

Operation & Maintenance
Manual
and
Maintenance Log

FOR

SYSTEM NAME



FLORIDA RURAL WATER ASSOCIATION
2970 Wellington Circle ~ Tallahassee FL 32309
Telephone: 850-668-2746 ~ Fax: 850-893-4581
E-mail: FRWA@frwa.net

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SYSTEM INFORMATION

Wastewater System: _____

Permit # _____

Street Address: _____

City, State, Zip: _____

Phone: _____ **Fax:** _____

Contact: _____

E-mail: _____

County: _____

Ownership: _____

Date: _____

The O&M Manual should be a quick reference for successful daily operation and include anything from trouble shooting to emergency procedures. The rule requires the O&M Manual to contain:

- ✓ Bound and Indexed Equipment Manufacturer Manuals (you can download most of these manuals off of the web or get them from equipment manufacturers)
- ✓ Operation and Control Procedures
- ✓ Preventive Maintenance and Repair Procedures

We recommend that you make at least **two copies** of the O&M Manual and store one in a safe place in case the plant copy gets lost or damaged by normal use.

The Preventative Maintenance Logs show the date and type of all maintenance performed. We recommend that you include the Preventative Maintenance Logs in your O&M Manual Binder.

This is a template and is by no means comprehensive. Each facility is unique and the complexity of your O & M Manual will depend on the complexity of your facility. This template has been designed to assist your wastewater facility in developing an O & M Manual and Maintenance Log that will meet the requirements set forth by the Florida Department of Environmental Protection.

FDEP REQUIREMENTS

Operation and Maintenance Manual

“In accordance with Rules 17-600.720 and 17-600.730(4)(c), F.A.C., each domestic wastewater treatment and effluent disposal or reuse facility must maintain up-to date operation and maintenance manual(s). The report should indicate whether up-to date operation and maintenance manual(s) for the treatment and effluent disposal or reuse facilities are available to the operator at a convenient location. The report should provide the name and address of the location.

The report should include the date the last up-date was done to the operation and maintenance manual(s) and indicate whether the manual(s) are revised on a periodic basis to reflect any facility alterations performed or to reflect experience resulting from facility operation. A good time to revise the operation and maintenance manual would be during preparation of the operation and maintenance performance report.

The details of the manual should be consistent with the complexity of the system. The manual should have been developed in accordance with the unique requirements of the individual wastewater facility. The report should indicate whether the manual(s) provide the operator with adequate information and description regarding the design, operation, and maintenance features of the facility involved.

The report should indicate whether the manual(s) include the information required by Rule 17-600.720(1)(b), F.A.C. In accordance with this rule, "The manual shall include basic hydraulic and engineering design criteria for the facility, as well as information and procedures required for normal control and distribution of wastewater, residuals, and effluent within the facility. In addition, information concerning process control and performance evaluation for the facility, as well as equipment and procedural descriptions (including any notification/reporting requirements of appropriate agencies) for emergency operating conditions and listing 11 of spare parts to have on hand shall be included. Regular maintenance and repair instructions for all equipment; laboratory testing equipment and monitoring procedures; safety and personnel requirements; and a "trouble shooting" problem guide shall be included in the manual."

When applicable, the report shall also indicate whether the manual includes the information required by Rules 17-610.330(2), 17-604.600(2)(f), and 17-28.230(3), F.A.C.”¹

Operation and Maintenance Log

“The report should indicate whether the facility maintains an up-to-date operation and maintenance log and whether it includes the information required by Rule 17-602.360(1)(e), F.A.C.”²

¹FDEP.12/20/2010.

<<http://www.dep.state.fl.us/central/Home/Wastewater/Domestic/OperationsReport/Guidelines.pdf>>.

² Idem.

CONTACTS

Emergency

State Warning Point – 800-320-0519

"Spills which are of 1,000 gallons or greater, or which may threaten the environment or public health are required to be immediately reported by a utility to the Florida Department of Environmental Protection (FDEP) through a **toll-free, 24-hour hotline** known as the [State Warning Point](#)."³

Repair/Service

| COMPANY OR ORGANIZATION | TELEPHONE | EMAIL |
|--------------------------------|------------------|--------------|
| Florida Rural Water Assoc. | (850)-668-2746 | |
| FDEP Inspector(s) | | |
| Operations (if applicable) | | |
| Laboratory | | |
| Chlorine Supplier | | |
| Sludge Hauler | | |
| Equipment Vendor | | |
| Equipment Vendor | | |
| Equipment Vendor | | |
| Chemical Supplier | | |
| Consultant | | |
| | | |
| | | |
| | | |
| | | |

³ FDEP. 12/21/2010<<http://www.dep.state.fl.us/water/wastewater/wce/spills.htm>>.

BOUND & INDEXED EQUIPMENT MANUFACTURER MANUALS

Attach all Equipment Manufacturer Manuals in this section

Include a copy of the most up-to-date Record Drawings (plans and specifications) that identify and describe any construction modifications that have occurred since the original construction permit was issued.

FACILITY DESCRIPTION & MAJOR EQUIPMENT

Preliminary Treatment Equipment

Flow Equalization/Surge Tanks

Bar Screens/Racks

Moving/Rotating/Hydro Screens *(if applicable)*

Grit Removal

Primary Treatment Equipment *(if applicable)*

Secondary Treatment Equipment

Type of Biological Treatment *(Extended Aeration, Oxidation Ditch etc.)*

Aeration Equipment *(Blower Motors, Air Filters, diffusers etc.)*

Return Sludge Pumping Equipment *(Size, Mfr. & Model)*

Disinfection Equipment *(Chlorination, Hypochlorination, etc.)*

Sludge Digestion Equipment

Digester Pumping Equipment (*Size, Mfr. & Model*)

Electrical Equipment

Auxiliary Power Equipment

Additional Equipment

MAINTENANCE PROGRAM

“A good maintenance program is essential for a wastewater treatment plant to operate continuously at peak design efficiency. A successful maintenance program will cover everything from mechanical equipment, such as pumps, valves, scrapers, and other moving equipment, to the care of the plant grounds, buildings, and structures.

Mechanical maintenance is of prime importance, as the equipment must be kept in good operating condition for the plant to maintain peak performance. Manufacturers provide information on the mechanical maintenance of their equipment. You should thoroughly read their literature on your plant equipment and understand the procedures. Contact the manufacture or the local representative if you have any questions. Follow the instructions very carefully when performing maintenance on equipment. You must also recognize tasks that may be beyond your capabilities or repair facilities, and you should request assistance when needed.

For a successful maintenance program, you or your supervisors must understand the need for and the benefits from equipment that operates continuously as intended. Disabled or improperly working equipment is a threat to the quality of the plant effluent, and repair costs for poorly maintained equipment usually exceed the cost of maintenance.”⁴

There are two basic types of maintenance, preventive and corrective. Preventive maintenance is scheduled maintenance actions designed to avert equipment failure and disruption of the treatment process. Typical preventive maintenance would include equipment and tank inspections, oil changes, lubrication of motors, etc. The goal of a successful preventive maintenance program is to protect valuable equipment, promote the longevity of this equipment and to ensure adequate treatment. The second type of maintenance is corrective maintenance. This type of maintenance is conducted when a failure has taken place and is required to restore equipment to operational status. Corrective maintenance is often required at inopportune times and frequently requires a significant amount of down time.

An effective preventive maintenance program is invaluable. Preventive maintenance can be conducted at a time convenient to the one performing the maintenance and downtime is limited. The cost and time it takes to complete preventive maintenance is almost always less, than the cost and time it would take to complete corrective maintenance.

Florida Rural Water Association recommends the design and implementation of a sound preventive maintenance program. A practical place to begin is with the equipment manufacturer recommendations. The details of your preventive maintenance program will depend on the amount of and type equipment at your facility.

⁴ *Office of Water Programs California State University, Operation of Wastewater Treatment Plants II, 7th Edition, 2007, pg. 333.*

BASIC OPERATION & MAINTENANCE

It is recommended that you develop a preventive maintenance schedule. An effective method of breaking down maintenance duties is by how often the maintenance is required. Depending on the activity, type of equipment and/or the frequency the equipment is used, maintenance may be required daily, weekly, monthly, quarterly, semiannually or annually. The charts below are not designed to include all the duties required at your plant. They are designed to assist you in building an operation and maintenance schedule tailor-made for your plant. Feel free to add or subtract items as you see fit.

DAILY OPERATIONAL/MAINTENANCE DUTIES

(Check the box next to items that apply to your facility)

| | |
|---------------------------|---|
| Basic Observations | <input type="checkbox"/> Visual Observations (i.e. foam, turbid effluent, etc.) <input type="checkbox"/> Abnormal or Noxious Odors <input type="checkbox"/> Abnormal Equipment Operation (Audible or Visual) |
| Basic Duties | <input type="checkbox"/> Clean Bar Screens or Racks <input type="checkbox"/> Hose Down Plant <input type="checkbox"/> Clean/Scrub Down Clarifier (if necessary) |
| Meter Readings | <input type="checkbox"/> Record Plant/Lift Station Meter Readings <input type="checkbox"/> Calculate & Record Total Daily Flow |
| Inspections | <input type="checkbox"/> Inspect Instrumentation for Proper Operation <input type="checkbox"/> Inspect Pumps & Controls <input type="checkbox"/> Inspect Disinfection Equipment |
| Samples | <input type="checkbox"/> Check & Record Chlorine Residual <input type="checkbox"/> Check & Record Dissolved Oxygen in Aeration Tank(s) <input type="checkbox"/> Check & Record PH |
| Security | <input type="checkbox"/> Complete a Daily Security Check <ul style="list-style-type: none"> ✓ Doors & Windows for Evidence of Tampering ✓ Alarms, Locks & Security Lighting ✓ Inspect Fences & Gates |
| | |
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WEEKLY OPERATIONAL/MAINTENANCE DUTIES

| | |
|--------------|---|
| Pumps | <ul style="list-style-type: none"><input type="checkbox"/> Inspect Pumps for Abnormal Operation<input type="checkbox"/> Manually Operate Pumps<input type="checkbox"/> Inspect & Clean Floats |
| | |
| | |

MONTHLY OPERATIONAL/MAINTENANCE DUTIES

| | |
|---------------------------------|--|
| Inspections | <ul style="list-style-type: none"><input type="checkbox"/> Clean & Flush Scum Lines<input type="checkbox"/> Clean & Flush Sludge Lines (RAS; WAS)<input type="checkbox"/> Inspect Pumps, Blowers and Moving Equipment<input type="checkbox"/> Operate Generator |
| Samples & Monitoring | <ul style="list-style-type: none"><input type="checkbox"/> Take Appropriate Samples<input type="checkbox"/> Complete & Submit DMR |
| | |
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| | |

QUARTERLY OPERATIONAL/MAINTENANCE DUTIES

| | |
|--------------------|---|
| Inspections | <ul style="list-style-type: none"><input type="checkbox"/> Inspect Pump Bearings<input type="checkbox"/> Lubricate Pumps, Motors, Blowers and Moving Equipment |
| Samples | <ul style="list-style-type: none"><input type="checkbox"/> Take Appropriate Samples |
| | |
| | |

SEMIANNUAL OPERATIONAL/MAINTENANCE DUTIES

| | |
|--------------------|---|
| Inspections | <ul style="list-style-type: none"><input type="checkbox"/> Inspect & Service Pumps<input type="checkbox"/> Operate Gate Valves |
| | |
| | |

ANNUAL OPERATIONAL/MAINTENANCE DUTIES

| | |
|--------------------|--|
| Inspections | <ul style="list-style-type: none"><input type="checkbox"/> Inspect Tanks for Cracks or Leaks<input type="checkbox"/> Repack Pump & Motor Bearings<input type="checkbox"/> Check Pin Wear on All Check Valves<input type="checkbox"/> Calibrate All Meters and Backflow Preventers |
| | |
| | |
| | |

When preparing a maintenance schedule, always refer the manufacturers' manual for each piece of equipment. Equipment manuals will recommend maintenance frequency and also specifications as to the types of fuel, lubricant or oil needed to ensure peak performance and maximum life expectancy. Be sure to follow these recommendations in strict accordance so that you will get the most out of your valuable equipment.

Often overlooked in a maintenance program are the building and grounds. However, certain items are required by FDEP to be maintained and they should not be overlooked. Building maintenance should include structures such as, stairways, ladders, railings, lighting, platforms, etc. Grounds that are well maintained add to the overall appearance of the plant and also have an impact on an individuals' perception of the plant and its staff.

Again, this template is designed to assist you in creating your own operation and maintenance program that is specific to your facility. Please contact your FRWA circuit rider if further assistance is needed.

**COLLECTION SYSTEM/
LIFT STATION
OPERATION & MAINTENANCE**