IMPROVING OUR COMMUNITIES with Natural Drainage Systems (NDS)

What are Natural Drainage Systems?

When it rains in Northeast Seattle, pollution from our streets runs directly into Thornton Creek untreated. Untreated runoff is not healthy for Thornton Creek, the Salish Sea, or people. The good news is: there is something we can do.

Natural Drainage Systems consist of shallow depressions built in the roadway shoulder (the space between the street edge and the property line) and are filled with deep-rooted plants and spongy soils that temporarily hold and clean polluted stormwater from streets. These features capture and clean pollutants before they can reach Thornton Creek.

Seattle Public Utilities (SPU) is planning to build natural drainage systems in your neighborhood in 2022.

Community benefits

Natural Drainage Systems offer multiple benefits to local neighborhoods and ecosystems, including:

- Lower risk of flooding
- Creation of habitat along our streets
- Healthier creek ecosystems
- Traffic calming
- Increased landscaping
- More street trees

What is the NDS Program?

The 2016-2024 Natural Drainage Systems Program is a SPU multi-year capital improvement program focused on Longfellow, Piper’s, and Thornton Creek watersheds.

The program’s goal is to construct street-side natural drainage systems that filter and manage stormwater and improve neighborhoods with street trees and traffic calming patterns. All projects include plants that help the natural drainage systems do their jobs: infiltrate and clean stormwater.

This project is being led by SPU and includes funding from the King County Flood Control District.

Learn more online at: www.seattle.gov/utilities/SouthThorntonNDS

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The South Thornton Natural Drainage System (NDS) Project has completed preliminary planning and field investigations.

At the **30% Design Phase** we present potential street and drainage improvements to the community, answer questions, and gather community concerns as we work toward finalizing the project scope based on regulatory requirements and project funding.

**30% INPUTS**
- Neighborhood priorities
- Current drainage conditions
- Location of utilities
- Location of homes + paths
- Location of driveways
- Rainfall runoff patterns along the street
- Soil testing + analysis
- Current utility locations + impacts
- Planting palettes & new street trees
- NDS sizing adjustments
- Refinements to design dimensions + details
- City right-of-way impacts
- Balance of costs with budget
- Maintenance of NDS
- Permits
- Community concerns

**60% INPUTS**
- Neighborhood priorities
- Local ecosystem needs
- Detailed utility locations + impacts
- Planting palettes & new street trees
- NDS sizing adjustments
- Refinements to design dimensions + details
- City right-of-way impacts
- Balance of costs with budget
- Maintenance of NDS
- Permits
- Community concerns

**FINAL INPUTS**
- Accessibility impacts
- Construction costs + impacts
- Ongoing maintenance costs + responsibility
- Permits
- Construction questions

**2021**
At the **30% Design Phase** we present potential street and drainage improvements to the community, answer questions, and gather community concerns as we work toward finalizing the project scope based on regulatory requirements and project funding.

**2022**
BEGIN CONSTRUCTION

**OUTREACH FOR 60% DESIGN**
LATE 2020

**SITING, FIELD INVESTIGATIONS**
SURVEY + CONCEPT DEVELOPMENT
2018 to 2019

**2020**

**2022**

**CONSTRUCTION**

**A Healthier & Safer Thornton Creek!**

**30% DESIGN**

**60% DESIGN**

**FINAL DESIGN**

**PRE-CONSTRUCTION OUTREACH**

**FINAL INPUTS**

**OUTREACH FOR 30% DESIGN**
MID 2020

**FINAL DESIGN**

**FINALE | DESIGN PERMIT**

**30% DESIGN PHASE**
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)
Project Area Map

THORNTON CREEK WATERSHED BOUNDARY

LAKE WASHINGTON

THORNTON CREEK

SOUTH BRANCH

MAIN BRANCH

LEGEND

WATERSHED AREA FLOWING INTO THORNTON CREEK
THORNTON CREEK
THORNTON CREEK (PIPED)
NDS SITE

PROJECT SITES

41ST PL NE
PROJECT SITE
WEDGWOOD

23RD AVE NE
PROJECT SITE

N 120TH ST
PROJECT SITE
N 117TH ST

N 120TH ST
N 117TH ST
N 115TH ST
N 113TH ST
N 107TH ST
N 100TH ST
N 92ND ST
N 90TH ST
N 85TH ST
N NORTHGATE WAY/N 105TH ST

NE NORTHGATE WAY
ROOSEVELT WAY NE
RAVENNA AVE NE
WALLINGFORD AVE N
I-5

15TH AVE NE
20TH AVE NE
35TH AVE NE
40TH AVE NE
45TH AVE NE
5TH AVE NE

Wedgwood
Elementary
School
Northgate Mall &
Transit Center
Nathan Hale
High School
North Seattle
College

SEATTLE PUBLIC UTILITIES

KING COUNTY FLOOD CONTROL DISTRICT

AUGUST 2020
30% DESIGN PHASE
The Site Selection Process: How we got here

SPU completed the initial analysis and selected locations for NDS in the Thornton Creek Basin based on a variety of factors, including community input, recurring drainage and flooding issues, and existing soil conditions. SPU selected sites that are technically feasible for the project that are optimal for flood mitigation and drainage issues.

What we’ve heard:
The Thornton Creek community is interested in...

- Improving water quality in the neighborhood
- Pedestrian safety
- Roadway parking changes
- Reinforcing the public right-of-way in the project area
- Addressing drainage and flooding issues in Northeast Seattle
WHAT TO EXPECT

How a typical NDS planting installation changes over time

BEFORE

NEWLY PLANTED

~1 year

GROWING

~5 years

MATURE
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

41st Pl NE

NATURAL DRAINAGE SYSTEMS
41ST PL NE: 41ST PL NE TO NE 105TH ST
(30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED)
STREET RIGHT OF WAY UTILIZATION KEY

KEY

- INFORMAL PEDESTRIAN ZONE
- INFORMAL PARKING/PEDESTRIAN ZONE
- ON-STREET PARKING ZONE
- NO PARKING
- NATURAL DRAINAGE SYSTEM & PLANTING ZONE
- SIDEWALK

NOTE: IMPROVEMENTS AND ON STREET PARKING WILL NOT BLOCK RESIDENTIAL DRIVEWAYS OR WALKWAYS
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

41st Pl NE

NATURAL DRAINAGE SYSTEMS
41ST PL NE: 41ST PL NE TO NE 105TH ST
(30% DESIGN PHASE - ADJUSTMENTS MAY BE MADE AS DESIGN IS FINALIZED)

KEY
- EXISTING SIDEWALK REPLACEMENT
- MULCH
- NATURAL DRAINAGE SYSTEM (NDS)
- 10' WIDE REPLACEMENT DRIVEWAY (CITY STANDARD WIDTH)
- PLANTING AREA
- NEW STORM DRAINAGE PIPES
- ILLUSTRATION MARKER
- ROCKERY
- IN NORTH SECTION - ROAD WIDENING AND NEW ASPHALT THICKENED EDGE ON THE WEST SIDE OF THE STREET. IN SOUTH SECTION - ROAD WIDENING AND NEW CURB ON EAST SIDE OF THE STREET. THE FULL EXTENTS OF EXISTING PAVEMENT REPAIR AND RESTORATION ARE NOT SHOWN FOR CLARITY.

RIGHT-OF-WAY PARKING
CURRENT PARKING CAPACITY*: 34
PEAK WEEKDAY USAGE**: 8-9
PARKING CAPACITY PER IMPROVEMENT PLANS: 29

*CURRENT PARKING CAPACITY IS THE ESTIMATED NUMBER OF SPACES AVAILABLE, BASED ON 20' PARKING SPACE LENGTH AND LEGAL SETBACKS FROM DRIVEWAYS, HYDRANTS, STOP SIGNS, ETC., ACCORDING TO THE OBSERVED PARKING PATTERNS OF RESIDENTS ON THIS STREET.

** BASED ON PARKING COUNTS CONDUCTED AT 5:00 AM, 12:00 PM, 6:00 PM & 11:00 PM.
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

41st Pl NE

EXISTING STREET SECTION
41ST PL NE

TYPICAL STREET SECTION (SOUTH SECTION)
NEW CURB EAST SIDE & NATURAL DRAINAGE SYSTEMS BOTH SIDES
41ST PL NE
41st Pl NE

EXISTING STREET SECTION
41ST PL NE

TYPICAL STREET SECTION (NORTH SECTION)
NEW ASPHALT THICKENED EDGE EAST SIDE
41ST PL NE
SOUTH THORNTON NATURAL DRAINAGE SYSTEMS (NDS)

41st Pl NE

ILLUSTRATION #1

VIEW LOOKING NORTH

41ST PL NE AT NE 105TH ST