

SURFACE WATER MANAGEMENT

Creating pro-active programs to reduce flooding, maintain infrastructure,
and improve water quality



City Council Presentation

July 7th, 2020

PRESENTATION TOPICS

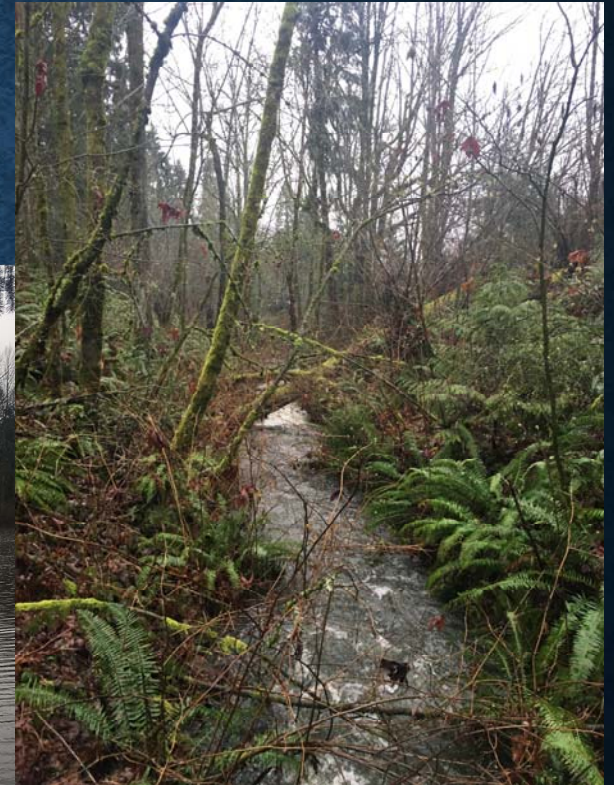
- ▶ What is surface water and stormwater?
- ▶ NPDES Permit
- ▶ SWM programs, staff, and funding
- ▶ Major program changes
- ▶ Pro-active approach to SWM programs

SWM = SURFACE WATER MANAGEMENT

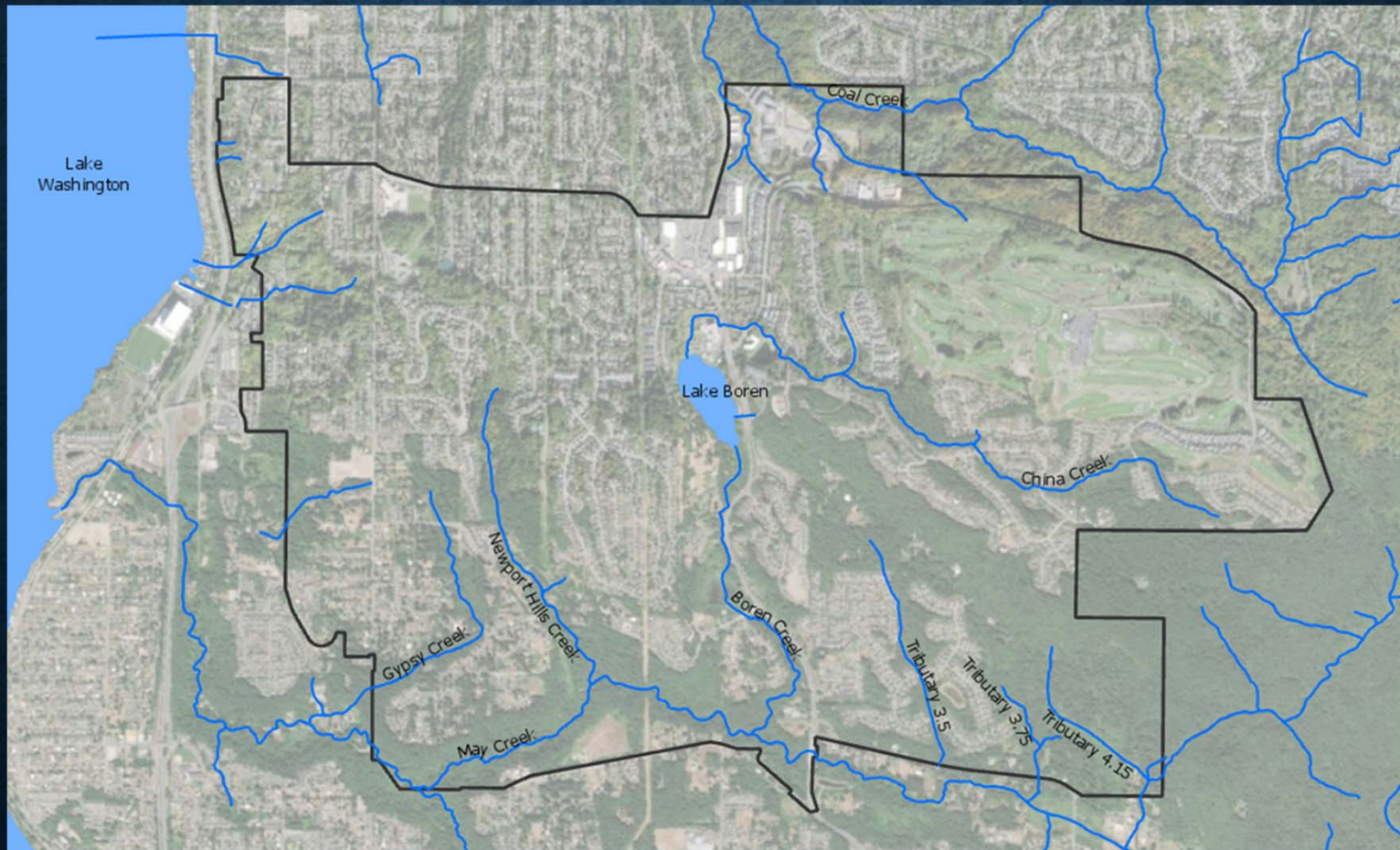
What is surface water?

Surface water means the water that exists on land surfaces before, during, and after stormwater runoff occurs, including:

- ✓ Drainage facilities
- ✓ Ponds
- ✓ Streams
- ✓ Lakes
- ✓ Rivers
- ✓ Wetlands
- ✓ Puget Sound



SURFACE WATER IN NEWCASTLE

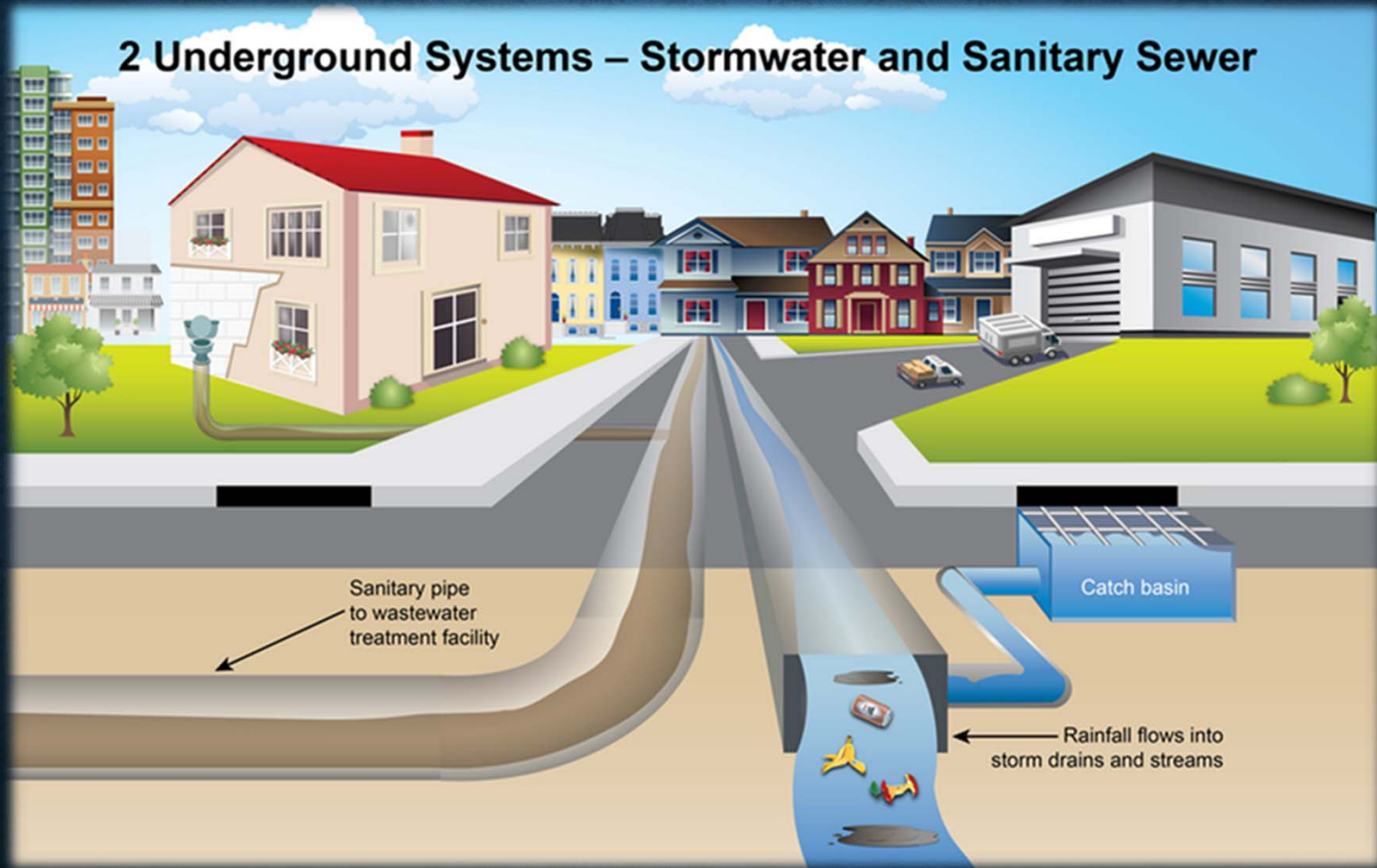


STORMWATER AFFECTS SURFACE WATER

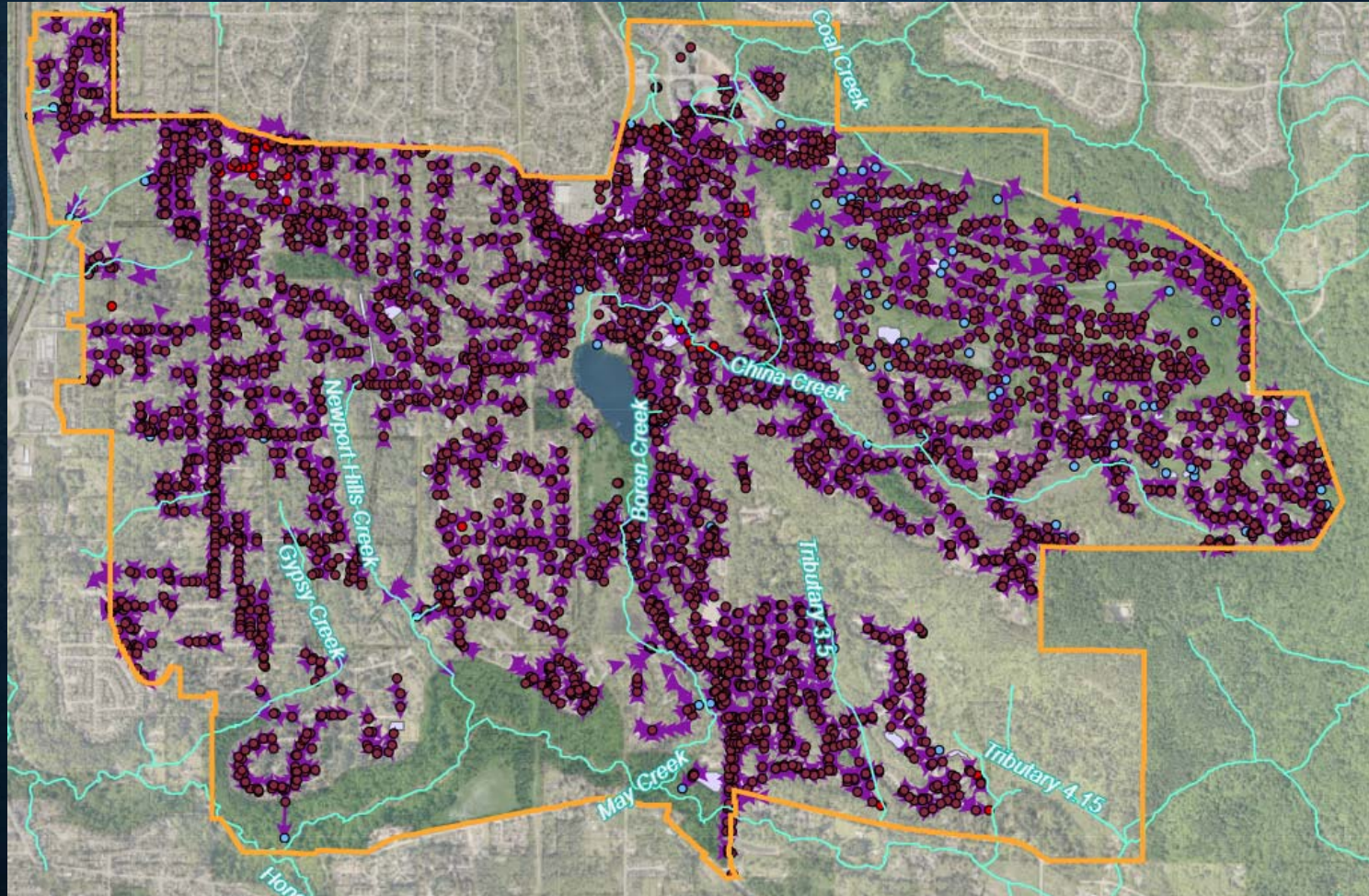
- Stormwater runoff means stormwater that flows over, or just below, the surface where it fell or melted.
- Stormwater runoff contributes to and becomes surface water.
- Stormwater runoff flows into our streams and lakes untreated.



2 Underground Systems – Stormwater and Sanitary Sewer



NEWCASTLE STORMWATER ASSETS





<http://data-newcastlewa.opendata.arcgis.com/>

SWM ASSETS

- ▶ 4.4 square miles
- ▶ City stormwater assets
 - ▶ 110+ ponds, tanks, vaults
 - ▶ 2,900+ storm drains
 - ▶ 3,500 pipes = 35 miles of pipe
 - ▶ 25 LID facilities



STORMWATER AND NPDES

- ▶ Stormwater is regulated by Environmental Protection Agency (EPA)'s National Pollutant Discharge Elimination System (NPDES) permit program.
- ▶ In Washington, EPA delegated the enforcement authority to the Department of Ecology.
- ▶ The Permit allows the City to discharge stormwater to waters of the State
- ▶ Newcastle's **Phase II** Municipal Stormwater Permit background:
 - ▶ Ecology issued the City it's first 5-year permit in 2007
 - ▶ Re-issued permit for 2012-2018, with more requirements. Permit was extended until July 31, 2019.
 - ▶ Current permit cycle is August 1, 2019 – July 31, 2024



HOW THE PERMIT TRANSCENDS INTO A 5-YEAR TIMELINE

Issuance Date: August 1, 2012
Effective Date: August 1, 2013
Expiration Date: July 31, 2018
Modification Date: January 16, 2014


**Western Washington Phase II Municipal
Stormwater Permit**

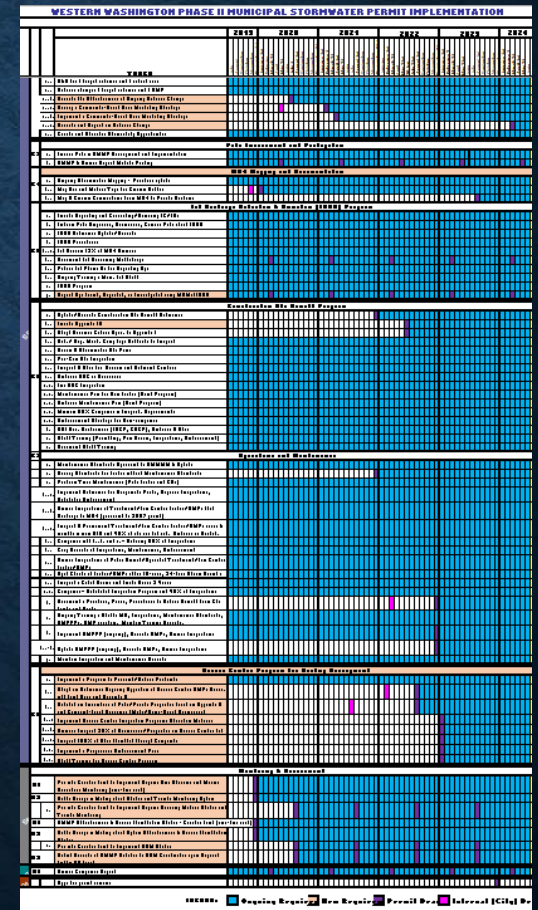
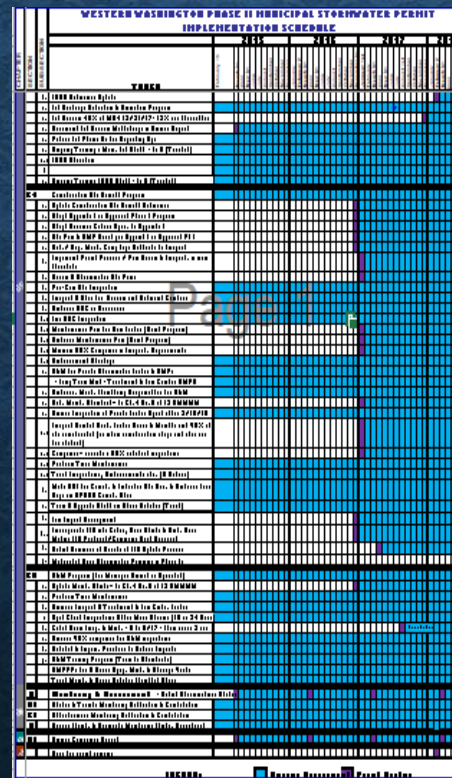
National Pollutant Discharge Elimination System and
State Water Discharge General Permits
for discharges from Small Municipal Separate Storm Sewers
in Western Washington

**State of Washington
Department of Ecology**
Olympia, Washington 98504-7600

In compliance with the provisions of
The State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington
and
The Federal Water Pollution Control Act
(The Clean Water Act)
Title 33 United States Code, Section 1251 *et seq.*

Until this permit expires, is modified, or revoked, Permittees that have properly obtained
coverage under this permit are authorized to discharge to waters of the state in accordance with
the special and general conditions which follow.


Heather R. Barthel
Water Quality Program Manager
Department of Ecology



SWM DIVISION

PROGRAMS

- ▶ Development Review & Runoff Controls
 - ▶ Erosion Control Inspections
- ▶ Inspection Program
 - ▶ City assets
 - ▶ Privately maintained systems
 - ▶ Source Control
- ▶ Operations & Maintenance
- ▶ Education & Outreach
- ▶ CIP Programs & Projects
- ▶ Asset Management/GIS
- ▶ Water Quality
 - Illicit Discharge Training
 - Spill Response

CONTRACTS

- ▶ Street Sweeping
- ▶ Vector Service
- ▶ Lake Boren Sampling
- ▶ SWM Rate Study
- ▶ CIP design
 - ▶ S-017, S-038, S-039, S-041
- ▶ CIP construction
- ▶ Wetland monitoring
- ▶ GIS

SWM STAFF

- ▶ Public Works Director (1/3 SWM)
- ▶ Surface Water Program Manager
- ▶ Surface Water Specialist
- ▶ ROW/SWM Inspector (1/2 SWM)
- ▶ Infrastructure Maintenance Manager (1/3 SWM)
- ▶ 2 Maintenance Technicians
- ▶ SWM Intern

SWM DIVISION FUNDING

- ▶ SWM Division primarily funded by SWM fees
 - ▶ Rates determined by rate studies
 - ▶ Commercial and multi-family parcels pay per impervious acre
 - ▶ All single family residential parcels = a flat rate per year
- ▶ What do SWM fees pay for?
 - ▶ SWM staff
 - ▶ SWM Operating budget (NPDES permit compliance)
 - ▶ SWM CIP programs and projects
- ▶ SWM Division has evolved from a utility that was reactive and barely meeting NPDES requirements to a utility that is innovative and meets NPDES requirements.



SWM: REACTIVE TO PRO-ACTIVE

2016

- Newcastle NPDES Permit audited by Ecology
- Launch Cartegraph
- Begin Comprehensive SWM Plan (CSWM Plan) Update, with Rate Study

2017

- Complete CSWM Plan Update
- Council approves CSWM Plan Update at the Optimum Level of Service, with staff additions: ROW/SWM Inspector and Water Quality Specialist

2018

- Surface Water Specialist begins
- New CIP programs are implemented
- SWM identifies ways to be more pro-active and efficient: Cartegraph is re-launched

2019

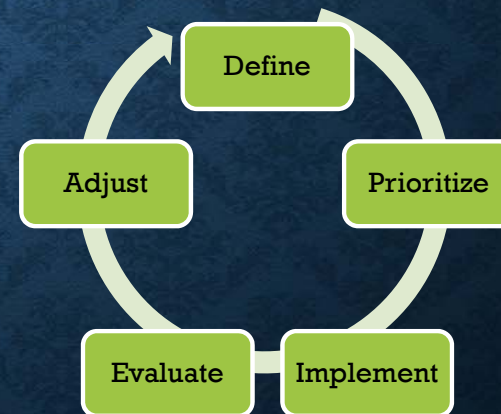
- First project in the S-038 program is completed, on time and under budget
- SWM staff overhaul GIS
- New NPDES Permit is effective July 1st = many more requirements
- Stormwater survey completed

2020

- Staff continue to evaluate data, SWM programs, efficiency
- Initial Pipe Condition Assessment is complete
- SWM staff working on SWM Fee Rate Study
- City completes 1st new permit requirements

FOSTERING A PRO-ACTIVE APPROACH

- ▶ How have we transitioned from reactive to pro-active?
 - ▶ Initially investing time and resources: staff, GIS, Cartegraph to foster long-term efficiency
 - ▶ Using adaptive management methodologies to evaluate current programs and permit requirements
 - ▶ Collecting & analyzing data
 - ▶ Meeting NPDES requirements
 - ▶ Asset management
 - ▶ Tracking asset costs
 - ▶ Innovative approaches
 - ▶ Collaboration with other cities and agencies
 - ▶ Applied at the programmatic level to task level
 - ▶ Operations and Capital Programs





DEVELOPMENT REVIEW

- SWM Maintenance added to all development projects
- Developments are mapped in GIS when completed
- Improved communication & collaboration between PW and CD
- Dedicated SWM Inspector
 - Pre-construction inspections
 - Erosion control inspections
 - Construction inspections
 - Bond conversion and release inspections

IDDE PROGRAM

- ▶ Spill response training collaboration with Ecology
- ▶ Spill response
 - ▶ Containment
 - ▶ Reporting
- ▶ Preventative inspections



OPERATION & MAINTENANCE PROGRAM: PRIORITIZING DATA

WESTERN WASHINGTON PHASE II MUNICIPAL STORMWATER PERMIT IMPLEMENTATION

	2015	2016	2017	2018	2019	2020
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1. 100% Inspected within 12 months						
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LEGEND: ■ Requiring Repair ■ New Repair ■ Permit Due ■ Intersect I/City St

Condition Categories

► Capacity for Sediment Remaining	★★★★☆	80
► CB Structure	★★★★★	100
Cover and Frame	★★★★★	100
No Illicit Discharge Connection Pres...	★★★★★	100
No Trash-Debris-Vegetation Present	★★★★★	100
▼ Structural Assets	★★★★★	100

- CS_FC_Cleanout Gate Damaged: ☐
- CS_FC_Overflow Damaged: ☐
- CS_FC_Orifice Plate Issue: ☐
- CS_FC_Overflow Obstructed: ☐
- Ladder Issue: ☐



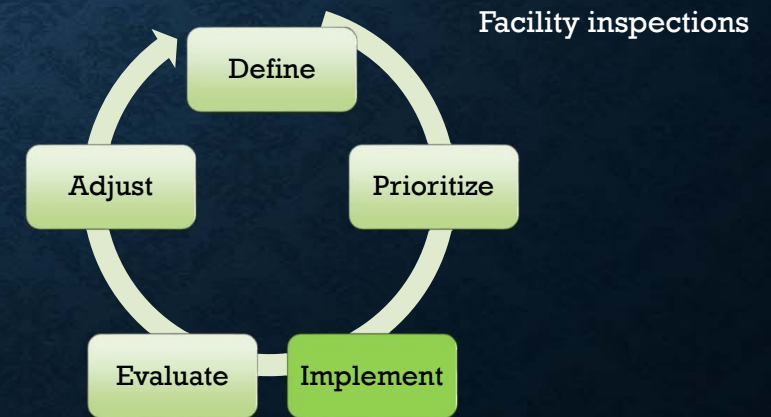
O&M PROGRAM: IMPLEMENTING WORKFLOWS

The image displays two maps of the Newcastle area, illustrating the implementation of an O&M program. The left map shows storm drain inspections, with red circles indicating locations where inspections are required and green circles indicating locations where inspections are completed. The right map shows facility inspections, with blue circles indicating locations where inspections are required. A circular workflow diagram is overlaid on the bottom right, showing the process: Define, Prioritize, Implement, Evaluate, and Adjust.

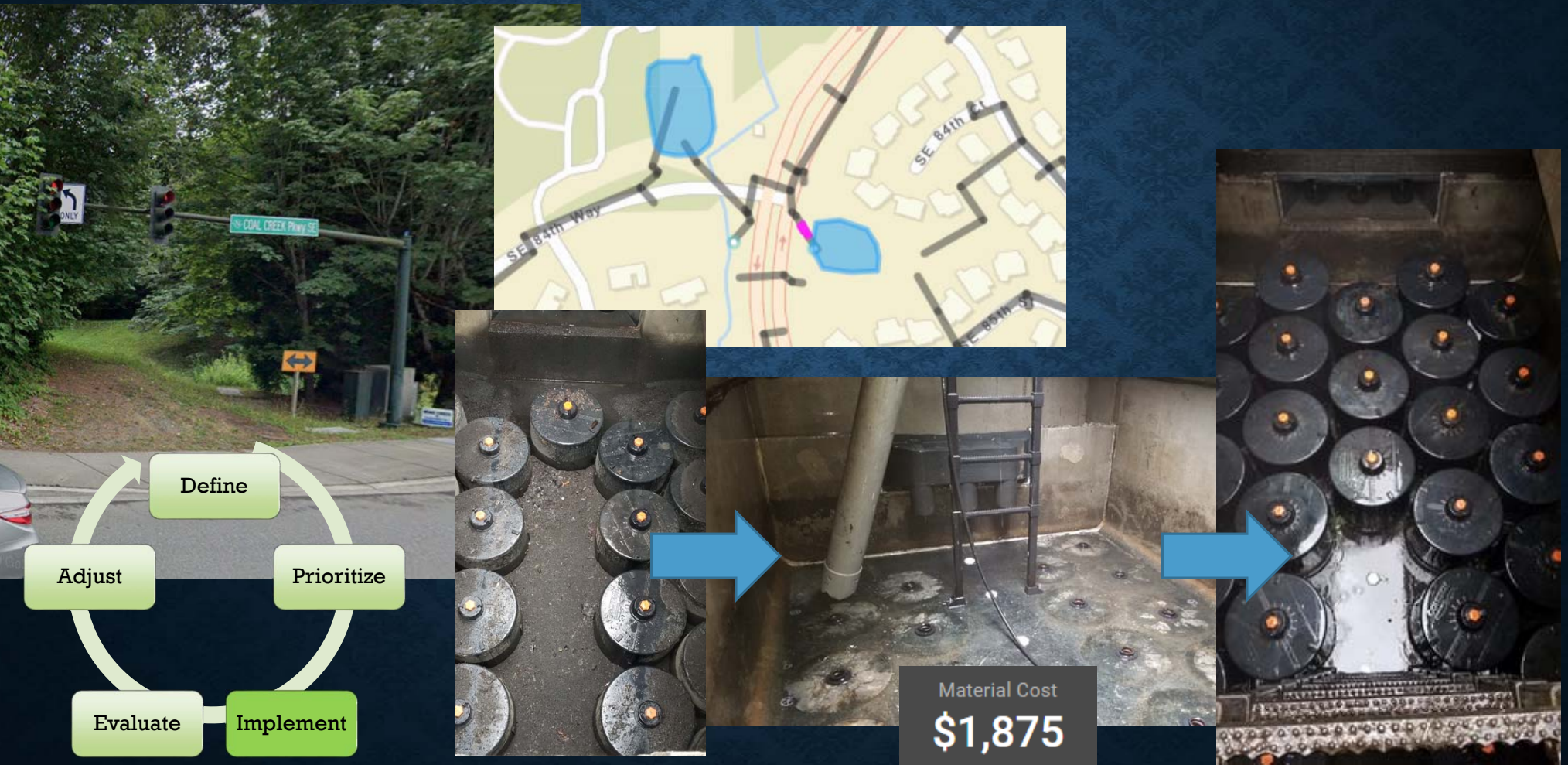
Storm drain inspections

Facility inspections

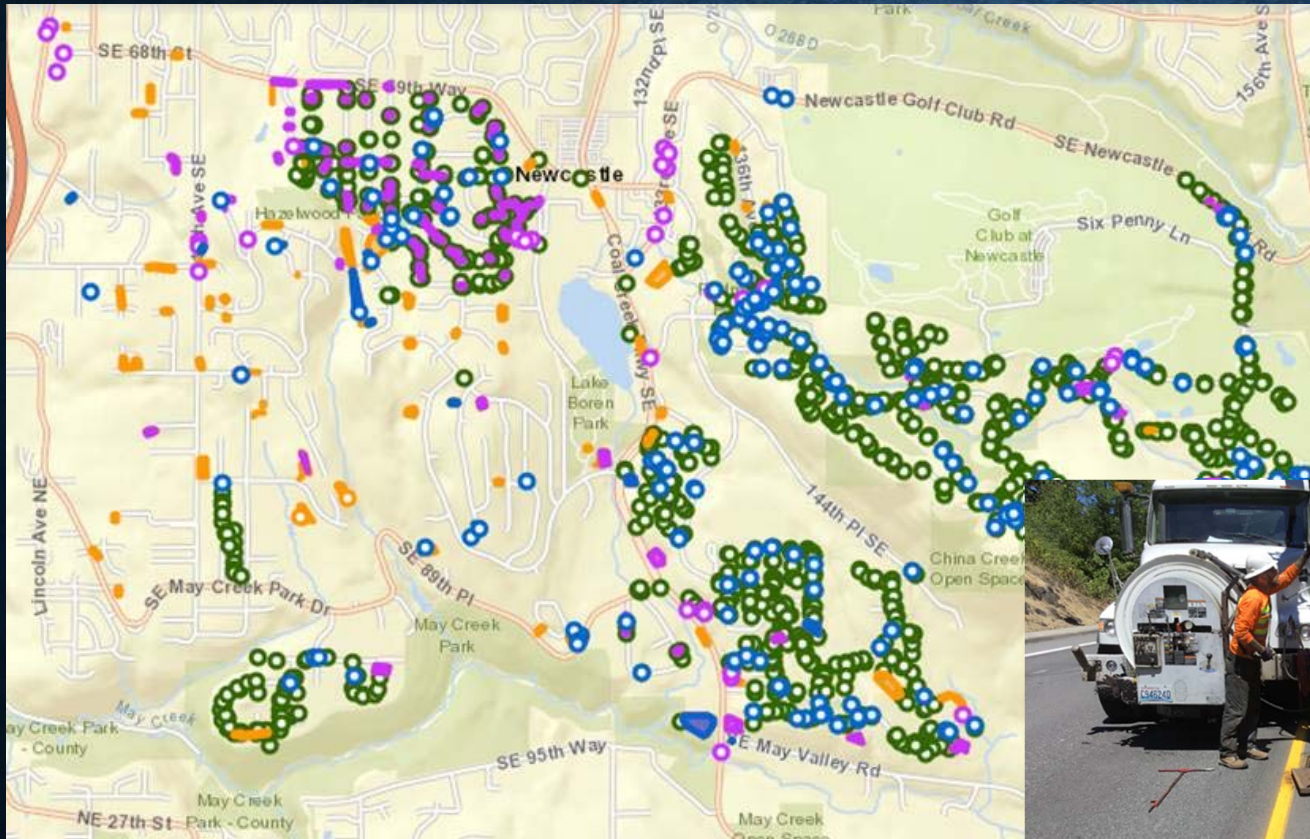
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graph TD; Define --> Prioritize; Prioritize --> Implement; Implement --> Evaluate; Evaluate --> Adjust; Adjust --> Define
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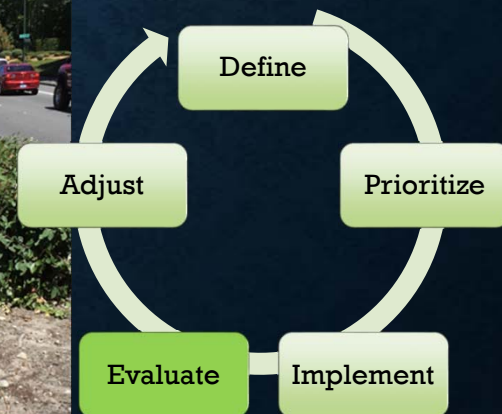
OPERATIONS & MAINTENANCE



EVALUATING DATA



- ▶ Orange = facilities inspections
- ▶ Green = CBs inspections
- ▶ Blue = NPDES maintenance tasks
- ▶ Purple = Preventative Maintenance



ADJUSTING PROGRAMS

- ▶ Increasing street sweeping frequencies = reduced vector tasks
- ▶ Through data collection and analytics, we will be able to apply to Ecology to reduce our NPDES permit requirement for qualifying storm drain inspections
 - ▶ This may apply to most of our storm drains
- ▶ Staff time for reduced inspections may be used for new upcoming permit requirements
 - ▶ Cost savings
 - ▶ Other cities are looking at hiring consultants or additional staff to meet new requirements.



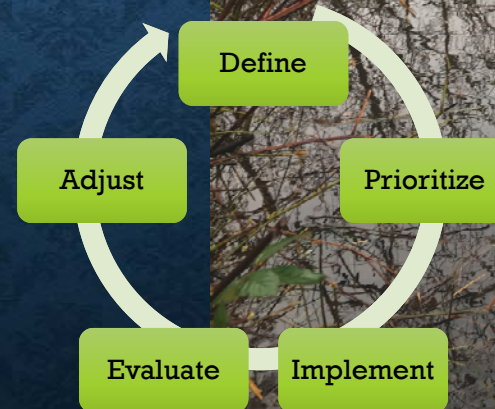
SWM DIVISION

- ▶ Inspected:
 - ▶ **1402** storm drains
 - ▶ **110** ponds, tanks, and vaults
 - ▶ **14** construction sites
 - ▶ Privately maintained storm systems (commercial + multi-family)
 - ▶ All storm outfalls
- ▶ Issued **100** enforcement actions for erosion control on construction sites
- ▶ Cleaned **171** storm drains
- ▶ Completed **274** maintenance tasks
- ▶ Hosted spill response training
- ▶ Overhauled and updated GIS
- ▶ Coordinated outreach events and volunteer activities
- ▶ Completed the initial Pipe Condition Assessment Program
- ▶ Coordinated with other cities with regional group meetings



NEXT STEPS FOR SWM

- ▶ Continue to evaluate our programs to strive to:
 - ▶ Meet NPDES permit requirements
 - ▶ Improve water quality
 - ▶ Reduce flooding
 - ▶ Provide excellent customer service
- ▶ Continue to evolve to a pro-active utility
- ▶ Complete the 2020 SWM Fee Rate Study
 - ▶ Save the date!
Results from the study will be presented
August 18th



THANK YOU!

**AUDRIE STARSY
SURFACE WATER PROGRAM MANAGER
CITY OF NEWCASTLE**