

NOTE: There is a three-minute time limit on all comments from the public, regardless of the subject matter. A request form is available from the Deputy Town Clerk; please fill it in and return it to her prior to the start of the meeting if you would like to speak during public comment. When you speak, you must come to the podium in the front and clearly state your name and address for the record. Please turn off or mute your cell phone or pager at the start of the meeting. Thank you.

TOWN OF BAY HARBOR ISLANDS

SPECIAL COUNCIL MEETING AGENDA

November 23, 2015

CALL TO ORDER: 8:45 a.m.

PLEDGE OF ALLEGIANCE:

ROLL CALL:

1. **Consideration and Approval** of a proposal from Hazen and Sawyer in the amount of \$65,000 to prepare a Plan of Compliance for utility owned Sanitary Sewer Collection Systems. Enclosed find the proposal from Hazen and Sawyer.

STAFF RECOMMENDATION: Approval.

POLL VOTE

ADJOURNMENT: Approximately 8:50 a.m.

Pursuant to Florida Statutes 286.0105, the Town hereby advises the public that should any person decide to appeal any decision of the Town Council with respect to any matter to be considered at this meeting or hearing, he or she will need a record of the proceedings, and that, for such purpose he or she may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based.

AGENDA ITEM REPORT

November 23, 2015

ITEM NUMBER: 1.

ITEM: Consideration and Approval of a proposal from Hazen and Sawyer in the amount of \$65,000 to prepare a Plan of Compliance for utility owned Sanitary Sewer Collection Systems. Enclosed find the proposal from Hazen and Sawyer.

DESCRIPTION:

As a result of the new EPA Consent Decree, which became effective in December 6, 2013, all Volume Sewer Customers (VSC) are required to provide a Plan of Compliance (the Plan) to document how they will comply with the new requirements of the Consent Decree. The new Decree shall require new concepts of system management to prevent sewer overflows; address asset management, information management, and life cycle lost.

Staff recommends that the Town Council approve expenditure of \$65,000.00 in favor of Hazen and Sawyer to prepare a Plan of Compliance for the Town.

RECOMMENDED ACTION:

Approval.

FINANCIAL ANALYSIS:

This expenditure will require appropriations General Reserves Fund.

BUDGET IMPACT:

Submitted By: Marlene Siegel, Town Clerk
Ronald Wasson, Town Manager

ATTACHMENTS

1.	Proposal from Hazen and Sawyer	2015-1027 - Bay Harbor Islands - Plan of Compliance proposal.pdf
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October 27, 2015

Randy Daniel, PE
Town Engineer/Director of Public Works

TOWN OF BAY HARBOR ISLANDS

9665 Bay Harbor Terrace
Bay Harbor Islands, FL 33154

Re: Proposal for Development of the Plan of Compliance

Dear Mr. Daniel:

Hazen and Sawyer is pleased to submit this proposal to provide professional engineering services for development of the Plan of Compliance on behalf of the Town of Bay Harbor Islands (Town). A scope of work, fee, schedule, and assumptions for this requested Work Authorization are presented in sequence below.

SCOPE OF WORK

Changes to the Miami-Dade County Code compel all wastewater volume sewer customers of the Miami-Dade Water and Sewer Department (MDWASD) to provide a Plan of Compliance documenting how sanitary sewer operating practices will ensure compliance with a set of new requirements derived from MDWASD's Consent Decree with the Florida Department of Environmental Protection, the United States Environmental Protection Agency, and the United States Department of Justice. **Attachment A** provides a detailed scope of work including a project background and task descriptions.

Please note that while for purposes of completeness the Attachment A scope of work addresses all required components of the Plan of Compliance, for purposes of project implementation we are proposing that the work be conducted in two phases as follow:

- Phase 1 would define and describe the required activities, procedures, and programs along with the necessary personnel, equipment, supplies, and outside services contracts. Phase 1 would also provide a Level of Service definition and identify critical assets that are essential to maintaining the Level of Service.
- Phase 2 would present the Information Management System requirements and staffing and funding plans needed to support the activities, procedures, and programs defined in Phase 1. Phase 2 would also include generation of Life Cycle Costs for critical assets.

We believe that this type of phased approach not only reflects the necessary logical sequence of the task execution but will also constitute a more cost effective and efficient approach to completing the project. This requested Work Authorization addresses Phase 1 and Phase 2 activities.

FEE

The task budgets requested for the work are summarized in the table below.

Phase 1 Program Activity		Budget
1	Compliance Plan for Modifications to Existing Requirements	\$1,110
2	Sewer Overflow Response Plan	\$8,550
3	Information Management System ¹	\$9,830
4	Sewer System Asset Management Plan ¹	\$11,990
5	Gravity Sewer System Operation and Maintenance Program ¹	\$7,890
6	Pump Station Operations and Preventative Maintenance Program ¹	\$12,570
7	Force Main Operations, Preventative Maintenance and Assessment/Rehabilitation Program ¹	\$12,550
8	Implementation Schedule	\$830
Total ²		\$65,900

¹ Task to be initiated in Phase 1 and completed in Phase 2 (reference Attachment B).

² Includes \$600 in reimbursable costs.

Attachment B provides a cost breakdown of the anticipated tasks and quantities for this Work Authorization. Tasks shown in Attachment B reflect the requirements contained in guidance provided by the Miami-Dade County Department of Regulatory and Economic Resources, Environmental Resource Management (RER-DERM).

SCHEDULE

Authorized tasks will be completed in accordance with the due dates established by RER-DERM. March 11, 2016 has been established by RER-DERM as the official due date for the Plan of Compliance.

ASSUMPTIONS

The following assumptions apply to this scope of work.

1. The work effort detailed herein assumes the City will assist with various information needs, including but possibly not limited to the following:
 - a. Plans, specifications, and as-built drawings for existing facilities and infrastructure.
 - b. Infrastructure inventories and data.
 - c. Equipment and parts inventory data.
 - d. Review of operating practices.
 - e. Data relative to the age and maintenance history of infrastructure.

- f. Access throughout the project to engineering and operations staff for field visit accompaniment and interviews to help supplement existing data and document existing conditions.
 - g. Regulatory reports and/or correspondence.
2. Funding to provide for meetings, communications, and resubmittals related to RER-DERM review comments and information requests has not been included in this requested work authorization.
3. In an effort to minimize the total cost of the work, this scope of work envisions a collaborative approach that relies on the assistance of Town personnel in some subtasks. In particular, funding levels for the various staffing and funding plans are very limited and the Town's participation in the development of these items will be needed.

In view of the very challenging schedule constraints affecting this project, please advise us as soon as possible of any further clarifications that may be needed concerning our proposal. We are grateful for the opportunity to assist the Town with this important program.

Very truly yours,

HAZEN AND SAWYER, P.C.



Christopher L. Kish, PE

Senior Associate

cc: J. Page (Hazen and Sawyer)
F. B. Chiriboga (Hazen and Sawyer)
E. Heijn (Hazen and Sawyer)
P. Carney (Hazen and Sawyer)

Attachment A – Scope of Work

PROJECT BACKGROUND

The County has signed a new Consent Decree (CD) with the Florida Department of Environmental Protection (FDEP), the United States Environmental Protection Agency (EPA), and the US Department of Justice requiring the County to make changes to its sanitary sewer operating practices to ensure compliance with State and Federal codes for the operation of sanitary sewer collection systems. The CD has been formally approved by the EPA and the Board of County Commissioners with an effective date of December 6, 2013.

As a result of the new CD, all wastewater volume sewer customers (VSCs) in Miami-Dade County are required to provide a Plan of Compliance (the Plan) documenting how they will comply with the new requirements of the CD. As these requirements represent a substantial change and expansion to previous requirements, the Miami-Dade County Department of Regulatory and Economic Resources, Environmental Resource Management (RER-DERM), has created a detailed guidance document to aid in preparation of the Plan. RER-DERM has also drafted proposed amendments to the Miami-Dade County Code, Chapter 24-42.2, and submitted them for EPA review on April 4, 2014. While the Plan must be a unique document reflecting the specific details and conditions of a specific utility, in general the submittal must address each of the items noted below and demonstrate how the utility will meet the requirements for that section.

1. Sewer overflow response plan
2. Information management system program
3. Sewer system asset management plan
4. Gravity sewer system operation and maintenance program
5. Pump station operations and preventative maintenance program
6. Force main operations, preventative maintenance and assessment/rehabilitation program

The requirements for the overall program are based on Paragraphs 17, 18, 19, and Appendix B of the CD, and the associated proposed changes to Chapter 24-42.2. The new CD is an extension of the previous CD, to include new concepts of system management and prevent sanitary sewer overflows to the maximum extent possible. Under the previous CD a number of sewer system Capacity, Management, Operation and Maintenance (CMOM) programs were developed. Included in the new CD are new sections concerning asset management, information management, and life cycle costs. Each utility, moreover, will be required to provide a staffing and funding plan to demonstrate capacity to comply with the new regulations. The requirements collectively comprise, in effect, an updated and expanded CMOM Program.

The Plan is required to be delivered to RER-DERM for review no later than six months after the final approval of the changes in County Code Section 24-42.2 that support the new requirements of the CD. It is currently anticipated that the Plan will be due sometime between July and September of 2015. RER-DERM has emphasized, in its communications to VSCs, that the required submittal will be complex and extensive and will require considerable time to prepare.

Attachment A – Scope of Work

The RER-DERM Guidelines remain in draft form at this time, and the proposed County Code amendments are pending EPA approval, and therefore the exact level of effort required for ultimate compliance remains to be seen. The Guidelines and proposed amendments are sufficiently detailed, however, to allow utilities to initiate planning and budgeting for Plan development – an imperative given the extensive nature of the new requirements and the relatively expedited completion schedule for the work. Hazen and Sawyer has relied on the Guidelines and proposed amendments, along with information obtained from Utility Round Table meetings and other direct communications with RER-DERM, to arrive at a scope of work for Plan development and an estimated funding level for this authorization. Each task is described in sequence below.

SCOPE OF WORK

Hazen and Sawyer (CONSULTANT) shall provide engineering services to assist with the development of the Town's Plan of Compliance in accordance with the RER-DERM Guidelines dated January 2, 2014, and the proposed amendments to Chapter 24-42.2 dated April 4, 2014.

Task 1 – Compliance Plan for Modifications to Existing Requirements

The first CD required a number of actions by the VSCs. Existing programs are not required to be addressed in the Plan except where modifications of the program are included as a part of the requirements of the new CD. However, since the plan is intended to be a comprehensive operating document for the utility, existing programs and any associated modifications will be briefly outlined in the Plan. RER-DERM is requiring that staffing and funding to carry out existing requirements be included as part of the staffing and funding considerations required by the new CD.

Subtasks by CONSULTANT

- Briefly summarize applicable requirements pertaining to the following programs that will not be modified under the new CD:
 - o Sanitary Sewer Evaluation Survey (SSES).
 - o Regional Rainfall Dependent Peak Flow Management Study.
 - o Reporting of pump station operating time or the equivalent value from pump station power consumption for each pump station on a monthly basis.
 - o Reporting and correction of stormwater discharges into the sanitary sewer.
 - o Annual report describing all sewer system evaluation and rehabilitation work completed during the previous year.
 - o Inspection of all pump stations to identify and correct equipment malfunctions and deficiencies that could lead to malfunctions.
- Briefly summarize applicable requirements pertaining to the following programs that will be modified under the new CD:
 - o Submittal of a map showing all sewer service areas and sewer subsystems including the total length of gravity sewer lines according to pipe diameters and material. This requirement has been modified in that the submittal is required in an electronic format compatible with the Miami-Dade GIS system.

Attachment A – Scope of Work

- o Monitoring of pump stations to prevent overflows. The new CD will require additional monitoring functions.
- o Participation in a County-wide regional computerized collection and transmission system model to optimize capacity and evaluate the impact of rehabilitation programs, system modifications, upgrades, and expansions. This requirement will be modified to require that the model be updated at intervals of no more than five years.
- o Maintenance of sanitary sewer collection systems so as to prevent or minimize the possibility of overflows. The extent of the required written maintenance plan will be increased and also expanded to require an operations plan.
- o Maintenance of an inventory of spare parts for the system. This requirement will be modified and expanded.
- o Performance of a peak flow management study and submittal of monthly flow data for each pump station to determine adequate capacity. This requirement will be discontinued under the new CD but similar study will be required for specific pump stations where the station has a one or more monthly readings above 15 hours and allocations meeting certain requirements are requested.

Subtasks by TOWN

- Respond to information requests by CONSULTANT.
- Review and comment on CONSULTANT's draft deliverable.

Task 2 – Sewer Overflow Response Plan

The Sewer Overflow Response Plan (SORP) is intended to provide a complete description of the utility's response to a sanitary sewer overflow (SSO), and requires sections addressing the detection, reporting, evaluation, and remediation of any SSO occurring within the utility service area.

Subtasks by CONSULTANT

Reporting, evaluation, notifications and recordkeeping

- Document a 24-hour, convenient method(s) for the public, and all government agencies operating within the service area, to report sanitary sewer overflows, backups, or other failures, including:
 - o Information to be obtained such as location, general conditions and size of overflow, start time of event if known, and contact information for the caller.
 - o Notification of personnel who will instigate an inspection of the reported problem.
 - o Logging of the time of the incoming communication, and the time of the utility response to the notification.
 - o Means to make the public aware of the reporting method(s).
 - o Method as to how all such reports will be stored as permanent records.

Attachment A – Scope of Work

- Document how the utility will investigate the event and the maximum time allowed for such determination, including who in the utility will be notified and who is responsible for initiating response action.
- Document methods to ensure that sufficient personnel will always be available to respond in a timely manner to any SSO, specifically including methods to be used to contact personnel outside of normal working hours and to provide substitutes for personnel who fail to respond.
- Develop guidelines for estimating the flow rate and for determining the total volume of the SSO, including required training for initial responders to provide flow estimates.
- Describe how, after a SSO has been identified by the utility, the following notifications will be made:
 - o Verbal reporting of any SSO, with all information specifically required by the RER-DERM-Guidelines, to the RER-DERM emergency number within 2 hours of identification of the event.
 - o Preliminary written reporting of any SSO, with all information specifically required by the RER-DERM-reporting form or an equivalent form, to RER-DERM within 24 hours of identification of the event.
 - o Verbal reporting of any SSO to waters of the State, to the FDEP State Warning Point Hotline within 24 hours of the utility becoming aware of the event, if the SSO equals or exceeds 1,000 gallons or will endanger public health or the environment.
 - o Detailed written reporting of any SSO, with all information specifically required by the RER-DERM-Guidelines, within 5 days of the utility becoming aware of the event, with a copy to FDEP if the SSO equals or exceeds 1,000 gallons or will endanger public health or the environment.
- Describe how the utility shall keep for at least 5 years all records associated with each SSO, including steps taken to prevent recurrence, work order records associated with investigation and repair activities, and a list and description of complaints from customers or others.

Response

- Describe procedures for responding to all SSOs to minimize the environmental impact and potential human health risk, including:
 - o Actions the utility will undertake to immediately provide notice to the public.
 - o Actions the utility will undertake to provide notice to appropriate Federal, State or local agencies/authorities.
 - o A detailed plan, and response standard operating procedures, to minimize the volume of untreated wastewater transmitted to the portion of the system impacted by the events precipitating the SSO to minimize overflow volumes.
 - o The utility's response in the event of building backups found to be caused by conditions in the utility's sewer system, including the timeframe for responses and the measures to be taken for cleanup, disinfection, and replacement of property where required.

Attachment A – Scope of Work

Preventive actions

- Present a detailed plan of the resources to be used to correct or repair the condition causing or contributing to the SSO, and to prevent a reoccurrence, including:
 - o Staffing, equipment, and funding required to implement these practices.
 - o Description of a program for response training of the utility's employees, and personnel of other affected agencies, necessary for the effective implementation of the SORP in the event of a SSO. Detailed description of procedures for estimating SSO volumes, methods and practices for providing a response to an event which occurs outside normal working hours including how reports of a SSO from the public will be received by the utility and which personnel are responsible for activating the response to the event, and what status conditions reported by the SCADA system will require an immediate response by utility personnel.
 - o Identification of those locations that have been recorded as previously suffering a SSO and those locations for each pump station (PS) at which a SSO is likely to occur first in the event of a PS failure.
 - o PS emergency bypass strategies and procedures, including the equipment, vehicles, and personnel to effect these actions and the methods and practices for providing a bypass outside normal working hours, as well as the storage locations for the equipment and supplies to carry out the bypassing.
 - o Description of all actions to be taken to disinfect an area after an SSO, including agents to be used, dosing rates, differing practices for when the release reaches surface water, and minimum stocks of on-hand supplies of disinfecting agents.

Subtasks by TOWN

- Respond to information requests by CONSULTANT.
- Collaborate with CONSULTANT to arrive at Standard Operating Procedures (SOPs) for the required elements.
- Review and comment on CONSULTANT's draft deliverable.

Task 3 – Information Management System

The Plan is also required to describe the implementation and management of an Information Management System (IMS) to support and enhance the effective operation of the sanitary sewer utility, indicate what components of the system, if any, are shared with other divisions of the municipal government, and document how the system is maintained to assure continuing operation and availability of the system.

Subtasks by CONSULTANT

- Provide detailed descriptions of the required IMS components, including:
 - o *A Management IMS component* to provide the utility Managers with guidance and instruction relative to the evaluation of operations, maintenance, customer service, and sewer system rehabilitation activities.
 - o *An Operations IMS component* to provide the utility Managers and Field Supervisors with guidance to adequately track scheduled operational activities.

Attachment A – Scope of Work

- o A *Maintenance IMS component* to provide the utility Managers and Field Supervisors with guidance to adequately track scheduled maintenance activities.
- o What information will be fed into the system, along with how it will be entered and recorded.
- o What management reports will be generated from the input data, including examples and periodicity for review.
- o What work reports will be prepared and submitted, including examples and periodicity for review.
- o Standard forms that will be used by field personnel and management, including those resulting from implementation of other parts of the CMOM program.
- o Record maintenance procedures, including a listing of the minimum retention dates for the different types of files, the formats for the files, the methods for long term storage, data security, and provisions for secure off-site duplicate records.
- o Computer software to be utilized, characteristics considered in the selection of the software, processes by which the need for upgrades to the system will be identified and met, and security system to prevent unauthorized access to the system.
- o Personnel authorized to enter, read, create reports from, edit, and delete each of the different types of files in the IMS, as well as applicable training to assure security of operation.
- o Implementation of a Geographic Information Systems (GIS) map of the overall system, including the parameters to be included and changes in the data required to provide the annual submittal to RER-DERM in a format compatible with the County GIS system.

Subtasks by TOWN

- Respond to information requests by CONSULTANT.
- Collaborate with CONSULTANT to arrive at detailed descriptions of the required elements.
- Review and comment on CONSULTANT's draft deliverable.

Task 4 – Sewer System Asset Management Plan

The Plan is also required to describe the implementation of an asset management plan designed to assure reliable and economical operation of the system as well as compliance with regulatory requirements. Subtasks will address the required asset management plan components as summarized below.

Subtasks by CONSULTANT

- Provide a current *Condition Assessment* of all sewer system components including gravity sewer lines, manholes, siphons if applicable, pump station components including force mains, aerial crossings if applicable, reporting and control systems, and maintenance and repair equipment and facilities. (Note: data gathered from the recent SSES will be used as a baseline conditional assessment to meet this requirement.)

Attachment A – Scope of Work

- Develop a statement of the *Level of Service* (LOS) the utility intends to provide the customers it serves to ensure compliance with regulatory requirements of the VSCO. The LOS statement must address in detail how the utility will provide uninterrupted sanitary sewer service without backups, avoid overflows, limit excessive infiltration and inflow, control odors, provide suitable maintenance and replacement of aging components, prevent nuisance conditions at pump stations, and avoid excessive costs.
- Identify *Critical Assets* within the sewer system that are essential to the LOS, including the gravity collection system, pump stations, force mains, generators, maintenance vehicles and equipment, information and records, and trained employees.
- Identify the minimum *Life Cycle Cost* (LCC) for each critical asset:
 - o LCC is to address the total cost of the component during its lifetime, including initial cost, length of life, operating costs, maintenance and repair costs, salvage value, and costs from interruption of service. In general, the LCC shows the relative effects of more or less maintenance with the higher costs of increased maintenance being offset by a longer operational life, and fewer service interruptions, and the minimum LCC occurs when increasing maintenance costs are equal to the increased value of a longer service life.
 - o LCC calculations are valid only as long as the LOS is maintained, since if the failure of a component leads to a failure of service or an overflow, or other violation of the LOS, that component is assumed to have received inadequate (underfunded) maintenance.
 - o The minimum standard for maintenance is to be able to identify and remedy any point of possible failure that would lead to an overflow before the component fails. It should be recognized that at some point the required maintenance activities will become more expensive than replacing the component. Identification of this point is the reason for the LCC process.
- Describe a *Long-Term Funding Plan* to pay for all identified LCC for each critical asset, including preventative maintenance and replacement costs when a component reaches the end of its service life, and taking into account the effects of expected inflation and other changes in costs over time. The long-term funding plan must provide detailed descriptions of:
 - o All potential sources of revenue, as well as the amount of funding available over time from each source, including sewer service fee charges, impact fees, grants, bonds, and payments from parties seeking upgraded utility services.
 - o The likelihood of securing funding from each source, and the probable level of funding from each source over time along with factors that may impact the funding from each source.
 - o Methods for increasing current funding sources or finding new funding sources to offset shortages that may occur for whatever reason.
 - o Changes to be made in funding for the utility, within one year of submittal of the Plan, in the event it cannot be demonstrated that currently available funding is sufficient to provide the level of system maintenance shown to produce the lowest

Attachment A – Scope of Work

determined LCC for each critical system component and cover both the short term and long term requirements of the utility.

- o A listing of all critical components, based on the LCC of the components, showing when each component will require replacement and how replacement will be funded for at least the next ten years. (Note: For projects exceeding 2% of the annual maintenance spending, the annual contribution to the sinking fund for the project is to equal that part of the project cost not yet funded divided by the number of years until the project is scheduled.)

Subtasks by TOWN

- Provide SSES report and supporting data.
- Respond to information requests by CONSULTANT.
- Collaborate with CONSULTANT to arrive at detailed descriptions of the required elements.
- Review and comment on CONSULTANT's draft deliverable.

Task 5 – Gravity Sewer System Operation and Maintenance Program

The Plan is also required to describe operation and maintenance with a focus on the gravity system. Subtasks will address the required components as summarized below.

Subtasks by CONSULTANT

- Develop written preventative operations and maintenance schedules and procedures addressing:
 - o Inspection, condition assessment, and maintenance of all gravity sewers, manholes, and inverted siphons or canal crossings (where applicable), including the associated easements and the need to control vegetative growth or encroachment of man-made structures or activities.
 - o Documentation of inspection and condition assessment results and scheduling of preventive maintenance as warranted, including the removal of plantings or unauthorized construction in easements where warranted to ensure access to the main in the event of emergency. (Note: Mains located where access is not possible are to be scheduled for early replacement.)
 - o Identification of particular locations requiring more frequent maintenance due to past accumulations of fats, oil, and grease (FOG).
- Conduct an engineering evaluation of potential sulfide and corrosion control options and develop a summary report of findings along with a recommendation of the preferred sulfide and corrosion control method(s). Incorporate in the evaluation aging-related issues for all types of pipe present in the utility's system.
- Develop prioritization criteria for evaluating the gravity sewers based upon pipe size, location of previous SSOs, community input, and other appropriate criteria.
- Present data attributes for the utility's mapping to allow program data to be compared in the utility's IMS against other pertinent data such as the occurrence of reported blockages, SSOs, and permit violations.

Attachment A – Scope of Work

- Describe an inventory management system for the system that includes a list of critical equipment and spare parts, including both a list and storage location for critical equipment and spare parts stored by the utility, as well as a list of sources where critical spare parts and equipment not stored by the utility may be obtained to permit repairs in a reasonable amount of time. Include written procedures for updating the critical equipment and spare parts inventories in the IMS no less frequently than once a year.
- Develop reports, to be available in the IMS, which list equipment problems and the status of work orders generated during the prior month.
- Describe a staffing and funding plan sufficient to allow completion of the activities required for the Gravity Sewer System Operation and Maintenance Program, including the functions, qualifications, numbers, and total cost of necessary personnel. Continuing costs for maintenance equipment, supplies, and materials are also to be determined.

Subtasks by TOWN

- Provide existing Operation and Maintenance Manual and supporting information.
- Respond to information requests by CONSULTANT.
- Collaborate with CONSULTANT to arrive at detailed descriptions of the required elements.
- Review and comment on CONSULTANT's draft deliverable.

Task 6 – Pump Station Operations and Preventative Maintenance Program

The Plan is also required to describe operation and maintenance focused on the pump stations. Subtasks will address the required components as summarized below.

Subtasks by CONSULTANT

- Identify means of communication between pump stations, field crews, and supervising staff. The system must be capable of coordinating a rapid response to any system problem in order to prevent overflows, and may include the SCADA system, cell phones, e-mail, and dedicated radio systems.
- Compile and summarize the technical specifications of each PS within the system, including at minimum:
 - o The number, type, manufacturer, model, impeller size, serial number, horsepower, normal full load amperage and operating voltage of pumps.
 - o The pump curves along with the rated and typical operating points for the pump station.
 - o Wet well dimensions and nominal operating levels, and dry well dimensions where applicable.
 - o The nominal station voltage. The type, manufacturer, rating, and pertinent serial numbers for pump controls and variable speed drives.
 - o The type and capabilities of the installed remote reporting and control system.
 - o The type, ratings, voltage, speed, model number, and fuel type for generators where applicable.

Attachment A – Scope of Work

- o Upstream and downstream pump stations where applicable.
 - o The electrical service fee structure.
- Describe systems used to continuously monitor and report information for each PS to a central monitoring station, provisions and requirements for maintaining the monitoring system, and procedures for notifying response personnel whenever an out of compliance condition is identified. The monitoring system must at minimum report pump running times and provide alarm functions for high and low level, pump shutdown or failure to start, and loss of power to the station.
- Develop written preventative operations and maintenance schedules and procedures addressing, at minimum:
 - o Periodic service and calibration of instrumentation such as flow meters, liquid level sensors, pressure sensors, alarm systems, elapsed time meters, and remote monitoring equipment.
 - o Predictive (including non-physical) and/or physical inspection and service for all pump stations to (a) record information from the elapsed time meters and pump start counters; (b) observe and document wet well conditions including grease and/or debris accumulation; (c) confirm and/or adjust wet well level control elevations; (d) record system pressure; (e) check SCADA and alarm components; (f) check stand-by power sources, with emergency generators to be test run at least once per week; (g) check motor electrical system for line voltage, current draw, and resistance of windings on each leg at least quarterly; and (h) identify maintenance needs.
- Develop written standard emergency/reactive O&M procedures addressing, at minimum:
 - o Criteria used to determine the necessity for and nature of emergency operations and maintenance.
 - o Methods for notification and activation of emergency repair personnel.
 - o Use of portable generators and portable bypass pumps where applicable.
 - o Evaluation of the need for additional equipment for emergency/reactive operations based on the station flow and operational characteristics and the ease or difficulty of employing various emergency operations at the station.
 - o Evaluation of the need for on-site standby power (on-site generator and/or second electrical feed from the power grid).
 - o Standard forms, reporting procedures and performance measures for emergency/reactive operations and maintenance.
- Describe an inventory management system for the system that includes a list of critical equipment and spare parts, including both a list and storage location for critical equipment and spare parts stored by the utility, as well as a list of sources where critical spare parts and equipment not stored by the utility may be obtained to permit repairs in a reasonable amount of time. Include written procedures for updating the critical equipment and spare parts inventories in the IMS no less frequently than once a year.

Attachment A – Scope of Work

- Develop reports, to be available in the IMS, which list equipment problems and the status of work orders generated during the prior month.
- Describe a staffing and funding plan sufficient to allow completion of the activities required for the Pump Station Operation and Preventive Maintenance Program, including the functions, qualifications, numbers, and total cost of necessary personnel. Continuing costs for maintenance equipment, supplies, and materials are also to be determined.
- Document the extent to which any services required under the Consent Decree are to be provided by an outside entity, the competencies and resources that the outside entity or entities will provide, the utility's means of immediately notifying the service provider upon detection of a problem, and the utility's ability to pay for contracted services in a timely manner. The requirements for work by outside contractors are to be the same as for work done by the utility, including documentation and IMS compatibility. For emergency response the utility is to document a maximum guaranteed 24-hour turnaround time for the service contractor to respond and correct the problem.

Subtasks by TOWN

- Provide available equipment manuals and maintenance schedules.
- Respond to information requests by CONSULTANT.
- Collaborate with CONSULTANT to arrive at detailed descriptions of the required elements.
- Review and comment on CONSULTANT's draft deliverable.

Task 7 – Force Main Operations, Preventative Maintenance and Assessment/Rehabilitation Program

The Plan is also required to describe a multi-step program to evaluate the condition of all force mains in the utility's system, and then develop a process based on LCC and LOS considerations to provide long term reliable and effective operation of the system. Each force main (FM) is to be considered separately in the program, and subtasks will address the required components as summarized below.

Subtasks by CONSULTANT

- Conduct an engineering evaluation of potential sulfide and corrosion control options and develop a summary report of findings along with a recommendation of the preferred sulfide and corrosion control method(s). Incorporate in the evaluation aging-related issues for all types of pipe present in the utility's system, along with any failure histories and environmental considerations affecting pipe condition.
- Develop a plan for inspection of FMs and document the need to control vegetative growth or encroachment of man-made structures where warranted to ensure access in the event of emergency. Include a schedule for the maintenance of easements and specify the differing requirements for maintenance for paved streets, unpaved areas adjacent to streets, and off-street areas. Note minimum required clearances for utility maintenance vehicles and mowing frequency for unpaved areas.

Attachment A – Scope of Work

- Describe an inventory management system for the system that includes a list of critical equipment and spare parts, including both a list and storage location for critical equipment and spare parts stored by the utility, as well as a list of sources where critical spare parts and equipment not stored by the utility may be obtained to permit repairs in a reasonable amount of time. Include written procedures for updating the critical equipment and spare parts inventories in the IMS no less frequently than once a year.
- Develop reports, to be available in the IMS, which list equipment problems and the status of work orders generated during the prior month. Air release valves are to be specifically included, and the work order listing is to include the start date of the order, subject, work required, completion status, and date of completion.
- Describe a staffing and funding plan sufficient to allow completion of the activities required for the overall FM Operations, Preventative Maintenance and Assessment/Rehabilitation Program, including the functions, qualifications, numbers, and total cost of necessary personnel. Continuing costs for maintenance equipment, supplies, and materials are also to be determined.
- Develop a FM Criticality Assessment and Prioritization program outline describing how the utility will develop, for submittal to RER-DERM at a specified regular frequency, a FM Prioritization Report documenting the results of the utility's FM Criticality Assessment of the structural integrity of its FMs and the risk of FM critical failure.
 - o The Criticality Assessment of a FM is to be based on any previous assessments or investigations regarding the structural integrity, as well as on diameter, average daily and/or peak flow transmitted, age, pipe material, length, availability and proximity of the nearest system component which could handle flows in the event of failure, operating pressure during peak flow events, and availability of new pipe for repairs in case of failure.
 - o The utility is to use the Criticality Assessment to prioritize FMs for further assessment to determine the need for rehabilitation/replacement.
 - o The FM Prioritization Report is to include the results of the utility's FM prioritization for further assessment and/or rehabilitation/replacement, along with a prioritized schedule for implementation of the FM assessment program.
- Develop a FM Assessment program outline describing how the utility will implement assessment activities in accordance with the schedule set forth in the FM Criticality Assessment and FM Prioritization Report. The program is to determine, for each force main in the utility system, if the force main needs to be repaired, rehabilitated, or replaced within the five year cycle, based on providing the lowest LCC for the FM while providing the primary required LOS considerations of avoiding SSOs and reducing operating costs by avoiding excessive head pressures. The FM assessment program outline is to address, at minimum:
 - o Standard procedures and schedules for continual aboveground assessment of the route(s) of each FM in the system, specifically including all crossings of water bodies or drainage ways, including standard forms for the visual assessment of FM routes and aboveground conditions that may indicate belowground leakage or structural issues with the FM.

Attachment A – Scope of Work

- o Standard procedures and schedules for inspecting and identifying FM that are either corroded or at risk of corrosion. This component is to include a system for anticipating locations and conditions that would lead to corrosion risk, identifying corrosion, and prioritizing repair of corrosion defects.
- o Standard procedures and schedules for inspecting and identifying FM that are at risk of failure due to age or type of construction. This component is to include a system for prioritizing replacement of mains that have exceeded their reasonable service life.
- o Standard procedures and schedules for monitoring all existing FM cathodic protection measures, as well as detailed cathodic protection requirements for new installations and explanation of instances in which cathodic protection may not be specified for ductile iron pipe.
- o Standard procedures and schedules for implementing acoustic monitoring of the FMs, where applicable. The acoustic monitoring component shall include leak detection, acoustic monitoring for wire breaks in pre-stressed concrete cylinder pipe (PCCP), and sonar or ultrasonic monitoring for pipe defect analysis including pipe wall deflections, corrosion, pits, voids, cracks, and debris. Any internal wall thickness measurements are to be used to establish a list of potential corrosion problems and prioritize rehabilitation of the FM to prevent line breaks and/or ensure the ability to reliably operate under pressures experienced during peak flow events.
- o Criteria for use of ground-penetrating radar to assess leaks as well as FM bedding conditions and/or voids.
- o A review of improvements in station capacity and reduction in power use for pump stations upstream of the FM when upgrades to a larger size are made. This assessment is to be made using the system model for the utility.
- o Analysis of the feasibility of parallel FM installation to provide redundant capacity for FMs determined to be highly critical, and/or to reduce head losses and power consumption.
- Develop a FM Rehabilitation/Replacement Program outline describing in detail how the utility will select a particular method based on consideration of cost, speed of implementation, street conditions, and requirements for manpower and specialized expertise. The program outline is to address, at minimum –
 - o Standard procedures for repairs, including method selection criteria. Alternatives to be considered should include open cut replacement of pipe sections; spot repairs using cured-in-place pipe (CIPP), mechanical sleeves or repair clamps; and, joint repairs using internal sleeves or external devices.
 - o Standard procedures for rehabilitation, including method selection criteria. Alternatives to be considered should include spray-on linings, close fit linings, CIPP, and woven hose linings (including adhesive-backed linings, non-adhesive backed linings and glass-reinforced thermoplastic linings).

Attachment A – Scope of Work

- o Standard procedures for replacing or upgrading, including method selection criteria. Alternatives to be considered should include open cut replacement of pipe, sliplining, pipe bursting, directional drilling, micro-tunneling, and pipe jacking.
- o Procedures for updating the IMS following completion of the remedial work.

Subtasks by TOWN

- Respond to information requests by CONSULTANT.
- Collaborate with CONSULTANT to arrive at detailed descriptions of the required elements.
- Review and comment on CONSULTANT's draft deliverable.

Task 8 – Implementation Schedule

The Plan is also required to provide an implementation schedule for all components of the Plan, including the initial start date and the repeat cycle time for recurring requirements, as described in the RER-DERM guidelines.

Subtasks by CONSULTANT

- Develop and present schedules that clearly identify due dates for all one-time and recurring compliance requirements, including all evaluation, inspection, training, software system implementation, and submittal requirements.

Subtasks by TOWN

- Review and comment on CONSULTANT's draft deliverable.

Attachment B
FEE PROJECTION
TOWN OF BAY HARBOR ISLANDS
Plan of Compliance

Task	Vice President	Associate	Senior Principal Engineer	Engineer	Drafter	Secretarial Support	Total Hours	Total Fee
LABOR:								
Task 1 <u>Compliance Plan for Modifications to Existing Requirements</u>								
Requirements for existing programs not modified under CD	0	1	2	0	0	0	3	\$430
Requirements for existing programs modified under CD	0	1	4	0	0	0	5	\$680
subtotal	0	2	6	0	0	0	8	\$1,110
Task 2 <u>Sewer Overflow Response Plan</u>								
Reporting, evaluation, notifications and recordkeeping	0	4	8	2	0	0	14	\$1,940
SSO response procedures	0	4	6	0	0	1	11	\$1,540
Staffing, training, equipment, and funding for SSO prevention	0	2	8	2	0	1	13	\$1,670
Assessment of SSO locations	0	2	4	0	2	0	24	\$1,080
Emergency bypass procedures and preparedness	0	4	4	2	8	0	34	\$2,320
subtotal	0	16	30	6	10	2	96	\$8,550
Task 3 <u>Information Management System</u> ¹								
Management, operations, and maintenance components	1	6	10	2	0	2	21	\$2,910
Information management processes	1	4	8	0	0	0	13	\$1,920
Reports to be generated along with review frequency	0	2	8	0	0	1	11	\$1,450
Records maintenance	0	2	6	0	0	0	8	\$1,110
Software and security	0	1	8	0	0	1	10	\$1,280
Implementation of GIS	0	1	6	2	0	0	9	\$1,160
subtotal	2	16	46	4	0	4	72	\$9,830
Task 4 <u>Sewer System Asset Management Plan</u>								
Condition assessment	0	6	8	2	0	2	18	\$2,440
Statement of level of service	1	4	2	0	0	0	11	\$1,160
Identification of critical assets	1	4	6	0	4	0	19	\$2,120
Determination of life cycle costs ¹	1	6	16	8	0	2	33	\$4,350
Long term funding plan ¹	1	4	8	0	0	0	13	\$1,920
subtotal	4	24	40	10	4	4	94	\$11,990
Task 5 <u>Gravity Sewer System Operation and Maintenance Program</u>								
Preventive O&M procedures and schedules	0	4	6	0	2	2	26	\$1,840
Engineering evaluation of corrosion control	0	4	6	0	0	1	19	\$1,540
Prioritization for gravity sewer evaluation	0	2	2	0	4	1	17	\$1,130
Inventory management system and IMS reports	0	2	6	2	0	2	12	\$1,500
Staffing and funding plan ¹	2	4	6	0	0	0	12	\$1,880
subtotal	2	16	26	2	6	6	86	\$7,890

Attachment B
FEE PROJECTION
TOWN OF BAY HARBOR ISLANDS
Plan of Compliance

Task	Vice President	Associate	Senior Principal Engineer	Engineer	Drafter	Secretarial Support	Total Hours	Total Fee
<u>Task 6 Pump Station Operations and Preventative Maintenance Program</u>								
Communications and monitoring/control systems	0	2	2	0	0	0	4	\$600
Pump station technical specifications	0	2	4	20	6	1	41	\$3,850
Preventive O&M procedures and schedules	0	2	6	0	0	2	10	\$1,270
Emergency procedures	0	4	6	0	2	1	17	\$1,760
Inventory management system and IMS reports	1	4	6	2	0	2	15	\$2,050
Staffing and funding plan ¹	1	4	6	0	0	0	11	\$1,670
Outside service providers	0	2	8	0	0	0	10	\$1,370
subtotal	2	20	38	22	8	6	108	\$12,570
<u>Task 7 Force Main Operations, Preventative Maintenance and Assessment/Rehabilitation Program</u>								
Engineering evaluation of corrosion control	0	4	6	0	0	0	18	\$1,460
Inspection procedures	0	4	4	0	0	1	9	\$1,280
Criticality assessment and prioritization	1	4	4	0	2	0	19	\$1,640
Condition assessment procedures	1	4	4	2	4	1	24	\$2,160
Rehabilitation/replacement program	1	4	4	2	4	1	32	\$2,160
Inventory management system and IMS reports	0	4	4	8	0	1	17	\$2,180
Staffing and funding plan ¹	1	4	6	0	0	0	11	\$1,670
subtotal	4	28	32	12	10	4	130	\$12,550
<u>Task 8 Implementation Schedule</u>								
Implementation schedules	0	2	2	0	2	0	14	\$830
subtotal	0	2	2	0	2	0	14	\$830
Total Labor Fee	14	124	220	56	40	26	608	\$65,320
REIMBURSABLE COST:					Units		Unit Price	Amount
Mileage, printing/copying, and miscellaneous					Lump Sum		\$600	\$600
Total Reimbursable Cost								\$600
TOTAL PROJECT COST (LUMP SUM)								\$65,900

LABOR RATES	\$208	\$173	\$128	\$112	\$112	\$80
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¹ Phase 2 subtask