



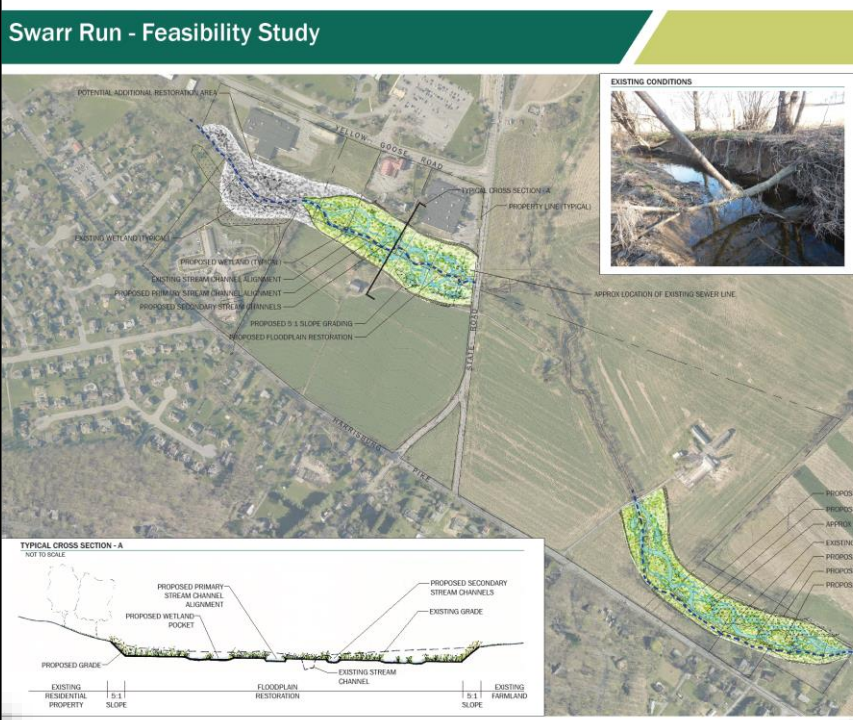
Swarr Run Floodplain Restoration

Mid-Atlantic Wetlands Workgroup

November 15, 2023

Presented by Justin Spangler, PE
Justin@LandStudies.com

Site History



Restoration Details

Public-Private Partnerships







**1824 - SCOTT
SWARR RUN FLOODPLAIN
RESTORATION AT STATE ROAD**
EAST HEMPFIELD TOWNSHIP, PA
9/30/2019
SCALE 1"=2000'

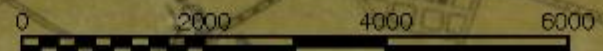
 717 627 4440
717 627 4660
landstudies.com
lsc@landstudies.com
34.5 North Street | Lititz, PA 17548

ESR-2019



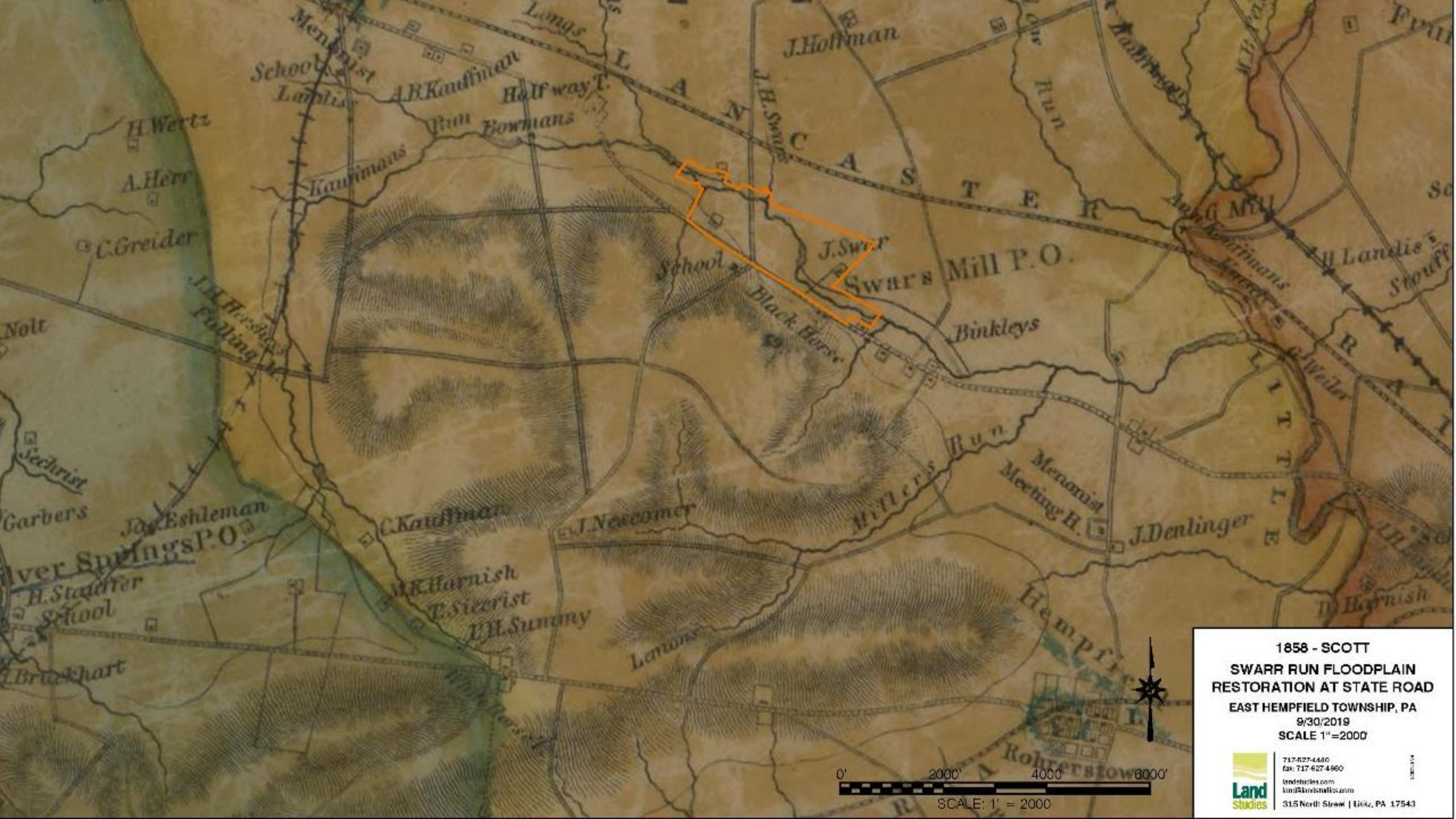
1842 - SCOTT
SWARR RUN FLOODPLAIN
RESTORATION AT STATE ROAD
EAST HEMPFIELD TOWNSHIP, PA
9/30/2019
SCALE 1"=2000

 717-627-6140
610-741-627-6100
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SCALE: 1" = 2000





1858 - SCOTT
SWARR RUN FLOODPLAIN
RESTORATION AT STATE ROAD
EAST HEMPFIELD TOWNSHIP, PA
9/30/2019
SCALE 1"=2000

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SCALE: 1" = 2000



ST
HEMPFIELD
TP

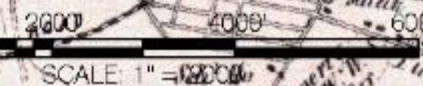


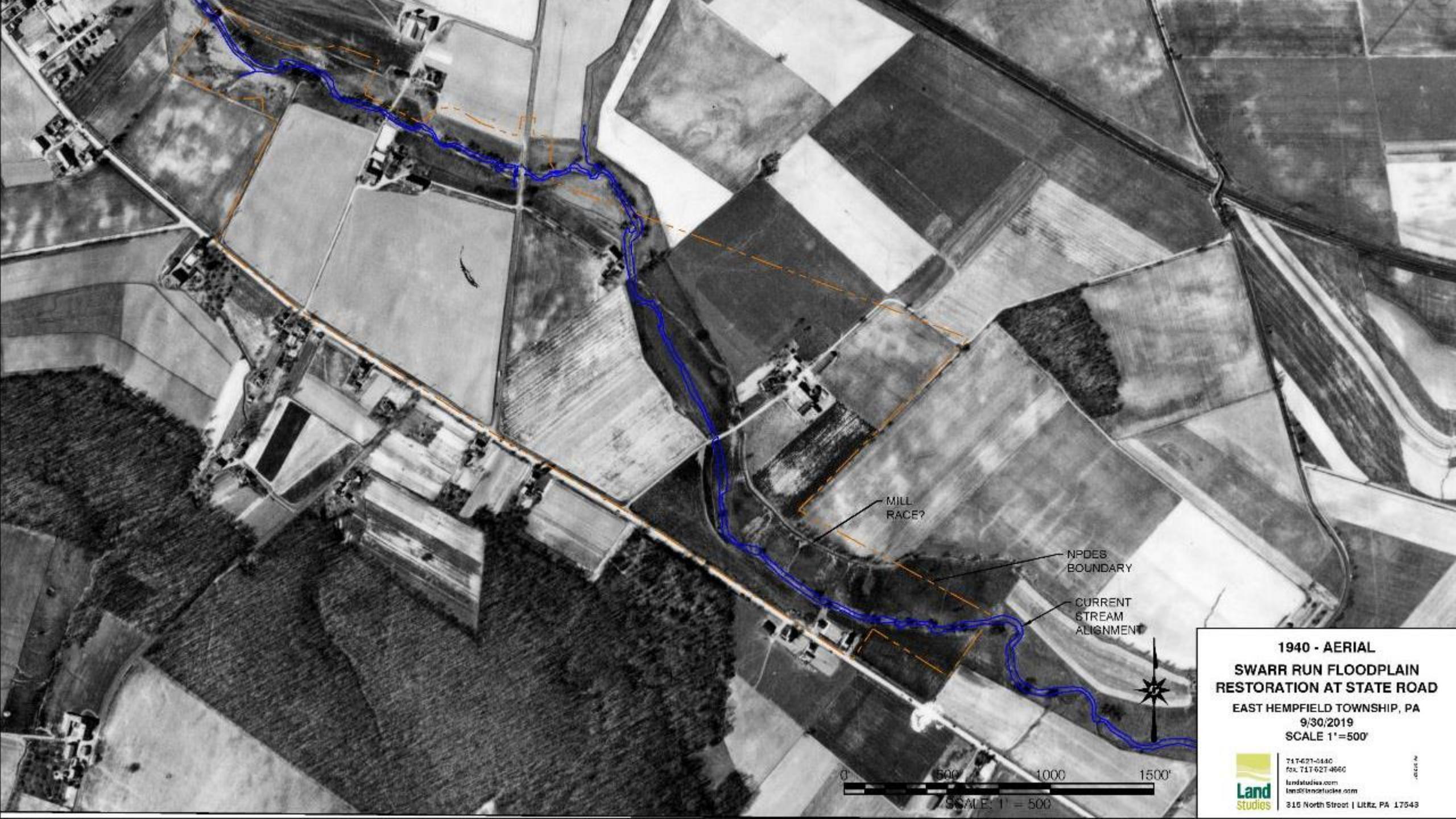
TOWNSHIP

1864 - BRIDGENS
SWARR RUN FLOODPLAIN
RESTORATION AT STATE ROAD

EAST HEMPFIELD TOWNSHIP, PA
9/30/2019
SCALE 1"=2000'

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MILL RACE?

NPDES BOUNDARY

CURRENT STREAM ALIGNMENT



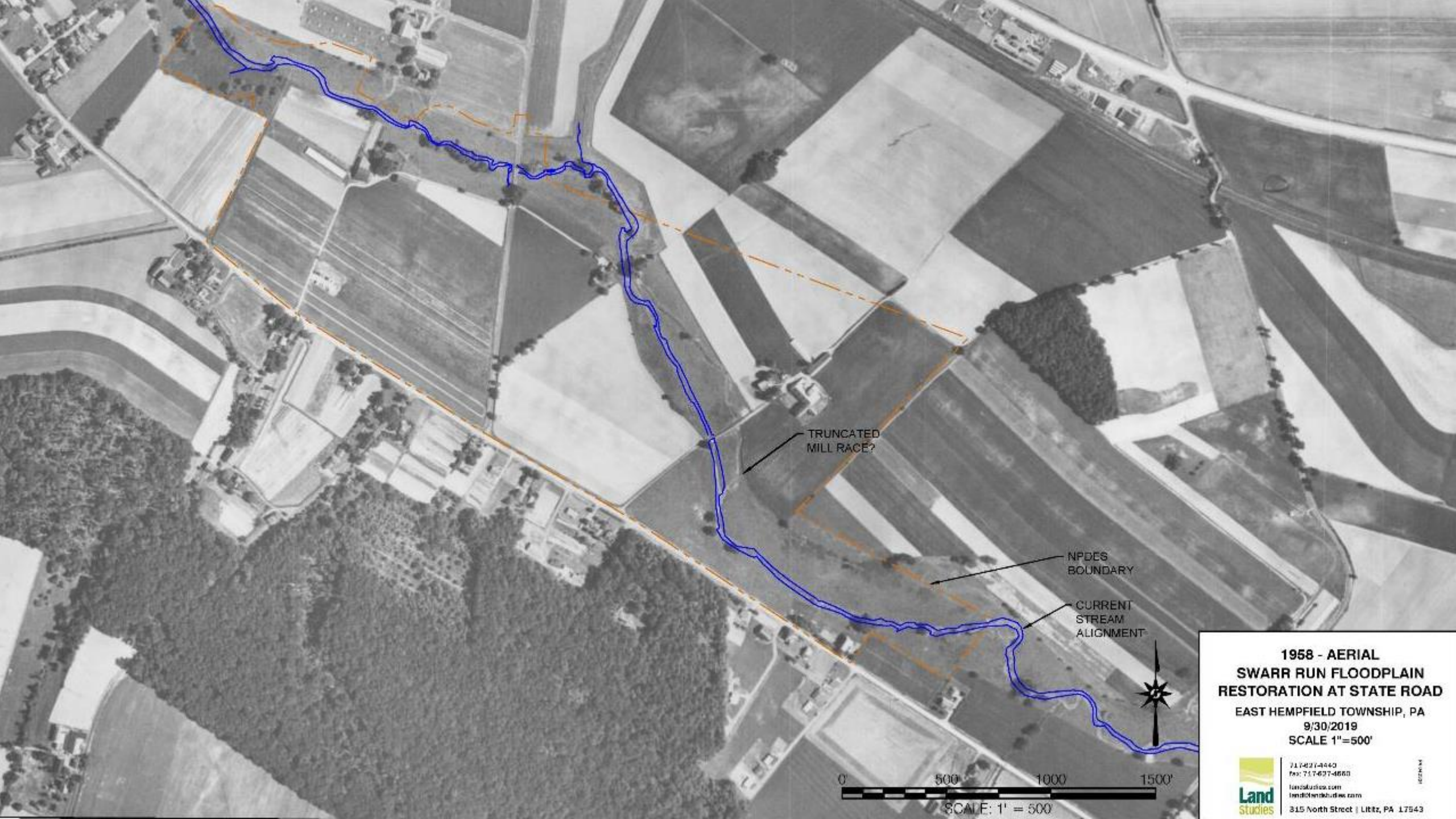
SCALE: 1" = 500'

1940 - AERIAL
SWARR RUN FLOODPLAIN RESTORATION AT STATE ROAD
EAST HEMPFIELD TOWNSHIP, PA
9/30/2019
SCALE 1"=500'



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01014 N



TRUNCATED
MILL RACE?

NPDES
BOUNDARY


CURRENT
STREAM
ALIGNMENT



SCALE: 1" = 500'



**1958 - AERIAL
SWARR RUN FLOODPLAIN
RESTORATION AT STATE ROAD**
EAST HEMPFIELD TOWNSHIP, PA
9/30/2019
SCALE 1"=500'



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10/20/19



NPDES
BOUNDARY

CURRENT
STREAM
ALIGNMENT



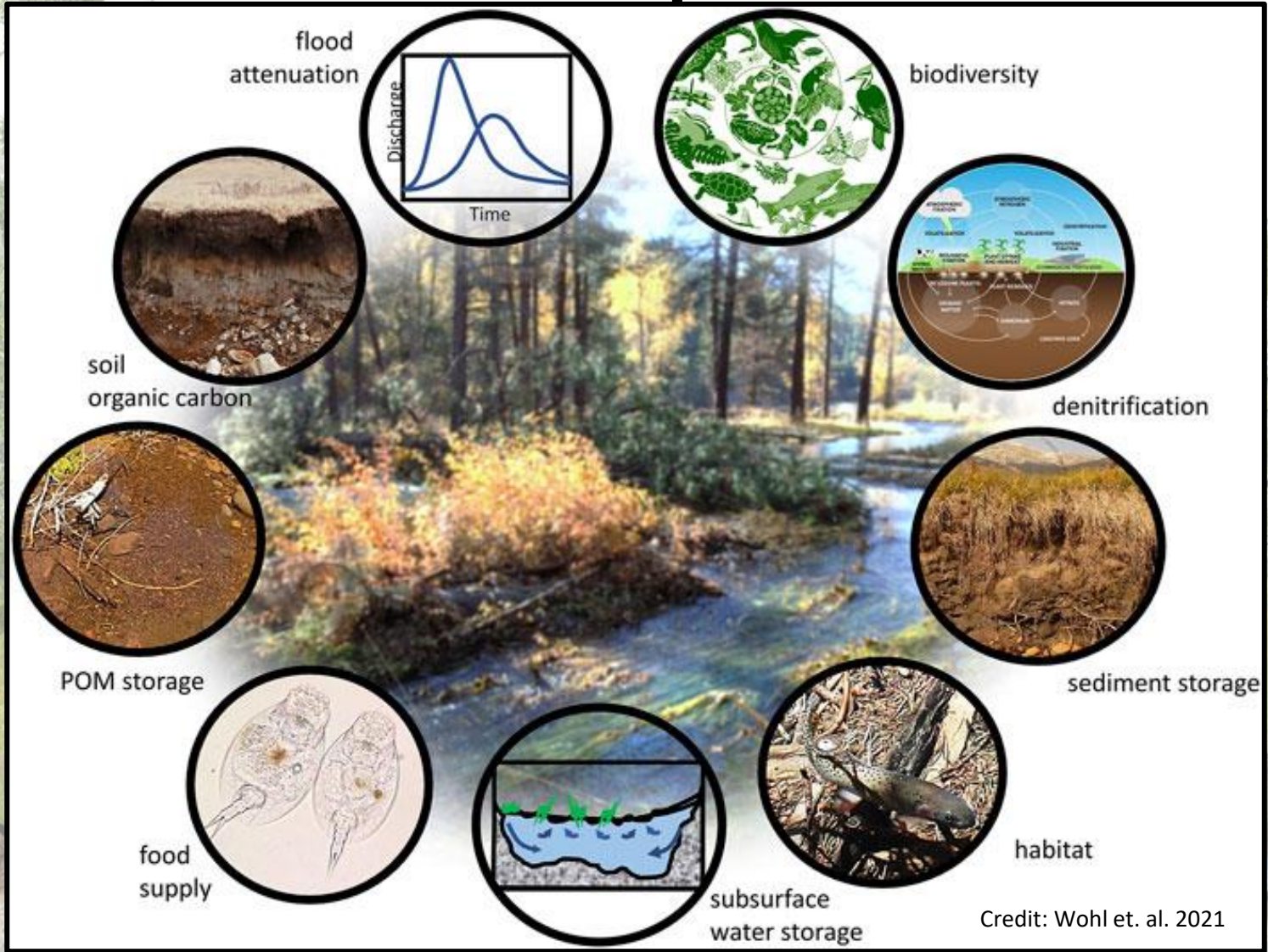
SCALE: 1" = 500'

2016 - AERIAL
SWARR RUN FLOODPLAIN
RESTORATION AT STATE ROAD
EAST HEMPFIELD TOWNSHIP, PA
9/30/2019
SCALE 1"=500'



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02/20/19



Credit: Wohl et. al. 2021



Development

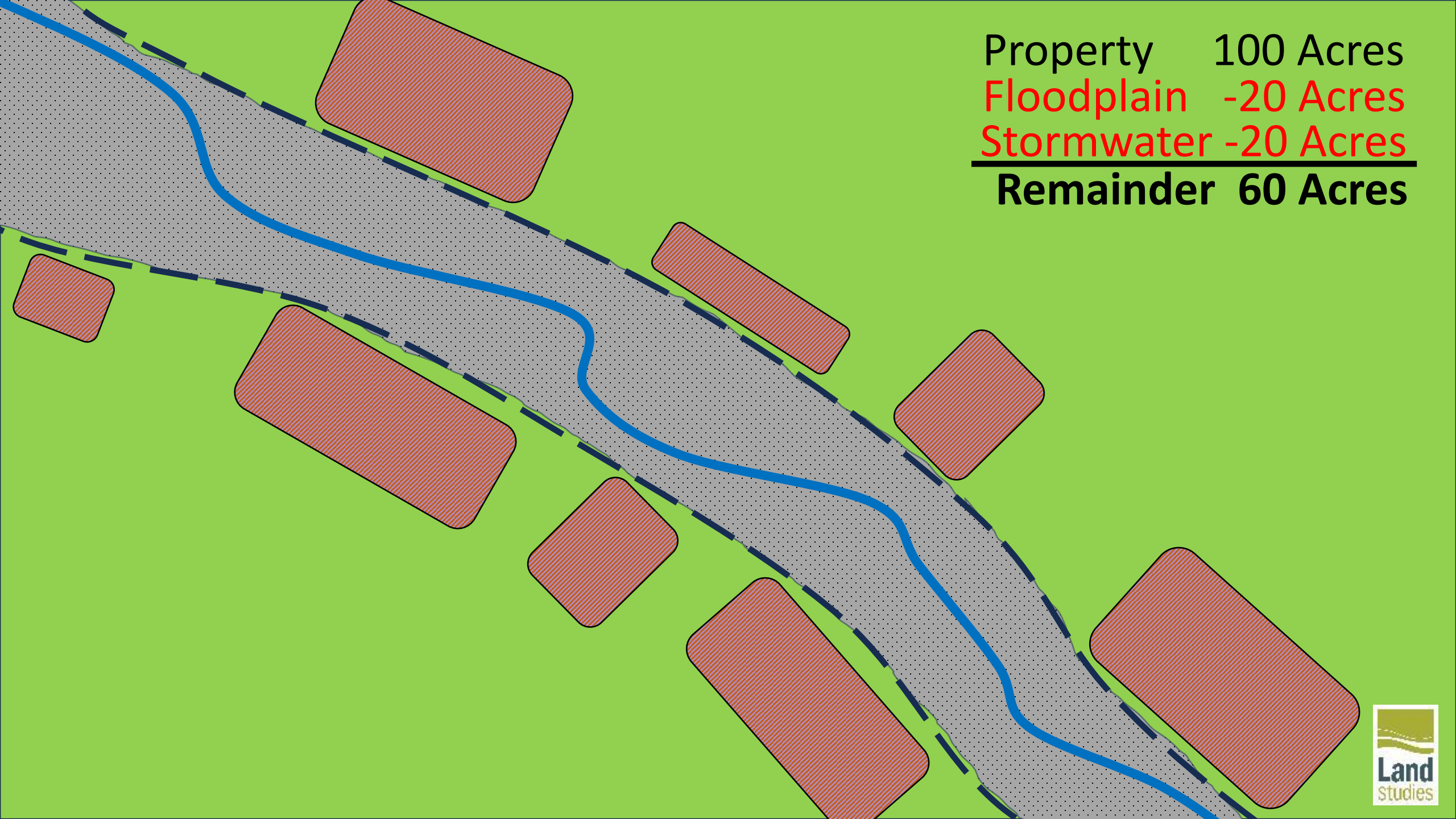
VS

Wetlands

Development = Wetlands

Property 100 Acres
Floodplain -20 Acres
Stormwater -20 Acres

Remainder 60 Acres





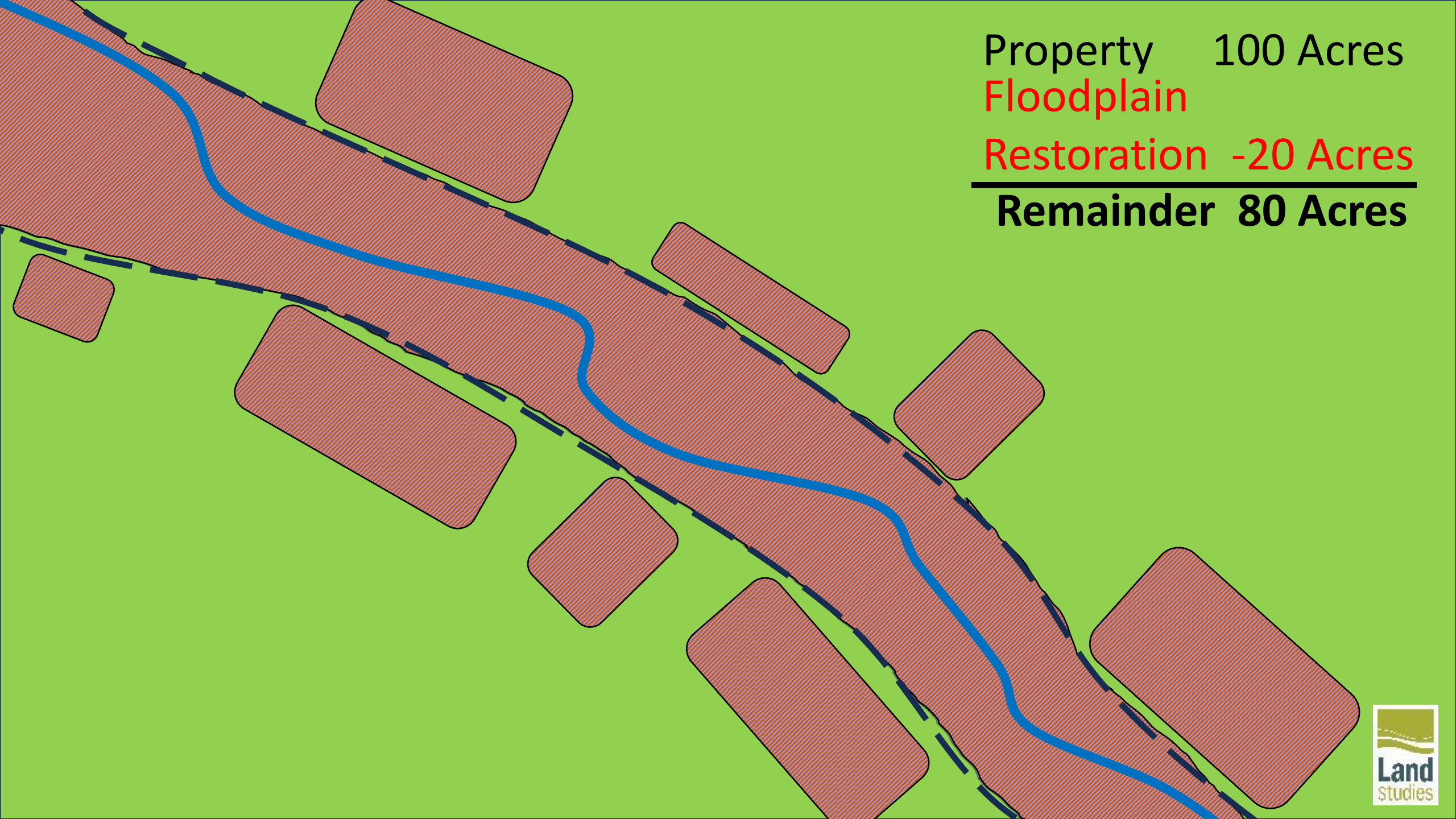
Phase I Annual Load:

- 327,417 lb Sediment
- 808 lb Nitrogen
- 126 lb Phosphorus

Property 100 Acres
Floodplain

Restoration -20 Acres

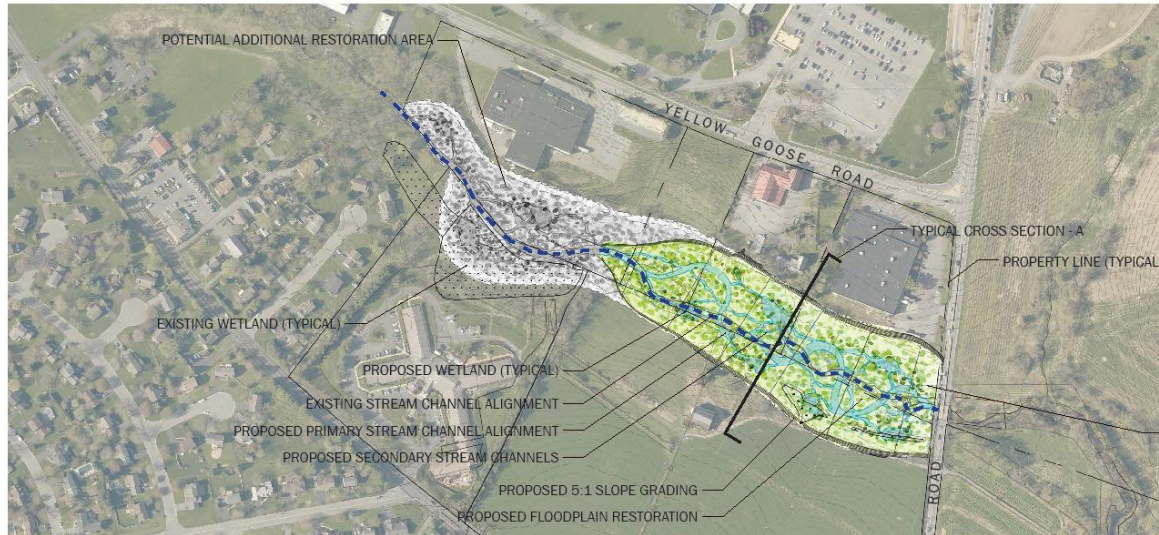
Remainder 80 Acres



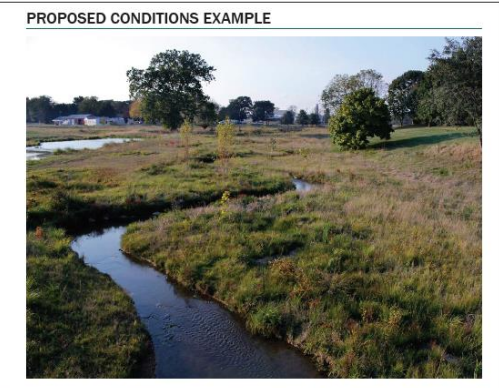


Phase I Annual Load:

- 327,417 lb Sediment
- 808 lb Nitrogen
- 126 lb Phosphorus



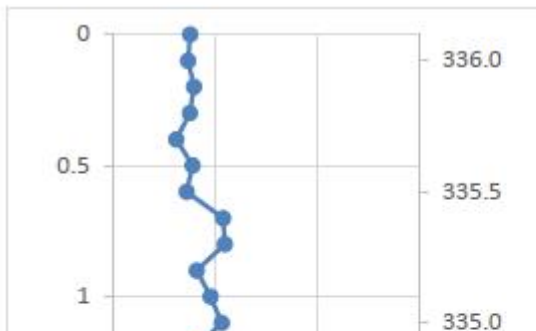
EXISTING CONDITIONS



PROPOSED CONDITIONS EXAMPLE

- Constructed in 2020 (Phase I)
- 17-acre project area
- 80,000 cubic yards of legacy sediment removed
- 3,489 linear feet of restoration
- 12.9 acres of Wetlands
 - 11.8 acres restored
 - 1.1 acres rehabilitated





Depth BGS (ft)	Horizon	Matrix Color (Munsell)	Texture	Redox Color (Munsell)	Redox Abundance	Coarse Fragments
0.0-0.9	A	10 YR 4/4	Silt Loam	--	--	0%
Topsoil.						

95.4% calibrated interval

6652 JS1

Lancaster, PA. Trench 16+25: 4.7' Depth

10 YR cal AD/BC

cal BP

p (%)

AD 685-750

1265-1200 BP

45.5

AD 760-780

1190-1170 BP

15.1

AD 785-875

1165-1075 BP

34.8

6653 JS2

Lancaster, PA. Trench 23+25: 3.5' Depth

AD 1445-1525

505-425 BP

67.3

AD 1570-1630

380-320 BP

28.1

6654 JS3

Lancaster, PA. Trench 42+50: 4.2' Depth

1215-1055 BC

3165-3005 BP

95.4

6655 JS4

Lancaster, PA. Trench 55+25: 2.2' Depth

AD 1525-1560

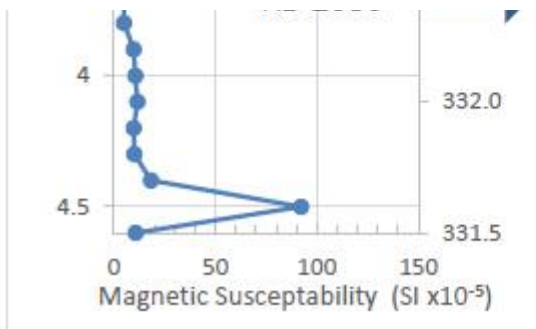
425-390 BP

27.4

AD 1630-1660

320-290 BP

68.0



3.5-4.7 -- -- Gravel -- -- 80%

Small sub-angular quartz basal gravels. Larger gravels interspersed. Some coarse sand, dark brown color.

Figure 13 - Soil Profile (Valley Station 23+25)



State Road – Study Point 1

Return Period	Pre (cfs)	Post (cfs)	Peak Reduction (%)
2-yr	231.20	223.55	-3.31%
5-yr	468.65	460.40	-1.76%
10-yr	721.46	713.10	-1.16%
25-yr	1161.12	1153.23	-0.68%
50-yr	1587.49	1580.58	-0.44%
100-yr	2098.54	2093.16	-0.26%









Pioneering innovative solutions to water
resource management.

Design | Sustain | Restore

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