
Engineer's Water & Septic Adequacy Report

Re: 7210 Hollies Acres Dr. Salcha, AK

Legal: Lot H1 Hollies Acres Subdivision

Inspected by: Timothy Henry, P.E. and Dave Mowery

Inspection date: August 21, 2020

Owners: State of Alaska Department of Natural Resources for the Department of Administration
Property: 3 Bedroom Single Family Residence

Wastewater Disposal System: **FAILED – The leach field needs replaced.**

Septic Tank Status: **FAILED – The tank needs replaced.**

Water Supply: **UNKNOWN – The well wasn't functional**

This report was prepared for you after the onsite inspection completed on August 21, 2020. My conclusion, based on site inspection, testing and analysis is that the water supply and septic system does not meet the minimum construction standards and performance requirements set by the Alaska Department of Environmental Conservation (ADEC) for a 3 bedroom home and the following corrections are required.

Item required for correction is as follows:

1. Install an appropriate sanitary seal for the 6" well casing. Install a new water supply line between the well and the crawlspace ensuring that it is carefully insulated and contains a self-regulating heat trace. Replace the water pump and make all corrections as needed to freeze damaged water pipes throughout the house to cure any leaks and restore full functionality to the water supply system.
2. Excavate and correct the shifted sewer line and foundation cleanout riser pipe for the sewer main. There is a soil blockage on the line at the location of the cleanout and it's suspected that the line has frost heaved and a coupling has come apart.
3. Have the failed septic tank and leach field replaced by a Certified Installer according to the ADEC installation requirements for a 3 bedroom home. With solids observed in the second chamber of the septic tank baffle appears to be failed and the leach field was not absorbing adequately.

Water Supply

The water source consists of a 6-inch drilled steel well casing located northwest of the house. The well is wide open and needs to have a sanitary seal. The private water well meets all separation distance requirements established by ADEC.

No bacteriological water sample was collected as part of this testing because the water supply was not functional during time of inspection.

Wastewater Disposal System

ADEC records for this system were not located for this property both at the online Septic Tracking System and in the hard copy files at the local ADEC office. The system is assumed to be original to the house from 1984.

The system did not pass the surge capacity testing and there appears to be a blockage at the sewer line at the location of the sewer cleanout. This will need to be excavated and corrected.

Solids were observed in the second chamber of the septic tank. Using a high definition camera we were able to view inside the tank and confirm it doesn't have a baffle. This doesn't meet ADEC requirements and replacement of the tank is recommended.

The absorption part of this test was conducted by adding water from a water holding tank that we brought with us directly to the absorption field. Using floats calibrated in the absorption field and septic tank the water level was measured in close intervals in conjunction with the total gallons added. The leach field has frost heaved and mud was observed in the leach field monitor tubes. The system did not meet the performance requirements and leach field replacement is recommended.

Observations

Number of Bedrooms: 3
Type of Residence: *Single Family*
Current System ADEC Filed: *No*

<u>Water</u>	<u>Observation</u>	<u>Recommended</u>
Water Supply Source:	<i>Private Well</i>	
Water Sample Location:	<i>n/a</i>	
Total Coliform:	<i>n/a</i>	
E. Coli:	<i>n/a</i>	
Production Adequate:	<i>No</i>	<i>450 gallons/day</i>
Observed Water Flow Rate:	<i>Unknown</i>	<i>3-5 gallons/minute</i>

<u>Wastewater Disposal System</u>	<u>Observation</u>	<u>ADEC Requirement</u>
Approximate Age of Absorption Field:	<i>Unknown</i>	<i>none</i>
Approximate Age of Tank:	<i>Unknown</i>	<i>none</i>
Septic Tank Material:	<i>Steel</i>	
Tank Size:	<i>1,000 gallons</i>	<i>1,000 gallons</i>
Compartments:	<i>1</i>	<i>2</i>
Required Design Flow Capable:	<i>No</i>	<i>450 gallons/day</i>

<u>Separation Distances</u>	<u>Observation</u>	<u>ADEC Requirement</u>
Private Well to Fuel Tank*	<i>>25 feet</i>	<i>25 feet</i>
Private Waterline/Holding Tank to Fuel Tank	<i>>10 feet</i>	<i>10 feet</i>

Private Well to Private Sewer Line or c/o	>25 feet	25 feet
Private Well to Septic System	>100 feet	100 feet
Septic System to Waterbody	>100 feet	100 feet
Absorption Field to >25% Slope	>50 feet	50 feet
<u>Lift Station:</u>	No	

*Applies to a buried fuel tank or above ground fuel tank equal to or greater than 500 gallons.
~ As indicated by provided historical documentation.

General Information

The ADEC does not currently regulate or enforce their construction and water quality standards for private water systems. If there are separation distance violations from potential contamination sources then they require waivers.

Water Flow Test

We typically perform the water flow test at an outside hose bib or other accessible water spigot. The water pressure inside the house can be affected by filters, water softeners, fittings or other flow restricting components. Sometimes we are not given access into the house for our testing and we do not assess system pressures at fixtures such as showers. The water flow test that we perform is not a direct well flow test and does not give accurate information on the full flow capacity of the well. Our water flow test gives an indication on system flow rates for the water distribution system given that we are typically using several hundred gallons of water during continuous use.

Wastewater Disposal System Testing Method

The wastewater disposal system was tested according to the ADEC document “Testing of On-Site Soil Absorption Systems” by Leroy C. Reid, JR., PH.D., P.E., D.E.E. A wastewater system must be able to absorb the design flow of 150 gallons per bedroom per day according to the ADEC and EPA specifications. Water was delivered directly into the absorption system monitor tube to verify if the system is in proper working condition. During the duration of the test the water flow rate, absorption rate and water levels in the absorption field and septic tank were measured and analyzed. Our analysis determines if the system is capable of absorbing the design flow for the home within a 24 hour period without water backing up into the septic tank.

Septic Tank Information

Under normal use and regular pumping, a typical steel septic tank should last around 25 years. Plastic tanks will last much longer. Recommended pumping is every 2 years. We are not able to guarantee the longevity of the tank since it depends on the owners’ maintenance and soil conditions. When a baffle fails in the tank or too much sludge accumulates before pumping, the absorption field becomes clogged.

Absorption Field Information

The absorption field not draining properly is usually the first failure to occur within a septic system. There is no way to determine the life remaining because it is usually a factor of sludge plugging the field. The soil pore spaces beneath a absorption field will eventually become clogged to the extent of preventing water absorption into the ground and the absorption field will need to be replaced.

Recommended Use and Maintenance for Homeowners

- The most important maintenance of your wastewater disposal system is to pump the septic tank. The ADEC recommends pumping when the sludge layer or floating scum layer exceeds 6 inches and at least every 2 years to prevent waste matter from carrying over and plugging the absorption field causing it to fail or backup into the house. If you have higher than typical use, such as a large tub used frequently or higher than typical toilet paper usage then you may need to pump more often.
- Because of our arctic weather conditions and frozen ground the waste matter does not breakdown in the same manner as you would expect in warmer climates. For this reason additives such as yeast and enzymes have proven ineffective in breaking down solids in the septic tank.
- It is recommended to maintain snow cover over the wastewater system during winter months to reduce the risk of freezing.
- It is our recommendation to dispose of food waste in the garbage instead of using a garbage disposal. The ADEC recommends increasing the tank size by 250 gallons if a garbage disposal is to be used. If you use a garbage disposal you should pump your septic annually.
- Do not dispose of feminine products into your wastewater system because they can float and be carried into the absorption field with the water. Additionally the following items should not be put in to your wastewater system: coffee grounds, dental floss, disposable diapers, kitty litter, cigarette butts, condoms, fat, grease, or paper towels.
- A wastewater disposal system is designed to be in constant use during winter months to keep from freezing. If the home remains vacant during freezing conditions for a prolonged period of time it may require steaming the tank and absorption field in order to bring it back into operation.
- You should monitor the wastewater system. The following are indicators from the ADEC that it may be failing:
 - There is a sewage odor in the house or yard,
 - The sinks and toilets are draining slowly,
 - The plumbing is gurgling or backing up,
 - The ground over your drain field is wet or mushy,
 - The monitoring tubes have consistently elevated water levels.

Limitations

This report was produced for the use in a real estate transaction to verify if the wastewater system is in working condition on the date of our onsite inspection. We are relying on the information in the ADEC filings by the wastewater system installer. The installer is responsible for the proper design, soil analysis, site layout and installation. The homeowner is responsible for

appropriate use and routine maintenance for keeping a system performing well. This report is based on the current condition of the system at the time of inspection based on our observations and testing procedures. We did not have access to the covenants or as-built survey at the time of the inspection. Our liability is limited to the invoiced amount of this report.

Please feel free to contact us with any questions.

Sincerely,

Timothy Henry, P.E.



August 24, 2020

Attachments:

- None