the pre-event dissolved oxygen at the two downstream dissolved oxygen sampling points.
2. MDEQ has chosen four parameters for use in CSO evaluation of impacts on the receiving stream. Those are suspended solids, oil films, turbidity, and sediment/sludge

deposits. Based upon available data to date the following preliminary conclusions can be drawn:

- a. In general, total suspended solids (TSS) concentrations in the basin effluent are lower than in-stream values.
 - b. Oil films have not been detected downstream from any of the CSO control facilities.
 - c. Total suspended solids and turbidity have a high degree of correlation. Therefore, if basin effluent and stream turbidity are measured during overflow events, the basin effluent turbidity would be lower than stream values as is the case with TSS.
 - d. The large majority of settleable material that used to enter the river from CSO outfalls controlled by the CSO basins is now kept out of the river. In addition, for those storms which do cause a basin to overflow to the river, the fact that the velocities in the CSO basin are significantly lower than stream velocities means that solids most prone to settle will do so in the CSO basin rather than in the receiving stream.
3. In summary, the available monitoring data show no evidence that the treated effluent from the currently operating CSO basins is causing any violation of the physical characteristic standard in MDEQ's water quality standards.

To obtain further information on the Rouge Project, including documents, maps and general information, visit us at:

<http://www.rougeriver.com>

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