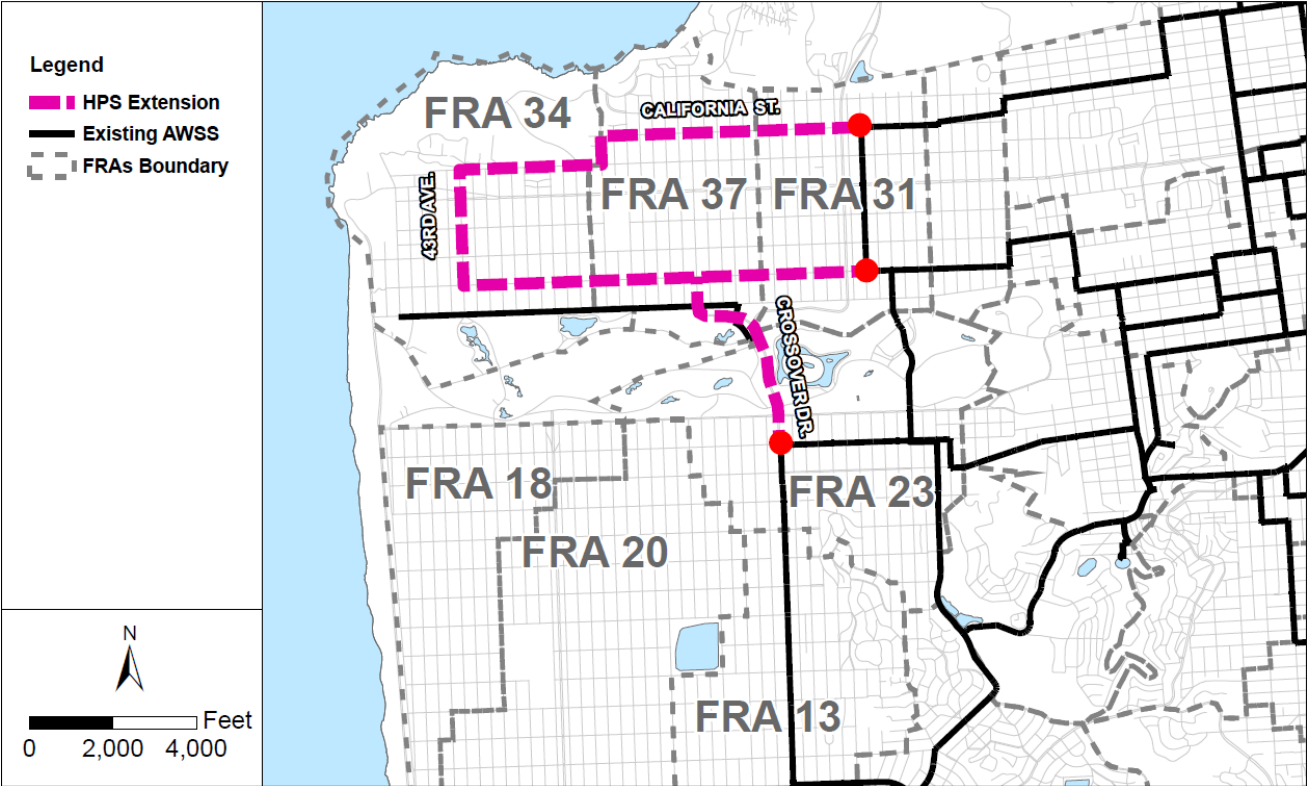


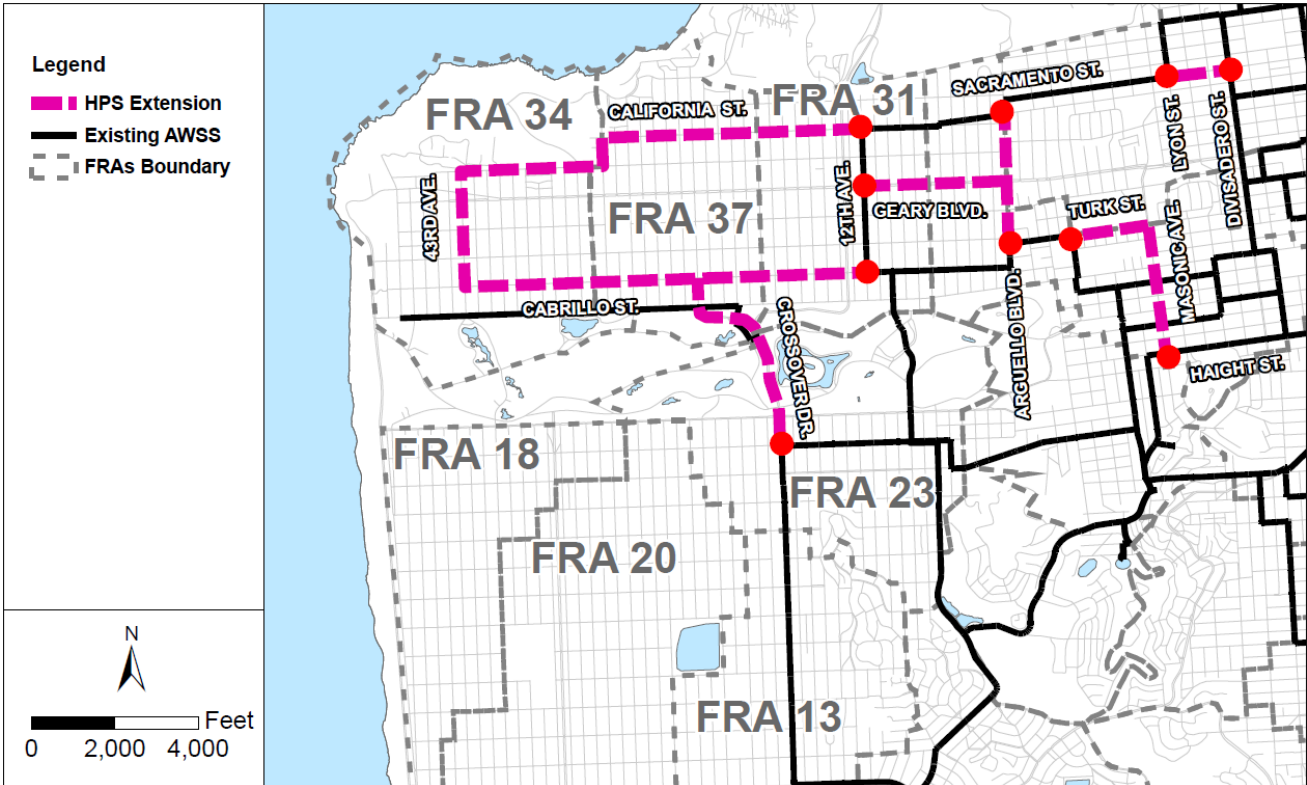
Option 1. AWSS Extension

AWSS connections: 3
Pipe Length: 28,000 LF
Additional Pump Station: No



Option 2. AWSS with crossover

AWSS connections: 10
Pipe Length: 43,500 LF
Additional Pump Station: No

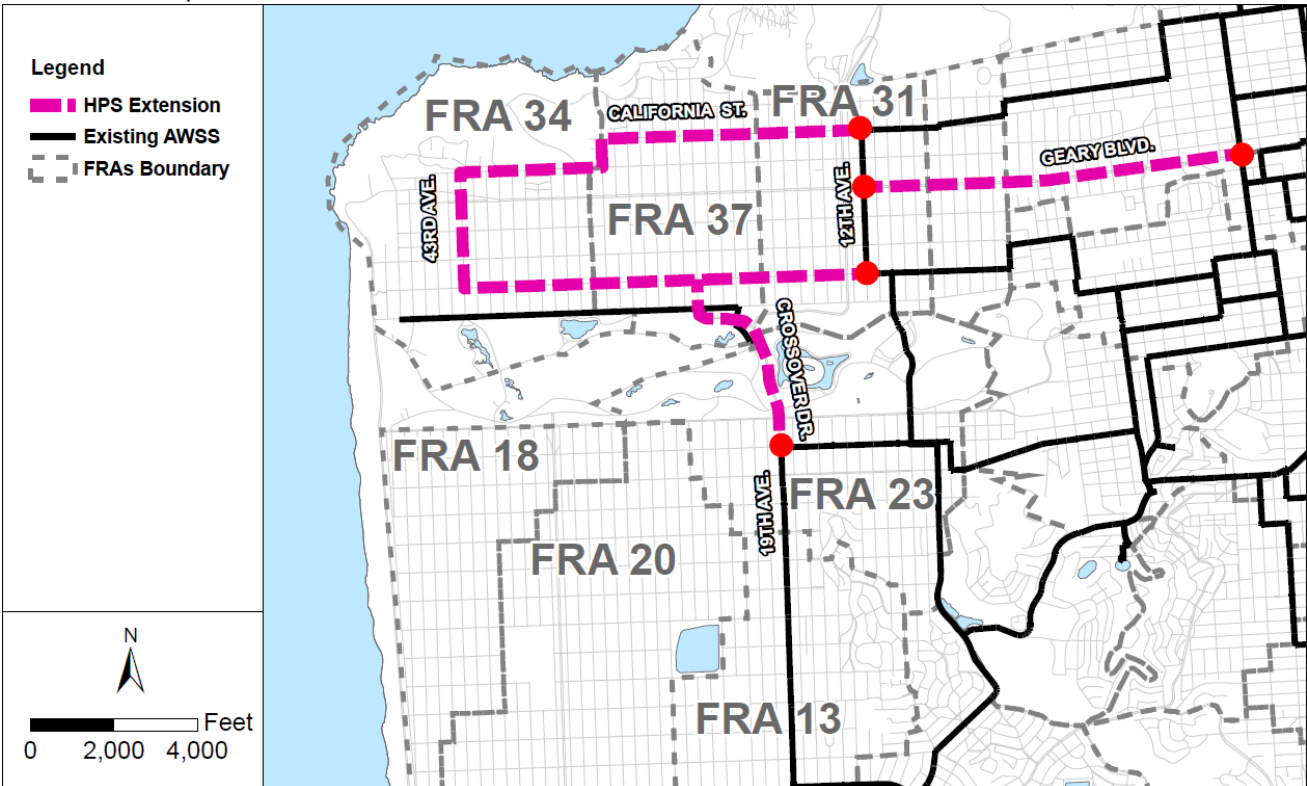


Option 3. AWSS with crossover

AWSS connections: 5

Pipe Length: 37,100 LF

Additional Pump Station: No

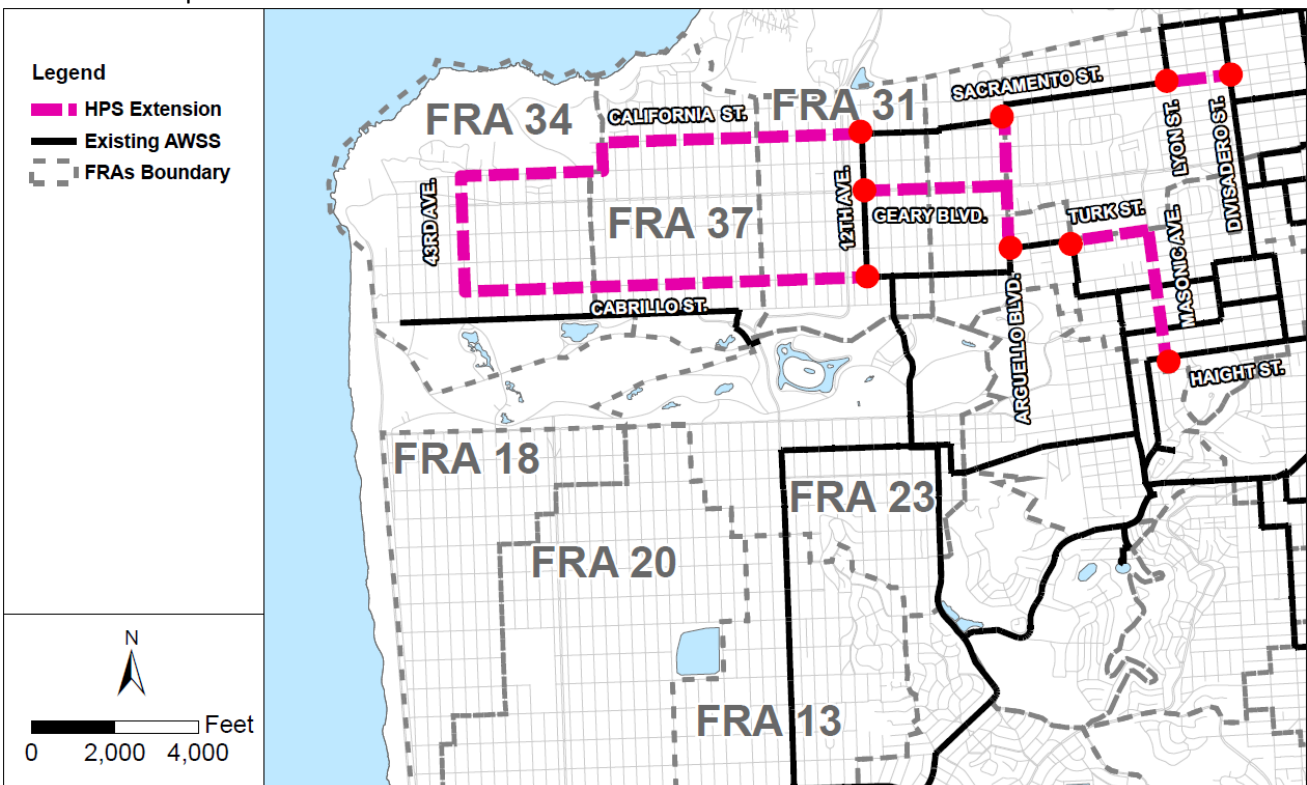


Option 4. AWSS without crossover

AWSS connections: 9

Pipe Length: 38,400 LF

Additional Pump Station: No

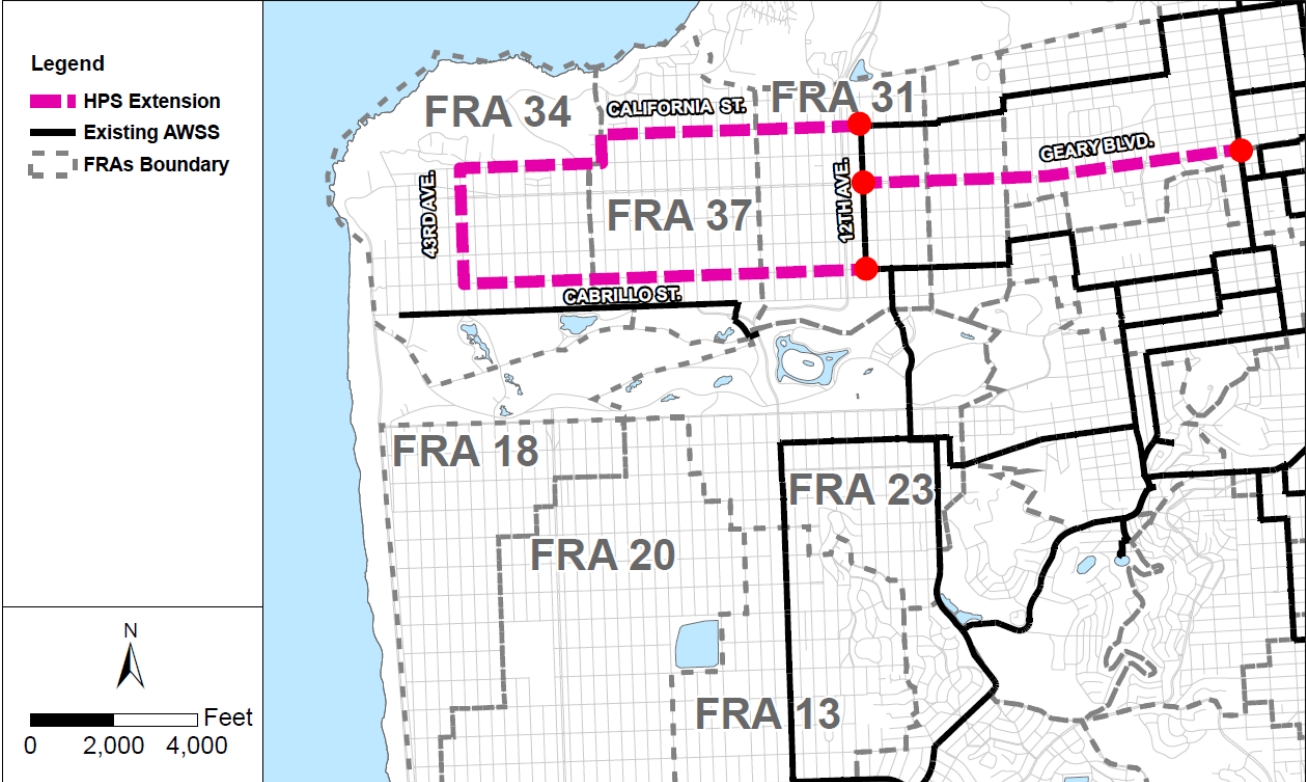


Option 5. AWSS without crossover

AWSS connections: 4

Pipe Length: 32,000 LF

Additional Pump Station: No

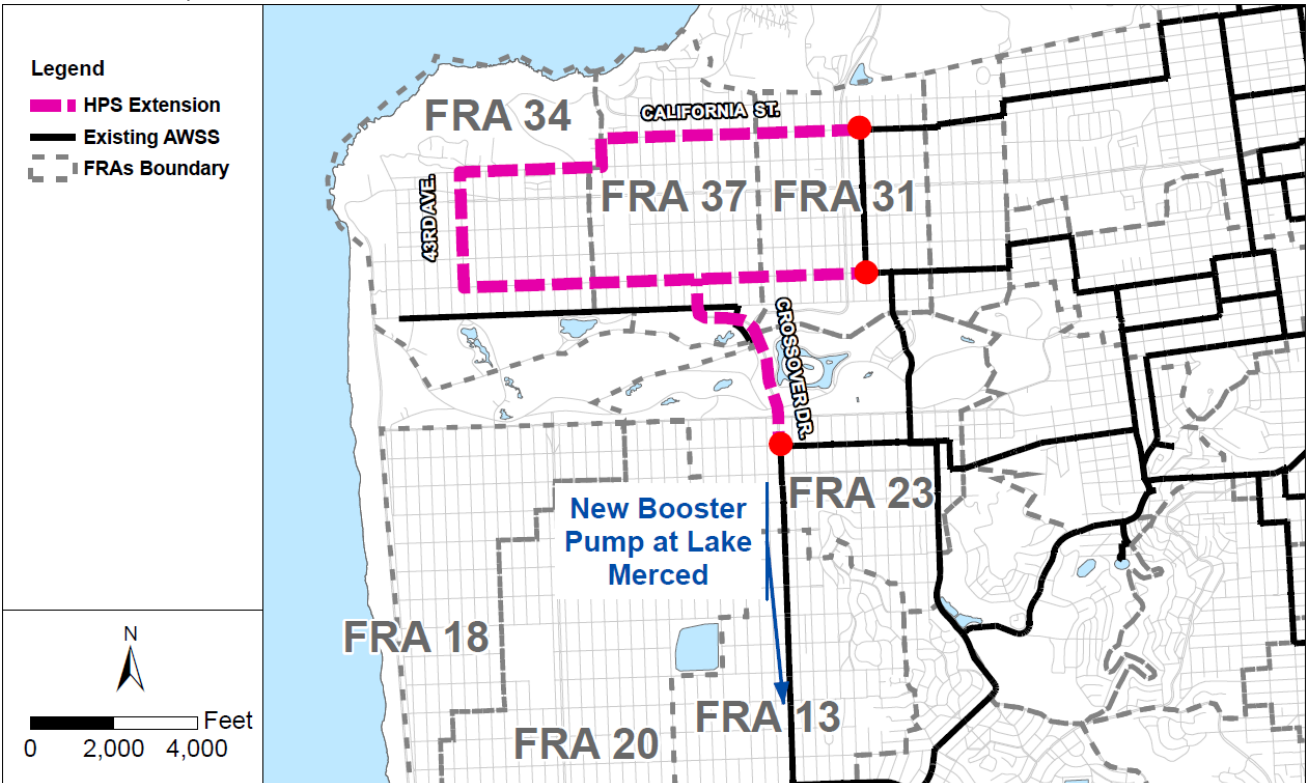


Option 6. AWSS with Additional Pump Station

AWSS connections: 4 (1 on Ocean Ave. not shown)

Pipe Length: 28,000 LF

Additional Pump Station: Lake Merced

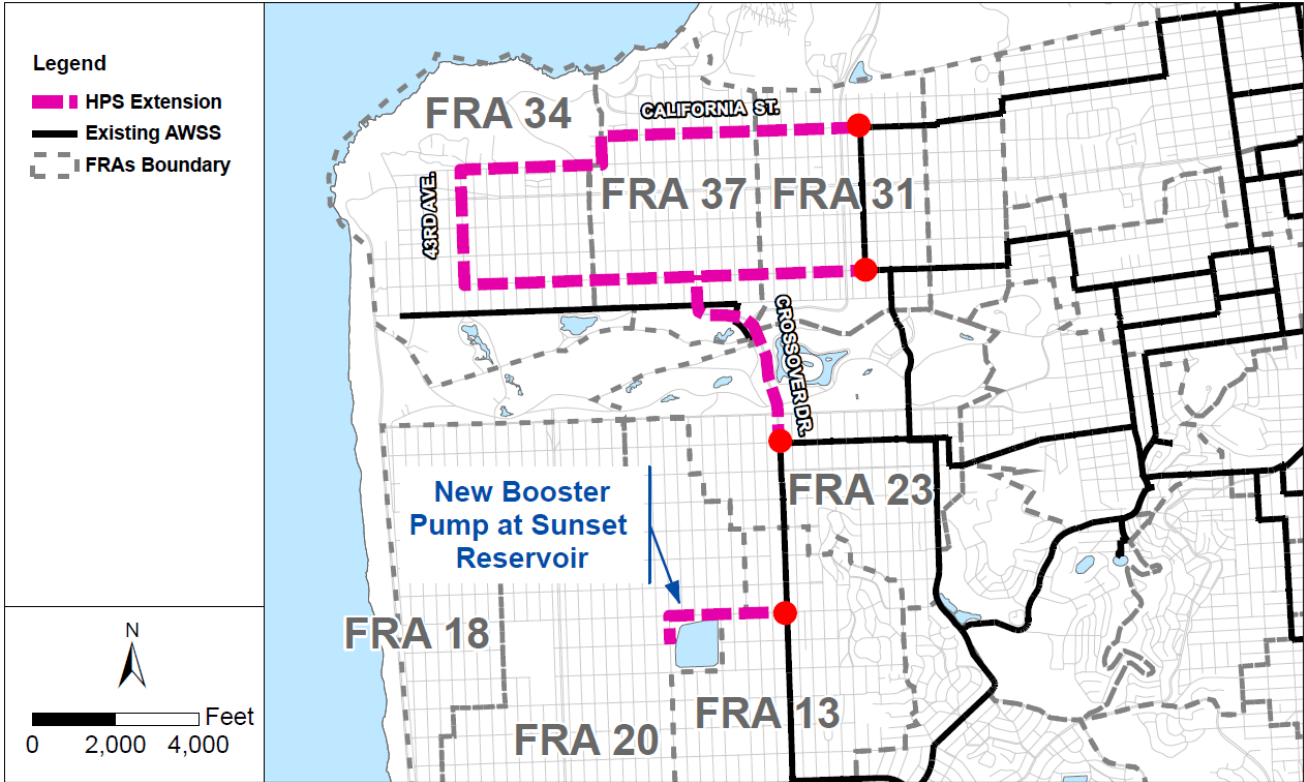


Option 7. AWSS with Additional Pump Station

AWSS connections: 4

Pipe Length: 31,500 LF

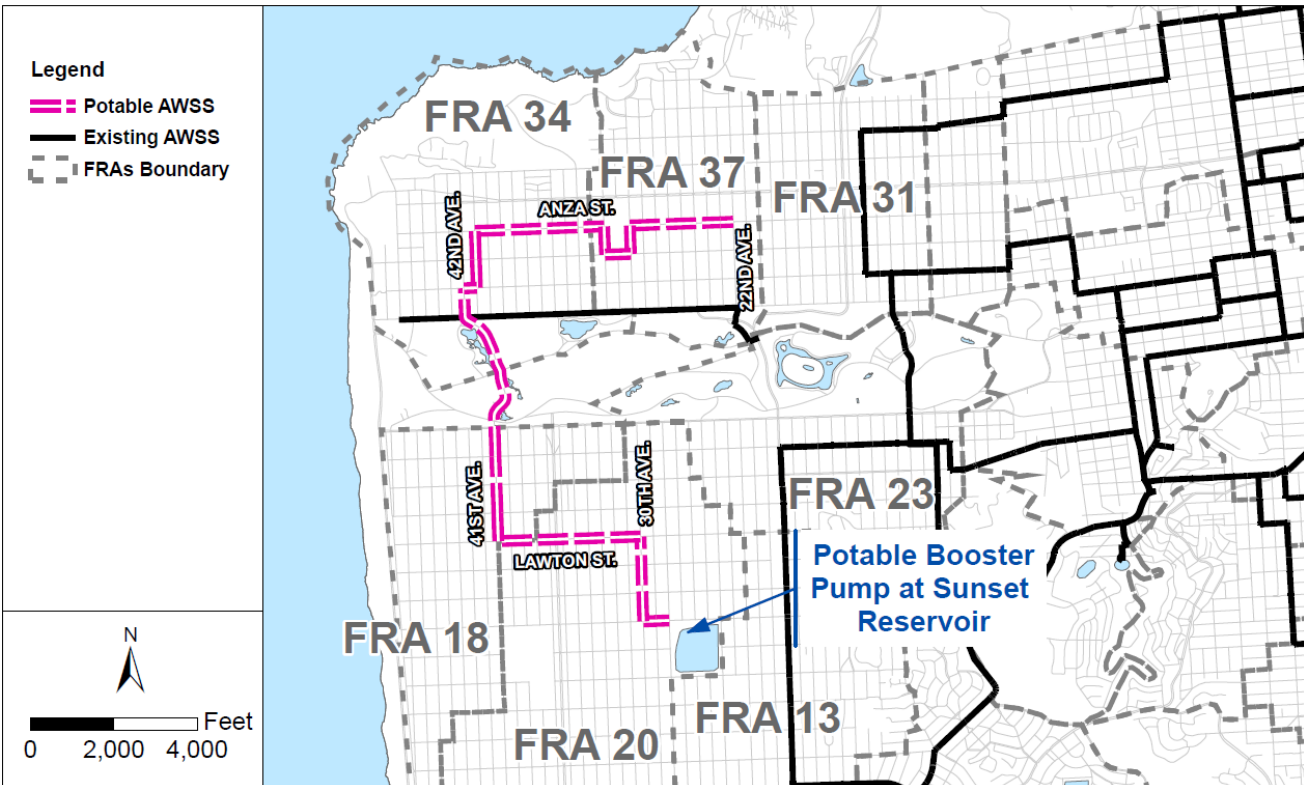
Additional Pump Station: Sunset Reservoir



Option 8. Potable AWSS with Pump Station

Pipe Length: 22,200 LF

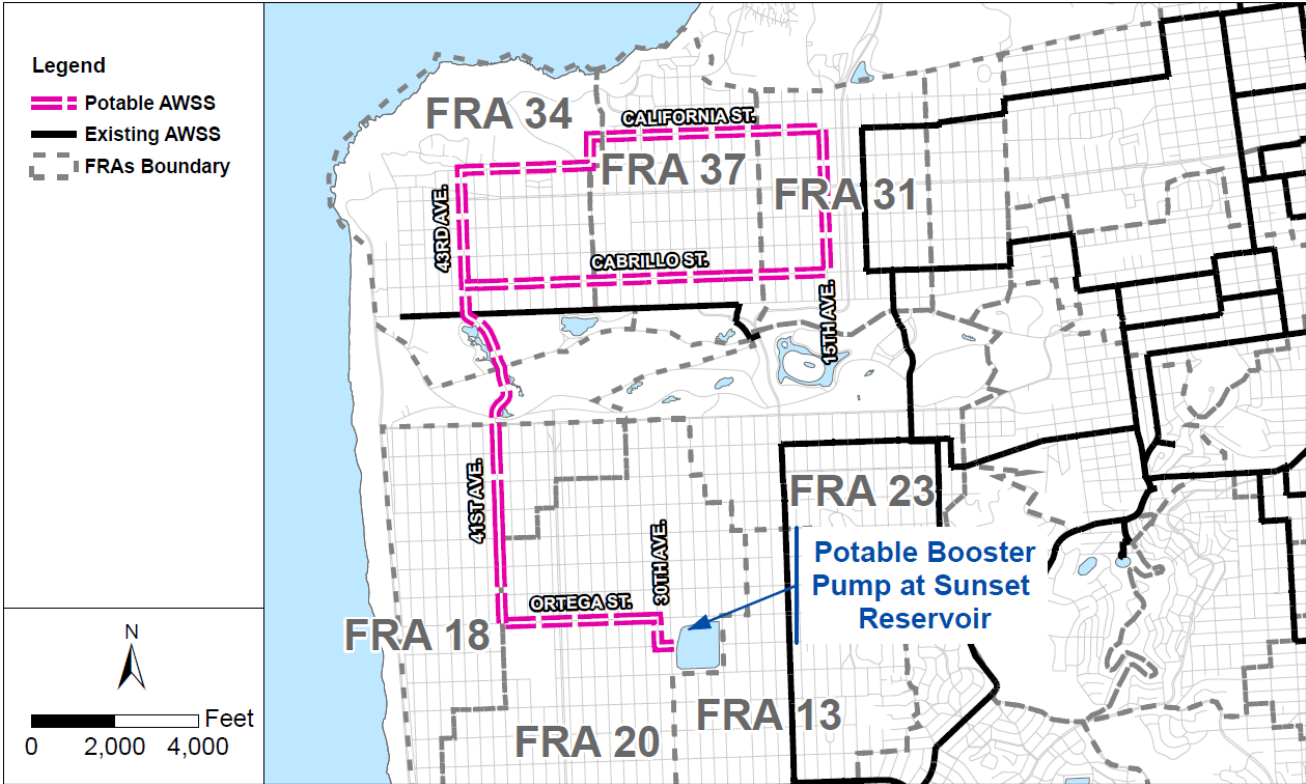
Additional Pump Station: Sunset Reservoir



Option 9. Potable AWSS with Pump Station

Pipe Length: 37,500 LF

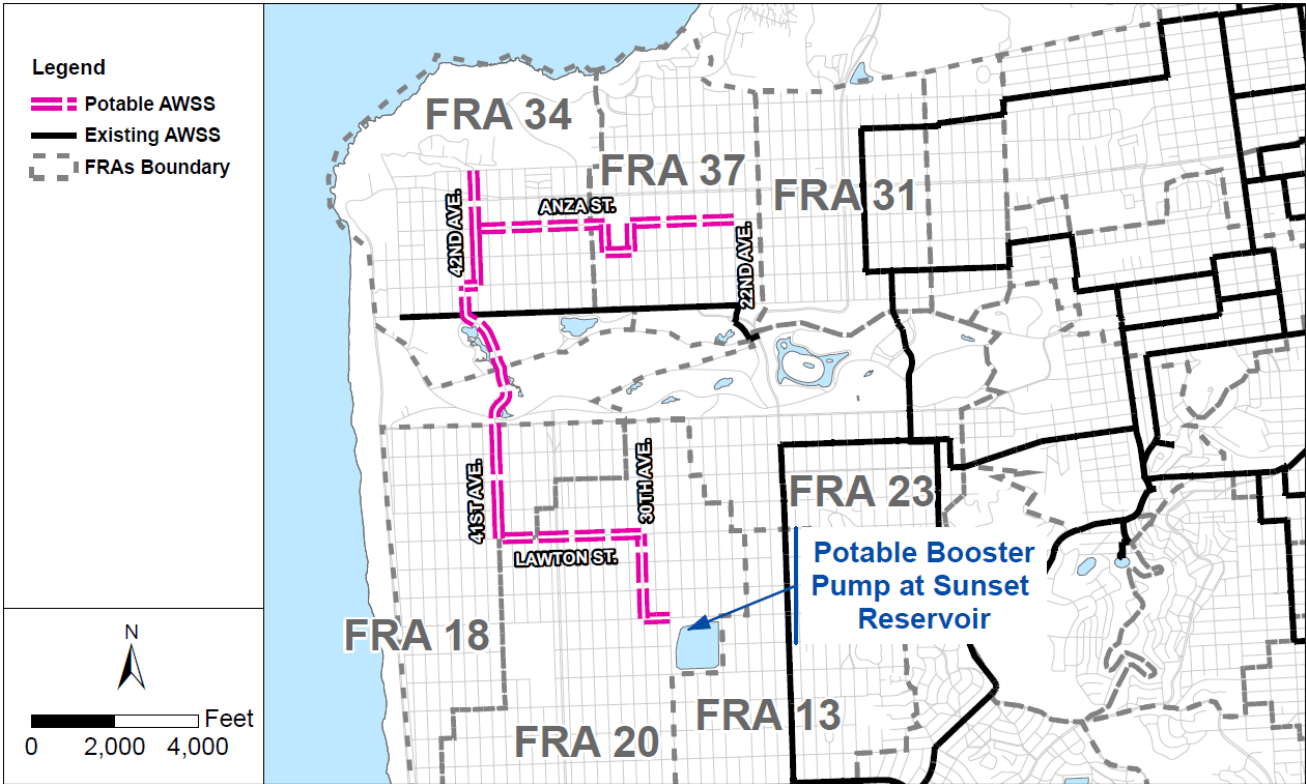
Additional Pump Station: Sunset Reservoir



Option 10. Potable AWSS with Pump Station

Pipe Length: 23,600 LF

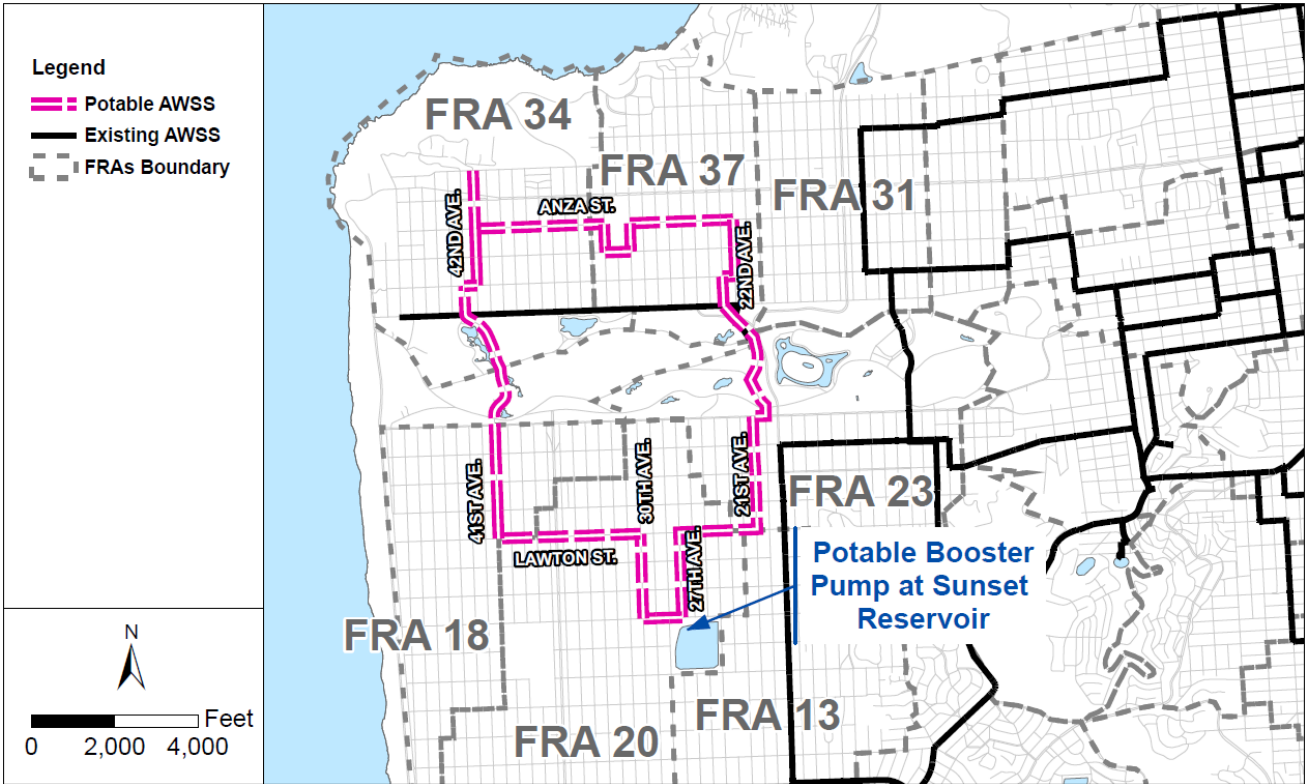
Additional Pump Station: Sunset Reservoir



Option 11. Potable AWSS with Pump Station

Pipe Length: 37,900 LF

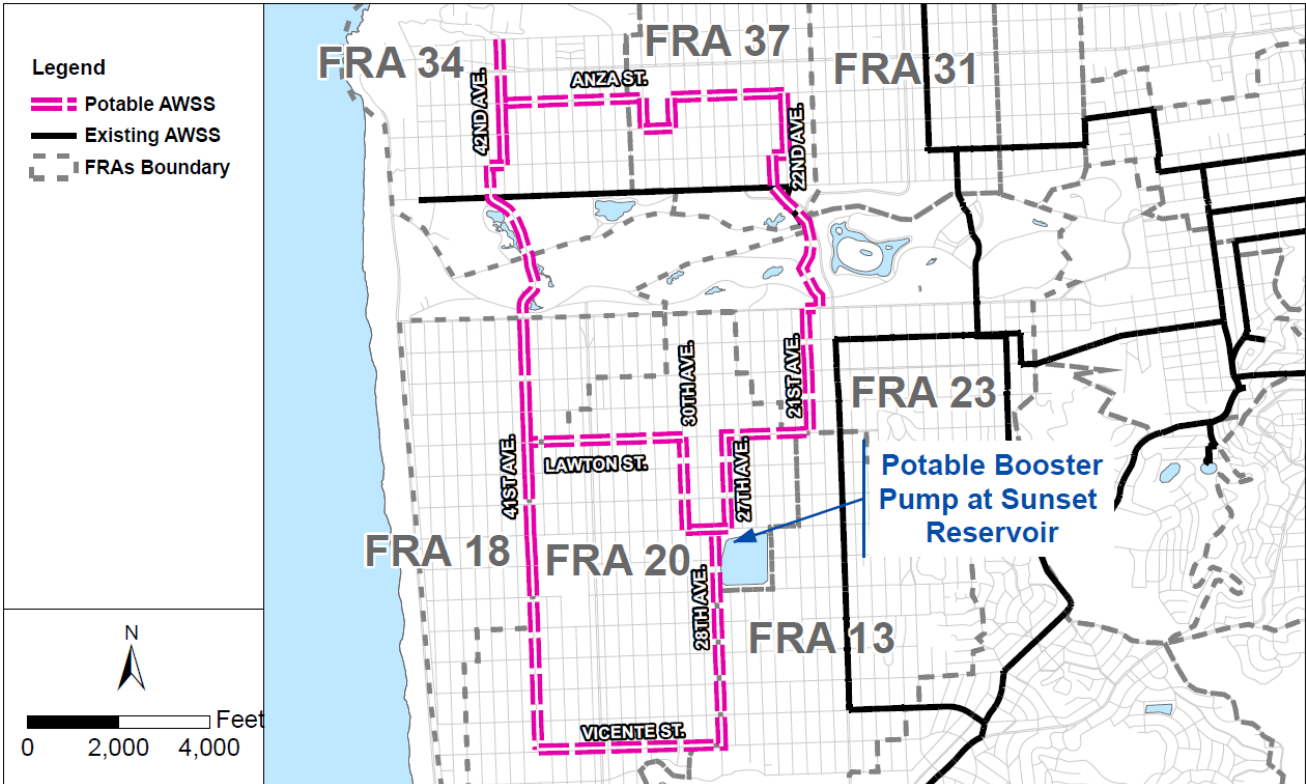
Additional Pump Station: Sunset Reservoir



Option 12. Potable AWSS with Pump Station – [RECOMMENDED SFPUC & SFFD OPTION](#)

Pipe Length: 51,500 LF

Additional Pump Station: Sunset Reservoir



Conceptual Plan for Phase 2 of Implementation for Option 12

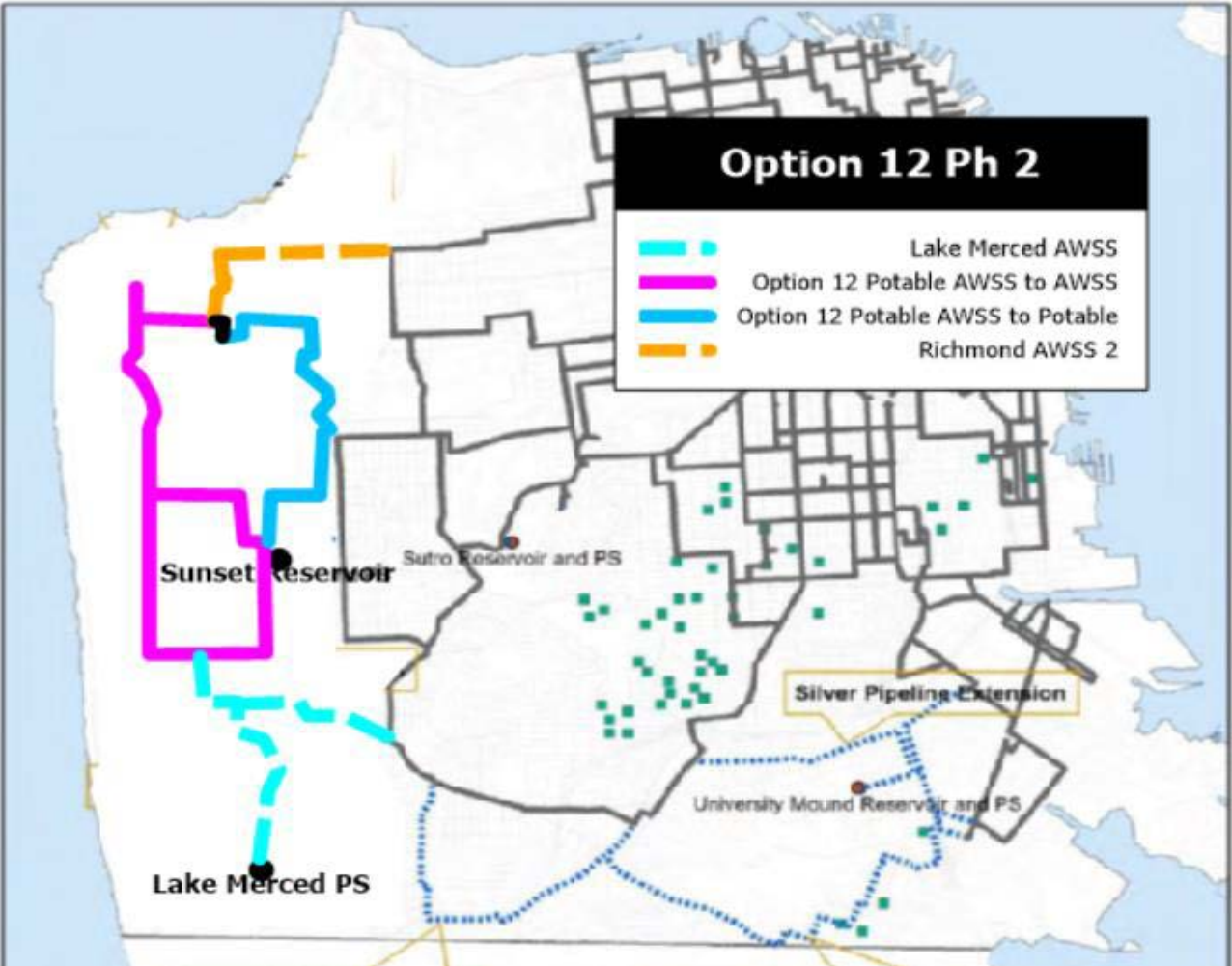


Table ES-1 Options Evaluated

Option	Project Components	Meets LOS Goals ¹	Redundant Supply ²	Redundant Network ³	Does not negatively impact AWSS in other areas	Potable System Benefit and Funding ⁴	Benefits to Sunset as well as Richmond District	Project Cost (\$million) ⁵	SFPUC Operating Funds Contribution (\$million)	Comments
1	AWSS Loop with park crossover		✓	✓	✓			\$51	\$0	
2	AWSS Loop with park crossover and additional pipe in Laurel Heights		✓	✓	✓			\$84	\$0	
3	AWSS loop with park crossover and additional pipe on Geary		✓	✓	✓			\$68	\$0	
4	AWSS loop with additional pipe in Laurel Heights (no crossover)	✓	✓	✓				\$75	\$0	
5	AWSS loop additional pipe on Geary (no crossover)	✓	✓	✓				\$60	\$0	
6	AWSS loop with Lake Merced Pump Station	✓	✓	✓	✓			\$87	\$0	Cost includes Ingleside Pipeline but developer funded pipelines also required
7	AWSS loop with Sunset Pump Station	✓	✓	✓	✓			\$67	\$0	Requires air gap facility
8	Potable AWSS with Pump Station	✓			✓	✓	✓	\$58	\$40	
9	Potable AWSS with Pump Station and Richmond Loop	✓			✓	✓	✓	\$85	\$40	
10	Potable AWSS with Pump Station and extension to Lincoln Park	✓			✓	✓	✓	\$61	\$40	
11	Potable AWSS with Pump Station and One Loop	✓		✓	✓	✓	✓	\$85	\$40	
12	Potable AWSS with Pump Station and Two Loops	✓	✓ ⁶	✓	✓	✓	✓	\$109	\$40	

1. LOS Goal: Each FRA will have a minimum of 50% reliable water supply to meet probable fire demands.

2. The AWSS was constructed with multiple supplies (Twin Peaks, Pump Stations 1 and 2 as well as fireboat manifolds) while the Potable AWSS has one supply although future supplies are possible, particularly with Option 12. Design elements could increase the reliability of the supply through redundant pump units and inlet and outlet piping.

3. A looped or gridded supply provides redundancy in the pipe system. Option 11 provides a looped supply to the Richmond District and Option 12 provides a looped supply to both Richmond and Sunset Districts.

4. Options 8 through 12 provide daily benefit to the potable water supply system, could be funded in part by water rate funds and replace a planned new transmission main (estimated to cost \$20 -\$30 million)

5. Costs based on CS-199 and subsequent studies.

6. Design allows for additional water sources to be added in future phases.