

Green Infrastructure Ferguson Twp. Municipal Building

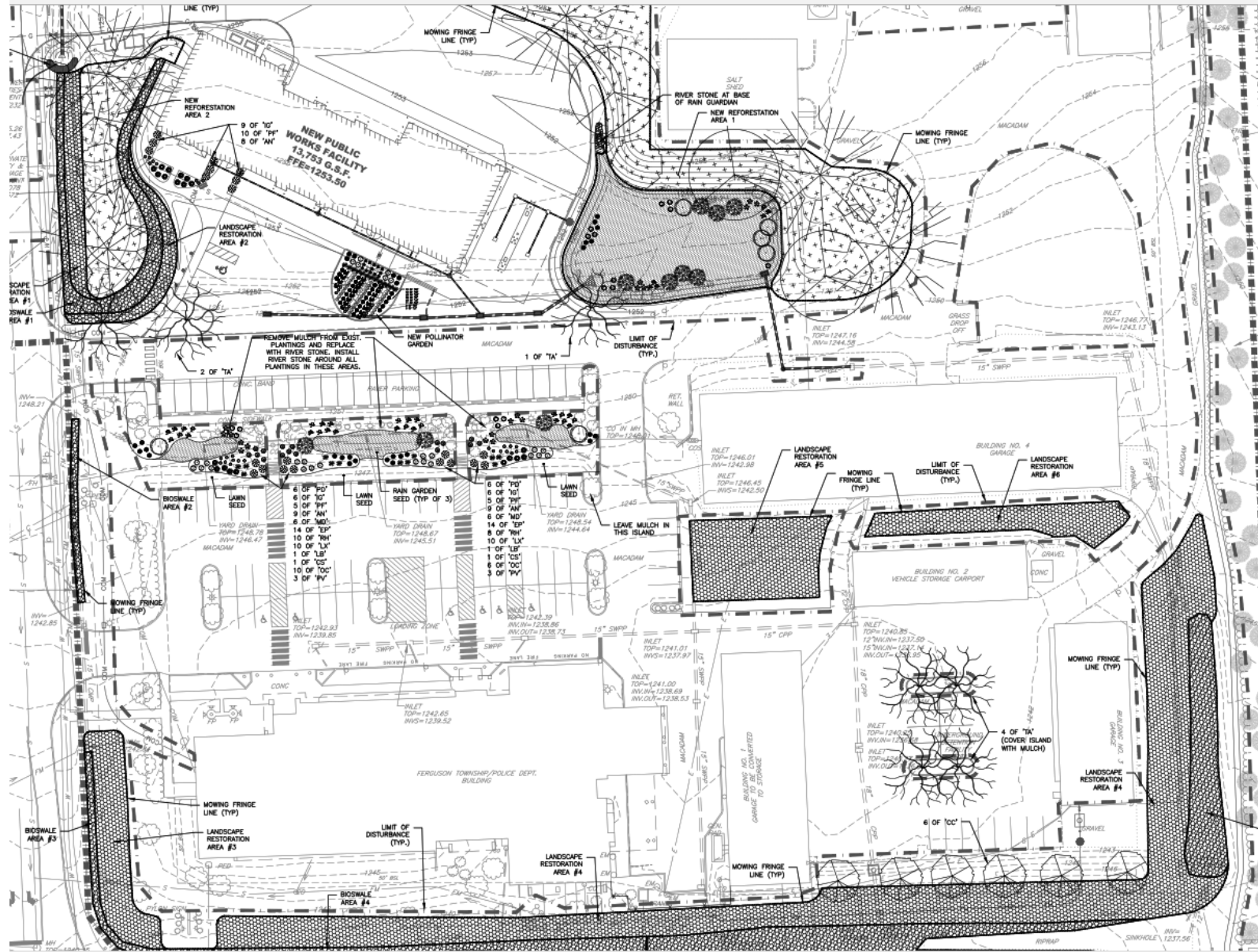


- ▶ Ferguson Township Board of Supervisors
- ▶ August 2023
- ▶ dmodricker@twp.ferguson.pa.us
- ▶ www.twp.ferguson.pa.us

Public Works Building



- ▶ LEED Gold certified public works building
- ▶ Basis of Design
- ▶ Support of elected officials
- ▶ BMPs (stormwater best management practices) and GSI (green infrastructure)



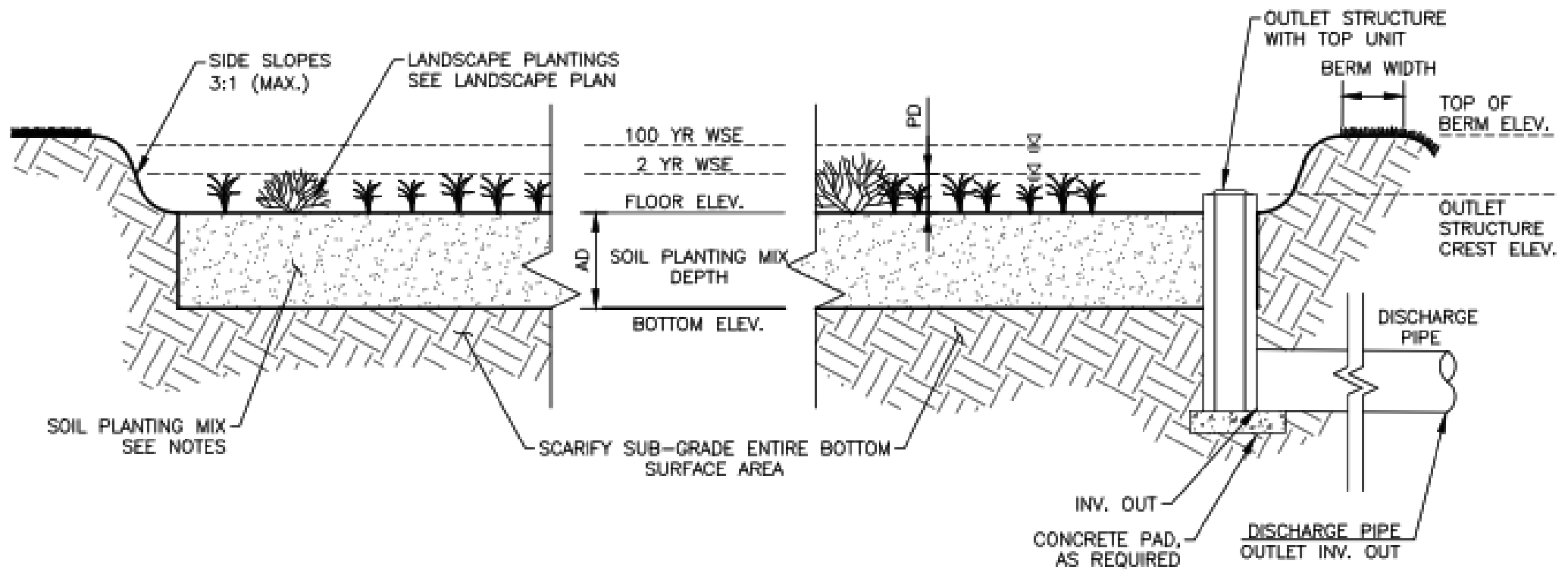
Recorded
September
2019

- ▶ Site plan to meet Township subdivision and zoning requirements
- ▶ Stormwater management plan to meet Township requirements (quantitative)
 - ▶ Peak runoff rate control
 - ▶ Stormwater pond capture volume
 - ▶ Recharge volume
 - ▶ Conveyance
 - ▶ Infiltration testing
 - ▶ Filter path for sinkhole protection
- ▶ Additional BMPs (Best Management Practices) for Stormwater
 - ▶ Bioswale, Reforestation, Naturalization of landscaping, Rain garden
 - ▶ Pervious pavers, capture at fueling, hydrodynamic separator

Pervious Pavement



- ▶ Proper design, ability to infiltrate into subsoils
- ▶ Typically includes stone layer below with 40% void ratio
- ▶ Maintenance to prevent clogging



"RAIN GARDEN" SCHEDULE:

- ▶ Rain Garden
- ▶ Redesigned existing rain gardens
- ▶ Riverstone and plantings
- ▶ Bentgrass on pool floor
- ▶ Emphasis on native plants



Spring 2022



July, 2023

Bioswale and Landscape Restoration

- ▶ Bioswale
 - ▶ Sprayed existing lawn grass
 - ▶ Tilled and amended existing soil
 - ▶ Planted with ERNMX-183
 - ▶ (Native Detention Area Mix)
 - ▶ <https://www.ernstseed.com/product/native-detention-area-mix/>
 - ▶ Seed at 20 lbs per acres
- ▶ Landscape Restoration
 - ▶ Killed turfgrass by spraying
 - ▶ Tilled existing soil
 - ▶ Planted with ERNMX-153
 - ▶ (Showy Northeast Native Wildflower & Grass Mix)
 - ▶ <https://www.ernstseed.com/product/showy-northeast-native-wildflower-grass-mix/>
 - ▶ Seed at 20 lbs per acre



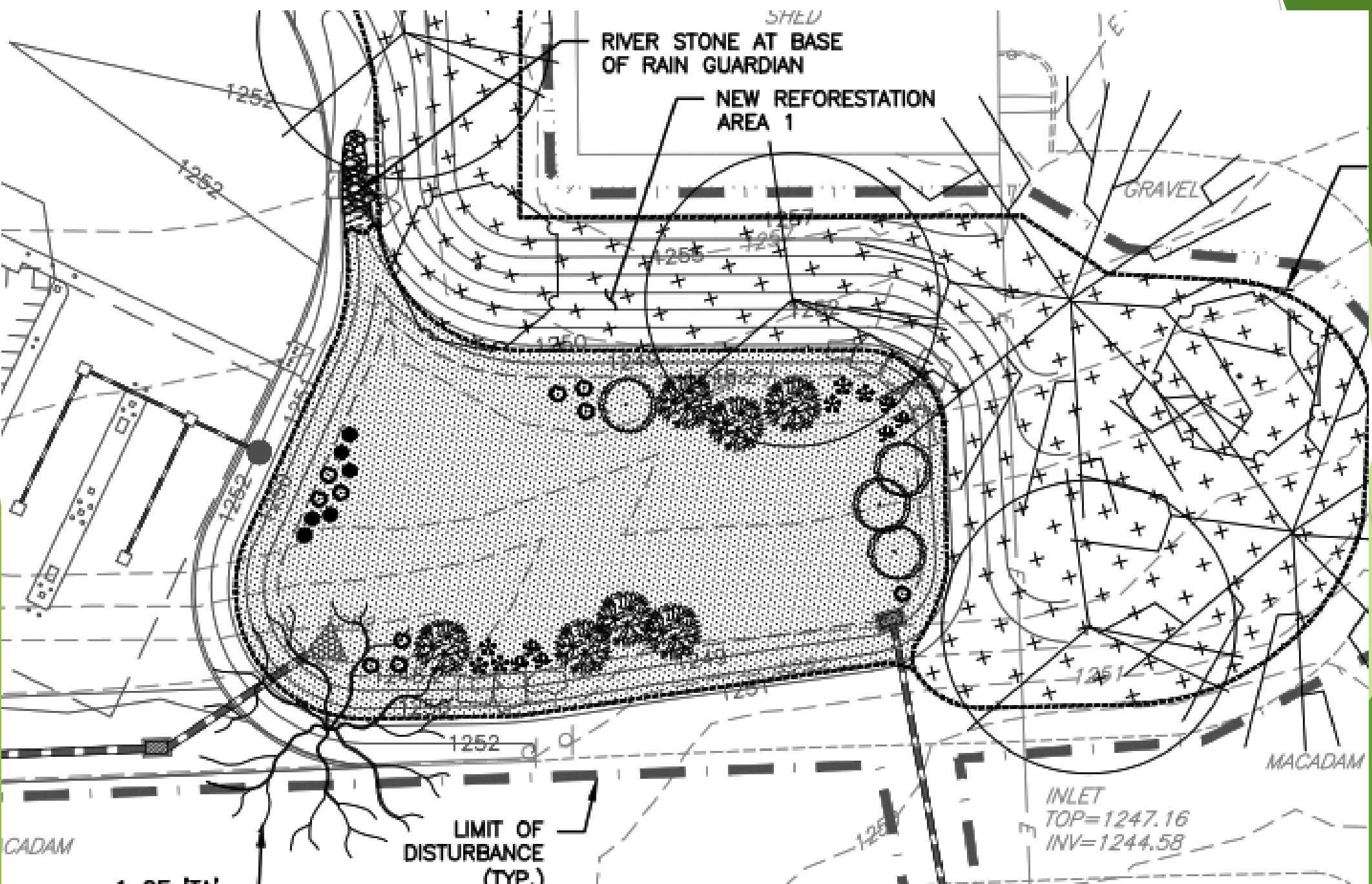
April 2022

July 2023





- ▶ Educational Signs:
- ▶ Increase diversity in natural community
- ▶ Improve stormwater runoff
- ▶ Promote sustainable landscape
- ▶ Encourage observation, create learning environment
- ▶ Reduce costs and environmental impacts





Seeded in Fall 2021,
picture in Spring 2022

April,
2022



July 2023

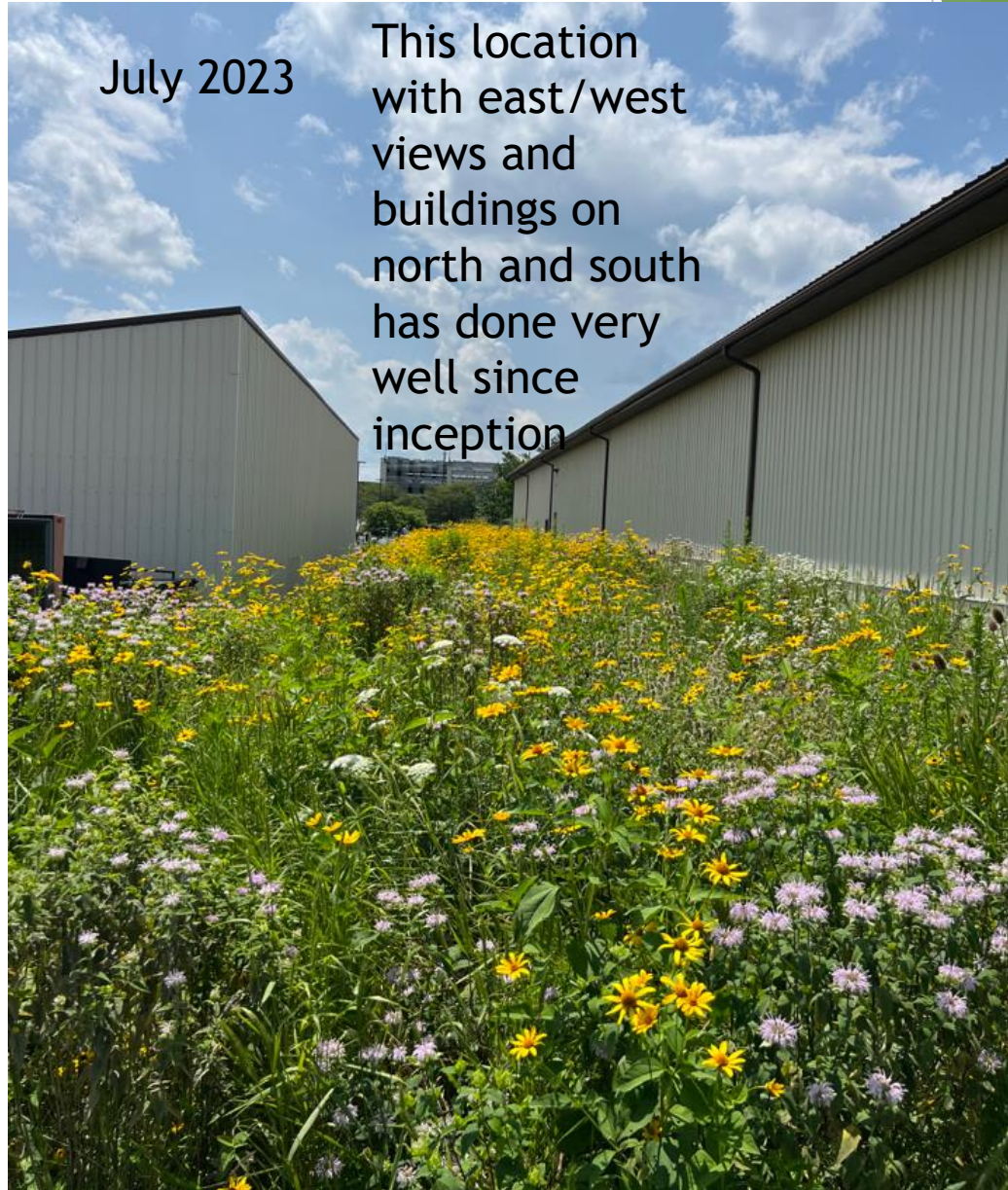


- ▶ Reduce Impervious Area
- ▶ Remove existing gravel
- ▶ Installed pollinator mix low mow zone

Spring 2022



July 2023



This location with east/west views and buildings on north and south has done very well since inception



Spring 2022



July, 2023

Reforestation



Spring 2022

July, 2023



Landscaping included trees and container plants

Redosier Dogwood

Shrubby Cinquefoil

Black Eyed Susan

Purple Coneflower

Spicebush

Cinnamon Fern

Dallas Blues Switchgrass

Much more

American Yellowwood

Sugar Maple

Bur Oak

White Pine

Witch Hazel

Cockspur Hawthorn

Eastern Redbud

Landscape care

- ▶ Includes cutting to approx. 8 inch height in the early spring and or late fall after 1st frost (November)
- ▶ Mowing grass borders weekly during the growing season
- ▶ Weed and invasive control during the growing season
- ▶ Still need to re-establish some areas, spot control
- ▶ Spring 2023, no rain, slow growth, then heavy rain and weeds grew faster than desired plants, hurry up weed control



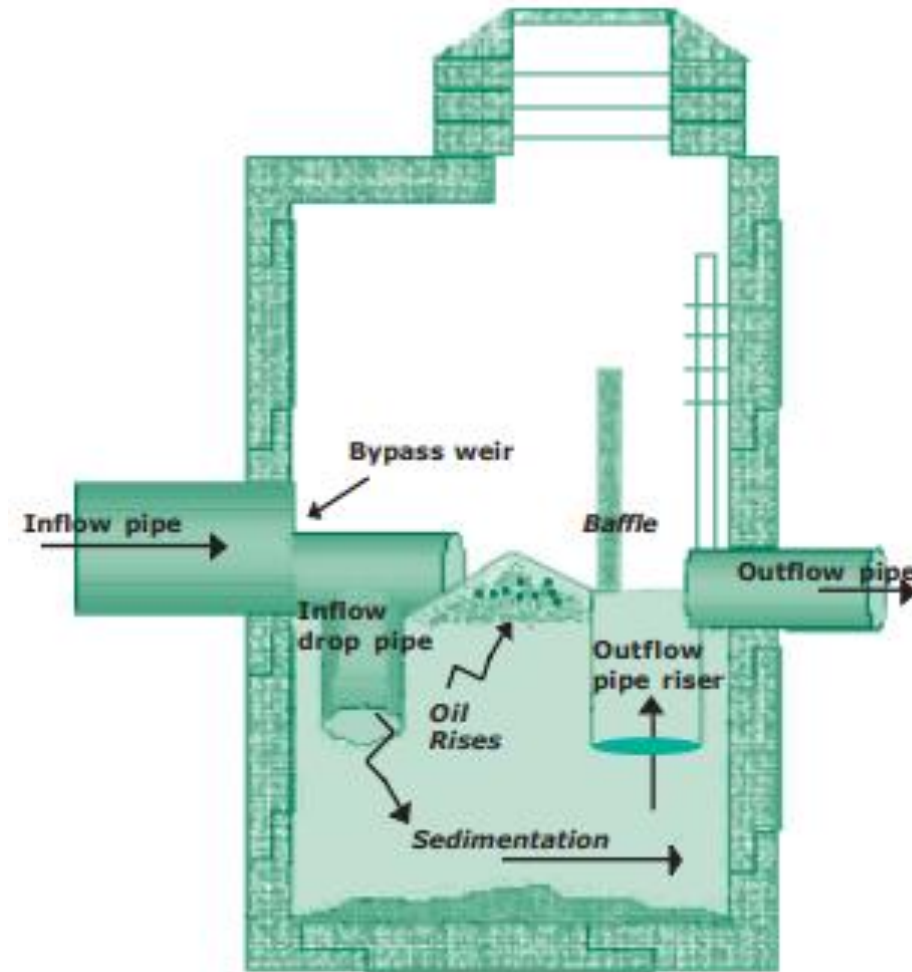
Wild teasel,
not thistle,
not listed in
mix design,
not on Pa
noxious weed
list, is a
pollinator,
how to
manage?

Landscaping Efforts

- ▶ Requires additional time and material during 2-year establishment period either by contractor or FTPW (or both) to ensure seeded areas thrive
- ▶ Comparison of landscape efforts before and after installation of green infrastructure (bioswales, BMPs, pollinator areas, reforestation)

Before establishing BMPs and bioswales											
		Times per month									
Description	Hours	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Subtotal
Mowing 3 laborers x 4 hours w mowers	12	0	3	4	4	4	3	4	3	0	300
TOTAL											300
After establishing BMPs and bioswales											
		Times per month									
Description	Hours	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Subtotal
Weed wacker in spring and fall cut to 8 inch height, 5 laborers x 4 hours	20	1	0	0	0	0	0	0	0	1	40
Mowing grass border areas with small mowers, 3 laborers x 3 hours	9	0	3	4	4	4	3	4	3	0	225
Weed control, spraying and pulling, 1 laborer x 5 hrs	5	0	1	1	1	1	0	0	0	0	20
TOTAL											285

- ▶ **Hydrodynamic Separator**
- ▶ During normal flow or first flush, water directed by weir and drops to lower chamber
- ▶ Sediment and oil separation
- ▶ High flow stormwater passes through untreated



Questions?

Wild Teasel

July, 2023

