Seattle Public Utilities | Protecting Seattle's Waterways

Preventing Sewage Overflows Into Lake Washington

Updated March 6, 2014

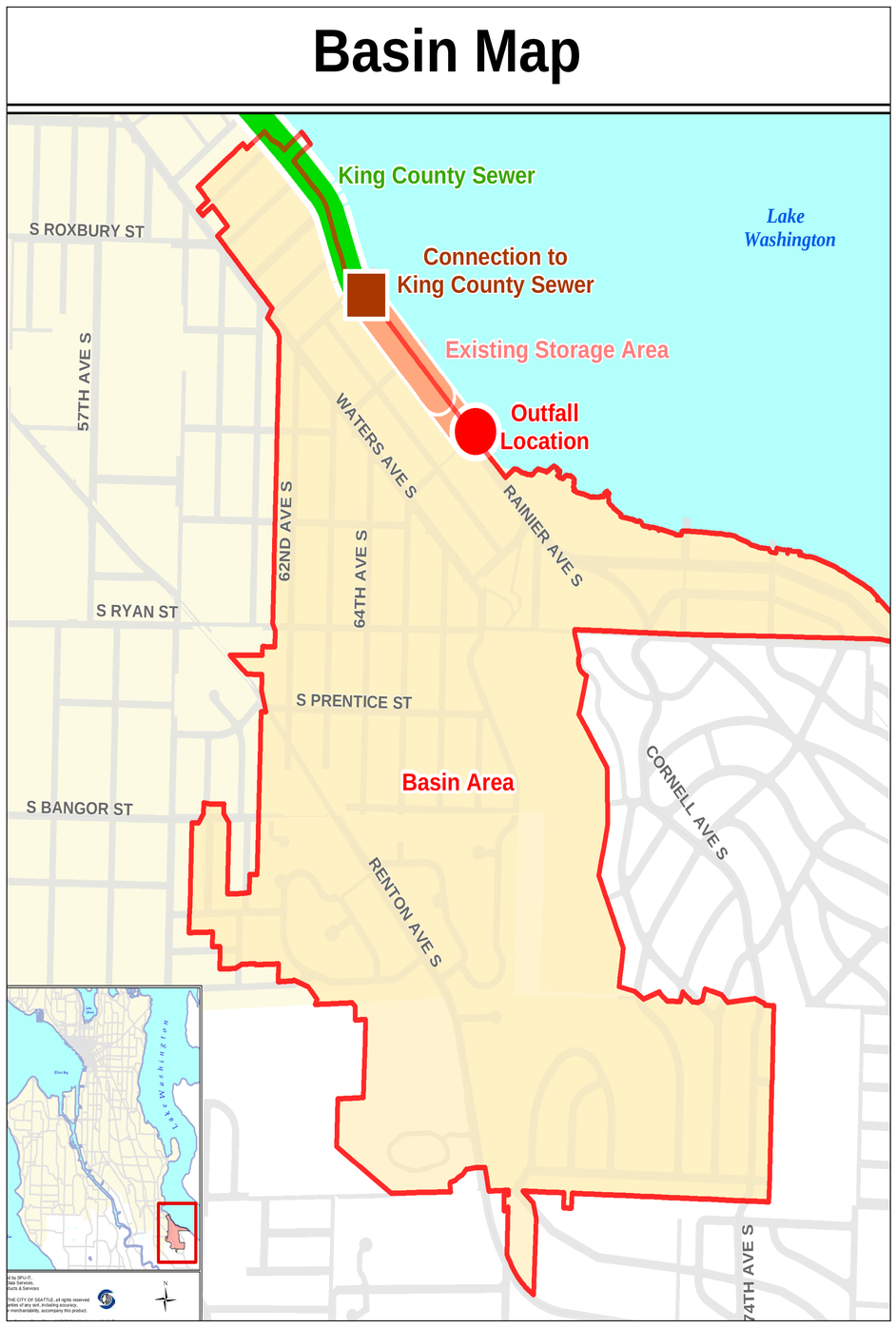
South Lake Washington Sewage Overflow Prevention:

Project Overview

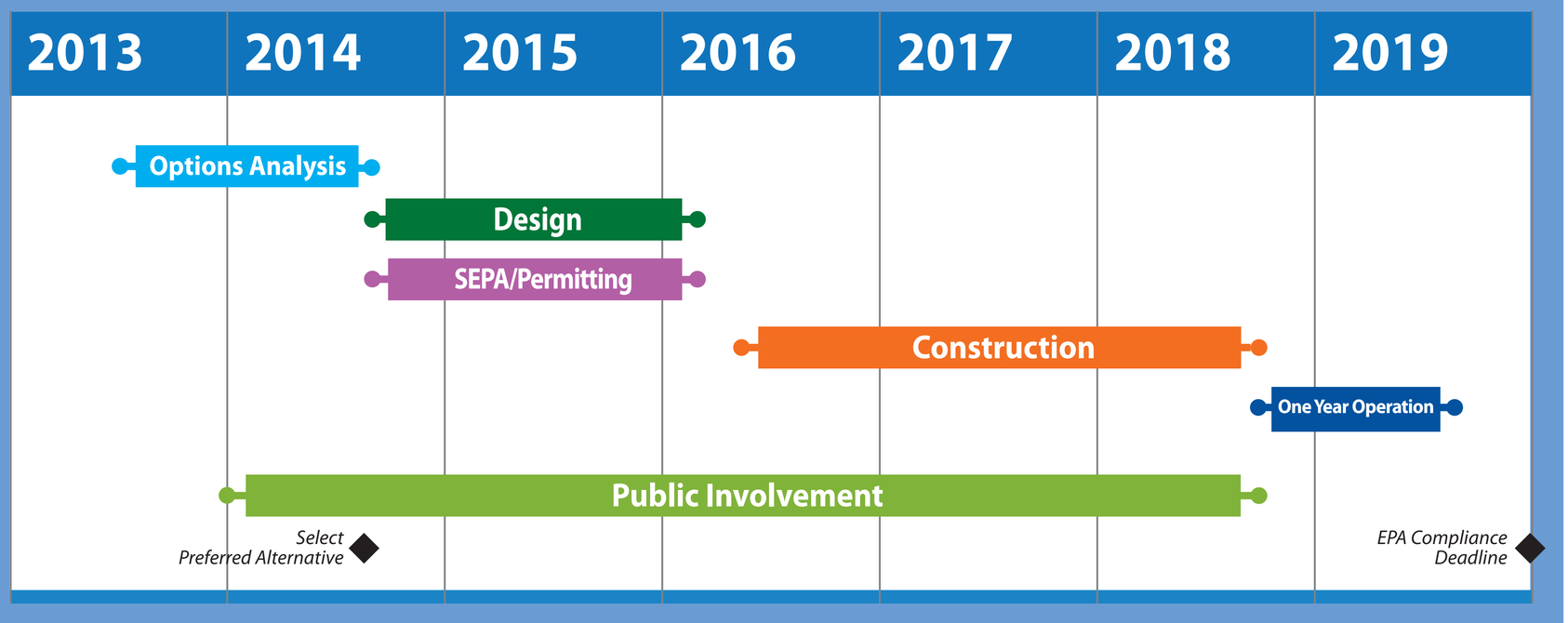
During heavy rains, nearly two million gallons of raw sewage and polluted stormwater overflowed into Lake Washington from a nearby outfall in 2012. Seattle Public Utilities (SPU) must correct this problem to protect public health and the environment, and comply with the federal Clean Water Act and state regulations. SPU proposes to build an underground storage tank to reduce sewage and stormwater overflows into Lake Washington.

SPU is evaluating four options to control sewage and polluted stormwater near Rainier Avenue S and Lake Washington (see basin map). Each option would:

- Cost about$20 - $24 million (total project cost)
- Have some impacts to neighbors and the traveling public during construction
- Take about 18 months to complete construction
- Control or store approximately 800,000 gallons of storage - slightly more than an Olympic size swimming pool



Timeline



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South Lake Washington Sewage Overflow Prevention:

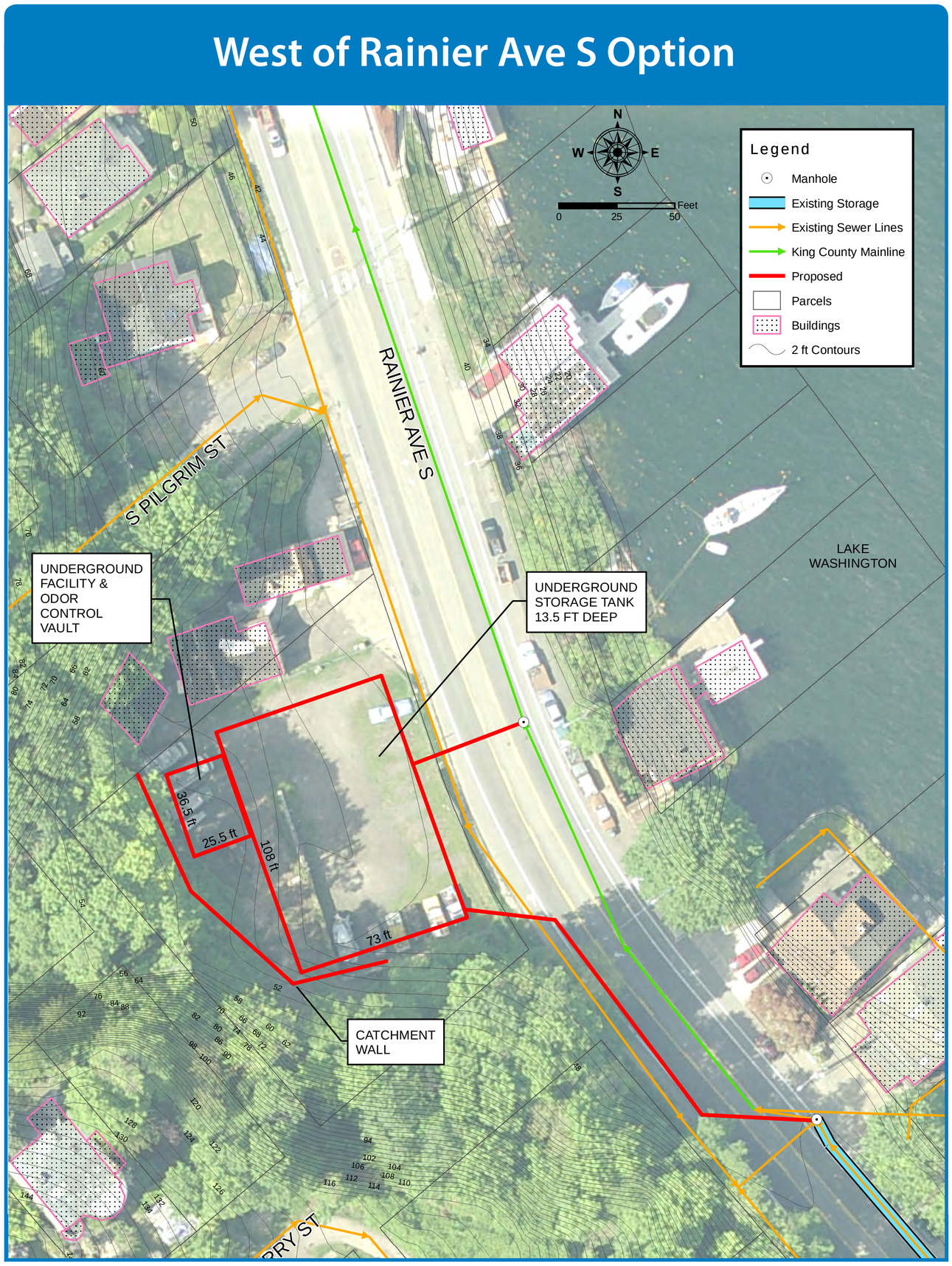
West of Rainier Ave S Option

Description of Potential Facility

- Underground storage tank on private property west of Rainier Avenue S
- SPU is working with the property owner to discuss options for using this property for the project
- Approximately 108 feet long, 73 feet wide, and 13.5 feet deep
- Separate underground facilities vault would house electrical, mechanical and odor control equipment
- Small above-grade electrical panel and vent pipe
- Permanent catchment wall along the southwest perimeter of the site to stabilize the steep slope
- Surface would be restored after construction and paved, allowing for access and parking to the commercial business the property owner is developing on this site
- SPU operation vehicles would access the area periodically for maintenance, parking on-site or along Rainier Ave. S.

Example of a slope-stabilizing catchment wall

Example of underground storage tank during construction



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South Lake Washington Sewage Overflow Prevention:

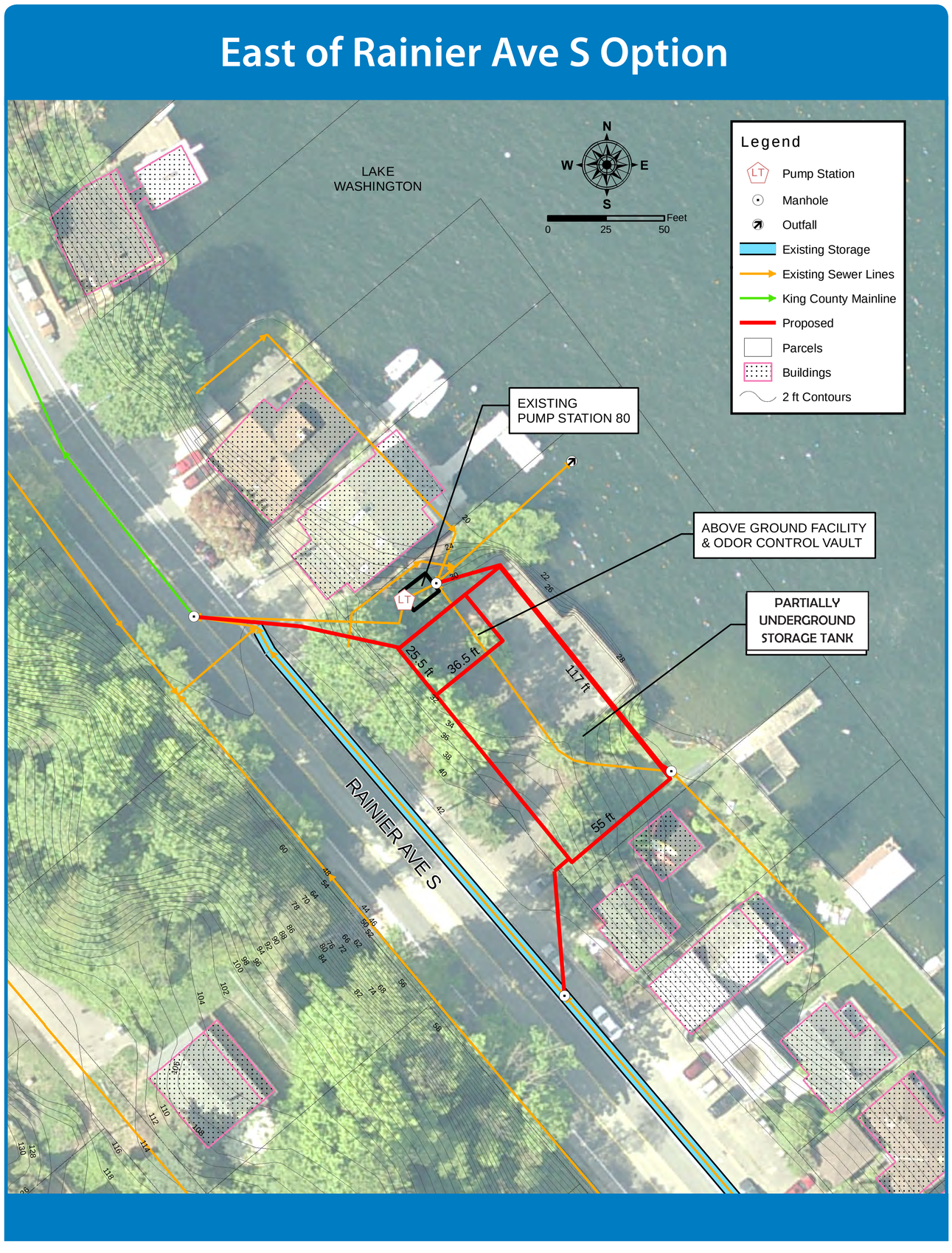
East of Rainier Ave S Option

Description of Potential Facility

- Partially underground storage tank on SPU property on the east side of Rainier Avenue S adjacent to the Lake Washington shoreline
- Approximately 117 feet long and 55 feet wide, and 16.5 feet deep
- Approximately 7 feet of the tank would be above ground
- Above-grade building would house electrical, mechanical, and odor control equipment
- Site paved after construction with access hatches for maintenance
- Restorative landscaping and improvements to the bulkhead along the shoreline
- Potential aesthetic treatments to the above-ground portion of the facility
- SPU trucks would access the area periodically for maintenance, parking on-site or along Rainier Avenue S
- Public access will not be provided, keeping the same use and access as is present today

Property today

Example of underground storage tank during construction



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South Lake Washington Sewage Overflow Prevention:

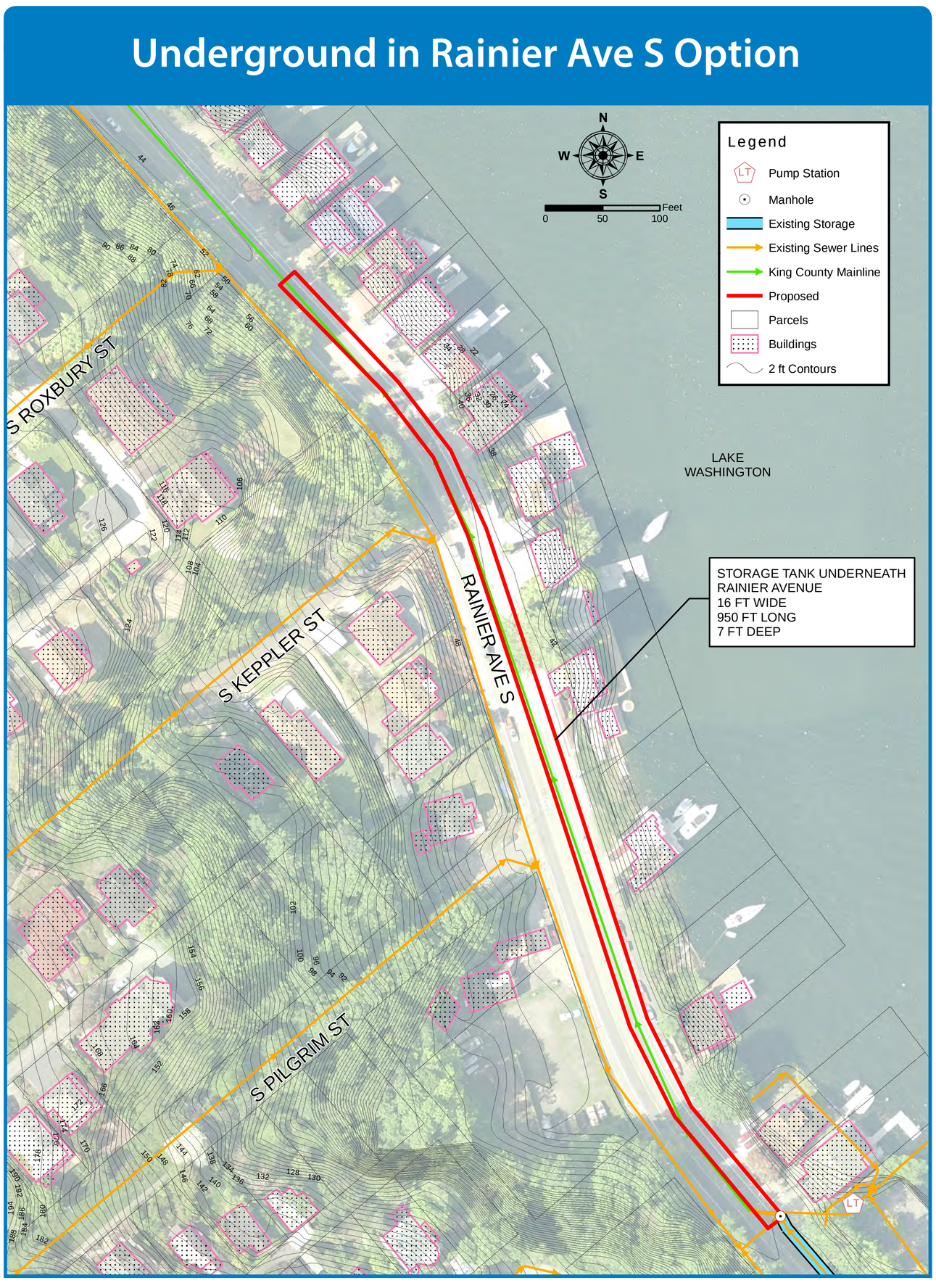
Underground in Rainier Ave S Option

Description of Potential Facility

- Underground storage tank underneath the Rainier Avenue S right-of-way between 68th Ave S and S Roxbury Street
- Approximately 950 feet long, 16 feet wide, and 7 feet deep – about 3 football fields in length
- Travel lane and sidewalk closures anticipated during construction
- Parking, bicycle, and pedestrian impacts during construction
- Street surface would be reconstructed to current Seattle Department of Transportation design standards
- Access hatches would be located along the tank length for maintenance
- Periodic one-lane closures would be required for maintenance, the current practice for the existing storage located to the south under Rainier Ave.

Rainier Avenue S today

Example of construction in roadway



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South Lake Washington Sewage Overflow Prevention:

Flow Transfer to King County Option

Description of Potential Facility

- Install 4,200 feet of 18-inch diameter line underneath the Rainier Ave. S. and Seward Park Ave. S. right-of-way – about 12 football fields in length (from approx. 68th Ave. S. and Rainier Ave. S. at the south end, to Seward Park Ave. S. and S. Henderson St. at the north end)
- Transfer additional flows of sewage and stormwater to the King County portion of the system for conveyance and treatment
- Bicycle lane, sidewalk and possible travel lane closures during construction
- Two-travel lanes would remain open on Rainier Avenue S during construction
- Street surface would be reconstructed to current Seattle Department of Transportation design standards
- Collaborative SPU/King County option, intended to optimize the performance of the existing system
- Likely will require upgrades to downstream storage and pumping facilities, which would cost additional money and result in community impacts in additional locations.

Example of pump station

Example of construction in roadway

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South Lake Washington Sewage Overflow Prevention:

Identifying the Options

How does SPU evaluate project options?

Size the problem ▶ Develop initial list of options ▶ Screen options ▶ Develop short-list of options ▶ Perform triple bottom line analysis ▶ Identify preferred option

SPU considers the social, financial, and environmental impacts of each option, including:

- Transportation, particularly construction-related traffic impacts
- Parking
- Pedestrian and bicycle impacts
- Long-term environmental impacts
- Community preferences
- Impacts to ratepayers

Introduction to sewage overflow reduction strategies

How does storage work?

The storage tank will temporarily hold raw sewage and polluted stormwater during a storm, when there is less room available in the sewer system. When the storm passes and capacity is available, the storage tank gradually sends the raw sewage and polluted stormwater to a wastewater treatment facility. Storage facilities can be in the form of tanks, pipes, and tunnels.

Benefits

- Provides temporary storage for combined sewage that can then be treated after a storm at the wastewater treatment plant
- Completed facility is below ground and landscaping and design can reduce visual impact

Constraints

- Can be difficult to site in urban areas

How does flow transfer work?

Flow transfers route peak flows to another location by expanding the capacity of the combined sewer conveyance system. Increasing capacity by adding new pipe, replacing existing pipes or building new pump stations allows flows to be diverted to other parts of the system. All flows are eventually sent on to a wastewater treatment or storage facility.

Benefits

- Overflows can be transferred to locations where peak flows can be better managed

Constraints

- Construction is spread out over a wide area so impacts to neighborhoods, businesses and local streets could be extensive
- Moves flow from one location to another, but additional storage or treatment facilities may still be needed