



Services of the San Francisco Public Utilities Commission

Emergency Firefighting Water System Auxiliary Water Supply System Flexible Water Supply System

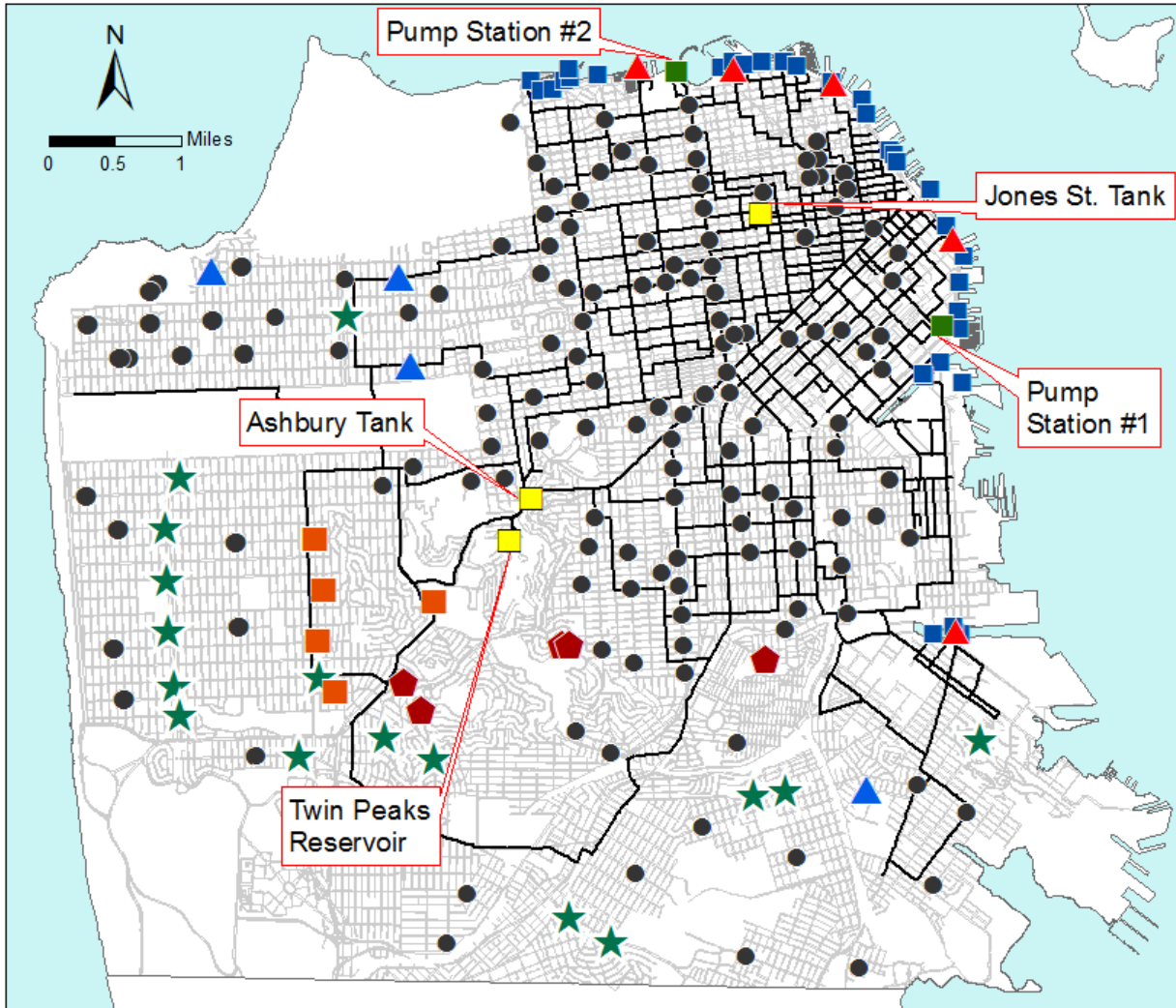
Capital Planning Committee

December 14, 2015

David Myerson, Project Manager

Project Management Bureau, Infrastructure, SFPUC

AWSS Map – September 2015



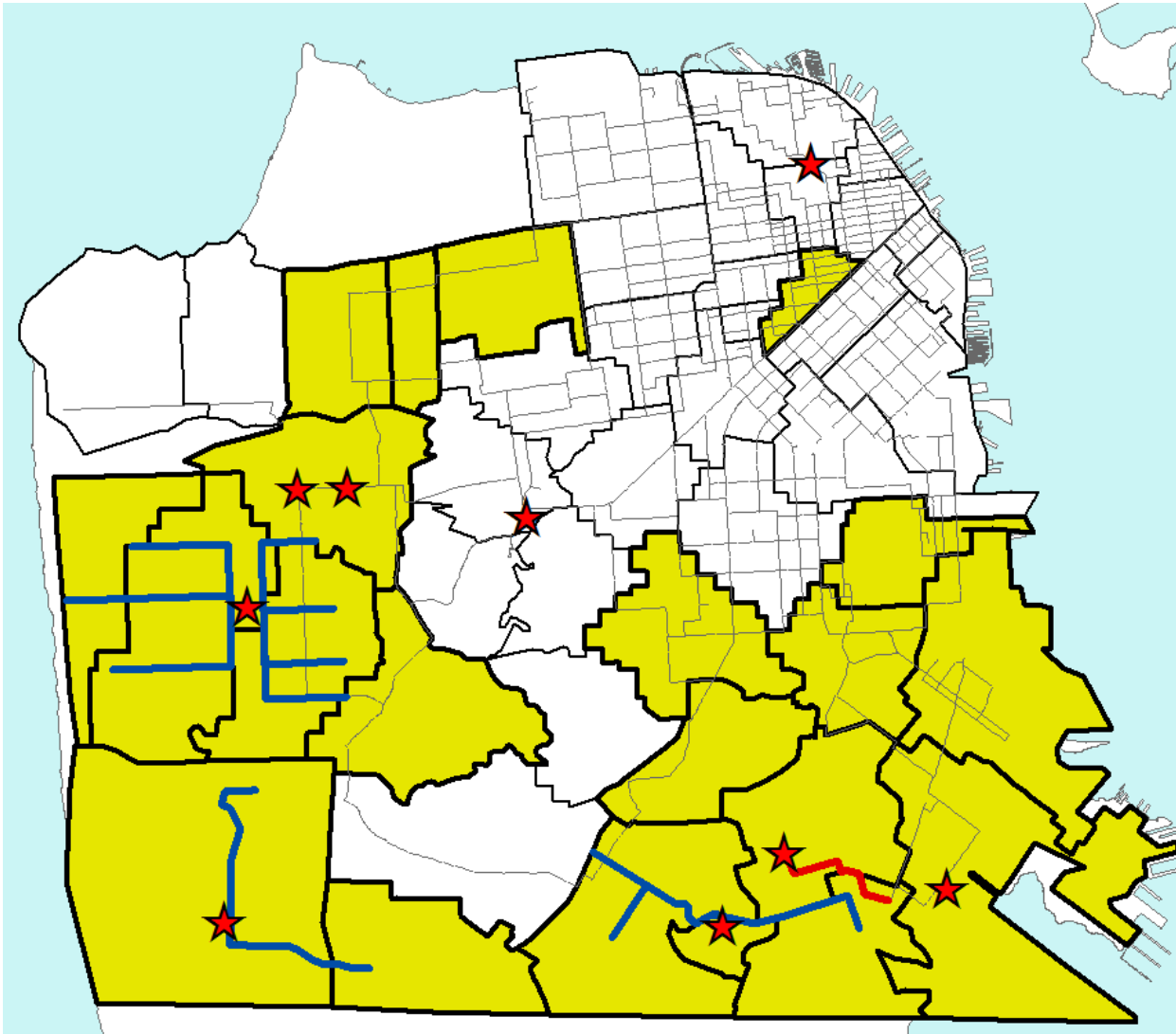
Legend

- Tanks and Reservoir
- Pump Stations
- ▲ Fireboat Manifolds
- Suction Connections
- AWSS Pipes

Cisterns

- ★ Completed 2010 Bond Cisterns
- ⬠ Construction 2010 Bond Cisterns
- Contract E Cisterns
- ▲ Contract F Cisterns
- Existing Cisterns

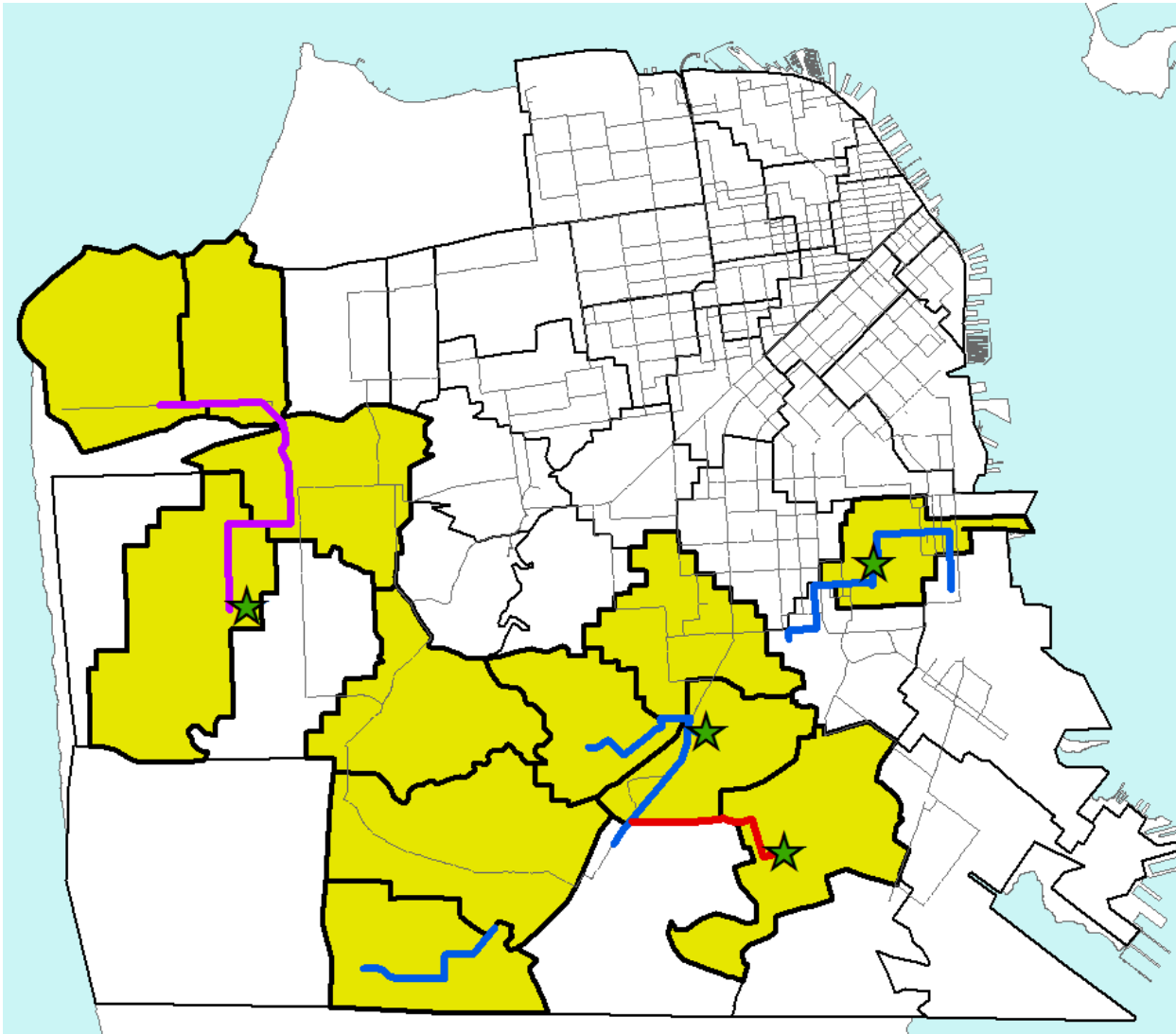
ESER 2014 Projects



Legend

- ★ ESER 2014 Projects
- New AWSS Pipelines
- Flexible Systems
- Existing AWSS Pipelines
- Improvement ESER 2014

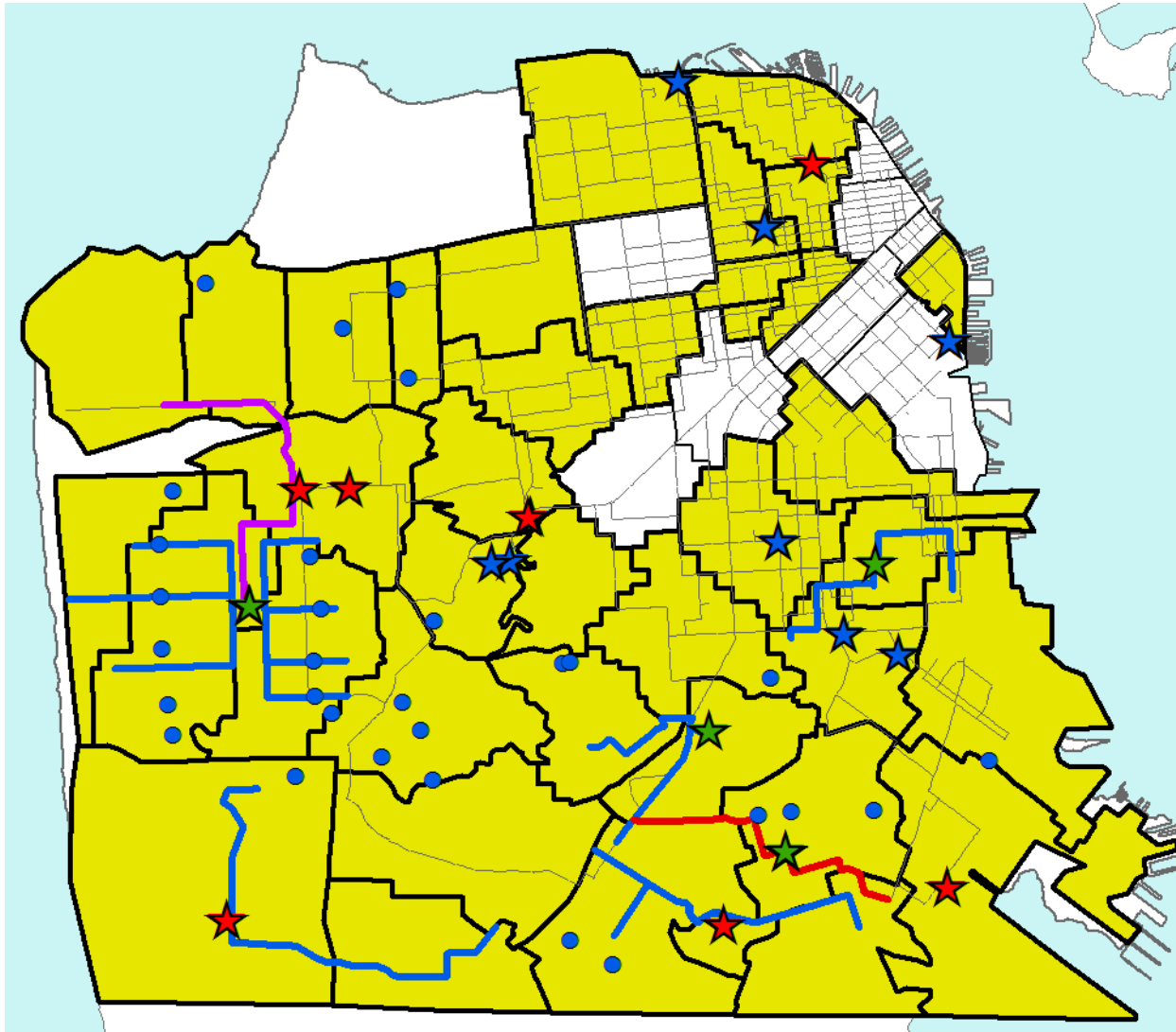
ESER Future Projects



Legend

- ★ Future Projects
- New AWSS Pipelines
- Potable Co-benefits
- Flexible Systems
- Existing AWSS Pipelines
- Improvement Future Projects

ESER 2010, 2014, & Post-2014 Projects



Legend

- ESER 2010 Cisterns
- ★ ESER 2010 Projects
- ★ ESER 2014 Projects
- ★ Future Projects
- New AWSS Pipelines
- Potable Co-benefits
- Flexible Systems
- Existing AWSS Pipelines
- Improvement All Recommended Projects



Recommended Projects (\$ millions)

Project	Full Implementation		ESER 2014	Water Revenues	Developer	Future (2015 \$)
AWSS Pipeline – Ashbury Connections	1.4		1.4	-	-	-
AWSS Pipeline – Candlestick Point	1.0		1.0	-	-	-
AWSS Pipeline – Columbus Avenue	1.0		1.0	-	-	-
AWSS Pipeline – Irving Street and 19th	8.0		8.0	-	-	-
AWSS Pipeline – Repair & Abandonment	4.1 + TBD		4.1	-	-	TBD
Potable Co-Benefits Pipeline – Richmond	45.3			34	-	11.3
AWSS Pipeline – University Mound East	7		7	-	-	-
AWSS Pipeline – University Mound West	11		-	-	-	11
AWSS Pump Station – U-Mound Reservoir	17.5		-	-	TBD	17.5 - TBD
Flexible System – College Hill Reservoir	6.5		-	-	-	6.5
Flexible System – Lake Merced	4.6		3.1	-	1.5	-
Flexible System – McLaren Park Tank	8.3		7.1	-	1.2	-
Flexible System – Potrero Heights Reservoir	4.5		-	-	-	4.5
Flexible System – Sunset Reservoir	11.3		11.3	-	-	-
Facility Assessments and Spending Plan	1.3		1.3	-	-	-
Facility & Tunnel Improvements	TBD		-	-	-	TBD
Pumping Station 1	9.0		9.0	-	-	-
Twin Peaks Reservoir Sealing	0.7		0.7			
Total (rounded)	147+		55	34	3+	55+

ESER 2014 Projects

Project		(\$ millions)
AWSS Pipeline	Ashbury Connections	1.4
	Columbus Avenue	1.0
	Repair & Abandonment	4.1
	University Mound East	7.0
Flexible Water Supply System	Lake Merced (plus pipe)	3.1
	McLaren Park Tank	7.1
	Sunset Reservoir	11.3
Initial Projects	Candlestick Point	1.0
	Facilities Assessments & Spending Plan	1.3
	Irving Street & 19 th Ave.	8.0
	Pumping Station 1	9.0
	Twin Peaks Reservoir Joint Sealing	0.7
Total		55

Flexible Water Supply System

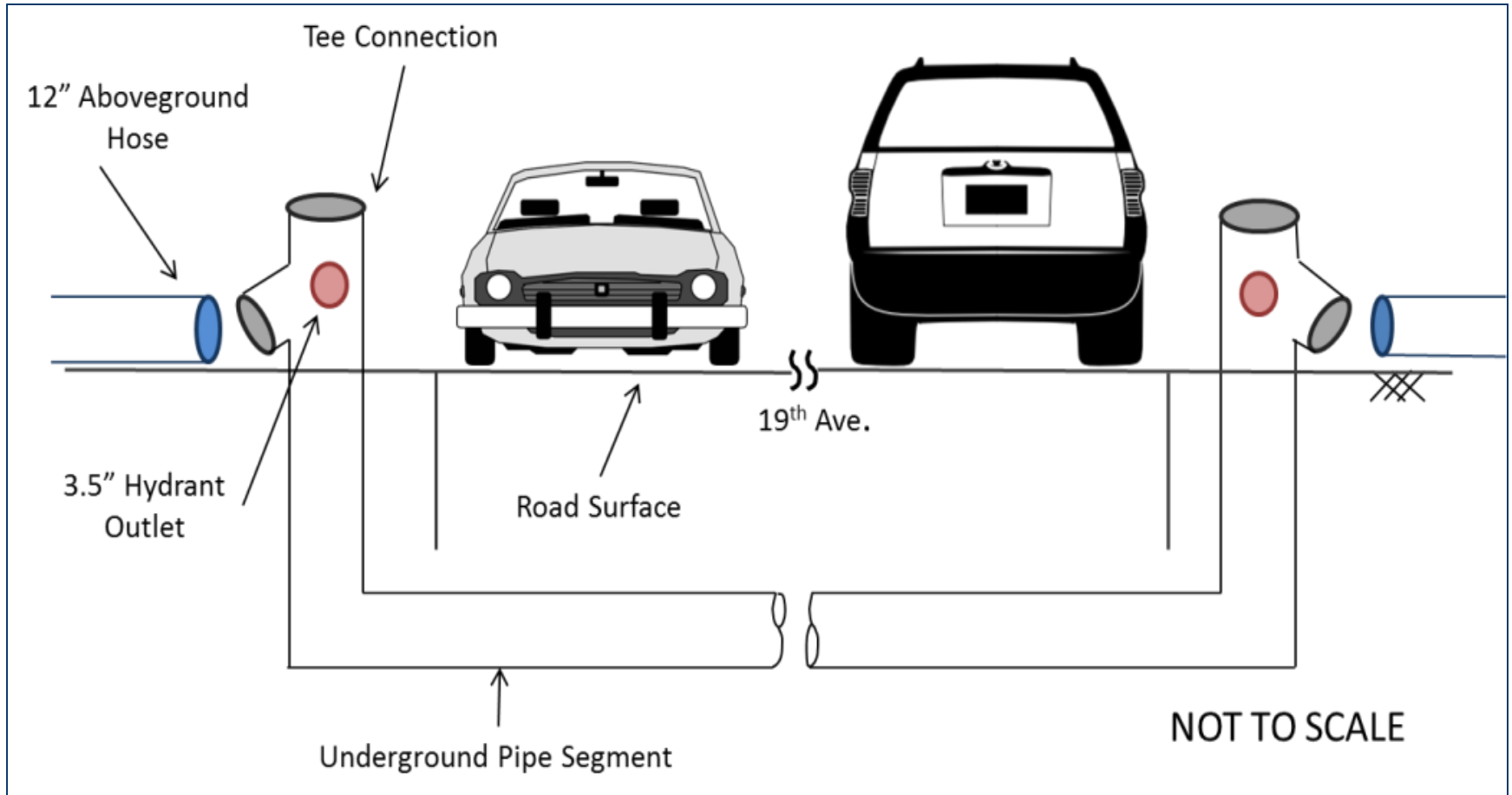
Funding	Project	Hose Unit Quantity	Pump Unit Quantity
ESER 2014	Lake Merced	2	1
	McLaren Park Tank	2	2
	Sunset Reservoir	2	2
Post-ESER 2014	College Hill Reservoir	1	2
	Potrero Heights Reservoir	1	1
Total		8	8

Flexible Water Supply System

- Lake Merced, McLaren Tank, Sunset Reservoir
- Below-grade pipe crossings for selected streets



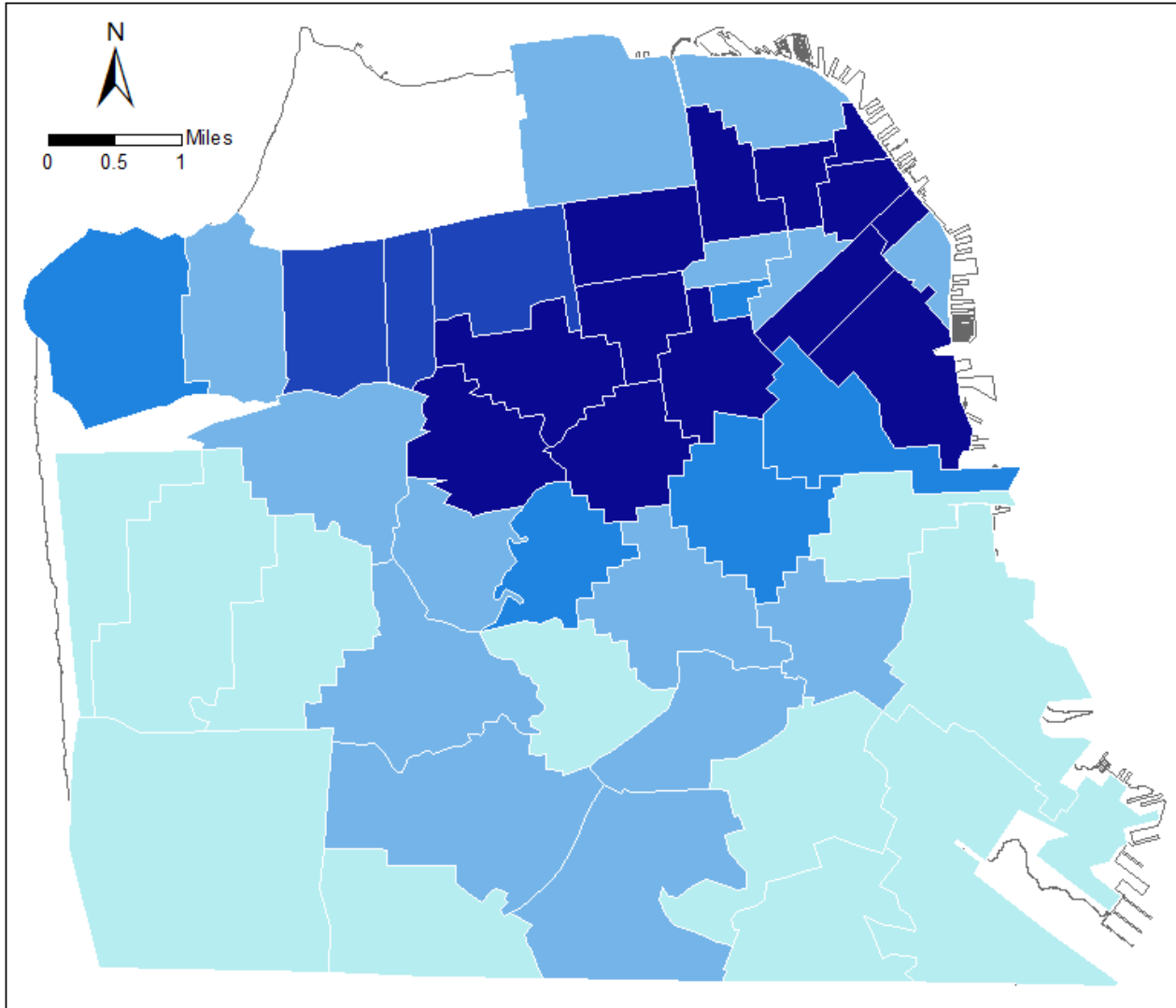
FWSS Crossing Schematic



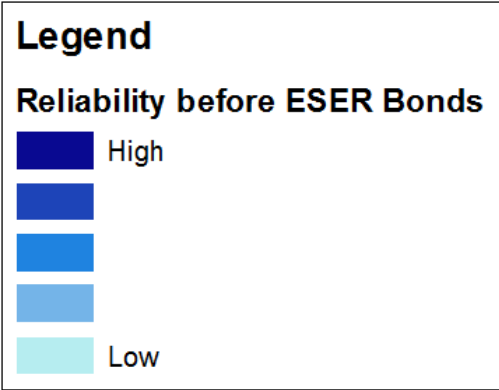
Proposed FWSS Crossing Locations

Street 1 (On)	Street 2 (Crossing)	Water Source
24th Ave.	Moraga St.	Sunset
24th Ave.	Noriega St.	Sunset
24th Ave.	Ortega St.	Sunset
24th Ave.	Taraval St.	Sunset
28th Ave.	Moraga St.	Sunset
28th Ave.	Noriega St.	Sunset
Lawton St.	19th Ave.	Sunset
Lawton St.	Sunset Blvd.	Sunset
Ortega St.	41st Ave.	Sunset
Ortega St.	Sunset Blvd.	Sunset
Pacheco St.	19th Ave.	Sunset
Santiago St.	19th Ave.	Sunset
Santiago St.	Sunset Blvd.	Sunset
Ulloa St.	19th Ave.	Sunset
Brazil Ave.	Mansell St.	McLaren Park
Brazil Ave.	Mission St.	McLaren Park
Vienna St.	Persia Ave.	McLaren Park
Brotherhood Way	Lake Merced Blvd.	Lake Merced
Middlefield Dr.	Lake Merced Blvd.	Lake Merced
Mission St.	Richland Ave.	College Hill
Mission St.	Silver Ave.	College Hill
Randall St.	Mission St.	College Hill
Randall St.	San Jose Ave.	College Hill
20th St.	Pennsylvania Ave.	Potrero Heights
22nd St.	Wisconsin St.	Potrero Heights
23rd St.	Potrero Ave.	Potrero Heights

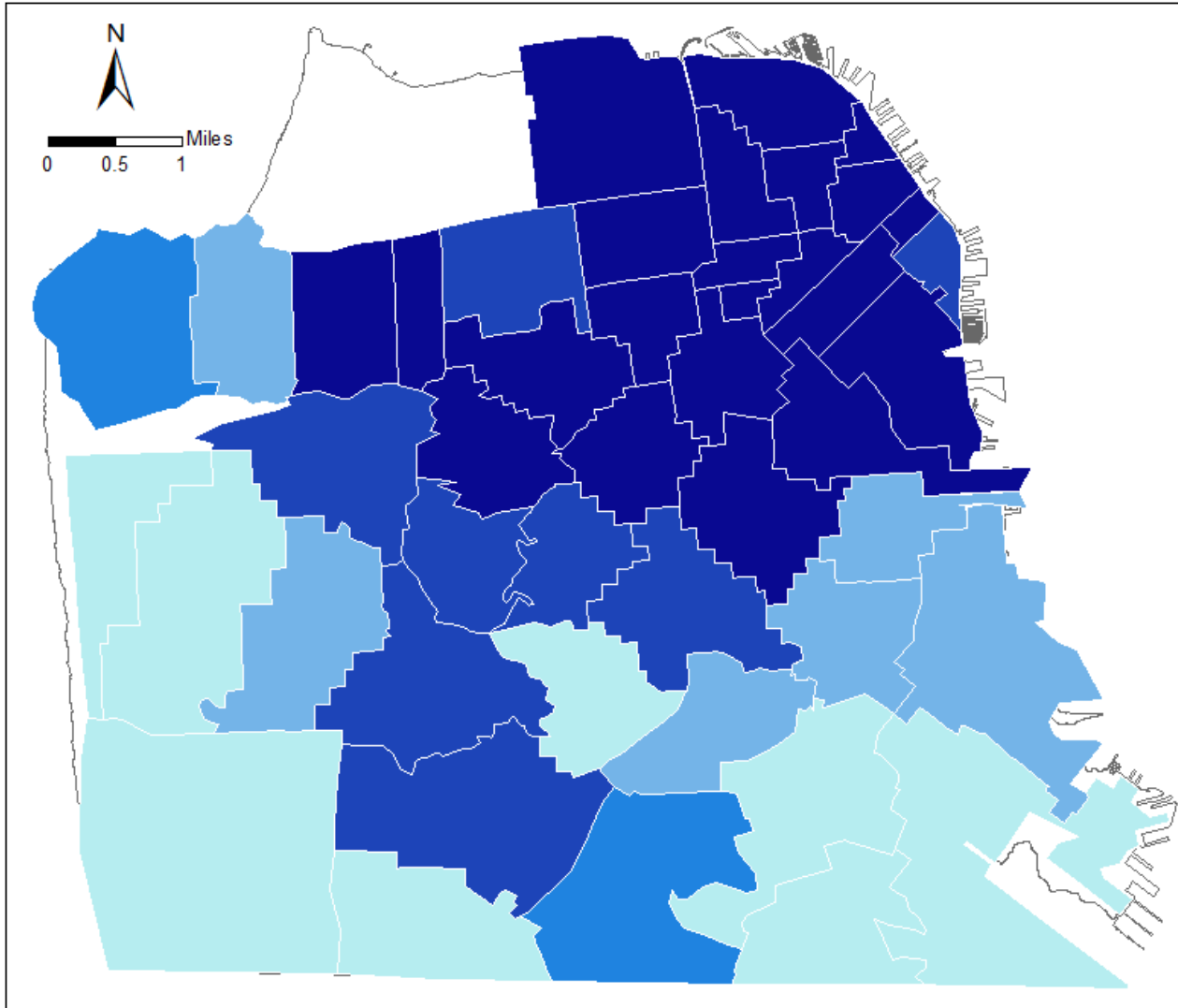
Reliability before ESER Bonds



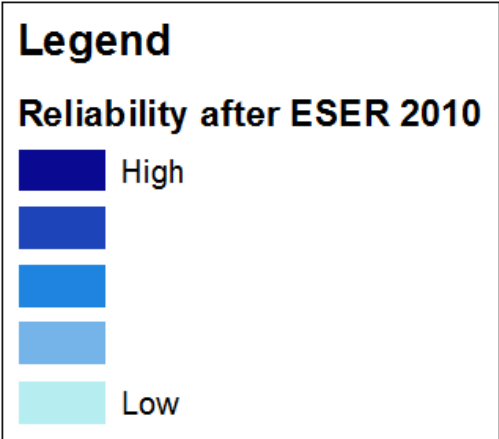
Citywide reliability
47%



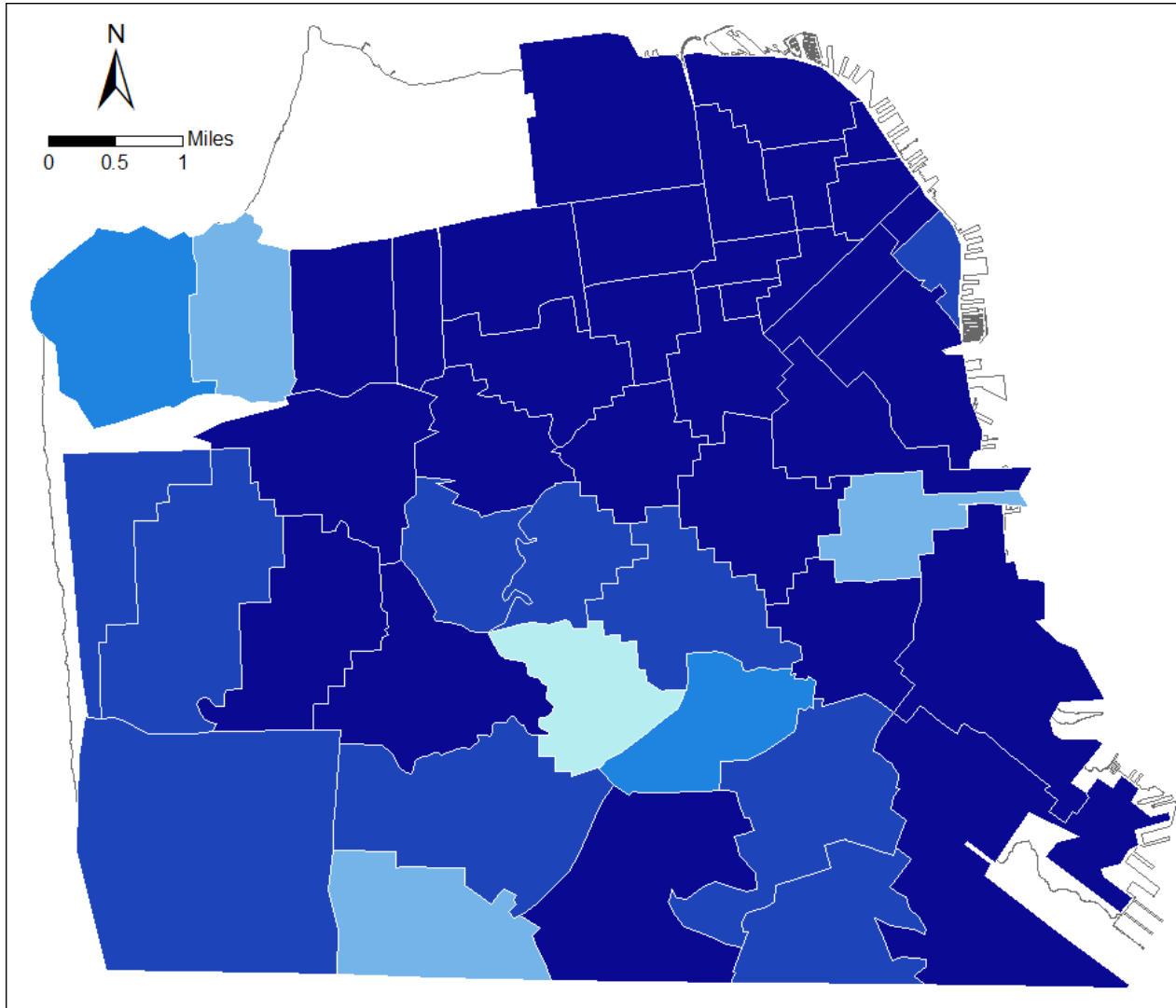
Reliability after ESER 2010



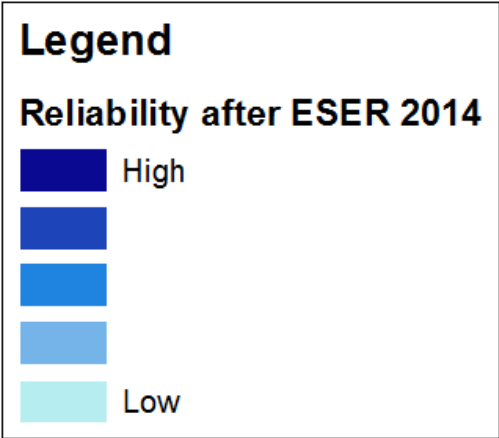
Citywide reliability
67%



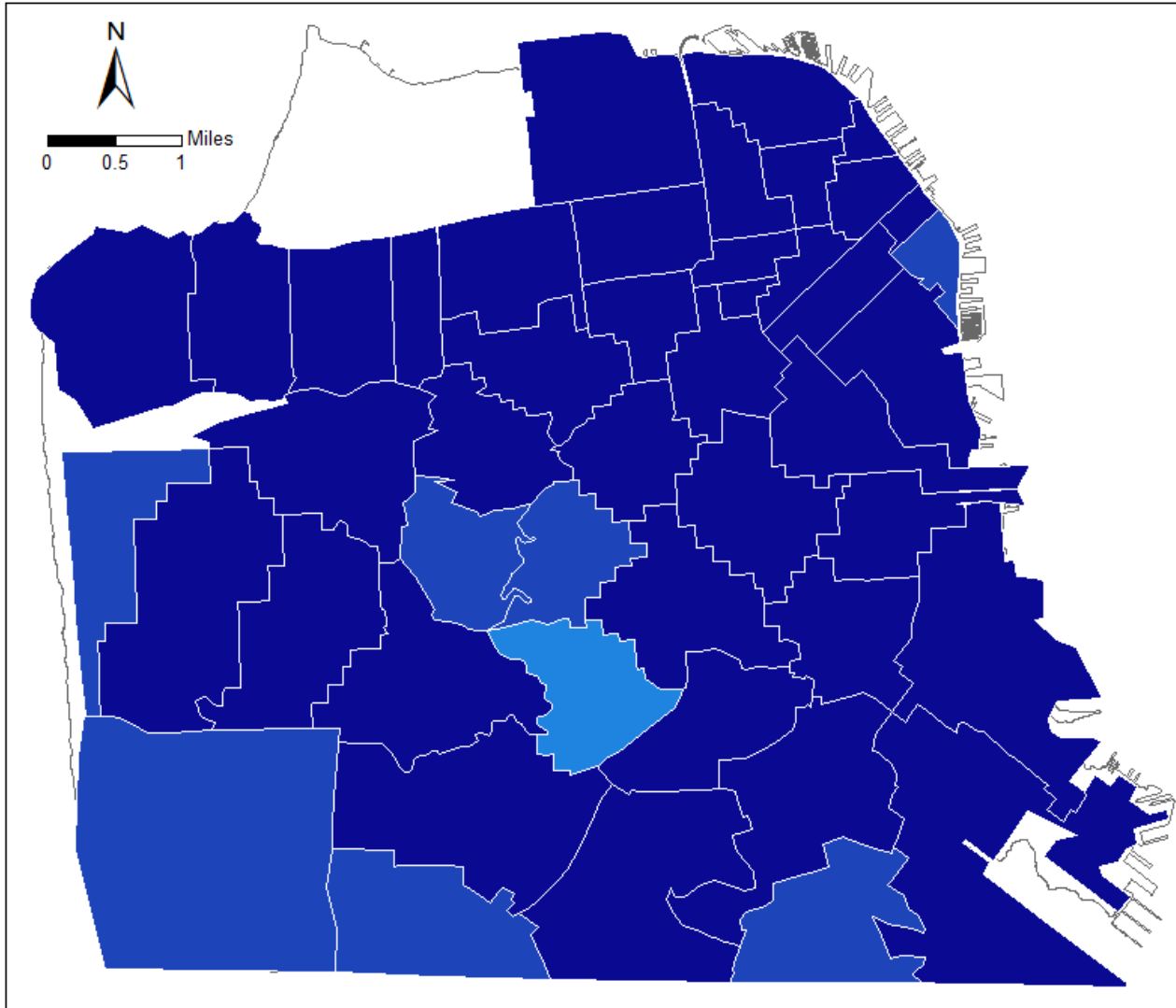
Reliability after ESER 2014



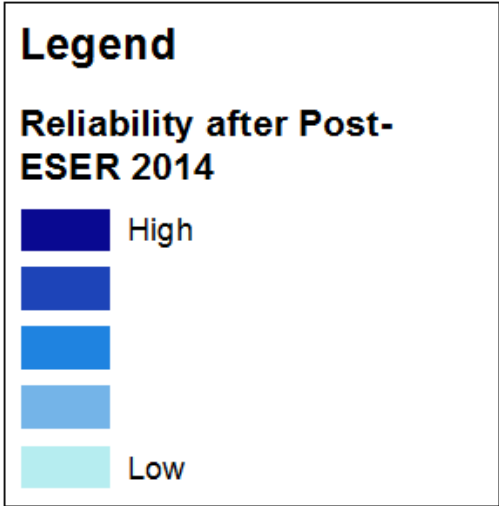
Citywide reliability
85%



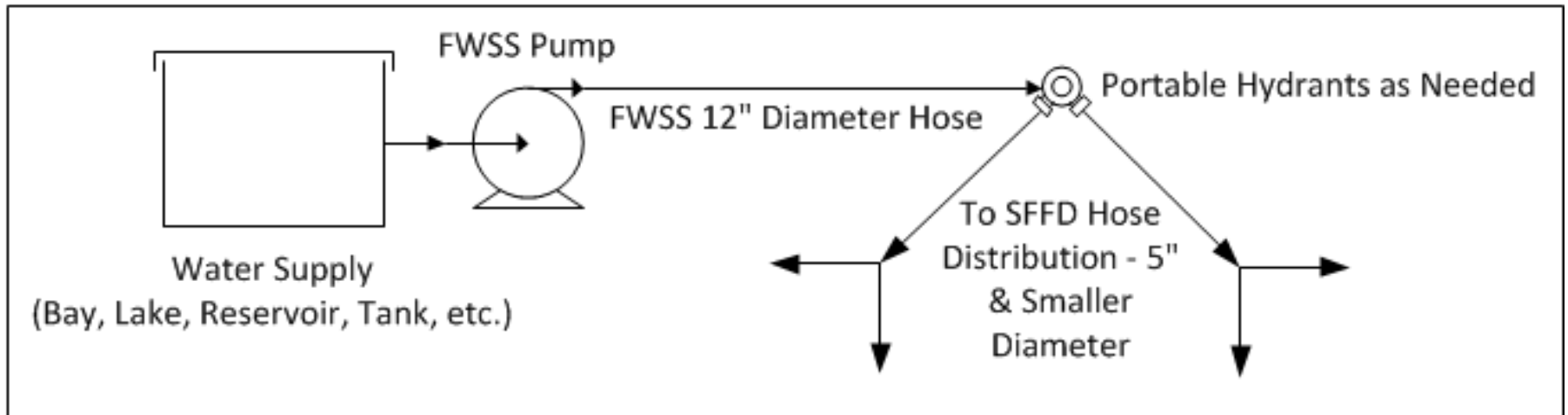
Reliability after Post-ESER 2014



Citywide reliability
93%



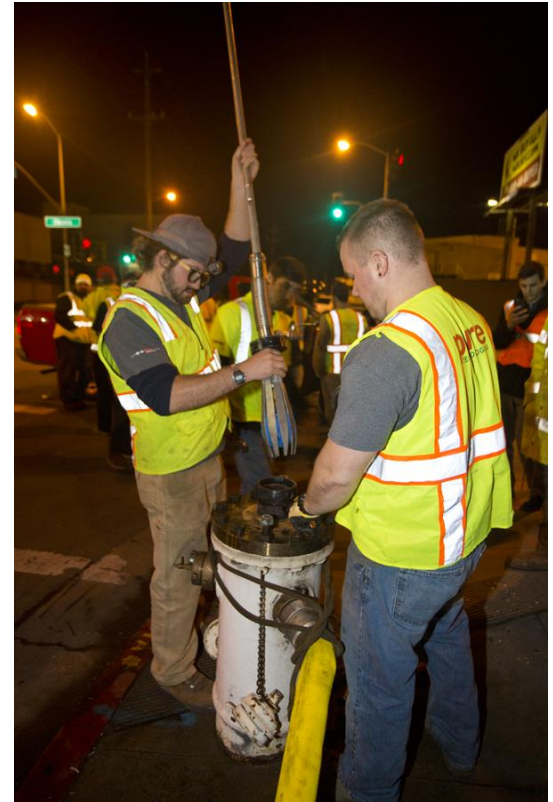
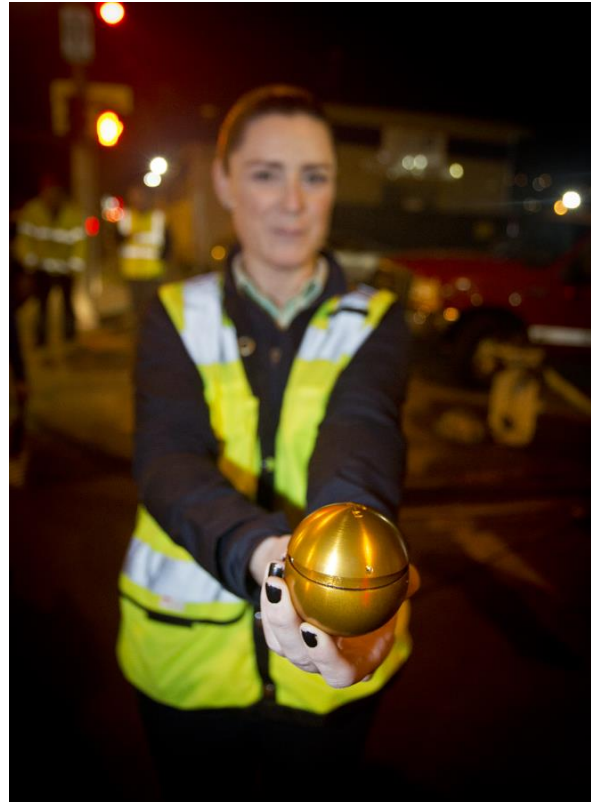
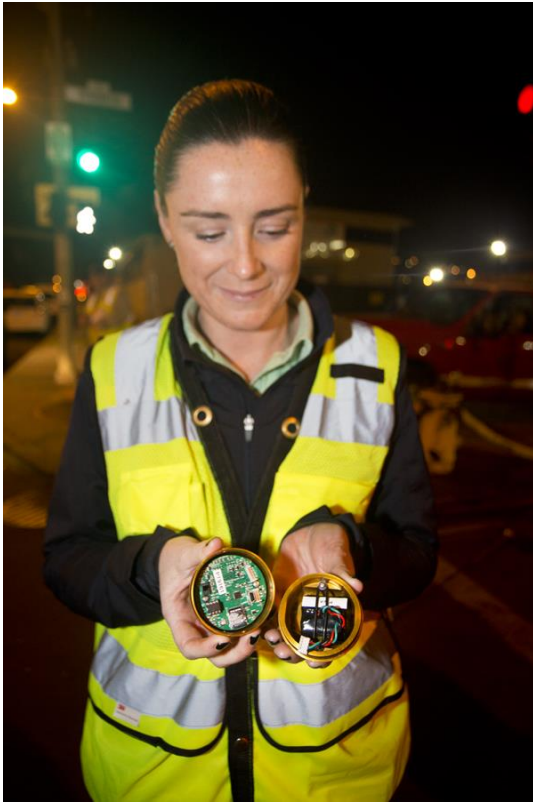
FWSS Schematic



Pipeline Assessment Program

- Planning study assumed pipeline in original condition and properly installed, but subject to earthquake damage
- Pipeline condition affected by ground displacement, corrosion, interfering utilities, installation, internal pressure, external loading, etc.
- Pipeline analysis
 - Likelihood of failure
 - Consequence of failure
 - Probabilistic and mechanistic analyses
- Goal: capital improvement recommendations
 - Repair
 - Replace
 - Abandon
- Implement capital improvement program

Pipeline Assessment



Pipeline Assessment

