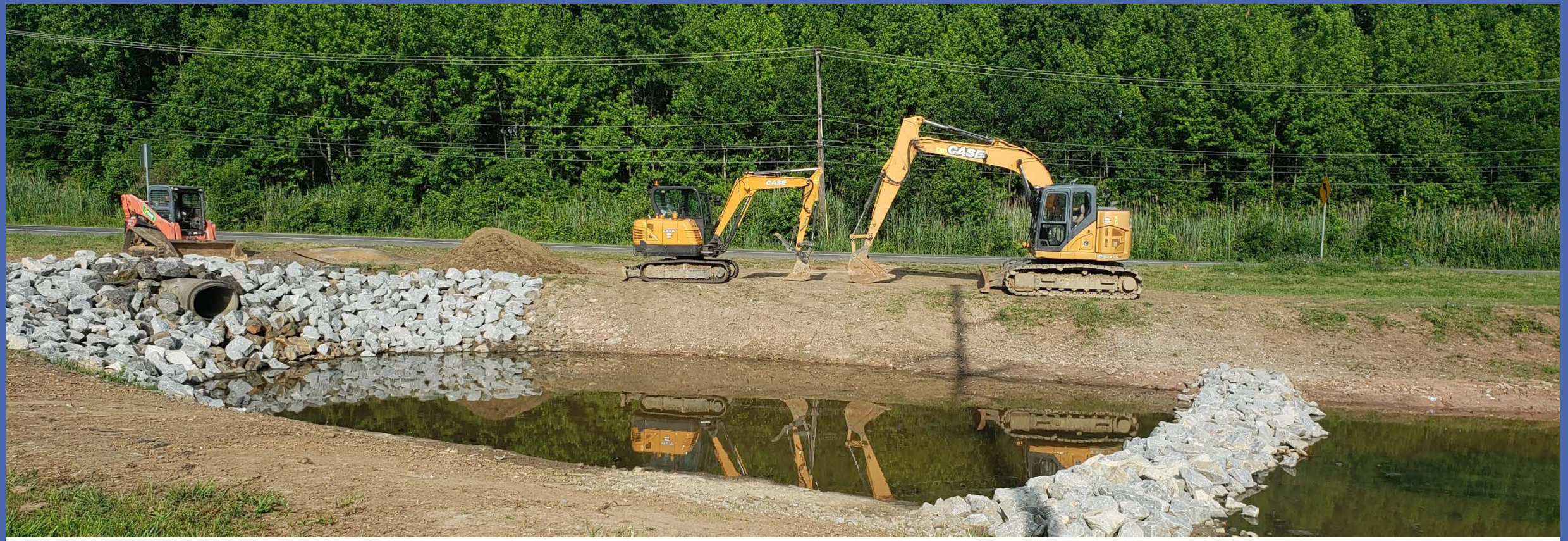
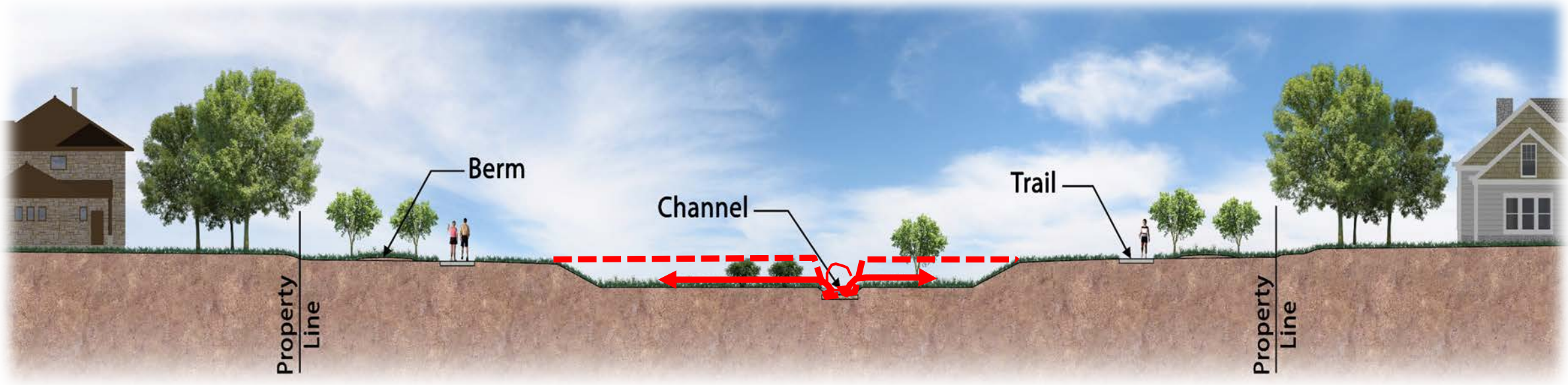


NPDES LESSONS LEARNED

SARA ESPOSITO
MARCH 8, 2021

Restoration Updates

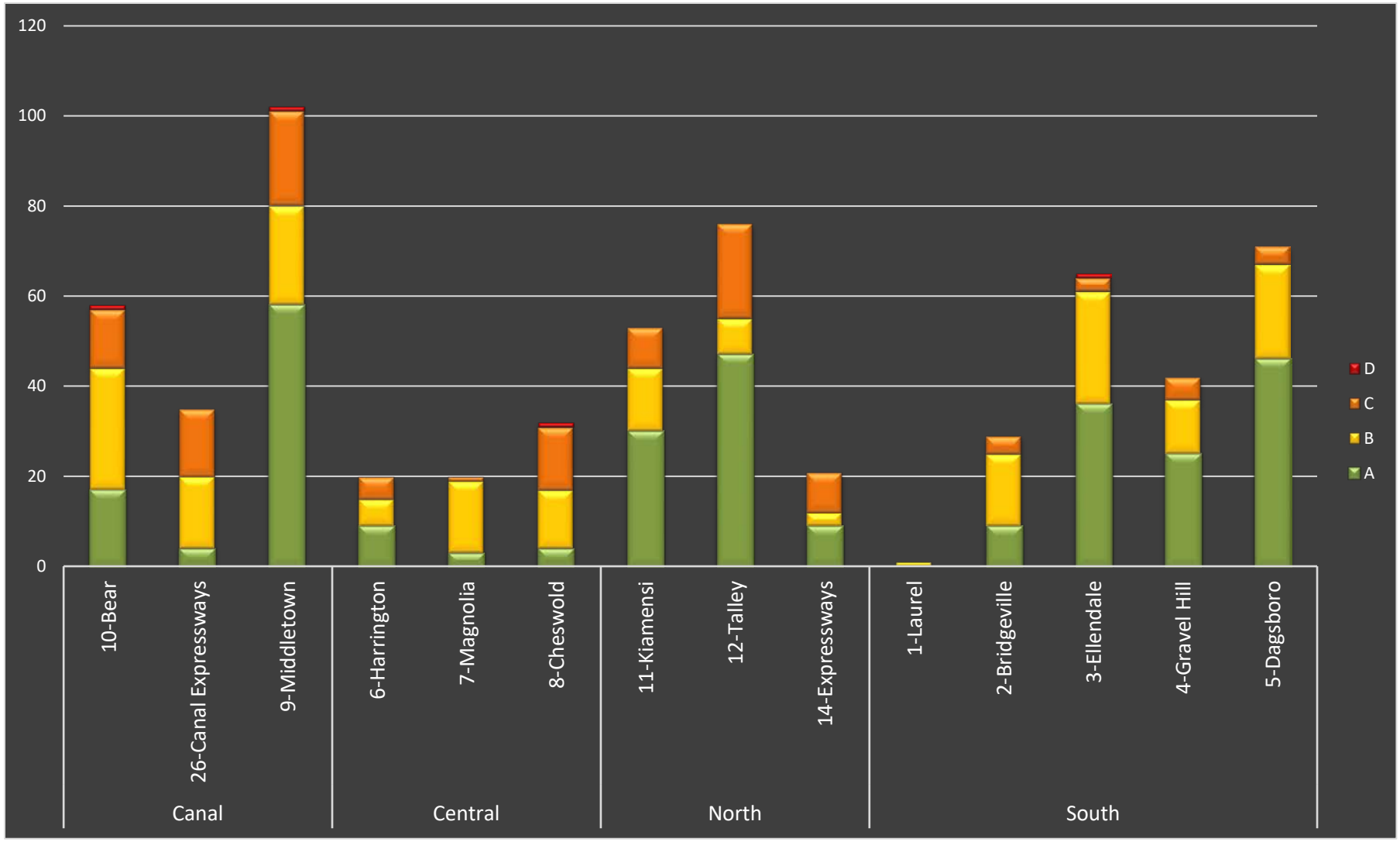
- T201880208 Harvey Road Channel Modification
- T202080204 Robscott Manor Stream Restoration
- T202180201 Dragon Run Stream Restoration at Kingsmill Mobile Home Park



BMP Status 2020

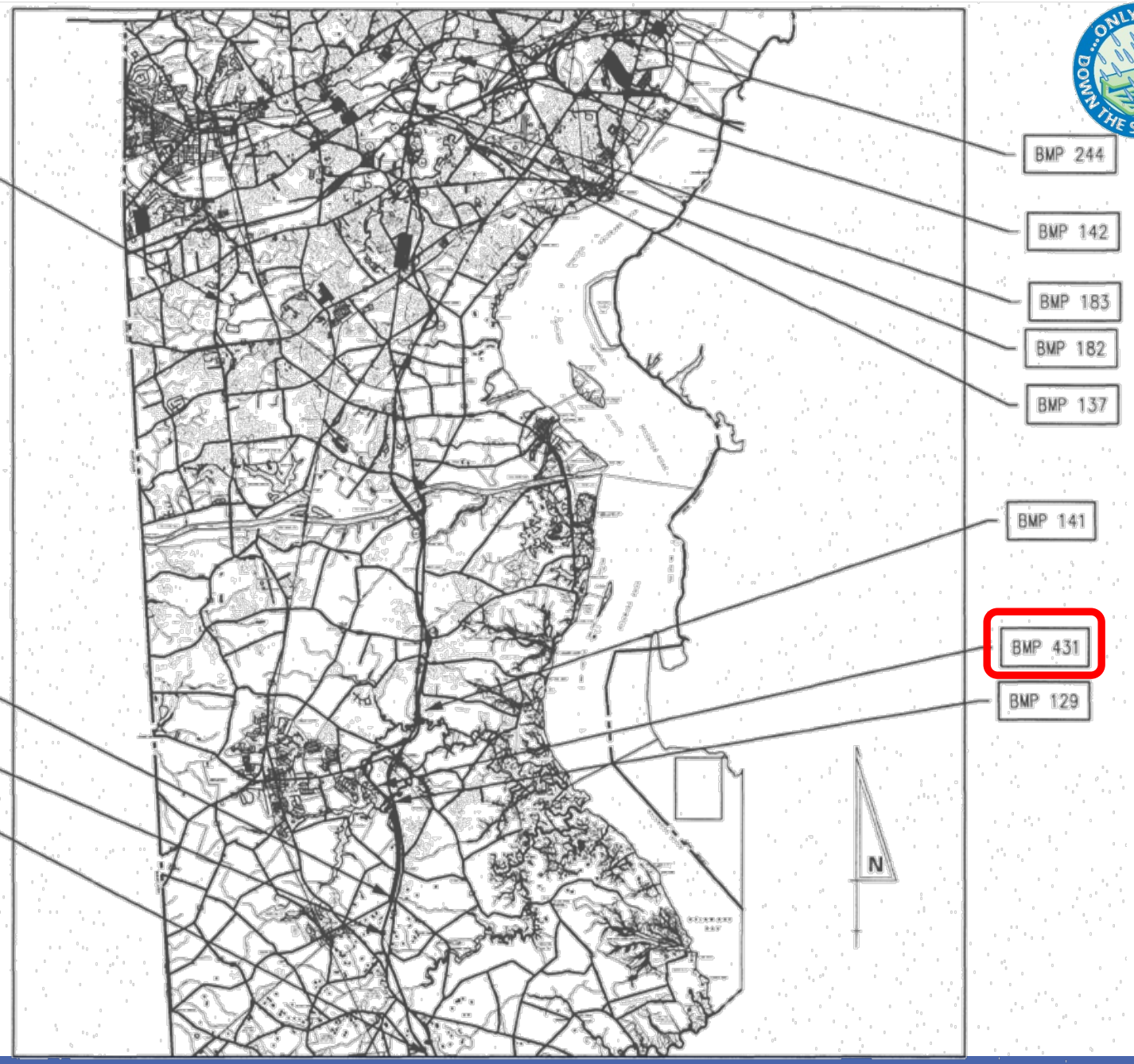
	A	B	C	D	Grand Total
Canal	**79**	**65**	**49**	**2**	**195**
10-Bear	17	27	13	1	58
26-Canal Expressways	4	16	15		35
9-Middletown	58	22	21	1	102
Central	**16**	**35**	**20**	**1**	**72**
6-Harrington	9	6	5		20
7-Magnolia	3	16	1		20
8-Cheswold	4	13	14	1	32
North	**86**	**25**	**39**		**150**
11-Kiamensi	30	14	9		53
12-Talley	47	8	21		76
14-Expressways	9	3	9		21
South	**116**	**75**	**16**	**1**	**208**
1-Laurel		1			1
2-Bridgeville	9	16	4		29
3-Ellendale	36	25	3	1	65
4-Gravel Hill	25	12	5		42
5-Dagsboro	46	21	4		71
Grand Total	**297**	**200**	**124**	**4**	**625**
2020 %	**47%**	**32%**	**20%**	**1%**	
2019 %	**39%**	**36%**	**23%**	**2%**	

BMP Status 2020



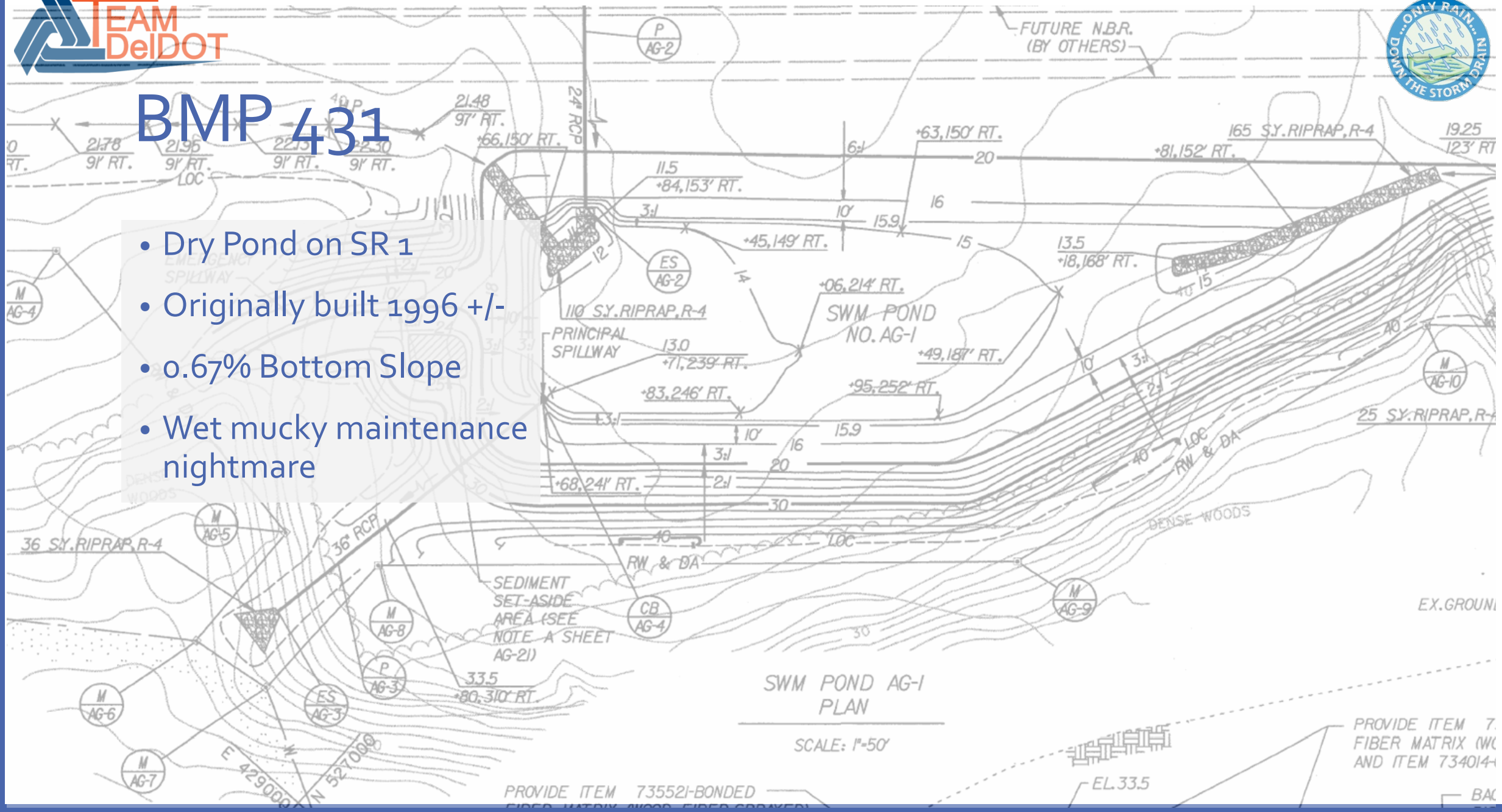
BMP Maintenance (T201780204)

- Diamond Hill & Canal District
- 13 Original BMPs
- 3 Change Orders
  - 21 / Jenny Run Outfall
  - 76 at Kiamensi MY
  - 143 on SR 141
- $1,613,730
  - $100,000 +/- per BMP



BMP 431

- Dry Pond on SR 1
- Originally built 1996 +/-
- 0.67% Bottom Slope
- Wet mucky maintenance nightmare



BMP 431 – Before (2020-04-09)



BMP 431 – Before (2020-04-09)



BMP 431 – After (2020-10-01)



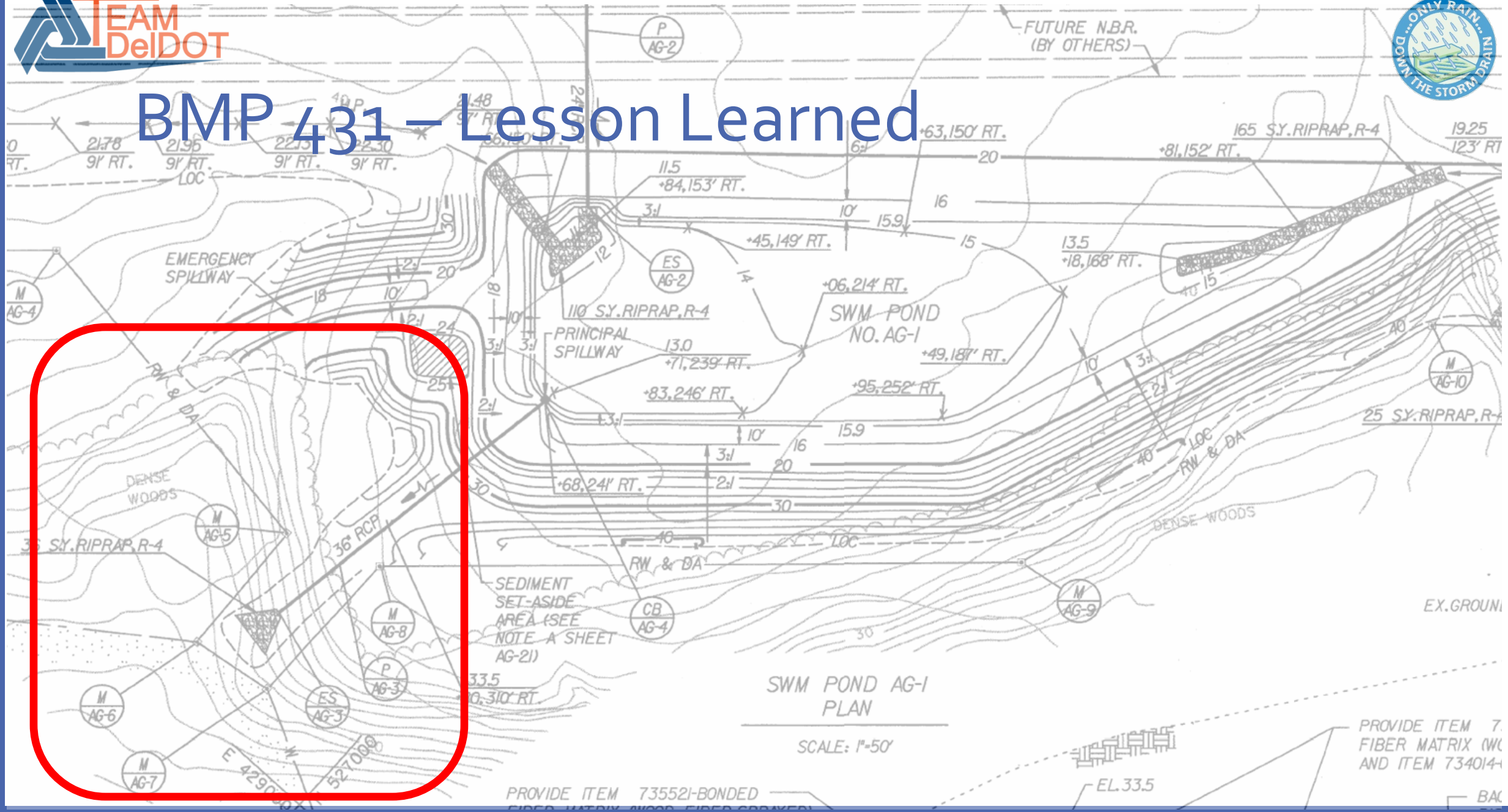
BMP 431 – After (2020-10-01)



BMP 431 – Lesson Learned

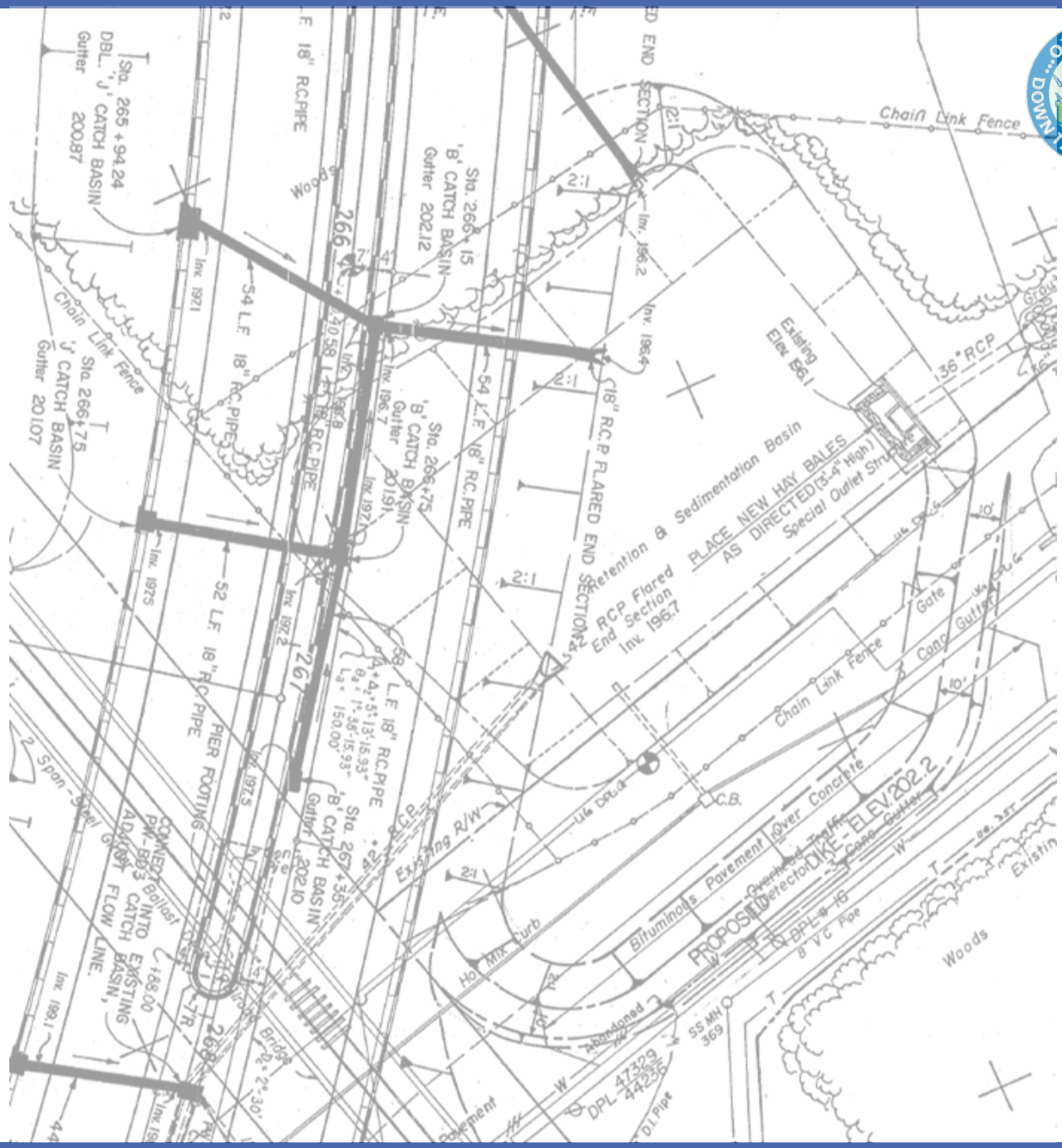


BMP 431 – Lesson Learned



BMP 143

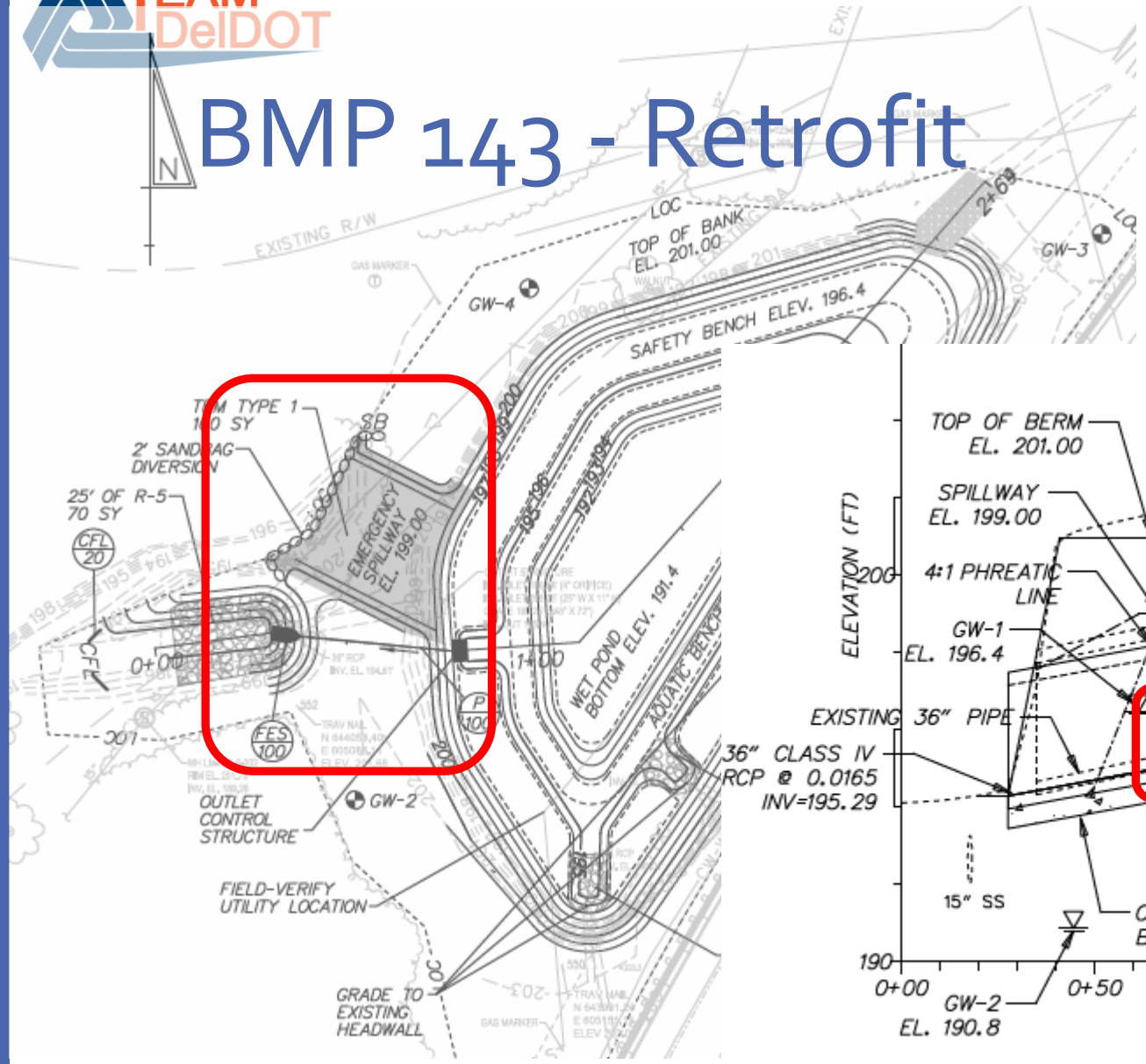
- Dry Pond* on SR 141
- Originally built 1987 +/-
- No details / no slope on original plan
- At some point converted to wet pond due to phragmites complaints by plugging low flow orifice
- Caused backflow into 141 underdrains / stormdrains

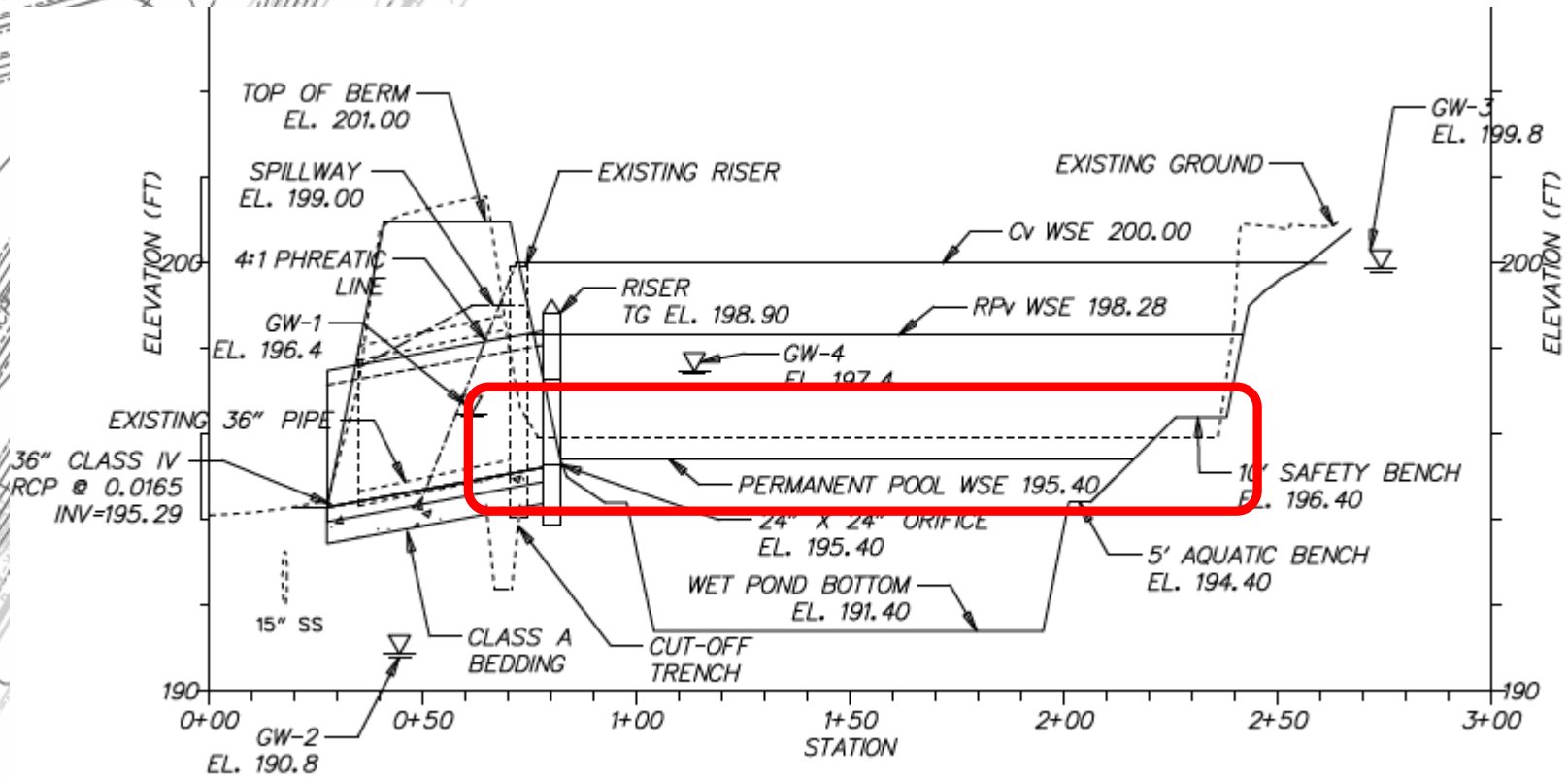


BMP 143 – Before (2019-12-20)



BMP 143 - Retrofit

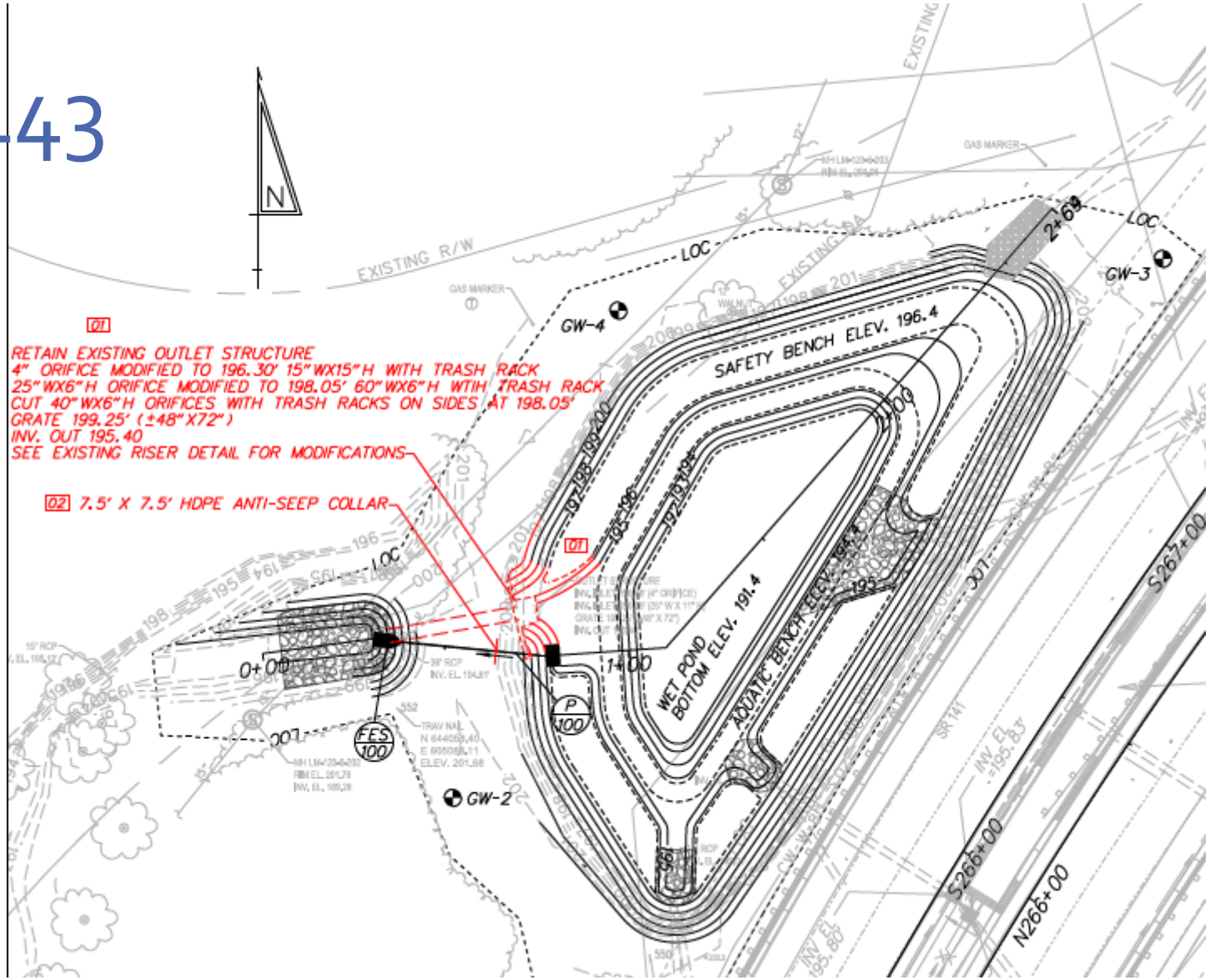




BMP 143 – Lesson Learned



BMP 143


N
EXISTING R/W
LOC
GW-4
GW-3
GW-2
01
RETAIN EXISTING OUTLET STRUCTURE
4" ORIFICE MODIFIED TO 196.30' 15"WX15"H WITH TRASH RACK
25"WX6"H ORIFICE MODIFIED TO 198.05' 60"WX6"H WTIH TRASH RACK
CUT 40"WX6"H ORIFICES WITH TRASH RACKS ON SIDES AT 198.05'
GRATE 199.25' (±48"X72")
INV. OUT 195.40
SEE EXISTING RISER DETAIL FOR MODIFICATIONS
02 7.5' X 7.5' HDPE ANTI-SEEP COLLAR
SAFETY BENCH ELEV. 196.4
WET POND BOTTOM ELEV. 191.4
AQUATIC BENCH ELEV. 194.4
0+00
1+00
2+69
S267+00
S266+00
N266+00
P 100
FES 100
SR 141

BMP 143 – After (2020-02-11)



BMP 143 – After (2020-03-17)



BMP 143 – Lesson Learned



BMP 143 – After (2020-04-09)



BMP 143 – After (2020-04-09)



BMP 143 – After (2020-09-21)



BMP 143 – After (2020-09-21)



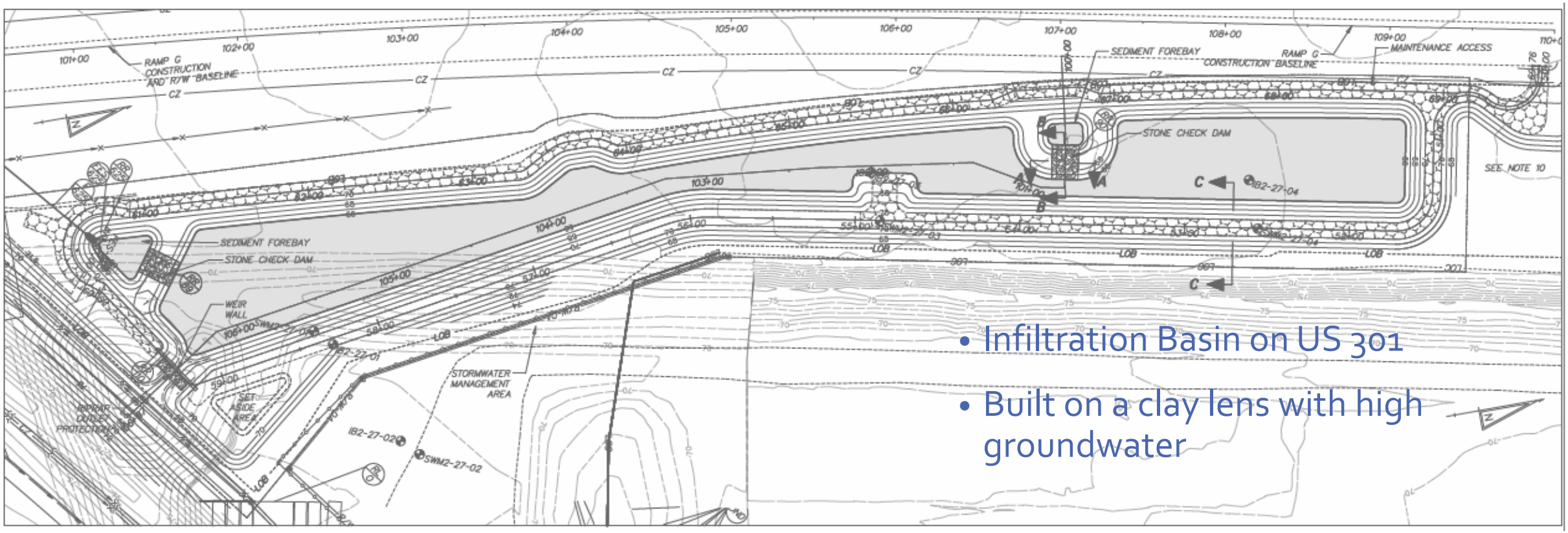
BMP 85 – Lesson Learned



Dry Pond – Lessons Learned

- Must have bottom slope!!!
  - 2%!!
  - If not 2% enhance drainage capabilities
    - Low Flow Channel
    - Amend bottom with Biochar for better drainage?
      - Call for trial BMPs particularly in Chesapeake watershed
    - Different BMP!!

BMP 670



- Infiltration Basin on US 301
- Built on a clay lens with high groundwater

BMP 670 – Before (11.27.18)



BMP 670 – Before (05.17.19)



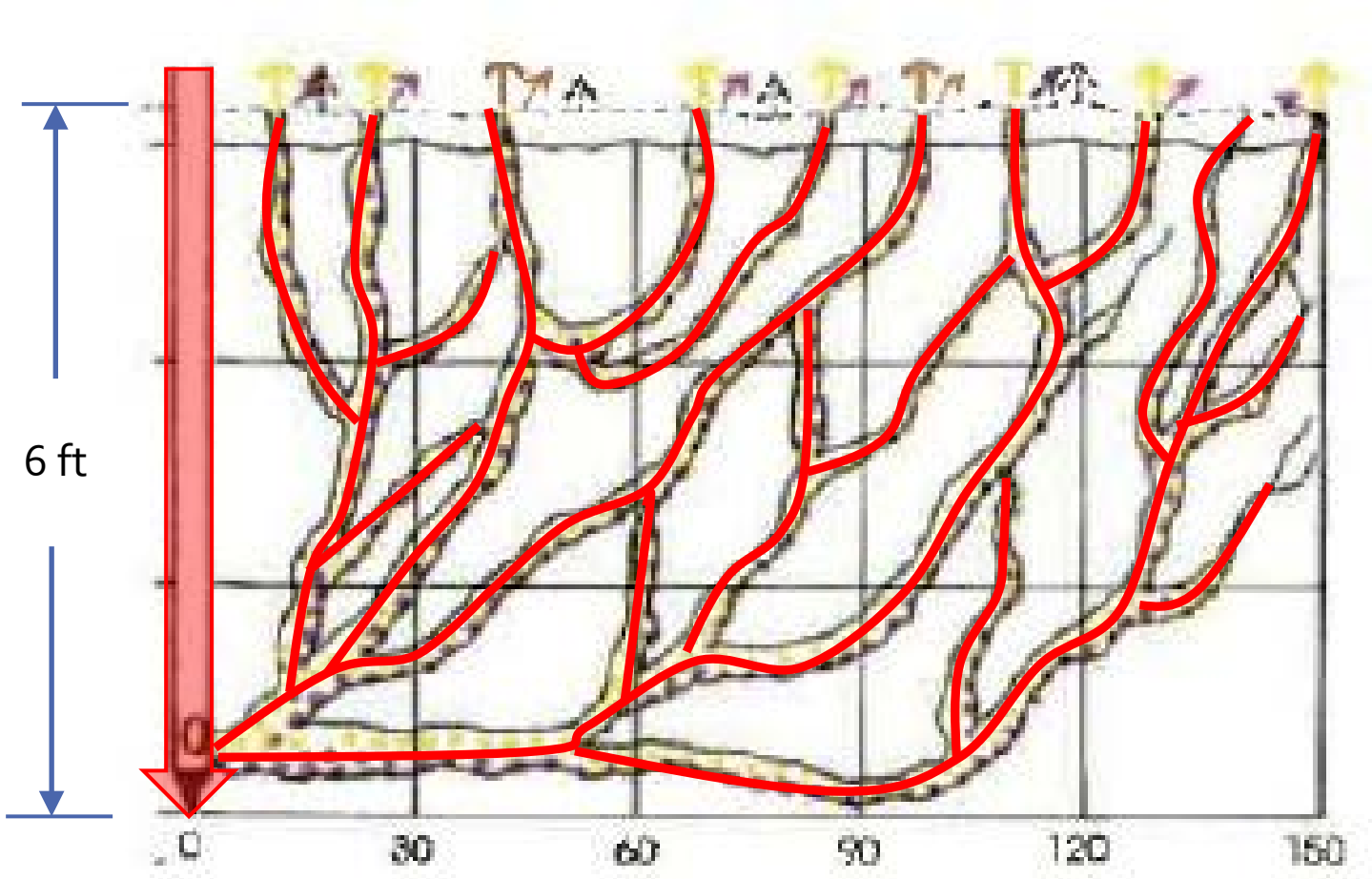
BMP 670 – Before (11.10.20)



BMP 670 – During (10.24.20)



BMP 670 – Soil Fracking



BMP 670 – During (10.24.20)



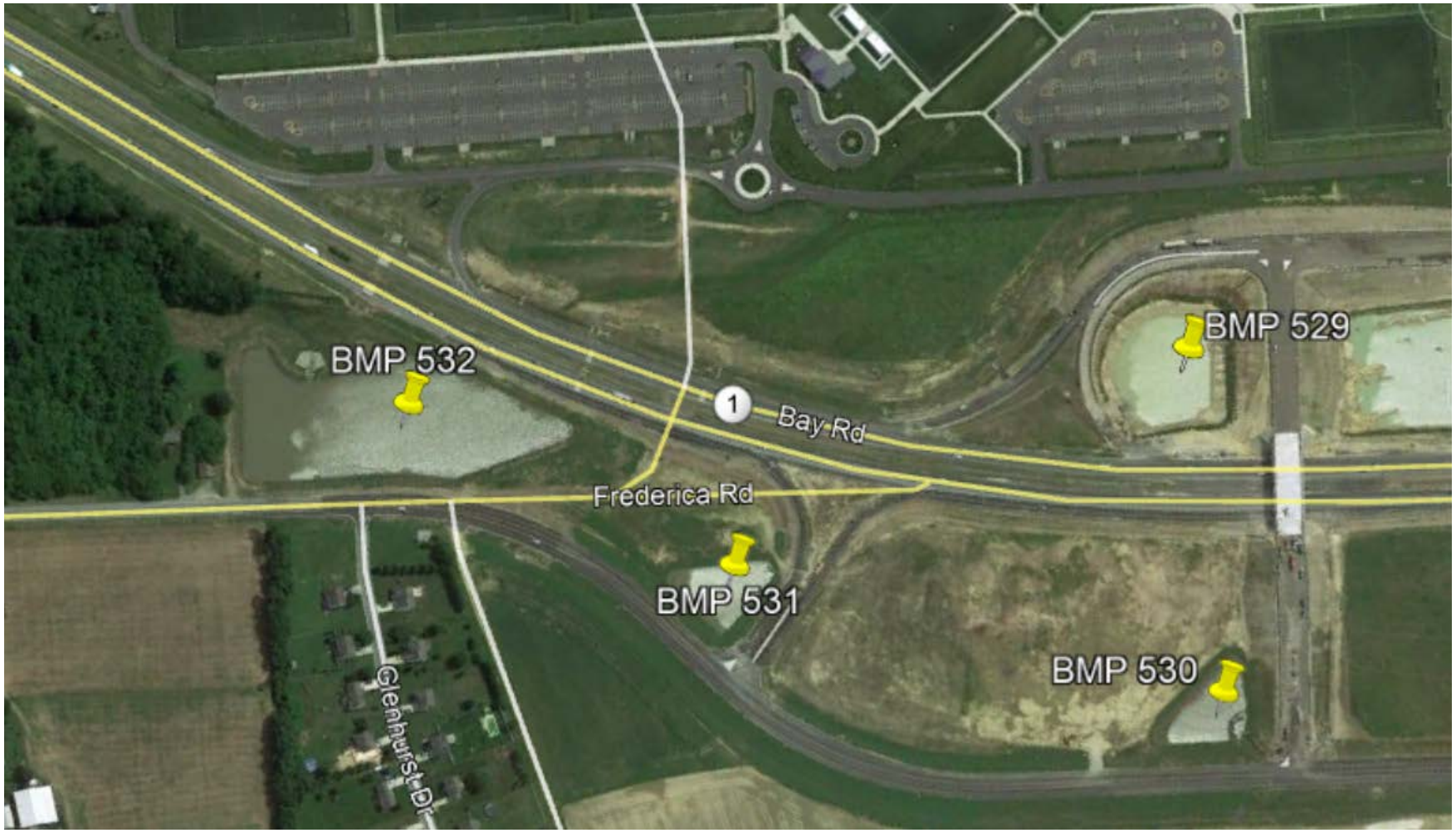
BMP 670 – During (10.24.20)



BMP 670 – After (11.23.20)



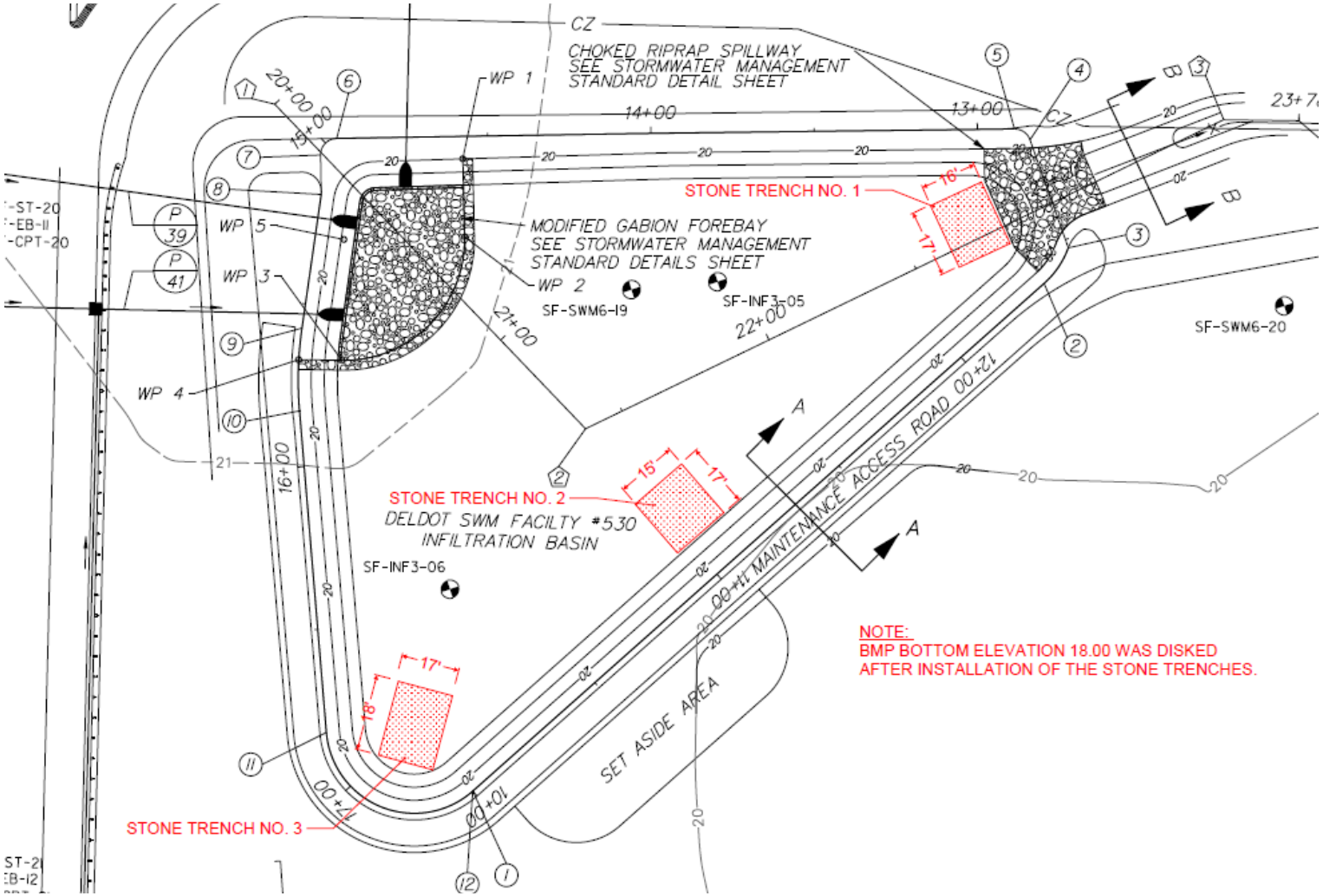
BMP 530 & 531 – Infiltration



BMP 530 – Before (11.07.18)



BMP 530 - Retrofit



BMP 530 – After (06.26.19)



BMP 531 – Before (11.07.18)



BMP 531 – After (08.11.19)



Infiltration – Lessons Learned

- Many infiltration failures on US 301 and statewide are in A-2-4 soils. Need additional exploration.
- Soil samples in basin bottom (per S&S regs).
- Minimum 2 per facility with more based on basin size (per regs)
- Seasonal high groundwater must be noted; Basin bottom 2 ft above that (per regs).
- Other states are having similar challenges. Also is it smart to be sending road runoff into our groundwater? Different BMP?

Wet Ponds – BMP of the *Past*, Present & **Future**



Wet Ponds – BMP of the *Past*, Present & **Future**



See it, Report it!

- Call **302.STOPPIT**

(anonymously)

- Contact me:

  Sara Esposito

  NPDES Program Manager

  302.760.2346

  sara.esposito@delaware.gov

- Team at: npdes@delaware.gov

