

PERMITTEE: K W Resort Utility, Corp.
FACILITY: Key West Resort Utility WWTP

PERMIT NUMBER: FLA014951
PA FILE NUMBER: FLA014951-011-DW2P

- (2) Oral reports, not otherwise required to be provided pursuant to subparagraph b.1 above, shall be provided to the Department's South District Office within 24 hours from the time the permittee becomes aware of the circumstances.
- c. If the oral report has been received within 24 hours, the noncompliance has been corrected, and the noncompliance did not endanger health or the environment, the Department's South District Office shall waive the written report.

[62-620.610(20)]

21. The permittee shall report all instances of noncompliance not reported under Permit Conditions IX.17., IX.18., or IX.19. of this permit at the time monitoring reports are submitted. This report shall contain the same information required by Permit Condition IX.20. of this permit. *[62-620.610(21)]*

22. Bypass Provisions.

- a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment works.
- b. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless the permittee affirmatively demonstrates that:
 - (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; and
 - (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 - (3) The permittee submitted notices as required under Permit Condition IX.22.c. of this permit.
- c. If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the Department, if possible at least 10 days before the date of the bypass. The permittee shall submit notice of an unanticipated bypass within 24 hours of learning about the bypass as required in Permit Condition IX.20. of this permit. A notice shall include a description of the bypass and its cause; the period of the bypass, including exact dates and times; if the bypass has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent recurrence of the bypass.
- d. The Department shall approve an anticipated bypass, after considering its adverse effect, if the permittee demonstrates that it will meet the three conditions listed in Permit Condition IX.22.b.(1) through (3) of this permit.
- e. A permittee may allow any bypass to occur which does not cause reclaimed water or effluent limitations to be exceeded if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Permit Condition IX.22.b. through d. of this permit.

[62-620.610(22)]

23. Upset Provisions.

- a. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee.
 - (1) An upset does not include noncompliance caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, careless or improper operation.

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- (2) An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of upset provisions of Rule 62-620.610, F.A.C., are met.
- b. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed contemporaneous operating logs, or other relevant evidence that:
- (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
 - (2) The permitted facility was at the time being properly operated;
 - (3) The permittee submitted notice of the upset as required in Permit Condition IX.20. of this permit; and
 - (4) The permittee complied with any remedial measures required under Permit Condition IX.5. of this permit.
- c. In any enforcement proceeding, the burden of proof for establishing the occurrence of an upset rests with the permittee.
- d. Before an enforcement proceeding is instituted, no representation made during the Department review of a claim that noncompliance was caused by an upset is final agency action subject to judicial review.

[62-620.610(23)]

X. INJECTION WELLS:

1. GENERAL CRITERIA

- a. The permittee shall be aware of and operate under the General Conditions of Florida Administrative Code, (F.A.C.), Rule 62-528.307(1), (a) through (x), and 62-528.307(3)(a) through (e). These General Conditions are binding upon the permittee and enforceable pursuant to Chapter 403 of the Florida Statutes.
- b. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
- c. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- d. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.
- e. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures.
- f. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation or reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
- g. When requested by the Department, the permittee shall furnish, within the time specified, any information needed to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit.

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h. Signatories and Certification Requirements

1. All reports and other submittals required to comply with this permit shall be signed by a person authorized under Rules 62-528.340(1) or (2), F.A.C.
2. In accordance with Rule 62-528.340(4), F.A.C., all reports shall contain the following certification:

“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 upon 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.”
- i. The permittee shall notify the Department and obtain approval prior to any work within the well, physical alterations or additions to the injection or monitor well, including removal of the wellhead.(includes well clean out or other well rehabilitation type work)
- j. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or injection activity that may result in noncompliance with permit requirements.
 1. The permittee shall report any noncompliance that may endanger health or the environment, to include:
 2. Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water; or to adjacent surface waters, or
 3. Any noncompliance with a permit condition or malfunction of the injection system that may cause fluid migration into or between underground sources of drinking water or adjacent surface waters.
- k. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
- l. No underground injection is allowed that causes or allows movement of fluid into an underground source of drinking water.
- m. The permittee shall retain all records of all monitoring information concerning the nature and composition of injected fluid until five years after completion of any plugging and abandonment procedures specified under Rule 62-528.435, F.A.C. The permittee shall deliver the records to the Department office that issued the permit at the conclusion of the retention period unless the permittee elects to continue retention of the records.

2. OPERATING REQUIREMENTS

- a. Injection of any fluids or materials, other than those permitted, into the disposal wells will constitute a violation of this permit and shall constitute cause for permit revocation and possible enforcement action for water quality violations.

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- b. Injection into the well shall not exceed a peak hourly flow rate of 1040 gallons per minute (1.497 million gallons per day, Peak Day Flow). Flow to the wellhead shall be measured with a properly calibrated flow meter or such other devices as provided for in this facility's wastewater treatment permit.
- c. In the event the permittee is temporarily unable to comply with any of the conditions of a permit due to breakdown of equipment, power outages, destruction by hazard of fire, wind, or by other cause, the permittee of the facility shall notify the Department.
- d. Notification shall be made in person, by telephone, or by electronic mail within 24 hours of breakdown or malfunction to the South District office.
- e. A written report of any noncompliance referenced in Specific Condition 2.c above shall be submitted to the South District and Tallahassee offices within five days after its occurrence. The report shall describe the nature and cause of the breakdown or malfunction, the steps being taken or planned to be taken to correct the problem and prevent its reoccurrence, emergency procedures in use pending correction of the problem, and the time when the facility will again be operating in accordance with permit conditions.
- f. The permittee shall calibrate all pressure gauges, flow meters, chart recorders, and other related equipment associated with the injection well system on the same basis as is required by the facility wastewater permit. The permittee shall maintain all monitoring equipment and shall ensure that the monitoring equipment is calibrated and in proper operating condition at all times. Laboratory equipment, methods, and quality control will follow EPA guidelines as expressed in Standard Methods for the Examination of Water and Wastewater. The pressure gauges, flow meters, and chart recorders, as applicable to this facility, shall be calibrated using standard engineering methods. Calibration records shall be kept by the permittee at the permitted facility and be available for inspection by Department personnel upon request.
- g. In the event a well must be plugged or abandoned, the permittee shall obtain a permit from the Department as required by Chapter 62-528, Florida Administrative Code. Within 180 days of well abandonment, the permittee shall submit to the Department and the TAC the proposed plugging method, pursuant to Rule 62-528.460, F.A.C. When no longer used for their intended purpose, these wells shall be properly plugged and abandoned.

3. TESTING AND REPORTING REQUIREMENTS

- a. The injection system shall be monitored in accordance with Rule 62-528.615(2), F.A.C. The following injection well performance data shall be recorded and reported in a Monthly Operating Report as indicated below. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

INJECTION WELLS

The specifications for the injection wells are as follows:

<i>Casing Diameter and Type</i>	<i>Depth Cased (ft bls)</i>	<i>Open Hole Interval (feet bls)</i>
10" Sch 40 PVC	60'	From 60 to 90

The injection wells shall be monitored in accordance with the parameters and frequencies listed below. The flow rate shall be recorded continuously or as required by the facility wastewater permit in accordance with Rule 62-528.615(2), F.A.C. All samples shall be collected and analyzed in accordance

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with the quality assurance requirements of Chapter 62-160, F.A.C. The report shall include the following data:

Parameters	Reporting Frequency
Daily Flow Rate (gpm)	Daily/Monthly
Maximum Peak Hourly Flow Rate (For non-continuous recorders please substitute Average Hourly Flow for the Peak Hourly Flow Rate. Average Hourly Flow = Daily Flow Rate ÷ 24)	Daily/Monthly
Minimum Total Residual Chlorine (mg/L)	Daily/Monthly
Total Volume WWTP Effluent Injected (gallons)	Daily/Monthly

WWTP Effluent Water Quality

Parameters	Reporting Frequency
pH (std. Units)	Monthly
Total Nitrogen (TN) (mg/L)	Monthly
Total Phosphorus (mg/L)	Monthly
CBOD ₅ (mg/L)	Monthly
Solids, Total Suspended (mg/L)	Monthly
Fecal Coliform	Monthly

- b. In accordance with Rule 62-528.615(2), F.A.C. the permittee shall submit to the Department the results of all monitoring data collected no later than the last day of the month immediately following the end of the month of record. The results shall be sent to the Department of Environmental Protection, South District Office, P.O. Box 2549, Fort Myers, Florida 33902-2549. The results shall be submitted in the same manner and on the same forms as required by the facility wastewater permit
4. UIC PROGRAM DISPOSAL WELL PERMIT RENEWAL
 - a. In accordance with Rules 62-4.090(1) and 62-528.455(3)(a), F.A.C., the permittee shall submit an application for renewal of the existing injection well system operating permit (a minimum of 5 copies) with the applicable fee at least 60 days prior to the expiration of this operation permit. The application for renewal shall include the items listed in Rule 62-528.455(3)(b), F.A.C.
 5. EMERGENCY DISPOSAL
 - a. All applicable federal, state and local permits must be in place to allow for any alternate discharges due to emergency or planned outage conditions.
 - b. Any changes in emergency disposal methods must be submitted for Technical Advisory Committee (TAC) review and Department approval.
 - c. The permittee shall notify the local office of the Department within 24 hours in the event the emergency discharge has been used. The notification should include the reason for using the emergency discharge, the duration of the discharge, and the volume discharged. Written notification shall be provided within 5 days after its occurrence.
 6. The permittee is reminded of the necessity to comply with the pertinent regulations of any other regulatory agency, as well as any county, municipal, and federal regulations applicable to the project. These regulations may include, but are not limited to, those of the Federal Emergency Management

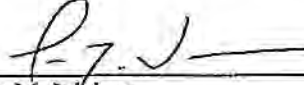
PERMITTEE: K W Resort Utility, Corp.
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Agency in implementing flood control measures. This permit should not be construed to imply compliance with the rules and regulations of other regulatory agencies.

Executed in Fort Myers, Florida

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION



Jon M. Iglehart
Director of
District Management

DATE: February 20, 2012

JMI/BJS/jl

**STATEMENT OF BASIS
 FOR
 STATE OF FLORIDA DOMESTIC WASTEWATER FACILITY PERMIT**

PERMIT NUMBER: FLA014951
 PA FILE NUMBER: FLA014951-011-DWIP
 FACILITY NAME: Key West Resort Utility WWTP
 FACILITY LOCATION: 6630 Front St., Stock Island, Key West, FL 33045
 Monroe County
 NAME OF PERMITTEE: K W Resort Utility, Corp.
 PERMIT WRITER: Barbara J. Skates

1. BASIS FOR PERMIT LIMITATIONS AND MONITORING REQUIREMENTS

This facility is authorized to discharge reclaimed water to **Underground Injection Well System U-001** which consists of 2 Class V injection wells discharging to Class G-III ground water based on the following:

Parameter	Units	Max/Min	Limit	Statistical Basis	Rationale
Flow	MGD	Max	0.499	Annual Average	62-600.400(3)(b) FAC
		Max	Report	Monthly Average	62-600.400(3)(b) FAC
BOD, Carbonaceous 5 day, 20C	mg/L	Max	5.0	Annual Average	Chapter 99-395, Laws of Florida, Section 6, & 62-600.740(1)(b)1.a. FAC
		Max	6.25	Monthly Average	62-600.740(1)(b)1.b. FAC
		Max	7.5	Weekly Average	62-600.740(1)(b)1.c. FAC
		Max	10.0	Single Sample	62-600.740(1)(b)1.d. FAC
Solids, Total Suspended	mg/L	Max	5.0	Annual Average	Chapter 99-395, Laws of Florida, Section 6, & 62-600.740(1)(b)1.a. FAC
		Max	6.25	Monthly Average	62-600.740(1)(b)1.b. FAC
		Max	7.5	Weekly Average	62-600.740(1)(b)1.c. FAC
		Max	10.0	Single Sample	62-600.740(1)(b)1.d. FAC
Coliform, Fecal	#/100mL	Max	200	Annual Average	Chapter 99-395, Laws of Florida, Section 6, & 62-600.440(4)(c)1. FAC
		Max	200	Monthly Geometric Mean	62-600.440(4)(c)2. FAC
		Max	800	Single Sample	62-600.440(4)(c)4. FAC
pH	s.u.	Min	6.0	Single Sample	62-600.445 FAC
		Max	8.5	Single Sample	62-600.445 FAC
Chlorine, Total Residual (For Disinfection)	mg/L	Min	0.5	Single Sample	62-600.440(4)(b) FAC
Nitrogen, Total	mg/L	Max	3.0	Annual Average	Chapter 99-395, Laws of Florida, Section 6, & 62-600.740(1)(b)2.a. FAC
		Max	3.75	Monthly Average	62-600.740(1)(b)2.b. FAC
		Max	4.5	Weekly Average	62-600.740(1)(b)2.c. FAC
		Max	6.0	Single Sample	62-600.740(1)(b)2.d. FAC
Phosphorus, Total (as P)	mg/L	Max	1.0	Annual Average	Chapter 99-395, Laws of Florida, Section 6, & 62-600.740(1)(b)2.a. FAC
		Max	1.25	Monthly Average	62-600.740(1)(b)2.b. FAC
		Max	1.5	Weekly Average	62-600.740(1)(b)2.c. FAC
		Max	2.0	Single Sample	62-600.740(1)(b)2.d. FAC

Until the facility upgrades its treatment processes to meet AWT limits, the effluent must meet secondary standards.

This facility is authorized to direct reclaimed water to Reuse System R-001, a slow-rate public access system, based on the following:

Parameter	Units	Max/Min	Limit	Statistical Basis	Rationale
Flow	MGD	Max	0.499-	Annual Average	62-600.400(3)(b) & 62-610.810(5) FAC
		Max	Report	Monthly Average	62-600.400(3)(b) & 62-610.810(5) FAC
BOD, Carbonaceous 5 day, 20C	mg/L	Max	20.0	Annual Average	62-610.460 & 62-600.740(1)(b)1.a. FAC
		Max	30.0	Monthly Average	62-600.740(1)(b)1.b. FAC
		Max	45.0	Weekly Average	62-600.740(1)(b)1.c. FAC
		Max	60.0	Single Sample	62-600.740(1)(b)1.d. FAC
Solids, Total Suspended	mg/L	Max	5.0	Single Sample	62-610.460(1) & 62-600.440(5)(f)3. FAC
Coliform, Fecal	#/100mL	Max	25	Single Sample	62-610.460 & 62-600.440(5)(f)2. FAC
Coliform, Fecal, % less than detection	percent	Min	75	Monthly Total	62-600.440(5)(f)1. FAC
pH	s.u.	Min	6.0	Single Sample	62-600.445 FAC
		Max	8.5	Single Sample	62-600.445 FAC
Chlorine, Total Residual (For Disinfection)	mg/L	Min	1.0	Single Sample	62-600.440(5)(b), 62-610.460(2), & 62-610.463(2) FAC
Turbidity	NTU	Max	Report	Single Sample	62-610.463(2) FAC
Giardia	cysts/100L	Max	Report	Single Sample	62-610.463(4) FAC
Cryptosporidium	oocysts/100L	Max	Report	Single Sample	62-610.463(4) FAC

Other Limitations and Monitoring Requirements:

Parameter	Units	Max/Min	Limit	Statistical Basis	Rationale
Flow	MGD	Max	0.499	Annual Average	62-600.400(3)(b) FAC
		Max	Report	Monthly Average	62-600.400(3)(b) FAC
		Max	Report	Quarterly Average	62-600.400(3)(b) FAC
Percent Capacity, (TMADF/Permitted Capacity) x 100	percent	Max	Report	Monthly Average	62-600.405(4) FAC
BOD, Carbonaceous 5 day, 20C (Influent)	mg/L	Max	Report	Single Sample	62-601.300(1) FAC
Solids, Total Suspended (Influent)	mg/L	Max	Report	Single Sample	62-601.300(1) FAC
Monitoring Frequencies and Sample Types	-	-	-	All Parameters	62-601 FAC & 62-699 FAC and/or BPJ of permit writer
Biosolids Transferred	dry tons	-	Report	Monthly Total	62-640.880(4) FAC
Sampling Locations	-	-	-	All Parameters	62-601, 62-610.412, 62-610.463(1), 62-610.568, 62-610.613 FAC and/or BPJ of permit writer

DEPARTMENT OF ENVIRONMENTAL PROTECTION DISCHARGE MONITORING REPORT - PART A

When Completed mail this report to: Department of Environmental Protection, South District Branch Office, 2796 Overseas Highway, Suite 221, Marathon, FL, 33050

PERMITTEE NAME: K W Resort Utility, Corp.
 MAILING ADDRESS: 6630 Front Street
 Key West, Florida 33040

PERMIT NUMBER: FLA014951-011-DW2P

FACILITY: Key West Resort Utility WWTP
 LOCATION: 6630 Front St., Stock Island
 Key West, FL 33045

LIMIT: Final
 CLASS SIZE: N/A
 MONITORING GROUP NUMBER: R-001
 MONITORING GROUP DESCRIPTION: reuse storage golf course pond and irrigation system, with Influent
 RE-SUBMITTED DMR:
 NO DISCHARGE FROM SITE:
 MONITORING PERIOD From: _____ To: _____

REPORT FREQUENCY: Monthly
 PROGRAM: Domestic

COUNTY: Monroe
 OFFICE: South District

Parameter	Sample Measurement	Quantity or Loading	Units	Quality or Concentration	Units	No. Ex.	Frequency of Analysis	Sample Type
Flow	Sample Measurement							
Flow	Sample Measurement							
Flow	Sample Measurement							
Solids, Total Suspended	Sample Measurement							
Coliform, Fecal	Sample Measurement							
Coliform, Fecal, % less than detection	Sample Measurement							

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: Key West Resort Utility WWTP

MONITORING GROUP NUMBER: R-001

PERMIT NUMBER: FLA014951-011-DW2P

MONITORING PERIOD From: To:

Parameter		Quantity or Loading		Units	Quality or Concentration			Units	No. Ex.	Frequency of Analysis
pH	Sample Measurement									
Chlorine, Total Residual (For Disinfection)	Sample Measurement									
Turbidity	Sample Measurement									
Flow	Sample Measurement									
BOD, Carbonaceous 5 day, 20C	Sample Measurement									
BOD, Carbonaceous 5 day, 20C	Sample Measurement									
Flow	Sample Measurement									
Percent Capacity, (TMADF/Permitted Capacity) x 100	Sample Measurement									
BOD, Carbonaceous 5 day, 20C (Influent)	Sample Measurement									
Solids, Total Suspended (Influent)	Sample Measurement									

DEPARTMENT OF ENVIRONMENTAL PROTECTION DISCHARGE MONITORING REPORT - PART A

When Completed mail this report to: Department of Environmental Protection, 2295 Victoria Ave, Suite 364, Ft. Myers, FL 33901-3875

PERMITTEE NAME: K W Resort Utility, Corp.
 MAILING ADDRESS: 6630 Front Street
 Key West, Florida 33040

FACILITY: Key West Resort Utility WWTP
 LOCATION: 6630 Front St., Stock Island
 Key West, FL 33045

COUNTY: Monroe
 OFFICE: South District

PERMIT NUMBER: FLA014951-011-DW2P

LIMIT: Final
 CLASS SIZE: N/A
 MONITORING GROUP NUMBER: U-001
 MONITORING GROUP DESCRIPTION: two Class V injection wells

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
Flow	Sample Measurement							
Flow	Sample Measurement							
BOD, Carbonaceous 5 day, 20C	Sample Measurement							
BOD, Carbonaceous 5 day, 20C	Sample Measurement							
Solids, Total Suspended	Sample Measurement							
Solids, Total Suspended	Sample Measurement							

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: Key West Resort Utility WWTP

MONITORING GROUP NUMBER: 11-001
 MONITORING PERIOD From: _____ To: _____

PERMIT NUMBER: FLA014951-011-DW2P

Parameter		Quantity or Loading		Units	Quality or Concentration			Units	No. Ex.	Frequency of Analysis	Sample Type
Coliform, Fecal	Sample Measurement										
Coliform, Fecal	Sample Measurement										
pH	Sample Measurement										
Chlorine, Total Residual (For Disinfection)	Sample Measurement										
Nitrogen, Total	Sample Measurement										
Nitrogen, Total	Sample Measurement										
Phosphorus, Total (as P)	Sample Measurement										
Phosphorus, Total (as P)	Sample Measurement										

DEPARTMENT OF ENVIRONMENTAL PROTECTION DISCHARGE MONITORING REPORT - PART A

When Completed mail this report to: Department of Environmental Protection, South District Branch Office, 2796 Overseas Highway, Suite 221, Marathon, FL, 33050

PERMITTEE NAME: K W Utility Corp.
 MAILING ADDRESS: 6630 Front Street
 Key West, Florida 33040

PERMIT NUMBER: FLA014951-011-DW2P

FACILITY: Key West Resort Utility WWTP
 LOCATION: 6630 Front St., Stock Island
 Key West, FL 33045-

LIMIT:
 CLASS SIZE: Final
 N/A
 MONITORING GROUP NUMBER: RMP-Q
 MONITORING GROUP DESCRIPTION: Biosolids Quantity
 RE-SUBMITTED DMR:
 NO DISCHARGE FROM SITE:
 MONITORING PERIOD From: _____ To: _____

REPORT FREQUENCY: Monthly
 PROGRAM: Domestic

COUNTY: Monroe
 South District

Parameter		Quantity or Loading	Units	Quality or Concentration	Units	No. Ex.	Frequency of Analysis	Sample Type
Biosolids Quantity (Landfilled)	Sample Measurement							
PARM Code B0008 + Mon. Site No. RMP-1	Permit Requirement	Report (Mo.Total)	dry tons				Monthly	Calculated

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):

ISSUANCE/REISSUANCE DATE:

DEP Form 62-620.910(10), Effective Nov. 29, 1994

DEPARTMENT OF ENVIRONMENTAL PROTECTION DISCHARGE MONITORING REPORT - PART A

When Completed mail this report to: Department of Environmental Protection, Domestic Wastewater Section, MS 3540, 2600 Blair Stone Road, Tallahassee, FL 32399-2400

PERMITTEE NAME: K W Resort Utility, Corp.
 MAILING ADDRESS: 6630 Front Street
 Key West, Florida 33040

PERMIT NUMBER: **FLA014951-011-DW2P**

LIMIT:
 CLASS SIZE:
 MONITORING GROUP NUMBER:
 MONITORING GROUP
 DESCRIPTION:
 RE-SUBMITTED DMR:
 NO DISCHARGE FROM SITE:
 MONITORING PERIOD From: _____ To: _____

Final
 N/A
 RWS-A
 Annual Reclaimed Water or Effluent Analysis

REPORT FREQUENCY: Annually
 PROGRAM: Domestic

FACILITY: **Key West Resort Utility WWTP**
 LOCATION: 6630 Front St., Stock Island
 Key West, FL 33045

COUNTY: Manroe
 OFFICE: South District

Parameter		Quantity or Loading	Units	Quality or Concentration	Units	No. Ex.	Frequency of Analysis	Sample Type
Antimony, Total Recoverable	Sample Measurement							
Arsenic, Total Recoverable	Sample Measurement							
Barium, Total Recoverable	Sample Measurement							
Beryllium, Total Recoverable	Sample Measurement							
Cadmium, Total Recoverable	Sample Measurement							
Chromium, Total Recoverable	Sample Measurement							

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: Key West Resort Utility WWTP

MONITORING GROUP NUMBER: RWS-A
 MONITORING PERIOD From: _____ To: _____

PERMIT NUMBER: FLA014951-011-DW2P

Parameter		Quantity or Loading		Units	Quality or Concentration			Units	No. Ex.	Frequency of Analysis	Sample Type
Cyanide, Total Recoverable	Sample Measurement										
Fluoride, Total (as F)	Sample Measurement										
Lead, Total Recoverable	Sample Measurement										
Mercury, Total Recoverable	Sample Measurement										
Nickel, Total Recoverable	Sample Measurement										
Nitrogen, Nitrate, Total (as N)	Sample Measurement										
Nitrogen, Nitrite, Total (as N)	Sample Measurement										
Nitrite plus Nitrate, Total 1 det. (as N)	Sample Measurement										
Selenium, Total Recoverable	Sample Measurement										
Sodium, Total Recoverable	Sample Measurement										

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DISCHARGE MONITORING REPORT - PART A (Continued)

FACILITY: Key West Resort Utility WWTP

MONITORING GROUP RWS-A
 NUMBER:
 MONITORING PERIOD From: _____ To: _____

PERMIT NUMBER: FLA014951-011-DW2P

Parameter		Quantity or Loading		Units	Quality or Concentration			Units	No. Ex.	Frequency of Analysis	Sample Type
Thallium, Total Recoverable	Sample Measurement										
(,)-dichloroethylene	Sample Measurement										
1,1,1-trichloroethane	Sample Measurement										
1,1,2-trichloroethane	Sample Measurement										
1,2-dichloroethane	Sample Measurement										
1,2-dichloropropane	Sample Measurement										
1,2,4-trichlorobenzene	Sample Measurement										
Benzene	Sample Measurement										
Carbon tetrachloride	Sample Measurement										
Cis-1,2-dichloroethene	Sample Measurement										

DISCHARGE MONITORING REPORT - PART A (Continued)

FACILITY: Key West Resort Utility WWTP

MONITORING GROUP RWS-A

PERMIT NUMBER: FLA014951-011-DW2P

NUMBER:

MONITORING PERIOD From: _____ To: _____

Parameter		Quantity or Loading		Units	Quality or Concentration			Units	No. Ex.	Frequency of Analysis	Sample Type
Dichloromethane (methylene chloride)	Sample Measurement										
Ethylbenzene	Sample Measurement										
Monochlorobenzene	Sample Measurement										
1,2-dichlorobenzene	Sample Measurement										
1,4-dichlorobenzene	Sample Measurement										
Styrene, Total	Sample Measurement										
Tetrachloroethylene	Sample Measurement										
Toluene	Sample Measurement										
1,2-trans-dichloroethylene	Sample Measurement										
Trichloroethylene	Sample Measurement										

DISCHARGE MONITORING REPORT - PART A (Continued)

FACILITY: Key West Resort Utility WWTP

MONITORING GROUP RWS-A
 NUMBER:
 MONITORING PERIOD From: _____ To: _____

PERMIT NUMBER: FLA014951-011-DW2P

Parameter		Quantity or Loading		Units	Quality or Concentration			Units	No. Ex.	Frequency of Analysis	Sample Type
Vinyl chloride	Sample Measurement										
Xylenes	Sample Measurement										
2,3,7,8-tetrachlorodibenzo-p-dioxin	Sample Measurement										
2,4-dichlorophenoxyacetic acid	Sample Measurement										
Slivex	Sample Measurement										
Alachlor	Sample Measurement										
Atrazine	Sample Measurement										
Benzo(a)pyrene	Sample Measurement										
Carbofuran	Sample Measurement										
Chlordane (tech mix, and metabolites)	Sample Measurement										

DISCHARGE MONITORING REPORT - PART A (Continued)

FACILITY: Key West Resort Utility WWTP

MONITORING GROUP NUMBER: RWS-A

PERMIT NUMBER: FLA014951-011-DW2P

MONITORING PERIOD From: _____ To: _____

Parameter		Quantity or Loading	Units	Quality or Concentration	Units	No. Ex.	Frequency of Analysis	Sample Type
Dalapon	Sample Measurement							
Bis(2-ethylhexyl)adipate	Sample Measurement							
Bis (2-ethylhexyl) phthalate	Sample Measurement							
Dibromochloropropane (DBCP)	Sample Measurement							
Dinoseb	Sample Measurement							
Diquat	Sample Measurement							
Endothall	Sample Measurement							
Endrin	Sample Measurement							
Ethylene dibromide (1,2-dibromoethane)	Sample Measurement							
Glyphosate	Sample Measurement							

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DISCHARGE MONITORING REPORT - PART A (Continued)

FACILITY: Key West Resort Utility WWTP

MONITORING GROUP RWS-A

PERMIT NUMBER: FLA014951-011-DW2P

NUMBER:

MONITORING PERIOD From: _____ To: _____

Parameter		Quantity or Loading		Units	Quality or Concentration			Units	No. Ex.	Frequency of Analysis	Sample Type
Heptachlor	Sample Measurement										
Heptachlor epoxide	Sample Measurement										
Hexachlorobenzene	Sample Measurement										
Hexachlorocyclopentadiene	Sample Measurement										
Gamma BHC (Lindane)	Sample Measurement										
Methoxychlor	Sample Measurement										
Oxamyl (vydate)	Sample Measurement										
Pentachlorophenol	Sample Measurement										
Picloram	Sample Measurement										
Polychlorinated Biphenyls (PCBs)	Sample Measurement										

DISCHARGE MONITORING REPORT - PART A (Continued)

FACILITY: Key West Resort Utility WWTP

MONITORING GROUP RWS-A
NUMBER:

PERMIT NUMBER: FLA014951-011-DW2P

MONITORING PERIOD From: _____ To: _____

Parameter	Sample Measurement	Quantity or Loading		Units	Quality or Concentration			Units	No. Ex.	Frequency of Analysis	Sample Type
Simazine	Sample Measurement										
Trixaphene	Sample Measurement										
Trihalomethane, Total by summation	Sample Measurement										
Radium 226 + Radium 228, Total	Sample Measurement										
Alpha, Gross Particle Activity	Sample Measurement										
Aluminum, Total Recoverable	Sample Measurement										
Chloride (as Cl)	Sample Measurement										
Iron, Total Recoverable	Sample Measurement										
Copper, Total Recoverable	Sample Measurement										
Manganese, Total Recoverable	Sample Measurement										

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DISCHARGE MONITORING REPORT - PART A (Continued)

FACILITY: Key West Resort Utility WWTP

MONITORING GROUP RWS-A

PERMIT NUMBER: FLA014951-011-DW2P

NUMBER:

MONITORING PERIOD From: _____ To: _____

Parameter		Quantity or Loading		Units	Quality or Concentration			Units	No. EX.	Frequency of Analysis	Sample Type
Silver, Total Recoverable	Sample Measurement										
Sulfate, Total	Sample Measurement										
Zinc, Total Recoverable	Sample Measurement										
pH	Sample Measurement										
Solids, Total Dissolved (TDS)	Sample Measurement										
Foaming Agents	Sample Measurement										

DAILY SAMPLE RESULTS - PART B

Permit Number: FLA014951-011-DW2P

Facility: Key West Resort Utility WWTP

Monitoring Period From: _____ To: _____

	BOD, Carbonaceous 5 day, 20C mg/L	Chlorine, Total Residual (For Disinfection) mg/L	Coliform, Fecal #/100mL	Nitrogen, Total mg/L	Phosphorus, Total (as P) mg/L	Solids, Total Suspended mg/L	pH s.u.	Solids, Total Suspended mg/L	Turbidity NTU	Flow MGD	Flow MGD
Code	80082	50060	74055	00600	00665	00530	00400	00530	00070	50050	50050
Mon. Site	EFA-001	EFA-001	EFA-001	EFA-001	EFA-001	EFA-001	EFA-001	EFA-001	EFA-001	FLW-002	FLW-003
1											
2											
3											
4											
5											
6											
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23											
24											
25											
26											
27											
28											
29											
30											
31											
Total											
Mo. Avg.											

PLANT STAFFING:

Day Shift Operator Class: _____ Certificate No: _____ Name: _____
 Evening Shift Operator Class: _____ Certificate No: _____ Name: _____
 Night Shift Operator Class: _____ Certificate No: _____ Name: _____
 Lead Operator Class: _____ Certificate No: _____ Name: _____

DAILY SAMPLE RESULTS - PART B

Permit Number: **FLA014951-011-DW2P**

Facility: **Key West Resort Utility WWTP**

Monitoring Period From: _____ To: _____

	Flow MGD	Flow MGD	BOD, Carbonaceous 5 day, 20C (Influent) mg/L	Solids, Total Suspended (Influent) mg/L				
Code	50050	50050	80082	00530				
Mon. Site	FLW-004	FLW-001	INF-001	INF-001				
1								
2								
3								
4								
5								
6								
7								
8								
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11								
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18								
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21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
Total								
Mo. Avg.								

PLANT STAFFING:

Day Shift Operator Class: _____ Certificate No: _____ Name: _____
 Evening Shift Operator Class: _____ Certificate No: _____ Name: _____
 Night Shift Operator Class: _____ Certificate No: _____ Name: _____
 Lead Operator Class: _____ Certificate No: _____ Name: _____

INSTRUCTIONS FOR COMPLETING THE WASTEWATER DISCHARGE MONITORING REPORT

Read these instructions before completing the DMR. Hard copies and/or electronic copies of the required parts of the DMR were provided with the permit. All required information shall be completed in full and typed or printed in ink. A signed, original DMR shall be mailed to the address printed on the DMR by the 28th of the month following the monitoring period. The DMR shall not be submitted before the end of the monitoring period.

The DMR consists of three parts--A, B, and D--all of which may or may not be applicable to every facility. Facilities may have one or more Part A's for reporting effluent or reclaimed water data. All domestic wastewater facilities will have a Part B for reporting daily sample results. Part D is used for reporting ground water monitoring well data.

When results are not available, the following codes should be used on parts A and D of the DMR and an explanation provided where appropriate. Note: Codes used on Part B for raw data are different.

CODE	DESCRIPTION/INSTRUCTIONS
ANC	Analysis not conducted.
DRY	Dry Well
FLD	Flood disaster.
IFS	Insufficient flow for sampling.
LS	Lost sample.
MNR	Monitoring not required this period.

CODE	DESCRIPTION/INSTRUCTIONS
NOD	No discharge from/to site.
OPS	Operations were shutdown so no sample could be taken.
OTH	Other. Please enter an explanation of why monitoring data were not available.
SEF	Sampling equipment failure.

When reporting analytical results that fall below a laboratory's reported method detection limits or practical quantification limits, the following instructions should be used:

1. Results greater than or equal to the PQL shall be reported as the measured quantity.
2. Results less than the PQL and greater than or equal to the MDL shall be reported as the laboratory's MDL value. These values shall be deemed equal to the MDL when necessary to calculate an average for that parameter and when determining compliance with permit limits.
3. Results less than the MDL shall be reported by entering a less than sign (" $<$ ") followed by the laboratory's MDL value, e.g. < 0.001 . A value of one-half the MDL or one-half the effluent limit, whichever is lower, shall be used for that sample when necessary to calculate an average for that parameter. Values less than the MDL are considered to demonstrate compliance with an effluent limitation.

PART A -DISCHARGE MONITORING REPORT (DMR)

Part A of the DMR is comprised of one or more sections, each having its own header information. Facility information is preprinted in the header as well as the monitoring group number, whether the limits and monitoring requirements are interim or final, and the required submittal frequency (e.g. monthly, annually, quarterly, etc.). Submit Part A based on the required reporting frequency in the header and the instructions shown in the permit. The following should be completed by the permittee or authorized representative:

Resubmitted DMR: Check this box if this DMR is being re-submitted because there was information missing from or information that needed correction on a previously submitted DMR. The information that is being revised should be clearly noted on the re-submitted DMR (e.g. highlight, circle, etc.)

No Discharge From Site: Check this box if no discharge occurs and, as a result, there are no data or codes to be entered for all of the parameters on the DMR for the entire monitoring group number; however, if the monitoring group includes other monitoring locations (e.g., influent sampling), the "NOD" code should be used to individually denote those parameters for which there was no discharge.

Monitoring Period: Enter the month, day, and year for the first and last day of the monitoring period (i.e. the month, the quarter, the year, etc.) during which the data on this report were collected and analyzed.

Sample Measurement: Before filling in sample measurements in the table, check to see that the data collected correspond to the limit indicated on the DMR (i.e. interim or final) and that the data correspond to the monitoring group number in the header. Enter the data or calculated results for each parameter on this row in the non-shaded area above the limit. Be sure the result being entered corresponds to the appropriate statistical base code (e.g. annual average, monthly average, single sample maximum, etc.) and units.

No. Ex.: Enter the number of sample measurements during the monitoring period that exceeded the permit limit for each parameter in the non-shaded area. If none, enter zero.

Frequency of Analysis: The shaded areas in this column contain the minimum number of times the measurement is required to be made according to the permit. Enter the actual number of times the measurement was made in the space above the shaded area.

Sample Type: The shaded areas in this column contain the type of sample (e.g. grab, composite, continuous) required by the permit. Enter the actual sample type that was taken in the space above the shaded area.

Signature: This report must be signed in accordance with Rule 62-620.305, F.A.C. Type or print the name and title of the signing official. Include the telephone number where the official may be reached in the event there are questions concerning this report. Enter the date when the report is signed.

Comment and Explanation of Any Violations: Use this area to explain any exceedances, any upset or by-pass events, or other items which require explanation. If more space is needed, reference all attachments in this area.

PART B - DAILY SAMPLE RESULTS

Monitoring Period: Enter the month, day, and year for the first and last day of the monitoring period (i.e. the month, the quarter, the year, etc.) during which the data on this report were collected and analyzed.
Daily Monitoring Results: Transfer all analytical data from your facility's laboratory or a contract laboratory's data sheets for all day(s) that samples were collected. Record the data in the units indicated. Table 1 in Chapter 62-160, F.A.C., contains a complete list of all the data qualifier codes that your laboratory may use when reporting analytical results. However, when transferring numerical results onto Part B of the DMR, only the following data qualifier codes should be used and an explanation provided where appropriate.

CODE	DESCRIPTION/INSTRUCTIONS
<	The compound was analyzed for but not detected.
A	Value reported is the mean (average) of two or more determinations.
J	Estimated value, value not accurate.
Q	Sample held beyond the actual holding time.
Y	Laboratory analysis was from an unpreserved or improperly preserved sample.

To calculate the monthly average, add each reported value to get a total. For flow, divide this total by the number of days in the month. For all other parameters, divide the total by the number of observations.
Plant Staffing: List the name, certificate number, and class of all state certified operators operating the facility during the monitoring period. Use additional sheets as necessary.

PART D - GROUND WATER MONITORING REPORT

Monitoring Period: Enter the month, day, and year for the first and last day of the monitoring period (i.e. the month, the quarter, the year, etc.) during which the data on this report were collected and analyzed.
Date Sample Obtained: Enter the date the sample was taken. Also, check whether or not the well was purged before sampling.
Time Sample Obtained: Enter the time the sample was taken.
Sample Measurement: Record the results of the analysis. If the result was below the minimum detection limit, indicate that.
Detection Limits: Record the detection limits of the analytical methods used.
Analysis Method: Indicate the analytical method used. Record the method number from Chapter 62-160 or Chapter 62-601, F.A.C., or from other sources.
Sampling Equipment Used: Indicate the procedure used to collect the sample (e.g. airlift, bucket/bailer, centrifugal pump, etc.)
Samples Filtered: Indicate whether the sample obtained was filtered by laboratory (L), filtered in field (F), or unfiltered (N).
Signature: This report must be signed in accordance with Rule 62-620.305, F.A.C. Type or print the name and title of the signing official. Include the telephone number where the official may be reached in the event there are questions concerning this report. Enter the date when the report is signed.
Comments and Explanation: Use this space to make any comments on or explanations of results that are unexpected. If more space is needed, reference all attachments in this area.

SPECIAL INSTRUCTIONS FOR LIMITED WET WEATHER DISCHARGES

Flow (Limited Wet Weather Discharge): Enter the measured average flow rate during the period of discharge or divide gallons discharged by duration of discharge (converted into days). Record in million gallons per day (MGD).
Flow (Upstream): Enter the average flow rate in the receiving stream upstream from the point of discharge for the period of discharge. The average flow rate can be calculated based on two measurements; one made at the start and one made at the end of the discharge period. Measurements are to be made at the upstream gauging station described in the permit.
Actual Stream Dilution Ratio: To calculate the Actual Stream Dilution Ratio, divide the average upstream flow rate by the average discharge flow rate. Enter the Actual Stream Dilution Ratio accurate to the nearest 0.1.
No. of Days the SDF > Stream Dilution Ratio: For each day of discharge, compare the minimum Stream Dilution Factor (SDF) from the permit to the calculated Stream Dilution Ratio. On Part B of the DMR, enter an asterisk (*) if the SDF is greater than the Stream Dilution Ratio on any day of discharge. On Part A of the DMR, add up the days with an "*" and record the total number of days the Stream Dilution Factor was greater than the Stream Dilution Ratio.
CBOD₅: Enter the average CBOD₅ of the reclaimed water discharged during the period shown in duration of discharge.
TKN: Enter the average TKN of the reclaimed water discharged during the period shown in duration of discharge.
Actual Rainfall: Enter the actual rainfall for each day on Part B. Enter the actual cumulative rainfall to date for this calendar year and the actual total monthly rainfall on Part A. The cumulative rainfall to date for this calendar year is the total amount of rain, in inches, that has been recorded since January 1 of the current year through the month for which this DMR contains data.
Rainfall During Average Rainfall Year: On Part A, enter the total monthly rainfall during the average rainfall year and the cumulative rainfall for the average rainfall year. The cumulative rainfall for the average rainfall year is the amount of rain, in inches, which fell during the average rainfall year from January through the month for which this DMR contains data.
No. of Days LWWD Activated During Calendar Year: Enter the cumulative number of days that the limited wet weather discharge was activated since January 1 of the current year.
Reason for Discharge: Attach to the DMR a brief explanation of the factors contributing to the need to activate the limited wet weather discharge.

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NOTICES

NONE



KW Resort Utilities Corp

6630 Front Street
Key West, FL 33040
305.295.3301
FAX 305.295.0143
www.kwru.com

25-30.440 (8)

2014 KW Resort Utilities Field Employees

Method of allocation. Christopher Johnson's salary is allocated to 703 Officer Salaries. All other employees carry out the operations and maintenance work on behalf of the Utility therefore each of their salaries are allocated to 701.

Christopher Johnson – State of Florida Class A WWTP Operator (# A13917) President KW Resort Utilities Corp – Airvac Certification # 1020, Professional Engineer Intern (Illinois License #061-030504)

Provide operational and administrative management and oversight for the KW Resort Utilities wastewater utility. Operational responsibilities include the management of the third largest wastewater treatment plant in the Keys, and a public sewer system comprised of both vacuum and force main systems. Other responsibilities include laboratory management, compliance with State regulations, facilities management, and management of the largest reclaimed water system in the Keys. Administrative responsibilities include budgeting, capital planning, accounting, information systems, data management, billing, financial planning and reporting, and reporting to a Board of Directors. Capital project responsibilities including the review of bid packages, design, contractor qualifications, submitted bids, financing, and bonding. Additional responsibilities include personnel management, development of strategic partnerships, and contract negotiation. Scheduled for "on call" duty, and serves as Plant Operator on weekends on a rotating basis.

Mark Burkemper – State of Florida Class B Operator (# B5355) - Senior plant operator/safety Officer – Airvac Certification # 1125

Senior Plant operator in charge of day to day operations of treatment plant, process control decisions, plant laboratory, and plant maintenance schedules. Also provides safety meetings to field crews. On scheduled "on call " duty, along with Plant Operator duty on weekends on a rotating basis.

Robert Bellino – State of Florida Class C Operator (# C21394) – Senior Systems Engineer Airvac Certified

Supervisor in charge of tracking, scheduling, and documenting all preventative maintenance on Wastewater Treatment Plant, Vacuum Station, and entire collection system. In charge of ordering all parts for plant and collection system. Responsible for all pumps (inventory, ordering and repairs). Supervised outside contractors when working on the WWTP. On scheduled "on call" duty, along with Plant Operator duty on weekends on a rotating basis.

Blaine Grassi – Airvac Certified

Field Technician

Perform overall maintenance and repairs in the vacuum system, lift stations, vacuum pits and buffer tanks. Analyze problems, make necessary corrections. On scheduled "on call" duty.

Eddie Roberts – Airvac Certified

Operator Trainee

Worked closely with Ted Yarbrow in learning the overall maintenance and repairs of the WWTP and Collection System. In charge of inspections in regard to leaking laterals in the collection system. Work with homeowners and the plumbers in repair of the leaking laterals. Inspection of all new sewer hook ups. On scheduled "on call" duty.

Theodor Yarbrow – Class B Operator (# B13317) – Operations Manager

Perform technical, supervisory, and managerial work directing the overall maintenance and repair of the wastewater treatment plant, vacuum station, lift stations, vacuum pits, buffer tanks and all related valves, controls, and appurtenances. Plan, prioritize, assign, supervise, review, and evaluate the work of staff and interface with vendors in the course of maintaining wastewater facilities. On scheduled "on call" duty along with Plant Operator on weekends on a rotating basis..

Pierre Amboise – Field Technician

Checks all lift station each morning fills out run times sheets and reports any problems. Performs maintenance and repairs in the vacuum system, lift station and vacuum pits. Handles emergency call outs and weekend runs when needed. On scheduled "on call duty".

Keith Waddell – Field Technician Plant and Collection System

Daily maintenance of plant grounds. Assist head mechanic with pulling and installing pumps. Assisted with general work and maintenance where needed. On scheduled "on call" duty.

Sean Bindranauth – Field Technician – Plant and Collection System (Replaced Blaine Grassi)

Perform overall maintenance and repairs in the vacuum system, lift stations, vacuum pits and buffer tanks. Analyze problems, make necessary corrections. On scheduled "on call" duty.

Matt Pellerito – Maintenance Plant and Collection System (Replaced Robert Bellino) Airvac Certified.

Perform technical, supervisory, and managerial work directing the overall maintenance and repair of the wastewater treatment plant, vacuum station, lift stations, vacuum pits, buffer tanks and all related valves, controls, and appurtenances. On scheduled "on call" duty.

Last Update 05-26-2015

Description, 350,000 expansion	Cost	
Purchase inner ring tank of 350,000 gpd plant, outer base ring, coarse bubble diffusers, access stairs and platform	\$1,091,125	here is where the money is saved in Equipment/Tank/Steel Eqova Quotation
Clearing, grubbing and demolition	\$20,000	
Foundation, 90' diameter, including piles	\$150,000	
Pre-stressed Driven Piles (ca. 70EA)	\$190,000	
Elevated concrete platform for blowers (with alum railings)	\$67,000	
Digester Blowers in exterior enclosures (2) including tax and delivery	\$145,000	
	\$18,000	vfd's
Yard Piping (including flow meters, valves etc.)	\$73,000	Beneway 13K well piping Phase I 18K paid
Installation of Inner Ring Steel tank and outer base ring, stairs, air headers, etc	\$375,000	installation of entire steel plant vs just inner ring tank plus the outer ring
Field Blasting and Coating	\$380,000	Eqova Quotation
Chemical storage and feed system	\$60,000	
Chemical storage slab, drain, sump	\$8,500	\$33,250 Toppino Contract
Electrical (including PLC, chemical probes, alarms, SCADA)	\$180,000	
Additional Sand Filters, foundation, valves, underdrain, media, etc.	\$135,773	
Static Screens for Existing WWTPS (Sweco)	\$63,000.00	\$62,218.93 Actual Cost SWECO-MI Lull etc.
	\$35,000	SWECO screen
Steel Platform for Existing WWTP Screens	\$30,000	
20 HP floating aerators, 2, installed	\$29,000.00	equipment for inner ring tank
Mobilization, bonds and insurance	\$151,070	based on % of project
Permitting Fees	\$6,000	
Design (significant portions completed)	\$200,000	Thru April 30, 2015 \$173,000

SCADA	\$11,000
Legal Last Stand	\$500,000
Legal other	
Sludge Handling/Processing Unit	
Financing	\$78,750
CEI (mostly in-house)	\$156,000
TOTAL	\$4,153,218

Barrett Quotation

\$3500 AQSCN4W

\$827 Annual Service

\$379,070.97 paid as of May 2015

\$1000 Installation

based on %of project

Preliminary Design Report

For

KW RESORT UTILITIES CORPORATION
WASTEWATER TREATMENT PLANT

Prepared For

KW Resort Utilities Corporation
6630 Front Street
Stock Island, Florida 33040

Prepared by

The Weiler Engineering Corporation
6805 Overseas Hwy
Marathon, Florida 33050
(305) 289-4161

WEC Job No. 12013.001

April 2014

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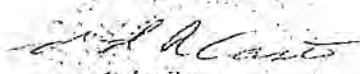
PDR

KWRU

ATTACHMENT A: Anticipated Flows Report

Certification Statement

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.


4/7/14
Edward R. Castle, P.E.
Florida License No. 58574

The Weiler Engineering Corporation
6805 Overseas Hwy
Marathon, Florida 33050
305-289-4161

PDR

KWRU

PROJECT DESCRIPTION

The project will include the installation of a new 0.350 MGD treatment train to increase capacity of existing treatment plant from 0.499 MGD to 0.849 MGD. The existing 0.499 MGD plant consists of two treatment trains, one 0.249 MGD train and one 0.250 MGD train. The new 0.350 MGD treatment train will include of a 90' diameter tank that will consist of influent screening, a 105,554 gallon influent equalization chamber, 163,300 gallon aeration chamber, 154,725 gallon post-anoxic chamber, 32,525 gallon re-aeration zone, 112,602 gallon clarifier, and a 317,950 gallon digester. The tank will be attached to concrete slab at existing grade with an elevated platform that will house the plant headworks and variable frequency drive blowers. Effluent from the new plant will pass through proposed expanded sand filters and the existing chlorine contact chambers shared by existing treatment trains. The plan also includes the addition of a dual influent screen on the existing plant as well as two new injection wells.

The existing treatment facility will continue with normal operation during construction of the new treatment train, so service will be provided without any interruptions during construction.

POPULATION

The facility provides wastewater treatment services for 1416 existing residential connections and 216 existing commercial connections consisting of a convalescent center, a college, restaurants, recreational vehicle parks, an animal clinic, a detention center, and a hospital. There are no industrial wastewater contributors to the facility.

SERVICE AREA

The service area is comprised of residential developments, marinas, office facilities and commercial businesses. Population is expected to increase as redevelopment of under-utilized properties takes place.

FLOW FORECAST

Wastewater Characteristics: The influent wastewater CBOD₅, TSS, TN and TP are presented below.

CBOD	250 mg/L	TN	40 mg/L
TSS	250 mg/L	TP	8 mg/L

Flow Patterns:

The facility is currently permitted at 0.499 MGD, based on the annual average daily flow. Flows are approaching the permitted capacity. During high use periods, such as tourist season, the maximum daily flows can reach or exceed 0.499 MGD.

Annual Average Daily Flow	416,000 gpd
Maximum Daily Flow	717,000 gpd

Contributions: All wastewater is currently being generated on Stock Island. Additional information can be found in Attachment A, Anticipated Flows Report.

Map of Service Area

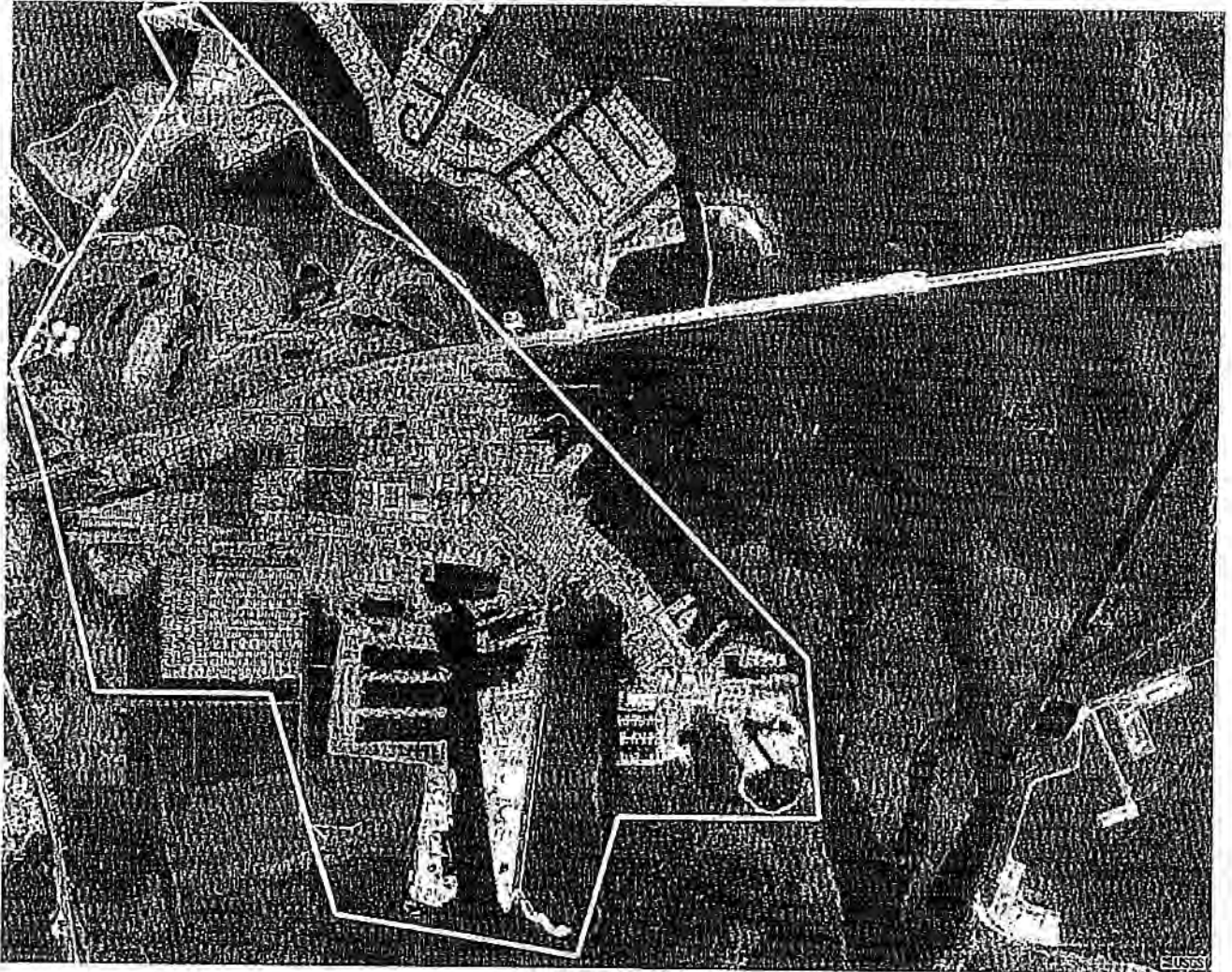
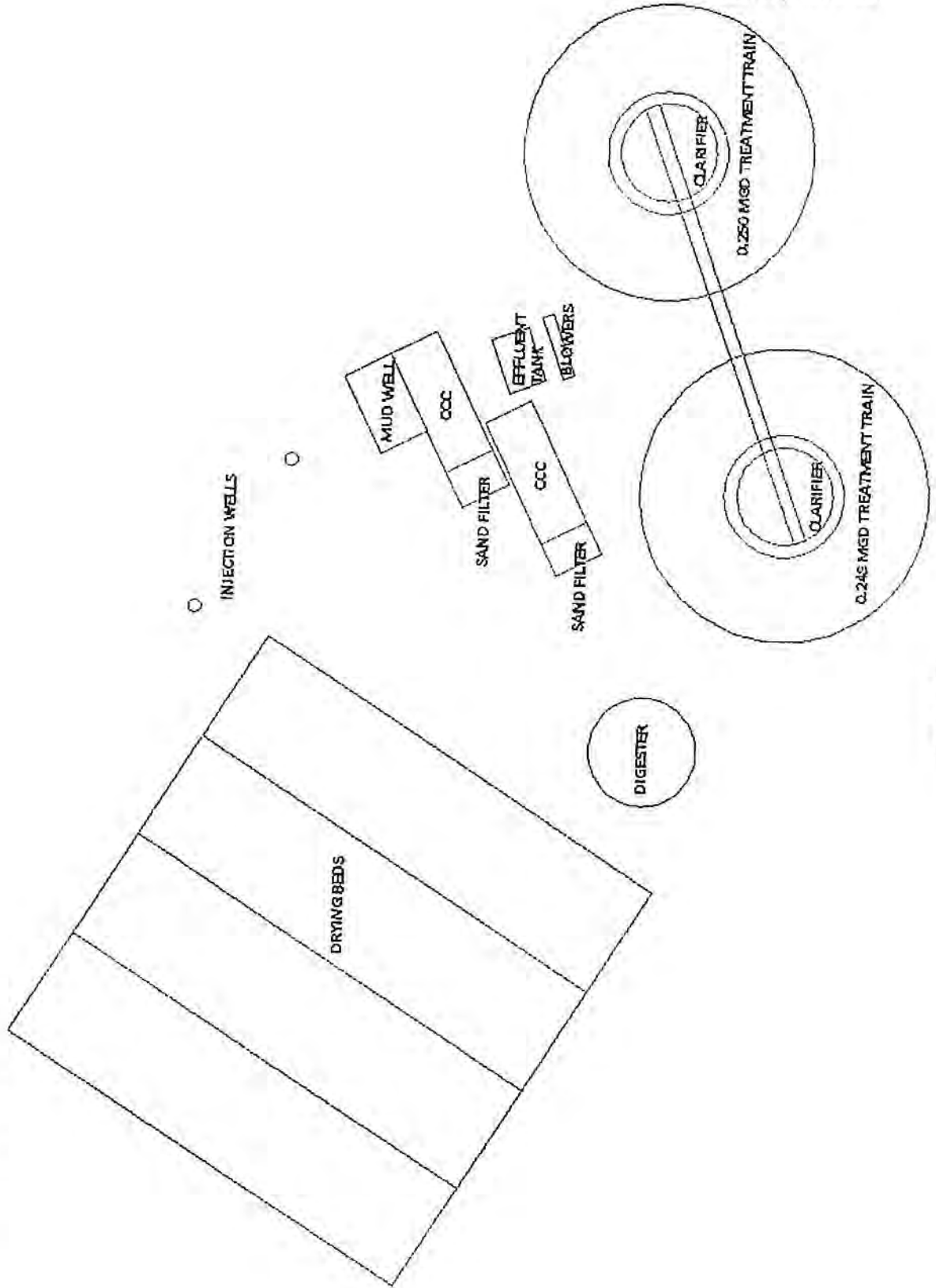


Figure 1: Existing Facility Site Plan



ENVIRONMENTAL ASSESSMENT

On two sides, the property is located between a construction and demolition debris transfer station and a commercial fishing boat dock, on the third by a marina. The fourth side of the property is the open water of the boat basin. The entire property is enclosed by a fence. No additional impacts to the adjacent properties will result. All treatment processes will be protected from the 25-year flood event and all electrical equipment will be located above the 100-year flood elevation.

DISPOSAL AND REUSE

The facility disposes of effluent to reuse ponds at the Key West Golf Club, and at the Monroe County Detention Center, the Florida Keys Community College and the Lower Keys Medical Center or two Class V injection wells. The effluent that is sent to the reuse facilities meets the standards contained in Part III of Chapter 62-610, FAC. The modified facility will continue to produce effluent that meets the Part III standards. As is the current practice, during times the effluent does not meet these standards, all flow will be sent to the injection well system. The injection wells are permitted under the authority of DEP permit numbers 184940-018-UO and 184940-019-UO. The wells are in compliance with the FDEP requirements. The wells are 10" in diameter and have an open hole drilled to at least 110', and cased to 60'. Two additional wells of the same dimensions are proposed as part of the expansion.

The modification will result in the facility producing effluent that is in compliance with the following Advanced Wastewater Treatment Facility Effluent Standards contained in Chapter 99-395, Laws of Florida:

Parameter	Limit	Basis
CBOD ₅ /TSS	5 mg/L	annual average
Total Nitrogen	3 mg/L	annual average
Total Phosphorus	1 mg/L	annual average

TECHNICAL INFORMATION/DESIGN CRITERIA

Design Loading Rates

CBOD ₅	250 mg/L		
TSS	250 mg/L	Q _{AADF}	849,000 gpd
TN	40 mg/L	Q _{MDF} *	976,350 gpd
TP	8 mg/L	Q _{PHF} **	1,273,500 gpd

(lb/day)	Flow (gpd)	CBOD (lb/day)	TSS (lb/day)	TN (lb/day)	TP
Q _{AADF}	849,000	1.771	1.771	284	57
Q _{MDF}	976,350	2.036	2.036	326	66
Q _{PHF}	1,273,500	2.656	2.656	425	85

* Q_{MDF} is the design maximum day flow.

** Q_{PHF} is the design peak hour flow.

Flow Metering and Sampling Provisions

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Facility flows are measured by Greyline Instruments SLT 5.0 Level and Flow Monitoring systems installed upstream of the V-notch weirs located at the end of each chlorine contact chamber. Each system is attached to a chart recorder. The chart paper is replaced as needed. The system is calibrated by comparison with a certified Doppler flow meter at least annually as required by FAC Rules 62-601.200(17) and 62-601.500(6).

Flow-proportioned influent composite samples are collected prior to the surge tanks from a sample tap on the influent line to the facility. All influent samples are collected so they do not contain digester supernatant, filter backwash or return activated sludge or any other plant process recycled waters in accordance with FAC Rule 62-601.500(4). Effluent total suspended solids grab samples are taken after filtration and prior to disinfection. All other effluent samples are collected after disinfection and prior to discharge. Grab samples are collected during periods of minimal treatment plant removal efficiencies or maximum hydraulic/organic loading. Flow proportioned effluent composite samples are collected for compliance monitoring, in addition to the grab samples collected for High Level Disinfection monitoring.

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TANK SIZES AND DETENTION TIMES

PROPOSED 0.849 MGD FACILITY

Unit Process	Number and Capacity	Detention Time based on design capacity of 849,000 gpd AADF
Flow Equalization	Two existing at 75,000 gal each, One proposed at 104,550 gal: Total Flow Equalization Volume: 254,550 gal	7.2 hrs
Aeration basins	Two existing at 116,250 gal each, One proposed at 163,300 gal: Total Aeration Volume: 395,800 gal	11.2 hrs.
Anoxic basins	Two existing at 109,910 gal each, One proposed at 154,725 gal: Total Anoxic Volume: 374,545 gal	9.0 hrs.
Re-aeration basins	Two existing at 23,840 gal each, One proposed at 32,525 gal: Total Re-aeration Volume: 80,205 gal	2.3 hrs.
Clarifiers	Two existing at 53,011 gal each, One proposed at 112,602 gal: Total Clarifier Volume: 218,624 gal	6.2 hrs.
Digesters	Two existing at 37,598 gal each, One existing at 53,011 gal, One proposed at 317,950 gal: Total Digester Volume: 446,157 gal	N/A
Filter	Two existing at 96 ft ³ each and Two proposed at 96 ft ³ each: Total filter Volume: 384 ft ³	N/A
Chlorine Contact	Four existing at 5,745 gal each	26 mins.

PROCESS

From the collection system, wastewater will flow through proposed self-cleaning static bar screens, one before each of the three surge tanks. From the surge tanks, raw influent is directed to the aeration basins. At this point, a sodium hydroxide feed system is provided as a source of alkalinity. The amount of alkalinity fed to the system will be dependent on facility operation once the system operation is stable. The combined surge tank volume of 254,550 gallons will provide adequate flow equalization for current and future flows to the facility.

The wastewater will flow through the aeration basins where BOD removal and nitrification take place. After the aeration basins, the nitrified wastewater will be injected with a carbon source as it enters the anoxic zone for the denitrification process. In the anoxic basins, a complete mix will ensure full denitrification and drive off excess nitrogen gas. Next, the wastewater enters the re-aeration tank where any excess feed of carbon will be biologically removed. The effluent from the re-aeration tanks will be injected with aluminum sulfate (alum) to begin the process of phosphorous removal. After re-aeration, the wastewater enters the clarifiers for the sedimentation process.

An additional alum injection site is proposed in the clarifier discharge header prior to the filters to allow for dosing of alum at this alternative location. This alum injection point will be automatically activated during periods of production of reclaimed water when phosphorus removal is not required should the effluent be diverted to the wells. The alum feed pumps will automatically start whenever the reclaimed water criteria for high level disinfection is not met, ensuring that the effluent phosphorus discharge limits are met any time effluent is discharged to the disposal wells.

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Return activated sludge and scum from the clarifier will be returned to the influent end of the aeration basins. Incorporated in the return piping will be a waste activated sludge valve to divert wasted sludge to the aerobic digesters.

The total digester volume of 446,157 gallons will provide adequate digester space in conjunction with the existing drying beds and proposed mobile centrifuge to achieve compliance with the standards for residuals treatment and disposal as required by the FAC. Residuals generated by the facility are aerobically digested, followed by dewatering either on drying beds or by the proposed mobile centrifuge. The residuals are aerobically digested and will be disposed of in a Class I or II solid waste landfill.

Effluent from the clarifiers is directed to sand filters, then to the chlorine contact chambers where the required contact time is met prior to disposal to the reuse system or injection well system. The treatment plant currently uses gas chlorine for disinfection. The use of liquid sodium hypochlorite for disinfection will be implemented as part of the WWTP modification due to safety concerns with gas chlorine.

Treated wastewater (effluent) is pumped to storage ponds on the Key West Golf Course for slow rate land application, to the Monroe County Detention Center for toilet flushing and cooling water and to the hospital and college on College Road for irrigation and cooling water. As an alternate disposal method, Class V underground injection wells are provided at the wastewater treatment plant site. There are two existing 10" Class V wells and two proposed 10" Class V wells.

SCADA

A Supervisory Control and Data Acquisition (SCADA) system is proposed as part of the facility expansion. The facility currently has continuous monitoring of Total Residual Chlorine and Turbidity as part of the reclaimed water system. There are also high level monitoring probes at various points on the process tanks. The upgrade intends to add to these monitoring systems and tie all inputs into a Web based communications system that will allow remote monitoring and limited control of the process. Automated control of process variables including dissolved oxygen levels, chemical feeds are proposed as well. It is requested that a variance to the minimum staffing requirement be included in the permit modification, reducing the staffing to 6 hours per day, 7 days per week upon completion of the SCADA system. A summary list of the existing and proposed SCADA inputs is presented below.

Chlorine Residual

CL17 output to circular chart recorder (existing)
CL17 output to reclaimed water pump shut-down (existing)
CL17 output to SCADA software (new)
CL17 Hi and Low Alarm to PC (new)
Flow meter output to bleach feed pumps (new)

Turbidity

NTU output to chart recorder (existing)
NTU output to reclaimed water pump shut-down (existing)
NTU output to SCADA software (new)
NTU Hi Alarm output to SCADA software (new, or program in PC)

Dissolved Oxygen/ORP

LDO probe output to blower controller, each aeration train (new)
LDO probe output to SCADA software, each aeration train (new)
ORP probe output to glycerin feed pump, each anoxic train (new)
ORP probe output to SCADA software, each anoxic train (new)

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Tank Levels

Surge Tank Hi Level Alarm output to SCADA software, each train (new)
Aeration Tank Hi Level Alarm output to SCADA software, each train (Existing output to Chatterbox)
CCC Hi Level/Hi Flow Alarm output to SCADA software, each train (new)
Mud Well Hi Level Alarm output to SCADA software (Existing output to Chatterbox)
Filter Cells Hi Level Alarm output to SCADA software (new)
Influent Screening Hi Level Alarm output to SCADA software (new)

Vacuum Pump Station

All standard outputs and alarms to SCADA software (Existing output to Chatterbox)

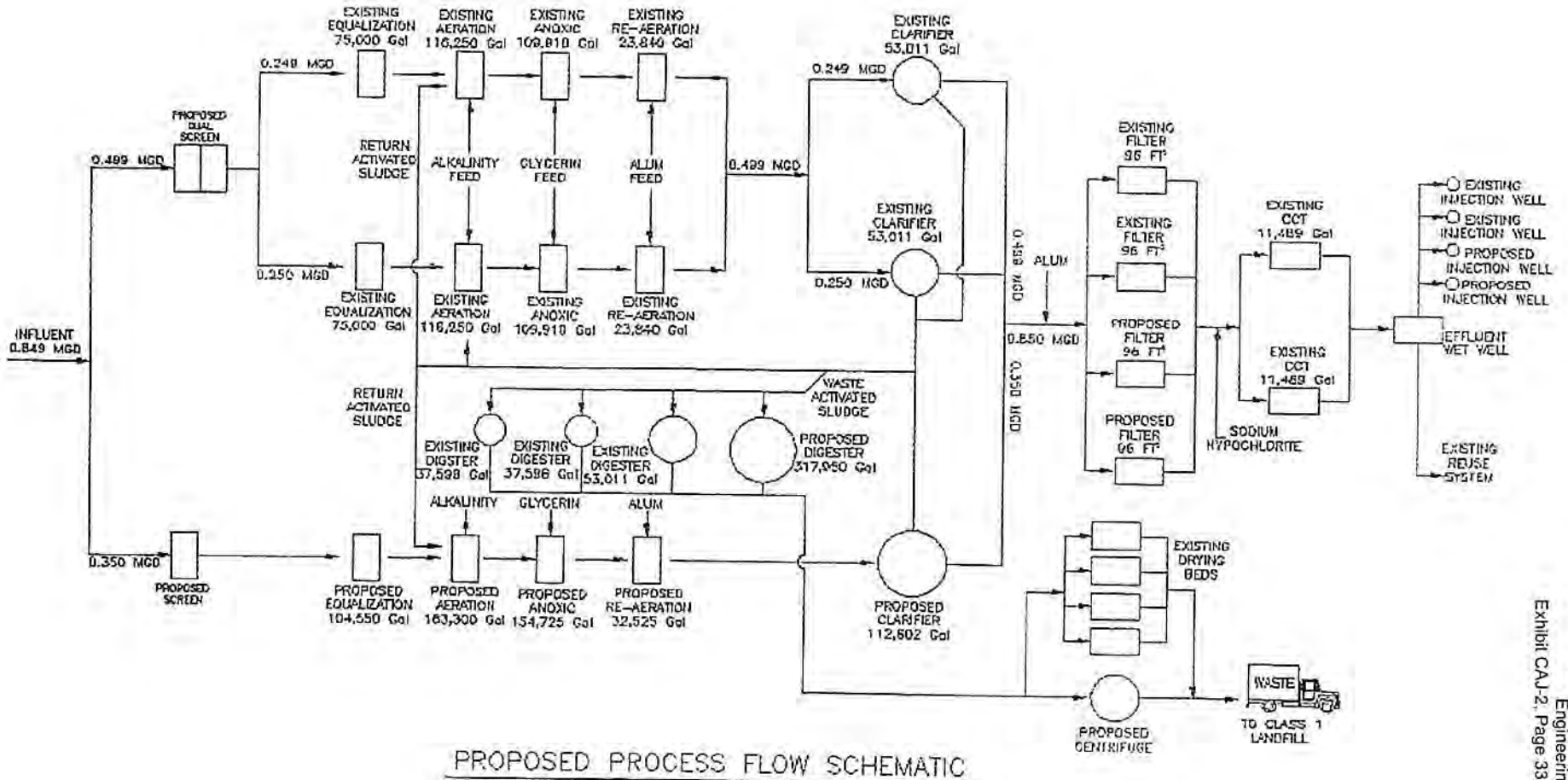
Blower Proportional Controller

Input from LDO probes (new)
Programmable Hi and Low set-points, at Controller (new)
Programmable Hi and Low set-points and adjustable gain from SCADA software (new)
Hi and Low DO Alarm from Controller to SCADA software (new)
HOA and Alarm Acknowledge capabilities from SCADA software (new)

Liquid Chlorine Controller

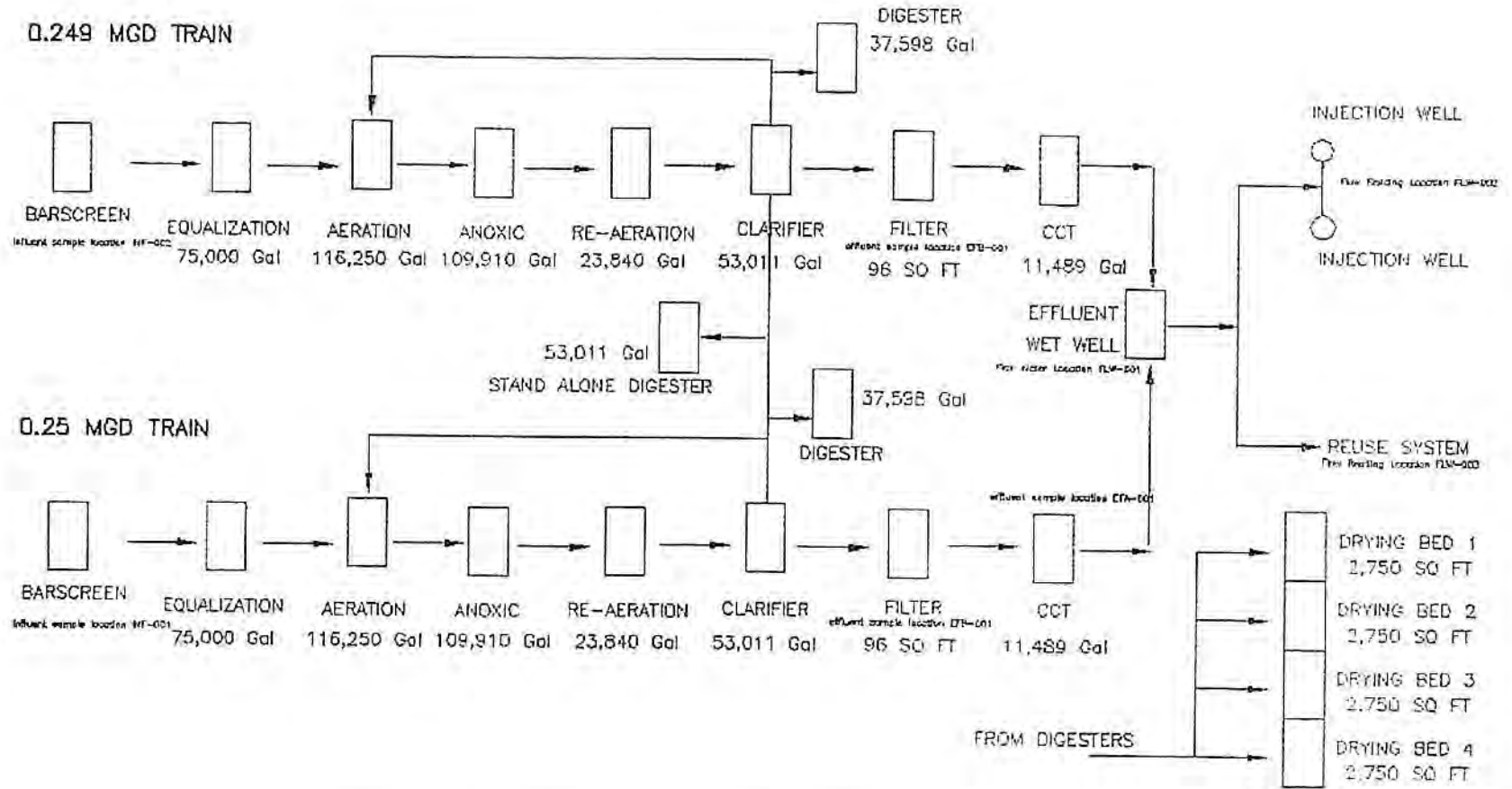
Input from Flow Meters (new)
Programmable Hi and Low set-points, at controller (new)
Programmable Hi and Low set-points and adjustable gain, from SCADA software
Pump Feed Failure Alarm to SCADA software (new)
Hi and Low CL2 Alarm to SCADA software (new)
HOA control and Alarm Acknowledge capabilities from SCADA software (new)

Figure 2: Proposed Process Flow Schematic



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Figure 3: Existing Process Flow Schematic



EXISTING PROCESS FLOW SCHEMATIC

K W RESORT UTILITIES CORPORATION
 0.849 MGD AWT EXTENDED AERATION PROCESS WWTP
 UNIT PROCESS CALCULATIONS

I. PLANT FLOWS (HYDRAULIC LOADINGS)

Permitted Capacity	499,000 gpd	{0.499 MGD}
Q_{AADF}	849,000 gpd	{design capacity, based on annual average daily flow}
Q_{MDF}	976,350 gpd	
Q_{PHF}	1,273,500 gpd	

II. ORGANIC LOADING

CBOD ₅	250 mg/L
TN	40 mg/L
TP	8 mg/L

$$CBOD_{AADF} = (8.34 \text{ lb/gal})(250 \text{ mg/L})(0.849 \text{ MGD}) = 1,771 \text{ lb/day}$$

$$CBOD_{MDF} = (8.34 \text{ lb/gal})(250 \text{ mg/L})(0.97635 \text{ MGD}) = 2,036 \text{ lb/day}$$

$$CBOD_{PHF} = (8.34 \text{ lb/gal})(250 \text{ mg/L})(1.2735 \text{ MGD}) = 2,656 \text{ lb/day}$$

$$TN_{AADF} = (8.34 \text{ lb/gal})(40 \text{ mg/L})(0.849 \text{ MGD}) = 284 \text{ lb/day}$$

$$TN_{MDF} = (8.34 \text{ lb/gal})(40 \text{ mg/L})(0.97635 \text{ MGD}) = 326 \text{ lb/day}$$

$$TN_{PHF} = (8.34 \text{ lb/gal})(40 \text{ mg/L})(1.2735 \text{ MGD}) = 425 \text{ lb/day}$$

$$TP_{AADF} = (8.34 \text{ lb/gal})(8 \text{ mg/L})(0.849 \text{ MGD}) = 57 \text{ lb/day}$$

$$TP_{MDF} = (8.34 \text{ lb/gal})(8 \text{ mg/L})(0.97635 \text{ MGD}) = 66 \text{ lb/day}$$

$$TP_{PHF} = (8.34 \text{ lb/gal})(8 \text{ mg/L})(1.2735 \text{ MGD}) = 85 \text{ lb/day}$$

III. SOLIDS LOADING

TSS 250 mg/L

$$TSS_{AADF} = (8.34 \text{ lb/gal})(250 \text{ mg/L})(0.849 \text{ MGD}) = 1,771 \text{ lb/day}$$

$$TSS_{MDF} = (8.34 \text{ lb/gal})(250 \text{ mg/L})(0.97635 \text{ MGD}) = 2,036 \text{ lb/day}$$

$$TSS_{PHF} = (8.34 \text{ lb/gal})(250 \text{ mg/L})(1.2735 \text{ MGD}) = 2,656 \text{ lb/day}$$

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IV. UNIT PROCESSES

Q_{AADF}	849,000 gpd = 35,375 gallons per hour = 590gpm
Q_{MDF}	976,350 gpd = 40,682 gallons per hour = 678gpm
Q_{PHF}	1,273,500 gpd = 53,063 gallons per hour = 885gpm

A. AERATION BASIN DETENTION TIME = $\frac{V}{Q}$

Volume

Two existing tanks at 116,250 gal each. One proposed tank at 163,300 gal: Total = 395,800 gal

$$\theta_{AADF} = 395,800 \text{ gallons} / 35,375 \text{ gph} = 11.2 \text{ hrs}$$

$$\theta_{MDF} = 395,800 \text{ gallons} / 40,682 \text{ gph} = 9.8 \text{ hrs}$$

$$\theta_{PHF} = 395,800 \text{ gallons} / 53,063 \text{ gph} = 7.5 \text{ hrs}$$

- Volumetric Loading

$$\frac{(1,771 \text{ lb/d CBOD}_5)(7.48 \text{ gal/ft}^3)(1000)}{395,800 \text{ gallons}} = 33.5 \text{ kg/m}^3 \cdot \text{day}$$

B. ANOXIC BASIN

Flow 849,000 gpd, annual average daily flow

Nitrogen Loading: 40 mg/l influent TN

Effluent Limit: 3 mg/L

[MLVSS] 2,625 mg/L

U_{DN} 0.05 lb $\text{NO}_x\text{-N/lb VSS} \cdot \text{day}$ {Metcalf & Eddy}

$$\begin{aligned} \text{Required Volume} &= \frac{(\Delta \text{TN})(1000000)}{(U_{DN})(\text{MLVSS})(8.34)} \\ &= 37000000 / 0.05 * 2625 * 8.34 = 37000000 / 1094.6 \\ &= 33,802 \text{ gallons will provide 1 hour detention time} \end{aligned}$$

To ensure adequate detention time, three anoxic basins, two existing with 109,910 gallons and one proposed with 154,725 gal shall be provided. The extra volume will result in an increase in the hydraulic detention time and the amount of endogenous carbon available for denitrification.

Detention Times:

$$\theta_{AADF} = 374,545 \text{ gallons} / 35,375 \text{ gph} = 10.6 \text{ hrs.}$$

$$\theta_{MDF} = 374,545 \text{ gallons} / 40,682 \text{ gph} = 9.2 \text{ hrs.}$$

$$\theta_{PHF} = 374,545 \text{ gallons} / 53,063 \text{ gph} = 7.1 \text{ hrs.}$$

C. REAERATION BASIN

Flow 849,000gpd AADF

Size Two existing at 23,840 gal each, One proposed at 32,525 gal; Total = 80,205 gal

Detention times

$$\theta_{AADF} = 80,205 \text{ gallons} / 35,375 \text{ gph} = 2.3 \text{ hrs.}$$

$$\theta_{MDF} = 80,205 \text{ gallons} / 40,682 \text{ gph} = 2.0 \text{ hrs.}$$

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$$\theta_{PHF} = 80,205 \text{ gallons}/53,063 \text{ gph} = 1.5 \text{ hrs.}$$

D. RETURN ACTIVATED SLUDGE (RAS)

Required: 0.5 to 1.5 times the maximum flow

$$Q_{PHF} = 1,273,500 \text{ gpd} = 885 \text{ gpm}$$
$$0.5 \times 885 \text{ gpm} = 442.5 \text{ gpm}$$
$$1.5 \times 885 \text{ gpm} = 1,327.5 \text{ gpm}$$

E. CLARIFIERS (calculations based on three clarifiers)

Volume of clarifiers: Two existing at 53,011 gal each, One proposed at 112,602 gal;
Total = 218,624 gal

1. Detention Time:

$$\theta_{AADF} = 218,624 \text{ gallons}/35,375 \text{ gph} = 6.2 \text{ hrs.}$$

$$\theta_{MDF} = 218,624 \text{ gallons}/40,682 \text{ gph} = 5.4 \text{ hrs.}$$

$$\theta_{PHF} = 218,624 \text{ gallons}/53,063 \text{ gph} = 4.2 \text{ hrs.}$$

2. Hydraulic loading (at PHF)

$$\text{Total Clarifier surface area} = (\pi \times 13^2) (2) + (\pi \times 16.75^2) = 1,943.3 \text{ ft}^2$$

$$SL_{HYD} = 1,273,500 \text{ gpd}/1,943.3 \text{ ft}^2$$
$$= 655 \text{ gpd}/\text{ft}^2$$

$$655 < 1000 \text{ gpd}/\text{ft}^2 \text{ (per "Ten State Standards")}$$

3. Weir Loading (at PHF)

$$\text{Weir length} = (2 \times \pi \times 13') (2) + (2 \times \pi \times 16.75') = 268.6 \text{ ft}$$

$$\text{Weir Overflow Rate} = 1,273,500 \text{ gpd}/268.6 \text{ ft} = 3,160.8 \text{ gpd}/\text{ft}$$

$$4,741 < 10,000 \text{ gpd}/\text{ft} \text{ (per "Ten State Standards")}$$

4. Solids Removal*

$$TSS_{INF} = 250 \text{ mg}/\text{L}$$

Facility treatment efficiency is 92%-95%.

after 95% removal = 12.5 mg/L

after 92% removal = 20 mg/L

*5 mg/L is required for AWT treatment, filtration is provided as required

F. FILTERS

Filter area = 384 ft², 96 ft² each

$$Q_{PHF} = 1,273,500 \text{ gpd} = 885 \text{ gpm}$$

$$\text{All 4 Filters: } 885 \text{ gpm}/384 \text{ ft}^2 = 2.3 \text{ gpm}/\text{ft}^2$$

$$\text{3 Filters: } 885 \text{ gpm}/288 \text{ ft}^2 = 3.1 \text{ gpm}/\text{ft}^2$$

Maximum Filtration Rate = 5 gpm/ft² min (from Metcalf & Eddy chart on p. 676)

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G. DISINFECTION (calculations based on four chlorine contact chambers in two basins)

The Chlorine Contact Chamber is required to provide a minimum contact period of 15 minutes at design peak hourly flow or the maximum pumping rate. The facility has flow equalization, which will result in using a peaking factor of 1.5 instead of 4.

Detention time = V/Q

Volume = 11,489 gal per basin, 5,745 gal per chamber, 22,978 gal total

Flow = $Q_{PHI} = 1,273,500$ gpd or 885 gpm or 53,063 gph

$\Theta = V/Q \quad \Theta = 0.25$ hr,

$V_{REQUIRED} = (0.25 \text{ hr})(53,063 \text{ gph}) = 13,266$ gal

22,978 gal > 13,266 gal therefore size is Adequate

@ 75% Operation (1 of 4 chambers off line) = 17,234 gal > 13,266 gal

22,978 gal/53,063 gph = 26 min. detention time with all 4 in service.

17,234 gal/53,063 gph = 19.5 min. detention time with 3 of 4 in service.

H. SODIUM HYPOCHLORITE SYSTEM

1 pound per day (ppd) chlorine gas = 1 gpd of 12.5% Trade NaOCl

Min. Total Residual Chlorine (TRC) = 1.0 mg/l.

Avg. chlorine ppd in recent years (based on 0.343 MGD Flow) = 38.8 ppd

Cl_2 Dosage = $(38.8 \text{ ppd}) / ((8.34 \text{ lb/day}) / (.343 \text{ MGD})) = 14$ mg/L

Cl_2 Dosage rate, in ppd for design flow = $(.849 \text{ MGD})(8.34 \text{ lb/gal})(14 \text{ mg/L}) = 99.2$ ppd

Gallons of 12.5% NaOCl needed per day = $(99.2 \text{ ppd } Cl_2)(1 \text{ gpd } 12.5\% \text{ NaOCl} / 1 \text{ ppd } Cl_2)$
= 99.2 gal/day

With 1.5 safety factor = $(99.2 \text{ gal/day})(1.5) = 148.8$ gal/day

Min. Tank size needed: $(148.8 \text{ gal/day})(15^{**} \text{ days}) = 2,500$ gal

Tank will be opaque for UV protection and rated for exterior use

* Dosage rate based on average feed rate of chlorine gas needed to satisfy chlorine demand and maintain desired TRC.

** Due to short shelf life of the sodium hypochlorite solution, a tank that allows for only 15 days of storage will be used instead of 30 days to prevent degradation of the sodium hypochlorite solution.

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I. PHOSPHORUS REMOVAL

ALUM	$Al_2(SO_4)_3 + 18H_2O$
ALUM STRENGTH	48.5 %
DENSITY OF ALUM SOL'N	11.2 lb/gal
MOLECULAR WT. OF ALUM	594.0
MOLECULAR WT. OF ALUMINUM	26.98
MOLECULAR WEIGHT OF P	30.97

STEP 1
A. WEIGHT OF ALUMINUM REQUIRED PER UNIT OF PHOSPHORUS
THEORETICAL DOSAGE 1 MOLE AL PER 1 MOLE P
ALUMINUM REQUIRED = (MW AL/MW P)
= (26.98/30.97)
= 0.87 lb AL/lb P

STEP 2
A. WEIGHT OF ALUMINUM AVAILABLE PER GALLON OF ALUM
Weight of alum per gallon of solution
= 0.485 X 11.2 lb/gal = 5.43 lb/gal

B. Weight of Aluminum per gallon
= 5.43 lb/gal * (2 * 26.98/594.0) = 0.493 lb/gal

STEP 3
POUNDS OF P IN INFLUENT
= mg/L P * FLOW, MGD * 8.34
= 8 * 0.849 * 8.34
= 56.6 lbs influent phosphorus

STEP 4
AMOUNT OF ALUM SOLUTION REQUIRED PER LB OF PHOSPHORUS
Alum Dosage = (0.87 lb AL/lb P) * (1 GAL ALUM SOL/0.493 lb AL)
= 1.76 GAL ALUM SOLUTION/lb P
= 1.76 * 28.3 lb
= 49.8 gallons of alum solution required for 0.849 MGD facility capacity

Since significant biological uptake of phosphorus occurs in the activated sludge process, the clarifier influent will have significantly less than the 8 mg/l used in the dosing calculations, providing a safety factor in the designed dosing rate.

Min. tank size needed: (49.8 gal/day) (30 days) = 1,494 gal tank

Tank will be opaque for UV protection and rated for exterior use

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J. GLYCERIN

Solution used will be 70% Glycerin as provided by manufacturer

Glycerin BOD: 870,000 mg/L

7 lb BOD = 1 gal Glycerin

Dissolved Oxygen (D.O.) going into anoxic zone = 2 mg/L

Influent NH_4 = 40 mg/L

NH_4 to NO_3 = $(62/17)(40 \text{ mg/l}) = 146 \text{ mg/L}$ NO_3

Oxygen present = $((((16*3)/(62))(146 \text{ mg/L})+2)(8.34 \text{ lb/gal})(0.849\text{MGD})) = 814 \text{ lbs/day}$

Glycerin solution needed per day: $(814 \text{ lb D.O.})/(7 \text{ lb/gal glycerin}) = 116.3 \text{ gal/day}^*$

Min. tank size needed: $(116.3 \text{ gal/day})(15 \text{ days}) = 1744.50 \text{ gal}$

* There is no safety factor being used for glycerin need because the tanks have been oversized to allow for endogenous decay which provides an additional carbon source.

K. ALKALINITY DOSING

Strength	50%
Density of Solution	12.76 lb/gallon
Molecular Weight NaOH	39.997
Molecular Weight Na	22.98
Molecular Weight OH	17.00

Weight of NaOH = $0.5 \times 12.76 \text{ lb/gal}$
 = 6.38 lbs lb/gal

OH per gallon = $6.38 \times (17.00/39.997)$
 = 2.71 lbs

Pounds of NH_4 per day = $(40 \text{ mg/L})(8.34 \text{ lb/gal})(0.849\text{MGD})$
 = 283 lbs

Pounds of CaCO_3 needed per day = $(283\text{lbs})(7.07 \text{ lbs } \text{CaCO}_3/\text{lb } \text{NH}_4)$
 = 2,001 lbs

Pounds of H_2O per day = $(120 \text{ mg/L})(8.34 \text{ lb/gal})(0.849 \text{ MGD})$
 = 850 lbs

Pounds of CaCO_3 added per day = $2001 - 850 = 1,151 \text{ lbs}$

Milliequivalent weights of CaCO_3 : 50 mg/meq
 NaOH: 40 mg/meq

Pounds of NaOH per day = $(40/50)(1,151 \text{ lbs}) = 921 \text{ lbs}$

During nitrification/denitrification in aeration basins there is release of some alkalinity so no safety factor will be used

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Min. tank size needed: $((921 \text{ lbs} \cdot 2) / (12.76 \text{ lb/gal})) \cdot 30 \text{ days} = 4,331 \text{ gal}$

Tank will be opaque for UV protection and rated for exterior use

The theoretical dose is 1 mole NaOH per 1 mg/L alkalinity. The above calculations are based on assumptions regarding the alkalinity concentration needed and may change accordingly. All chemical feed pumps will be sized to accommodate any variables encountered.

ATTACHMENT A
ANTICIPATED FLOWS REPORT

PDR

KWRU

Anticipated Flows

KW Resort Utilities Corporation
Wastewater Treatment Facility

Monroe County

DEP Permit FLA014951

Permit Expiration Date: 19 February 2017

Report Prepared by:

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PDR

KWRU

INTRODUCTION

This Anticipated Flows Report is provided with the Preliminary Design Report to be submitted with an application for modification of the existing plant at Key West Resort Utilities (DEP Permit No. FLA014951). This report will provide information regarding the facility's operation and recent flows, and the need for expansion of the plant.

GENERAL INFORMATION

The KWRU facility is currently a 0.499 MGD AADF permitted wastewater treatment plant (WWTP) located on Stock Island in Monroe County, Florida.

Presently, the wastewater treatment facility consists of two post-anoxic biological nutrient removal treatment trains, installed separately but piped together to allow the facility to operate as a single plant. The trains, with design flows of 0.249 MGD and 0.250 MGD, respectively, are equipped with sand filters and chlorine contact chambers.

Treated wastewater is pumped to the Key West Golf Club reuse storage ponds for slow rate land application and to the Monroe County Detention Center for toilet flushing and cooling water, as well as the Lower Keys Medical Center, and Florida Keys Community College for irrigation and cooling water. Backup effluent disposal is provided by two (2) ten-inch Class V Group III underground injection wells.

FUTURE FLOW POPULATION PROJECTION

The KWRU WWTP currently treats wastewater flows from 2932 wastewater accounts consisting of residences, restaurants, an animal clinic, a laundromat, a convalescence facility, a detention center, a hospital, and a college. The AADF at KWRU has been increasing in recent past, most likely a result of the upturn in the economy. The AADF for 2012 was 0.382 MGD. This increased to 0.416 in 2013. In the first quarter of 2014 which coincides with peak tourist season, the average daily flows have been approximately .450 MGD.

In 2014 and 2015, at least four re-developments are expected to begin operating. Based on the plans and wastewater services agreements available to date, these projects will increase flows as described below:

Stock Island Marina Village - Consisting of re-development of the working waterfront on the western side of Safe Harbor on Stock Island, the project includes the addition of wet slip dockage for boats, a large fish house, commercial office space and a hotel. The project is expected to generate approximately 30,250 GPD of wastewater.

Oceanside Marina - The existing marina is being redeveloped to add 78 residential units, 4 transient rental units, a restaurant, a bath house with laundry facilities, 3 swimming pools, a recreational facility and employee housing. The project is expected to generate an additional 26,125 GPD of wastewater in addition to that already being generated.

Sunset Marina - This project is in the planning phase and is expected to add approximately 60 residential units to the existing site, increasing wastewater flows by 15,000 GPD.

Bernstein Development - This project is in the planning phase and is expected to be similar in size and amenities to the Stock Island Marina Village project. It is expected to generate approximately 30,000 GPD of wastewater.

PDR

KWRU

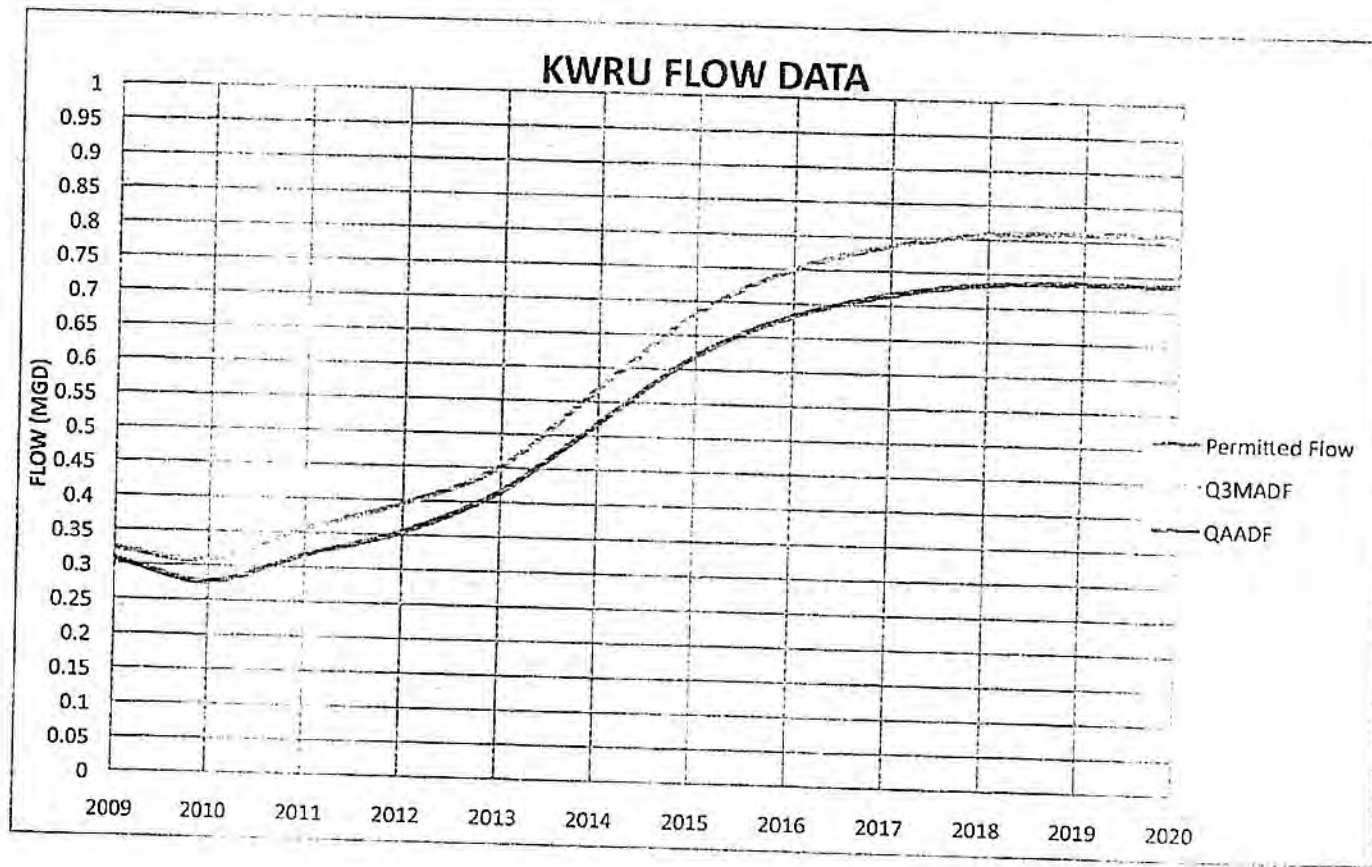
A review of the Monroe County Property Appraiser's GIS maps and associated data, it appears that there is approximately 40 acres of additional scarified or underutilized properties in the KWRU service area that are sites for potential redevelopment. Some large waterfront parcels exist and appear to have been recently purchased as investment properties. These parcels in particular have a high potential for redevelopment.

Although there are restrictions in place limiting new building rights, transferable development rights can be purchased from other properties with high densities in less desirable locations, such as older, land-locked mobile home parks. These development rights can then be used to allow units to be constructed in the more desirable waterfront properties in closer proximity to Key West. For these reasons, and based on the redevelopment history in the keys, it is apparent that the potential for further increases in flow exist in the KWRU service area.

The graph below shows the flow trends at KWRU from

PROJECTED FLOWS

This chart shows the average flows to the facility over the past four years and the expected flow through 2020.



SUMMARY AND CONCLUSIONS

The annual average daily flow to the KWRU WWTP may reach 0.74 MGD AADF or 148% of existing plant capacity following development of the known underutilized or undeveloped properties in the Stock Island service area. This may represent "build-out" flows, although some redevelopment of other existing occupied properties with higher use facilities is possible. With the expansion of the WWTP capacity to 0.849 MGD, the anticipated flows will represent 87% of the proposed permitted capacity, allowing for an additional 100,000 GPD of capacity for such redevelopments,.