OVERVIEW

This letter presents the design report for proposed improvements to the existing septic system for the subject property. The existing system consists of a 1,500-gallon concrete septic tank and a 1,500-gallon concrete pump chamber followed by dual capacity raised bed leachfields with two-feet of coarse sand for treatment. Each leach field is 1,512 square feet. The system was installed in the early 1990’s. The tanks are 25-feet and the leach fields are 50-feet from the two watercourses that intersect the property.

The property consists of five units of residential housing which are approximately 2,200 square feet. The discharge permit allows for daily flows of 600 gpd which can accommodate habitable square footage between 2,801 and 3,300 square feet. The owners would like to add an additional unit of affordable housing i.e. an ADU. The property’s total habitable square footage will be no more than 3,300 square feet. Most importantly, this proposal meets Section 4.15.621 Design Flow criteria and does not constitute an increase in permitted design flow.

Currently, the average daily water use (including irrigation) of the housing units is 340 gpd. With the addition of the ADU, the average wastewater flow will still remain significantly less than the design flow. The discharge permit allows for 600 gpd. As a conservative design approach the owners are proposing the installation of high efficiency toilets (1.28 gallons per flush), upgrading the shared laundry facility to front
loading high efficiency washer (15 gallons per wash) and the installation of low-flow shower heads to assist in conserving water.

We are proposing to add significant improvements to the existing onsite wastewater system. This includes a new watertight 1,500-gallon concrete septic tank with an AX20 textile fabric secondary pretreatment module and a Vericomm telemetry panel. This serves to provide the addition of secondary pretreatment as a mitigation for the existing reduced setback to watercourse, upgrades the system to meet current design criteria for a raised bed leachfield and overall improves the life of the system.

The following is a list of existing and proposed system components:

- New 1,500-gallon concrete septic tank.
- New AX20 textile fabric treatment system capable of treating 600-gpd.
- Existing concrete 1,500-gallon pump chamber.
- New Stinson Beach specific telemetry control panel.
- Existing dual (two-field) raised bed leach field system with a diversion valve.

SUPPORTING FIELDWORK

Dates:

- October 12th, 2021
- November 8th, 2021
- December 30th, 2021

Details:

- 1 x soil profile inspection pit
  - Conducted in the existing leach field area. The soils generally consist of gravelly loams underlain by gravelly sand alluvium to depths of 36-inches.
- Groundwater determination
- Passing performance evaluation of existing system
  - Excavations within the existing leach field system and hydraulic load test.

PROPOSED SYSTEM

New Septic Tank and AdvanTex Treatment System

A new 1,500-gallon concrete septic tank with an AdvanTex pretreatment unit is proposed. One AX20 unit is specified and can accommodate 600 gpd. The estimated settings for a 4 to 1
recirculation rate. The treatment setting should be determined at the final construction meeting and then be checked within a month of install.

**Existing Pump Chamber and New Telemetry Control Panel**

Existing 1,500-gallon concrete pump chamber and existing pump with associated controls to pump treated effluent to the existing leachfields. An overflow pipe is set in the risers of the tank to provide emergency storage within both tanks when necessary.

**Existing Dual Raised Bed Leach Field System**

Each single capacity existing leach field is 1,512-square feet. Per current code the required area for the 600-gpd design flow is 429-square feet. Each existing leach field is three and one half times larger than code requires and is therefore, significantly oversized. During our performance evaluation the existing system was excavated to observe the condition of the drain rock layer. There was no presence of any anaerobic build up within the drain rock and sand layer. The system is in excellent working order.

Leach Field design calculations are summarized below:

- Wastewater Application Rate Per Code: 1.4 gpd/ft²
- Primary Area Provided (per field): 1,512 ft²
- Primary Area Required (per field): 429 ft²
- Wastewater Application Rate Provided (per field): 0.40 gpd/ft²

**ADDITIONAL DOCUMENTS**

Three sets of construction plans.

This upgrade serves to improve the overall quality and life of the wastewater system and the conditions associated with the land and waters. If you have any additional questions, please email me at info@eckmanenvironmental.com.

Sincerely,

Noadiah S. Eckman, P.G.
Managing Geologist