MEMORANDUM

To: Michigan Department of Environmental Quality (MDEQ)
Revolving Loan Section, Attn: Jonathan Berman

From: Hubbell, Roth & Clark, Inc.

CC: WRC/PCRDDD

Date: October 31, 2017

Re: Pontiac Clinton River No.1 Drain Drainage District
MDEQ Stormwater, Asset Management and Wastewater (SAW) Grant #1148-01
Summary of Stormwater Asset Management Plan

The following is a summary of the work completed under the MDEQ SAW Grant work performed by the Pontiac Clinton River No.1 Drain Drainage District (PCRDDD). It includes a summary of the project scope, results and findings of activities covered by the grant, grant amount spent and match amount, and contact information. It has been prepared as required under Section 603 of Public Act 84 of 2015, and follows recent MDEQ guidance.

GRANTEE INFORMATION

Pontiac Clinton River No.1 Drain Drainage District, SAW Grant Project #1148-01

Project Grant Amount: $235,000

Applicant Match Amount: None

Authorized Representative
Jim Nash, PCRDDD, Chairman
(248) 858-0958
wrc@oakgov.com

Consultant Contact
Karyn Stickel, HRC, Associate
(248) 454-6566
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WRC Project Manager
Mike McMahon, WRC, Chief Engineer
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EXECUTIVE SUMMARY

The Pontiac Clinton River No.1 Drain Drainage District (PCRDDD) applied for and received a grant to further develop an Asset Management Plan (AMP) for its stormwater system through the Michigan Department of Environmental Quality's (MDEQ) Stormwater, Wastewater and Asset Management (SAW) program. Because the SAW program was funded through monies appropriated for water quality,

other related infrastructure systems, such as drinking water, were not eligible for funding through the grant, but are considered in analysis and recommendations where appropriate.

The PCRDDD is operate and maintained by the Oakland County Water Resources Commissioner (WRC) on behalf of the Drainage Board of PCRDDD created under Chapter 20 in Oakland County under the Drain Code. The WRC has various tools used to manage the assets it owns or operates and maintains, including a GIS geodatabase, collaborative asset management system, hydraulic models, condition assessment methods, risk and prioritization models, capacity studies, asset deterioration models, and an operating and capital improvement project prioritization model. These tools are used to guide the short and long-term strategies for WRC to operate the various systems in a sustainable manner that meets the required level of service, with a focus on prioritizing assets that are most critical and being cost-effective. The funding strategy for each fund is also evaluated annually through WRC's "Long-Term Plan" (LRP) process that includes a review of the current fund balances and anticipated future funding needs.

The WRC "Common to All" approach was generally followed in development of the asset management plan for this system. The following is a summary of the AMP, as required by the grant, which includes a brief discussion of the five major AMP components, a list of the plan's major identified assets, and contact information for the grant.

STORMWATER INVENTORY

WRC uses its existing Geographic Information System (GIS) geodatabase as the primary means to inventory and map the assets in the system. The geodatabase includes key attributes associated with each asset, such as installation date (age), size, material, along with other information as appropriate for a given asset type.

WRC currently uses the Cityworks software package for its Computer Maintenance Management System (CMMS,) which then collaborates with the GIS to present a single interface to the user via the Collaborative Asset Management System (CAMS.) CAMS assists in managing inspections and maintenance work by generating and tracking work orders, collecting inspection and condition data, and compiling costs and hours spent on each asset. Maintenance history and costs can be tracked on an asset and/or fund level.

Condition assessment tools and protocols were developed by WRC to allow for efficient and consistent recording of asset condition. For sanitary, combined, and stormwater sewer assets, a NASSCO-compliant software program stores data collected during sewer televising. The data stored can be shared with the existing CAMS system. Inspection work orders in the CAMS system are used for evaluation of other types of assets, such as manholes and other collection system structures, and for most vertical asset types, such as pumps, valves, structures, etc.

As part of the grant for PCRDDD, the GIS geodatabase inventory was reviewed for completeness and to ensure critical attributes were populated. Approximately 11,148 lineal feet of storm underwent condition assessment via cleaning and televising. Approximately 68 access structures were evaluated using the CAMS inspection work orders.

CRITICALITY OF ASSETS

WRC implemented PowerPlan asset optimization software as part of the "Common to All" Program. Baseline Probability of Failure (POF) and Consequence of Failure (COF) factors were configured into the

software as part of that Program, and were used to estimate the overall risk of the horizontal assets (sewers and associated structures.)

Both the POF and COF were scored on a scale of 1 to 5, with 1 being the lowest probability or consequence of failure, and 5 corresponding to the highest probability or consequence of failure. The Business Risk Evaluation (BRE or Risk) score is the product of the POF score and the COF score (POF times COF equals Risk,) and has a scale of 1 to 25. Higher BRE scores identify the assets with the greatest overall risk.

The POF and COF for horizontal assets are determined using scoring values developed uniquely for each asset type, such as gravity main, non-gravity main, manhole, etc. The POF and COF scores for each asset type are calculated using attribute data from the GIS geodatabase, inspection data from the CAMS system, and NASSCO PACP and MACP ratings. The primary attribute for determining the POF of gravity mains (storm sewers) was the PACP Structural Quick Score. The PACP Maintenance Quick Score and age are also incorporated into the POF rating. Where PACP scores were not available, the POF score was based on the age-based assumed condition.

For manholes and other access structures, the POF is based primarily on the MACP fields cover condition, frame condition, chimney condition, cone condition, wall condition, bench condition, and channel condition along with age. If the MACP data was not available, the score was based on just age.

The COF for mains and access points (storm and related structures) was determined based on asset depth, size, proximity to groundwater and flood zones, and proximity to roads and intersections.

LEVEL OF SERVICE DETERMINATION

At the strategic level, the Level of Service (LOS) identifies the long-term goals and strategies of the organization. An overall LOS guiding matrix was developed to document the goals and strategies of the WRC organization. The WRC Mission Statement and the annual LRP process form additional elements of the LOS.

The WRC's current Mission Statement is:

> *The Oakland County Water Resources Commissioner's Office is dedicated to the preservation and protection of our water environments, public health, welfare, convenience and the citizen's right to quality water. We are committed to acting with integrity and professionalism and will always seek collaboration among our Oakland County communities and regional partners.*
>
> *We commit ourselves to providing our customers with high value services that are fairly priced, environmentally sound and sustainable in the long term. We are committed to an open dialogue with our communities and promise to keep lines of communication open.*
>
> *In our pursuit of excellence and continuous improvement, every member of our staff will respond to issues of the public promptly, safely, respectfully and with sensitivity to their individual needs. Our office will always endeavor to provide an appropriate resource when an issue is not within our authority.*
>
> *We will install a culture that perpetuates an environment promoting trust, respect and teamwork, both within our organization and among our communities and region.*

The WRC strategic Level of Service Goals included:

- Financial Viability and Impact. Goal: Emergency repairs can be repaired within Utility Reserve Budgets of the system. Measurable: Exceedances of reserve budgets
- Public Confidence and System Service Impact. Goal: Minimal to some loss of service or impact on other services for less than four hours. No sewer system or basement backups. Minor disruption (e.g., traffic, dust, noise.) Measurable: Number of service interruptions, complaints, and backups.
- Regulatory Compliance. Goal: No state permit violations and comply with all MDEQ policies. Measurable: Number of violations
- Safety of Public and Employees. Goal: Non-reportable injuries, no lost-time injuries or medical attention required. No impact to public health. Measurable: Number of injuries and any public health advisories.
- Redundancy. Goal: Comply with 10 State Standards. Measurable: Number of violations.
- Risk and BRE score: Goal: 70% of assets have a BRE less than 15. Measurable: System risk score.
- Staffing. Goal: Staffing levels and training maintained to meet level of service. Measurable: Number of open positions, training hours.

At the tactical level, the LOS focuses on the prioritization in the medium-term and identification of factors and indicators related to performance, cost, risk, and failure probability. The Probability of Failure and Consequence of Failure scoring matrices used in the criticality and risk analysis were developed using the strategic LOS guidance. Progress toward the goals are measured through the CAMS analytic data, and is reviewed as part of the LRP process with internal staff and customers.

At the operational level, the LOS is related to procedures and information related to the short-term, day-to-day operation. Performance is measured at the asset level using work orders to collect data, and annual reporting of measurables and progress toward goals with operational staff.

REVENUE STRUCTURE

The annual operation and maintenance budget includes the typical costs spent each year to operate the system and to perform normal maintenance activities. This baseline O&M budget does not include major capital improvements that are required to increase capacity, meet new regulatory requirements, or replace items that have failed or reached the end of their useful service life.

The asset optimization software assisted WRC staff by developing recommended strategies for inspection, rehabilitation and replacement needs over the long-term for each system based on condition and risk. WRC project management staff then reviewed the recommendations generated by the software and rationalized the recommendations to “real world” needs, including any improvements required due to capacity or regulation changes. The WRC uses this information as part of its existing LRP process to prioritize projects and ensure adequate funding is available.

The LRP process is a tool to determine utility rates and charges to provide sufficient revenues to cover the anticipated operation, maintenance, replacement, capital improvement projects, and debt costs associated with a given system, as well as to maintain a reserve balance for emergencies or a significant one-time charge. It ensures adequate revenues are collected for budgeted needs in the current year, and over the long term. The stormwater and Drainage District funds do not currently use the LRP rate

process due to the lack of reliable funding mechanisms for stormwater systems, but the overall framework is set up to accommodate these systems in the future.

Because of the lack of funding for the drainage district, a rate sufficiency study was not completed for this task.

CAPITAL IMPROVEMENT PLAN

The asset optimization software forecasts and prioritizes assets that require replacement in the planning period. The individual replacements can be combined into projects and scheduled with budget amounts established. This information is then used in the LRP process to determine revenue needs for funding the project established. A list of capital projects was developed for PCRDDD, using recommendations from the asset optimization software, and consideration of other system needs. These projects will be constructed as funding allows.

The recommended projects are summarized below. Projects listed for implementation in the 0 to 5 year range include cost estimates prepared on data available at the study/feasibility level. Projects in the 5 to 20 year range are based on broad concepts only and costs are based on cost curves and other general tools. All projects are listed for financial and resource planning purposes only. Changes to project inclusion, scope, cost and/or timing are expected as resources are allocated and changes occur in prioritization, regulations, technology, cost and other data becomes available.

Capital Projects, 0 to 5 years:

- 2018 – 2020 – Program to replace two pipe outlets and one storm pipe. Total replacement cost is approximately $45,000.

- 2021 – 2023 – Replacement of several standard manholes and catch basins. Total replacement costs of approximately $45,000. Rehabilitation of two large stormwater structures. Replacement of these structures would be cost prohibitive due to the locations, therefore, it is recommended that $25,000 be budgeted for each, for a total project cost of $50,000

Capital Projects, 6 to 10 years:

- 2024 – Replacement of one storm pipe. Total replacement cost is approximately $7,000.

Capital Projects, 10 to 20 years:

- 2024 – Replacement of one storm pipe. Total replacement cost is approximately $7,000.

- 2027 – 2031 - Rehabilitation of five storm pipes, two storm catch basins and one storm manhole structure. The total rehabilitation cost is $200,000.

- 2032 – 2037 – Rehabilitation of four storm pipes, two storm catch basins and eight storm manhole structures with a total budgeted cost of $200,000.

RECOMMENDATIONS

In order to keep this AMP sustainable into the future, overall framework has been set up to be able to utilize the LRP process for future needs. The LRP process will be undertaken annually to review existing recommendations, status of current projects, and forecasted needs against available reserves and anticipated funding. The asset optimization tool will be regularly synced with CAMS to incorporate any new GIS and operational and condition data. The software will then automatically update recommended events, treatment and replacement strategies, and capital projects. The updated recommendations will be reviewed quarterly and as part of the annual LRP to ensure the availability of required funds for the projects.

LIST OF MAJOR ASSETS

The PCRDDD's major assets include:

- 11,148 LF of storm sewer
- 68 access structures

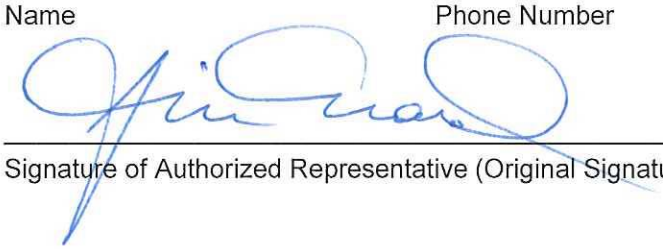
Department of Environmental Quality
SAW Grant
Stormwater Asset Management Plan
Certification of Project Completeness

Completion Due Date **October 31, 2017**
(no later than 3 years from executed grant date)

The **Pontiac-Clinton River Drain No. 1 Drainage District** *(legal name of grantee)* certifies that all stormwater asset management plan (SWAMP) activities specified in SAW Grant No. **1148-01** have been completed and the SWAMP, prepared with the assistance of SAW Grant funding, is being maintained. Part 52 of the Natural Resources and Environmental Protection Act, 1994, PA 451, as amended, requires implementation of the SWAMP within 3 years of the executed grant (Section 5204e(3)).

Attached to this certification is a summary of the SWAMP that identifies major assets. Copies of the SWAMP and/or other materials prepared through SAW Grant funding will be made available to the Department of Environmental Quality or the public upon request by contacting:

Jim Nash	at **248-858-0958**	**wrc@oakgov.com**
Name	Phone Number	Email



10/27/17

Signature of Authorized Representative (Original Signature Required) Date

Jim Nash, Chairman of the Drainage Board and Oakland County Water Resources Commissioner
Print Name and Title of Authorized Representative