

## Forwarding Comments

From the perspective of developing different grade levels of O&M providers from “low to high expertise,” we offer the following:

### O&M SERVICE PROVIDER:

#### GRADE 1: (Basic Treatment Systems (Septic System) Operator)

- Is by definition, a septic system service provider.
- Has a knowledge of septic system operation and gravity drainfields, inspection, and troubleshooting.
- Has a knowledge of anaerobic treatment in the septic tank and aerobic treatment in the drainfield.
- Has a knowledge of what constitutes a confined space entry situation.

#### GRADE 2: (Advanced Treatment System Operator)

- Can do everything a Grade 1 Operator can do, plus...
- Has the additional knowledge to be considered an **ATU** level service provider.
- Has a good working knowledge of all treatment processes in the **ATU** and drainfield.
- Has a working knowledge of all ATU system components.
- Can inspect and troubleshoot ATU systems.
- Has a knowledge of what constitutes a confined space entry situation.

**Commented [FKL-(1)]:** Is this for aerobic treatment unit or advanced treatment unit?

**Commented [FKL-(2)]:** See previous comment

#### GRADE 3: (Supervisor Level)

- Has expert level knowledge of Septic and ATU systems.
- Can act in a supervisory capacity over a field crew.
- Can write and file final reports to owner or government agency.
- Has a good working knowledge of terminology, nomenclature, and regulations governing all aspects of the job.
- Has excellent Public Relations skills.
- Has an absolute knowledge of confined space entry procedures and holds an OSHA certification.

These grade levels are footnoted in red as G1, G2 and G3 in the aspect of Need-to-Know in the following outline.

## O&M Service Provider – Need to Know

### I. Understand and Apply Administrative Requirements of the Aquifer Protection Permitting Program & Local Ordinances

- A. General permit operation and maintenance (R18-9-A313.B.). G1, G2, G3
- B. Conventional system operation and maintenance (R18-9-E302.D). G1, G2, G3
- C. Advanced treatment operation and maintenance (R18-9-E303-E323, operation sections). G2, G3
- D. Be able to read and interpret permits. G3
- E. Be able to distinguish the operational condition of a system. G 1, G2, G3
- F. Inspection requirements. G1, G2, G3
- G. Recordkeeping requirements. G3
- H. Annual reporting requirements to ADEQ or delegated authority. G3

### II. General O&M

- A. Terminology. G1, G2, G3
  - 1. Inspection
  - 2. Operation
  - 3. Maintenance
  - 4. Monitoring
  - 5. Repair/ Upgrade
  - 6. Service
  - 7. Management
- B. System treatment train.
  - 1. Identify components
    - a. Conventional. G1, G2, G3
    - b. Advanced treatment. G2, G3
  - 2. Reading a permit. G3
  - 3. Completing an inspection using approved forms. G1, G2, G3
- C. Site assessment. G1, G2, G3
  - 1. Surface water management
  - 2. Subsurface water management
  - 3. System encroachment
  - 4. System setbacks
  - 5. Vegetation and soils
  - 6. Groundwater monitoring wells (if applicable)
  - 7. Off-property influences

### III. O&M of Piping

- A. Sewer line from house to treatment system. **G1, G2, G3**
- B. Cleanouts. **G1, G2, G3**
- C. Treatment system piping
  - 1. Conventional. **G1**
  - 2. Advanced treatment. **G2, G3**
- D. Treatment system to soil treatment area piping
  - 1. Conventional. **G1**
  - 2. Advanced treatment. **G2, G3**
- E. Soil treatment area piping
  - 1. Conventional. **G1**
  - 2. Advanced treatment. **G2, G3**
- F. Air-relief valves. **G2, G3**
- G. Cleaning and flushing. **G2, G3**

### IV. O&M of Septic and Holding Tanks **G1, G2, G3**

- A. Tank material and construction method
- B. Tank access
- C. Alarms
- D. Pumping recommended
- E. Baffles
  - 1. Inlet/outlet
  - 2. Chamber separation
- F. Effluent screens
- G. Tank structural integrity/condition
- H. Watertightness
- I. Operational condition

### V. O&M of Pump Tanks **G2, G3**

- A. Type
- B. Conditions at the pump tank (odor)
- C. Tank description
- D. Tank access
- E. Current tank operating conditions (liquid levels)
- F. Pump/Siphon access
- G. Discharge assembly
- H. Electrical (components sealed and watertight)
- I. Tank structural condition
- J. Solids accumulation
- K. Baffles
- L. Screens or filters

## VI. O&M of Pumps, Floats, and Controls G2, G3

- A. Controls
  - 1. Type
  - 2. Controls operating properly
  - 3. Watertight
  - 4. Alarm test switch
  - 5. Electrical meter readings
  - 6. Telemetry operational
- B. Pump/Siphon
  - 1. Type
  - 2. Siphon operating properly
  - 3. Pump operating properly
  - 4. Amps/voltage measurement
  - 5. Pump turns On/Off
- C. Water level sensor
  - 1. Type
  - 2. Alarm sensor operating audible and visible alarms
- D. Sensor settings
- E. Pump delivery rate
- F. Dose volume
- G. Verify dose frequency and volumes
- H. Wiring safe
- I. Float placement and tie downs
  - 1. Dose volume
- J. Flow measurement
- K. Timer settings
- L. Safety
  - 1. Confined space
  - 2. Hygiene
  - 3. Hazard awareness and control
  - 4. Wiring diagram

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## VII. O&M of Distribution Systems (gravity and pressure)

- A. Gravity G1, G2, G3
  - 1. System identification
  - 2. General assessment
  - 3. Distribution
  - 4. Inspection pipes
    - a. Ponding
  - 5. Switching valves or make flow adjustments at distribution box

- B. Pressurized drip systems **G2, G3**
  - 1. System identification
  - 2. General assessment
  - 3. Distribution
    - a. Observe on/off pressures
    - b. Verify pressure gage is working
  - 4. Inspection pipes
    - a. Ponding
  - 5. Open return valve and flush drain field lines back to the dosing tank. Return drain valve to original position.
  - 6. Inspect, clean, or replace strainer screens
  - 7. Inspect air relief valves
  - 8. Calculate flow

**VIII. O&M of Alternative Soil Treatment Systems At-grade Systems & Mound Systems**  
**G2, G3**

- A. At-grade and mound systems
  - 1. Pressure distribution
  - 2. Ponding
  - 3. Seepage at the toes
- B. Drip systems
  - 1. System identification
  - 2. General assessment
  - 3. Filters
  - 4. Distribution
    - a. System pressure
  - 5. Air release valves
  - 6. Switching valves
  - 7. Flow calculation

**IX. O&M of Drip systems \***

- 1. ~~System identification~~
- 2. ~~General assessment~~
- 3. ~~Filters~~
- 4. ~~Distribution~~
  - a. ~~System pressure~~
- 5. ~~Air release valves~~
- 6. ~~Switching valves~~
- 7. ~~Flow calculation~~

**Commented [FKL-(3)]:** Why was this section removed?

**X. O&M of Alternative Pre-treatment Systems \* G2, G3**

- A. Aerobic Treatment Unit

1. System identification
  2. General assessment
  3. Air supply
  4. Mixed liquor
  5. Separation
    - a. Settling
    - b. Growth
  6. Return
  7. Effluent quality
- B. Media Filter
1. System identification
    - a. Textile
    - b. Peat
    - c. Sand
    - d. Other
  2. General assessment
  3. Distribution
    - a. Single pass
    - b. Recirculating
    - c. Ponding
  4. Media replacement
  5. Effluent quality
- C. Constructed Wetland Systems
1. System identification
  2. General assessment
  3. Water level
  4. Vegetation
  5. Effluent quality
- D. Disinfection Systems
1. System identification
  2. General assessment
  3. Disinfection agent
- E. Other alternative pretreatment systems we need to consider?

## **XI. Monitoring of Systems G2, G3**

- A. Types of monitoring
- B. Necessary tools
  1. Monitoring
  2. Shipping
- C. Monitoring location
- D. Sampling and reporting requirements

- E. Sample handling
  1. COC
  2. Lab needs

**XII. Reporting G3**

- A. Who gets report
- B. Method
- C. Forms

**XIII. Large System Reporting G3**

- A. Frequency
- B. Who gets report
- C. Additional legal requirements
  1. Operator licenses
- D. Method
  1. Groundwater monitoring
- E. Forms

**XII. Basic Math Requirements G1, G2, G3**

- A. Add, subtract, multiply and divide
  1. Slope
  2. Unit conversion
    - a. Metric to ~~English~~ Standard
    - b. ~~English unit conversion~~ Standard to Metric
    - c. Fahrenheit/Centigrade
- B. Average
  1. Weighted average
- C. Use powers and percentages
- D. Graphing (pump curves), pressure calculation
- E. Basic algebra/geometry
- F. Calculate volumes and flow rates
- G. Calculate chemical dilution
- H. Calculate detention time
- I. Know the logarithmic nature of pH values.

**XIII. How to Be A Service Provider**

- A. Developing a Service Company G3
  1. Tools
  2. Methods
- B. Developing a Service Contract G3
  1. Creating a File
- C. Mfr. Form or Company Form/Report

**Commented [FKL-(4)]:** I believe that we could provide a standard form to help folks create a more unified contract.

D. Health & Safety Program & Other OSHA requirements

