

Montgomery Park to Hollywood Transit and Land Use Development Study

Initial BES Resiliency considerations for Westside alignment

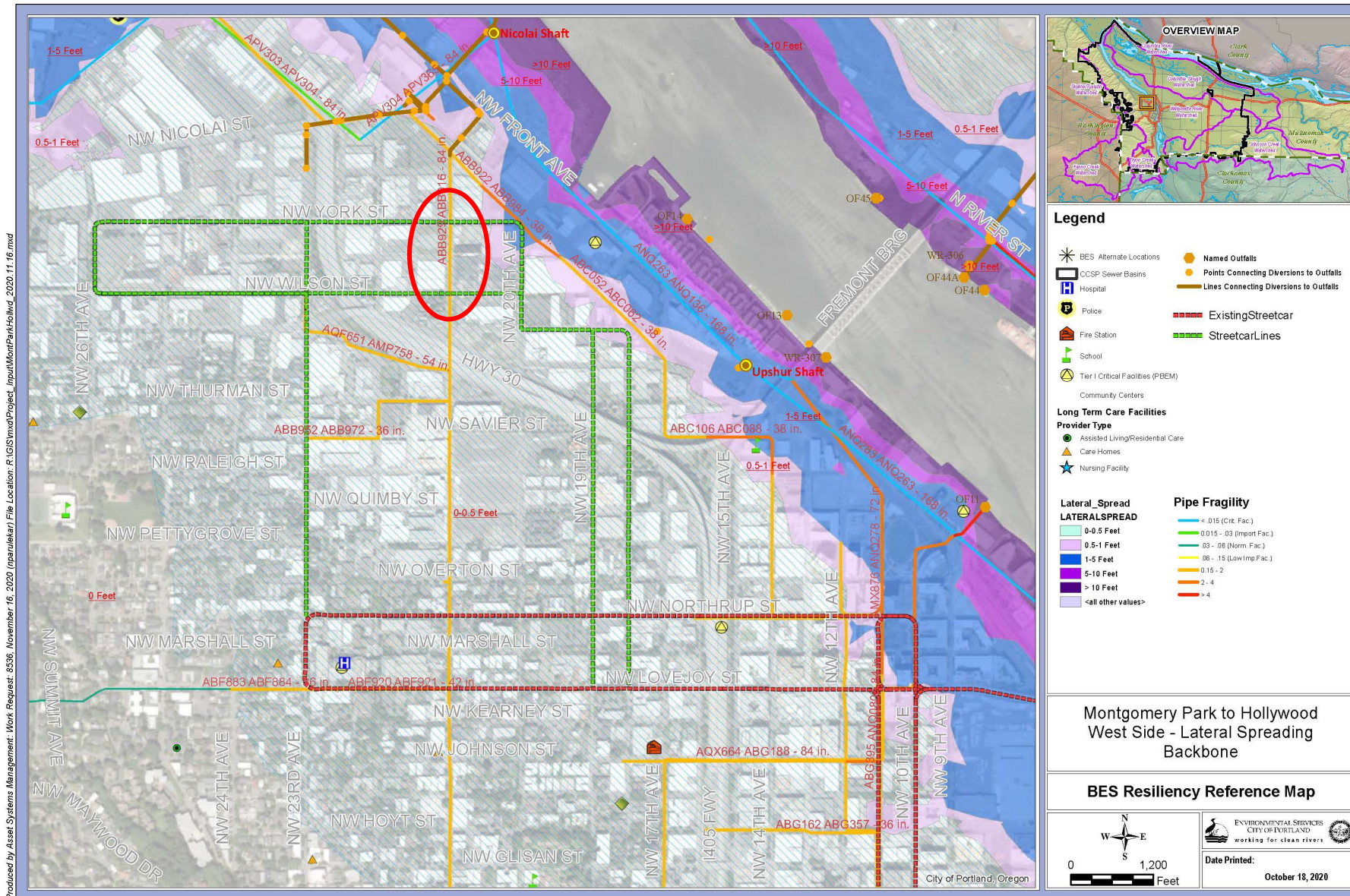
December 2, 2020



This 1930 photograph shows the Guild's Lake area, filled in with sediment sluiced from the West Hills and dredged from the Willamette River. The Montgomery Ward building is visible just to the south of the filled area.

Photo courtesy of Oregon Historical Society, OrHi 64447

Earthquake Lateral Spreading – BES Backbone Seismic Vulnerability

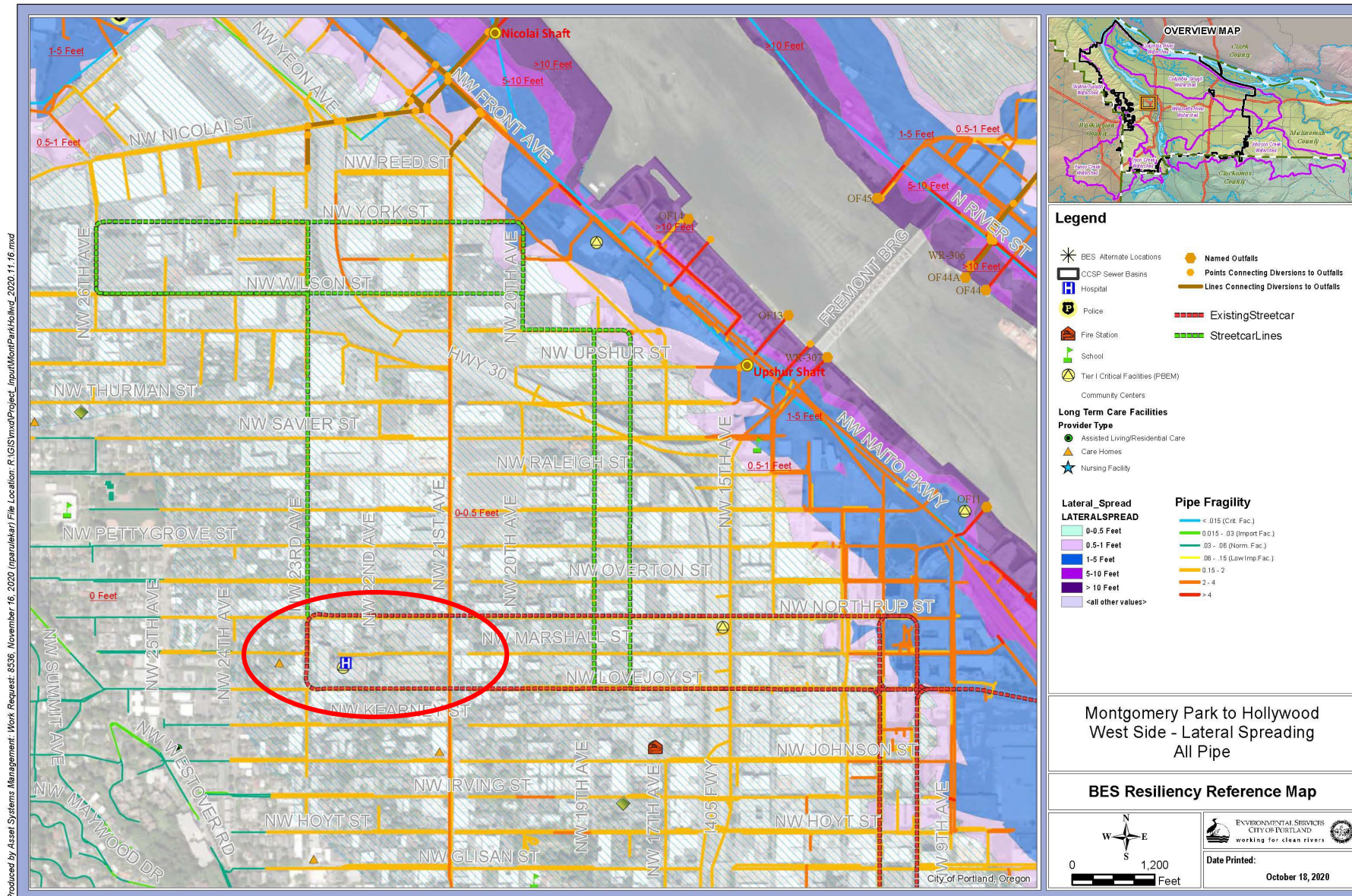


Map shows fragility of critical BES “backbone” assets in relation to projected lateral spreading associated with M9.0 earthquake scenario.

Takeaways:

- BES has critical, seismically vulnerable assets (red circle) under the new route. We will want to evaluate upgrade needs prior to route construction.
- Are new routes expected to provide service after a Cascadia quake? There are interdependency issues to consider.
- Eastern streetcar alignment option provides marginally better opportunity to reinforce backbone pipe that runs under NW 21st.

Earthquake Lateral Spreading – BES All Pipe Seismic Vulnerability



Map shows BES pipe fragility in relation to projected lateral spreading associated with M9.0 earthquake scenario.

Takeaways:

- Many BES pipes underlying both alignments have moderate to high fragility and may fail during an earthquake, undermining the rail lines. Depending on post-earthquake transit priority of proposed lines, reinforcing could reduce risk from pipe failure.
- Routes near Legacy Med Center should be resilient; BES would invest to make sure pipes don't fail and cause sinkholes near hospital; NW23rd is concern as well.
- Lateral spreading risk is greater for the eastern proposed streetcar option.

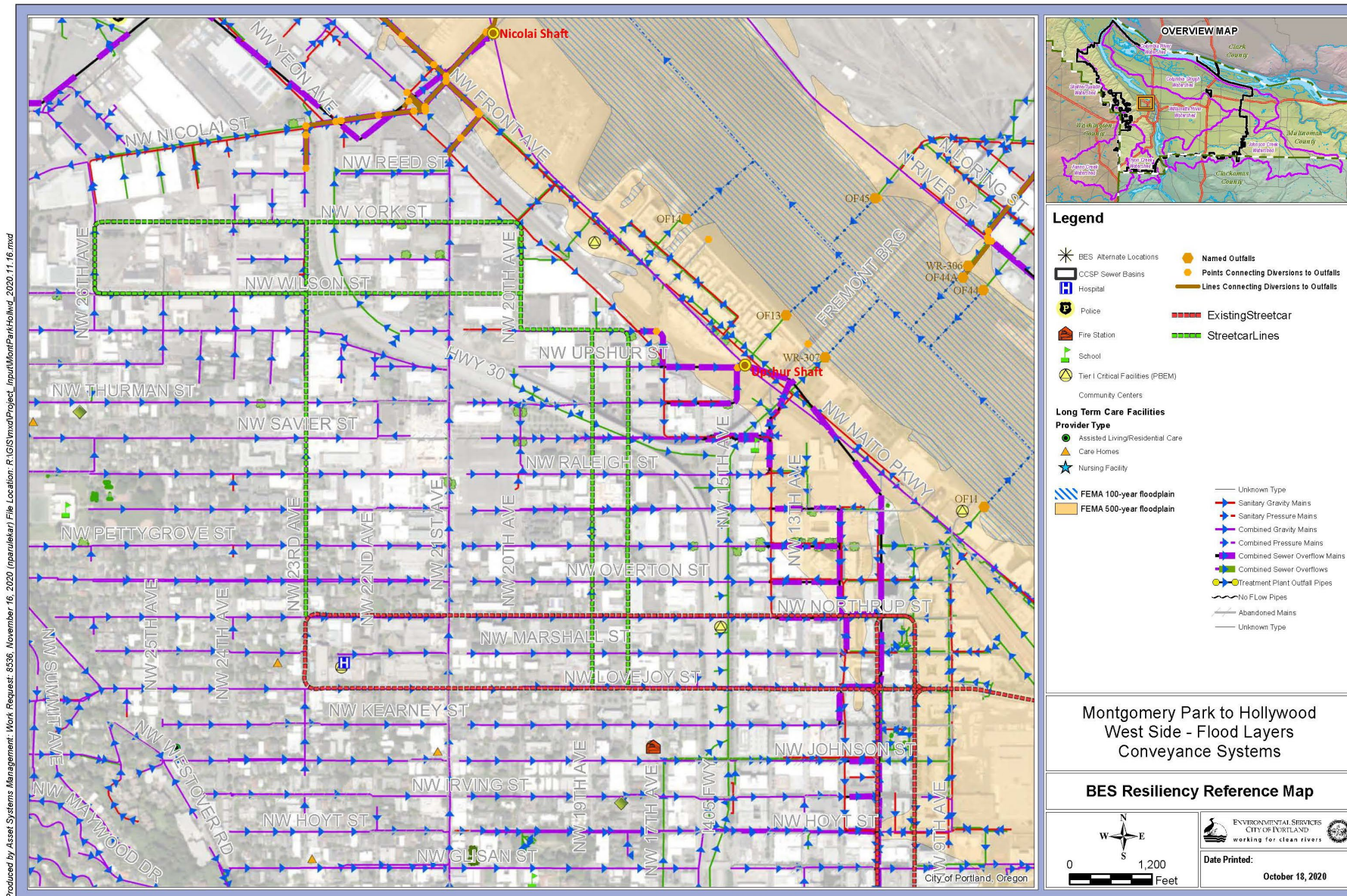
Produced by Asset Systems Management: Work Request: 8536, November 16, 2020 (nparulekar) File Location: R:\GIS\mxd\Project_Input\MontPark\Hollvud_2020.11.16.mxd



Takeaways:

- The eastern streetcar route and portion of NW Wilson line have high risk of regular localized street flooding, an access barrier for streetcar users. Flooding may periodically interrupt service. Raised platforms and other design elements would only partially mitigate flood impacts to users.
- Project might provide opportunity for BES to address pipe capacity issues in select locations.

Climate Change – Riverine Flooding and BES Conveyance

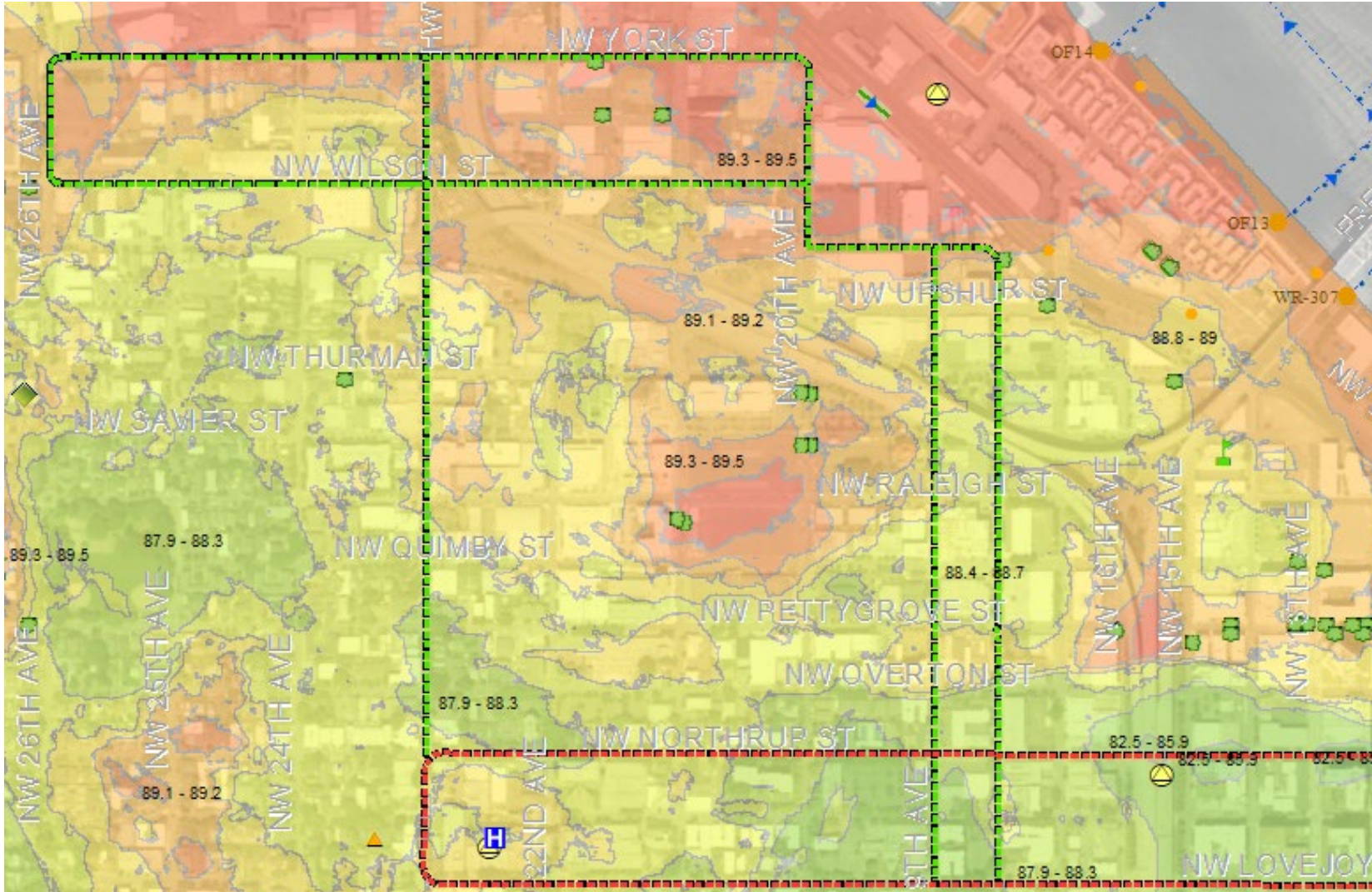


Map shows BES conveyance system in relation to 100-and 500-year FEMA-mapped floodplains.

Takeaways:

- Potential streetcar alignments are outside of mapped floodplains.
- FEMA map layers are estimates. Actual riverine flood extents may vary from FEMA maps due to compounding stormwater contributions, climate change, dam operations, and other factors.
- Riverine flooding does not initially appear to be a high-frequency risk for BES assets associated with the proposed streetcar alignments.

Climate Change – Urban Heat Islands



Map shows urban heat in relation to proposed streetcar alignments.

Takeaways:

- Proposed streetcar alignments and redevelopment of former industrial/employment area could provide opportunities to mitigate urban heat island effect by increasing green infrastructure including tree canopy.
- Rail-related infrastructure should account for higher operating temps in mechanical and electrical design.

Preliminary map data provided by PSU Prof. Vivek Shandas and BPS on 11/24/20