

# HRC *by Design*

Fall 2004

## *Approaching 90 Years*

Hubbell, Roth & Clark, Inc. (HRC) is beginning preparations for our 90th anniversary. Established in 1915, HRC has seen many changes to our industry and especially to the areas in Michigan in which we work. We are very proud to look back over those 90 years and see the many improvements that we have helped with. It is great to work in a profession where you can actually improve the quality of life of your fellow man. HRC hopes to continue to contribute to the well being of all and looks forward to working with all of you. ♦

## *HRC Opens Macomb County Office*

HRC is pleased to announce the opening of our new Macomb County office, located in the City of Mount Clemens, Michigan. Keith McCormack, P.E., vice president and principal of the firm, will oversee services provided by this new office, which was established to further enhance HRC's relationship with numerous clients within Macomb County and surrounding communities.

Located at 50 Cherry Street, Mt. Clemens, Michigan, 48043, the new office phone number is (586) 569-5000.

For more information on HRC's newest office location and services, please contact Keith D. McCormack, P.E. at (586) 569-5000 or [kmccormack@hrc-engr.com](mailto:kmccormack@hrc-engr.com). Visit [www.hrc-engr.com/OfficeLocations.asp](http://www.hrc-engr.com/OfficeLocations.asp) for maps to all of HRC's five office locations, including Mt. Clemens, Bloomfield Hills, Detroit, Pontiac and Howell. ♦

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## *Bay City's Triumph Over PCBs Award Winning Wastewater Treatment Plant Improvements Further Waterfront Redevelopment Efforts*



*Redevelopment of Bay City's waterfront will encourage events such as the Tall Ships Great Lakes Tour.*

### *A Glimpse Into the Past*

Bay City's location near the mouth of the Saginaw River fostered the growth of one of its earliest industries - lumbering. In the 1840s, the great pine forests of Michigan were harvested and lumber was floated down the Saginaw River to Bay City. There, more than 50 mills were active at one point, crowning Bay City as the "Lumber Capital of the World." Other industries which sprang up in Bay City included boat building which evolved from wooden ships to eventually steel naval vessels and ore carriers needed for commerce on the Great Lakes. Bay City became one of the top-ranked ports on the Great Lakes with more waterborne tonnage handled at the Bay City Port area than any other Michigan port city, excluding Detroit.

With the advent of the automobile, Bay City became the home of an important General Motors parts facility and a manufacturing center for cranes, shovels, electrical transformers, and other automotive parts suppliers.

Many of these industries have eventually fallen due to changes in the world economy or they were driven out of Bay City due to competition from larger companies. Bay City has been wrestling with its future prospect for continued economic health. The City has been encouraging development along the waterfront attempting to convert the area to a tourist destination revolving around its great natural resource, the Saginaw River. The City is well underway with a new waterfront conference center needed to revitalize the desired tourism to Bay City. Also, Bay City now sponsors many events on the river, such as the annual River Roar Hydroplane Races and the exhibition of Tall Ships which use Bay City for a port during their Great Lakes Tour.

### *Environmental Concerns*

Past heavy manufacturing and industry in Bay City have created the challenges facing the City's water environment. Polychlorinated Biphenyl (PCB) was used as a fire resistant cool-

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ant in the manufacture of electrical transformers and in other products. Past manufacturing and disposal procedures have caused the dispersal of PCB in various areas of the City. One of the properties of PCB which made it an attractive product was its resistance to environmental breakdown. Medical research discovered that small concentrations of PCB could cause birth defects. Due to this research, the manufacture of PCB has been prohibited.

### **Wastewater Treatment Plant Improvements**

The City of Bay City was faced with the challenge of meeting discharge limitations with an aging wastewater treatment facility, part of which was constructed in the 1950s. The City facility also has to meet the limitation for PCB, which frequently is found in the plant's influent and sometimes in the effluent. With the NPDES permit limitation for PCB at less than detection, new facilities were required to meet a consent judgment stipulation that the City provide the best available treatment for PCBs. The City of Bay City hired Hubbell, Roth & Clark, Inc. to prepare studies to evaluate the existing wastewater treatment facilities and to determine the most cost-effective renovations to continue to meet NPDES limitations for conventional pollutants and new facilities to meet the stringent PCB limitation.

The improvements proposed and ultimately constructed at the Bay City WWTP include new influent pumps, primary settling tank mechanisms, secondary clarifier mechanisms, trickling filter distributor arms and domed covers, new sludge disposal facilities to dewater and store solids for disposal to landfill, new laboratory and administrative building, ultraviolet disinfection, and the tertiary carbon filtration system for PCB removal. The facility treats an average daily flow of approximately 7 million gallons per day (MGD), with sustained peak flows of 18 MGD resulting from the dewatering operations of the City's five combined sewer overflow retention treatment basins. The total project cost (and State Revolving Fund) estimate was approximately \$42,435,000 with nearly \$3 million included for retention treatment basin modifications.

*The project was made most difficult by the fact that nearly all of the major process and electrical equipment was replaced without taking the plant out of service.*

The plant discharge had to meet the state mandated discharge limitations while each piece of equipment and the electrical service to that equipment was replaced.

### **Project Innovations**

The most significant innovation of the Bay City Wastewater Treatment Plant Improvement Project was the design and construction of the first municipal wastewater PCB treatment system in Michigan. Of the few carbon filtration systems built in the United States, the system designed and constructed for Bay City is unique. Nearly \$5 million of capital was saved by thoroughly studying the alternatives and developing a system which filters solids and removes PCB in one unit process.



*Unique Tertiary Carbon Filtration System*

A second and possibly even more important innovation to the City of Bay City was the planning involved with the construction staging required to replace existing process equipment at the facility.

*Almost every major piece of mechanical and electrical equipment at the Bay City facility was replaced as part of the project.*

Each new piece of equipment had to be tested and put into operation before they could move on to the next process. Construction required unique staging and equipment startup techniques to assure that the entire plant remained in operation at all times. Nearly two-thirds of the project cost consisted of replacement and upgrade of the existing treatment plant processes. Consequently, a major source of the construction effort revolved around taking individual unit processes out of service for the shortest duration possible to facilitate the changeover to the new facilities. In HRC's long 89-year history, this project was one of

the most complicated construction projects the company had ever experienced.

### **An Award-Winning Solution**

The City of Bay City was required to upgrade an aging wastewater treatment facility to provide state-of-the-art treatment for which no municipal plant in Michigan had ever installed before. Bay City had to plan, design, and construct these new facilities according to a stringent milestone schedule required in a consent judgment with the State of Michigan and MDEQ. Using thorough engineering, the City was able to cost-effectively provide innovative treatment methods that saved the City millions of dollars in capital. The project met all of the State mandated compliance dates and the project cost stayed within the State Revolving Fund Loan budget, allowing the City to meet the requirements of the consent judgment. The City of Bay City made a large capital commitment to renovate the wastewater treatment facility, but by doing so the City has proven that they are committed to improving the water quality of Bay City. It is the quality of this water environment (the Saginaw River) on which the future economic vitality of Bay City may be hinged. By providing state-of-the-art treatment facilities, the City of Bay City has provided the important infrastructure for which the future Bay City redevelopment will be based.



*Plant Improvements*

The Bay City Wastewater Treatment Plant Improvements project garnered the 2004 American Public Works Association (APWA) Michigan Chapter *Project of the Year* Award in the "Environment – Over \$10 million" category, illustrating HRC's dedication to providing engineering excellence.

For more information on HRC's Wastewater Treatment Services, contact Curt Christeson, P.E., at (248) 454-6300 or [cchristeson@hrc-engr.com](mailto:cchristeson@hrc-engr.com) or your HRC representative. ♦

## Recent Awards

HRC is proud to present our most recent project awards:

### **City of Birmingham Quarton Lake Restoration Project**

2004 Michigan Municipal Achievement Award  
Superior Innovation  
Michigan Municipal League

2004 Outstanding Achievement Award for  
Building Design and Construction  
Engineering Society of Detroit

2004 Honorable Conceptor Award and  
Judge's Choice Award for Board Design  
ACEC/Michigan

2004 Project of the Year Award – Environment –  
Less than \$2 Million  
APWA Michigan

2004 Project of the Year Award – Environment –  
Less than \$2 Million  
APWA

2004 Quality of Life Award  
ASCE/Michigan Section/Southeastern Branch

### **Long Lake Road Reconstruction (Carnaby to Dequindre)**

City of Troy, Oakland County  
2004 Urban Arterial >30,000 sq. yds.  
Michigan Concrete Paving Association

### **I-75 from I-475 Northerly to M-57 Mt. Morris & Vienna Townships, Genesee County**

2004 Award of Excellence  
Michigan Concrete Paving Association

### **City of Bay City Wastewater Treatment Plant Improvements**

2004 Project of the Year – Environment - Over  
\$10 Million  
APWA Michigan

### **General Motors Phase II Containment Project Crew Award**

2003 WFG Recognition Awards

### **General Motors Bulk Fluid Storage & Delivery**

2003 Construction Award of Excellence  
Associated Builders and Contractors, Inc.

### **City of Saginaw CSO Control Program**

2003 Honorable Mention  
ASCE/Michigan Section

### **City of Midland 43.5 MG Storage Basin**

2003 Honorable Mention  
ASCE/Michigan Section

### **2003 Quality of Life Award**

ASCE/Michigan Section/Southeastern Branch

## Sullivan Promoted to Senior Associate



Timothy Sullivan, P.E.

HRC is pleased to announce that Timothy Sullivan, P.E., has been promoted to the position of Senior Associate. Mr. Sullivan has been an employee of HRC for 10 years, and was made an Associate of the firm in 2002. He

has over 27 years of professional experience in the field of Environmental Engineering, most recently as project manager for the evaluation, design and construction of water

and wastewater treatment facility expansions and pumping station projects. Mr. Sullivan works mainly out of HRC's Detroit office location.

Mr. Sullivan holds a Bachelor's degree in Civil Engineering from Michigan State University, and a master's degree in Environmental Engineering from the University of Michigan.

Mr. Sullivan is active in the Water Environment Federation (WEF) and Michigan Water Environment Association (MWEA) and has chaired several MWEA Committees. He also serves as a review author for WEF Manuals of Practice 8 and 11. ♦



## Watershed Management Department Profile

HRC's Watershed Management Department offers a broad range of services to communities facing the challenges of new storm water permit regulations and an increased regulatory focus on watershed planning. HRC's team is well versed in the most current regulatory issues and can provide guidance and expertise in dealing with regulatory, permitting and design issues.

HRC works closely with each client to develop a scope of services tailored to fit that community's needs based on its size, existing storm water programs, watershed goals, and staff constraints. From in-depth assistance with developing a comprehensive storm water program to occasional assistance creating and publishing educational materials, HRC stands ready to meet the individual needs of each community.

Storm Water Permit and Watershed Planning Services include:

- ♦ Permit Applications
- ♦ Public Education Plans
- ♦ Illicit Discharge Elimination Plans

- ♦ Subwatershed Management Plans
- ♦ Storm Water Pollution Prevention Programs (SWPPI)
- ♦ Storm Water Management Programs (SWMP)
- ♦ MDEQ Reporting
- ♦ Local Ordinances
- ♦ Stream Inventory Studies
- ♦ Soil Erosion and Sedimentation Control Programs
- ♦ Lake Restoration
- ♦ Bio-engineering/Streambank Stabilization
- ♦ Regional Storm Water Retention Facilities
- ♦ Wetland Mitigation
- ♦ Water Quality Sampling Studies
- ♦ Grant Applications

For more information regarding HRC's Watershed Management Department and the services we provide, please contact Margaret Synk Kuhn, P.E., at (248) 454-6300 or [msynkkuhn@hrc-engr.com](mailto:msynkkuhn@hrc-engr.com), or your HRC representative. ♦



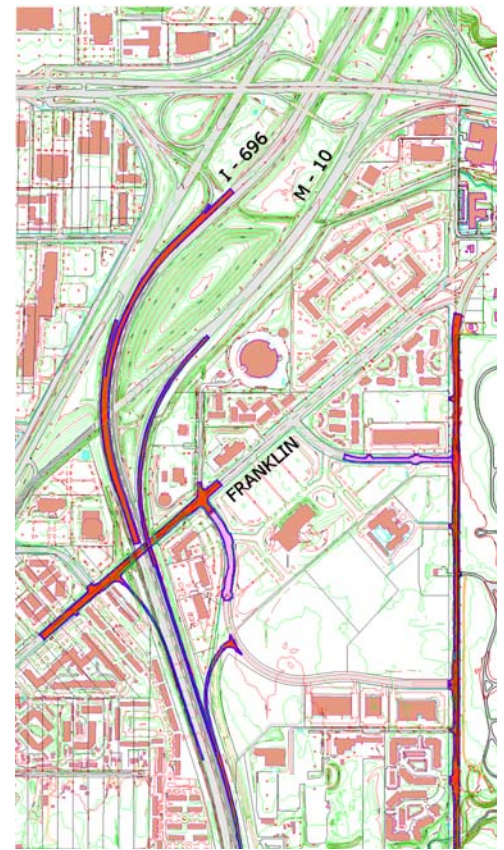


## *I-696/Franklin Road Interchange Project in the Works*

The City of Southfield's quest to improve access to the I-696/US-24/M-10 Interchange dates back to 1973 when the City initiated discussions with the Michigan Department of Transportation to bring construction of such improvements to fruition. Initially, the City retained Hubbell, Roth & Clark, Inc. (HRC) to perform a traffic study and analysis of the existing and proposed roadways and traffic patterns, and to present design strategies that would allow for construction of new interchange ramps.

Today, HRC is responsible for design plans and specifications for proposed new construction of a Franklin Road bridge over I-696, a westbound I-696 exit ramp and an eastbound I-696 entrance for Franklin Road. The project will also include traffic signals, traffic maintenance plans, reconstruction of over one mile of local roads, storm sewer, and replacement of the Pernick Drain storm sewer under I-696. ♦

HRC is an MDOT prequalified consultant working closely with local communities and road commissions to improve area roadways. For more information regarding HRC's road design and construction engineering services, please contact Mr. George Hubbell, P.E., at (248) 454-6300, or [gghubbell@hrc-engr.com](mailto:gghubbell@hrc-engr.com).



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