Operation and Maintenance Performance Report

Key West Resort Utility Wastewater Treatment Facility

FLA014951

Monroe County

DEP Permit FLA014951

Permit Expiration Date April 10, 2012

Report Prepared by:
Weiler Engineering
201 W Marion Avenue
Suite 1306
Punta Gorda, Florida 33950
941.505.1700

CERTIFICATIONS

I certify that the information contained in this report is, to the best of my knowledge, true and correct; that the report was prepared in accordance with sound engineering principles and I have discussed the recommendations made in this report with the permittee's delegated representative.

The Weiler Engineering Corporation
6805 Overseas Highway
Marathon, Florida 33050

Edward Castle, P. E. 58574

Date

I certify that I have reviewed the information contained n this report and am fully aware of any recommendations and schedules included in the report.

Certified Operator
Mark Burkemper, B-5355

Date

KW Resort Utilities
6630 Front Street
Key West, Florida 33040

I certify that I have reviewed the information contained in this report and am fully aware of any recommendations and schedules included in the report.

Chris Johnson, President
KW Resort Utilities, Corp.
6630 Front Street
Key West, Florida 33040

Date

INTRODUCTION

The Key West Resort Utility (KWRU) wastewater treatment facility is designed to achieve Advanced Wastewater Treatment (AWT) levels, with a permitted capacity of 0.499 million gallons per day (MGD) based on the annual average daily flow (AADF).

The facility is a Category III, Class C; permitted to operate under the authority of FDEP Permit FLA014951. Staffing is by a Class C or higher operator for 6 hours per day, 7 days per week, in compliance with Permit Condition V and applicable DEP rules.

Effluent Carbonaceous Biochemical Oxygen Demand ($CBOD_5$), Total Suspended Solids (TSS), fecal coliform, pH, Total Nitrogen and Total Phosphorus are monitored pursuant to Permit Condition I.A.1 to determine efficiency of the treatment process.

Influent Total Nitrogen, Total Phosphorus, $CBOD_5$ and TSS are monitored pursuant to Permit Condition I.B.1 to determine loading to the facility.

FACILITY OPERATION

At the facility there is a vacuum building which houses four pumps connected to an auto-dialer that notifies the operator of low vacuum. The building was clean and no visible spills of oil or other fluids were observed.

Collection system influent from both the vacuum and gravity systems flows to a splitter box, which sends flow to the separate treatment trains. The facility is composed of dual plants with design flows of 0.249 MGD and 0.25 MDG, which are piped together to allow the facility to operate as a single plant.

Each treatment train consists of a bar screen, an equalization basin, an aeration tank, an anoxic tank, a re-aeration basin, a clarifier, a sand filter, and a chlorine contact chamber.

From the surge tanks, raw influent is directed to dual aeration basins of equal size where nitrification takes place. There is a sodium bicarbonate feed system to add any required alkalinity in an amount dependant on facility operation. This system will be used when the facility is operated in the AWT mode. Each aeration basin is equipped with multiple air headers and the contents appear to be evenly mixed with no dead spots. The mixed liquor color was good; no odors were present, and a crisp white foam was observed.

When the facility is operated as an AWT facility, nitrified wastewater will be injected with a carbon source as required prior to flowing to the anoxic zone for the denitrification process where a complete mix drives off excess nitrogen gas.

When operated as an AWT facility, the mixed liquor flows from the anoxic basins to the re-aeration basins. In order to achieve phosphorus reduction, the effluent from the re-aeration tanks will be injected with aluminum sulfate.

Currently, the anoxic and re-aeration basins are operating as aeration basins. Flow from each treatment train's aeration basin is delivered to the clarifiers. The stilling wells did not contain excessive solids, and clear water was observed above the blankets; no pop-ups or floating solids seen. Each of the Return Activated Sludge (RAS) and the Waste Activated Sludge (WAS) lines were in the appropriate positions and were functioning properly. The skimmer arms were properly operating. The weirs appeared level and were maintained free of algae.

From the clarifiers, flow is delivered to the back-washable sand filters, which were free of solids or trash and operating properly. Once the water leaves the sand filters, turbidity samples are collected for analysis by the in-line continuous turbidity meter.

The final stage of treatment is the chlorine contact chambers where the required contact time and required high level disinfection is obtained prior to disposal to the reuse system or injection well system. Samples are automatically collected for analysis by a Hach in-line chlorine meter to ensure the total residual chlorine level is at least 1 mg/L.

In accordance with F.A.C. Rule 62-600.300(4)(b), the 6 mg/L chlorine dosage rate was obtained from the Great Lakes/Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997 edition.

The contents of each chlorine contact chamber were clear; no floating material or excessive solids observed. Baffles were in place to minimize short circuiting. It was observed that the gas chlorine cylinders were properly stored.

From the chlorine contact chambers, effluent is discharged to either the reuse system or the injection well system. A Leopold-Stevens meter and totalizer on the effluent tank is used to provide hydraulic loading information for the facility.

The effluent is pumped to reuse storage ponds for slow-rate land application on the golf course at the Key West Golf Club. The Monroe County Detention Center (MCDC) also receives treated wastewater which is used for toilet flushing and cooling water. At the facility there are two ten-inch Class V Group III underground injection wells that provide alternate effluent disposal.

Residuals (WAS) are maintained in the three aerobic digesters for fifteen (15) days and are then put into under-drained drying beds. Residuals are left on the beds for sixty (60) days. When the total solids reach 80%, dried residuals are removed by Waste Management, Inc. and taken to the Medley Landfill and Recycling Center, located at 9350 NW 89th Avenue, Medley, Florida 33178.

The three month average daily flows indicate the facility is operating between 45 and 62% of the permitted capacity of 0.499 MGD.

July2011	0.307	Jan 2011	0.282
Jun	0.302	Dec	0.259
May	0.298	Nov	0.283
Apr	0.295	Oct	0.227
Mar	0.297	Sept	0.245
Feb	0.285	Aug	0.224

Safe and dry access points from which influent and effluent samples are collected are provided.

The facility sends the samples collected as required by Permit Conditions I.A.1, I.B.1, and I.C.1 to US Water in Marathon Florida, Laboratory Certification #E85433, and to Sanders Laboratories Inc., in Nokomis, Florida, Laboratory Certification #E84380. All on-site tests are performed by an operator certified in accordance with FAC Chapter 62-602.

The facility operations staff performs the required duties in a professional, thorough, and competent manner. The log book included the required information regarding facility operation.

PHYSICAL CONDITION

SURGE TANKS:

The facility has dual surge tanks, both of which are in good condition. All influent enters the surge tanks after passing through the manually-cleaned bar screens.

AERATION BASINS:

The facility has dual aeration basins which are in good condition. The contents of each basin were aerating evenly with no dead spots observed.

ANOXIC TANK:

The dual anoxic tanks are in new condition, and when placed into operation, will function as intended.

RE-AERATION BASIN:

The tanks are in new condition and will also operate as intended when placed into service.

CLARIFIERS:

The facility has two circular clarifiers, each is in good condition. The sludge mechanisms and transfer equipment were operating properly.

DIGESTERS:

There are three aerobic digesters; one integrated into each of the treatment trains and a new stand alone digester. All are in good condition, and were aerating evenly with no dead spots observed.

CHLORINE CONTACT CHAMBERS:

There are dual chlorine contact chambers. The contents of each tank were very clear with no accumulated solids observed.

FILTERS:

There are dual sand filters in like new condition after having been repainted and new media installed. The filters were operating properly with no accumulated solids observed.

DISPOSAL SYSTEM:

The dual 10" injection wells are in compliance with current standards. The operator has not reported any problems with the wells during the term of the current permit.

The reuse storage ponds at the Key West Golf Club have a combined surface area of 94,200 ft^2. The ponds were not overgrown and did not contain excessive algae.

The reuse storage system at the Monroe County Detention Center is comprised of three (3) interconnected tanks totaling 102,372 gallons; these tanks are in good condition.

BYPASS/OVERFLOWS:

No evidence of bypass or overflow was observed at the facility or in the operations log book.

OPERATION AND MAINTENANCE PROGRAM

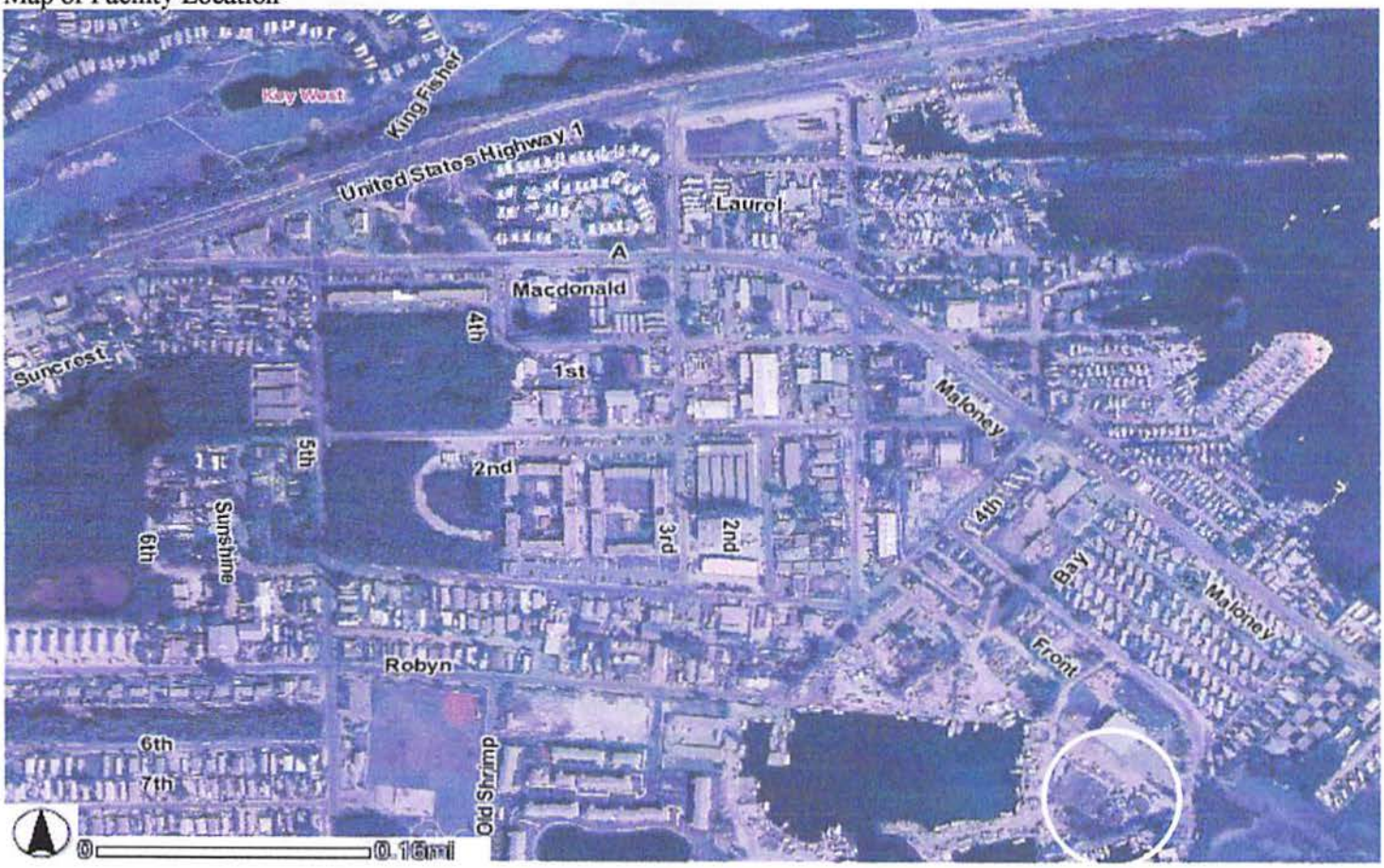
RECORD DRAWINGS and OPERATION AND MAINTENANCE MANUAL:

Current record drawings and the Operation and Maintenance Manual are maintained in the Key West Resort Utility office at 6630 Front Street, Stock Island, Florida 33040.

OPERATION AND MAINTENANCE LOG:

The Operation and Maintenance log is kept at the facility, and is current to the most recent on-site visit by the facility operator.

Map of Facility Location



Location of Facility relative to US 1

KWRU 017252