



REGEN

**LOS OLIVOS WASTEWATER HYBRID
COLLECTION ANALYSIS**

Prepared for:
Los Olivos Community Service District

Prepared by:
Regen AEC, PLLC

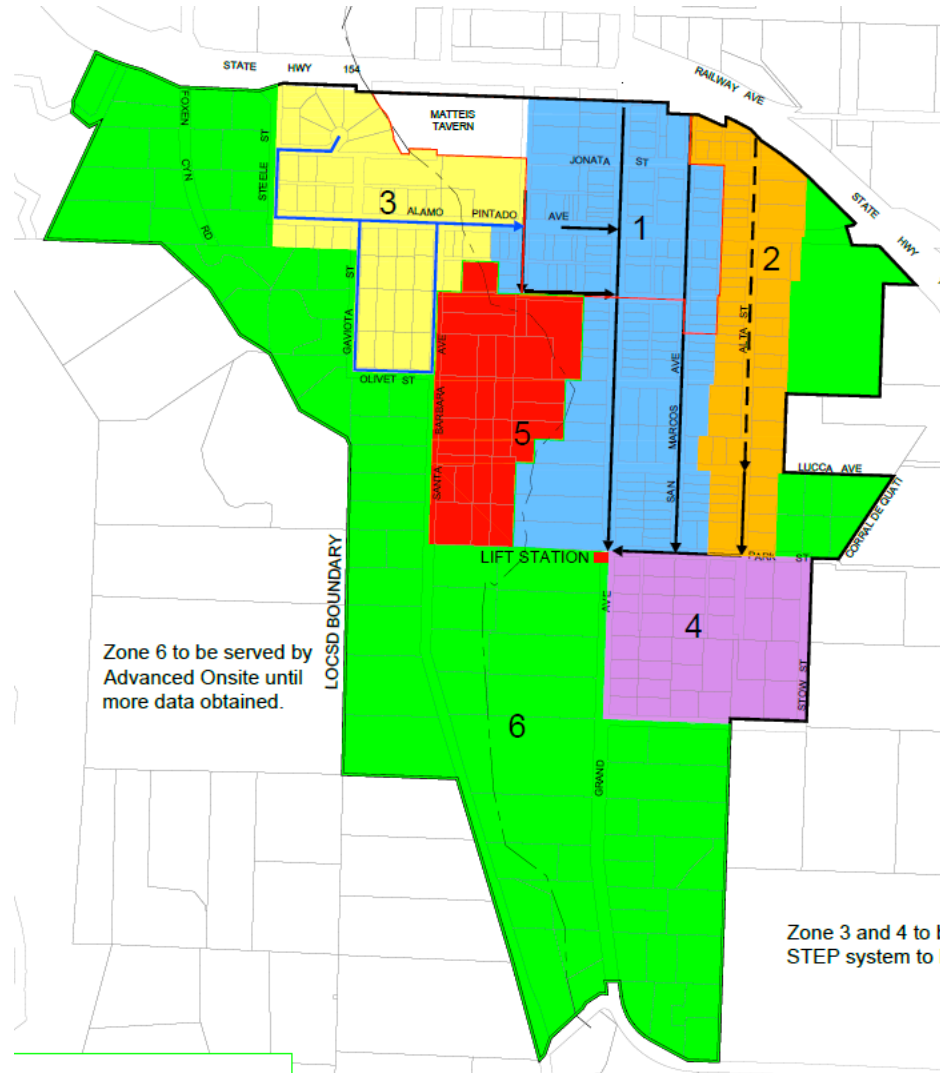


Initial Hybrid Collection System 15% Design Analysis

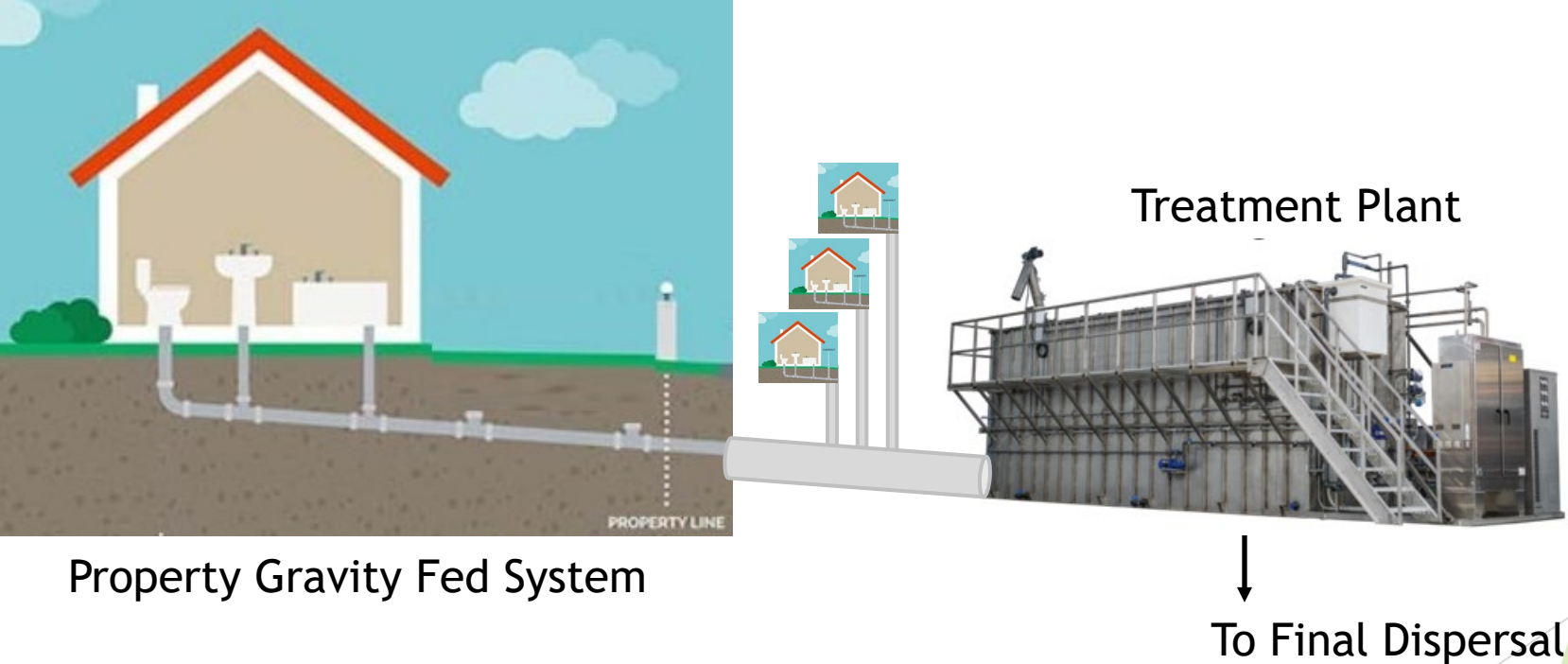
Based on 7.21.23 District proposed zoning

Considerations:

1. Zones 1 & 2 - Gravity Sewer
2. Zones 3, 4 & 5 - Effluent Sewer
3. Zone 6 - Advanced Onsite



Gravity Collection To Centralized Treatment Facility Overview

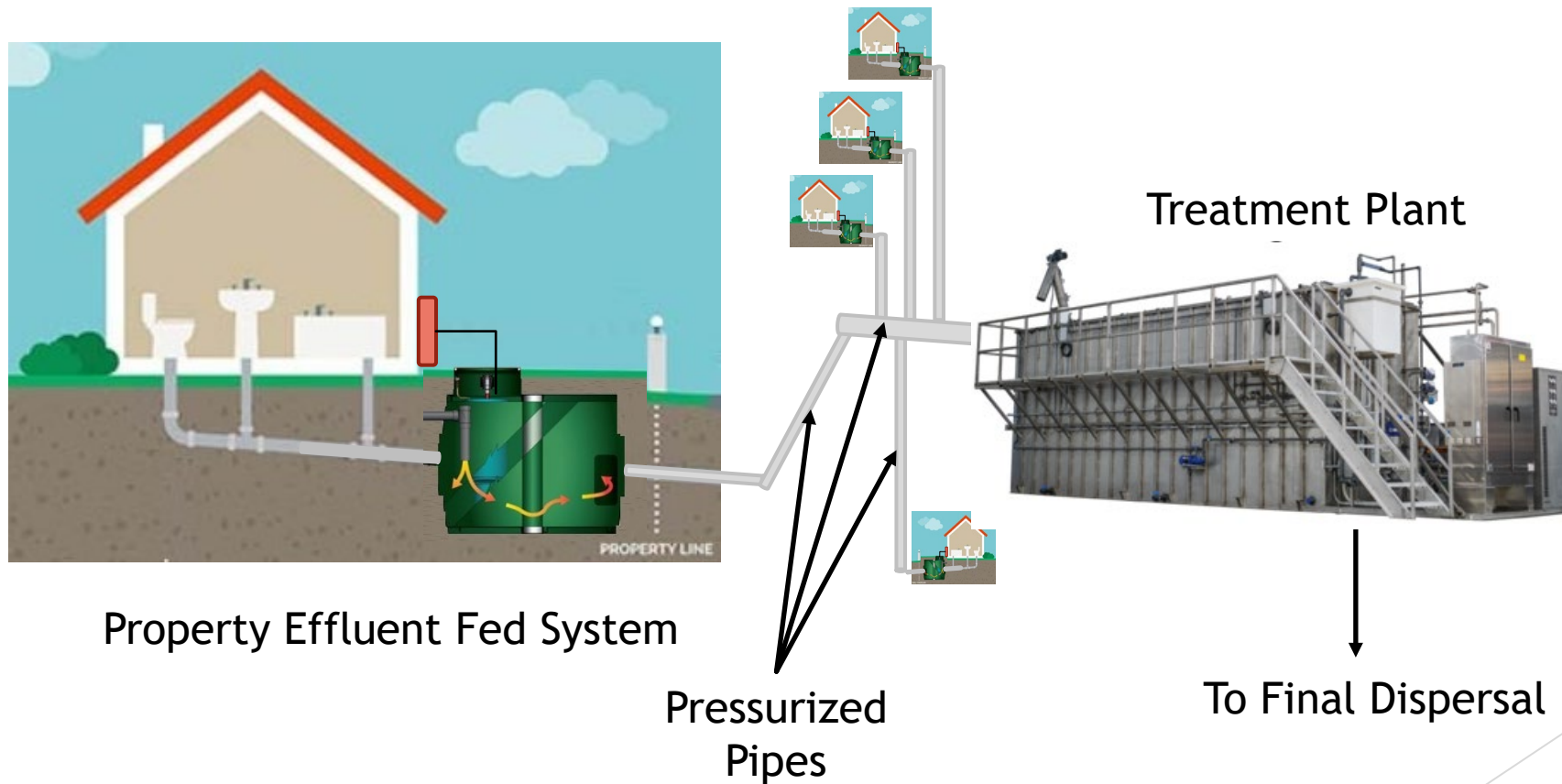


Property Gravity Fed System

Treatment Plant

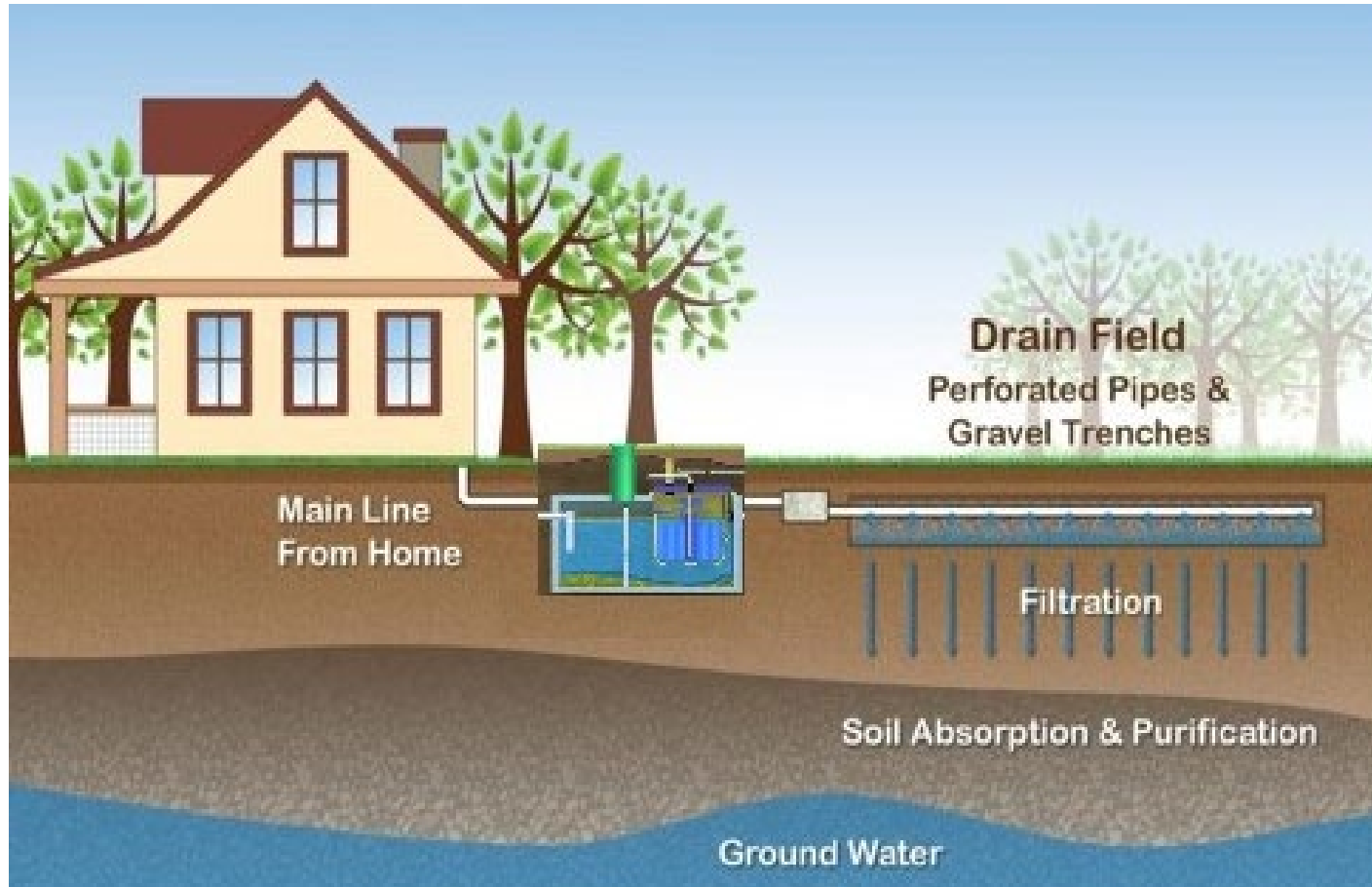
To Final Dispersal

Effluent Collection To Centralized Treatment Facility Overview

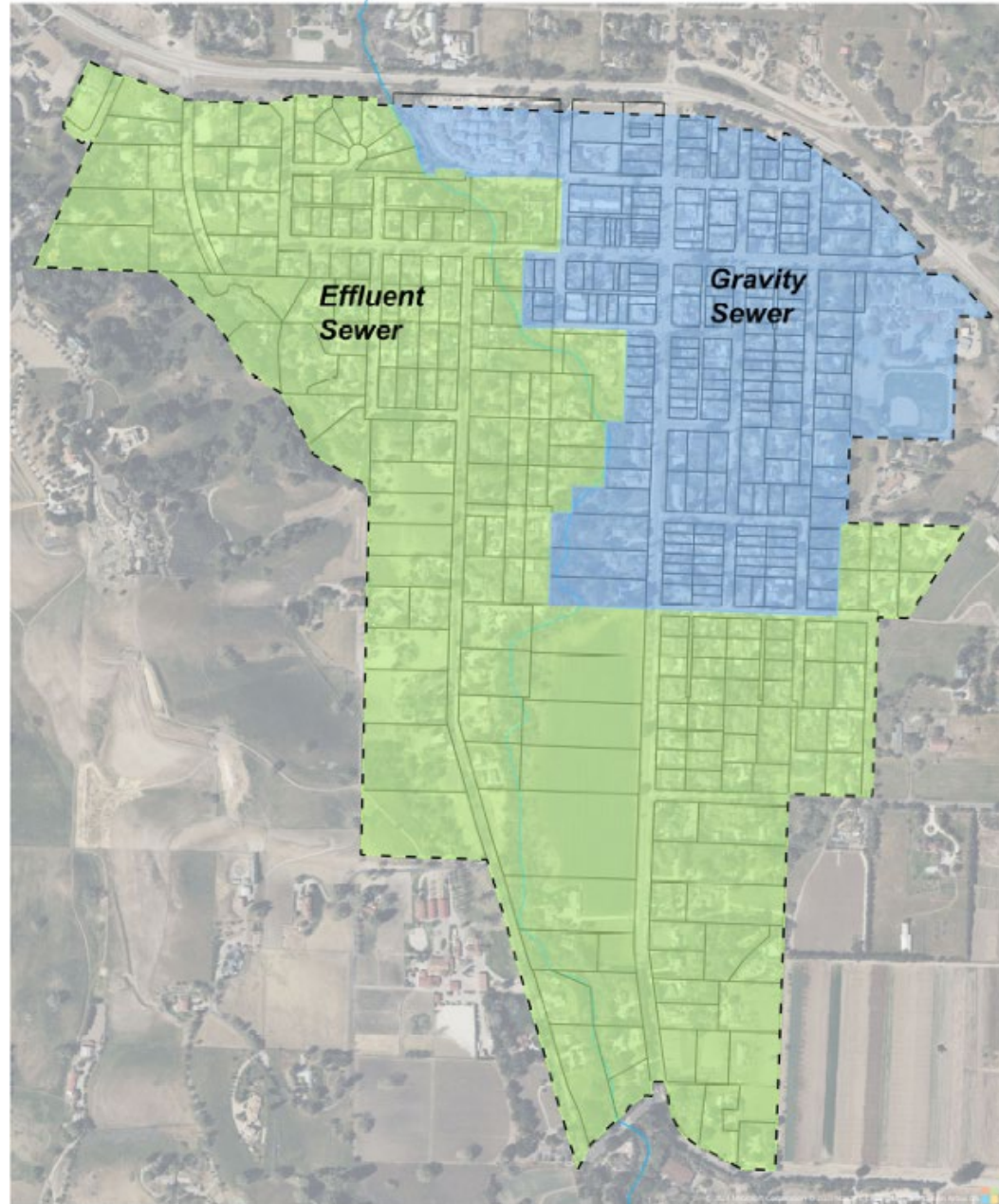




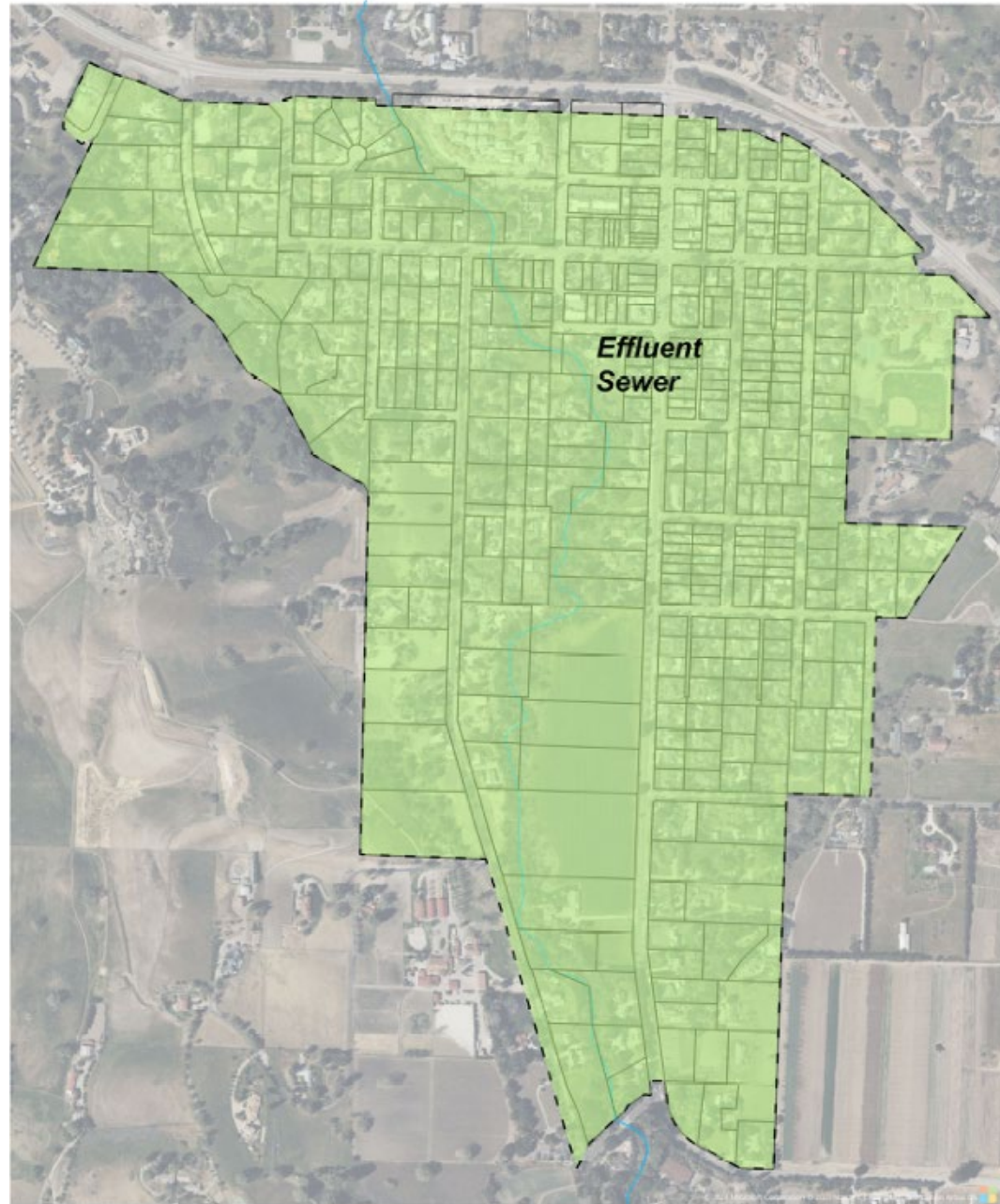
Advanced Onsite Systems Overview



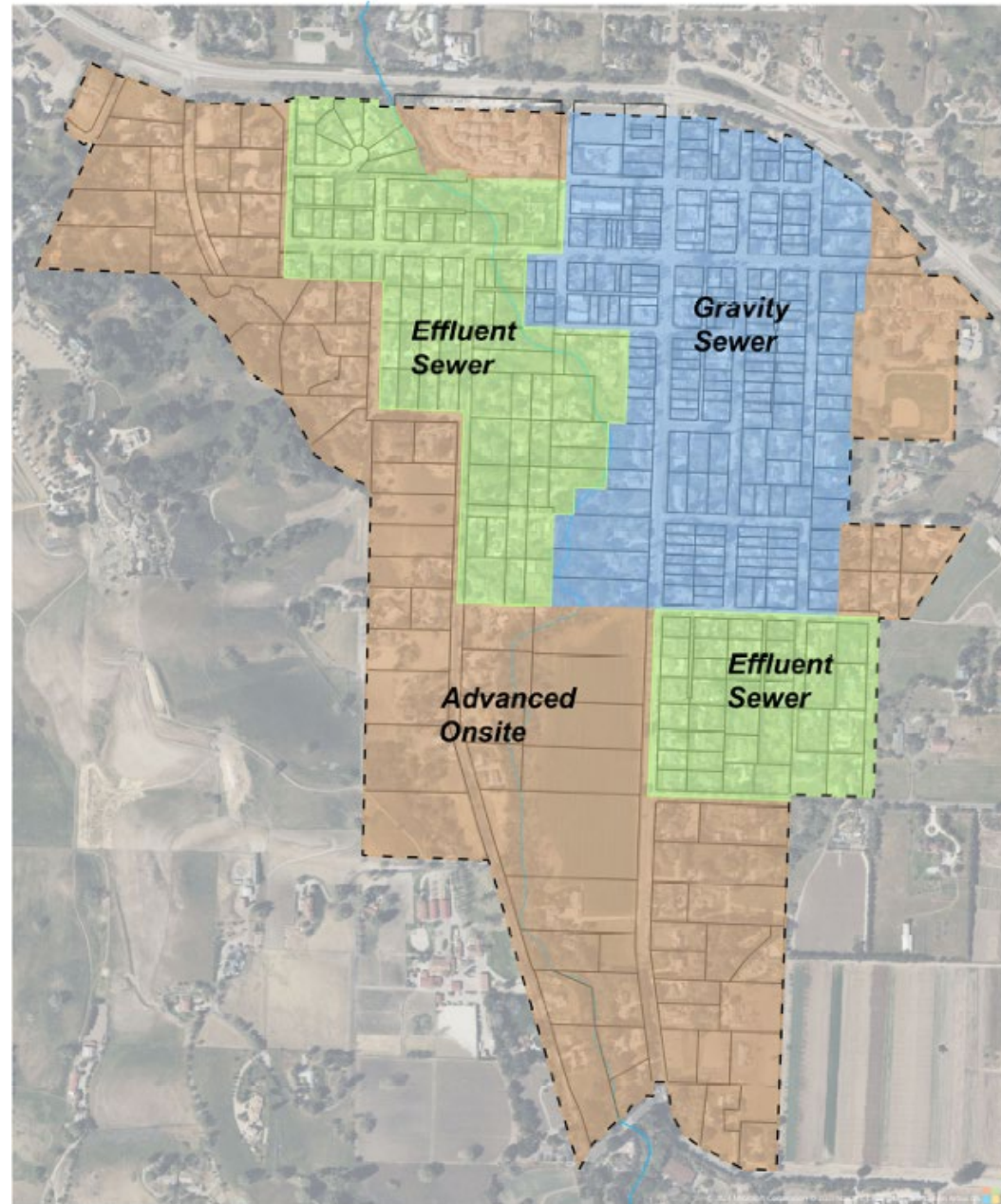
Option A - Gravity Sewer in central town (zones 1 & 2), Effluent Sewer in area surrounding downtown (zones 3-6)

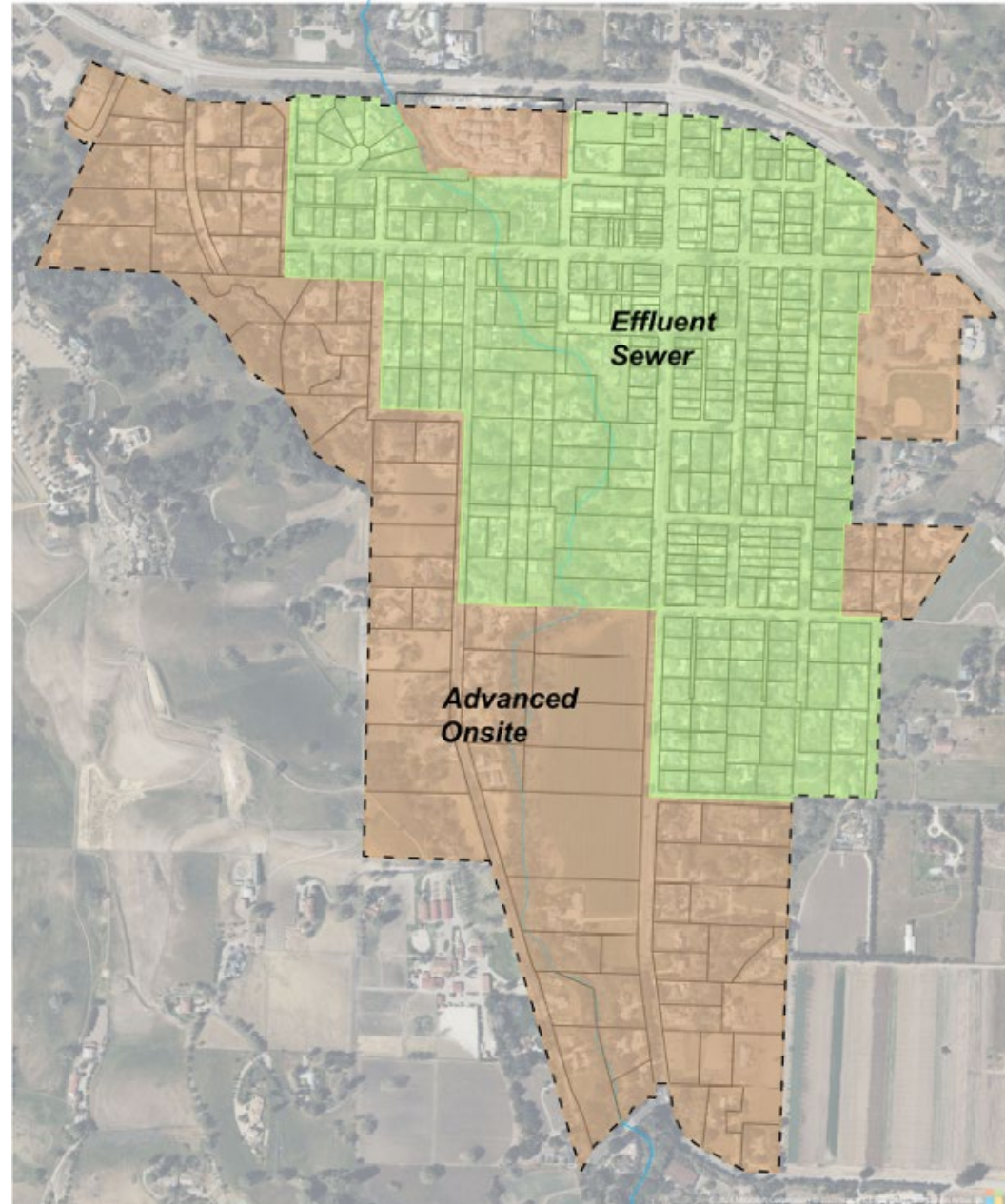


Option B - Effluent Sewer for entire district (zones 1-6)



Option C - Gravity Sewer in central town (zones 1 & 2), Effluent Sewer in immediate area surrounding downtown (zones 3-5), Advanced Onsite Systems (zone 6)





Hybrid Collection Options Wastewater Flow Estimates

(Based on District Flow Records)

Option	Avg Day	Max Month	Max Day
	(gpd)*	(gpd)*	(gpd)*
A (Gravity / Effluent Sewer)	96,181	110,608	134,653
B (Effluent Sewer)	96,181	110,608	134,653
C (Gravity / Effluent Sewer / Advanced Onsite)	81,381	93,588	113,933
D (Effluent Sewer / Advanced Onsite)	81,381	93,588	113,933

* Flow variations between technologies from infiltration and exfiltration were not analyzed

Hybrid Collection Options Wastewater Constituent Estimates

Option	Avg BOD	Avg TSS	Avg TKN
	(mg/L)	(mg/L)	(mg/L)
A (Gravity / Effluent Sewer)	183	271	71
B (Effluent Sewer)	150	40	65
C (Gravity / Effluent Sewer / Advanced Onsite)	209	293	72
D (Effluent Sewer / Advanced Onsite)	150	40	65

- Lower collection system constituents offer potential capital cost savings at the treatment facility

Hybrid Collection Options Cost Breakdown

Option	Overhead and Construction	Gravity Sewer Construction	Effluent Sewer Construction	Collection Contingency Costs	Advanced Onsite Construction	Engineering Costs	Costs Provided by District
	(\$US)	(\$US)	(\$US)	(\$US)	(\$US)	(\$US)	(\$US)
A (Gravity / Effluent Sewer)	\$2,830,000	\$6,777,000	\$3,969,000	\$4,072,800	\$-	\$5,294,640	\$2,760,000
B (Effluent Sewer)	\$2,830,000	\$-	\$8,756,800	\$3,422,040	\$-	\$4,488,652	\$2,360,000
C (Gravity / Effluent Sewer / Advanced Onsite)	\$2,830,000	\$6,777,000	\$2,553,000	\$3,648,000	\$6,734,000	\$4,742,400	\$2,760,000
D (Effluent Sewer / Advanced Onsite)	\$2,830,000	\$-	\$7,160,800	\$2,997,240	\$6,734,000	\$3,896,412	\$2,360,000

Hybrid Collection Options Cost Summary

Option	Collection System Subtotal (\$US)	Advanced Onsite Subtotal (\$US)
A (Gravity / Effluent Sewer)	\$25,703,440	\$-
B (Effluent Sewer)	\$21,637,492	\$-
C (Gravity / Effluent Sewer / Advanced Onsite)	\$23,310,400	\$6,734,000
D (Effluent Sewer / Advanced Onsite)	\$19,244,452	\$6,734,000
Original Option	Collection Subtotal*	Advanced Onsite
Stantec Gravity System	\$31,442,860*	\$-

*Includes service connections for each lot, which were excluded from Stantec original cost estimate



Key Factors Impacting Decision

- ▶ Cost estimates are based on full buildout construction period, not phased construction
- ▶ Value engineering should be conducted to identify areas in which costs can be reduced.
- ▶ Specific legal restrictions may impact viability of solutions. Example; Advanced Onsite may not be an acceptable solution to the county or Regional Water Quality Board.
- ▶ Directional boring of Effluent Sewer lines should minimize construction disturbances within roadways.



Key Factors Impacting Decision, cont.

- ▶ Water main setback to effluent sewer processing tank should be evaluated in very dense areas. This may lead to single tanks for combined properties, or a request for variance from county.
- ▶ Newer existing tanks may be converted to effluent sewer processing tank based on watertight test, resulting in potential reduced capital costs.
- ▶ Existing Advanced Onsite systems may be able to be reused, based on county and RWQB acceptance.
- ▶ The location of the treatment facility does not greatly impact the collection systems overall cost, with the exception of transporting to Solvang.



REGEN

Questions?