



Cover Sheets for Demonstration of Four-Log Virus Treatment of Ground Water

General Information

Public Water System (PWS) Information

PWS Name: _____

PWS ID: _____

PWS Type

- Community Water System
 Non-Transient Non-Community Water System
 Transient Non-Community Water System

Population Served by PWS

- > 3,300 people
 501 to 3,300 people
 ≤ 500 people

PWS Owner Information

PWS Owner: _____

Contact Person: _____

Contact Person's Title: _____

Contact Person's Mailing Address: _____

Contact Person's E-mail: _____

Contact Person's Telephone: _____

Water Treatment Plant (WTP) Information

WTP Name: _____

WTP Address: _____

Permitted Maximum-Day Operating Capacity of WTP: _____

Does the WTP expose ground water to the open atmosphere during treatment?*

- Yes
 No

* Water treatment facilities that are protected against contamination from birds, insects, wind-borne debris, rainfall, and drainage—i.e., water treatment facilities that are covered by an impervious roof and enclosed within impervious sidewalls or sidewalls of at least 20-mesh screen—are not considered to be exposing water to the open atmosphere.

Virus Treatment Information

Type of Virus Treatment Demonstration

If the WTP exposes ground water to the open atmosphere during treatment, check one of the following:

- This demonstration is for four-log virus treatment after water is last exposed to the open atmosphere.
- This demonstration is just for four-log virus treatment of the ground water source(s).
- Not applicable (the WTP does not expose ground water to the open atmosphere during treatment).

Summary of Technologies Used for Virus Treatment; and Virus Inactivation or Removal Credit Claimed for Each Technology

Technology	Virus Inactivation or Removal Credit Claimed, logs
<input type="checkbox"/> Chemical disinfection using free chlorine	
<input type="checkbox"/> Chemical disinfection using chloramines	
<input type="checkbox"/> Chemical disinfection using chlorine dioxide	
<input type="checkbox"/> Chemical disinfection using ozone	
<input type="checkbox"/> Ultrafiltration (UF)	
<input type="checkbox"/> Nanofiltration (NF); or reverse osmosis (RO)	
<input type="checkbox"/> Ultraviolet (UV) disinfection	
<input type="checkbox"/> Conventional filtration treatment, including lime softening	
<input type="checkbox"/> Slow sand filtration	
<input type="checkbox"/> Direct filtration; or microfiltration preceded by coagulation	
<input type="checkbox"/> Diatomaceous earth filtration	
<input type="checkbox"/> Other (describe):	
Total	

Checklist of Information Attached and Included in this Demonstration

Required for all demonstrations:

- A schematic diagram of the WTP. (The schematic shall show all pumping, treatment, or storage facilities; all chemical disinfectant application points and disinfectant residual monitoring points; application points for any chemicals that will affect pH significantly; any turbidity or conductivity monitoring points; the point of the first customer [often the WTP itself]; etc. Also, the schematic shall identify any facilities that expose water to the open atmosphere.)

Required for demonstrations involving chemical disinfection:

- CT calculations.
- Identification of standby equipment, switch-over devices for gas containers, and alarm systems as required by Rule 62-555.320(13), Florida Administrative Code, and *Recommended Standards for Water Works*.
- Identification of the disinfectant residual monitoring frequency and any continuous disinfectant residual monitoring equipment.
- The proposed disinfectant residual monitoring location(s).
- The proposed minimum residual disinfectant concentration(s) for each disinfectant residual monitoring location.

Required for demonstrations involving UF:

- The absolute pore size of the membranes and, if the absolute pore size is greater than or equal to 0.01 micron, challenge testing information showing at least four-log removal capability for the membranes.
- The direct integrity testing frequency, method, resolution, sensitivity, and control limit for the membrane units if four-log virus removal credit is claimed.
- Identification of the continuous filtrate turbidity monitoring equipment for the membrane units.
- Identification of the operating requirement (filtrate turbidity ≤ 0.15 NTU) for each membrane unit.

Required for demonstrations involving NF or RO:

- The molecular weight cutoff for the membranes.
- The direct integrity testing frequency, method, resolution, sensitivity, and control limit for the membrane units if four-log virus removal credit is claimed.
- Identification of the continuous monitoring equipment for the membrane units.
- The proposed operating requirement – i.e., maximum percent salt passage (generally $\leq 25\%$ for NF and $\leq 5\%$ for RO) – for each membrane unit.

Required for demonstrations involving UV disinfection:

- UV reactor validation information, including the validated UV dose and validated operating conditions for flow rate, UV intensity, UV lamp status, and if applicable, UV transmittance (UVT).
- Identification of the equipment for continuously monitoring the flow rate, UV intensity, UV lamp status, and if applicable, UVT for each UV reactor.

Required for demonstrations involving conventional filtration treatment, including lime softening; direct filtration; or microfiltration preceded by coagulation:

- Identification of the combined filter effluent (CFE) turbidity monitoring frequency and any continuous CFE turbidity monitoring equipment.
- The CFE turbidity monitoring location.
- Identification of the operating requirement (CFE turbidity ≤ 1 NTU) for the filtration technology.

Required for demonstrations involving slow sand filtration or diatomaceous earth filtration:

- Identification of the CFE turbidity monitoring frequency and any continuous CFE turbidity monitoring equipment.
- The CFE turbidity monitoring location.
- Identification of the operating requirement (CFE turbidity \leq 5 NTUs) for the filtration technology.

Required for demonstrations of other technologies:

- Information from pilot plant studies, or other performance studies, demonstrating the level of virus treatment that the technology will achieve under the full range of expected operating conditions at the WTP.
- The proposed compliance monitoring and operating requirements for the technology.

Certifications

Certification by Professional Engineer in Responsible Charge of Preparing this Demonstration

I, the undersigned professional engineer licensed in Florida, am in responsible charge of this four-log virus treatment demonstration. I certify that, to the best of my knowledge and belief, all the information included in this demonstration is accurate and consistent with the Florida Department of Environmental Protection's draft "Guidelines for Four-Log Virus Treatment of Ground Water," October 2009.

P.E. License Number

Type or Print Name

Signature, Date, and Seal

Certification by PWS

I am duly authorized to sign on behalf of the PWS identified on page 1 of these coversheets. I understand that, if the Florida Department of Environmental Protection approves this four-log virus treatment demonstration, the PWS will have to begin conducting compliance monitoring in accordance with the federal Ground Water Rule and as discussed in this demonstration. I further understand that that the PWS will be in violation of the treatment technique requirements under the federal Ground Water Rule if the PWS (1) fails to maintain four-log virus treatment, by failing to meet the operating requirements discussed in this demonstration, and (2) does not correct the failure to maintain four-log virus treatment within four hours after first determining the failure.

Type or Print Name

Signature

Title

Date

DRAFT