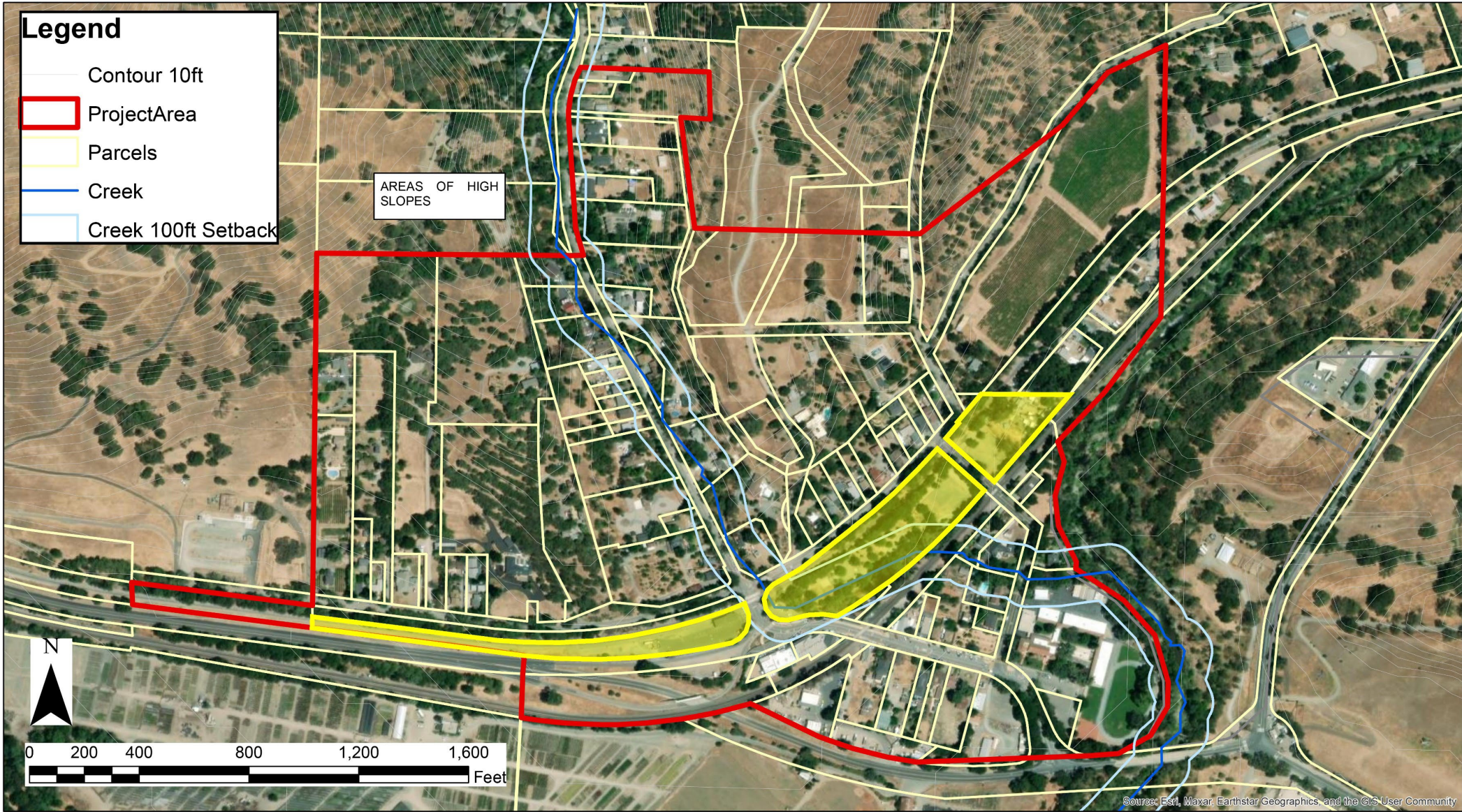


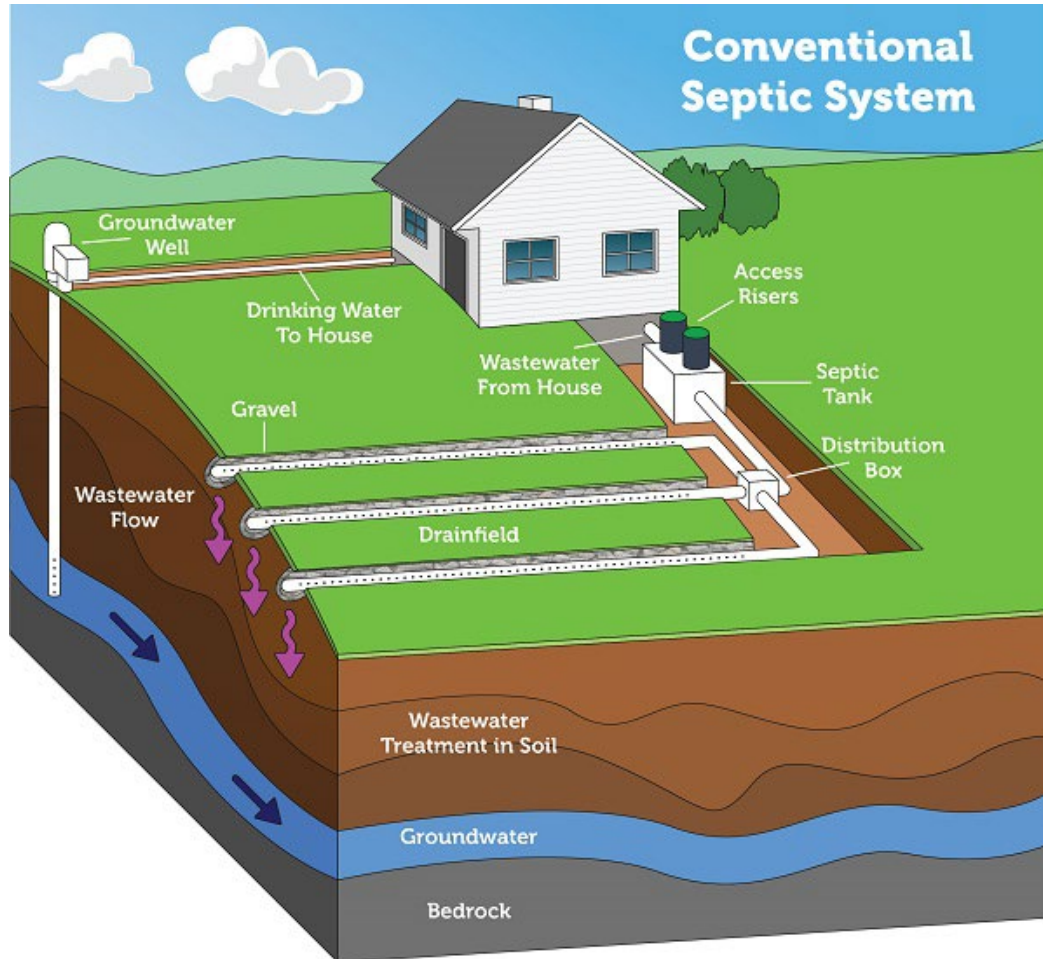
Sunol Phase 2 Feasibility Study

Alternatives and Costs for a Community Wastewater System

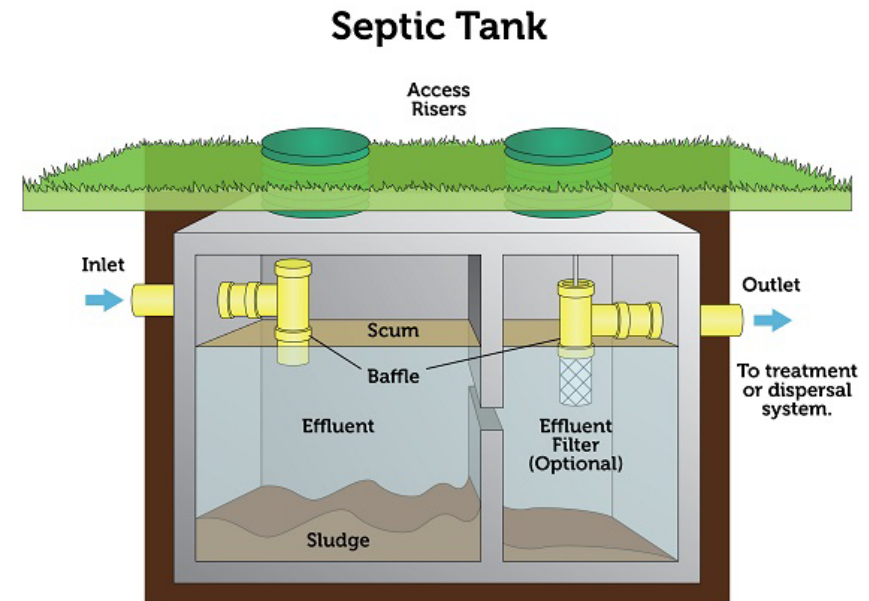
By Questa Engineering



What is an individual OWTs/septic system?



Please note: Septic systems vary. Diagram is not to scale.



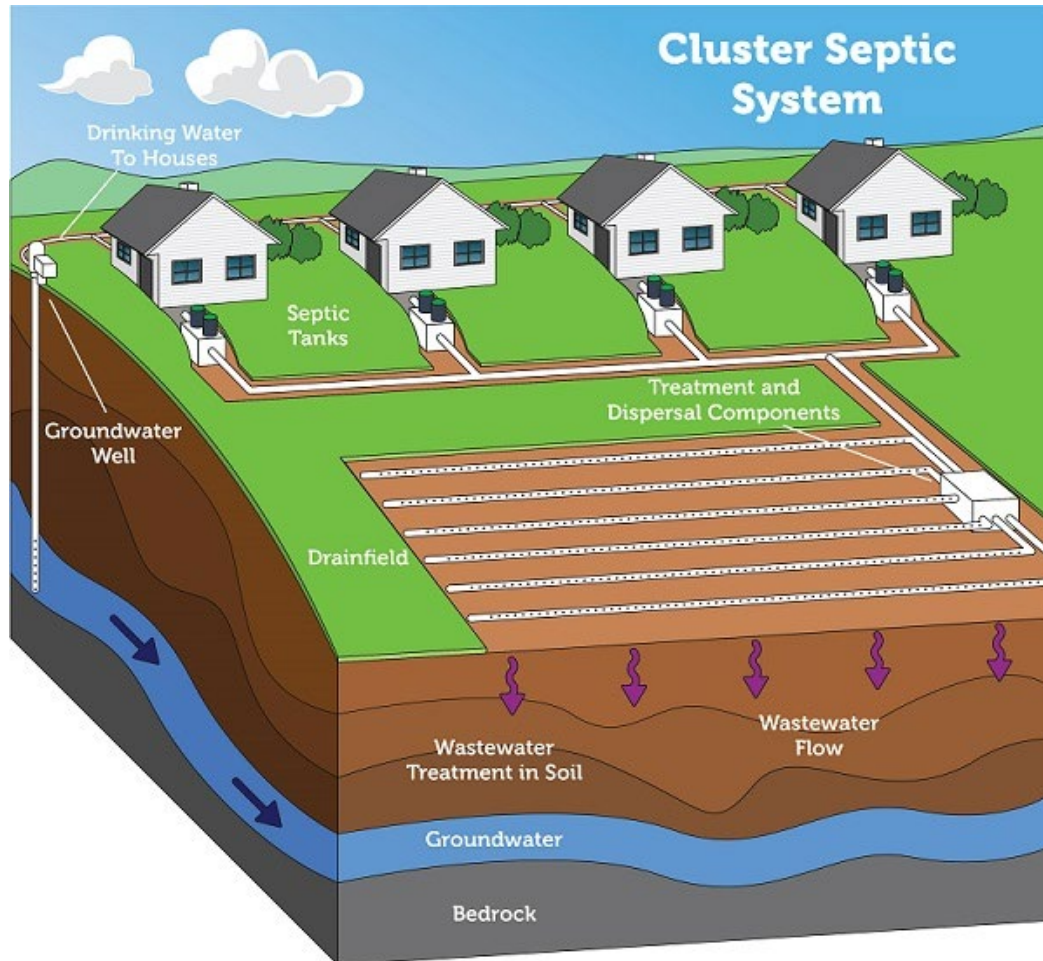
Please note: The number of compartments in a septic tank vary by state and region.

All parcels in the Sunol study area currently handle wastewater with individual systems like this.

Status of the 107 Parcels in Study Area

Classification of Existing OWTS/Septic Systems	#	%
System serving parcel is up to code or close	20	18%
System serving parcel is not up to code, or parcel has too little dispersal area to install up to code system	37	35%
No documentation of a system serving parcel	50	47%

What is a community wastewater management system?



Please note: Septic systems vary. Diagram is not to scale.

Collection of wastewater from multiple properties with common/shared treatment and disposal system at a centralized location

Questa has developed 7 alternatives for Sunol to consider.

#	Type	Alternative
1	OWTS	No Project
2		Onsite Wastewater Management Program
3	OWTS + New Restrooms using Depot Gardens Leach Field	Expanded use of existing Depot Gardens Leach field
4		Expansion of Depot Gardens leach field
5	Community Wastewater Systems ✓ <i>Treatment at Bond St</i> ✓ <i>Disposal at Depot Gardens</i> ✓ <i>OWTS management district</i>	Effluent collection with Advantex treatment
6		Conventional sewer system with MBR package plant
7		Combination effluent and conventional sewer with Advantex or MBR package plant

Important Notes

- It is not yet clear how much of the Bond Street Parcel will be available to the project. As that is clarified, the alternatives will be refined to reflect the way forward.
- All costs in this presentation are informed estimates.



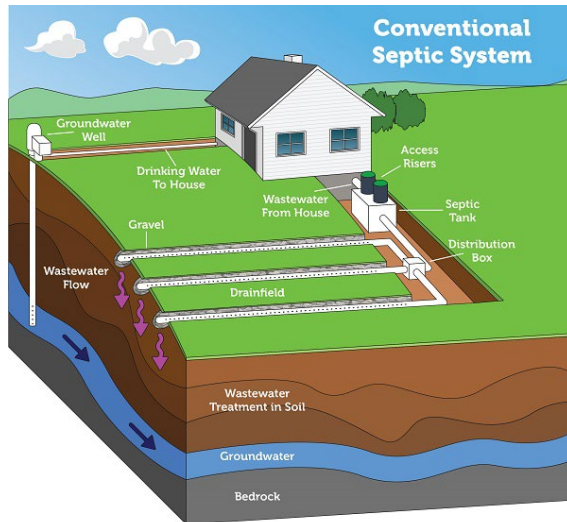
Alternatives 1 and 2

Minimal or No-project, no new
infrastructure

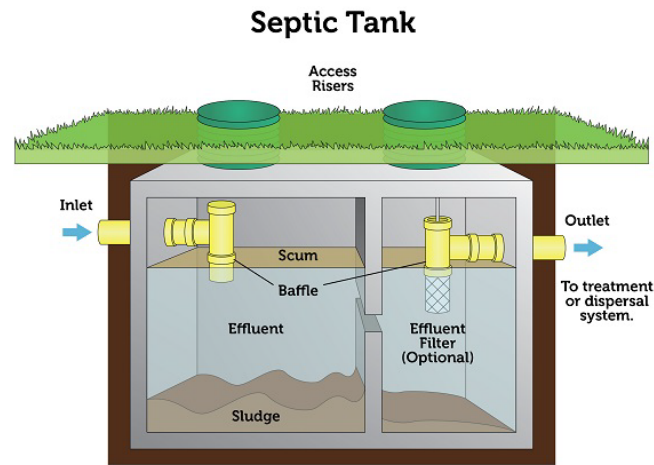
No.	Alternative	Description
1	No Project (Status Quo)	<ul style="list-style-type: none"> ➤ All property owners are individually responsible for compliance with the Alameda County Environmental Health Onsite Wastewater Treatment System Manual and County OWTS Ordinance
2	OWTS Management Program	<ul style="list-style-type: none"> ➤ Formation of a Public District for management and monitoring of OWTS within a defined area (Zone), which may include all or a portion of the Sunol Study Area ➤ Customized local standards for parcels <u>within the Management Zone</u>, in lieu of the OWTS Manual and Ordinance requirements ➤ Managed upgrades of existing and new OWTS ➤ Possible alternative solutions, including holding tanks with contracted septage pumper ➤ Streamlined Environmental Health OWS regulatory oversight process

Alternative 1 – Costs

Category	Costs
OWTS Maintenance and Repair Costs, per household	\$0 to \$102,240
Annual O & M Costs, per household	\$0 to \$1,700



Please note: Septic systems vary. Diagram is not to scale.

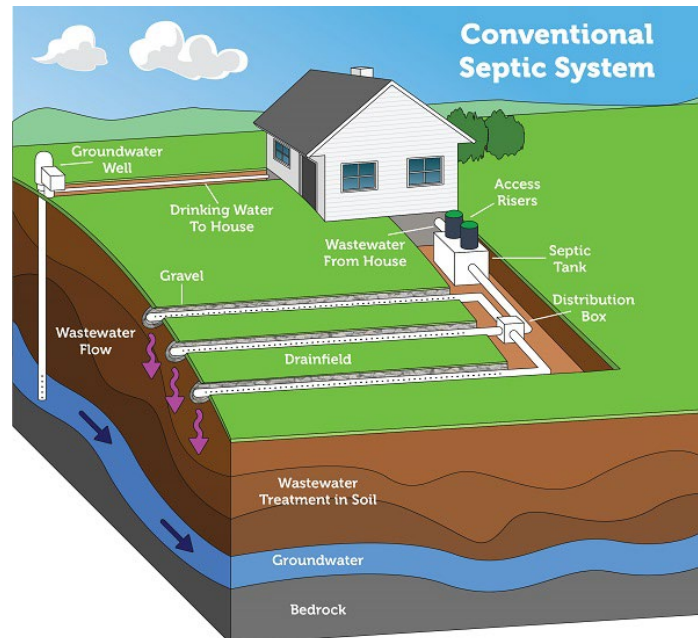


Please note: The number of compartments in a septic tank vary by state and region.

All parcels in the Sunol study area continue to handle wastewater with individual systems like this.

Alternative 2 – Costs

Category	Costs
OWTS Inspection, Repair, and Upgrade under Management District	\$4,983,300
Average per household	\$56,628
Annual O & M	\$124,190
Average per household	\$1,411



Please note: Septic systems vary. Diagram is not to scale.

- Special District formed to manage improvements to OWTS across the area
- Sunol specific policies, which may be more flexible or appropriate than existing county-wide EH regulation
- Costs to individuals are higher than in Alternative 1 because all systems will be reviewed and repairs and upgrades will be required

Alternatives 3 and 4

Public Bathrooms and Downtown
Revitalization

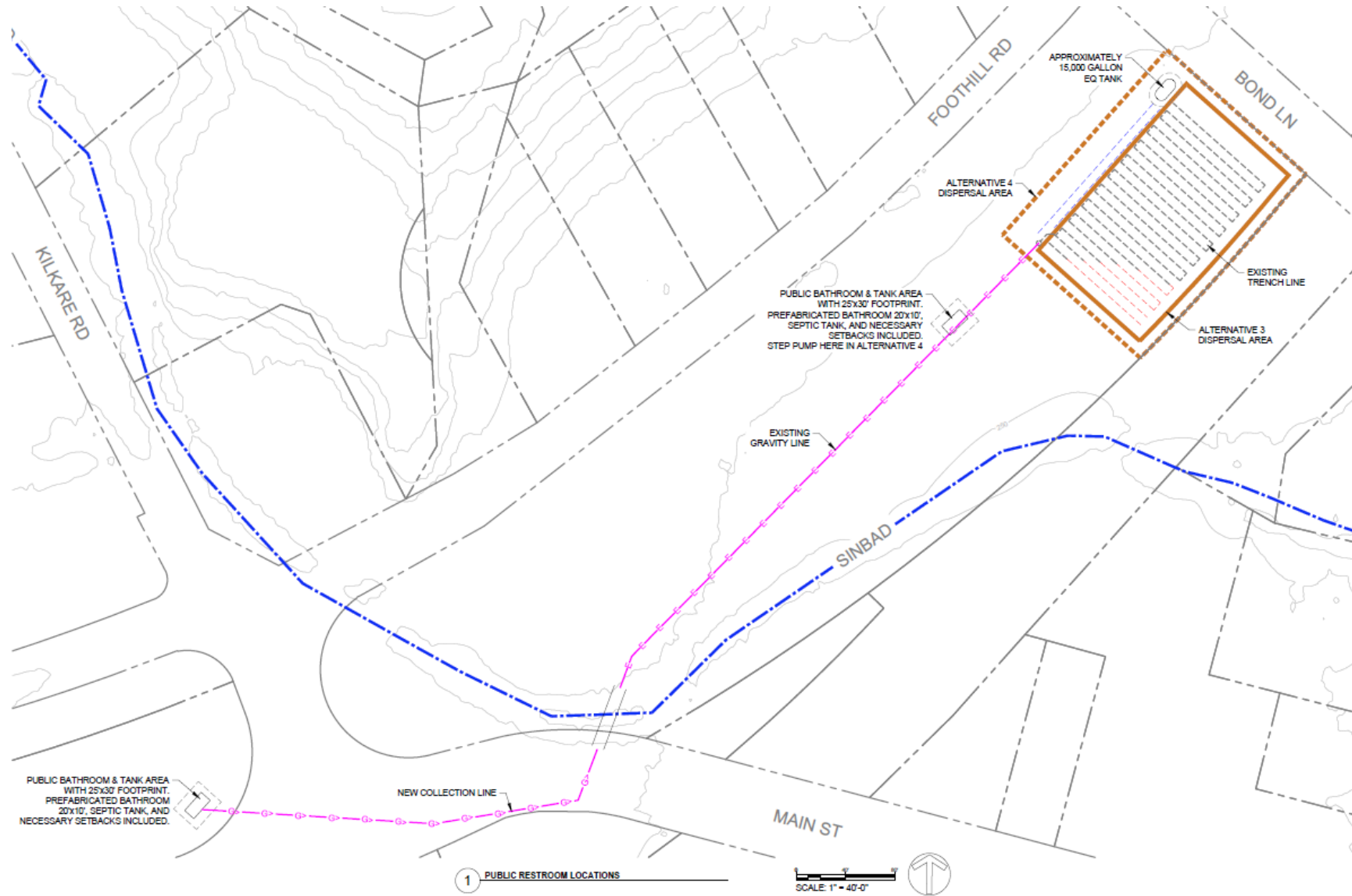
No.	Alternative	Description
3	<p>Depot Gardens Leach field Expanded Use (Standard OWTS)</p> <p>(+ OWTS Management Program)</p>	<ul style="list-style-type: none"> ➤ Use existing inactive gravity leaching trenches on County-owned land in Depot Garden to serve (2) new public restrooms (Train Depot & Gardens) ➤ Install septic tanks at new restrooms and piping from tanks to leach field ➤ Install manifold piping to spread the wastewater to the currently unused leaching trenches ➤ Form Management Zone specific to the Depot Gardens leach field and parcels served
4	<p>Depot Gardens Leach field Expanded Capacity (Advanced OWTS)</p> <p>(+ OWTS Management Program)</p>	<ul style="list-style-type: none"> ➤ Use and expand inactive leaching trenches on County-owned land on Depot Garden to serve (2) new restrooms plus some new commercial flow ➤ Install septic tanks at new restrooms and piping from tanks to leach field ➤ Modify existing leaching trenches for pressure distribution & increased infiltration capacity, and install new pump tank(s) (Advanced OWTS) ➤ Possible surplus capacity for disposal of limited volume of new commercial flow and/or holding tank wastewater hauled from individual parcels (residential or commercial) ➤ Form Management Zone specific to the Depot Garden leach field and parcels served

Alternative 4 – a step in the right direction

Alternative 4 could function as an interim step which could meet some community needs, like public bathrooms downtown, additional parking at Depot Gardens, and some support for growing businesses to handle septic needs through a pump and haul program.

These needs could be met shorter term, while the community works towards funding a community-wide wastewater management system (as described in alternatives 5,6 and 7).

Alternatives 3 and 4

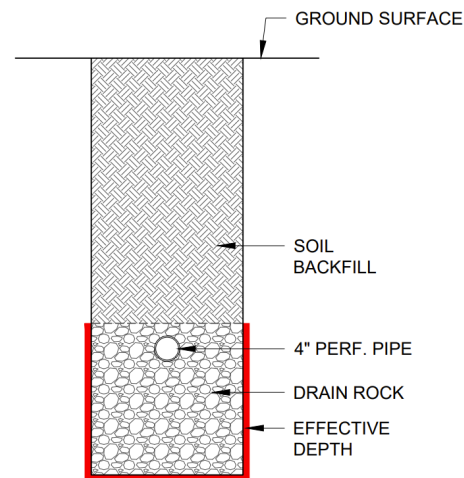


Alternative 3 – Costs

Category	Costs
Restroom Facilities	\$669,135
Wastewater Facilities	\$218,720
Total Facilities Costs	\$909,440
Annual O & M Costs	\$35,310



- New bathrooms at Depot Gardens and at Niles Canyon Railway connected to the existing leach field.
- Does not allow for parking over the Depot Gardens Leach field.



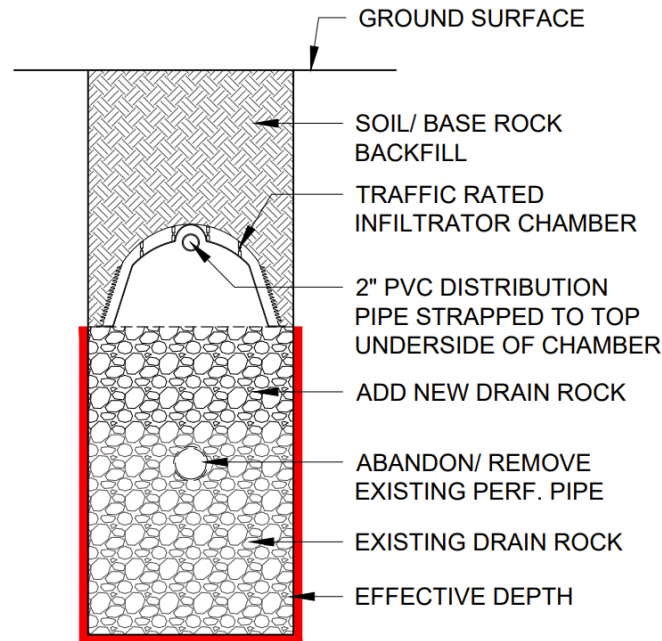
EXISTING TRENCHES



Alternative 4 – Costs

Category	Costs
Restroom and Parking Facilities	\$821,578
Wastewater Facilities	\$838,395
Total Facilities Costs	\$1,659,973
Annual O & M Costs	\$44,176

- Allows parking over the modified leach field in Depot Gardens
- Public bathrooms in Depot Gardens and at Niles Canyon Railway
- Some surplus capacity available for pump and haul



MODIFIED TRENCHES



Alternatives 5-7:

Community Wastewater Systems

Serving commercial, mixed use and
residential parcels

Community Wastewater System Alternatives

- Collection
 - Conventional gravity sewer
 - Effluent sewer with septic tanks at each parcel
- Treatment
 - MBR package plant
 - Advantex Biofiltration
- Disposal
 - Leach fields at Depot Gardens and potentially Bond street parcel
 - Some disposal on Bond Street
- OWTS Management District for:
 - (1) System Ownership & Operations
 - (2) Management program for remaining OWTS

No.	Collection	Treatment	Dispersal
5	<p>Septic Tank–Effluent Sewer System</p> <ul style="list-style-type: none"> ✓ <i>Septic tanks on all parcels</i> ✓ <i>Central downtown lift station</i> 	<p>AdvanTex Biofiltration</p> <p>@ County owned Bond St Parcel</p>	<p>Disposal on County owned parcel @ Depot Gardens:</p> <ul style="list-style-type: none"> ➤ Modified new & existing leaching trenches ➤ Parking over leach field OK ➤ New drip dispersal irrigation ➤ Some overflow/reserve @ County Bond St. parcel
6	<p>Conventional Gravity Sewer System</p> <ul style="list-style-type: none"> ✓ <i>Abandonment of existing septic tanks on all parcels</i> ✓ <i>Central downtown lift station</i> 	<p>MBR Package Plant</p> <p>@ County Owned Bond St Parcel</p>	<p>Disposal on County owned parcel @ Depot Gardens:</p> <ul style="list-style-type: none"> ➤ Modified new & existing leaching trenches ➤ Parking over leach field OK ➤ New drip dispersal irrigation ➤ Some overflow/reserve @ County Bond St parcel
7	<p>Combination</p> <p>Effluent & Conventional Gravity Sewer System</p> <ul style="list-style-type: none"> ✓ <i>Septic tanks or grinder pumps on some individual parcels</i> 	<p>AdvanTex or MBR Package Plant</p> <p>@ County Owned Bond St Parcel</p>	<p>Disposal on County owned parcel @ Depot Gardens:</p> <ul style="list-style-type: none"> ➤ Modified new & existing leaching trenches ➤ Parking over leach field OK ➤ New drip dispersal irrigation ➤ Some overflow/reserve @ County Bond St. parcel

Alternative 5 - Costs

Category	Costs
Capital Costs	\$6,923,712*
<i>Range per household</i>	<i>\$49,455 to \$64,108</i>
<i>Annual Assessment per household (30 yrs/3%)</i>	<i>\$2,522 to \$3,269</i>
Annual O & M Costs	\$204,600
<i>Range per household</i>	<i>\$1,461 to \$1,894</i>

*Assumes 100% participation. Includes wastewater costs of Alternative 4. Per household costs could be reduced by grants and increases in number of households in the service area over time. Per household costs would be paid over time. O & M costs could be paid annually.

Septic Tank Effluent Pump (STEP) Collection System



Advantex Treatment

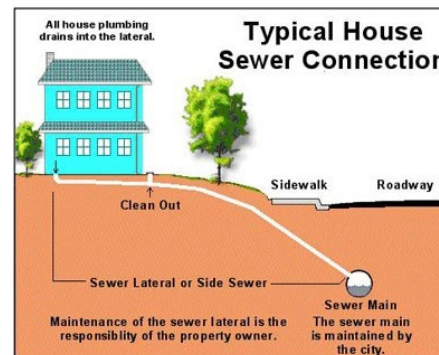


Alternative 6 - Costs

Category	Costs
Capital Costs	\$7,928,513*
<i>Range per household</i>	<i>\$56,632 to \$73,412</i>
<i>Annual Assessment per household (30 yrs/3%)</i>	<i>\$2,888 to \$3,744</i>
On-Lot Facilities Costs	See range below
Annual O & M Costs	\$237,600
<i>Range per household</i>	<i>\$1,697 to 2,200</i>

*Assumes 100% participation. Includes wastewater costs of Alternative 4. Per household costs could be reduced by grants and increases in number of households in the service area over time. Per household costs would be paid over time. O & M costs could be paid annually.

On-Lot Costs	Cost Range
Septic tank abandonments	\$3,000 to \$5,000
Grinder/Ejector Pumps	\$8,000 to \$12,000
Gravity Lateral Connections	\$5,000 to \$10,000
Pressure Lateral Connections	\$5,000 to \$10,000
Permitting & Inspection	\$ 1,500 to \$2,500



MBR Package Plant



Alternative 7 - Costs

Category	Costs
Capital Costs	\$7,575,739*
<i>Range per household</i>	<i>\$54,112 to \$70,146</i>
<i>Annual Assessment per household (30 yrs/3%)</i>	<i>\$2,760 to \$3,577</i>
Annual O & M Costs	\$202,400 to \$250,800
<i>Range per household</i>	<i>\$1,446 to 2,322</i>

*Assumes 100% participation and Cloacina installation, as it represents the higher end cost for this Alternative. Includes wastewater costs of Alternative 4. Per household costs could be reduced by grants and increases in number of households in the service area over time. Per household costs would be paid over time. O & M costs could be paid annually. O & M costs vary for alternative 7 because either an MBR or Advantex treatment unit could be used and they have different maintenance costs.



MBR
Package
Plant



Advantex

Cost Comparison - Alternatives 5, 6, & 7

Cost Item	Estimated Costs (\$)			
	Alt 5 Effluent Sewer	Alt 6 Conventional Sewer	Alt 7 Hybrid Effluent & Conventional Sewer	
Collection & Treatment	Advantex	Cloacina MBR	Advantex	Cloacina MBR
	6,085,317	7,090,118	5,862,712	6,737,344
Depot Gardens Dispersal Fields	838,395	838,395	838,395	838,395
Total Estimated Project Cost	6,923,712	7,928,513	6,701,107	7,575,739
Estimated Cost Per Parcel	\$49,455 - \$64,108	\$56,632 - \$73,412	\$47,865 - \$54,112	\$62,047 - \$70,146
Annual Assessment (30 yrs, 3%)	\$2,500 to 3,250	\$2,900 - \$3,750	\$2,500 - \$2,750	\$3,150 - \$3,600

Thank you