

OSSF Maintenance Inspections

I. Introduction and Overview (10 min)

Question: How many maintenance providers or technicians are in classroom today?

Question: What are some of the myth's that you hear from people about aerobic systems.

II. Procedures for quality maintenance inspections. (50 min)

Question: What is the average time it takes to complete a maintenance inspection?

Question: On an average how many inspections can be completed in an 8hr day?

A. Review past records

- Helps to re-familiarize with system
- Possible repairs or special notes

B. Visual inspection of property

- Possible changes that could affect system
- Relocation of disposal field
- Installation of light in area causing photocell problems
- Landscaping in drip field

All changes that affect rules and regulations of OSSF have to go back through the local DR for approval. Documentation of changes is critical

C. Inspection of the tank area

- Lids accessible for servicing
- Water tight/no broken lines
- Lids properly screwed/locked down. This is a big problem and could cost you your business in not addressed. Reason why time should be noted on inspection report.

D. Treatment process inspection

Note: This is why it is so critical to have a knowledgeable technician doing the inspections because of the diversity of OSSF Systems. Ex. Imhoff cones/Flow EQ/Fillers/45° clarifiers sludge returning devices, etc.

1. Pretreat tank - 50 to 60% TSS/BOD removal

Open up to examine pretreat tank area

FOG's/Sludge thickness of crust

Baffles OK and clear-most calls for flow blockages come from the pretreatment tank winter/early spring.

Filters

Use sludge judge to take measure of the three layers in tank (be careful getting the sample-most dangerous area for sampling)

Record level

Close up pretreat tank and secure

2. Aerobic treatment unit (ATU)

***If taking BOD/TSS sample for lab, go ahead and take sample now

a. Mixed Liquor

Open up to examine aerobic activity/clarifier.

Examine the coloration and odor of the mixed liquor

The color, Floccing of particles will tell you a lot about health of system

Use the sludge judge and get a sample of the mixed liquor

Put sample in a settlement tube and take a reading on rate of settleability
Called (30 minute sett. Test)

After complete pour back into mixed liquor.

Record level

At this time look/listen to see and hear the turbulence that the blower is creating. (normal or not)

Go over to the blower area and take a PSI reading to make sure there are no problems in the distribution line.

Normal ranges are (2.5 – 3.5)

Over 3.5 stones probably clogged-should clean them

PH down/Muriatic Acid

Place stones back in mixed liquor

b. Clarifier

Examine the clarifier/still area in the tank

Is it clear/heavy sludge

Skim the area to clean/if too thick have dumped

Heavy amounts of floating debris can cause major problems with flow and pump tank.

Some systems have skimming devices for sludge removal. Make sure they are operational

Filter/clean over trash tank

Close up aerobic tank and secure

3. Pump Tank

****If taking chlorine/fecal coliform sample, go ahead take sample now.**

Observe inside of pump tank for anything unusual

Use sludge judge to take sludge sample (record level)

High sludge levels/problems

Pumps set at different heights-control sludge levels

4. Other possible tanks (ex. Dosing, gravity flow tanks, etc.

Question: Most dangerous tank to work in

1. Health concern-Trash/Pre-treat tank
2. Electrical Concern-Pump or Dosing tank

E. The electrical components inspections

Note: Most of electrical components will affect the pump tank areas. Exception is when there is a mixer or stirring tube pump in aerobic tank.

1. Floats/Probes

Floats:

Check floats by using a device that can raise and lower levels

Make sure floats are not tangled and wires are suspended

Clear of any debris that might be on floats (wash with hose)

Look/listen to see that light and audible alarm on control panel are both working properly

Probes:

If system uses probes make sure any debris is removed from with a brush from contacts

Systems that use probes have many ways of testing the probe function through the control panel. Be aware of how to test.

2. Control Panels-Sign Inspection Sticker

1. Timers/Photocells-make sure working properly/reset timer to proper time

2. Breakers/Relays

3. Connections/loose wires

4. Blower and alarms

5. Cracks or signs of water intrusion

6. Possible corrosion from gases from system

3. Distribution Pumps

a. Adjust floats and timer to start and run pump

b. Listen for any unusual noises

c. Check to make sure no leaks are in the distribution pipe

d. Sample valve OK/Quick connect OK.

e. While running, go to control panel and take an amp reading on pump.

4. Air Compressors/Blowers

a. Remove protective device around blower to view

b. Clean all debris/dirts/insects away from blower

c. Remove filter and clean/if really bad replace filter

d. Make sure no leaks are around the connections or distribution pipe

e. Could cause system to lose valuable dissolved oxygen.

F. The disinfection device inspection

1. Tablet chlorination-

*open top and observe chlorinator

*examine around outside edges for breaks/infiltration of water/dirt

*Remove dispenser and clean

*Chlorine swelling-Problem

*Use proper tablets-calcium hypochlorite

2. Liquid chlorination-

*Turn distribution pump back on, see if vacuum is created

*Is bleach circulating through hose

* If not, check for clogging/debris in suction filter/remove and clean

*Make sure hoses have no kinks in line

3. Other methods-

*Ultra-violet light

*Ozone

G. Effluent disposal field inspections

1. Spray Irrigation disposal fields

A. Be familiar with spray field design to note any changes in pattern

B. Turn pump on and locate sprayheads

C. Rotating properly-even distribution

D. Spraying correctly

E. Vegetation

F. Zoning valve-are all zones being sprayed

2. Drip Irrigation disposal field

A. Remove filters/replace with clean one or clean at site

B. Turn pump on

1. Check pressure difference at filter and return line (record data)

2. Check vacuum breakers to make sure they are working properly

3. If zoned make sure each zone is working properly (switching)

4. Look for breaks in line that would cause excessive ponding

5. Vegetation

H. Required Compliance Testing

1. Total chlorine Residuals/Fecal coliform

2. BOD/TSS samples

III. Health and Safety (10 min)

A. Exposure to pathogens

B. Electrical

C. Personal Protective Equipment

1. Gloves

2. Clothing

3. Footwear

4. Eye protection

5. Disinfectant hand wash

6. First Aid Kit

IV. Conclusion/Questions

Quality Maintenance Inspections provide

1. Important data for system continual operation

2. Longevity and prevent major environmental problems

3. Complete and accurate records of system performance

4. Homeowner confidence

Questions for Review

1. Why is a visual inspection of the property important when doing a OSSF Maintenance Inspection Report?
2. During a maintenance visit you see that lids are open and will not tighten down on the risers. What should you do?
3. Where do most flow blockages occur in an OSSF? Most often what time of the year?
4. If taking a BOD/TSS sample for the lab. At what point in the inspection should it be taken?
5. Is a 30min settleable test a diagnostic or a compliance test? Explain answer?
6. (True or False) Sludge levels have to be kept at a minimum in the pump tank to avoid problems with effluent pump and distribution area.
7. Why is it important for both the audible and visual alarm to function on a OSSF control panel?
8. If air stones are clogged up and not allowing dissolved oxygen to get to the mixed liquor what will be the result?