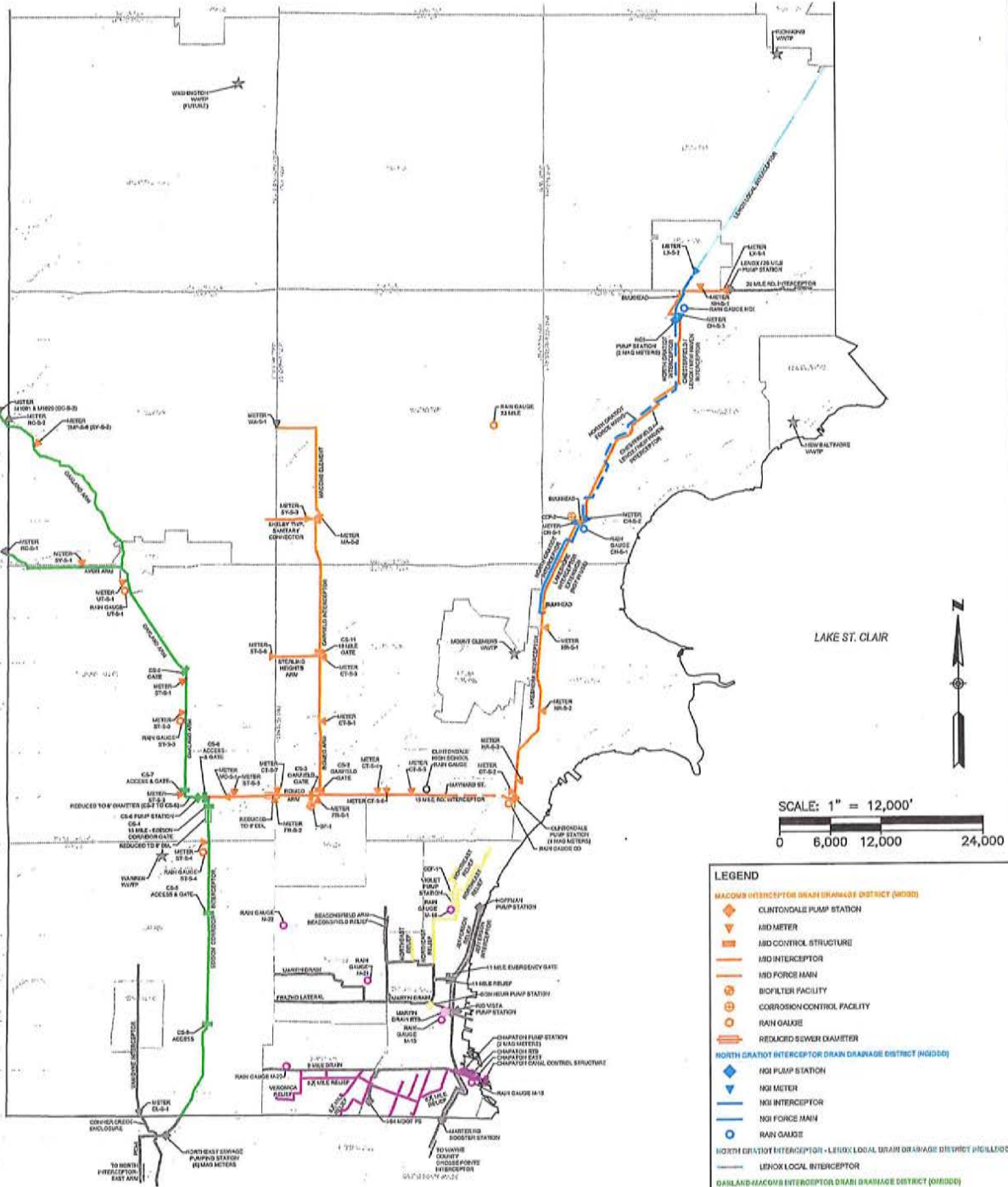


MARTIN SANITARY DIVERSION DRAIN
INTRA-COUNTY DRAINAGE BOARD
NOVEMBER 18, 2019
10:15 A.M.
AGENDA

	Page
1. Call of meeting to order and roll call	
2. Approval of Agenda for November 18, 2019	
3. Approval of Minutes for October 21, 2019	3
4. Public Participation	
5. Chapaton and Martin RTB Disinfection System Replacement Design – Vince Astorino	5
<p>Motion: To award the disinfection system design contract to Wade Trim in the total amount of \$157,230 (Martin District share \$49,450).</p>	
6. Consideration for approval of invoices (see attached)	40
7. Financial Report – Bruce Manning	41
8. Adjourn	

MACOMB COUNTY WASTEWATER SYSTEMS



LEGEND

- ◆ MACOMB INTERCEPTOR DRAIN DRAINAGE DISTRICT (WOODS)
 - ◆ CLINTONDALE PUMP STATION
 - ▼ IMD METER
 - IMD CONTROL STRUCTURE
 - IMD INTERCEPTOR
 - IMD FORCE MAIN
 - BIOFILTER FACILITY
 - CORROSION CONTROL FACILITY
 - RAIN GAUGE
 - REDUCED SEWER DIAMETER
- ◆ NORTH GRATIOT INTERCEPTOR DRAIN DRAINAGE DISTRICT (HOGGSD)
 - ◆ NGI PUMP STATION
 - ▼ NGI METER
 - NGI INTERCEPTOR
 - NGI FORCE MAIN
 - RAIN GAUGE
- ◆ NORTH GRATIOT INTERCEPTOR - LELOUX LOCAL DRAIN DRAINAGE DISTRICT (HILLIARD)
 - LENOX LOCAL INTERCEPTOR
- ◆ OAKLAND/MACOMB INTERCEPTOR DRAIN DRAINAGE DISTRICT (OMAGSD)
 - ◆ CS-6 PUMP STATION
 - ▼ OMD METER
 - OMD CONTROL STRUCTURE
 - OMD INTERCEPTOR
 - REDUCED SEWER DIAMETER
- ◆ 1/2 MILE RELIEF DRAIN DRAINAGE DISTRICT
 - ◆ CHAVATON WEST PUMP STATION
 - ◆ CHAVATON RETENTION TREATMENT BASH
 - CHAVATON CANAL CONTROL GATE
 - 1/2 MILE INTERCEPTOR
 - RAIN GAUGE
- ◆ SEMCOVDS INTERCEPTOR DRAIN DRAINAGE DISTRICT (MAGSD)
 - ◆ SEMCOVDS PUMP STATION
 - CORROSION CONTROL FACILITY
 - SEMCOVDS INTERCEPTOR
- ◆ MARTIN & SANITARY DISINTEGRATION DRAIN DRAINAGE DISTRICT (MAGSD)
 - MARTIN DRAIN RETENTION TREATMENT BASH
- OTHER SYSTEMS**
 - ◆ PUMP STATION
 - ▼ METER
 - ★ WWTP
 - INTERCEPTOR

Candice S. Miller
MACOMB COUNTY PUBLIC WORKS COMMISSIONER



An adjourned meeting of the Intra-County Drainage Board for the **MARTIN SANITARY DIVERSION DRAIN** was held in the Office of the Macomb County Public Works Commissioner, 21777 Dunham, Clinton Township, Michigan, on October 21, 2019, at 10:24 A.M.

PRESENT: Candice S. Miller, Chair
Bryan Santo, Member
Harold Haugh, Member

ALSO PRESENT: Marvin Sauger, Jim Carabelli, Joseph Romano, Macomb County Board of Commissioners; Vince Astorino, Operations & Flow Manager, Brian Baker, Chief Deputy, Jeff Bednar, P.E., Environmental Resources Manager, Stephen Downing, Construction & Maintenance Manager, Bruce Manning, Financial Manager, Tom Stockel, Construction Engineer, Kellie Kource, Drain Account Specialist, Dan Heaton, Communications Manager, Macomb County Public Works

The meeting was called to order by the Chair, Candice Miller. A motion was made by Mr. Haugh, supported by Mr. Santo to approve the agenda as presented.

Adopted: YEAS: 3
NAYS: 0

Minutes of the meeting of September 9, 2019 were presented. A motion was made by Mr. Santo, supported by Mr. Haugh to approve the minutes as presented.

Adopted: YEAS: 3
NAYS: 0

The meeting was opened to public participation, then closed, there being no comments from the public.

The Chair presented the invoices totaling \$11,031.71 to the board for review and approval.

A motion was made by Mr. Santo, supported by Mr. Haugh to approve the invoices as presented.

Adopted: YEAS: 3
NAYS: 0

A motion to receive and file the financial report given by Mr. Manning was made by Mr. Haugh and supported by Mr. Santo.

Adopted: YEAS: 3
NAYS: 0

There being no further business, it was moved by Mr. Santo, supported by Mr. Haugh that the meeting of the Martin Sanitary Diversion Drain Board be adjourned.

Adopted: YEAS: 3
NAYS: 0

The meeting was adjourned at 10:24 a.m.



Candice S. Miller, Chair
Macomb County Public Works Commissioner

STATE OF MICHIGAN
COUNTY OF MACOMB

I certify that the foregoing is a true and correct copy of proceedings taking by the Intra-County Drainage Board for the Drainage District shown on the attached set of minutes, on October 21, 2019 the original of which is on file in the Public Works Commissioner's Office. Public notice of the meeting was given pursuant to Act No. 267, Public Acts of Michigan, 1975, including, in the case of a special or rescheduled meeting or a meeting secured for more than 36 hours, notice by posting at least 18 hours prior to the time set for the meeting.



Candice S. Miller, Chair
Macomb County Public Works Commissioner

DATED: 10/21/19



Candice S. Miller

Public Works Commissioner
Macomb County

To: 8 ½ Mile Relief Drain Drainage District Board Members
Martin Sanitary Diversion Drainage District Board Members

CC: File

From: Vincent Astorino, Operations & Flow Manager

Date: November 12, 2019

Subject: Chapaton and Martin RTB Disinfection System Replacement Design Recommendation

The Macomb County Public Works Office (MCPWO) has identified that a critical capital improvement need for the Chapaton and Martin RTB's is the replacement of the disinfection systems. These are systems that were installed in approximately 1978 and have exceeded the end of their useful life. Due to this, MCPWO has budgeted in the 19/20 budget cycle to undergo the complete replacement of these systems. Chapaton has budgeted \$1,000,000 dollars and Martin has budgeted \$200,000 for the complete cost of the project.

Wade Trim was awarded a contract to evaluate these systems in 2018 as part of a publicly bid project on MITN. As part of that evaluation, they came to the same conclusion as the MCPWO staff that the systems were in need of replacement.

MCPWO then put together a request for proposal and sent it out to two qualified firms to perform the design and construction administration of the work. Those firms were Tetra Tech and Wade Trim, both of which have a vast amount of experience with disinfection systems and either one would be perfect for the job.

Since both firms were pre-qualified and would score high from a technical standpoint, scoring for this proposal was strictly based off of cost and they are as follows:

- Tetra Tech = \$169,250
- **Wade Trim = \$157,230**

This work will be split between Chapaton and Martin. This has been done by using separate task numbers for the project. The split to each district is as follows for the low scoring firm:

- Task 1 (Chapaton) = \$107,780
- Task 2 (Martin) = \$49,450

MCPWO staff is recommending to award the contract to Wade Trim in the total amount of \$157,230 to design the replacement of the disinfection systems. Their proposal has been attached for reference.

OFFICE LOCATION: 21777 Dunham Road, Clinton Township, Michigan 48036 • Phone: 586-469-5325 • Fax: 586-469-5933
ENGINEERING • Phone: 586-469-5910 • Fax: 586-469-7693 ♦ **SOIL EROSION** • Phone: 586-469-5327 • Fax 586-307-8264



/// CHAPATON AND MARTIN RETENTION TREATMENT BASIN DISINFECTION IMPROVEMENTS

8½ MILE RELIEF DRAIN DRAINAGE DISTRICT & MARTIN SANITARY
DIVERSION DRAINAGE DISTRICT

NOVEMBER 8, 2019

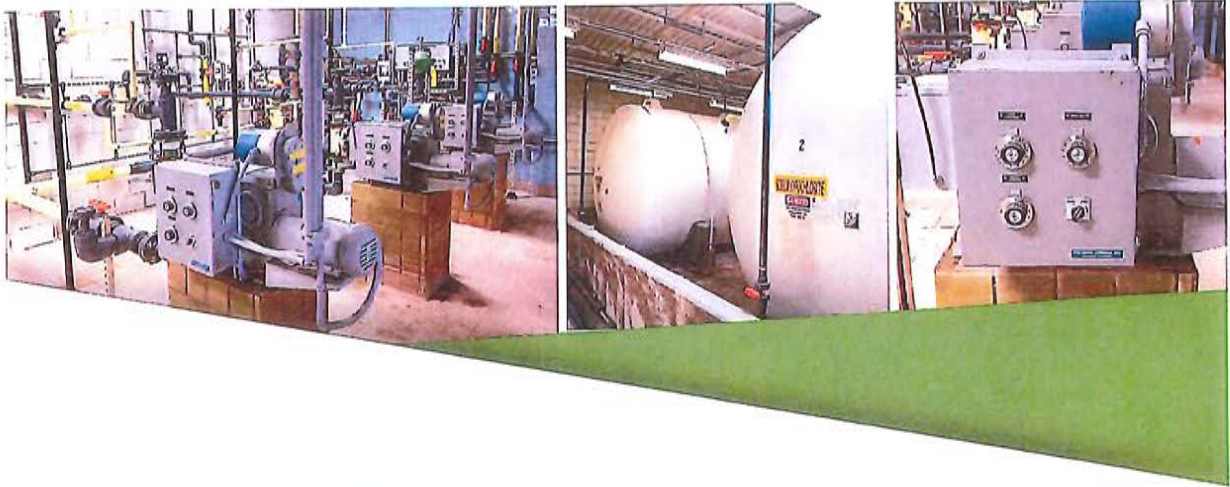


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Section 1

/// LETTER OF INTRODUCTION



Wade Trim Associates, Inc.
25251 Northline Road • Taylor, MI 48180
734.947.9700 • www.wadetrim.com

November 8, 2019

8¹/₂ Mile Relief Drain & Martin Sanitary Diversion Drainage Districts
Macomb County Public Works Office
21777 Dunham Road
Clinton Township, MI 48036

Attention: Vincent Astorino

Re: Chapaton & Martin Retention Treatment Basin Disinfection Improvements
MCPWO Project No. WWS-2019-017

Dear Selection Committee:

The Macomb County Public Works Office (MCPWO) has elected to select an engineering consultant to provide services for improvements to the disinfection system in the Chapaton Retention Treatment Basin (CRTB) and Martin Retention Treatment Basin (MRTB) facilities. These disinfection improvements will result in a new simplified and automated system tied into SCADA that will increase reliability and ease of maintenance so that protection of our waterways can continue without interruption.

Wade Trim recently completed a detailed review of the existing disinfection study at the Chapaton RTB and the Martin RTB as part of the Basin Segmentation and Disinfection System Upgrade Study. As part of this study Wade Trim was able to meet with MCPWO staff, review documentation and ultimately gain intimate knowledge of the existing disinfection system that will allow us to move expeditiously to meet the milestone schedule dates outlined in this request for proposal.

Wade Trim excels in the planning, design and construction management of wastewater collection system and treatment improvements and rehabilitations. We have helped some of the nation's largest utilities expand and rehabilitate their collection systems developing specialized expertise to address wastewater and wet weather capacity and water quality issues. Expert design skills are needed to support rehabilitation and upgrade efforts and manage wet weather flows. Wade Trim brings this skill set steeped in a rich history of successfully addressing these challenges. Wade Trim will lead this effort and will provide project management services as well as a local engineering team. A large engineering support staff provides the additional resources needed to deliver successful projects. A review of our resumes reveals the depth of experience and knowledge gained working with regional utilities with similar aging infrastructure, wet weather capacity, and water quality concerns as MCPWO.

To conduct the Chapaton and Martin Basins improvements, Wade Trim has assembled a project team with expertise in CSO RTB disinfection design and construction that can provide the creative and innovative solutions required. Our Project Manager, John Arvai, PE, has comprehensive knowledge of the challenges of designing

and constructing water and wastewater projects within confined areas that also require critical sequencing and phasing of the work to keep facilities operational. To complement John's expertise, he will be supported by experienced technical CSO design experts in process disinfection and electrical. Jeff Reynhout, PE, Process Disinfection, has 43 years of CSO experience and has worked on multiple disinfection throughout the Michigan and the midwest. Alan Schwab, PE, Electrical/I&C, has 25 years of industry experience and has provided electrical engineering for similar systems as Chapaton and Martin RTBs.

We believe the keys to success for this project are to design easy-to-access and maintainable equipment, to make sure equipment performs as expected, the system enhances control of TRC, and to effectively manage design and construction budgets. Our team is eager for the opportunity to continue our work with Macomb County on this important project that will protect our water, reduce operational costs, and improve facility efficiencies. Please call us at 313.961.3650 to discuss any questions or obtain any further information needed.

Very truly yours,
Wade Trim Associates, Inc.



John Arvai, PE
Project Manager



Dennis Prevo, PE
Senior Vice President

/// KEY PERSONNEL

Successful planning, design, and construction management of engineering projects depend on a range of skills and disciplines to deliver final projects that meet client needs and objectives. The ultimate success of a project hinges on the people, their experience, and their commitment to the team and the project. Wade Trim is confident that our team members have the capacity to make sure completed projects are a success for the 8½ Mile Relief Drain Drainage District and the Martin Sanitary Diversion Drainage District. Our professionals understand the value of delivering service seamlessly from local and multiple office locations. We have identified key personnel to provide their specialized expertise. In this section you will find brief bios and resumes of our key personnel.



JOHN ARVAI, PE
Project Manager
Cost Estimating & Constructability



23 Years of Industry Experience

✓ Currently serving as the Project Manager for the Chapaton RTB Canal Upgrade

✓ Familiar with MCPWO practices and procedures

Our team will be led by John Arvai who will serve as Project Manager and will also perform Cost Estimating and Constructability review for this project. John is currently serving as Project Manager for the Chapaton RTB Canal Upgrades as well as the MIDD As-Needed Engineering Services projects and is aware of MCPWO expectations. John's vast and extensive understanding of design and construction in a municipal environment provides him with the ability to integrate cost saving measures into the project.

John Arvai has also served as project manager and lead estimator on large municipal water/wastewater system construction work, which has included new construction, renovation and improvements at water/wastewater treatment plants, pump stations, reservoirs, and distribution systems. Thru these experiences, John has gained a large base of knowledge in the water and wastewater industry, which includes sequencing and phasing of work, demolition, deep shafts, dewatering, bypass pumping, excavation, structural concrete, process mechanical and equipment, electrical and instrumentation including SCADA. John's firm understanding of project management, schedule development, the construction process, constructability, value engineering and the importance of building, managing and maintaining relationships helps to ensure assigned projects successfully meet schedule milestones and budgets.

/// KEY PERSONNEL



STEVE KALINOWSKI, PE
QA/QC



40 Years of Industry Experience

✓ Implemented solutions to control wet weather flows throughout Macomb, Oakland, and Wayne county sewer districts

Steve Kalinowski, PE, brings in-depth understanding of collection systems based on his extensive work history planning, designing, and supporting construction services and post-construction activities for storage systems in Wayne and Oakland counties. He also brings diverse project experience evaluating and designing solutions to address the range of collection system issues including CSOs, basement flooding, and inflow and infiltration. His hydrologic and hydraulics expertise covers model development, alternative evaluation and designing system input. Steve manages a project from initial evaluation to pinpoint the problem through solution development and post-project monitoring. He has developed and implemented solutions to control wet weather flows throughout southeastern Michigan.



JEFFREY REYNHOUT, PE
Process Disinfection



43 Years of Industry Experience

✓ Implemented disinfection on many facilities from less than 1 mgd to 945 mgd

Jeffrey Reynhout, PE, is a Process Engineer attentive to operator friendly designs and good equipment selection. He embraces the concept that in addition to achieving regulatory requirements, treatment processes must be practical to operate and maintain. He has worked as project manager on several disinfection projects for Grand Rapids, Detroit, Wayne County, and Indiana including the Market Avenue project leading design on a 32 MG RTB including a new 1 BGD pump station, flushing, and disinfection systems. Jeff has also led the process design and provided QA/QC for improvements at CSO facilities from 50 MGD to 945 MGD. Much of his wastewater treatment experience has involved designing and constructing improvements and additions to existing facilities with minimal impact on day-to-day plant operations.



JIM WHITE, PE
Structural



33 Years of Industry Experience

✓ Expertise in structural analysis of pump stations, WWTPs, CSOs, and equalization basins

James White, PE, has worked on a variety of structural projects and has been involved in planning, design and construction phases gaining valuable knowledge of client expectations throughout a project. Jim has served as project manager and structural engineer on a variety of infrastructure projects including seawalls, dams, wet weather pollution control facilities, pump stations and industrial/commercial structures. His recent design experience has focused on tunnel-related structures, seawall repair and replacements along the Detroit River, multi-million dollar combined sewer overflow and sanitary retention facilities and wastewater treatment plants.

/// KEY PERSONNEL



ALAN SCHWAB, PE
Electrical/I&C



25 Years of Industry Experience

✓ Engineered the hardware and software and provided testing and implementation of electrical control systems for WWTPs

Alan Schwab, PE, is a seasoned electrical engineer with extensive design and field engineering experience. He provides project management for field instrumentation and start up for electrical control systems. He has engineered the hardware and software and provided testing and implementation of electrical control systems for water/wastewater treatment plants and automated material handling systems in automotive plants. He has spent many years in the field inspecting, testing, evaluating, and up-starting electrical equipment including MCCs, motors, generators. His design experience allows him to possess knowledge of being able to evaluate the condition and performance of electrical equipment. Alan is also a proficient report writer which will allow him to document valuable needed information in the field while conducting tests and inspections that will ultimately be used to prepare the evaluation summary on all findings and test results.



JOHN GOLDEN
BIM



29 Years of Industry Experience

✓ BIM and virtual design professional with experience on several CSO projects

John Golden is a BIM Specialist, BIM Technical Lead, and Virtual Design and Construction professional with 29 years of experience. He is familiar with architectural, structural, mechanical, electrical, civil, automotive, and land development projects. John is an imaginative individual and excels at problem solving and innovative use of tools and resources. He also has extensive experience with residential, commercial, office, manufacturing, industrial, design and construction.

JOHN ARVAI, PE

PROJECT MANAGER /
COST ESTIMATING & CONSTRUCTABILITY



EDUCATION

- » MS, Construction Management, Eastern Michigan University
- » BS, Civil and Environmental Engineering, University of Michigan

REGISTRATION

- » Professional Engineer, MI
- » 30-hour Occupational Safety and Health Training

QUALIFICATIONS

- » 23 years of experience serving as project manager and lead estimator on municipal, water and wastewater construction projects
- » Experienced with municipal requirements and industry standards

REPRESENTATIVE PROJECT EXPERIENCE

- Chapaton RTB Canal Upgrade, Macomb County Public Works Office, MI. Project Manager for the design of a new gate structure and canal basin expansion in order to create an additional 12 to 15 MG of capture volume. The project requires considerable geotechnical, hydraulic, and site engineering design work. Approximately 1,400 feet of the existing canal cross section will be converted into additional storage by increasing the width and depth. This project will increase MCPWO to retain additional volume leaving the RTB prior to discharging into Lake St. Clair and allows MCPWO to send the captured volume back thru the RTB into their sewer system. The project is presently at the 60% design phase.
- Retention Treatment Basins (RTBs) Segmentation and Disinfection System Upgrade Study, Macomb County Public Works Office, MI. Project Manager for feasibility study exploring improvements to the Chapaton (28-MG storage capacity) and Martin (10-MG storage capacity) RTBs to better manage treatment and retention of flows within the RTBs. Disinfection systems were evaluated with a focus on upgrading chemical feed pumps and improving dosing efficiency. Segmentation options for first flush capture tank were also evaluated. A targeted first flush capture design volume was established and utilized to develop first flush segmentation options for review. Computational fluid dynamics (CFD) modeling is being used to verify the flow through the basin and effectiveness of the preferred first flush segmentation option. Aerial mapping and a bathymetric survey of the Chapaton canal was also performed.
- Macomb Interceptor Drain Drainage District (MIDD) As-Needed Engineering Services, Macomb County Public Works Office, MI. Project Manager. Wade Trim has performed work tasks at the Clintondale and North Gratiot Interceptor (NGI) Pump Stations. At Clintondale, issues related to air relief valves and electrical items were evaluated and solutions recommended in a technical memorandum. At NGI, we designed the replacement sluice gates and the addition of a new, smaller dry weather pump. The project has bid and we are currently moving toward award of the start of construction.
- Saddle Creek CSO Retention Treatment Basin (RTB), Omaha PWD, NE. Project team member on this 315-MGD RTB performing constructability reviews and managing the construction schedule and cost estimate development at concept confirmation, 60% design stage and 90% design stage. Leading contractor outreach program effort. Assisting with value engineering and mass concrete quality control review and specification development.
- Preliminary Planning EHRT Evaluation, Allegheny County Sanitary Authority. Project team member on this HRT basin and pump station project assisting with cost estimate development and constructability review for conceptual options at different locations.
- Gravois and Hafner Storage Studies, St. Louis Metropolitan Sewer District, MO. Project team member assisting with basin and pump station cost estimate and constructability review for various basin options at different locations.

- PC-789, Pump Station 1 Rack and Grit and MPI Sampling Station 1 Improvements, Great Lakes Water Authority (GLWA), Detroit, MI. Lead Estimator and Project Manager for the \$20,915,000 modifications and improvements project for the existing grit and screening handling system. Project included bar screen, conveyor and grit equipment replacement, electrical and instrumentation and controls improvements and process piping system.
- PC-787, Replacement of Belt Filter Presses for Complex I and Upper Level Complex II, GLWA, Detroit, MI. Project Manager for the \$30,200,000 construction project to replace 10 belt filter presses for Complex I and 12 upper level belt filter presses for Complex II dewatering, SFE booster pumps, sludge belt conveyors, sludge grinders, and all related supportive equipment including control panels and associated wiring.
- G.W. Kuhn Drain Regulator Reconstruction and Improvements, Contract No. 5, Oakland County Water Resources Commissioner, MI. Renovated 5 existing sewage regulator chambers consisting of excavation, shoring, concrete demolition, gate demolition, traffic control, flow isolation, bypass pumping, and cast-in-place concrete. The \$1,240,000 project also included new hatches, fiberglass ladders, platforms, and manual and electric regulator gates with control panels and related instrumentation, as well as site restoration.
- GWK Drainage District Asset Management Plan (AMP), Oakland County Water Resources Commissioner, MI. Senior Project Manager assisting with the development of GWK AMP that is part of a larger initiative to develop AMPs for all OCWRC assets. Horizontal assets include sewers and manholes under the jurisdiction of WRC. Vertical assets include the Retention Treatment Basin, associated flushing system and Dequindre Pump Station.
- Miller Road Pump Station Rehabilitation, City of Dearborn, MI. Project Manager for a \$6,580,000 construction project that included isolation and bypass pumping of existing sewage influent which allowed demolition of existing superstructure as well as removal and replacement of all pumps, shafts, motors, piping, valves, electrical and instrumentation in the pump station.
- Saline WWTP Improvements, Phase II, City of Saline, MI. Lead Estimator and Project Manager for \$3,072,000 construction project that replaced rotating biological contactor drives, motors and bearings, replacement of sludge digester precast cover, repairs to odor control unit, other structural repairs, and electrical and instrumentation improvements.
- DB-112 Springwells WTP Emergency Grating, GLWA, Detroit, MI. Project team member on this design build renovation performing quality assurance reviews of contract plans and specifications at the 50% design stage and the 90% design stage. Renovation work includes replacement of deteriorated steel platforms and support framing in 5 areas of the low lift and high lift stations along with process removals and installation.
- PC-674 Connor Station and Fox Creek Building Rehabilitation, Detroit Water and Sewerage Department (DWSD), Detroit, MI. Project Manager for construction of \$27,200,000 project that required sequenced removal and replacement of 4 sanitary sewage pumps (Max Capacity of 229 MGD), drive shafts and motors, electrical, instrumentation and controls in the sanitary pump station. Existing vacuum priming system for 8 storm water pumps (Max Capacity of 2,544 MGD) was replaced including electrical, instrumentation and controls in the storm pump station. Work included sluice gate and actuator replacements, site, architectural and mechanical renovations.
- DWS-823 Michigan Avenue Booster Pumping Station Rehabilitation, DWSD, Detroit, MI. Project Manager for the \$2,200,000 construction project that included removal and replacement of 2 reservoir pumps, shafts, motors and associated piping and valves in the booster pump station. Project also included electrical, instrumentation and HVAC improvements as well as architectural building repairs.

STEVEN KALINOWSKI, PE

QA/QC



EDUCATION

- » BS, Civil Engineering, Michigan State University

REGISTRATION

- » Professional Engineer, MI

QUALIFICATIONS

- » 40 years of experience evaluating and designing , cost-effective solutions to address drainage issues, control flooding, and disinfection for regional and local municipal systems
- » Developed and implemented solutions to control wet weather flows throughout Macomb, Oakland, and Wayne county sewer districts

REPRESENTATIVE PROJECT EXPERIENCE

- Chapaton RTB Canal Upgrade, Macomb County Public Works Office, MI. Design Lead for the design of a new gate structure and canal basin expansion in order to create an additional 12 to 15 MG of capture volume. The project requires considerable geotechnical, hydraulic, and site engineering design work. Approximately 1,400 feet of the existing canal cross section will be converted into additional storage by increasing the width and depth. This project will increase MCPWO to retain additional volume leaving the RTB prior to discharging into Lake St. Clair and allows MCPWO to send the captured volume back thru the RTB into their sewer system. The project is presently at the 60% design phase.
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- Priority 1B Improvements, Wayne County, MI. Design Task Manager for disinfection system improvements at three existing CSO RTBs located in Dearborn Heights, Redford Township, and the City of River Rouge. Design evaluations included review of all aspects of existing disinfection systems, and selection of improvement recommendations to upgrade and replace aging equipment with new technology and instrumentation for improved treatment efficiency and enhanced operation and maintenance. Selected improvements included use of peristaltic hose pumps, upgrades to distribution piping and valves, and instrumentation and controls for more efficient chemical dosing and treatment. Design evaluations were conducted in collaboration with County engineering and operations staff to confirm equipment features and preferences for improving automated processes for basin operations and maintenance.
- Upper Duck All Bundle, Metropolitan Sewer District of Greater Cincinnati, OH. System Design Lead for wet weather improvements bundle that includes conveyance sewers, regulator improvements, sewer separation and bioretention basins to address SSO and CSO in areas tributary to the Duck Creek Interceptor.
- North Huron Valley/Rouge Valley Wastewater Control System, Wayne County, MI. Project Engineer for the planning and design of system improvements including a 17 mile parallel relief interceptor, 2.2 million gallon wet sanitary retention basin, and a wet weather lift station. Project included design and construction of a permanent flow monitoring system consisting of approximately 35 flow meters and rain gauges, and a telemetry system for remote site data collection and analysis.

- Middlebelt Transport Storage Tunnel, Oakland County WRC, MI. Hydraulic/Hydrologic Lead for design and construction of a 7,600-foot-long, 9-foot-diameter tunnel along Middlebelt Road in Farmington Hills to address system bottlenecks and prevent potential SSOs along the Farmington Interceptor.
- Village Oaks. Chaucer Court Drainage Area Study, City of Ann Arbor, MI. Project Manager for investigation and evaluation of improvement alternatives to address surface flooding in a residential area. Includes hydrologic/hydraulic modeling analysis to determine runoff impacts of upstream properties on the storm sewer and detention basin systems tributary to the Malletts Creek. Local residents and the Washtenaw County Water Resources Commissioner staff are major stakeholders in the study.
- Holland Road Drainage Improvements, City of Taylor, MI. Completed a storm drainage project within the LeBlanc Drainage District consisting of a detention basin, open drain clean out, and storm sewer construction. The detention basin design incorporated features to create new wetland areas as a wetland mitigation project.
- Ecorse Creek Pollution Abatement Drain No. 3, , Wayne County, MI. Managed a drainage improvement project consisting of a 36-acre-foot retention basin, pump station, and 10,000 linear feet of 12-inch through 78-inch storm sewers. The project was designed to serve as a water hazard for the Taylor Meadows Golf Course development constructed on the site. Project included establishment of a new county drainage district to consolidate existing districts served by the improvements on the Wayne County Long and Schloff Drains. Duties included concept, design, construction engineering, and startup.
- Allen Park District One Tunnel, City of Allen Park, MI. Project Manager for wet weather storage and transport tunnel located within major urban area crossing several railroads, gas and oil pipelines, major interstate highway, as well as residential area and college campus. The project includes 3,400 lineal feet of 96-inch diameter sewer in soft ground tunnel, 1,400 lineal feet of 14-inch diameter force main, 3,000 lineal feet of 18- to 60-inch diameter connecting and/or relief sewers, 400 lineal feet of 15- to 18-inch pipe-bursting, and a new 28.4 cfs submersible pumps station with below ground mechanical room and above ground electrical and generating room.
- Lower Rouge Equalization Basin and Pump Station, Western Townships Utilities Authority. Project Manager for the design of a pumping and equalization storage expansion to an existing facility. The existing pump station is designed to be upgraded with new pumps and piping to provide 120 MGD firm capacity to equalization and/or treatment. A second equalization basin of 5.5 MG is being constructed to double the storage capacity of the existing facility. Installation of larger pumps in an existing wet well was verified by physical modeling. The project site design included restoration of the entire site with native prairie grass plantings and storm water management features to reduce the quantity and improve quality of runoff from the site, including a prairie grass roof over the basin, 6,000 cubic foot capacity rain garden, grass pavers for maintenance access drive, and a storm water retention pond with sediment forebays and vegetative swales.
- South Omaha Area Industrial Project, City of Omaha PWD, NE. Conveyance Task Lead for study and design phase for new interceptor to address wet weather overflows by diverting high strength meat packing waste from the collection system directly to the WWTP. Developed and evaluated alternatives for diversion of flows through new interceptor that included sewer separation, gravity sewer tunnel, and a lift station with a combination force main and gravity sewer. Final solution included a 17.4-MGD lift station and dual force main to handle highly variable flow and facilitate future cleaning with built-in pigging system.
- Downriver Wastewater Management Study, Wayne County, MI. A flow monitoring program to establish existing flows within the regional interceptor system. Responsibilities included data analysis for determining existing conditions, evaluating sewer capacity, developing alternatives for system improvements, and a permanent flow monitoring scheme.

JEFFREY REYNHOUT, PE
PROCESS DISINFECTION



EDUCATION

- » BS, Civil Engineering, Michigan Technological University

REGISTRATION

- » Professional Engineer: MI, MO, NE, NY, OH, PA, TN, VA

QUALIFICATIONS

- » 43 years of design and construction experience, including WWTP improvements design
- » Attentive to operator-friendly designs and good equipment selection
- » Adept in construction sequencing to maintain continuous operations and minimize impacts
- » Implemented UV disinfection on many facilities from less than 1 mgd to 62 mgd, including enclosed tubes and open channel of various types
- » Lead Process Mechanical Engineer for Wade Trim

REPRESENTATIVE PROJECT EXPERIENCE

- Market Avenue Retention Basin, Grand Rapids, MI. Project manager and lead designer on this 32 MG RTB, including a new 1 BGD pump station, flushing and disinfection systems. Disinfection included sodium hypochlorite flow paced chemical addition, and sodium bisulfite in preparation for TRC control, the only CSO facility in the state to have this feature. The first CSO facility constructed under new state guidelines in the 1980s, and first to use computer-based controls.
- LS 507 CSO facility, Indianapolis, Indiana. Lead designer for the improvements to the LS 507 CSO facility, constructed in a flood plain and lacking screening, disinfection and dichlorination capability. The project included design and construction of horizontal fine screens, dry weather pumping, metering, NaOCl disinfection and bisulfite dichlorination, all constructed in the confines of the existing facility. Challenges included keeping equipment protected from flooding, maintaining access, and construction of improvements when facility was in service.
- 3 Basins Project, Wayne County, MI. Lead process designer for three demonstration basins for Inkster, Dearborn Heights and Redford Townships, each facility including new pump stations, screening equipment and disinfection. Each demonstration basin had different features to provide regulatory agencies with information for ongoing practices for controlling CSO issues.
- Milk River Intercounty Drainage Board Wayne County, MI. Project Manager and lead designer on the major improvement to the existing pump station and 4 MG reservoir. Improvements in the multi-staged project included refurbishment to some existing 1500 and 1750 Hp pumps, new 28 MG basin, new disinfection facilities, new flushing system, new mile long river recirculation system, and new DCSO effluent aeration system. Challenges included public engagement, keeping existing facility in service, and meeting SRF schedules.
- Baby Creek CSO High Rate Treatment Detroit, MI. Project Manager and lead designer on this 5,000 cfs facility, constructed in Patton Park on the border between Detroit and Dearborn. Facility was needed to provide fine screening and disinfection for the protection of the Rouge River. Challenges overcome were public acceptance, difficult hydraulics, and high flow rates.
- Rouge River Outfall, Detroit, MI. Served on the oversight committee for the benefit of the WRRF staff in reviewing and offering comment on this design build work to provide new NaOCl disinfection facility construction at the crowded WRRF site. Facility provided for the disinfection of wastewater plant discharges to Rouge River when the Detroit River outfall was hydraulically limited.
- Mill Creek WWTP Pump Station Rehabilitation, Metropolitan Sewer District of Greater Cincinnati, OH. Provided QA/QC and advised on pumping station processes for the 450 MGD rehabilitation design on the upgrade of a raw sewage pump station.

- Pontiac WWTP Capacity Evaluation and Compliance Assessment, Oakland County WRC, Pontiac, MI. Evaluated each unit process at the Auburn and East Blvd. WWTPs, and determined a nominal capacity for average and max day flows. Compared flows with firm capacity in support of County's due diligence for acquiring the facility.
- Pontiac Auburn WWTP Mechanical Screen Replacement and Digester Mixing Improvements, Oakland County WRC, Pontiac, MI. Project Manager for new mechanical bar screens and digester mixing. Evaluated several mixing technologies and settled on linear motion mixer. Also added new fixed steel cover to project during design.
- Southerly WWTP First Stage Final Settling Improvements, NEORS, Cleveland, OH. Senior Project Engineer responsible for evaluation and design of replacement pumps, piping, meters and controls for 21 existing return activated sludge pumps, and 3 new activated sludge pumps to serve 10 refurbished and 1 new final settling tanks. Also evaluating and designing grease receiving and storage facility to accommodate an average of 25,000 gallons per day of grease trap waste, to be mixed with plant skimmings and incinerated in the new fluid bed incinerators, part of the Reusable Energy Project.
- Canonsburg Township WWTP Improvements, Canonsburg Houston Joint Authority, PA. Performed biddability/constructability reviews and provided QA/QC for headworks pumping and screening, primary tanks, anaerobic digester rehabilitation, and other improvements.
- District No. 3 WWTP Expansion and Improvements, Genesee County Drain Commissioner, MI. Senior Project Engineer responsible for planning, design and construction activities for improvements and expansion to headworks, raw sewage pumping, primary and secondary treatment and disinfection. The expansion increased treatment average daily flow capacity from 3.8 MGD to 11 MGD. During the study phase, the plant's performance was thoroughly evaluated to determine the most cost-effective design. Completed in 2008, the project was constructed under three contracts to minimize the impact on plant operations and fast track improvements that enhanced operations.
- WWTP Expansion, Ypsilanti Communities Utilities Authority, Washtenaw County, MI. Performed QA/QC and design consultation of all wet processes to expand capacity from 29 to 45 MGD. Designed UV disinfection system to handle peak flow of 63 MGD.
- Wyandotte WWTP Improvements, Wayne County Department of Environment, MI. Performed value engineering for medium pressure UV disinfection and pure oxygen activated sludge improvements for 225-MGD WWTP.
- WWTP Expansion, City of Lansing, MI. Responsible for QA/QC of design improvements to expand tertiary plant to 37 MG. Wrote process and controls section of O&M manual.
- Brush Creek WWTP Solids Process and Handling Upgrades and Improvements, Western Westmoreland Municipal Authority, PA. Performing biddability/constructability reviews and providing QA/QC for anaerobic digester rehabilitation, solids dewatering, waste-activated sludge system and laboratory facilities improvements for this 4.4-MGD facility.
- Holland WWTP Study and Expansion, City of Holland, MI. Project Engineer responsible for wastewater treatment plant planning report recommending short-term and long-term solutions for needed plant improvements and expanded capacity. Implemented recommendations for expansion of the existing facility from design through construction at this pure oxygen treatment facility.
- St. Clair County WWTP Improvements, St. Clair County, MI. Project Manager responsible for planning, design and construction to replacing failing RBCs with oxidation towers. Required careful sequence of construction criteria as the entire secondary process was replaced while maintaining compliance with the plant's discharge permit.
- Mount Clemens WWTP Expansion and Upgrade, City of Mt. Clemens, MI. Project Engineer for this major expansion and upgrade, revising this extended air/lagoon plant to an oxidation ditch secondary with tertiary filters. Existing facilities were integrated in the design of the new plant.

JIM WHITE, PE
STRUCTURAL



EDUCATION

- » BS, Civil Engineering, Structural Emphasis, University of Toledo

REGISTRATION

- » Professional Engineer: MI, FL, PA, TN

QUALIFICATIONS

- » 33 years of structural engineering experience for collection and treatment system rehabilitations
- » Expertise covers structural analysis of pump stations, WWTPs, CSO, and equalization basins

REPRESENTATIVE PROJECT EXPERIENCE

- Mill Creek WWTP Raw Sewage Pump Station Rehabilitation, Metropolitan Sewer District of Greater Cincinnati, OH. Project Manager for \$7.5 million rehabilitation of 360 MGD North Pump Station that works with the 155 MGD South Pump Station to provide an ultimate raw sewage pumping capacity of 450 MGD to the WWTP. The station includes 9 pumps of which 3 are variable frequency drives. All of the existing pumps are being rehabilitated and new motors installed. Structural rehabilitation of the 50-foot wet well includes concrete repairs and application of a new protective coating. Two, 96-inch diameter steel force mains are also receiving interior coatings to extend their service life. Architectural upgrades to the building are also part of the project.
 - Duck Key WWTP Expansion, the Florida Keys Aqueduct Authority, FL. Lead Structural Designer (FKAA) for upgrade of Duck Key Wastewater Treatment Facility to meet advanced wastewater treatment effluent limits by 2010 and provide centralized service to Hawk's Cay, Conch Key and Duck Key. The facility consists of two separate treatment plants and a reclaimed water storage and pumping system.
 - A. Ragnone WWTP Wet Weather Basin and Pump Station Improvements, Genesee County Drain Commissioner, Montrose Township, MI. Project Manager for a new 2 mg wet weather treatment basin located adjacent to the WWTP. The basin is designed to provide a surface overflow rate of 2,000 gpd/sf for solids removal and 15 minutes of contact time for disinfection at a peak flow rate of 50 mgd. The project includes a 50 mgd pump station and a 48-inch diameter effluent force main leading to a junction chamber to blend with the plant discharge to accomplish the NPDES permit limits. After the event, the basin uses a series of flushing gates to flush settled solids and grit back to the Brent Run Pump Station.
- Districts 3 and 7 WWTP Wastewater Treatment Plant Improvements, Genesee County Drain Commissioner, MI. Structural Engineer for the design team of consultants and project manager for construction phase of a \$20 million expansion to upgrade a 7.2 MGD tertiary wastewater treatment plant to carry an average day flow of 11.0 MGD and a maximum flow of 22 MGD. Improvements were performed to treat additional sanitary sewage discharge from Tyrone Township, Fenton Township, and Hartland Township
- North Key Largo Wastewater Treatment Plant Advanced Treatment and Wastewater Reuse, North Key Largo Utility Corporation, North Key Largo, FL. Structural designer for the upgrade and expansion of a 0.55 mgd wastewater treatment facility for the Ocean Reef community to meet Advanced Wastewater Treatment (AWT) effluent limits and to implement effluent reuse. The existing treatment process will be retrofitted with a four-stage Bardenpho biological treatment system used in conjunction with Membrane Biological Reactor (MBR) technology. The project includes ultraviolet disinfection systems, diffused air and chemical feed systems, headworks re-design, and hazardous material storage.
- Equalization Basin and Pumping Station, Western Townships Utilities Authority. Lead Structural Engineer for a new 5.5 mg wet weather sanitary basin and associated pump station. Tipping buckets are being used for solids management after the event.

- PC-744, Program Management Services for WWTP Rehabilitation and Upgrade Program, DWSD, Detroit, MI. Analysis of existing underground concrete tanks and load rating. Design of structural modifications to existing underground structures. Evaluation of pumping station structures for Needs Assessment.
- Wet Weather Basin Wall Failure Study and Repair, Genesee County Drain Commissioner. Conducted structural evaluation of a basin wall failure and determined hydrostatic forces from saturated backfill soils created the failure. Evaluated three temporary stabilization systems to maintain use of the facility while long term repair schemes were developed.
- Wayne County CSO Demonstration Basins, Wayne County, MI. Construction engineering support including shop drawing approval. All three basins were designed to provide screening, settling and disinfection to CSO flows. Each basin used a series of tipping buckets to flush settled solids and grit back to a dewatering pump station.
- GWK Drain (Twelve Towns) Retention Treatment Basin, Drain Commissioner of Oakland County, MI. Design coordinator for a 30 mg expansion to an existing 90 mg retention treatment facility. Led the effort to lay out the facility geometrics and develop the construction sequence. The improvements included the design of a new screening and conveyance facility, the addition of a 2,000 foot long baffle and weir system, and a new sodium hypochlorite disinfection system. The project also included the design of a full-coverage, spray nozzle flushing system and a 100 cfs dewatering pump station.
- Three CSO Demonstration Basins, DWSD, Detroit, MI. Construction engineering support during the construction including shop drawing approval. The basins were 2.2, 2.8 and 22 mg respectively. Flush systems included spray nozzles and tipping buckets.
- Palm Bay Belt Filter Press Design, City of Palm Bay, FL. Structural designer for the design of the installation of a belt filter press at the Troutman Wastewater Treatment Plant.
- Elizabeth Lake Pumping Station Rehabilitation Phase II, Drain Commissioner of Oakland County, MI. Lead structural engineer for the rehabilitation of a 31 cfs pump station. Project involved replacement of the entire process, mechanical and electrical systems, and the addition of a 4,200 lf force main, paralleling the original discharge sewer. The major challenge of this project was developing a demolition and construction sequence that permitted continuous operation of the facility during construction.
- Lift Station 1A, Wayne County. Lead structural engineer for a 149 cfs lift station. This pumping station lifts CSO flows to a sufficient elevation from 13 communities to assure that contract capacity flows can be introduced into a surcharged sewer interceptor leading to the Detroit wastewater treatment plant.
- Emergency Evaluation, Omaha DPW, NE. Performed structural evaluation of a concrete-encased, above ground CSO force main that had experienced up to nine inches of settlement resulting in leaks in a primary interceptor.
- Taylor Creek WWTP Reliability and Service Upgrade Project, Metropolitan Sewer District of Greater Cincinnati, OH. Structural Engineer for evaluation of critical operational issues, alternatives evaluation and preliminary design of selected alternatives at 5.5-MGD wastewater treatment plant. Compliance with current regulatory, building, electrical and safety codes as well as with the Ten States Standards was evaluated along with anticipated future regulations and capacity requirement. Alternatives evaluated included clarifier modifications and a new sludge tank.
- Upper Duck All Bundle, MSDGC, Cincinnati, OH. Facility Planning Structural Lead for wet weather improvements bundle that included evaluation of strategic sewer separation, green infrastructure, conveyance sewers, enhanced high rate treatment (EHRT) facilities, CSO regulator improvements and storage tanks (0.6 to 1.2 MG) to address SSO and CSO in areas tributary to the Duck Creek Interceptor.

ALAN SCHWAB, PE
ELECTRICAL / I&C



EDUCATION

- » BS, Electrical Engineering, Lawrence Technological University
- » AS, Chemical Technology, Lawrence Technological University

REGISTRATION

- » Professional Engineer, MI, FL

QUALIFICATIONS

- » Seasoned electrical engineer with 25 years of design and field engineering experience
- » Engineered the hardware and software and provided testing and implementation of electrical control systems for WWTPs

REPRESENTATIVE PROJECT EXPERIENCE

- Mill Creek WWTP Raw Sewage Pump Station Rehabilitation, MSDGC, Cincinnati, OH. Provided site visit, review and troubleshooting assistance for electrical issues during construction of 360-MGD North Pump Station rehabilitation. The station includes 9 pumps of which 3 are variable frequency drives. All of the pumps are being rehabilitated and new motors installed. Co-wrote the motor specification for the new pumps.
- George W. Kuhn Retention Basin, Oakland County Water Resources Commissioner, MI. Electrical Engineer responsible for design drawings and specifications for a new pump station and screening and disinfection facility. Performed electrical design for all wiring, lighting, power distribution equipment, backup generator system, pump controls, and level and flow monitoring. Integrated new control system into the County's existing SCADA communication network.
- Puritan-Fenkell CSO Retention Treatment Basin, DWSD, Detroit, MI. Started and debugged the system for a 2.8-MG basin providing screening, settling and disinfection to CSOs. Basin uses a series of tipping buckets to flush settled solids and grit into a dewatering pump station after an event.
- Saddle Creek CSO RTB, Omaha PWD, NE. Electrical and Controls Engineer for a 315-MGD RTB with 6.6 MG of storage. Prepared contract bid documents including schematic design for the electrical power system, panel schedules for the electrical power distribution system, schematics for the electrical control system, control panel equipment layout drawings, and specified electrical power distribution and control equipment. Electrical design was performed for all wiring, lighting, power distribution equipment, emergency standby generator, pump controls, screening and disinfection equipment, and flow monitoring. The new control system was integrated into the City's existing SCADA communication network.
- Hubbell-Southfield CSO Retention Treatment Basin, DWSD, Detroit, MI. Designed control panel equipment layout and electrical control system schematics, and specified instrumentation and controls equipment for the 22-MG basin that provides screening, settling and disinfection for flows up to 3,200 cfs. Provided assistance with installation and calibrated the instrumentation equipment. Started and debugged the system.
- South Beaches WWTP Process Improvements Upgrade, Brevard County, FL. Electrical Engineer for the design of a new sodium hypochlorite chemical storage and feed facility to disinfect the discharge from an 8 MGD facility. Disinfection is provided to non-potable public reuse, a deep injection disposal well, and surface water discharge. Project includes 2-3000 gallon bulk storage tanks and new duplex chemical metering pumps with hurricane resistant shelter. Senior Engineer for the replacement of the mechanical bar screen and selection of a washer/compactor unit. Design included debris disposal improvements and upgrading the existing electrical equipment to satisfy NFPA 820 requirements.
- Piney Creek WWTP Improvements, Bethel Park Municipal Authority, Bethel Park, PA Electrical Engineer.

- District No. 3 WWTP Expansion, Genesee County, MI. Electrical/Controls Engineer for project that expanded WWTP treatment average daily flow capacity from 3.8 MGD to 11 MGD. During the study phase, the plant's performance was thoroughly evaluated to determine the most cost-effective design.
 - Prospect Woods Pump Station and Kemper Mill Village Pump Station Improvement Projects, MSDGC, Cincinnati, OH. Electrical Engineer for two 180 gpm residential pump stations. They were both new pump stations with new electrical utility power feed, lift station control and SCADA panels, and emergency diesel generator.
 - Pontiac WWTP Capacity Evaluation and Compliance Assessment, Oakland County WRC, Pontiac, MI. Conducted field inspection and asset assessment of electrical engineering and instrumentation at the Pontiac WWTP facilities. Assisted in development of recommended improvements for 20-year capital improvement program.
 - Troutman WWTP Improvements, City Palm Bay, FL. Electrical/Controls Engineer for a new sludge dewatering facility consisting of a new belt filter press building and sludge feed pumps. Lead Electrical Engineer to create contract bid documents including schematic design for the electrical power system, panel schedules for the electrical power distribution system, schematics for the electrical control system, and control panel equipment layout drawings. Specified electrical power distribution and control equipment. Designed electrical systems for all wiring, lighting, power distribution equipment, pump controls, and flow monitoring. Integrated new control system into the City's SCADA communication network.
 - Piney Creek WWTP Improvements – Phase I, Bethel Park Municipal Authority, Bethel Park, PA. Project Manager for design of upgrades to the 5-MGD Bethel Park WWTP. Project includes construction of a new digester cover and vertical draft tube mixing system, new sludge conveyor system for the sludge belt filter presses, new sludge and grit pumping systems, new primary clarifier mechanisms, and various other site access improvements.▪ Grit/Odor Control Improvements Project, Western Westmoreland Municipal Authority, PA. Design/Process Engineer for the Grit and Odor Control Improvements Project, which included a new vortex grit removal system, grit pumping and washing, and grit conveyance. The project also included the design of aluminum covers for odor control and odor treatment via carbon. Prepared design calculations, drawings and specifications as well as administered construction and project direction.
- Southerly CSO Early Action Projects, NEORSD, Cleveland, OH. Electrical design for CSO control project that included large overflow regulating structures and diversion chambers for future tie-in to a CSO tunnel. Underground regulating and diversion structures were designed to accommodate the extremely dense network of existing utilities, highway structures, other site constraints, and connection to a future tunnel.
- Taylor Meadows Irrigation Pump Station, City of Taylor, MI. Provided QA/QC of electrical and instrumentation and controls for replacement of the golf course irrigation lift station. Project included salvaging existing, 30-foot-deep wet well, demolition of existing pump house, and construction of a new pump house and pump system. Pump house was located near the top of a hill on very poor soils and required design and construction of a helical pier foundation system to adequately support the block pump house.
- Retention Basin Electrical and Security Design, DWSD, Detroit, MI. Designed electrical and instrumentation and controls for 3 retention basins with back-up generation at each facility. The \$100-million project included providing an integrated security system for the facilities that tied into the DWSD's existing system. Key-card entry, camera and DVR capability, security lighting, smoke and motion detection, and security fencing were provided.
- Equalization Basin and Pump Station, Western Townships Utilities Authority, Canton Township, MI. Electrical Controls Engineer for new equalization basin next to an existing storage basin. A new pump station is being designed and an existing station retrofitted to accommodate peak influent flows of 120 MGD. System includes screening, 11 MG of equalization storage, high and low lift pumping, odor control, and flushing systems.

JOHN GOLDEN

BIM



EDUCATION

- » School of Architecture, University of Detroit

REGISTRATION

- » AGC CM-BIM and CANBIM LEED AP BD+C Certified

QUALIFICATIONS

- » BIM and virtual design professional with over 29 years of relative experience on architectural, structural, mechanical, electrical, civil, automotive, and land development projects
- » Ability to communicate effectively with clients, engineers, municipalities, quality and manufacturing personnel, and contractors.

REPRESENTATIVE PROJECT EXPERIENCE

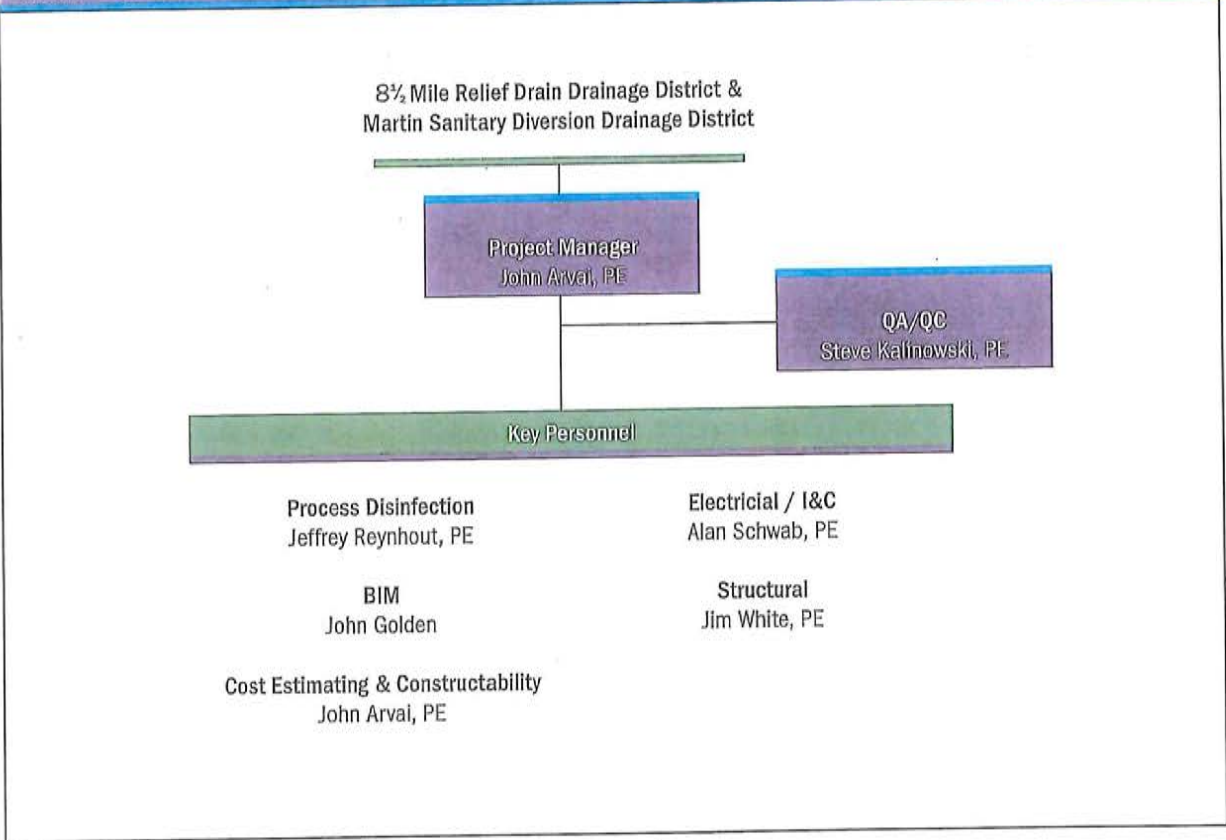
- Retention Treatment Basins (RTBs) Segmentation and Disinfection System Upgrade Study, Macomb County Public Works Office, MI. CAD/BIM Support for feasibility study exploring improvements to the Chapaton (28-MGD storage capacity) and Martin (10-MGD storage capacity) RTBs to better manage treatment and retention of flows within the RTBs. Disinfection systems were evaluated with a focus on upgrading chemical feed pumps and improving dosing efficiency. Segmentation options for first flush capture tank were also evaluated. A targeted first flush capture design volume was established and utilized to develop first flush segmentation options for review.
- Saddle Creek CSO Retention Treatment Basin (RTB), City of Omaha PWD, NE. CAD/BIM Support for the RTB design project to meet the City's long-term control plan objectives. The site layout included a basis of design report and preliminary and final design of a 160-MGD RTB with a minimum 30-minute disinfection detention time.
- Highland Heights/Silver Grove Equalization Tanks, Wet Weather Pump Stations and Screening Facilities, Sanitary District 1 of Northern Kentucky, KY. CAD/BIM support for the design of 2 equalization basins, wet weather pump stations, discharge control valve chambers, and screening facilities to reduce/eliminate overflows in the Highland Heights/Silver Grove area along Route 8 in Campbell County. Providing modeling of the process piping within the structures as well as BIM coordination with external consultants.
- Miami-Dade Central Pure Oxygen Project, Miami-Dade County, FL. CAD/BIM support for design and installation of a high purity oxygen production facility at Miami-Dade County's 143-MGD Central District Wastewater Treatment Plant (CDWWTP). The new oxygen facility will be placed on a site currently housing the plant's odor control building. After demolition of the building, existing piping that traverses the site will be relocated to avoid interference with construction. One of the main electrical power feeds for the CDWWTP runs along the site. Part of the work includes removing and replacing the service to provide for a more reliable power source. A strong maintenance of plant operation is being employed so that plant capacity is maintained during the entire construction process.
- Regional Technology Lead, IBI Group, Michigan LLC, Southfield, MI. Responsible for aligning BIM execution strategy of IBI Group with needs of clients and projects. Collaboration with other IBI offices, external partners and consultants to facilitate consistent workflow and standards implementation across entire company. Identified and evaluated new BIM technologies and made recommendations based on corporate initiatives, goals, and budgets.
- Sr CAD Designer/VDC Manager, Walbridge, Detroit, MI. Responsible for set-up and management of BIM coordination models from multiple source files including owner, A/E firm, contractor and subcontractor, and equipment suppliers. Evaluation of software and processes for use as construction management tools.

Section 3

/// ORGANIZATIONAL CHART

Wade Trim has available staff with a variety of expertise to complete the Chapaton and Martin Retention Treatment Basin Disinfection Improvements project. Below you will find an organizational chart that indicates roles and responsibilities of each key team member. These key members will be supported by a strong team bringing comprehensive experience in a wide range of projects and disciplines.

Exhibit 1 Organizational Chart



/// WORK PLAN

UNDERSTANDING OF THE PROJECT

Macomb County operates two combined sewer retention treatment basins (RTBs) that provide disinfection of treated overflows discharged into Lake St. Clair. The Chapaton RTB has a capacity of 28 million gallons and the Martin RTB 10 million gallons. These facilities were originally constructed in the mid-1960s in accordance with the design standards at that time, as single compartment storage basins with no disinfection.

In the late 1970's, disinfection systems were added to both facilities. These systems have performed adequately and have been upgraded in some respects since the original construction. For instance, the hypochlorite tanks which were originally buried concrete tanks have been replaced with fiberglass tanks in an addition to the East Building.

In more recent years automation features have been added to all Chapaton and Martin operations, including disinfection. We are aware that the MCPWO has implemented influent CSO metering and is in the process of implementing a comprehensive TRC real time analysis system in the Chapaton basin.

The purpose of this design project is to develop construction bidding documents which will upgrade the disinfection equipment, piping and instrumentation for another 20-30 years and meet the stated MCPWO goals which are as follows:

- » Increase the reliability of the disinfection distribution system with new and more reliable pumps
- » Develop an automated sequence that is integrated into the MCPWO SCADA system for disinfection at the basins using already existing flow meters and SWAN TRC equipment along with a backup disinfection plan
- » Simplify the disinfectant storage system and process piping
- » Increase usable floor space at both the existing Chapaton East Building and Martin Service Building
- » Create a design allowing disinfection availability during construction

PROJECT APPROACH

BOD – Basis of Design

We suggest that the first step in the development of the BOD is to review existing information and documents associated with the disinfection system, discuss the system with the operations and maintenance staff and perform a building site survey of the disinfection systems. Any new surfacing information that was not previously considered when Wade Trim completed the disinfection study for MCPWO will be considered. Given our extensive knowledge of the disinfection system we anticipate that the development of the BOD will move along quickly which will prove key to meeting the project's milestone schedule.

The BOD development will require the following design decisions be made:

Points of Chemical Application

Currently, sodium hypochlorite is applied at the 9 Mile gravity drain upstream of the basin, at each pump discharge, and at the effluent end of the basin.

These application points will be confirmed in a workshop setting or revised to better suit the present-day operations of the facility.



The chemical feed pumps at both Chapaton and Martin Basins require upgrading because replacement parts are no longer available from suppliers.

Dedicated Hypo Pump per Application Point or Split Chemical Feed

All chemical metering pump systems operate best when dosing control is accomplished by the metering pump, which is manufactured to have repeatability and accuracy of flow control. It is possible to feed several points from a single pump, or from a discharge header, using flow meters and control valves; but this adds additional equipment and software and is more prone to complications and failure. We will need to decide how to arrange the feed pumps with the application points and balance the need for versatility with number of pumps, meters and controls. Flow diagrams that can be reviewed in a workshop setting may be the most efficient way to do this.

Degree of Redundancy

Reasonable redundancy is necessary to allow for equipment failures and maintenance activities, and to satisfy regulatory requirements. Beyond that, the number of spare pumps is largely dependent on the operator's degree of comfort and judgement of the consequences of failure. We will discuss these issues and arrive at a mutual agreement before the basis of design is formally presented.

Minimum and Maximum Dosages

The facility has functioned very well over the years with the capability to feed up to 10 mg/l. Given no failures to disinfect due to pump capacity, we cannot, by calculation, suggest that a larger system of pumps is needed. However, we should consider the ability to feed up to perhaps 20 mg/l if we can still possess the rundown necessary to accommodate smaller events with lower chlorine demands. This merely offers protection against unknown future conditions and doesn't add significant costs to the project.

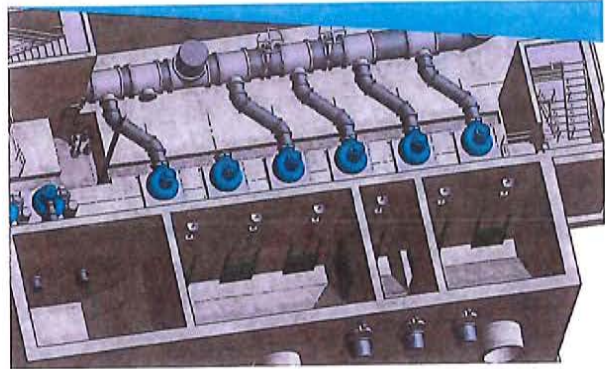
Preliminary Design

Following confirmation from MCPWO on the Basis of Design, preparation of drawings to the 60% point will be developed along with the development of a specification table of contents. As part of the drawing development Wade Trim will utilize BIM Revit to 3D model the Martin Service Building and also update the existing 3D model for the proposed pump room at Chapaton. The Martin BIM model work can progress immediately at the start of the project utilizing existing reference drawings and as built. A 60% review workshop will be held to confirm that the disinfection design is meeting the vision and goals of the project.

/// Exhibit 2 BIM Benefits

BIM Model Benefits

- » Conceptualization of preliminary design alternatives
- » Identification of conflicts
- » Ability to generate a "virtual removal of equipment" sequence which will identify the scope of the removal and other safety concerns
- » Accurate as-built documentation
- » Efficient construction document preparation and quantity take-offs
- » Future integration with facilities management, program management, and asset management systems



Wade Trim recently used Revit 3D BIM (Building Information Modeling) software to model an existing pump station facility to assess the potential for wet well improvements to improve pump performance for a 45 MGD lift station in Omaha, NE. Our work on Omaha's Saddle Creek Retention Treatment Basin (RTB) project expanded our expertise in BIM, which has in turn improved cost estimation, building performance, scheduling and project flexibility for the City. Likewise, BIM allows for the same project ease for all clients, including a greater ability to view improvements, avoid conflicts and present to stakeholders a better understanding of a given project.

Design review comments from the workshop will be incorporated into the design and approved prior to proceeding to the final design phase.

During the course of the preliminary design progression, we anticipate the following deliverables:

- Project start meeting minutes
- Draft Basis of Design Report
- Final Basis of Design Report
- Monthly progress meeting minutes
- 60% design review documents

Final Design

Following MCPWO approval of the 60% drawings Wade Trim will proceed to the 100% design stage which will include drawings and specifications ready for construction bidding. It will be necessary to have an intermediate workshop to review the design details moving from 60% to 100%. A 100% review workshop will be held to address any final review comments and confirm the design meets the project goals. During this final design stage Wade Trim will prepare permit applications, and engineer's opinion of probable construction cost.

During the course of the final design progression, we anticipate the following deliverables:

- Review meeting minutes
- 100% design review minutes
- Part 41 Permit application and documents
- 3D BIM models
- 100% Design Documents

Bidding Support Services

Wade Trim will assist the MCPWO in facilitating the pre-bid meeting and will prepare handouts and presentations for the meeting detailing the project scope of work as necessary. During the bidding phase, the Wade Trim Team will assist in addressing all bidder questions, issuing bulletins/addenda to the bidders up to the time when bids are received, and assisting MCPWO in reviewing the bids by evaluating the bids as requested and necessary to determine the responsible low bidder. Wade Trim will conduct a pre-award meeting with the apparent low bidder, if needed.

During the course of the bidding phase, we anticipate the following deliverables:

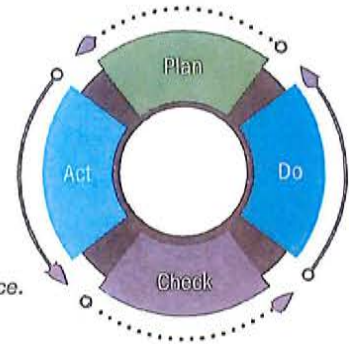
- Pre-bid meeting agenda and meeting minutes
- Addenda
- Bid award recommendation
- Pre-award meeting agenda and meeting summary

Exhibit 3 QA/QC

Wade Trim Commitment to Quality

Quality is not a process or checklist but a culture and mindset at Wade Trim. Quality is reviewed at each team meeting and key decisions are reviewed just like key calculations. Our commitment to quality is demonstrated through our people and contributes to the successful delivery of services to our clients. Our program is continuously improved by the Plan-Do-Check-Act cycle.

Measuring performance and using feedback drive the quality cycle and improve performance.



Continuous Improvement

A corporate initiative named Quality Quest strengthens continuous improvement to quality. A Quality Improvement Advisory Group (QIAG) is responsible for maintaining our Quality Program and has detailed the process to a standards level in our Project Standards Manual.

The long-term effectiveness of the program is safeguarded using corrective and preventive actions that require evaluation of the quality policy, using independent reviewers, quality objectives, audit results, analysis of findings, and actions directed by management to improve the quality process. It has re-energized the quality function and provides the Practice Leads (Hydraulics & Hydrology, Structural, Underground Utilities, etc.) what they need to ensure we have a state-of-the-art QA/QC program. Wade Trim's Chief Technical Officer delivers a Quarterly Report on the status and effectiveness of the program at Quarterly Board Meetings.

Construction Administration Services

Pre-Construction Conference

Wade Trim will organize and facilitate the pre-construction conference including preparing and issuing the agenda and taking minutes. This conference will include appropriate County staff, the contractor, and regulatory agencies. Topics to be discussed include the contract documents, contractor schedule, and roles and responsibilities of each entity. Each entity will have the opportunity to address construction issues that may need coordination or further research to be sure the project construction phase gets off to an efficient start.

Progress Meetings

Monthly progress meetings will be facilitated by Wade Trim and participants will include appropriate MCPWO staff, contractors, utility companies, and regulatory agencies. Meeting topics will include the construction progress and schedule, status of engineering submittals and requests for information (RFIs), delivery of major equipment and materials, and any issues that must be addressed by the construction team. Wade Trim will prepare and issue meeting minutes to the attendees who will have the opportunity to request corrections or clarifications to the minutes before they are finalized for the record.

Perform Shop Drawing/RFI/O&M Manual Review

Wade Trim will review shop drawings, RFI, O&M manuals, and other construction phase documents that require review by the Engineer. Formal responses to each will be prepared by Wade Trim and transmitted back to the contractor, with copies of each Engineer response provided to MCPWO. For particular documents requiring the review of the Engineer, Wade Trim will seek appropriate input from the MCPWO prior to returning the response to the contractor. Some responses may be better suited for MCPWO staff to lead the response, with only support from Wade Trim.

Construction Observation

Wade Trim will provide experienced resident construction staff that will monitor the work during construction activities. Wade Trim Team staff will monitor the progress of the work and prepare an inspector daily report (IDR). The report will include contractor labor force, equipment on site and in use, quantity of work installed, photographs to document progress of the work, weather conditions, visitors to the site, and other relevant construction-related

information. These reports will be prepared by our staff, reviewed by our project manager, and distributed to the team daily. The use of drone technologies can be utilized to allow for aerial views of construction observation and to document progress, which would be very beneficial on a site as large as this one.

Provide Pay Recommendations

Payment applications will be prepared and submitted by the contractor to MCPWO and the Engineer for review and comparison to actual progress of the work. Our construction team will review the payment application and request any changes from the contractor that are necessary to accurately reflect completed work. Once review of the payment application is complete and necessary revisions are made by the contractor, Wade Trim will prepare and submit the official Certificates of Payments to MCPWO for final review and processing.

Issue Clarifications

Wade Trim will respond to Requests for Information (RFI) from the contractor to clarify the design intent or to interpret the contract requirements and prepare formal responses for each to the contractor. As appropriate, MCPWO will be consulted on all RFI responses prior to the transmittal of the response to the contractor and in some cases may decide to lead the response effort.

Furnish Consultation During Construction

The most important and valuable service Wade Trim can offer MCPWO during the construction phase is thoughtful monitoring of the progress and anticipation of issues before urgent needs or crises develop. Wade Trim staff experienced in basin rehabilitation construction projects will be assigned to this project.

Substantial Completion Observation

At the appropriate time, the contractor will request the project be certified as substantially complete. Wade Trim staff will evaluate the status of the work to verify the project has reached substantial completion per the requirements of the contract. This process will include verification that project equipment and processes were properly started-up, commissioned, tested, and turned over to MCPWO. At that time and with MCPWO concurrence, Wade Trim will assemble the proper documentation and prepare a Substantial Completion Certificate for the MCPWO to issue.

Final Walk Through Observation

Prior to final completion, Wade Trim staff will prepare a "punch list" of items that do not conform to the contract documents. A final walk-through will be scheduled by Wade Trim and will include representatives from MCPWO and the contractor to verify project completion. Upon the County's and the Engineer's satisfaction, Wade Trim will prepare a Final Completion Certificate for the County to issue.

Prepare Record Drawings and Close-Out

Record drawings will be prepared for the Chapaton RTB Canal Upgrade project. As part of the project documentation, the contractor will be required to keep a "red line" set of markups to actively represent the work as installed. Wade Trim will meet with the contractor on a monthly basis at a minimum, to review the contractor's "red line" set of markups. Our team will review the markups to verify accuracy with the Engineer's records and the actual as-built conditions. This monthly meeting will facilitate more efficient preparation of the final set of record drawings. Once the work is complete, the contractor will be required to submit the final as-built drawings and documents. Wade Trim will review the final as-built documents, recommend revisions as necessary, and ultimately adopt the as-built drawings as the final record documents for the project. Wade Trim will update the 3D BIM model to reflect construction as-built conditions.

This task will also include project close-out items such as reviewing project records to assure all construction issues have been addressed, reviewing final submittals by the contractor, preparing reconciling change orders and final pay certifications, and assisting with updating the Nexgen database with MCPWO assistance.

TEAM COLLABORATION

Our proposed management approach will be to present our technical evaluations and findings for discussion with MCPWO in a series of monthly meetings, with additional collaborative workshops conducted as necessary to review design and solicit input for key decisions as work progresses. Wade Trim successfully uses this collaborative approach on all of our projects and considers it a core value that guides our management approach.

We have successfully demonstrated this collaborative approach to MCPWO on recent projects for the Chapaton Retention Treatment Basin. The progress meeting/workshop topics were scheduled in advance, included our design project manager and appropriate design discipline leads as required for the specific workshop topic, and provided a forum for interactions with the MCPWO's engineering staff to review and discuss details of the technical development and design evaluations for informed collaborative selections and decisions. The various design evaluations and decisions were documented in a series of Technical Memorandums that were incorporated into the project reports and design files.

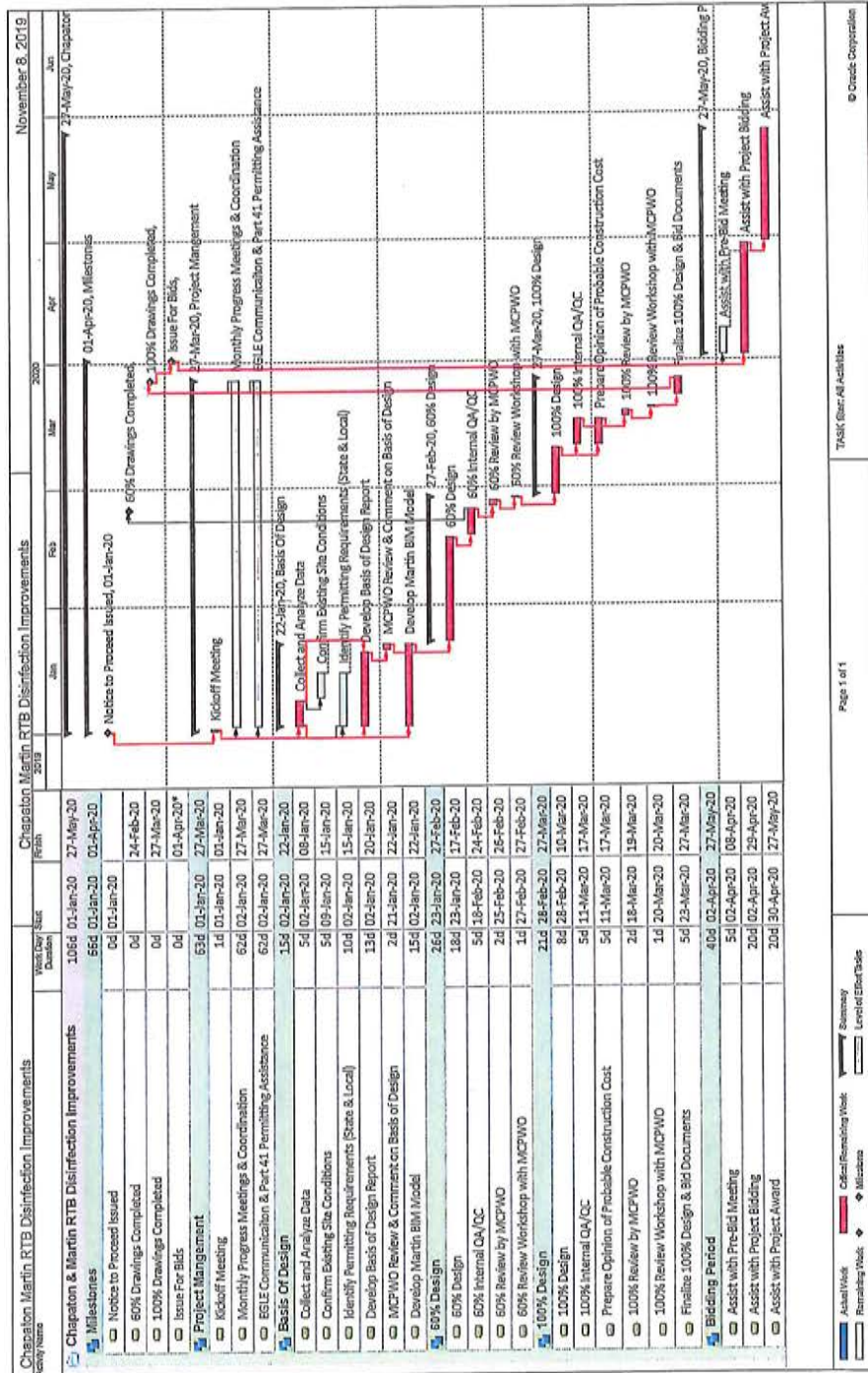
We intend to build on this success using a similar technical approach for this project.

ASSUMPTIONS

- Pumps will be peristaltic type
- Existing storage tanks will be used
- MCPWO will perform SCADA programming, specifications will require PLC programming by Contractor
- New piping to each application point (at Chapaton only) will be designed with corrosion resistant supports
- BIM model will be developed to not more than LOD 300 to convey design intent.

/// SCHEDULE

We firmly believe that agreement on a written Basis of Design sets the stage for efficient, successful design and construction. Following the Basis of Design review and agreement, we can then proceed on preparing a 60% and 100% complete set of documents as outlined below. We encourage MCPWO participation, questions, and direction at any point in the project, but in accordance with the RFP, we show specific meetings and review periods in the design schedule.



/// COST

PROPOSAL FORM

Proposal No. Proposer: Wade Trim Associates, Inc. (print or type company name)

BASE PROPOSAL

The undersigned Proposer, having carefully examined the Proposal Documents and the Scope of Work, the requirements of the Request for Proposal and all subsequent Addenda, all as issued by the Owner, and being familiar with all conditions and requirements of the Scope of Work, hereby proposes and agrees to furnish all material, labor, equipment, tools and supervision; and to furnish all services necessary to complete the Work required in accordance with the Bidding Documents for the following projects, in the following amount:

One-hundred and fifty-seven thousand two-hundred and thirty Dollars \$ 157,230 (Sum to be written out)

Respectfully submitted this 11 day of November, 2019

By: Wade Trim Associates, Inc. (Name of bidding firm or corporation)

Witness:

By: Dennis Prevo (Signature)

Attest: Ralph Picano (Signature)

Dennis Prevo (Type or print name)

By: Ralph Picano (Type or print name)

Title: Senior Vice President (Owner/Partner/President/Vice Pres.)

Title: Corporate Secretary (Corporate Secretary or Assistant Secretary Only)

Address: 500 Griswold Street, Suite 2500 Detroit, MI 48226

Phone: 313.961.3650

License: Professional Engineer, MI, 6201047479

Federal ID No.: 38-1802386

Wade Trim Associates, Inc. Company Name

John Arvai Company Representative

(Affix Corporate Seal Here)

Senior Project Manager Title

November 4, 2019 Date



**Wade Trim Billing Rate Schedule
Water Resources
With Equipment Billed Separately
Effective January 2019**

Labor Cost Classification Code	Classification Title	2019 Rate Per Hour
299	Professional Engineer V	\$ 205.00
298	Professional Engineer IV	\$ 185.00
297	Professional Engineer III	\$ 160.00
296	Professional Engineer II	\$ 140.00
295	Professional Engineer I	\$ 120.00
294	Engineer IV	\$ 145.00
293	Engineer III	\$ 125.00
292	Engineer II	\$ 105.00
291	Engineer I	\$ 90.00
246	Professional Planner III	\$ 140.00
245	Professional Planner II	\$ 120.00
244	Professional Planner I	\$ 105.00
243	Planner III	\$ 110.00
242	Planner II	\$ 80.00
241	Planner I	\$ 70.00
256	Prof. Landscape Architect III	\$ 150.00
255	Prof. Landscape Architect II	\$ 115.00
254	Prof. Landscape Architect I	\$ 100.00
253	Landscape Architect III	\$ 95.00
252	Landscape Architect II	\$ 85.00
251	Landscape Architect I	\$ 75.00
266	Professional Scientist III	\$ 140.00
265	Professional Scientist II	\$ 100.00
264	Professional Scientist I	\$ 85.00
263	Scientist III	\$ 110.00
262	Scientist II	\$ 75.00
261	Scientist I	\$ 60.00
286	Professional Surveyor III	\$ 140.00
285	Professional Surveyor II	\$ 115.00
284	Professional Surveyor I	\$ 105.00
283	Surveyor III	\$ 100.00
282	Surveyor II	\$ 90.00
281	Surveyor I	\$ 80.00
786	Survey Technician VI	\$ 125.00
785	Survey Technician V	\$ 105.00
784	Survey Technician IV	\$ 95.00
783	Survey Technician III	\$ 80.00

**Wade Trim Billing Rate Schedule
Water Resources
With Equipment Billed Separately
Effective January 2019**

Labor Cost Classification Code	Classification Title	2019 Rate Per Hour
782	Survey Technician II	\$ 65.00
781	Survey Technician I	\$ 50.00
716	Construction Technician VI	\$ 140.00
715	Construction Technician V	\$ 115.00
714	Construction Technician IV	\$ 100.00
713	Construction Technician III	\$ 90.00
712	Construction Technician II	\$ 80.00
711	Construction Technician I	\$ 65.00
726	CADD Technician VI	\$ 115.00
725	CADD Technician V	\$ 105.00
724	CADD Technician IV	\$ 95.00
723	CADD Technician III	\$ 85.00
722	CADD Technician II	\$ 70.00
721	CADD Technician I	\$ 65.00
736	Engineering Specialist II	\$ 165.00
735	Engineering Specialist I	\$ 145.00
734	Engineering Technician IV	\$ 175.00
733	Engineering Technician III	\$ 100.00
732	Engineering Technician II	\$ 75.00
731	Engineering Technician I	\$ 60.00
756	Project Specialist III/Manager	\$ 170.00
755	Project Specialist II	\$ 145.00
754	Project Specialist I	\$ 105.00
753	Project Aide III	\$ 125.00
752	Project Aide II	\$ 90.00
751	Project Aide I	\$ 65.00
203	Senior Principal	\$ 270.00
202	Principal	\$ 265.00
201	Senior Professional	\$ 260.00

Outside expenses and subconsultants at cost times 1.15.

Special billing rates will apply in matters requiring expert witnesses or other consulting as it relates to legal matters.

Reviewed and Revised Annually

**Wade Trim Equipment Billing Schedule
Effective January 2019**

Other Direct Costs	Rate
Survey Equipment	\$6.00/hour
Robotic Survey Equipment	\$15.00/hour
GPS Equipment	\$20.00/hour
Kaarta Hand Held Scanner	\$35.00/hour
Drone	\$100.00/hour
Manhole Lift Cover	\$10.00/hour
SSES - Includes Van and Standard Equipment	\$14.75/hour
SSES - Equipment (Van and Miscellaneous)	\$8.50/hour
Daily Vehicle Charge	\$76.33/day
Construction Vehicle	\$16.00/hour
Field Vehicle	\$0.63/mile
Troxler Nuclear Densometer	\$5.50/hour
Cylinder Breaking	\$12.00/cylinder
Concrete Testing Equipment	\$5.00/hour
Photocopies	\$0.10/copy
Color Copies	\$0.25/copy
Color Printer (per print)	\$0.15/print
OCE Printer	\$1.40/sheet
OCE Printer/Mylars	\$4.00/sheet
Travel	\$0.64/mile
IPAD	\$50.00/day
Laptop Computers	\$9.50/day
Flow Meter (single site)	\$275.00
Flow Meter (dual site)	\$550.00
Sampler (monthly)	\$500.00/monthly
Saximeter	\$12.00/hour
Rain Gauge	\$125.00/monthly
Recorder	\$150.00/monthly

Reviewed and Revised Annually

/// FORMS

OWNER ENGINEER DISCLOSURE FORM

Engineer NAME:	Wade Trim Associates, Inc.
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1. Does the Engineer currently employ a relative of any employee, elected official or appointee of an elected official of Macomb County or the OWNER? Relative is defined as husband or wife, father or mother, son or daughter, brother or sister, uncle or aunt, first cousin, nephew or niece, great uncle or great aunt, grandfather or grandmother, grandson or granddaughter, father-in-law or mother-in-law, son-in-law or daughter-in-law, brother-in-law or sister-in-law, stepfather or stepmother, stepson or stepdaughter, stepbrother or stepsister, half-brother or half-sister, the parents or grandparents of the individual's fiancée.

YES NO

If yes, please answer the following:	
A.	Name of employee or elected official (or appointee):
B.	Position/Title:

2. Does any employee or elected official of the OWNER or Macomb County have an interest in the vendor organization in any of the following capacities, either compensated or non-compensated: director, owner, officer, partner, beneficiary, trustee, member, employee or contractor.

YES NO

If yes, please answer the following:	
A.	Name of employee or elected official (or appointee):
B.	Position/Title:
C.	Department or Agency:
D.	Position/Title with Vendor:

3. Does any current employee or elected official of the OWNER or Macomb County have legal or beneficial ownership of 10% or more of the outstanding stock of the Engineer organization?

YES NO

If yes, please answer the following:	
A.	Name of employee or elected official (or appointee):
B.	Position/Title:
C.	Department or Agency:

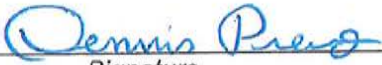
D.	% of Ownership of Vendor Organization:	
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4. In the last five calendar years, has the vendor failed to perform or otherwise deliver on the terms of a contract or agreement with Macomb County, the OWNER, or any other public entity, including suspensions or debarments?

YES
 NO

If yes, please provide further explanation:

I hereby certify that the information included on this form is complete, true and accurate to the best of my knowledge and belief. I understand that either I or the organization to which this form applies may be subject to sanctions and/or penalties as set forth in the ethics ordinance if any information has been falsified or omitted.

Dennis Prevo		Senior Vice President
<i>Name (Please Print)</i>		<i>Title</i>
		11/04/2019
<i>Signature</i>		<i>Date</i>

NON-COLLUSION AFFIDAVIT

STATE OF

COUNTY OF

Dennis Prevo, being first duly sworn, deposes and says that he/she is authorized on behalf of Wade Trim Associates, Inc. (Proposer Name) who is making the foregoing Proposal(s) that:

- 1) Such Proposals are genuine and not collusive or a sham.
- 2) This Proposer has not colluded, conspired, connived or agreed, directly or indirectly, with any other Proposer or person to submit a Proposal which is a sham.
- 3) This Proposer has not in any manner agreed with any other persons or businesses to fix the proposed price, overhead, profit, or any cost element of the submitted Proposal.
- 4) This Proposer has not attempted to secure any advantage against any other Proposers through collusion with any other Proposer or employees or representative of the OWNER or Macomb County.
- 5) That the Proposals submitted are true and accurate to the best of my knowledge and belief and are made in good faith.
- 6) This Proposer has not directly or indirectly submitted or disclosed its Proposal or its contents or divulged information or data relative thereto to any association or to any member or agent of any other Proposer to this proposal.

Further, Affiant sayeth not.

Dennis Prevo
Signature

Subscribed and sworn to before me
this 4 day of November, 2019.
[Signature]
Notary Public
County of Oakland,
State of MI
My Commission Expires: 1-21-2023

SHARI L. KRAZEL
Notary Public, State of Michigan
County Of Oakland
My Commission Expires 01-21-2023
Acting in the County of Wayne



MARTIN SANITARY DIVERSION INVOICES 11/05/19

Funding Source	Apportionment	Manager	Vendor	Amount	Invoice Detail	Project Summary	Project Balance
Martin Sanitary Diversion Drain	Chapter 20 Roseville - 78.09% St. Clair Shores - 21.91%	Astorino	HESCO	\$ 1,200.00	Invoice #161025-9 - 09.30.19	Annual Preventative Maintenance	\$ 44,699.00
		Astorino	JCI Jones Chemical Inc.	\$ 4,116.62	Invoice #804641 - 10.31.19	Hypochlorite Solution - 4,551 gallons	
		Total		\$ 5,316.62			

YTD Budget

Fund: Martin Sanitary Diversion

As of Fiscal Period: Oct 1, 2019-Oct 31, 2019

DESCRIPTION	2020 FINAL BUDGET	ENCUMBERED	ACTUAL	REMAINING BUDGET	PCT UTILIZED
REVENUE ACCOUNTS					
State-Grants	-			-	100.0%
Investment Inc-Interest	5,000			5,000	0.0%
Reimb-Local Communities	838,682		419,341	419,341	50.0%
PY Revenue-Fund Balance	286,915			286,915	0.0%
<i>Total Revenue Accounts</i>	1,130,597	-	419,341	711,256	37.1%
EXPENSE ACCOUNTS					
Application/Permit Fee	3,000			3,000	0.0%
Dues, Training, Conf, Subs.	3,150			3,150	0.0%
Engineering					
-As Needed Engineering	15,000			15,000	0.0%
- Disinfection System Replacement	200,000				
-CCTV of Dewatering Line and Influent and Effluent Boxes	25,000				
-Design Flushing System Upgrades & First Flush Capture(new money)	175,000			175,000	0.0%
-Design Flushing System Upgrades & First Flush Capture	200,000			200,000	0.0%
-Design Basin Equipment Hatch	12,000			12,000	0.0%
New Equipment	12,900			12,900	0.0%
Operating Supplies	55,900		4,186	51,714	7.5%
Other Professional Svcs	18,000			18,000	0.0%
Personnel Services	188,558			188,558	0.0%
Repair & Maintenance	138,740		275	138,465	0.2%
Scada System	24,894		45	24,849	0.2%
Utilities	43,150		110	43,040	0.3%
Capital Reserve	15,305		15,305	-	100.0%
<i>Total Expense Accounts</i>	1,130,597	-	19,921	885,676	1.8%

	O&M Balance 9/30/2019	O&M	Total 10/31/2019
Cash - Operating	694,657	399,420	1,094,077
Accounts Receivable			0
Assets			0
Liabilities			0
Revenues		419,341	419,341
Expenditures		19,921	19,921
Equity	694,657		1,094,077

Detail of 2019 Equity

Design Basin Equipment Hatch	12,000
Sampling Pumps	7,500
Replace Drain Gate Hydraulic Accumulator	50,000
Design Flushing System Upgrades & First Flush Capture	200,000
SCADA Reserves	11,610
Capital Reserves	413,547