RV/Mobile Home Park Webinar

Preparing Your Onsite Wastewater System for Winter Visitors

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Introduction

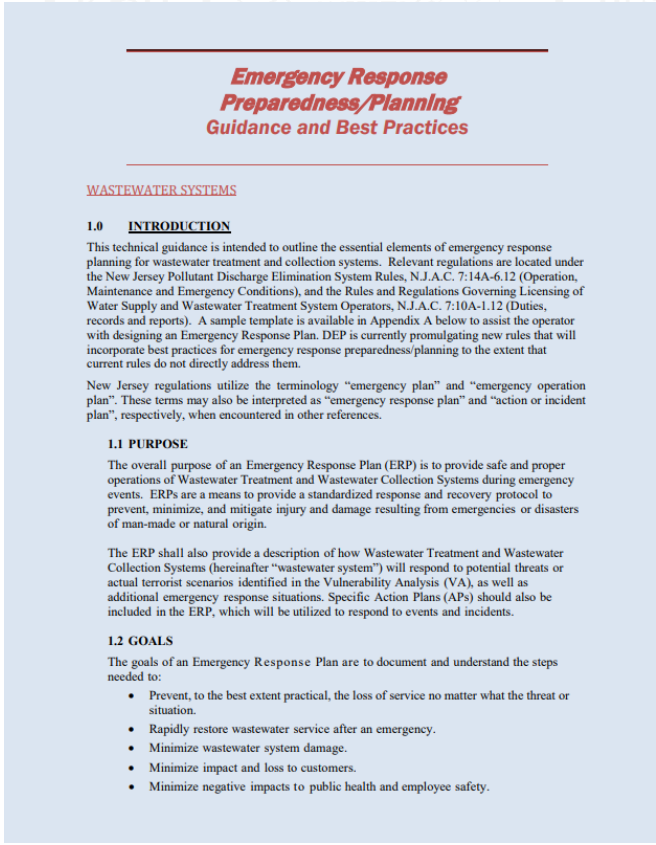
Wastewater is often an overlooked part of RV and mobile home parks.
If not operated correctly, they could be an overwhelming part as well.

Facilities should start by having 2 plans in place to assist.

1. Contingency Plan
   - Emergency numbers
   - List of vendors that can act quickly

   Example: https://www.nj.gov/dep/dwq/pdf/guidance_erp.pdf

2. Operations and Maintenance Plan
   - Notification procedures (notifying residents)
   - Planned inspection, maintenance duties
   - O&M manuals for all equipment



Emergency Response Preparedness/Planning
Guidance and Best Practices

WASTEWATER SYSTEMS

1.0 INTRODUCTION

This technical guidance is intended to outline the essential elements of emergency response planning for wastewater treatment and collection systems. Relevant regulations are located under the New Jersey Pollutant Discharge Elimination System Rules, N.J.A.C. 7:14A-6.12 (Operation, Maintenance and Emergency Conditions), and the Rules and Regulations Governing Licensing of Water Supply and Wastewater Treatment System Operators, N.J.A.C. 7:10A-1.12 (Duties, records and reports). A sample template is available in Appendix A below to assist the operator with designing an Emergency Response Plan. DEP is currently promulgating new rules that will incorporate best practices for emergency response preparedness/planning to the extent that current rules do not directly address them.

New Jersey regulations utilize the terminology "emergency plan" and "emergency operation plan". These terms may also be interpreted as "emergency response plan" and "action or incident plan", respectively, when encountered in other references.

1.1 PURPOSE

The overall purpose of an Emergency Response Plan (ERP) is to provide safe and proper operations of Wastewater Treatment and Wastewater Collection Systems during emergency events. ERPs are a means to provide a standardized response and recovery protocol to prevent, minimize, and mitigate injury and damage resulting from emergencies or disasters of man-made or natural origin.

The ERP shall also provide a description of how Wastewater Treatment and Wastewater Collection Systems (hereinafter "wastewater system") will respond to potential threats or actual terrorist scenarios identified in the Vulnerability Analysis (VA), as well as additional emergency response situations. Specific Action Plans (APs) should also be included in the ERP, which will be utilized to respond to events and incidents.

1.2 GOALS

The goals of an Emergency Response Plan are to document and understand the steps needed to:

- Prevent, to the best extent practical, the loss of service no matter what the threat or situation.
- Rapidly restore wastewater service after an emergency.
- Minimize wastewater system damage.
- Minimize impact and loss to customers.
- Minimize negative impacts to public health and employee safety.

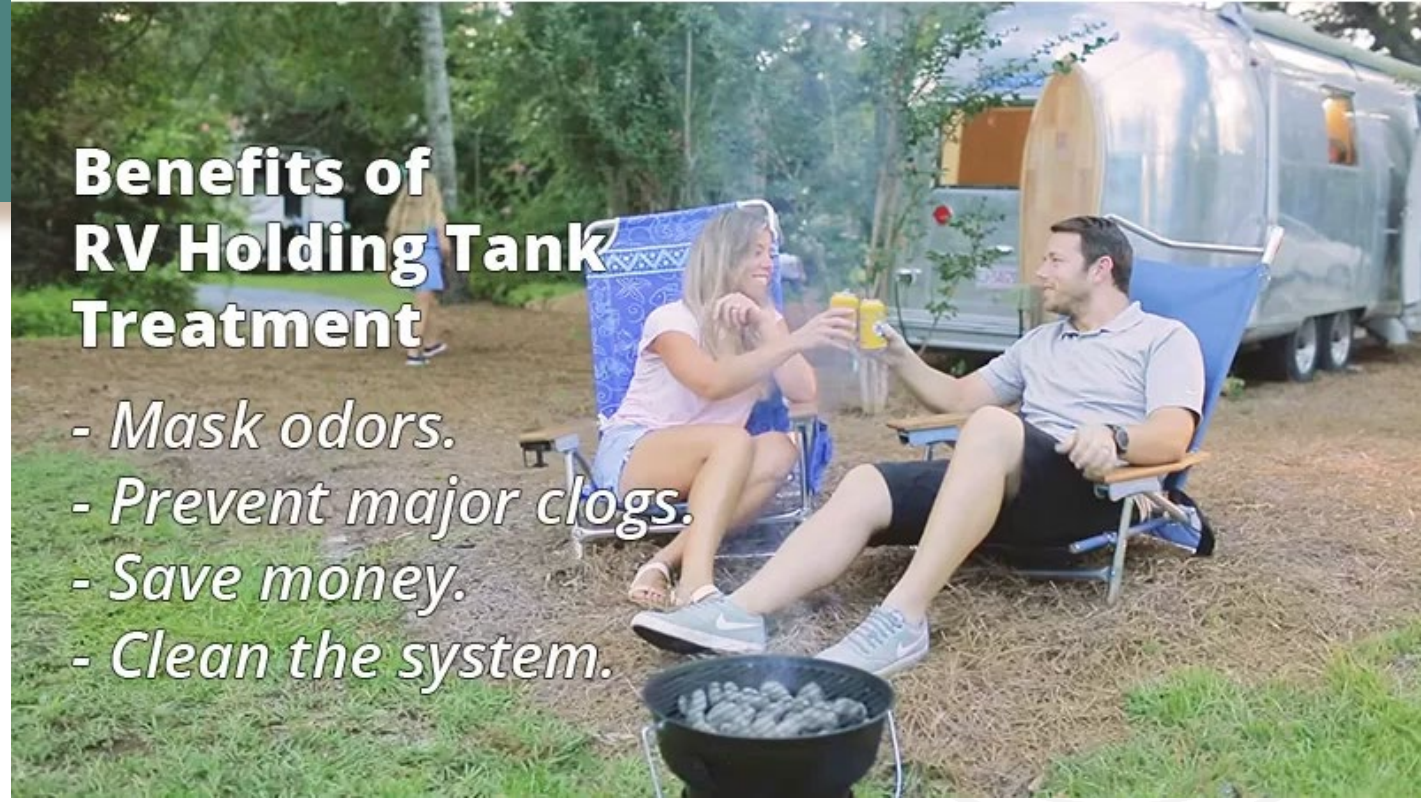
Individual permit – Both items required by ADEQ for permit amendments

Notify residents

Annual reminders should be sent out to residents

- Don’t flush grease down the drains
- Prevent non-flushable items
  - Wipes
  - Kleenex
  - Q-Tips
- Use Odor inhibitors that will not negatively affect treatment processes

Source: https://www.mewea.org/pump-clog-resources/outreach-materials-dont-flush-baby-wipes-campaign/



RV Toilet Chemical Cleaners and Odor inhibitors shouldn't contain:

- Formaldehyde (or para-Formaldehyde)
- Zinc or copper
- Pesticides

Use odor control chemicals sparingly that are enzyme or bacteria based

Do not use large amounts of bleach and other disinfectants

Wastewater Disposal in RV/MH Parks

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All Systems Have Conveyance/Collection Systems

- 4-inch HCS
- Manhole and piping system

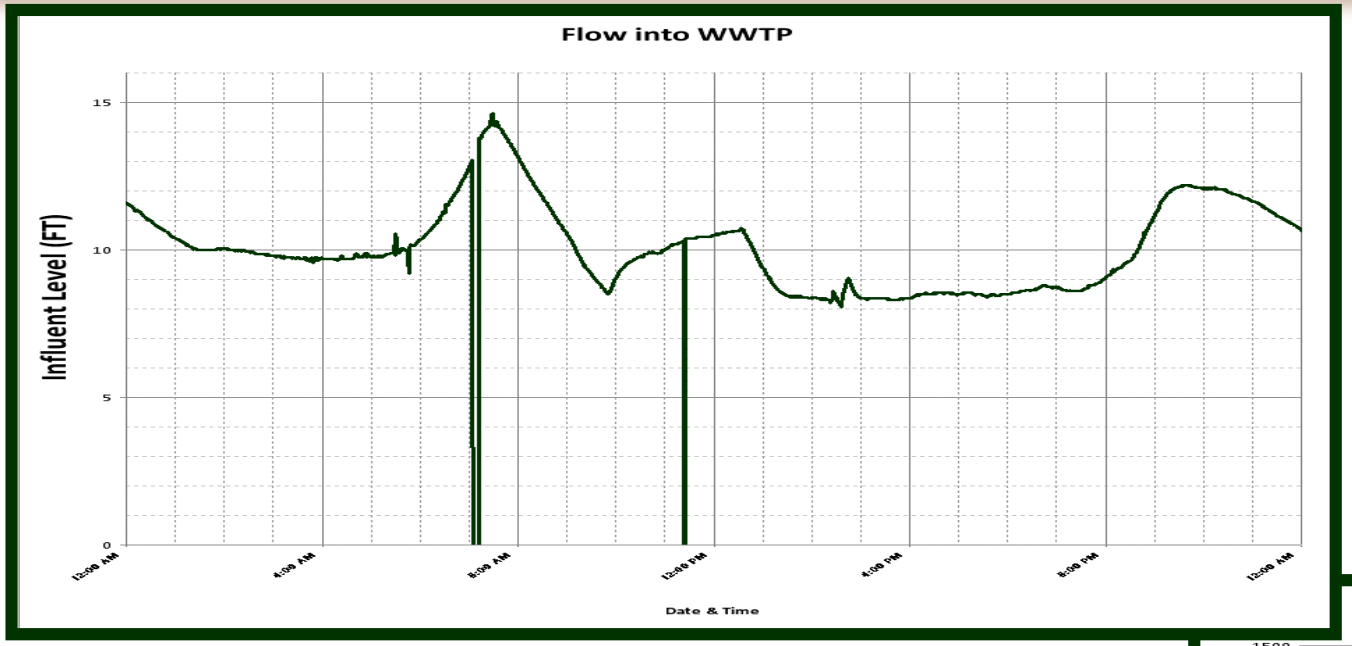
Some systems are connected to Larger Wastewater Treatment plants

- Gravity flow
- Lift Station and Force Main

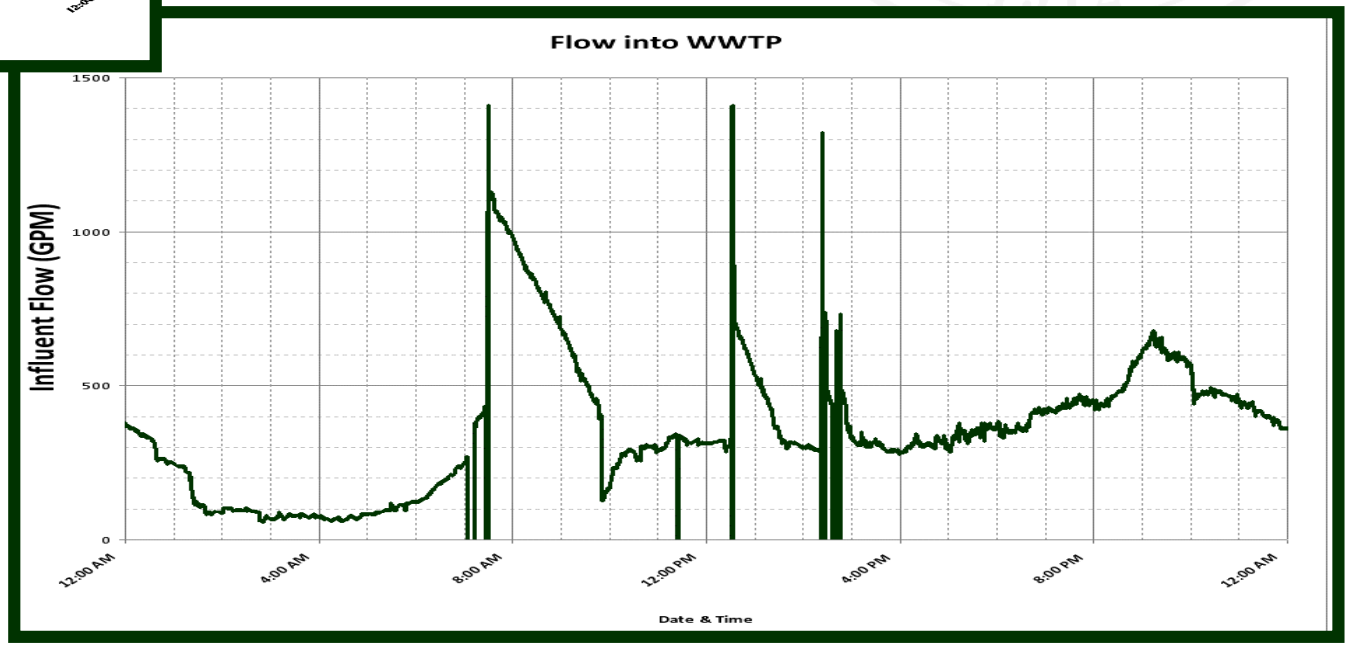
While some have Onsite Wastewater Treatment

- Septic Tanks
- Alternative Onsite treatment plants
- Small package Plants

Typical Residential Daily WWTP Flow



Gravity

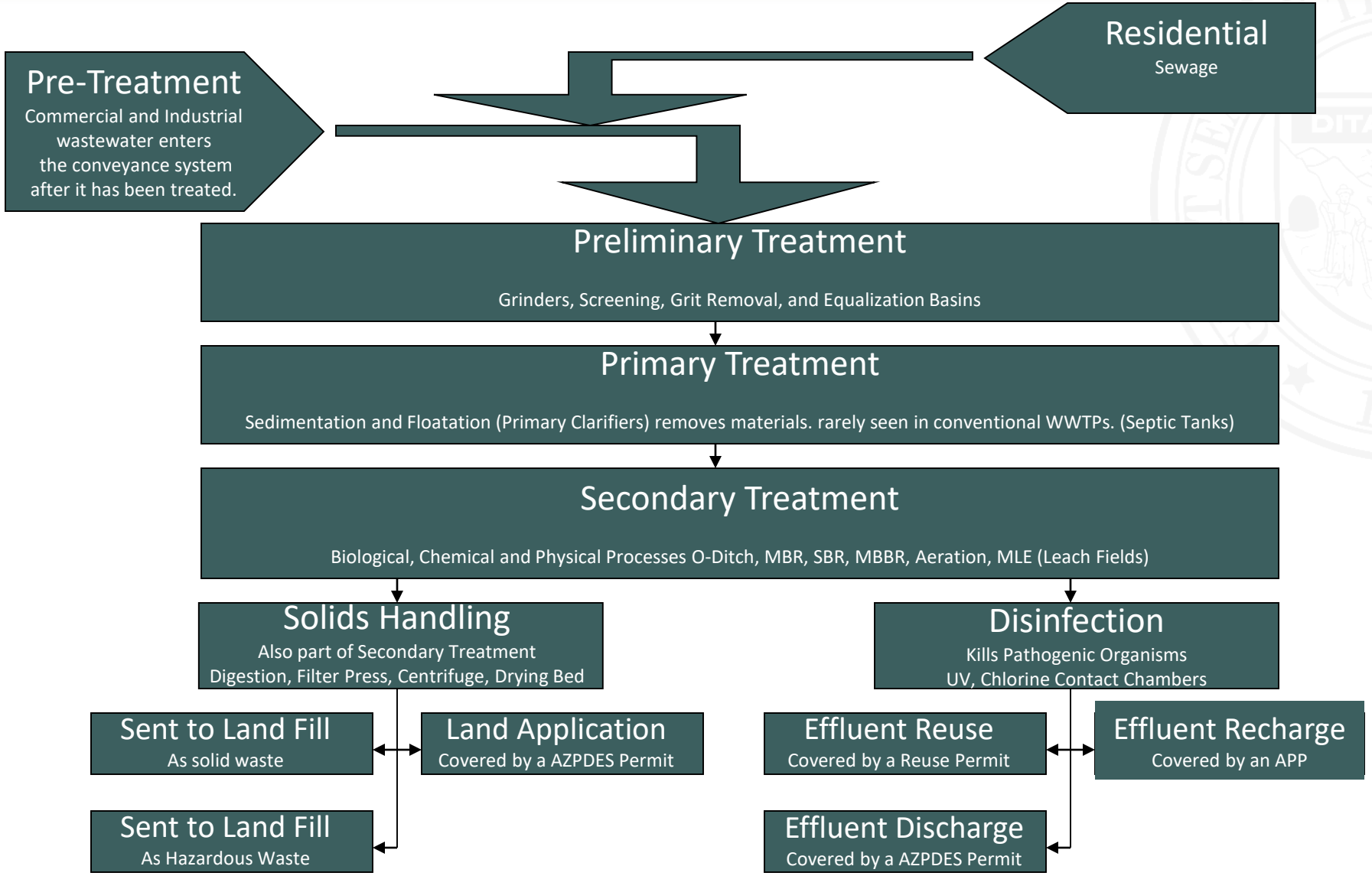


Force Main

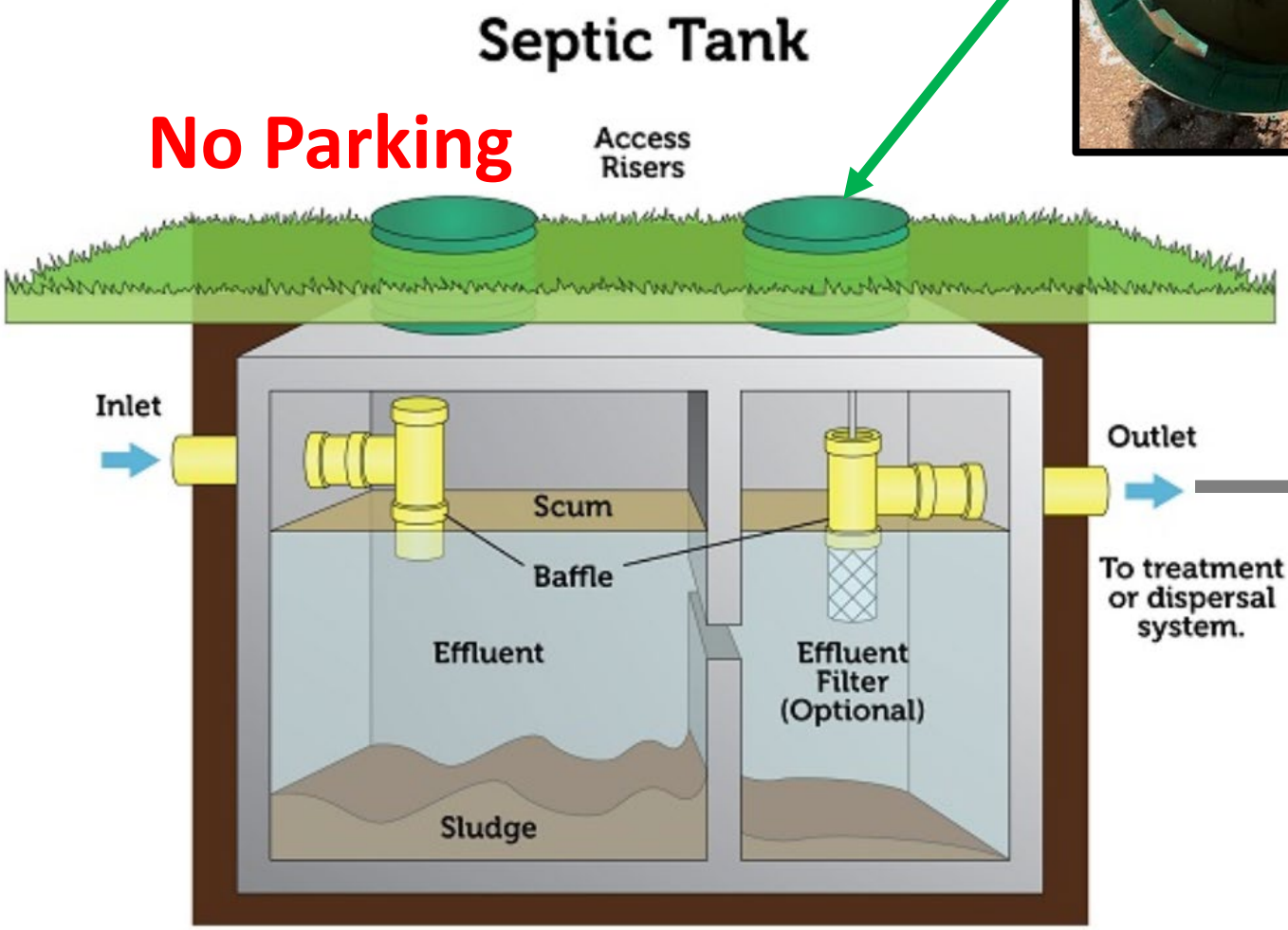
Understand the settings on your pump station to prevent:

- Over/underfeeding the WWTP
- Allowing septic/odorous conditions
- Seasonal adjustments may be necessary

The Treatment Process



Septic Tanks



Disposal Field

No Parking

Source: https://www.epa.gov/septic/types-septic-systems

Ensure Septic tanks are not overloaded

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Mobile Home/RV park owners need to ensure Systems are not overloaded

R18-9-A314. Septic Tank Design, Manufacturing, and Installation for On-site Wastewater Treatment Facilities

Criteria for Septic Tank Size and Design Flow			
Number of Bedrooms	**Fixture Count**	**Minimum Design Liquid Capacity (gallons)**	**Design Flow (gal/day)**
1	7 or less	1000	150
	More than 7	1000	300
2	14 or less	1000	300
	More than 14	1000	450
3	21 or less	1000	450
	More than 21	1250	600
4	28 or less	1250	600
	More than 28	1500	750
5	35 or less	1500	750
	More than 35	2000	900
6	42 or less	2000	900
	More than 42	2500	1050
7	49 or less	2500	1050
	More than 49	3000	1200
8	56 or less	3000	1200
	More than 56	3000	1350

https://apps.azsos.gov/public_services/Title_18/18-09.pdf

Residential Fixture Type	Fixture Units	Residential Fixture Type	Fixture Units
Bathtub	2	Sink, bar	1
Bidet	2	Sink, kitchen (including dishwasher	2
Clothes washer	2	Sink, service	3
Dishwasher (Separate from kitchen)	2	Utility tub or sink	2
Lavatory, single	1	Water closet, 1.6 gallons per flush (gpf)	3
Lavatory, double in master bedroom	1	Water closet, >1.6 to 3.2 gpf	4
Shower, single stall	2	Water closet, greater than 3.2 gpf	6

A good rule of thumb would be no more than:

2 RVs per 1,000 gallon septic tank

3 RVs per 1,500 gallon septic tank

4 RVs for 1,800 or 3 x Q(flow)

2Q + 1,500 for tanks 2,000 or larger

Mobile Homes could be larger and should be calculated individually

Septic Tanks

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Mother Nature does most of the work

Tanks should routinely be emptied

- Check tanks annually with a sludge judge
- At a minimum, tanks shall be emptied once every 5 years
- Empty high usage tanks prior to high traffic season

Microbiology works slower in the winter

- Over disinfection can kill biology (COVID Concern)

Evaporation and transpiration work slowest during the winter months

Too much flow can damage leach fields

- Water meters can notify of too much flow
- Trickling for winter months

A standard rule of measurement is that you're due for a pump out when the solids (scum + sludge) accumulate to about 30 – 50% of the total volume your tank

https://www.amazon.com/Septic-Checker-Without-Diameter-clogged/dp/B075XQ6QC4

DO NOT TRICKLE TO DRAINS

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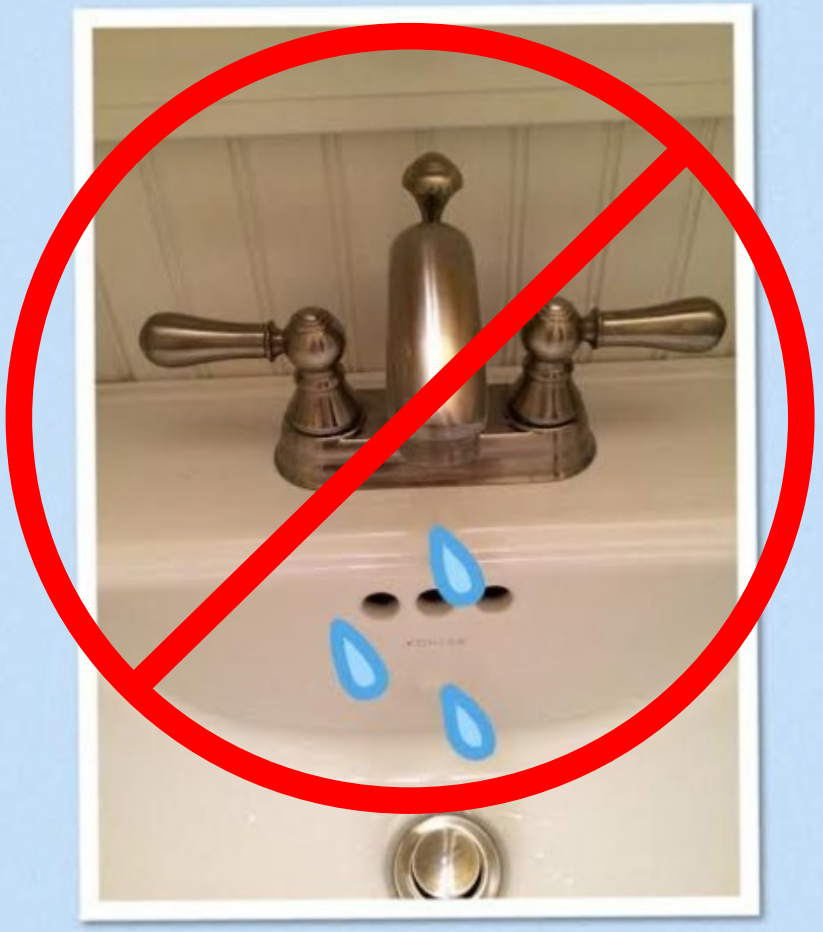
LEAVE A LITTLE WATER TRICKLING FROM YOUR TAPS

DURING THE **FREEZING WEATHER SEASON** TO PREVENT **FROZEN/BROKEN WATER LINES!**

When you have FREEZING temperatures, leave the faucet on to drip overnight to prevent pipes freezing.



New leach fields can be hard to locate in an existing MH/RV Park

How to Keep RV Pipes from Freezing

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<u>The following list was found online</u>

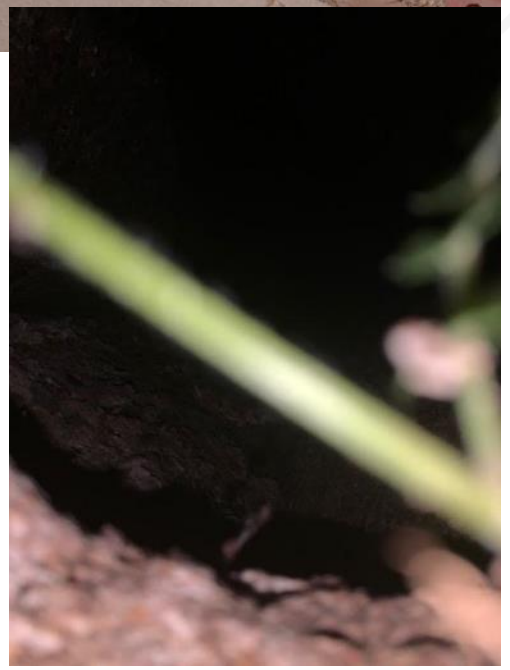
1. Open Cabinet Doors in the RV circulate heat.
2. Put Insulation around pipes.
3. Insulate the holding tank.
4. Use Heat Tape on RV Pipes.
5. Skirt Your RV.
6. Close Gray Valve and Use Onboard Fresh and Waste Water Tanks.
7. Insulate Your RV Bays.
8. Head to a Warmer Location.

Maintain your site

Prevent infrastructure from being hidden

- Dirt, gravel, or asphalt
- Vegetation
  - Can hide animal dangerous to infrastructure and humans
  - Root intrusion can damage infrastructure
  - Can clog screen and other equipment
  - Fire hazard

Look for signs of inflow or infiltration



Air Release Valves, Pump vents, and tank vents

- Screens to prevent bugs, etc.

https://www.amazon.com/

Above Ground PVC

- Paint PVC to prevent UV degradation
- Wrap pipes
- Metal above (corrosion protection below), PVC below

Alternative WWTPs

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Microbiology (bugs)

- Ensure that the microorganisms have food
- Sample sludge to look at color
- Good F/M (New sludge that is hungry)
- Low F/M (High energy costs, poor treatment, and effluent solids)

https://www.tpomag.com/online_exclusives/2013/06/modified_settleability_test_for_activated_sludge_treatment

https://www.ebsbiowizard.com/mixed-liquor-volatile-suspended-solids-mlvss-mlss-1056/

Equipment

- Make sure blowers are working
  - Intakes are clear
- Pumps are not clogged
  - If possible, test flow of each pump
- Test alarms and generators monthly
  - All lift/pump stations should have high-high and low-low alarms
  - Alarms should be audible and visual
  - Place a phone number outside that a passerby can call

R18-9-A313 (B) for general permits O and M

In addition to operation and maintenance requirements in the general permit or specified in the O and M manual, the permittee shall ensure that the following tasks are performed, as applicable:

1. Pump accumulated residues, inspect and clean wastewater treatment and distribution components, and manage residues to protect human health and the environment;

2. Clean, backwash, or replace effluent filters according to the manufacturer's instructions, and manage residues to protect human health and the environment;

3. Inspect and clean the effluent baffle screen and pump tank, and properly dispose of cleaning residue;

4. Clean the dosing tank effluent screen, pump switches, and floats, and properly dispose of cleaning residue;

5. Flush lateral lines and return flush water to the pretreatment headworks;

6. Inspect, remove and replace, if necessary, and properly dispose of filter media;

7. Rod pressurized wastewater delivery lines and secondary distribution lines (for dosing systems), and return cleaning water to the pretreatment headworks;

8. Inspect and clean pump inlets and controls and return cleaning water to the pretreatment headworks;

9. Implement corrective measures if anomalous ponding, dryness, noise, odor, or differential settling is observed;

10. Inspect and monitor inspection and access ports, as applicable, to verify that operation is within expected limits for:
    a. Influent wastewater quality;
    b. The pressurized dosing system;
    c. The aggregate infiltration bed and mound system;
    d. Wastewater delivery and the engineered pad;
    e. The pressurized delivery system, filter, underdrain, and native soil absorption system;
    f. Saturation condition status in peat and other media; and
    g. Treatment system components;

11. Inspect tanks, liners, ports, seals, piping, and appurtenances for watertightness under all operational conditions;

12. Manage vegetation in areas that contain components subject to physical impairment or damage due to root invasion or animals;

13. Maintain drainage, berms, protective barriers, cover materials, and other features; and

14. Maintain the usefulness of the reserve area to allow for repair or replacement of the on-site wastewater treatment facility

Septage Management

Accept dumping that the system can handle

- Overloading can shock the system
- ADEQ is working on a substantive policy for dump sites

Ensure back flow prevention of public water (Hose)

- Garden hose checks are not enough
- BPAs should be tested annually
- Ensure freeze protection
- Signage

Dump stations could contain pretreatment

- Separate tank that equalizes flow to WWTP
- Aeration
- Screening

Treating wastewater is not free

Create a separate budget

- Consider a savings account for large capital expenses

Connection Fees

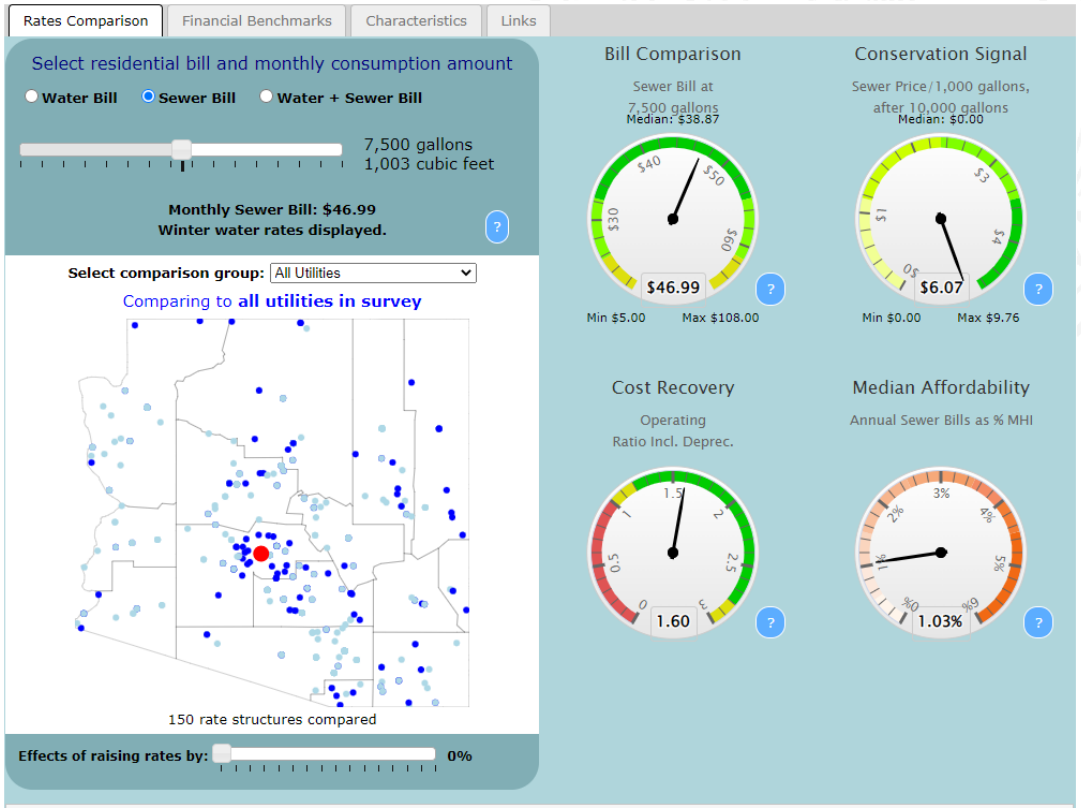
- Typically stored for future expansion
- Used for end of life large capital

Flow Based Fees

- Help promote water conservation
- Typically based off of water meters

Fixed Fees

- Help support day to day operation
- Sometimes charged when there is no flow



https://dashboards.efc.sog.unc.edu/az

Questions

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