City of Key West
Key West, FL

Capacity, Management, Operation and Maintenance (CMOM) Plan

Richard A. Heyman Wastewater Treatment Plant and Collection System

Prepared for:
City of Key West
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Acronyms and Abbreviations

AADF	annual average daily flow
AWWA	American Water Works Association
ARV	air release valve
BOD	biological (or biochemical) oxygen demand
CCTV	closed-circuit television
CEU	continuing education unit
CIP	Capital Improvement Plan
CIPP	Cured-in-Place Pipe
CKW	City of Key West
CMMS	Computerized Maintenance Management System
CMOM	Capacity, Management, Operation, and Maintenance
CO2	carbon dioxide
CPI-U	Consumer Price Index for All Urban Consumers
DMR	discharge monitoring report
DOD	Department of Defense
EPA	Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
FKAA	Florida Keys Aqueduct Authority
FOG	fats, oils, and grease
FSE	food service establishment
GI	grease interceptor
GIS	Geographic Information System
H2S	hydrogen sulfide
HDPE	high-density polyethylene
I&C	instrumentation and controls
I/I	infiltration and inflow
IT	information technology
LF	linear feet
MG	million gallons
MGD	million gallons per day
NASSCO	National Association of Sewer Service Company
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
OGI	oil/grease interceptor

OJT on-the-job training

OMI Jacobs Operations Management International

OSHA Occupational Safety and Health Administration

PACP Pipeline Assessment Certification Program

PNP Public Notice of Pollution

PVC polyvinyl chloride

RAHEPF Richard A. Heyman Environmental Protection Facility

ROW right of way

SCADA system control and data acquisition

SOP standard operating procedure

SORP sewer overflow response plan

SSES Sanitary Sewer Evaluation Survey

SSO Sanitary Sewer Overflow

SUO Sewer Use Ordinance

TMADF three-month average daily flow

TSS total suspended solids

TV television

UI underground injection

UV ultraviolet

USEPA United States Environmental Protection Agency

VCP vitrified clay sewer pipe

W/WW water/wastewater

WWTP wastewater treatment plant

1 Introduction and Purpose

The purpose of a Capacity, Management, Operations, and Maintenance (CMOM) plan is to assist wastewater utility owners and operators in providing a high level of service to customers and increase regulatory compliance. A CMOM is used to identify and incorporate industry-accepted practices to better manage, operate, and maintain collection systems. CMOM planning also helps to evaluate collection system capacity, respond to and ultimately reduce sanitary sewer overflows (SSOs).

This manual will assist the City of Key West (CKW) in the continuation and expansion of its maintenance program for the entire system; meet its goal to provide reliable, safe, and efficient wastewater services; and satisfy the United States Environmental Protection Agency's (USEPA) guidelines for CMOM activities. The CMOM plan helps CKW to meet USEPA and Florida Department of Environmental Protection (FDEP) regulatory requirements to protect water quality and the environment.

2 Collection System Description

CKW's wastewater collection system consists of more than 85,000 linear feet (lf) of force main and 330,000 lf of gravity main lines serving a population consisting of 26,000 residents and an approximate transient population of 26,000. Visitors to Key West are estimated at 52,000 on an average day. The system has 1,388 manholes and 26 wastewater lift stations. It also receives sewerage from 12 connection points with United States (US) Navy and Coast Guard facilities, and an additional connection with Fort Zachary Taylor State Park. Wastewater from the collection system is conveyed to the Richard A. Heyman Environmental Protection Facility (RAHEPF), a permitted domestic wastewater treatment facility located on Fleming Key. Tables 2.1, 2.2, and 2.3 below summarize the pipe diameter, material, and age distribution respectively for the collection system.

Table 2.1: City of Key West Wastewater Collection System Pipe Diameter Distribution

Pipe Diameter (in)	Force Main	Gravity Main
2-6	22%	0.5%
8-12	20%	85.5%
14-18	14%	7%
20+	44%	6%
Unknown		1%

Table 2.2: City of Key West Wastewater Collection System Pipe Material Distribution

Pipe Material	Force Main	Gravity Main
PVC	78%	99%
HDPE	22%	0.3%
Clay	0%	0.2%
DI	0%	0.5%

Table 2.3: City of Key West Wastewater Collection System Pipe Age Distribution

Pipe Age	Force Main	Gravity Main
0-25 years	78%	86%
26-50 years	22%	14%

Figure 2.1 below shows CKW's lift stations and lift station district boundaries.

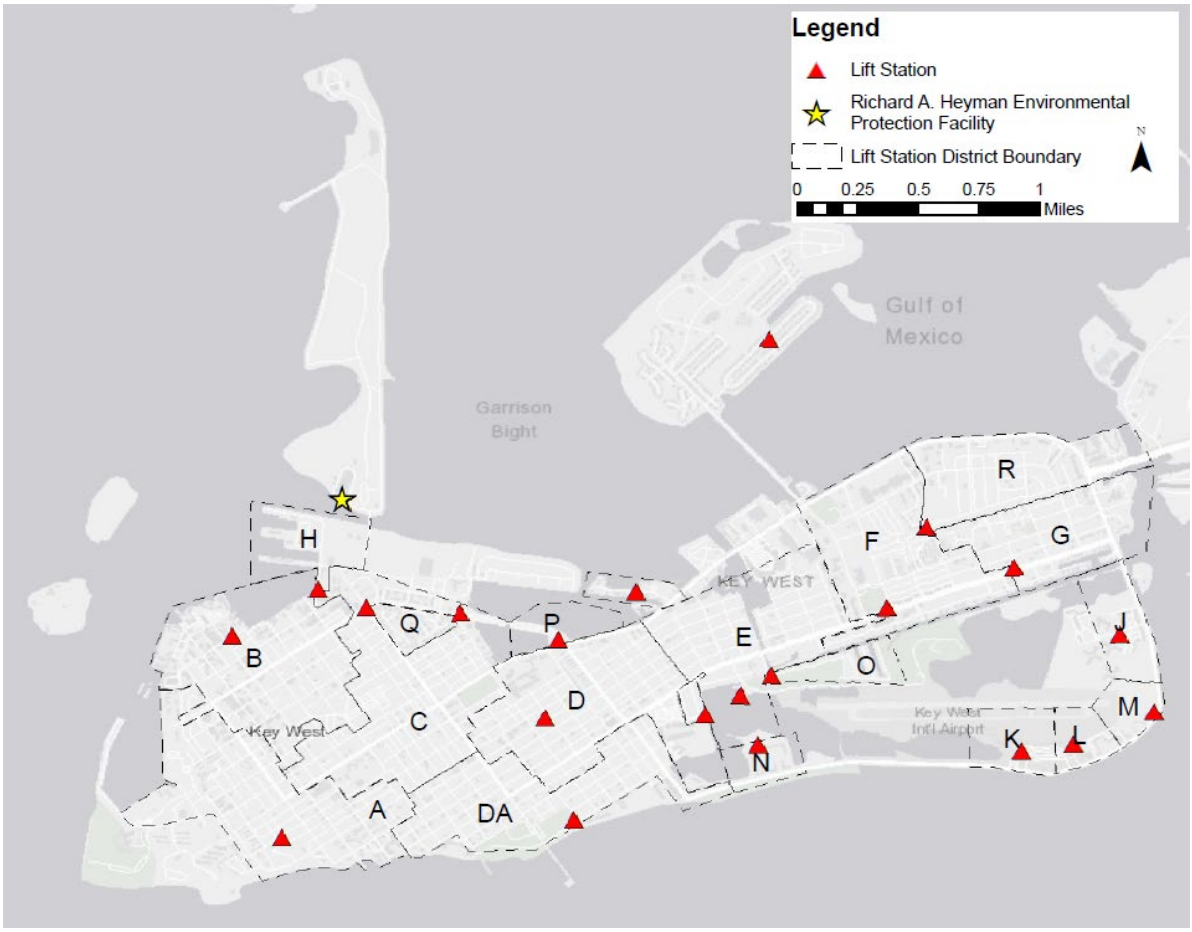

Figure 2.1. City of Key West Wastewater Lift Stations and Lift Station Districts.

City boundaries on Key West extend to adjacent US Navy and Coast Guard bases under separate jurisdiction. The US Navy and Coast Guard bases each have operating areas and residential areas located adjacent to, but outside of the City's boundary. City land-use is primarily residential and commercial. Hospitality is the dominant commercial activity includes hotels, short-term rentals, restaurants and bars servicing tourists arriving by automotive vehicles, aircraft, and boats/ships including large commercial cruise liners. The hospitality industry's impact on overall population on Key West is significant as single day event driven transient population can far exceed reported residential population.

RAHEPF has a 10.0 million gallons per day (MGD) Annual Average Daily Flow (AADF) permitted capacity extended aeration domestic wastewater treatment plant. The plant has an average daily flow for 2023 of 4.6 MGD. The plant consists of headworks of three mechanical bar screens and two grit removal systems. The biological treatment units include a 5-stage Bardenpho process with a 0.35 million gallon (MG) anaerobic zone, 0.87 MG anoxic zone, 2.61 MG aeration zone, 0.97 MG post-anoxic zone, and a 0.24 re-aeration zone. Solids are removed from the effluent by two clarifiers with a capacity of 10 MGD each and four cloth media filters. Two ultraviolet (UV) reactors are utilized for disinfection. The plant also includes two sludge storage tanks (total volume 0.44 MG) and two belt-filter presses. Effluent is discharged under permit to 2 underground injection well systems. (FDEP Permit FLA147222, 1/23/2024-1/22/2029)

3 Collection System Management

Wastewater collection systems are important major assets and represent a large capital investment. Utilities are responsible for managing these systems and should set goals to protect infrastructure investments, provide adequate capacity, reduce operations and maintenance costs, and reduce and rapidly respond to sanitary sewer overflows. Completing all preventative maintenance, timely upgrades, reduction of SSOs, and regulatory compliance are key goals for CKW. Protection of public health and the environment is a priority. CKW also has goals to increase sustainability, resilience, preparation for weather and disasters, and implementing new technology as appropriate. CKW has implemented proper procedures, operations and maintenance (O&M) management, and training to help reach these goals.

3.1 Organizational History and Structure

The City of Key West became an incorporated city in 1828. The territorial council of Florida granted the city a charter. CKW is governed by a mayor-council system with a 6-member city commission elected from individual districts. The city encompasses the 4-mile long and 1-mile-wide island of Key West and is the southernmost city in the contiguous United States. The city also encompasses several nearby islands, including a section of Stock Island. The Naval Air Station Key West, Truman Annex, and Trumbo Point Annex are all under jurisdiction of the US Navy.

The city has 15 departments. The utilities department, falling under the assistant city manager, includes 3 divisions: Waste Water, Storm Water, and Solid Waste. Potable water is provided to the Florida Keys, including CKW, by the Florida Keys Aqueduct Authority (FKAA), independent of the city government. CKW organizational charts are shown below in Figures 3.1 and 3.2.

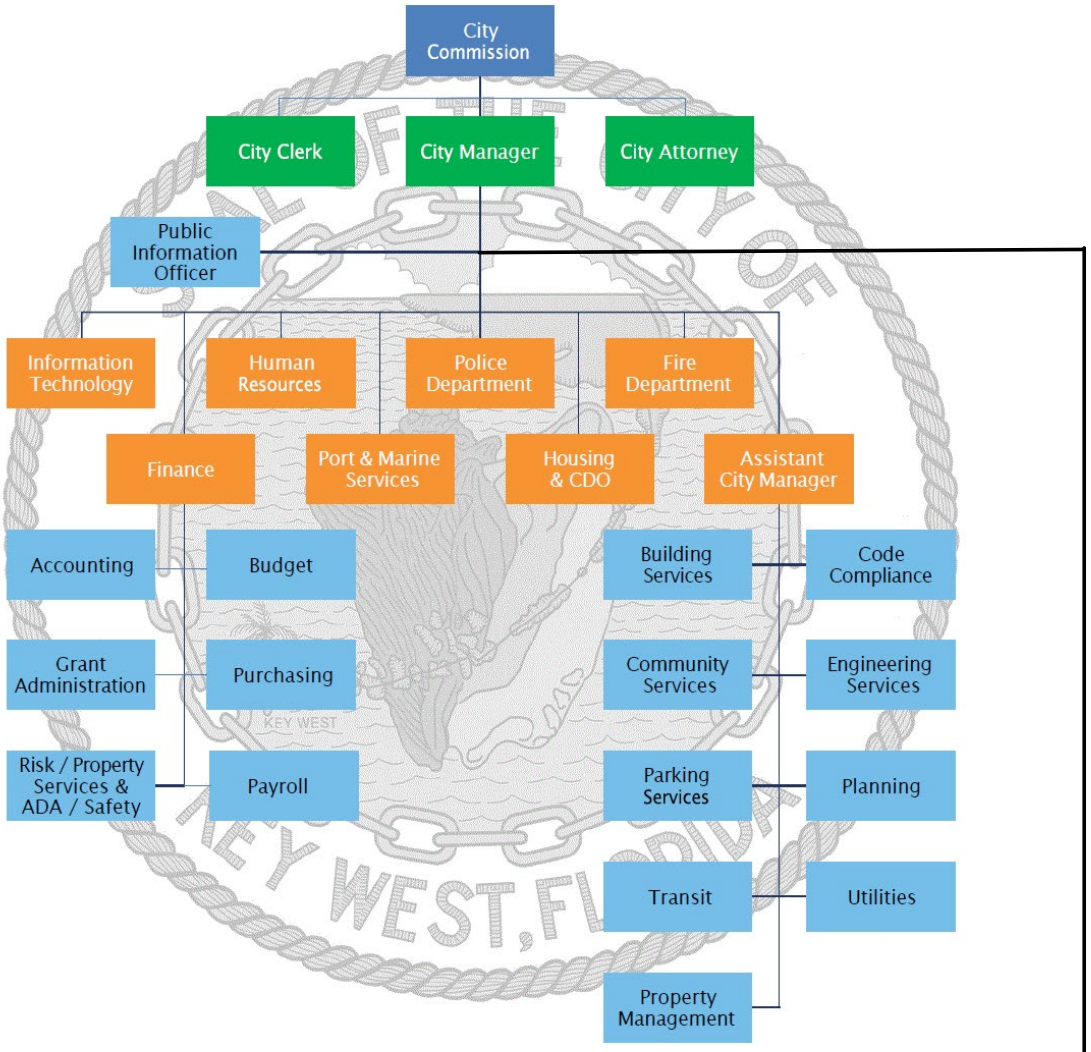

Figure 3.1. City of Key West Organization Chart 2024.

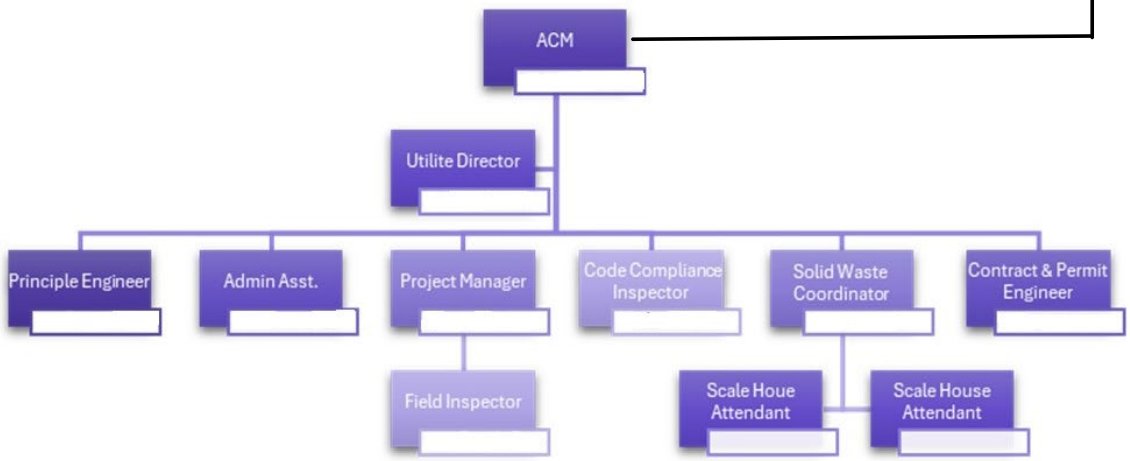

Figure 3.2. City of Key West Utilities Organization Chart 2024.

CKW has contracted Jacobs Operations Management International (Jacobs OMI) to operate, maintain, and manage the wastewater treatment plant (RAHEPF) and related facilities, including collection and

stormwater systems. Jacobs OMI includes a project manager, operations supervisor, maintenance supervisor, and collection system supervisor. Jacobs OMI organization chart is shown in Figure 3.3 below.

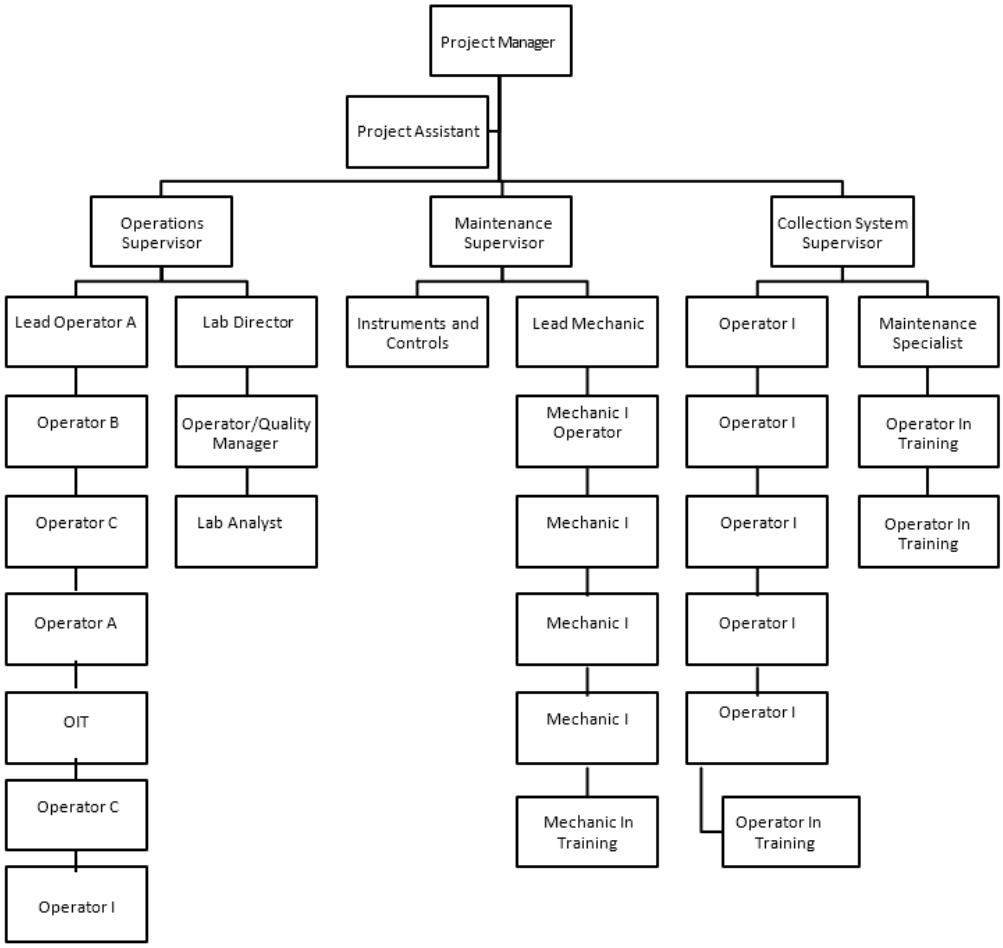

Figure 3.3. Jacobs OMI Organization Chart 2024.

3.2 Mission and Goals

As stated in the September 30, 2023, Annual Comprehensive Financial Report, CKW's vision is "A tropical island with unique community character in harmony with the diversity of its people and with its environment" and a mission of "honoring our past and embracing our future for a better Key West". A strategic plan was written for the years 2021-2024 (Key West Forward, The Strategic Plan for the City of Key West, 2021-2024 by Elisa Levy Consulting) that includes addressing affordable housing, rising sea levels, environmental protection, major projects, communication strategy, and an employee plan.

3.3 Staffing

CKW has 10 employees in the Utilities department, including the Utilities Director. The RAHEPF facility is staffed by 30 full time Jacobs OMI employees. These include supervisors, administrators, six operators, one lead operator, one laboratory analyst, one lead maintenance technician, and four maintenance technicians. The collection system also has an additional six operators and three maintenance specialists. An example job description is attached as Attachment 1.

The treatment plant is staffed 24/7 by a Class A operator as required by FDEP permit, while full operations and maintenance staff begins at 7:30 am daily. Maintenance staff rotates on call duties to

ensure coverage 24/7/365. During emergencies and predicted severe weather, staff may be contacted to provide additional support.

The wastewater treatment plant and collection system staff do not currently have open positions. Hiring new staff can be challenging due to limited qualified talent living and working with the south Florida Keys. The staff must be able to pass federal background checks, because the treatment plant, some assets, and offices are located on the Naval Air Station. When recruiting, staff vacancies can remain open for weeks.

Utility construction work and capital projects are contracted out. Some maintenance is also contracted for large projects, like smoke testing for the entire system. Small repairs and maintenance are handled by Jacobs OMI staff.

3.4 Safety and Training

CKW has a comprehensive Safety Manual for all employees. Policy and by Occupational Safety and Health Administration (OSHA) requirements are detailed in the manual. Jacobs OMI also has comprehensive safety manual and training for all wastewater treatment plant and sewer collection system operation and maintenance employees. Safety topics covered include PPE, materials, equipment, trenching, excavating, confined spaces, and others. Safety standard operating procedures (SOPs) are written and available to all employees. Staff also attends numerous safety training sessions throughout the year. An example Activity Hazard Analysis for a manhole inspection with rain pan insert is shown in Attachment 2.

CKW and Jacobs OMI utilize a combination of on-the-job skill training, self-study, and manufacturer and industry-wide training to meet its training needs and requirements. A First-Aid, CPR, and AED training class is offered periodically. Jacobs OMI training is provided to new employees at the time of hire and all staff review the document annually and document they are aware of the content by signing a training log. The training log is scanned and uploaded to the project's SharePoint site. Operator duties are also outlined in the Facility Operations Plan, which is updated annually. CKW also requires new employee training as appropriate for the specific position.

The Collections and Stormwater Departments maintain a budget for annual training consistent with the requirements mandated by the Florida Department of Environmental Protection (FDEP). This training ensures that the wastewater collection system staff maintain their professional certifications and also to continually improve their knowledge and skill set, as well as provides the opportunity to achieve advanced competency in the profession. Each of the wastewater collection staff members are expected to earn certification from the State of Florida. Staff is required to participate in at least 12 hours of continuing education or training every year to maintain their certifications and fulfill the Annual Project Business Plan training goals. Information on FDEP's operator certification program can be found at https://floridadep.gov/sites/default/files/ocp_handbook%20Nov%202022.pdf.

3.5 Communication

CKW and Jacobs OMI communicate on a regular basis with internal departments, each other, the general public, and regulatory agencies. Formal meetings are held monthly, but informal meetings occur frequently. This open communication between CKW and OMI staff allows for frequent and timely input and feedback. Jacobs OMI project manager and supervisors meet with the CKW utilities department frequently to discuss ongoing and upcoming projects, any issues, and future planning. Supervisors meet with their plant and collection system staff every weekday morning to discuss the day's schedule, any issues, projects, safety, and any feedback from the staff.

3.6 Customer Service

Customers have several avenues to contact CKW. Customers can call Jacobs OMI directly for questions or concerns with sewer. These calls are logged via paper. Any issues requiring service, repair, or investigation will be entered into the computerized maintenance management system (CMMS) and forwarded to the appropriate queue. For water issues, customers can call FKAA directly. For misrouted calls for Jacobs or FKAA, administrators forward the call log information to the appropriate party for follow-up. For emergencies or spills, calls are routed to Jacobs OMI. After hours, a live answering service receives the notification and contacts the collection system on-call contact according to procedures.

In addition, the City's Key West Connect online app helps residents reach CKW online or via their smartphone or tablet to request services or help fix issues. The system is not monitored 24/7, so issues related to public safety or those requiring immediate attention should be reported directly to the Key West Police Emergency Line.

The City of Key West has launched a mass notification solution powered by CivicReady. CivicReady is intended to be used to provide residents with critical information quickly in a variety of situations, such as severe weather, road closures, king tide flooding, evacuations, etc., that may have significant impacts. This service is available to citizens to receive emergency notification alerts via text message, email, pager or voice mail (in extreme cases), based on preference.

For public relations, public radio spots have been used. Topics have included no illegal dumping, nutrients, deep injection wells, cleanup of trash to protect waters, CivicReady app promotion, and clean boating. Smoke testing and construction notification are handled by CKW public relations and contractors. An example smoke testing door hangar and results form are shown in Attachment 3.

3.7 Regulatory

RAHEPF operates under Florida Department of Environmental Protection (FDEP) discharge permit number FLA147222 for a domestic wastewater treatment plant. FDEP is authorized to protect Florida's water resources and enforce provisions of Chapter 403, Florida Statutes, and Title 62, Florida Administrative Code.

For the WWTP discharge permit, the following is permitted:

> Underground Injection U-001: An existing 10.0 MGD annual average daily flow permitted capacity underground injection well system consisting of 2 Class V underground injection wells permitted under Department permit number(s) 0327710-003 and 004-UO/5W and discharging to Class G-III ground water. Underground Injection Well System U-001 is located approximately at Latitude: 24°34' 5.412" N, Longitude: 81°47' 46.7988" W. Effluent samples are taken at 2 locations:
>
> a. EFF-01: After the UV reactors
>
> b. PPI-01: In the ultraviolet reactor

Monitoring requirements and limits are specified in the discharge permit, such as UV dosage, percent capacity, CBOD 5-day, total nitrogen, total phosphorus and total suspended solids (TSS).

3.8 Legal Authority

"The City of Key West, Florida (the "City") is a municipal corporation incorporated in 1828. Currently, the City of Key West is organized and exists under the provisions of Chapter 23374, Laws of Florida (1945), as amended. The City operates under a commission manager form of government. The City provides services authorized by its charter, including public safety, public welfare, public improvements, planning

and zoning, transportation, recreation, and general administrative services." (City of Key West Annual Comprehensive Financial Report 2023.)

"In addition to its general government activities, the City provides sewer, solid waste, stormwater, marina, and mass transit services through enterprise funds." (City of Key West Annual Comprehensive Financial Report 2023.)

4 Collection System Operation

Operation of the collection system includes operating, budgeting, monitoring, safety procedures, modeling, construction, and remediation. Successful operations are key to keeping the collection system operating as intended to convey wastewater and protect public safety, capital investment, and the environment. Sufficient funds need to be budgeted for continued normal and emergency operations.

4.1 Monitoring

4.1.1 Water quality

Salinity testing is performed weekly and as needed at the treatment plant, lift station wet wells, and at other locations within the collection system. Tidal influences play a role in high salinity levels in the CKW's sewer collection system due to the City's location surrounded by seawater, situated between the Gulf of Mexico to the Straits of Florida and Atlantic Ocean. King tides are unusually high tides that occur several times a year, usually in the fall, that can cause coastal tidal flooding, especially in low-lying areas. Salinity testing helps to identify infiltration and inflow (I/I) within the collection systems especially during king tides and storm events.

Effluent water quality monitoring is done at the WWTP after and within the UV reactors according to permit requirements as discussed in section 3.7. Effluent water is conveyed to underground injection wells.

4.1.2 Flow monitoring

Flow monitoring is utilized at the treatment plant. Flow monitors can be temporarily added to isolate issues. Lift station flow estimates were developed using pump runtime data during analysis for the 2023 Lift Station Plan by Jacobs. Lift station performance analysis showed that all lift stations had adequate capacity.

The assumed lift station capacities were calculated based on pump drawdown test results and pump capacity information available to the City and the estimated average and maximum daily flow from the lift stations. In addition, capacity utilization percentage was calculated for each lift station based on the average daily flow and the maximum daily flow over the data analysis period. These calculations are show below in Table 4.1 from the 2023 Lift Station Plan.

Table 4.1: City of Key West Lift Station Capacity and Daily Flow Summary. (Lift Station Plan. 2023)

Lift Station	Number of Pumps	Lift Station Capacity (gpm)	Average Daily Lift Station Flow (gpm)	Maximum Daily Lift Station Flow (gpm)	Average Capacity Utilized (%)	Maximum Capacity Utilized (%)	Maximum/ Average Capacity Utilization Ratio
A	2	3,596	480	1,793	13%	50%	3.7
B	2	2,723	515	2,418	19%	89%	4.7
C	2	4,220	363	2,033	9%	48%	5.6
D	2	5,791	402	3,078	7%	53%	7.7

Lift Station	Number of Pumps	Lift Station Capacity (gpm)	Average Daily Lift Station Flow (gpm)	Maximum Daily Lift Station Flow (gpm)	Average Capacity Utilized (%)	Maximum Capacity Utilized (%)	Maximum/ Average Capacity Utilization Ratio
E	2	5,114	354	1,262	7%	25%	3.6
F	2	4,365	615	3,590	14%	82%	5.8
G	2	2,681	179	910	7%	34%	5.1
H	2	499	25	254	5%	51%	10.0
J	2	626	65	376	10%	60%	5.8
K	2	240	10	63	4%	26%	6.6
L	2	280	27	104	10%	37%	3.8
M	2	260	7	80	3%	31%	11.4
N	2	514	28	128	5%	25%	4.6
O	2	415	29	205	7%	49%	7.1
R	2	4,418	422	2,242	10%	51%	5.3
S	2	495	9	240	2%	49%	25.8
T	2	400	47	382	12%	95%	8.0

4.1.3 Satellite Communities

Several satellite communities convey wastewater into the collection system. These connections are metered and checked monthly. These communities include Peary Court Apartments, Sigsbee Military RV Park, Fort Zachary Taylor State Park, and the Naval Air Station. Flows for the US Navy are summarized in Table 4.2 below. A sewer use agreement is in place for the US Navy. New connections are governed by the Code of Ordinance requirements and special agreements made for satellite communities and significant contributors.

Table 4.2: City of Key West Wastewater Collection System US Navy Flows. (I/I Plan. 2023)

Contract Station ID	AADF (gpd)	Downstream LS District
Trumbo Front Gate	54,987	C
Trumbo Backflow Preventer	4,499	C
Trumbo Back Gate	129,475	H
Emma & Amelia	5,421	A
Truman & Fort	40,008	A
Outer Mole	1,392	A
United & Whitehead	4,250	A
Sigsbee	112,483	RAHEPF
Medical Center	4,849	F
Navy Dive Center	1,155	N/A
Fort Zachary Taylor	4,078	A

4.2 Mapping

The CKW collection system is mapped within GIS (geographic information system), Esri's ArcGIS. Most of the collection system is mapped within GIS. Any new, missing, or incorrect assets within GIS can be reported by field personnel for updates by the GIS administrator. Figure 4.1 below shows the GIS map of CKW collection system including its main components.

Figure 4.1. City of Key West Wastewater Collection System. 2024.

4.3 Engineering

The CKW Utilities Department is responsible for implementing the capital improvement plan, coordinating and inspecting construction projects, designing in-house projects, and maintaining drawings and records of CKW's systems. Sewers constructed are required to be designed and constructed with industry standards and practices and implemented with preferred equipment vendors. Equipment must be designed to operate in island environment with potential exposure to saltwater.

New construction and rehabilitations are inspected by CKW both during and after construction are complete. CKW Code of Ordinances, building codes, plumbing codes, applicable city rules and regulations dictate requirements for size, slope, alignment, materials of construction of a sewer service lateral, in addition to the methods to be used in excavating, placing of the pipe, jointing, testing, and backfilling the trench. Codes also state guidelines and specifications for repair and replacement of sewer laterals.

CKW has specific standards for new construction and for rehabilitation of existing sewer lines. The CKW Engineering Standard Details document includes design and construction requirements related to the

City's wastewater collection system. Engineering Standards are provided for sewer manholes, joint details, catch basins, service connections, encasements, trenches, concrete, and other details. The Jacobs OMI collections staff and the City Engineering staff from the City's Building and Utilities Departments work cooperatively to develop and improve design standards and specifications for new construction to ensure the most up to date and effective construction plans and specifications possible.

4.4 Lift Stations

Wastewater collection staff maintain the CKW's 26 lift stations. Four small lift stations that are not on telemetry are inspected daily. The remaining are inspected on a bi-monthly schedule. Bi-monthly maintenance activities include checking pump operation and clearing wet well debris. Lift station pump runtimes and trends are reviewed and monitored daily by operators at the treatment plant. If any alarms, issues or inconsistencies occur, operators notify maintenance for investigation. All inspections are saved in the CMMS.

Lift stations have permanent generators, except the 4 small stations that are not on telemetry. Ten mobile generators are also available as needed. Vacuum trucks are available to bypass stations. Most stations have pump redundancy to provide a consistent level of service during maintenance or pump failure.

As part of the Sewer Collection System Master Plan Development project, the Lift Station Plan was finalized in December 2023 by Jacobs. The objective of this Plan is to use data obtained from the lift stations and the sewer collection system to estimate the lift station utilization versus the available capacity to identify undersized lift stations and to develop a plan, if needed. The results of the lift station performance analysis showed that all lift stations had adequate capacity, though seven lift stations potentially operated over 50% of the total lift station capacity. CKW has been prioritizing and implementing recommendations, both from the 2015 Wastewater Pump Stations Conditions Report recommendation list and the 2023 Lift Station Plan.

5 Collection System and Equipment Maintenance

5.1 Planning

Proper maintenance is crucial to managing infrastructure costs and improving the operation of the collection system. Preventative maintenance (PM) schedules have been created in the CMMS. Work orders are generated from the PM schedules and ensure the maintenance staff are meeting the maintenance schedule for most assets.

Initially, PMs are created within the CMMS according to the manufacturer's recommendations. PMs are updated as equipment is rehabilitated, replaced, or requires additional maintenance. Any trouble areas have maintenance scheduled more frequently. Lift stations are inspected bi-monthly with other preventative maintenance scheduled as needed.

5.2 Scheduling

Scheduling for preventative maintenance, staffing, and on-call duty is done by the supervisors. During emergencies, king tides, and severe storms, all staff are working or on call to identify and resolve any issues as long as it is safe to do so. Preventative maintenance and projects are on hold until the situation is resolved.

5.3 Pretreatment and Fats, Oils, and Grease (FOG)

Wastewater pretreatment rules and regulations are detailed in Section 74-166 of the Key West, FL Code of Ordinances document. A portion of the pretreatment ordinance for industrial users is included in

Attachment 4. No significant industrial users are located within the City, though ordinances exist for any contributors to the sewer system. Special agreements are made for any new significant contributors that will dictate any pretreatment requirements. Requirements will be specific to the effluent and the City's regulations.

Section 307(b) of the Federal Water Pollution Control Act, as amended, requires all municipal sanitary sewers with major contributing industries to comply with the pretreatment standards of 40 CFR 128. Therefore, the sewer use ordinances of all municipalities which have received a grant under PL 92-500 must require this compliance. The CKW Ordinance also defines specific prohibited discharges, including hazardous materials, pH and temperature ranges, obstructive items, and potentially harmful wastes.

Additional regulations are detailed for any industrial users with wastes containing fats, oil, or grease (FOG). These users are required to have an Oil/Grease Interceptor (OGI) as determined by the director. New building code also details requirements for OGIs. Figure 5.1 below shows an example of a gravity OGI. Establishments are required to maintain and clean out grease traps as needed. Manifests are kept of these activities.

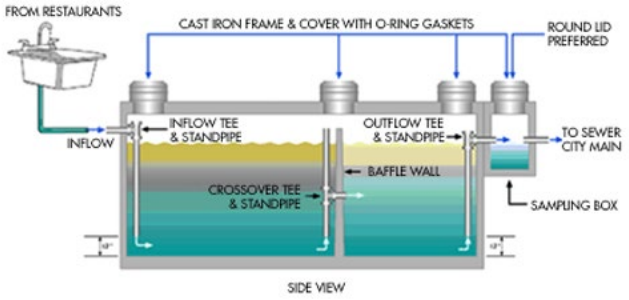

Figure 5.1. Gravity Oil and Grease Interceptor Example.

The Special Magistrate has authority to impose administrative fines and other noncriminal penalties, and inexpensive method of enforcing any codes and Ordinances in force in the City where a pending or repeated violation continues to exist.

FOG "hot spots" have been identified and have been added to an additional cleaning schedule in order to prevent buildup and SSOs. The largest hot spot is Duval Street where food service establishments are clustered around this tourist area. This area is also monitored for street and storm drain flooding during heavy rain events via live video feed. Storm drains in the area are also cleaned prior to any forecasted heavy rain events. A written formal FOG program will be implemented by CKW by the end of 2025. The program may include updates to the Code of Ordinances, inspection details, and enforcement activities.

5.4 Parts

Spare parts are kept at a storage shed at the treatment plant. Parts are cataloged and reordered as needed. Specialized parts may need to be ordered. Lead times and shipping times are considered when keeping spare parts on hand. Maintenance has authorized credit cards in order to make emergency purchases for supplies and small parts. Complete parts inventory is done yearly.

5.5 Equipment and Tools

Equipment is owned by CKW and operated by Jacobs OMI. Vacuum trucks are used for spills or during rehabilitation or replacement activities. Bypass pumps and equipment are also available during construction projects or for inflow during storm surges or other spills. Equipment can be exposed to corrosive salt during use, so additional spray and cleaning is done after use to extend the life of equipment. Table 5.1 below shows CKW owned heavy duty equipment and used by Jacobs OMI for operations and maintenance.

Table 5.1: City of Key West Wastewater Heavy-Duty Equipment

Asset Name	Classification
2002 Ford/ Vactor (COLL) # 206	Heavy-Duty Truck
2008 Yale Forklift (COLL)	Forklift
2022 Kenworth Vactor (COLL) #2370	Heavy-Duty Truck
2015 Navistar Vactor (COLL) #6146	Heavy-Duty Truck
2018 Vactor (COLL) #863	Heavy-Duty Truck
2020 Kenworth (COLL) #8057	Heavy-Duty Truck

6 Sewer System Evaluation Survey (SSES)

An evaluation of existing sanity sewer collection systems must be performed on a periodic basis to identify the condition of sewers, pump stations, manholes, and other collection system components to identify infiltration and inflow (I/I), aging or failing infrastructure, and plan for preventative maintenance and replacement or renewal. Preventive maintenance refers to regular, routine maintenance to help keep equipment up and running, preventing unplanned downtime and SSOs and expensive costs from unanticipated failures.

SSES metrics are shown in Table 6.1 below.

Table 6.1: City of Key West Sewer System Evaluation Survey Metrics

Collection System	Frequency
Gravity – Cleaning (lf/year)	49,500
Gravity – Smoke Testing	System wide 2021. Priority 1 repeat 2024.
Gravity - CCTV	As needed
Force Main Assessments	25% per year
Lift Station Inspections	Bi-monthly
Manhole Inspections	During cleaning cycles and smoke testing
ARV Inspections	25% per year

6.1 CCTV

The collection system is inspected using closed circuit television (CCTV) by wastewater collection operators. The equipment is owned by CKW and utilized by OMI staff as needed. Staff places the CCTV camera into a gravity sewer line and transmit video of the sewer line to a device. Visual inspection of the video is used to identify issues and defects.

Using this information, operations staff assist CKW in evaluating and prioritizing problems areas for future Capital Improvement Project (CIP) replacement, maintenance, overall mainline condition and inflow/infiltration (I/I) evaluations. Staff utilizes several CCTV programs, including:

- Sanitary sewer overflow inspections
- Preventative maintenance inspections
- I/I investigations
- Basin inspections
- CIP mainline replacement program

- New construction

6.2 Cleaning

To ensure uninterrupted wastewater flows and to reduce or eliminate stoppages or sanitary sewer overflows, preventive and area maintenance is scheduled and completed in each of the City's flow basins. Review of the effectiveness of past maintenance practices have led to the preventive maintenance programs that are in place today.

The preventative cleaning and area maintenance activities for the sanitary sewer are performed by two Vactor trucks sewer combination units and multiple wastewater collection operators. Approximately 49,500 linear feet, or 1/6th, of the collection system, is cleaned annually on the Preventive Maintenance program. The entire system is cleaned every 6 years, though the current strategy is to target a complete island wide gravity pipe cleaning per year as well as more frequent maintenance of "hot spots" or areas that routinely require additional attention due to settling of debris, grease, or organics. Over 7,000 feet of the collection system is on periodic additional preventive maintenance schedules with a frequency ranging from two months to 12 months.

6.3 I/I reduction plan

Intrusion from saltwater can be isolated and identified through salinity level testing, which is done consistently during high and king tides. During maintenance and cleaning activities, visible white mossy slicks also can indicate saltwater intrusion. When detected, repairs, rehabilitation, and/or customer education can be utilized to eliminate the source.

In 2023, the Infiltration and Inflow Plan was finalized by Jacobs. This plan prioritized lift stations and lift station districts to target for reduction in I/I. The prioritization map is shown below in Figure 6.1. The lift stations were prioritized based on the following logic and are color-coded in the map accordingly:

- Priority 1: Areas with historical SSOs caused by wet weather and high salinity. Even though Lift Station H does not have any historical SSOs, it was included because of high salinity and its tributary to Lift Station B which is categorized as a Priority 1 area.
- Priority 2: Areas with historical SSO with lower salinity but high I/I values, or areas with higher salinity and no historical SSO.
- Priority 3: Areas serving a larger population with high I/I values and lower salinity or areas serving a larger population with a historical SSO but lower salinity and lower I/I values.
- Priority 4: Areas serving a smaller population with high I/I values.
- Priority 5: Areas that do not exhibit high I/I values.

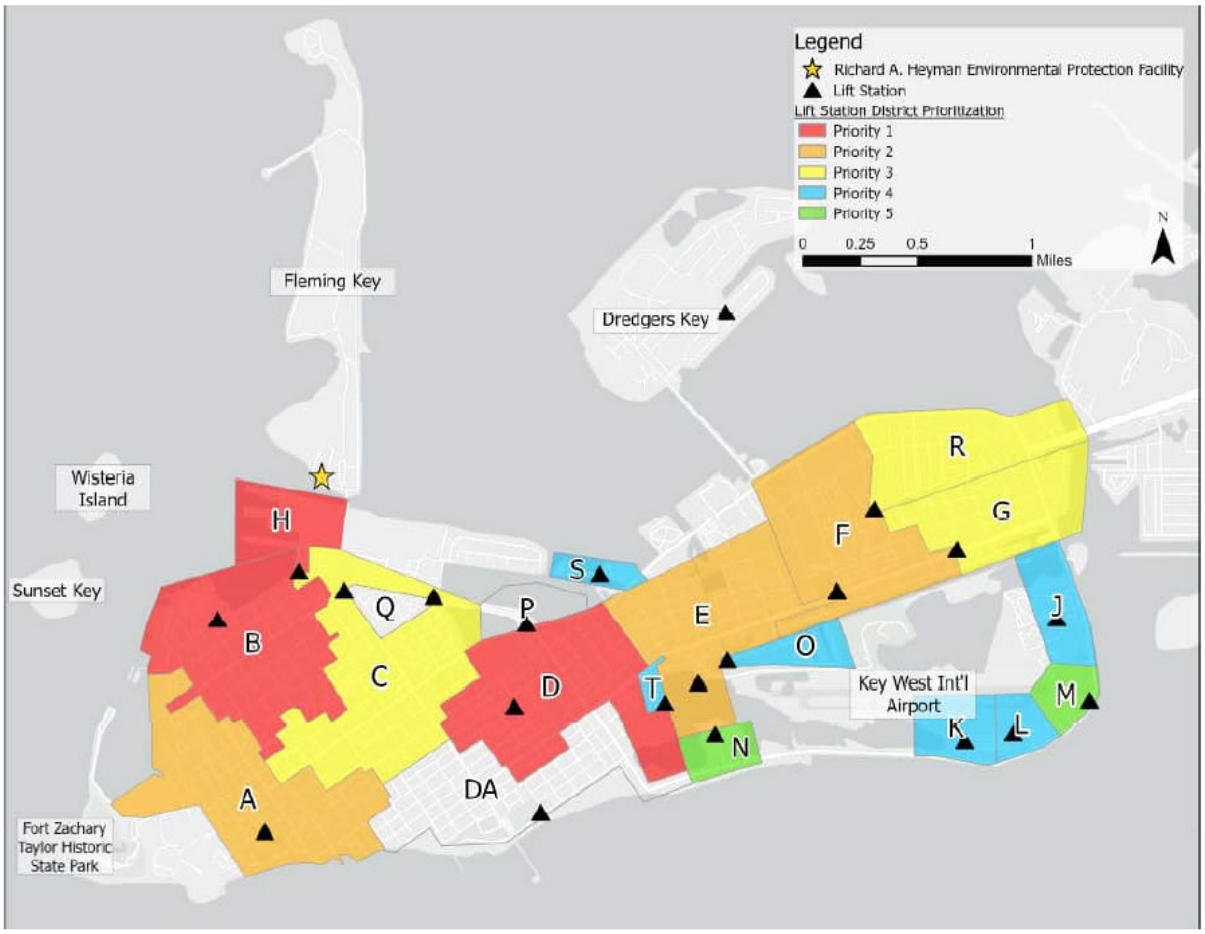

Figure 6.1. City of Key West Collection System Priority Lift Station District Map. I/I Plan. 2023.

6.4 Smoke testing

A smoke test is a sewer inspection method that forces nontoxic smoke into sewer system access points. Smoke testing is utilized to identify breaks which may allow I/I into the collection system. An example of a customer notice of smoke testing is in Attachment 2. Smoke testing was completed throughout the entire system in 2021. Results were utilized for the Key West Infiltration and Inflow Plan from 2023. Collection system smoke testing has begun for 2024 for the Priority 1 lift station districts, which includes visual inspection of manholes in these areas and “midnight” flow observation. Manholes with visible I/I will be scheduled for relining and leak sealing.

6.5 Manhole inspection

Manhole inspections are completed during preventative maintenance and cleaning activities throughout the year. Any issues or defects noted are entered into the CMMS for repair or future rehabilitation. GIS data will be migrated to the CMMS in 2025. Once migrated, manhole inspections will be scheduled in CMMS that will include procedures and required equipment lists.

6.6 Capacity

Richard A. Heyman Environmental Protection Facility (RAHEPF) is permitted for 10 MGD. The plant’s annual average daily flow (AADF) has been between 4.0 MGD and 4.6 MGD. Daily flows are monitored and reported per permit requirements. Growth and development are limited in Key West due to the State of Florida’s hurricane evacuation clearance time for permanent residents is less than 24 hours.

The Lift Station Plan uses data obtained from the lift stations and the sewer collection system to estimate the lift station utilization versus the available capacity to identify undersized lift stations and to develop a plan, if needed. The results of the lift station performance analysis showed that all lift stations had adequate capacity, though seven lift stations potentially operated over 50% of the total lift station capacity.

CKW will be developing a hydraulic model of the collection system by the end of 2026.

7 Sanitary Sewer Overflow Response

7.1 Sanitary Sewer Overflow Response Plan

Jacobs OMI utilizes their Spill Emergency Response Plan for response to any SSO. The plan was last reviewed in 2023 and is included in Attachment 5. The Response Plan includes standard procedure for responding to SSOs. The document covers the standard response plan from the initial possible SSO report and dispatch of personnel to correction, containment, and cleanup procedures.

Large SSOs for the treatment plant and collection system have mainly been caused by extreme rain events or unpredicted equipment failures. Jacobs OMI is continuously looking for and implementing strategies to handle extreme rain events. Minor SSOs have been caused due to equipment failures and contractor line breaks.

7.2 Emergency Preparedness and Response

7.2.1 Response

Reporting procedures are also detailed in the Spill Emergency Response Plan, along with supervisors' responsibilities.

7.2.2 After Hours and Monitoring

For after-hours emergency response, at least one operator is on duty at the treatment plant. At least one mechanic and one operator are on call for emergency response. They are on-call for one week, then rotate among other staff. Alerts come from SCADA or incoming calls to the answering service from customers, FKAA, or other entities. After hours, calls can also come in from the FKAA Stock Island Call Center or the Florida City Call Center.

7.2.3 Equipment

CKW has vacuum trucks that are used for SSOs. Lime disinfection is used. Other companies can be called in to help haul wastewater to a different pump station, collection system or further downstream if a station is being overloaded. Staff usually perform line repairs, equipment repairs and replacements, or contract out if needed.

7.2.4 Lift Stations

If a lift station is the source for an active SSO, maintenance personnel are dispatched to the station immediately. All but four lift stations are monitored and have alerts configured to identify issues quickly. The stations can be shut down remotely if required. Some lifts stations have deep enough wells that can be shut down if needed to help with isolating an area with an active SSO. Emergency procedures can include using portable generators for temporary power outages and bypass pumping until operations are fully restored.

7.2.5 Emergency Operations

The Florida Keys are vulnerable to large rain events, king tides, and hurricanes. Storm surges pose a potential threat to the islands. Evacuations are sometimes required for intense hurricanes that could cause significant damage and threaten public safety. During these events, Jacobs OMI follows the guidelines as detailed in the Procedures for Severe Weather section of the Facility Emergency Response Plan, updated April 2024. Crews can be in place or on call to quickly respond to disruptions in service, SSOs, and other issues if safe for them to do so.

7.3 SSO Notifications

Reporting is completed by the CKW interim utilities director to FDEP according to their requirements. SSOs greater than 1000 gallons or that may threaten the environment or public health must be reported to the State Watch Office immediately. The State Watch Office is a 24-hour hotline. All SSOs must be reported through DEP's online business portal, which also allows a Public Notice of Pollution (PNP) to be created.

Reporting requirements are 24-hour verbal notice and 5-day written report. After reports are submitted to the business portal, notice via email is sent to the local FDEP office and the FDEP Southeast District office.

FDEP has provided photos that are used to help determine spill volumes. The FDEP guidance for estimating SSO volumes is shown in Attachment 6.

Notifications to the public for SSOs, boil water notices, hurricane preparedness alerts, and news alerts are put on the CKW website and sent to anyone subscribed to CivicReady. Public Notice of Pollution (PNP) can be submitted through FDEP's website at https://floridadep.gov/pollutionnotice. A copy of the PNP form is shown in Attachment 7. Spill areas will be secured and marked with appropriate signage until spills are contained, cleaned, and disinfected.

8 Wastewater Treatment Plant

Richard A. Heyman Environmental Protection Facility (RAHEPF) is a 10.0 MGD annual average daily flow (AADF) permitted capacity with an annual average daily flow of 4.6 MGD complete mix activated sludge domestic wastewater treatment facility including influent screening, grit removal, aeration, secondary clarification, aerobic sludge digestion and dewatering facility. Residual solids are sent to Medley landfill. Figure 8.1 below shows a Google Earth map of RAHEPF located on Fleming Key on the Naval Air Base Trumbo Point Annex.

Disposal of treated wastewater is by 2 Class V underground injection wells rated at 18.6 MGD AADF each. Disposal is permitted under permit number 0327710-003 and 004-UO/5W.

The underground well system U-001, with wells IW-1 and IW-2, is located at 24°34' 00" N Latitude and 81°47'45" W Longitude, Trumbo Point Annex, Fleming Key, Key West FL 33040.

An Operations Plan has been updated by Jacobs OMI in March 2024. This plan includes staffing, design specifications, permit requirements, control strategy, and process details for the treatment plant. Operator duties and sampling requirements and procedures are also included in both the Operations Plan and SOPs.

Figure 8.1. Richard A. Heyman Environmental Protection Facility.

8.1 Monitoring

All systems are monitored through SCADA, which sends alerts and alarms when an event occurs that may require an operator.

8.2 Effluent compliance

Effluent limits are defined under discharge permit FLA147222 and include limitations for flows, total phosphorus and nitrogen, total suspended solids (TSS), CBOD, and fecal coliform. Limits are established for underground injection. Monitoring and sampling help to ensure compliance with permitted levels. An example FDEP Discharge Monitoring Report (DMR) for effluent to the underground injection wells is shown in Attachment 8. Similar reports are required for effluent for biosolids quantity and daily sample reports.

8.3 Maintenance

Operators and mechanics keep daily logbooks that include operation and maintenance activities, tests performed, sampling, results, and any repairs completed. Preventative and corrective maintenance activities are logged in the CMMS.

8.4 Training/Licensure

Operators must be a Certified Operator holding a Florida DEP license for wastewater treatment plants. Operators and mechanics have in-house training, along with other technical training either online or offsite. Online classes are utilized for continuing education units (CEUs).

9 Capital Improvement Plan and Budgeting

CKW maintains an ongoing five-year financial plan that is updated annually. The plan will include projections of existing revenue and expenses as well as operating costs and revenue of future capital improvements included in the capital budget. Operational costs have increased due to the effects of the COVID-19, and operational budgets reflect the increase. Feedback for inclusion in the CIP planning is received from CKW staff and Jacobs OMI.

Capital planning occurs during March and April each fiscal year. Potential project lists are submitted by CKW Utilities staff and Jacobs OMI. Priorities are evaluated for inclusion in the current CIP cycle. Jacobs OMI supervisors and staff meeting every 2 weeks to discuss potential projects to be added to capital planning. Critical assets are identified in the CMMS. Renewal and replacement projects for critical assets are given priority in capital planning.

CKW budgets for operations and maintenance under the Sanitary Sewer System Fund, which accounts for the activities of the treatment plant, lift stations, and collection system. The Sewer Fund includes professional services for engineering, studies, and permitting. Jacobs OMI operations and maintenance contract falls under the treatment plant operation department, which also includes rate studies, plant repairs, and plant construction projects. A separate department exists for renewal and replacement, which includes repairs, maintenance, equipment, and construction projects. Stormwater utility fund is separate from sewer.

Sewer usage rates are evaluated yearly through an annual rate study and presented to the City Commission in July. CKW's current rate structure has a base charge that provides revenue independent of usage and offsets some of the operational costs. Any rate increases are evaluated with the rate study and with the June Miami Consumer Price Index for all Urban Consumers (CPI-U) each year in order to compensate for inflation. Wastewater rates were increased by the annual inflation adjustment of 3% in both 2023 and 2024, lower than CPI-U. This decision to not raise wastewater rates the full amount of CPI-U for those 2 years is due to a sensitivity towards the financial pressures faced by customers. For 2024, CKW will raise rates 10% as a catch up for the lower rate increases, in order to fund planned capital projects. Table 9.1 lists the Miami CPI-U for years 2020-2024.

Table 9.1 Miami, FL, CPI-U 12-month percent changes, all items index, not seasonally adjusted. (US Bureau of Labor Statistics)

	2020	2021	2022	2023	2024
JUNE	0.7	5.1	10.1	6.9	3.5

10 Information Technology

CKW Information Technology group and Jacobs OMI are responsible for all business software, telephone and radio networks and the data information network that runs the length of the system. Jacobs OMI staff have Jacobs issued laptops in addition to CKW network equipment used for operations.

Jacobs OMI utilizes a computerized maintenance management system (CMMS) for tracking work orders, maintenance operations, and repair activities. The CMMS software program used is Accruent's Maintenance Connection. Dashboards and reports are utilized for tracking progress for work orders and PMs. Monthly reports are generated for CKW to show maintenance activities.

ESRI GIS is utilized by CKW and Jacobs OMI for mapping of wastewater assets and attributes. The CMMS is used to create, schedule, and prioritize work orders and preventative maintenance. Secure external access is configured for CMMS and GIS.

Jacobs OMI currently has an open position for an asset manager, who will help with asset management and expand use of the current CMMS. A GIS connector will be added to Maintenance Connection which adds a GIS Viewer into the asset and work order modules.

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USEPA. 2005. Guide for Evaluating Capacity, Management, Operations and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems.

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https://www.cityofkeywest-fl.gov

Attachment 1: Example Job Description

Jacobs / OMI Key West, FL

Title: Operator - Wastewater

Reports to: Operations Manager
Operator

General Statement

Performs a variety of tasks in the operation and maintenance of a water/wastewater treatment plant including maintenance of equipment, quality control/testing and day-to-day activities on an assigned shift.

Essential Duties and Responsibilities

- Performs any combinations of tasks pertinent to controlling operations of the wastewater treatment plant
- Operates, performs minor repairs, and maintains the wastewater treatment plant facility
- Operates pumps, engines, and generators to control and adjust flow and processing of wastewater, sludge and effluent
- Monitors gauges, meters, and control panels
- Observes variations in operating conditions and interprets meter and gauge readings
- Operates valves and gates either manually or by remote control
- Maintains shift log and records meter and gauge readings
- Takes samples and performs laboratory process tests and analyses when needed or on call weekend duty
- Performs routine maintenance functions and custodial duties
- Makes operating decisions in the absence of Operator 1
- Works safely and adheres to established safety procedures
- Follows written and oral instructions
- Ability to carry and respond to pages as requested by management
- Ability and willingness to work on-call shifts, as requested, including being fit and able to respond to call-ins in a timely manner
- Monitor plant and pump station SCADA notify proper personnel of all alarms and verify that the response was adequate to clear the alarm condition
- Performs other duties as assigned

Working Conditions and Physical Requirements:

- The work area can involve a working environment indoors as well as outdoors, which could cause exposure to outdoor elements; proper environmental attire will be required. Some areas can have loud noise, active machinery, high pressure fluid systems, electrical equipment, confined spaces, heights and depths, fumes, airborne particles, noxious gases, pathogens and various chemicals. The use of appropriate safety equipment will be mandatory in these areas to prevent hazardous contact.

    - Must be able to sit, stand, stoop, twist and bend at the waist, turn, kneel, squat, raise arms above shoulder height, grasp, reach, perform repetitive hand movements and fine coordination to work on equipment, have vision sufficient to read blueprints;

have hearing in the normal range with or without correction. In a 10-hour shift must be able to transport self across the facility, ascend and descend stair steps, lift objects up to 50 pounds from floor level to waist height, climb and work off of a ladder or scaffold; use arms and back to tighten and loosen nuts and bolts; carry a 50-pound toolbox up a flight of stairs; work in confined spaces and wear and use appropriate safety equipment.

I have read and understand my job description.

_____ _____

Employee Signature Date

Attachment 2: Activity Hazard Analysis

ACTIVITY HAZARD ANALYSIS

Job/Task Name: Manhole Inspection (with Rain Pan Insert) (No Entry)		**Date:** 08/03/2020
		Project Name & Job/Task Location: FL03 / Key West, FL
Personal Protective Equipment: Safety Glasses, Safety Vest, Leather Gloves		**Project Manager / Dept. Supervisors** Rick Cleaver, PM / Ralph Estevez, Michael Martinez
__x__ **NEW or** ____ **REVISED Revision #**	**Departments:** All Stormwater & Collections Employees	**Reviewed by / Approved by:** Safety Team

Section 1

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	**Potential Health and Safety Hazards** (Analyze each principal step for potential hazards)	**Hazard Controls** (Develop specific controls for each potential hazard)
LOCATE MH FOR INSPECTION	TRAFFIC	SET UP PROPER MOT., USE ALL NECESSARY PPE (SAFETY VEST, SAFETY GLASSES, ETC.)
OPEN MH WITH HOOK	SLIP, TRIP, PINCH, BACK STRAIN, FLYING DEBRIS	BE AWARE OF TRAFFIC, USE PROPER LIFTING TECHNIQUES, USE ALL NECESSARY PPE (SAFETY VEST, SAFETY GLASSES
CHECK RAIN PAN FOR ANY DAMAGE BEFORE REMOVAL	FLYING DEBRIS	BE AWARE OF TRAFFIC, USE ALL NECESSARY PPE (SAFETY VEST, SAFETY GLASSES, LEATHER GLOVES, ETC.)
PULL OUT RAIN PAN THEN PERFORM VISUAL INSPECTION (DO NOT ENTER)	SLIP, TRIP, PINCH, BACK STRAIN, FLYING DEBRIS	BE AWARE OF TRAFFIC, USE PROPER LIFTING TECHNIQUES, USE ALL NECESSARY PPE (SAFETY VEST, SAFETY GLASSES
INSERT RAINPAN BACK INTO MH RING	SLIP, TRIP, PINCH, BACK STRAIN, FLYING DEBRIS	BE AWARE OF TRAFFIC, USE ALL NECESSARY PPE (SAFETY VEST, SAFETY GLASSES, LEATHER GLOVES, ETC.)
CLOSE MH BY SLIDING MH COVER BACK INTO PLACE, CHECK FOR PROPER SEAL	SLIP, TRIP, PINCH, BACK STRAIN, FLYING DEBRIS	BE AWARE OF TRAFFIC, USE PROPER LIFTING TECHNIQUES, USE ALL NECESSARY PPE (SAFETY VEST, SAFETY GLASSES
CLEAN UP WORK AREA AND LEAVE SITE	TRAFFIC, FLYING DEBRIS	BE AWARE OF TRAFFIC, USE ALL NECESSARY PPE (SAFETY VEST, SAFETY GLASSES, LEATHER GLOVES, ETC.)

Print	**Signature**	**Date/Time:**
Supervisor Name: Ralph Estevez, Michael Martinez		
Safety Rep or PM: Rick Cleaver		7/24/2020
Employee Names:		

Attachment 3: Smoke Testing Notification and Results Form

USSI

SEWER LINE SMOKE TEST
TO BE CONDUCTED IN YOUR AREA
Contracted by your utility provider

Weekdays 8 a.m. to 5 p.m.
Weather permitting

You do not need to be home during the testing, which will take about 15 minutes.

Why This Test is Commonly Used
This routine, preventative maintenance test will help identify leaks, defects and stormwater inflows in the sewer system, thereby improving wastewater treatment operations and efficiency.

What to Expect
If you just received this door hanger you should expect to see a smoke test crew in your area in the next few days. While smoke can be expected to be visible coming out of manhole covers and vent stacks in roofs, **it should not enter homes. To reduce the likelihood of smoke entering a building, it is recommended that you pour 2-3 gallons of water into seldom-used sinks and floor drains,** where the smoke could arise due to lack of water pressure. This may be done at any time prior to the test.

How the Test Works
The test consist of forcing safe smoke oil into the sewer lines and observing where it escapes in order to determine the location of leaks and defects. Odorless and safe, the smoke leaves no residuals or stains and has no adverse effect on people, plants or animals. The test generally last about 15 minutes from start to finish.

If Problems are Found
You may be notified upon completion of the project if there are any problems found on your property.

Special Requests
While smoke testing is safe, residents with heart or respiratory conditions may contact USSI at 1-888-645-9570 or 941-926-2646 between the hours of 9am to 4pm to inquire about testing schedules and have a call ahead placed, only if needed.

Contractors
Work is being performed by USSI LLC crews in easily recognizable uniforms.

For ESL and more information and videos that pertain to smoke testing please visit www.ussiusa.com.

Select "I just received a Door Hanger notice about smoke testing-Click Here" OR use your smart phone and scan the QR code for additional information.

Smoke Test Report for Key West
Lift Station:LSD ;Address:2118 Harris Ave

lastUpdateBy	Robert
isActive	True
Date	2024-08-13
State	Florida
Comments	None
Type of Defect	Laterals
Type of cleanout	Schedule 40 PVC
What size is the cleanout?	4 Inch
What kind of lateral defect is this?	Open 4 Inch CO
Does a Hub Need to be replaced	Yes 4"
Can an LDL be Installed	Yes
Area Directly Around Defect	Grass
How large is the defect?	Large
What is the elevation of the defect?	Low Elevation - Great Chance Of Water Pooling
Defect Location	Front Right
Rate the defect value on a scale of 0 (Lowest) to 6 (Highest)	Five
GPSLoc	24.558384810548354,-81.77884009768398
Surveyor	Robert
Public or private?	Public
Is this a Compliance Issue	No
Estimate Cost To Repair	$100
Dish Size Outside Diameter	

Attachment 4: Industrial User, FOG, Pretreatment Ordinances

(Sec. 74-166 – 74-175)

Sec. 74-166. - Additional requirements for major contributing industries.

(a) Section 307(b) of the Federal Water Pollution Control Act, as amended, requires all municipal sanitary sewers with major contributing industries to comply with the pretreatment standards of 40 CFR 128. Therefore, the sewer use ordinances of all municipalities which have received a grant under PL 92-500 must require this compliance.

(b) Any major contributing industry within the city as defined by 40 CFR 128.124 shall comply with 40 CFR 128 and any other regulation as shall from time to time be established by the Environmental Protection Agency or other appropriate regulating governmental agency.

(Code 1986, § 74.09)

Sec. 74-171. - Grease, oil and sand interceptors.

Grease, oil, and sand interceptors shall be provided when, in the opinion of the director, they are necessary for the proper handling of liquid wastes containing grease in excessive amounts or any flammable wastes, sand, or other harmful ingredients, except that such interceptors shall not be required for private living quarters or dwelling units. All interceptors shall be located as to be readily and easily accessible for cleaning and inspection.

(Code 1986, § 74.37)

Sec. 74-172. - Preliminary treatment for flow-equalizing facilities.

Where preliminary treatment for flow-equalizing facilities are provided for any waters or wastes pursuant to this article, they shall be maintained continuously in satisfactory and effective operation by the owner at his expense.

(Code 1986, § 74.38)

Sec. 74-175. - Special agreements between city and industrial users.

No statement contained in this article shall be construed as preventing any special agreement or arrangement between the city and any industrial concern whereby an industrial waste of unusual strength or character may be accepted by the city for treatment, subject to payment therefor by the industrial concern.

(Code 1986, § 74.41)

Attachment 5: Spill Emergency Response Plan

Jacobs / Operations Management International, Inc.

Key West, Florida

Spill Emergency Response Plan

Review September 2023

Awareness

OMI maintains an emergency contact list showing whom to contact in case of emergency. All associates are subject to being called in response to any emergency repairs after regular business hours, on weekends, or on holidays. OMI "On-Call" personnel are provided with pagers, and/or handheld radios, and Nextel cellular phones for immediate response.

Response

When a wastewater spill problem has been identified that could be a potential hazard to the environment established standard procedures are followed. Immediately upon notification of a spill:

- On-Call personnel respond to the reported spill site to assess conditions.
- If in fact there is a legitimate sewage spill, conditions causing the spill are determined and immediate action is taken to stop all sewage flow contributing to the spill.
- The WWTP operator is contacted who utilizes radio telemetry to disable all pumping stations that may be contributing to the problem.
- Additional personnel are contacted and mobilized for assistance. The number of people called is determined by the associate initially responding to the spill.
- If the Vactor sewer combination truck is needed, a minimum of two people are required. If the spill was minor, it is possible for a single associate to clean the area with our portable water vacuum unit.
- If the spill was caused by a broken force main, gravity main, or any other infrastructure failure, construction repair personnel are mobilized with appropriate equipment to begin repair assessment. If the spill was caused by pumping station equipment failure, OMI Maintenance personnel are mobilized with all equipment typically utilized in this instance.
- If, upon determining the exact cause of the spill, additional assistance is needed, all OMI staff is available 24/7 upon notification.
- After all required information is ascertained, FDEP is contacted by the plant operator, and if not already involved in the incident, all pertinent supervisors and the project manager are notified, and the client contact is informed.
- Post spill cleanup is performed using granulated Lime, wash down water, and the Vactor sewer combination vehicle. All material and liquid removed from the site is transported to the WWTP for containment and ultimate disposal.

Unless specified otherwise in a wastewater permit, notifications are required for any unauthorized wastewater spill to surface waters or ground waters of the state, or for any other unauthorized discharge to surface waters or ground waters of the state that may endanger health or the environment.

It is the policy of OMI Key West to conduct an ecologically based assessment of aquatic receptors of wastewater spills to assess any possible impacts on Key West's nearshore water regardless of whether the spill has been categorized as major or minor. To fully assess the impact of a sewer spill on the aquatic environment physical, chemical, and biological perimeters are examined. Each of these parameters provides additional information on the assimilative capacity of the point of spill and thus an indication of remedial measures required. All but the most minor (100 gallons or less) spills are deemed to be significant in terms of physical impact to the environment and are reported to the Florida DEP, regardless of their initial classification. Minor spills that reach nearshore waters are always reported to the FDEP and sampling procedures are followed as they would be for a major spill.

Field investigations are accomplished through a cooperative effort between OMI Laboratory and Collection System Maintenance Department personnel. Physical and chemical parameters up to and including the full suite of water quality parameters may be used if deemed necessary. All biological sampling follows state guidelines and protocols for both fish and macro invertebrates sampling. Investigations of fish kills follow the state guidelines for fish kill assessments. Appropriate sections of the FDEP operating procedures for rapid bio assessment are referenced when evaluating physical conditions. The field observations, assessments and lab results are reviewed, and a determination made of the severity of the spill. Spill site cleanup procedures beyond the procedures already performed by OMI personnel that are deemed appropriate to the severity of the spill are performed.

Official Notification

To comply with State law, spills of raw wastewater, whether they originate from a manhole, a broken line, or through a designated bypass, are reported to the FDEP. Notification of a spill to the FDEP is made when all pertinent information is gathered and found to be accurate; through the toll-free Dispatch Center (during off-duty hours) or through the appropriate Zone Supervisor, the Division Manager or Operations Group Manager (during regular duty hours) immediately. All sewer backup calls are immediately assessed to determine if there is a related spill.

The FDEP requires direct notification to its Compliance Section in the event of sewer spills that reach a body of water from the City of Key West sewer lines. Whenever a wastewater spill is over 1,000 gallons, or circumstances may endanger health or the environment, the required notification must be provided using the State Warning Point's toll-free number, (800) 320-0519. For example, a surface water discharge of inadequately disinfected domestic wastewater should be reported using the toll-free number for the State Warning Point since this represents a potential public health threat.

If the spill is deemed a major spill, a formal report is provided to the Compliance Section including identification of the cause of the spill; a description of activities required to eliminate the spill; an estimate of the total volume of the spill; an evaluation of the impact of the spill; what will be done to eliminate the reoccurrence of a similar event in the future, and a description of the continuing monitoring program necessary to identify any future impacts. This monitoring effort normally includes testing the impacted outfall for enterococcus, pH, dissolved oxygen, and temperature. This testing is performed daily for 3 days or until uncontaminated results are achieved following the spill. If a spill volume is less than 1,000 gallons, no formal report is required after the initial notification to the Compliance Section; however, the event must be included in a monthly summary provided to the Compliance Section.

Reporting

Reporting Requirement

Any spills, except spills listed in 1.42, which discharge to Waters of the State
of becoming aware of the spill. The cause of the spill shall be investigated as soon as possible but in no

case less than during the first 48 (forty-eight) hours after becoming aware of the spill. Within 5 (five) calendar days of becoming aware of the spill a written report shall be sent to the regulatory contact which includes the following information:

1. Date of the spill.
2. Location of the spill.
3. Description of what was spilled.
4. Cause of the spill.
5. Estimated volume discharged and name of receiving waters
6. Corrective action(s) taken to mitigate or reduce the adverse effects of the spill
7. Actions take to prevent similar spill in the future.
8. Contact information.

As a minimum report shall be made to:

Notify regulatory agency, (EPA, EPD, DEP etc. In some cases, both the state and the federal regulatory must be notified check local requirements).

Report the incident to the Health Department for the areas affected by the incident. Additional agencies may need to be notified based on local requirements check permit and local guidance.

Florida SSO Reporting Requirements

Rule Highlights

- Spills / Sanitary Sewer Overflows greater than 1,000 gallons must be reported to the **STATE WATCH OFFICE** formerly known as STATE WARNING POINT **(800-320-0519)** within 24 hours of learning of the spill/SSO.
- Spills / Sanitary Sewer Overflows that endanger public health or the environment must be reported to the **STATE WATCH OFFICE** formerly known as STATE WARNING POINT **(800-320-0519)** within 24 hours of learning of the spill/SSO.
- Spills / Sanitary Sewer Overflows less than 1,000 gallons must be verbally reported to the FDEP within 24 hours of learning of the spill/SSO.
  - Written report describing the spill/SSO must be provided to the FDEP within five days.
  - A written report is not required if the FDEP was notified within 24 hours and the spill/SSO has been corrected and did not endanger public health or the environment.

- **The preferred method for reporting is electronically using the following link:**

  http://dep.state.fl.us/pollutionnotice/.
- Reporting entities may also report via e-mail using the Pollution Notice Form and e-mailing it to pollution.notice@dep.state.fl.us.

- Reporting entities should be aware that, while submission of a notice through this website complies with the requirements of Section 403.077, F.S., it does not relieve them of any obligation to report to the State Watch Office.

In addition to the above notifications the following abnormal event form needs to be submitted to the Marathon Office and the FDEP Southeast District.

Note: Any written report intended to go to a regulatory agency must be reviewed and approved by **the PM, the Director of Environmental Compliance, or his designee and by the PM's direct supervisor** prior to issuance.

Gases

Inert Gases unless released in sufficient quantities to a confined space, to include interior rooms, in sufficient to pose suffocation potential.

Flammable gases in quantities that do not exceed the Lower Explosive Limit LEL in the environment to which it is released.

Oxygen to the atmosphere

Nitrogen –see inert gases.

Wastewater

Spills of less than 25 gallons provided that cleanup occurs within 24 hours of becoming aware of the spill.

Spills that are to areas that are completely lined with impermeable surfaces (such as concrete or plastic liner) which are returned in its entirety to the treatment system provided that the spill is not accessible to the public or the spilled area is attended to by personnel onsite to protect the public until the spill is removed.

Spills of less than 25 gallons if they do not leave the plant site.

Water

Spills of source water (raw water) from wells, lakes, or streams provided that no addition of any chemical or substance occurred after removal from the source and prior to the spill site.

Spills of potable water from the distribution line that does not cause a public nuisance or erosion sufficient to impact public health or potential for additional infrastructure damage.

Sludge

Spills less than 1 cubic yard if spilled to public right away if both a) the sludge is stabilized to meet either class A or class B under 40 CFR 503 and b) the sludge is removed within 24 hours of the actual spill.

Note : All sludge spills to an unapproved area shall be removed immediately upon discovery, including sludge spilled to areas within an approved sludge disposal site in areas not intended to receive sludge.

Additional Reporting Requirements

If a spill reaches a surface water the project shall post notice as close to where the spill occurred as possible and along waterway if applicable, the notice shall include at a minimum the information in 1-8 of 1.41

Spills shall be reported (via email or telephonically – depending on legal aspects of release) to the JACOBS OMI Director of Environmental Compliance or the Manager of Laboratory, IPP and NPDES Permit Compliance and to the applicable area manager, RBM or RDO (within 8 hours of finding)

Additional reporting requirements, based on Permit requirements may apply based on a case-by-case basis.

Many states require reporting spill incidents to local media. Check local requirements. Spill reports to media shall include as a minimum the items 1-8 in section 1.41 above. (Should this requirement be in effect, reporting to local media should only be performed through coordination with the Communications group)

Failure to Adhere to Policy

Failure to adhere to this policy will be treated as a falsification of records and is subject to potential DML or termination.

Monitoring

Wastewater

- Spills of wastewater external to the plant must be sampled and tested for BOD, TSS, pH and bacterial testing (refer to permit and test for same parameters required in permit ie. Fecal coliform, total coliform, e-coli). Additional monitoring may be required by state requirements, or the permit refer to these testing and monitoring requirements.

Chemical

- Notify Fire Department (when available HAZMAT Department), Director of
- Environmental Compliance and Project Manager Supervisor.
- Notify Regional Safety Coordinator, Kevin Savage

After consultation proceed to cleanup if so instructed.

Water

- Spills of potable water which enter a surface water shall be immediately tested for chlorine content and pH.

- Spills of water which enter a surface water shall also be tested for fluoride content if fluoridation is practiced.
- Cleanup

Wastewater

- Remove debris and rags and dispose of as per normal permit requirements for these materials.
- Use lime to increase pH in area of spill to reduce potential for human pathogens.
- When possible, use vac truck to remove ponded wastewater.

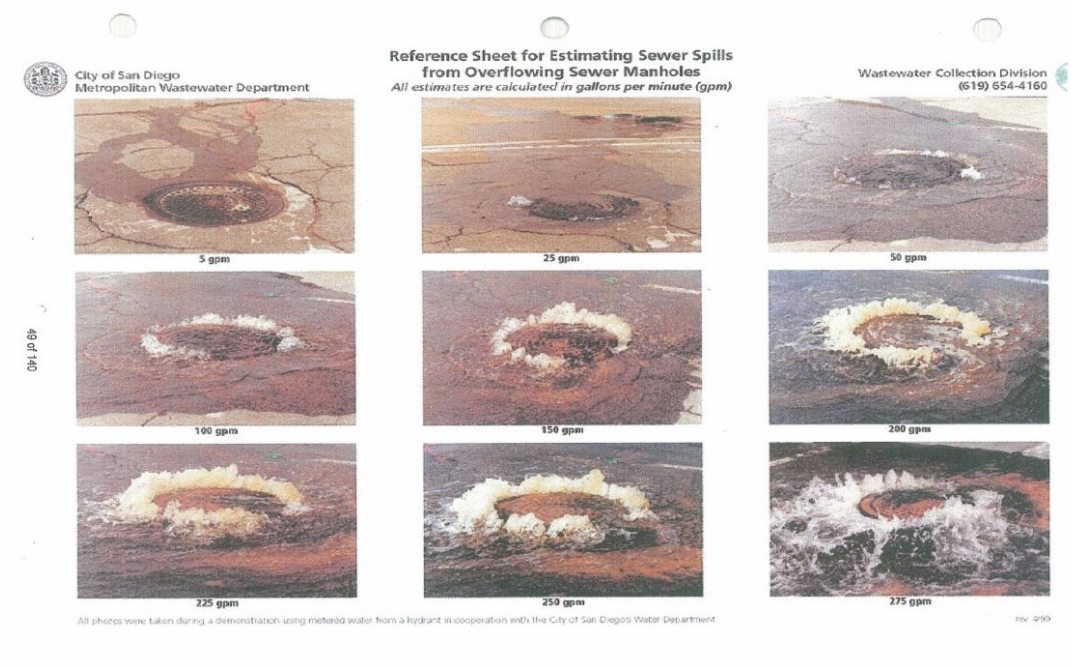
Sludge

- For solid sludge remove all sludge from area and dispose of as Class B sludge or landfill.
- For liquid sludge remove all sludge and lime area. Dispose of as Class B sludge or landfill.
- Do not dispose of spilled sludge as a Class A sludge, unless sludge can be returned to treatment system, retreated and recertified as Class A

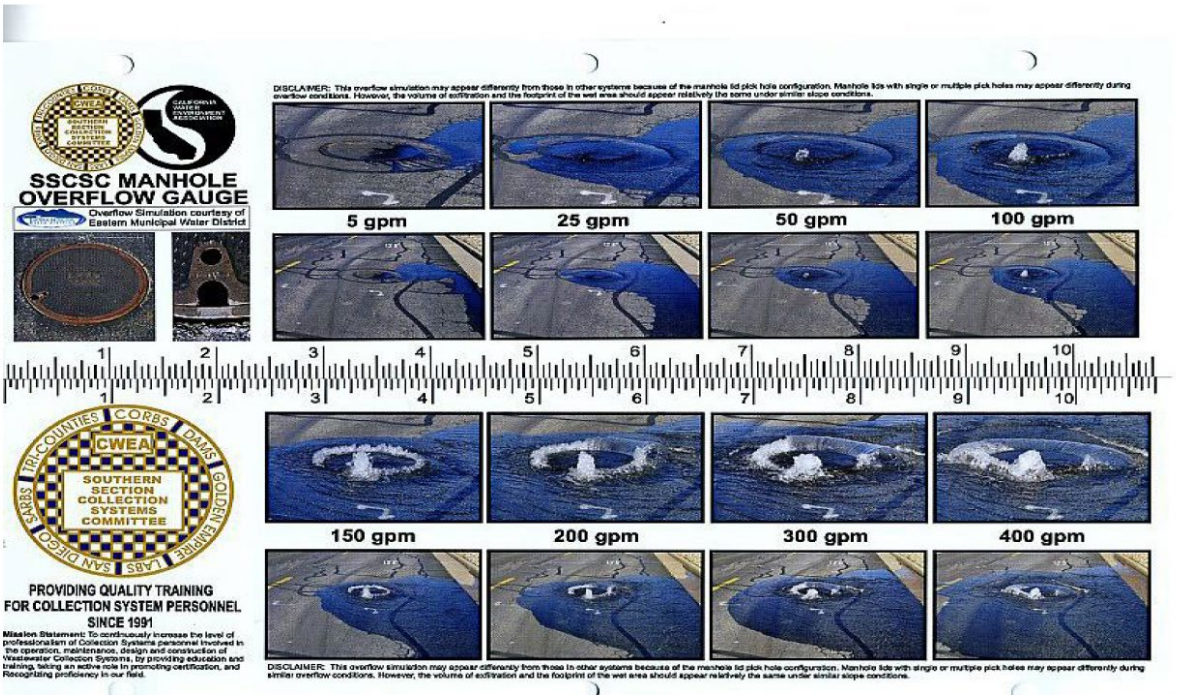
Attachment 6: Estimating SSO Volumes

FDEP provides guidance in estimating SSO volumes. Below are 5 slides detailing how to estimate SSO volume.

Visual Estimate –Overflowing Manhole



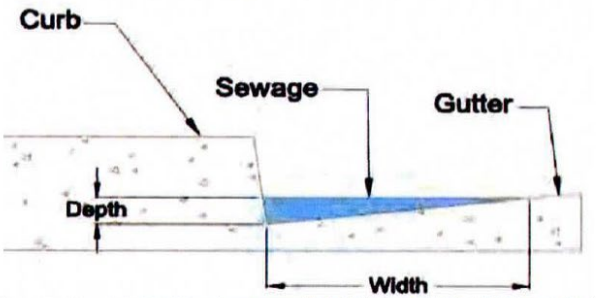
Visual Estimate –Pick Holes



Volume Estimate -Roadway Gutter

1. Measure the length of the gutter containing the overflow.
2. Measure the depth and width of the overflow in the gutter.
3. Convert all measurements to feet.
4. Calculate the overflow volume:

Volume Spilled (gal)= Length X Width X Depth X 3.74



Pooled Area Estimate

Area = 200 square feet

Average Pooled Depth = 2 inches

[Convert depth to feet:

2inches/12 = 0.167 feet

200 ft^2 X 0.167 = 33.4 cubic feet]

33.4 cft X 7.48 gpcf = **~250 gallons spilled**

Connections Served Estimate

1. Determine the number of connections served.
2. Calculate: 200 gallons /household per day x duration of the SSO event.

[*78 homes @ 200 GPD= 15,600 gpd 15,600 gpd / 1440] Minutes=10.8 gpm]*

Estimated spill duration 150 minutes X 10.8 gpm =

1,620 gallons spilled

Attachment 7: Public Notice of Pollution

FLORIDA DEPARTMENT OF Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Pollution Notice

You are submitting a Public Notice of Pollution in accordance with Section 403.077, F.S. which is intended to prevent harm to human health, welfare, or property by assisting the control of pollution. This rule specifies that "reportable releases" are required to be reported to the Department.

Please be aware that while submission of a Notice through this form complies with the requirements of Section 403.077, F.S., it does not relieve you of any obligation to report to the State Watch Office or other authority required by your permit or state law.

Fields marked with * are necessary to implement the Subscription service required by statute. After completion, please e-mail the form to pollution.notice@dep.state.fl.us.

If you are reporting a new release, please select "Initial Notice" below.

If you have previously reported this incident, have obtained a DEP Incident ID, and wish to update your Notice, please select "Updated Notice of Pollution" and enter the DEP Incident ID.

NOTICE TYPE *

☐ **Initial Notice of Pollution**

☐ **Updated Notice of Pollution**

If this is an updated Notice, DEP Incident ID: _____

INCIDENT INFORMATION

Please enter a name for the Incident:

State Watch Office Incident Number or Case ID:

Incident Report (Please enter the information provided to the State Watch Office. If you have a summary e-mail from the State Watch Office, you may copy that and paste it here): *

Please select all counties directly affected by the Incident: *

☐ Alachua	☐ Duval	☐ Holmes	☐ Miami-Dade	☐ Seminole
☐ Baker	☐ Escambia	☐ Indian River	☐ Monroe	☐ St. Johns
☐ Bay	☐ Flagler	☐ Jackson	☐ Nassau	☐ St. Lucie
☐ Bradford	☐ Franklin	☐ Jefferson	☐ Okaloosa	☐ Sumter
☐ Brevard	☐ Gadsden	☐ Lafayette	☐ Okeechobee	☐ Suwannee
☐ Broward	☐ Gilchrist	☐ Lake	☐ Orange	☐ Taylor
☐ Calhoun	☐ Glades	☐ Lee	☐ Osceola	☐ Union
☐ Charlotte	☐ Gulf	☐ Leon	☐ Palm Beach	☐ Volusia
☐ Citrus	☐ Hamilton	☐ Levy	☐ Pasco	☐ Wakulla
☐ Clay	☐ Hardee	☐ Liberty	☐ Pinellas	☐ Walton
☐ Collier	☐ Hendry	☐ Madison	☐ Polk	☐ Washington
☐ Columbia	☐ Hernando	☐ Manatee	☐ Putnam	
☐ DeSoto	☐ Highlands	☐ Marion	☐ Santa Rosa	
☐ Dixie	☐ Hillsborough	☐ Martin	☐ Sarasota	

Start Date and Time of Incident: * _____ (MM/DD/YYYY) ____ (HH) ____ (MM) am (am/pm)

Is the Incident on-going? * ☐ Yes ☐ No

If No, End Date and Time of Incident: _____ (MM/DD/YYYY) ____ (HH) ____ (MM) am (am/pm)

Has the pollution migrated off-site from the Incident? * ☐ Yes ☐ No

If Yes, please select any county(ies) to which the Incident has migrated: *

☐ Alachua	☐ Duval	☐ Holmes	☐ Miami-Dade	☐ Seminole
☐ Baker	☐ Escambia	☐ Indian River	☐ Monroe	☐ St. Johns
☐ Bay	☐ Flagler	☐ Jackson	☐ Nassau	☐ St. Lucie
☐ Bradford	☐ Franklin	☐ Jefferson	☐ Okaloosa	☐ Sumter
☐ Brevard	☐ Gadsden	☐ Lafayette	☐ Okeechobee	☐ Suwannee
☐ Broward	☐ Gilchrist	☐ Lake	☐ Orange	☐ Taylor
☐ Calhoun	☐ Glades	☐ Lee	☐ Osceola	☐ Union
☐ Charlotte	☐ Gulf	☐ Leon	☐ Palm Beach	☐ Volusia
☐ Citrus	☐ Hamilton	☐ Levy	☐ Pasco	☐ Wakulla
☐ Clay	☐ Hardee	☐ Liberty	☐ Pinellas	☐ Walton
☐ Collier	☐ Hendry	☐ Madison	☐ Polk	☐ Washington
☐ Columbia	☐ Hernando	☐ Manatee	☐ Putnam	
☐ DeSoto	☐ Highlands	☐ Marion	☐ Santa Rosa	
☐ Dixie	☐ Hillsborough	☐ Martin	☐ Sarasota	

INCIDENT LOCATION

Please enter the location of the incident. If you are entering Directions, please put "See Directions" in Address Line 1.

Facility/Installation Name: *

Address Line 1: *

Address Line 2:

Directions:

City: *

State: * FL

Zip Code: *

Incident Location (in Decimal Degrees – e.g., Latitude: 30.43813621, Longitude: -84.28134377):

Latitude: **Longitude:**

To find the lat/long of your incident, click here. After you select a location, the lat/long will be in the information box in the upper right corner of the screen.

REPORTER DETAILS

Name: *

Title: *

Phone: * **Ext:**

E-mail Address: *

Relationship: * ☐ Operator of the Facility/Installation ☐ Owner of the Facility/Installation

☐ Other:

CONTACT DETAILS

Name: *

Phone: * **Ext:**

E-mail Address: *

Attachment 8: FDEP DMR Example

Discharge Monitoring Report Example for Effluent to Underground Injection Wells

DEPARTMENT OF ENVIRONMENTAL PROTECTION DISCHARGE MONITORING REPORT - PART A

When Completed submit this report to: http://www.fldepportal.com/go/

PERMITTEE NAME: City of Key West
MAILING ADDRESS: 1300 White Street
Key West, Florida 33040-

FACILITY: Richard A Heyman WWTP - Key West
LOCATION: Trumbo Point Annex-Fleming Key
Key West, FL

COUNTY: Monroe
OFFICE: Southeast District

PERMIT NUMBER: FLA147222-015-DW1P

LIMIT: Final
CLASS SIZE: N/A
MONITORING GROUP NUMBER: U-001
MONITORING GROUP DESCRIPTION: Injection Well System, with Influent
RE-SUBMITTED DMR: ☐
NO DISCHARGE FROM SITE: ☐
MONITORING PERIOD From: _____ To: _____

REPORT FREQUENCY: Monthly
PROGRAM: Domestic

Parameter		Quantity or Loading		Units	Quality or Concentration			Units	No. Ex.	Frequency of Analysis	Sample Type
BOD, Carbonaceous 5 day, 20C	Sample Measurement										
PARM Code 80082 Y Mon. Site No. EFF-1	Permit Requirement					5.0 (An.Avg.)		mg/L		5 Days/Week	24-hr FPC
BOD, Carbonaceous 5 day, 20C	Sample Measurement										
PARM Code 80082 1 Mon. Site No. EFF-1	Permit Requirement				10.0 (Max.)	7.5 (Max.Wk.Avg.)	6.25 (Mo.Avg.)	mg/L		5 Days/Week	24-hr FPC
Ultraviolet Light Dosage	Sample Measurement										
PARM Code 61938 J Mon. Site No. PPI-1	Permit Requirement				35 (Min.)			mW-s/sqcm		Daily; 24 hours	Meter
Solids, Total Suspended	Sample Measurement										
PARM Code 00530 Y Mon. Site No. EFF-1	Permit Requirement					5.0 (An.Avg.)		mg/L		5 Days/Week	24-hr FPC
Solids, Total Suspended	Sample Measurement										
PARM Code 00530 1 Mon. Site No. EFF-1	Permit Requirement				10.0 (Max.)	7.5 (Max.Wk.Avg.)	6.25 (Mo.Avg.)	mg/L		5 Days/Week	24-hr FPC
Ultraviolet Light Transmittance	Sample Measurement										
PARM Code 51043 J Mon. Site No. PPI-1	Permit Requirement				65 (Min.)			percent		Daily; 24 hours	Meter

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NAME/TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	TELEPHONE NO	DATE (mm/dd/yyyy)

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here):

DISCHARGE MONITORING REPORT - PART A (Continued)

FACILITY: Richard A Heyman WWTP - Key West MONITORING GROUP NUMBER: U-001 PERMIT NUMBER: FLA147222-015-DW1P

MONITORING PERIOD From: _____ To: _____

Parameter		Quantity or Loading		Units	Quality or Concentration			Units	No. Ex.	Frequency of Analysis	Sample Type
Coliform, Fecal	Sample Measurement										
PARM Code 74055 Y Mon. Site No. EFF-1	Permit Requirement					200 (An.Avg.)		#/100mL		5 Days/Week	Grab
Coliform, Fecal	Sample Measurement										
PARM Code 74055 1 Mon. Site No. EFF-1	Permit Requirement					200 (Mo.Geo.Mn.)	800 (Max.)	#/100mL		5 Days/Week	Grab
Ultraviolet Light Intensity	Sample Measurement										
PARM Code 49607 J Mon. Site No. PPI-1	Permit Requirement				Report (Min.)			mW/sqcm	0	Daily; 24 hours	Meter
pH	Sample Measurement										
PARM Code 00400 1 Mon. Site No. EFF-1	Permit Requirement				6.0 (Min.)		8.5 (Max.)	s.u.		Continuous	Meter
Nitrogen, Total	Sample Measurement										
PARM Code 00600 Y Mon. Site No. EFF-1	Permit Requirement					3.0 (An.Avg.)		mg/L		5 Days/Week	24-hr FPC
Nitrogen, Total	Sample Measurement										
PARM Code 00600 1 Mon. Site No. EFF-1	Permit Requirement				6.0 (Max.)	4.5 (Max.Wk.Avg.)	3.75 (Mo.Avg.)	mg/L		5 Days/Week	24-hr FPC
Phosphorus, Total (as P)	Sample Measurement										
PARM Code 00665 Y Mon. Site No. EFF-1	Permit Requirement					1.0 (An.Avg.)		mg/L		5 Days/Week	24-hr FPC
Phosphorus, Total (as P)	Sample Measurement										
PARM Code 00665 1 Mon. Site No. EFF-1	Permit Requirement				2.0 (Max.)	1.5 (Max.Wk.Avg.)	1.25 (Mo.Avg.)	mg/L		5 Days/Week	24-hr FPC
Flow	Sample Measurement										
PARM Code 50050 Y Mon. Site No. FLW-1	Permit Requirement		10.0 (An.Avg.)	MGD						Continuous	Flow Totalizer
Flow	Sample Measurement										
PARM Code 50050 1 Mon. Site No. FLW-1	Permit Requirement	Report (Mo.Avg.)	Report (3Mo.Avg.)	MGD					0	Continuous	Flow Totalizer

DISCHARGE MONITORING REPORT - PART A (Continued)

FACILITY: Richard A Heyman WWTP - Key West MONITORING GROUP NUMBER: U-001 PERMIT NUMBER: FLA147222-015-DW1P

MONITORING PERIOD From: _____ To: _____

Parameter		Quantity or Loading		Units	Quality or Concentration			Units	No. Ex.	Frequency of Analysis	Sample Type
Percent Capacity, (TMADF/Permitted Capacity) x 100	Sample Measurement										
PARM Code 00180 G Mon. Site No. INF-1	Permit Requirement						Report (Mo.Avg.)	percent	0	Monthly	Calculated
BOD, Carbonaceous 5 day, 20C (Influent)	Sample Measurement										
PARM Code 80082 G Mon. Site No. INF-1	Permit Requirement						Report (Max.)	mg/L	0	5 Days/Week	24-hr FPC
Solids, Total Suspended (Influent)	Sample Measurement										
PARM Code 00530 G Mon. Site No. INF-1	Permit Requirement						Report (Max.)	mg/L	0	5 Days/Week	24-hr FPC