

# Roxhill Wetland Hydrology Restoration: Pilot Groundwater Block Design

This design is the outcome of a community led wetland restoration project, restoring wetland function



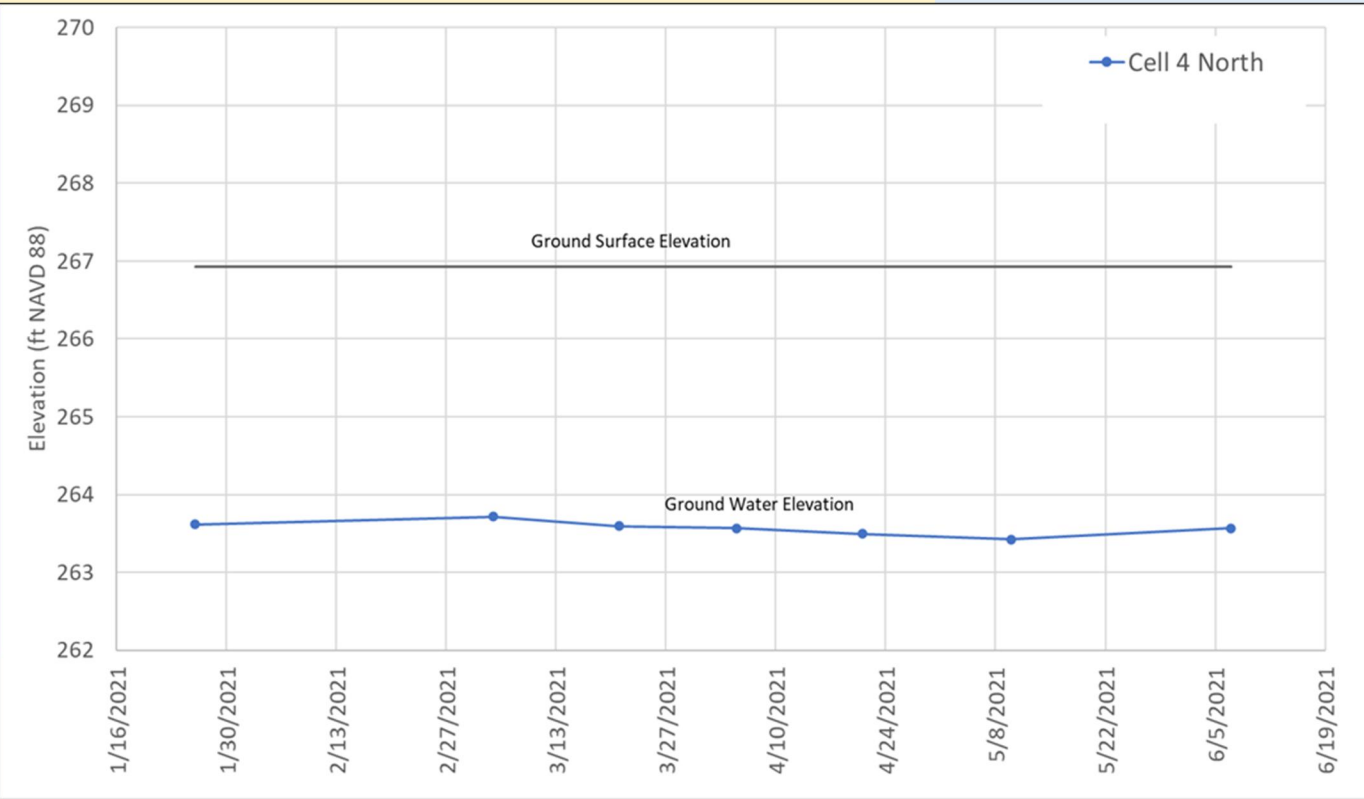
Figure 1 . Roxhill Park Wetland Hydrology Restoration Study Area Location.

The Roxhill wetlands are the historical headwaters of Longfellow Creek, occupying a depression within fine-grained glaciolacustrine sediments deposited after the last glaciation, approximately 14,000 years ago. The wetland system has undergone a number of significant changes after European establishment of the City of Seattle. Our best evidence for the former extent of the wetland is the mapped extent of Peat (symbol Op) shown on a 1962 geologic map of the South Seattle Quadrangle by the United States



Figure 2 . Geologic context of Roxhill Park and wetlands.

- Note that only the indicated units were digitized; the units shown are generally surrounded by glacial till (not shown).
- Since informal groundwater and wetland monitoring started in 2019, there has been no evidence of surface water within Cells 1 to 3. Surface flows from the Upper Basin (south of cell 4) have been observed to enter the Cell 4 during significant storm events but infiltrate within 25 feet of the trail bridge at the upstream end of Cell 4.
- 2021-2022 groundwater monitoring revealed that groundwater is typically 3.5 feet to 5 feet below the soil surface (see Figure 3 ). Wetlands are typically sustained when groundwater is within 1-foot of the soil surface. A 2022 formal wetland delineation of Roxhill bog found that the vast majority of the bog is no longer technically a wetland.



## Study Area

In addition to this site assessment, a 2020 survey of community leaders and members revealed two key concerns, 1) declining environmental health of the bog wetland ecosystem and 2) the natural area was becoming increasingly unsafe to visit, day or night. Restoration of wetland hydrology will benefit the former bog and naturally shift the wetland plant community toward wetland species. In the meantime, a vegetation management plan, which opens up sightlines and views along the trails and trail intersections, is being implemented by Delridge Neighborhood Development Association in collaboration with Seattle Parks and Recreation.



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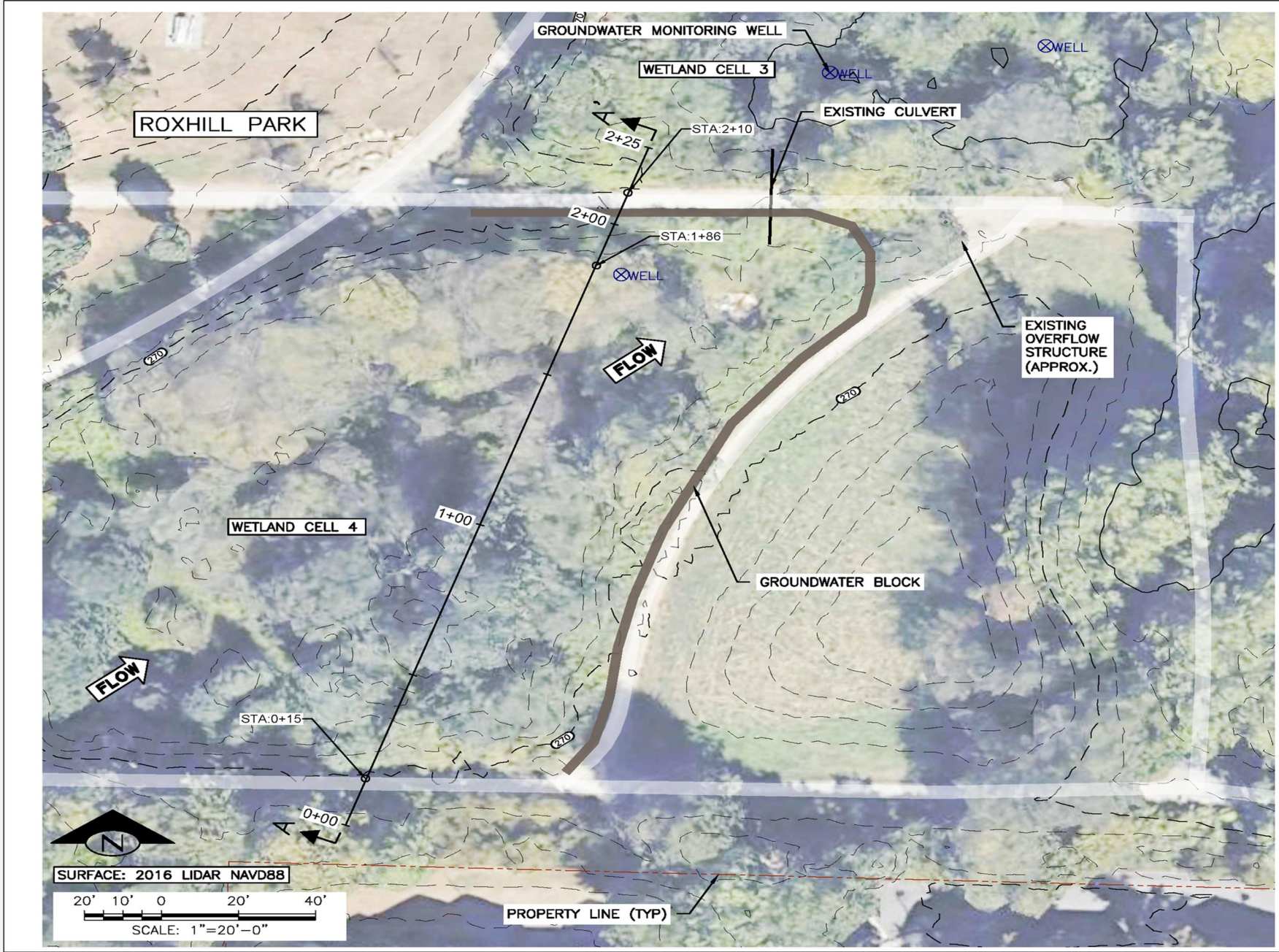
## Project Partners:



## Funding:



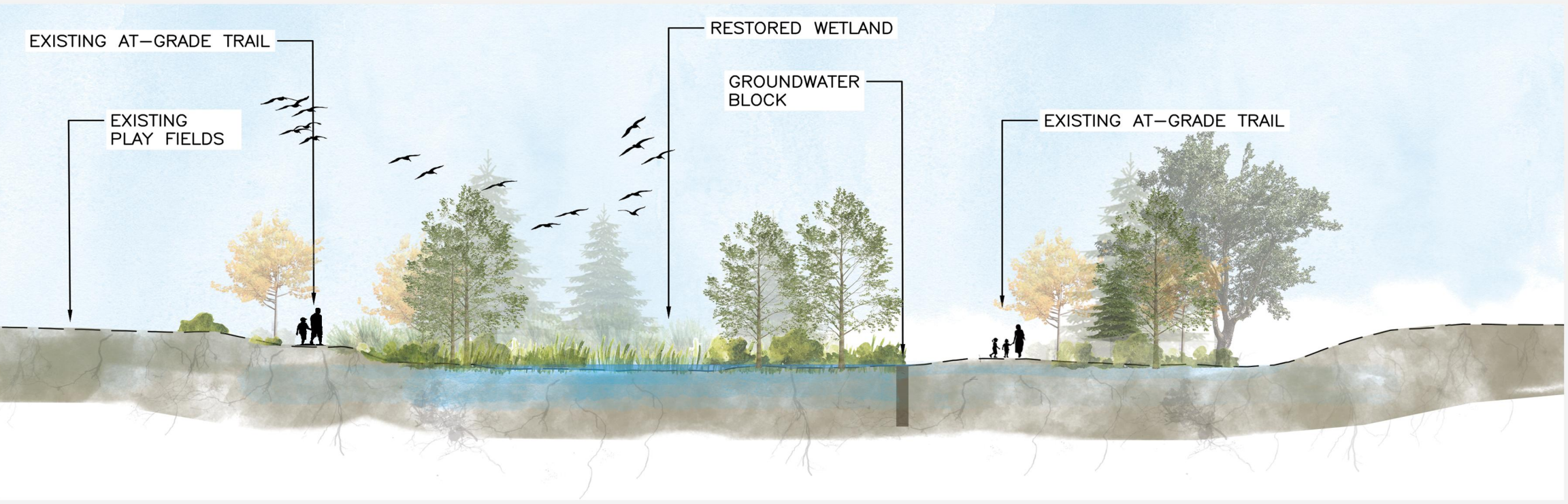
This project is funded in part by the King County Wastewater Treatment Division, The Boeing Company and Rose Foundation for Communities and the Environment



Restoring wetland hydrology within the highly modified urban context surrounding Roxhill bog is not a easy task. When constructed, the proposed groundwater block in cell 4 will be a unique pilot project, testing whether groundwater flows are infiltrating deeper into the soil profile or running laterally underground and off site (see plan view). If increases in groundwater elevations are observed, then additional groundwater blocks will increase local groundwater levels and significantly restore wetland hydrologic processes (see illustrated cross section view).

- The proposed pilot groundwater block project consists of installing a vinyl sheet pile groundwater block between Cell 4 and Cell 3 to elevation 267 (see plan and cross section views).
- The block would generally be aligned along the edge of existing paths, limiting disturbance to the park and vegetated areas and intersecting known groundwater flow path.
- An important element of the pilot project will be the development and implementation of a focused monitoring program. The monitoring program will utilize the existing groundwater monitoring network to track groundwater response. The monitoring should occur for a full wet season (Oct-May) following pilot project installation.

- Lessons learned from this pilot project will be used to inform future restoration of the bog.



## Select Resources and References:

- Roxhill Park: Hydrologic Investigations and Recommendations. King County Wastewater Treatment Division, Department of Natural Resources (March 2000)
- Roxhill Park Natural Area Stewardship Report, Starflower Foundation (2007)
- SPU Test Pit Descriptions, SPU Materials Lab (October 1999)
- Roxhill Bog Committee Report – Why the Roxhill wetland is Dry and What Can be Done About it (March 2015)
- Seattle Public Utilities Investigation, Roxhill Park Existing Conditions Report (August 2014)
- What Happened At Roxhill (David Perasso, June 2014)
- Longfellow Creek Historical Ecology Project (SPU, 2003).
- Starflower Foundation, 2007. Roxhill Park Natural Area Stewardship Report.
- Pfeiffer, C.A., 2020. Roxhill Park Natural Area Trailside Vegetation Management for Safety, Visibility & Habitat. Seattle, Washington.
- Rigg, G.B., 1958. PEAT RESOURCES OF WASHINGTON (No. Bulletin No. 44). Olympia, WA