

SE Linwood Avenue Project: Improved Stormwater Management and New Pedestrian/Bike Bridge across Johnson Creek

By Andrew Swanson/Clackamas WES

Project Overview

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Project improved SE Linwood Ave in unincorporated Clackamas County from SE Monroe Street to SE Johnson Creek Boulevard:

- CCDA (in County's Dept. of Transportation & Development) fosters economic growth and community revitalization by implementing adopted urban renewal plans to improve economic vitality and support livable, sustainable communities.
- Construction cost \$6.8 million, funded by North Clackamas Revitalization Area (NCRA) urban renewal district



Project Overview

A much better storm sewer system was installed along SE Linwood Avenue from SE Monroe Street to SE Johnson Ck Blvd.

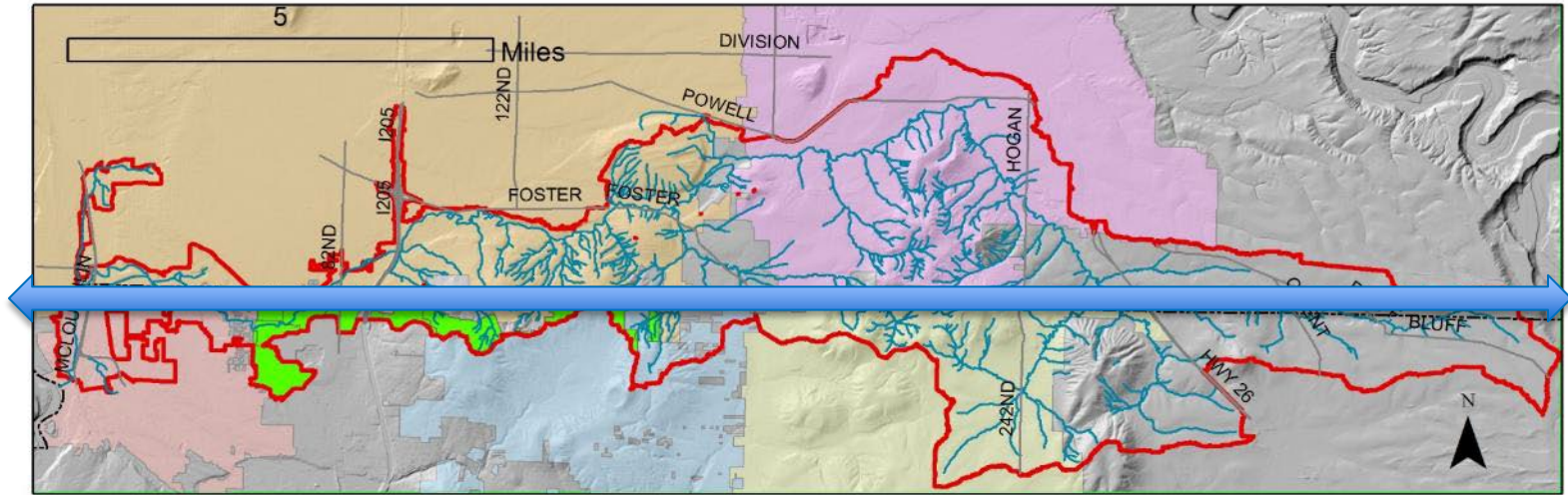
Each side of SE Linwood includes:

- 11 foot travel lane for motorized vehicles, and
- 5-foot landscaped space with: I) trees and shrubs, or II) a vegetated stormwater planter box, and
- 10 foot shared pedestrian/bike path (made with pervious asphalt)





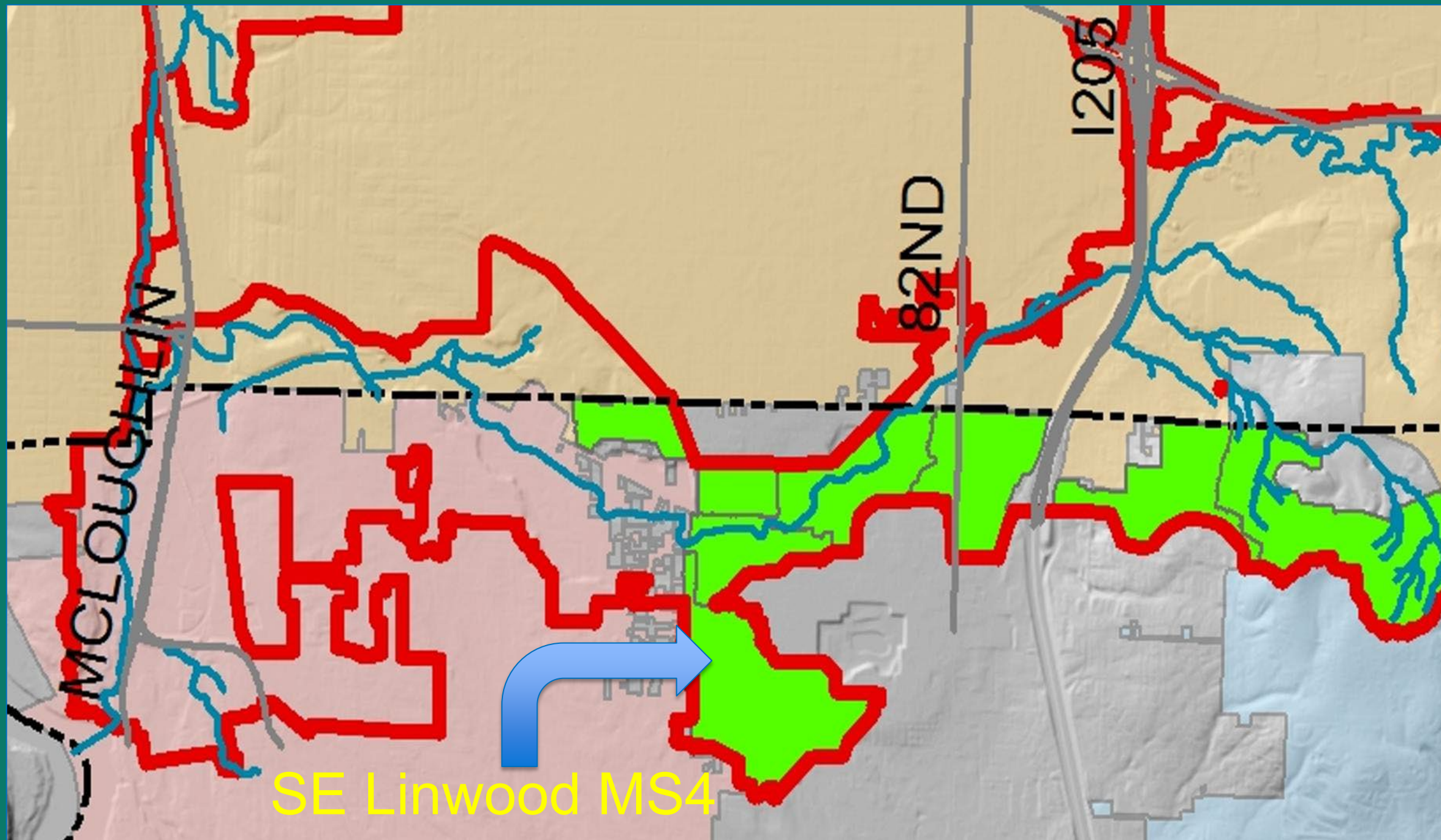
Johnson Creek Surface Water Basin with Jurisdictional Boundaries and Clackamas Service District #1



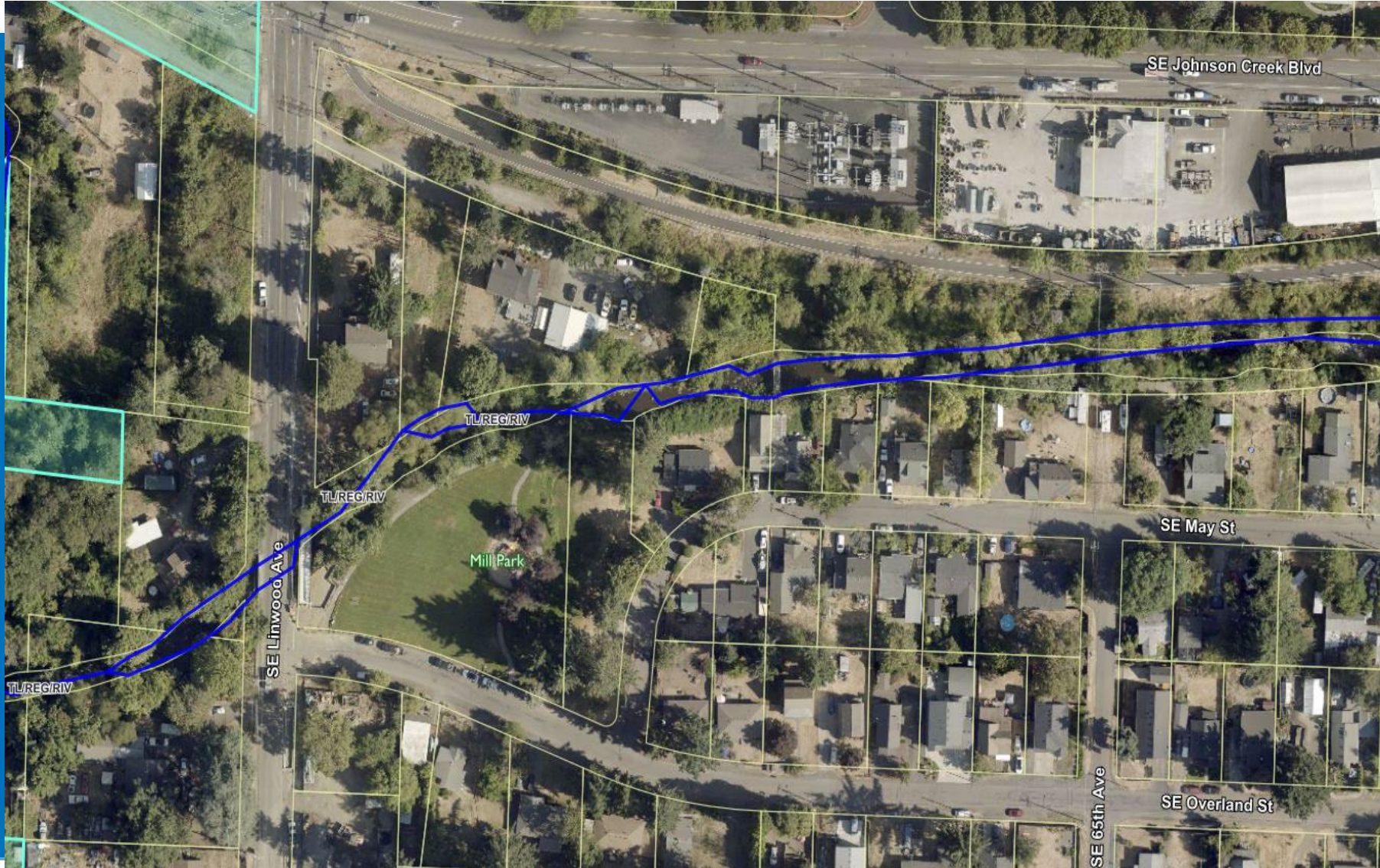
- JC maj art
- Johnson Creek & Tributaries
- Multnomah-Clackamas County Line
- Surface Flow Watershed
- Clackamas WES Service District #1
- Damascus
- Gresham
- Happy Valley
- Milwaukie
- Portland

Johnson Creek Surface Watershed Area is 34.7 square miles

	Jurisdiction Area (sq mi)	% Surface Watershed
Clackamas County	14.7	42%
Multnomah County	20.0	58%
Cities		
Damascus	4.0	11%
Gresham	8.4	24%
Happy Valley	1.0	3%
Milwaukie	1.6	5%
Portland	6.2	18%
Clackamas WES Service District #1	1.5	4%



Near SE J.C. Blvd & Springwater Trail



Before and After



BEFORE



AFTER

LINWOOD AVENUE IMPROVEMENT PROJECT >> CITY OF MILWAUKIE & CLACKAMAS COUNTY



Before



Aerial View: After

(This is one of many photos in these slides that were provided by Ken Itel)



The SE Linwood Avenue MS4

- This Municipal Separate Storm Sewer System (MS4) drains ~300 acres, including areas South of SE King Road towards SE Monroe and East to SE 77th Ave (Linwood is where SE 61st would be). The MS4's 54 inch diameter concrete pipe outfall was – and still is – in Johnson Creek near Linwood Ave.
- In 1997, to control minor flooding, WES' "*Monroe to King*" project piped the excess overflow stormwater from some County-owned drywells into this MS4. This 1997 project created a hybrid "Drywell and MS4" type of storm sewer system (retains lots of stormwater) and connected it to the existing Linwood MS4.



MS4 Permit Retrofit

- Prior to the road's re-construction in 2023, stormwater runoff generated by SE Linwood Road used to be collected by the MS4 and discharged into Johnson Creek.
- Now, the new, improved storm sewer system (a MS4 Permit “retrofit”) retains most road stormwater runoff on site. In the 15 new vegetated planter boxes, some stormwater is transpired by plants or is evaporated. Most on site retention is provided by infiltration of stormwater into soil. During heavier rains, stormwater is filtered before entering the creek. Pervious asphalt in bike lane retains even more stormwater



1 of the 15 Stormwater Planter Boxes

(the pedestrian/bike path is made w/pervious asphalt)

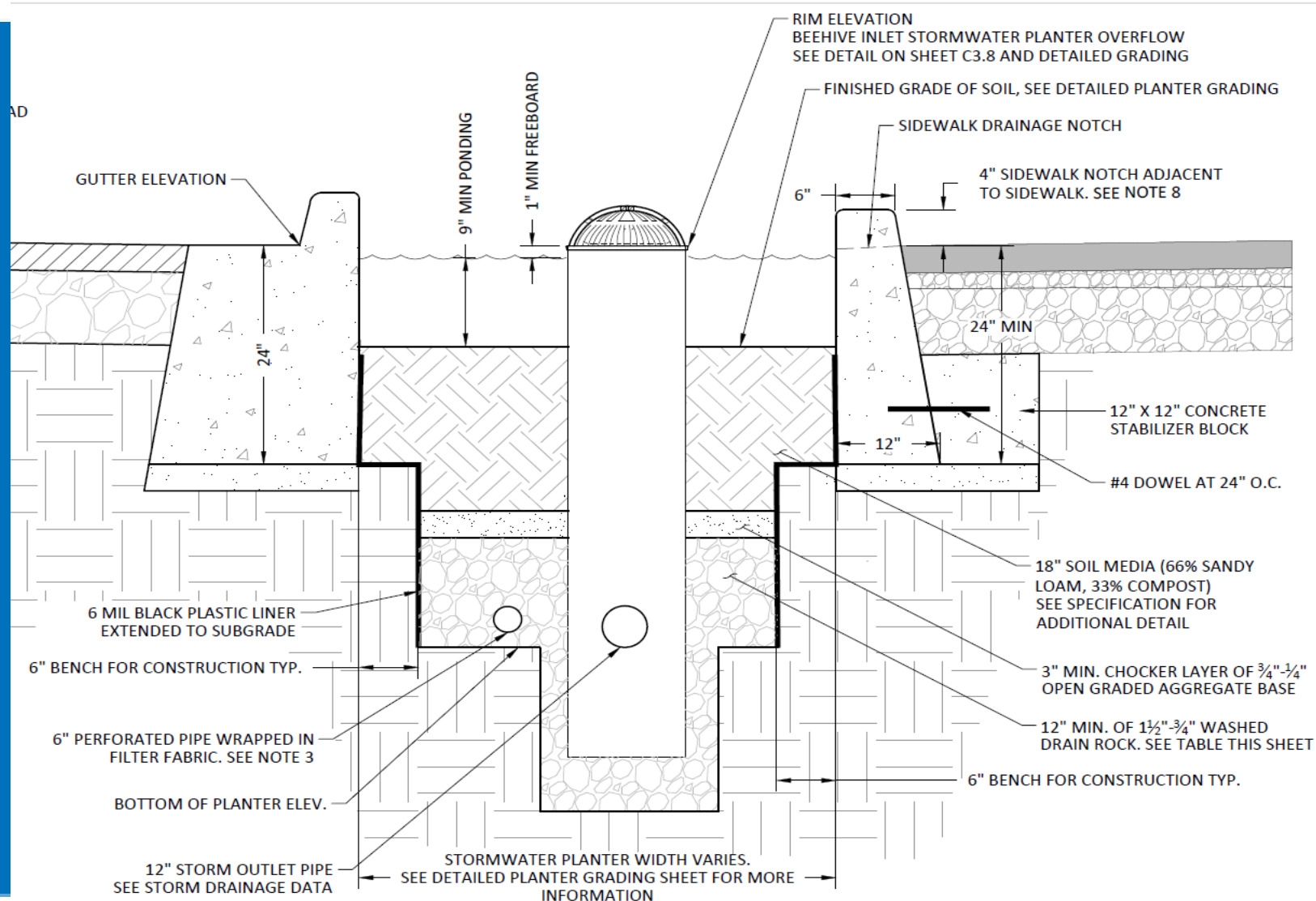


Stormwater Management Design

- The bottoms of the vegetated planter boxes don't have an impervious liner, so they infiltrate stormwater.
- Project's design fully complies w/WES' 2013 stormwater standards. Stormwater infiltration rate was measured at no less than 3.1 inches per hour and went as high as 80.4 inches per hour. Generally, they're Group B and C soils.
- The planter boxes fully infiltrate the required 1st ½ inch in 24 hours. And they fully treat (ie. filter) the required water quality storm (1 inch in 24 hours).
- Road ADT (avg daily trips) = 8,155 in 2019. Its an arterial.



Vegetated planter box cross section



Another Stormwater Planter Box



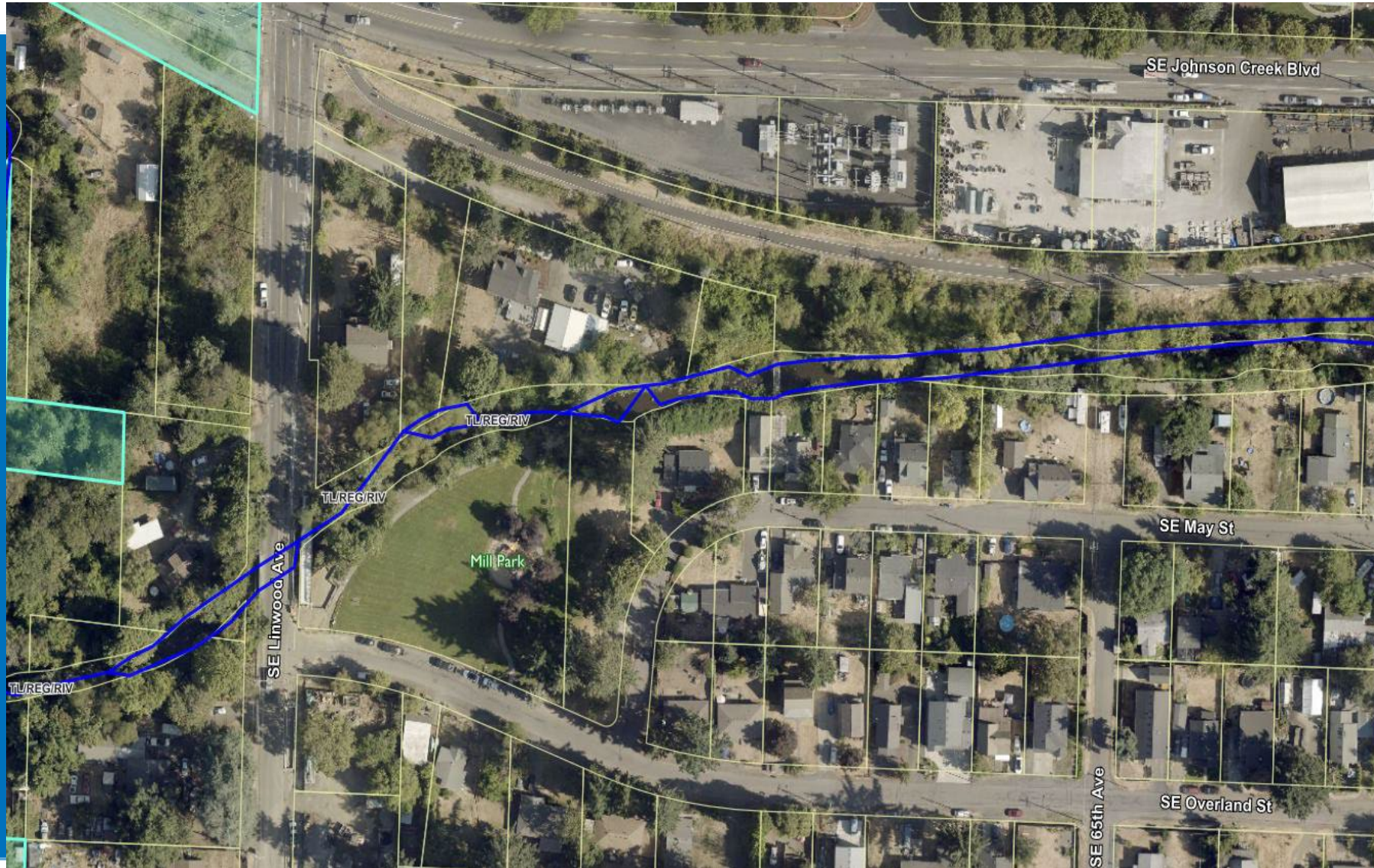
And another one...



And one more... (Sept. 2025)



NCPRD's Mill Park



NCPRD's Mill Park



NCPRD's Mill Park

- The North Clackamas Parks & Recreation District's Mill Park in unincorporated urban Clackamas County provides excellent public access to Johnson Creek.
- The SE Linwood Avenue project provided a new separate, safe pedestrian and bicycle bridge across Johnson Creek on the edge of Mill Park.



Pedestrian/bike bridge (July 2024)

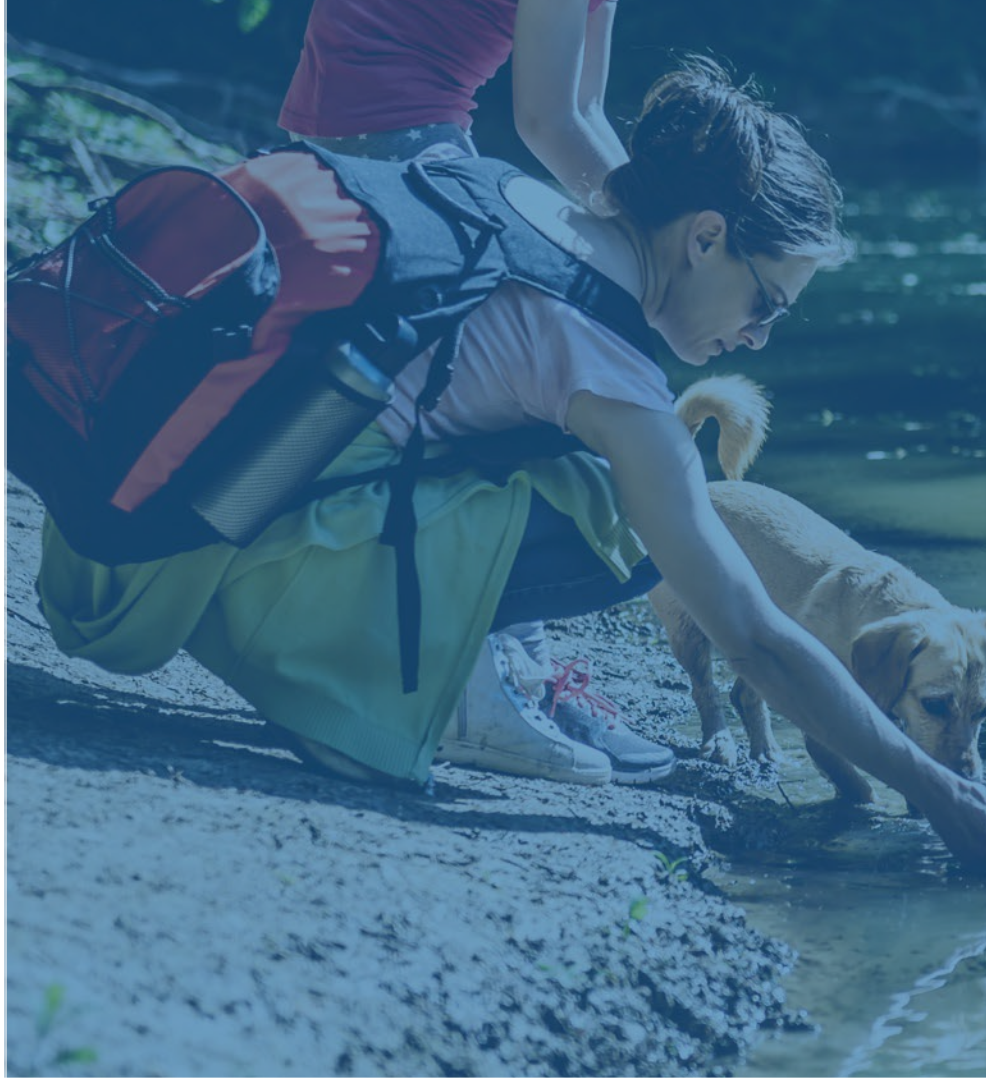


Pedestrian/bike bridge (Sept. 2025)



Mill Park and the new bridge (Sept. 2025)





Questions?

