

**Village of Beverly Hills
SAW Grant No. 1292-01
Wastewater and Combined System**

May 31, 2017

The Village of Beverly Hills applied for and received a grant to further develop its Asset Management Plan for its sanitary and combined systems through the Michigan Department of Environmental Quality's (MDEQ) Stormwater, Wastewater and Asset Management (SAW) program. The Village of Beverly Hills was awarded an MDEQ Stormwater, Asset Management, Wastewater (SAW) Grant in "Round 1" of the Program for a total amount of \$2,327,375 with the Village of Beverly Hills responsible for \$415,177 in match funding. As of December 31, 2016, the approved total amount used is \$1,043,524.17 with the Village of Beverly Hills matching \$104,352.42. The final amount spent will not be available until the last disbursement request after May 31, 2017. Because the SAW program was funded through monies appropriated for surface water quality, other related infrastructure systems, such as drinking water, were not eligible for funding through the grant.

The Village of Beverly Hills sanitary and combined sewer systems are operated and maintained under the jurisdiction of the Oakland County Water Resources Commissioner (WRC). The Village of Beverly Hills has a contract with the office of the Oakland County Water Resources Commissioner (WRC) for operation and maintenance of its sanitary and combined systems. The WRC has various tools used to manage the assets it owns or maintains, including a GIS geodatabase, collaborative asset management system, hydraulic models, condition assessment methods, risk/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 maintain 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 WRC "Common to All" approach was generally followed with 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.

A. Asset Inventory and Condition Assessment:

WRC uses its existing Geographic Information System (GIS) geodatabase as the primary means to inventory and map the assets in the system. The geodatabase provides a means to record the attributes associated with each asset, such as installation date (age), size, material, along with other information needed for a given asset type. The geodatabase is synced with WRC's Collaborative Asset Management System (CAMS) so that 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 Village of Beverly Hills, the GIS geodatabase inventory was reviewed for completeness and to ensure critical attributes were populated. Approximately 169,516 lineal feet of sanitary and 66,245 lineal

feet of combined sewer underwent condition assessment via closed-circuit televising (CCTV). In addition, approximately 1,961 manholes and other related structures were evaluated using the ArcGIS Collector Application before importing into the CAMS System.

Vertical assets, including pump stations and storage and treatment facilities, were inventoried using a WRC hierarchy template and condition assessment data was collected and input into the CAMS system.

B. Level of Service:

WRC developed an overall level of service goal that will be used as a starting point for each fund, including the Village of Beverly Hills. Considerations into the level of service included compliance to regulations, operation, impact to the public and environment, safety and security, and are included in the overall business risk evaluation.

	WRC Base Level of Service Goals	Measurables
Financial Viability and Impact	Emergency were not eligible for funding through the grant repairs can be repaired within Utility Reserve Budgets of the system	Exceedances of reserve budgets
Public Confidence / System Service Impact	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).	Number of service interruptions, complaints, and backups
Regulatory Compliance	No state permit violations. Comply with all MDEQ policies.	Number of violations
Safety of Public and Employees	Non-reportable injuries, no lost-time injuries or medical attention required. No impact to public health	Number of injuries and any public health advisories
Redundancy	Comply with Ten State Standards	Number of violations
BRE score	70% of assets have a BRE less than 15	System risk score
Staffing	Staffing levels and training are maintained to meet level of service	Number of open positions, annual training hours

C. Criticality of Assets:

WRC uses an asset optimization software (Power plan formally known as RIVA) to assist with prioritization of cost-effective maintenance strategies and capital improvement planning. The software syncs with both the GIS geodatabase and the WRC CAMS software packages.

Baseline Probability of Failure (POF) and Consequence of Failure (COF) factors that WRC configured into the Power Plan software as part of the “Common to All” approach were used to estimate the overall risk of the wastewater system asset. The average Business Risk Evaluation (BRE) for the entire sanitary sewer system is 3.38 on a scale of 25. The average BRE for the entire combined sewer system is 9.04 on a scale of 25. For pump stations and storage and treatment facilities, individual assets were reviewed by staff as part of the grant work, and POF and COF factors determined and input into the software.

D. O&M Strategies and Revenue Structure:

O&M strategies for the system were reviewed against the “Common to All” approach developed by WRC. These include determining future sewer cleaning and televising frequency and inspection and maintenance procedures for pump stations and storage and treatment facilities. Costs required to implement the selected strategies were estimated and incorporated into the rate review process for the system. The Village of Beverly Hills submitted a rate methodology on November 7, 2016 which was approved by the MDEQ on December 20, 2016.

The WRC worked with Oakland County’s Fiscal Services staff to determine if the current rate structures were sufficient to meet the current needs for the management of the wastewater and stormwater systems, and to plan for any adjustments that may be required to meet anticipated future expenses. The Power Plan software provides estimated annual maintenance and capital needs for each fund, which is then reviewed by WRC staff and the local community.

E. Long Term Funding/Capital Improvement Plan:

Capital Improvement Plans identify system upgrades and rehabilitation and replacement needs for the future, typically over a period of 20 years, with greater emphasis on the first five years of the plan. Power Plan was used to model asset deterioration and assist with identifying capital improvement needs for the near and long term. Costs for anticipated capital projects in the near term are also incorporated into the rate process. During inspection of the combined and sanitary sewer system, the village developed a multi-year rehabilitation project for the near future to repair a significant amount of the poorly rated pipe segments. For the more distant future, the Village of Beverly Hills plans do more preventative work by cleaning and televising more linear feet per year thru their maintenance contract with the WRC.

F. Contact Information:

A signed Certification of Project Completeness form is enclosed. Contact information for the grantee including name, address, and phone number is included below:

Primary Contact and System Manager

Village of Beverly Hills

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SUMMARY OF ASSETS IN THE VILLAGE OF BEVERLY HILLS:

Collection System Sewers:

Sewer Assets by Material	Length (FT)	Segment Count
ABS Truss	286	1
Asbestos Cement	4,489	18
Cast Iron	42	2
Clay or VCP	86,410	405
Concrete	80	1
Ductile Iron	579	14
Non-Reinf Concrete	88,216	417
PVC	12,242	69
Reinforced Concrete	95,443	475
Unknown	8,609	35
Grand Total	296,395	1,437

Collection System Sewers:

Sewer Assets by Diameter	Length (FT)	Segment Count
Non-Circular	27	2
Unknown	638	10
6"	1,041	5
8"	134,194	670
10"	23,163	128
12"	67,185	305
15"	23,960	101
18"	16,517	69
21"	3,547	18
24"	5,167	30
27"	923	3
30"	3,790	20
36"	4,345	28
42"	638	2
48"	2,152	8
54"	3,497	15
72"	3,911	16
78"	1,701	7
Grand Total	296,395	35,478

Collection System Structures:

Structure Type			
Combined	Count	Sanitary	Count
Manhole	612	LiftStation	3
Inlet	495	Access Point	1
		SystemValve	1
		Manhole	864
Grand Total			1976

Vertical Assets:

Asset Class	Count
Electrical Equipment	6
Facility Meters	7
Generators	2
Instrumentations	9
Pumps	7
Structures	5
Wet Wells	3
Grand Total	39