

DGLVR Webinar 2019 Project Sharing Session Summaries



**4/4/2019
Starts at 9am**



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For technical assistance, call: 814-865-5355



DGLVR Webinar

Project Sharing Session Summaries

Purpose:

- Held three “Project Sharing Sessions” around the State this spring where CDs presented completed and upcoming projects.
- Purpose today is to share a quick summary of some of the project presented at these sessions.

DGLVR Webinar

Project Sharing Session Summaries

Disclaimers:

- I will make mistakes, misquotes, or just plain make stuff up about your project!
- Don't be offended if your project was omitted or quickly summarized, 30 projects presented here.
- Not all projects presented here are perfect, I will be highlighting good practices and ignoring "imperfections" since CDs were kind enough to volunteer to share.

DGLVR Webinar

Project Sharing Session Summaries

Will move fast today: 28 project summary slides and 2 project walkthroughs

More Info:

- Note counties and projects of interest, contact that Conservation District for details.
- Recording and PPT slides available on Centre Website

DGLVR Webinar

Project Sharing Session Summaries

- **General Drainage / Surface**
- **Road Fill and Drainage**
- **Mattress / Underdrain**
- **Urban / Infiltration**
- **Stream Encroachments**
- **Stream Crossing Replacement**

Type questions in Q&A or Chat. I will stop after each section to try to address

2018 DnG

Cumberland County

1/2

Summary:

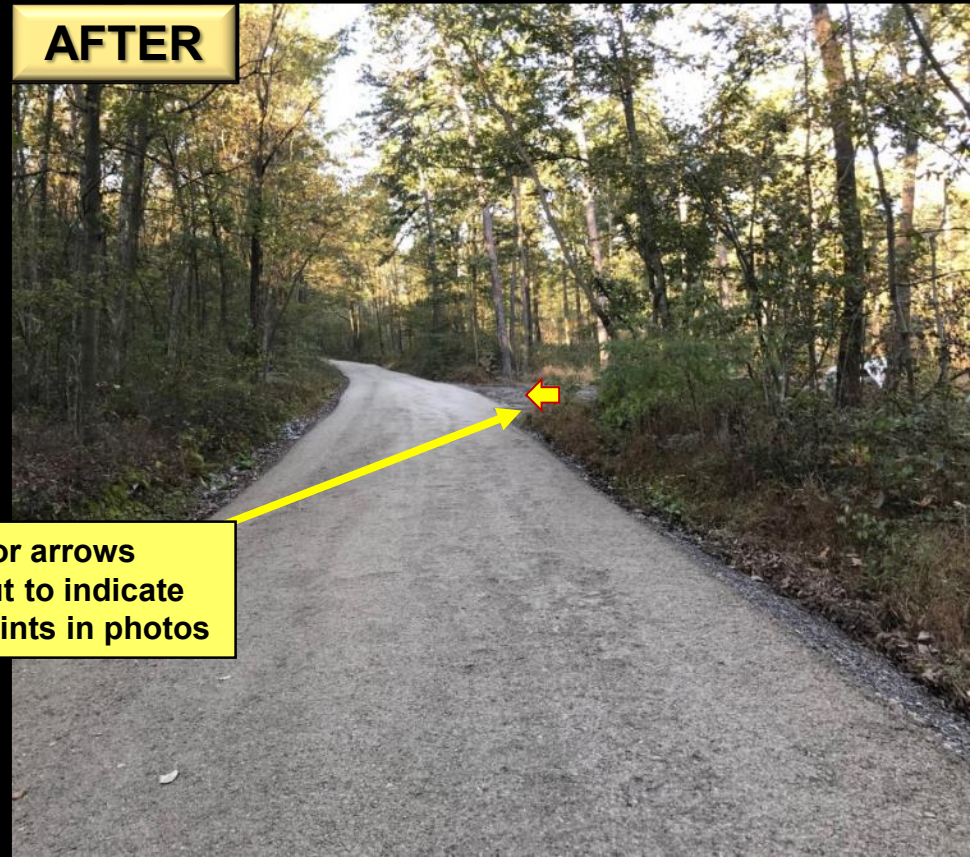
- Huge multi-year project on 2.4 miles of road that was rutted and nearly impassable.
- **2016:** 23 shallow crosspipes
- **2017:** 20 shallow crosspipes + 1,200' underdrain
- **2018:** 10,000+tons of base material added
- **2019:** Planned ~1.2 miles of DSA placement



Previous Drainage Phase



BEFORE



AFTER

Look for arrows
throughout to indicate
common points in photos

Summary:

- Huge multi-year project on 2.4 miles of road that was rutted and nearly impassable

Cold Springs Road Dickinson Township

Status: In Progress
Length: 12,600 ft

Construction: 2016-2019
Contract: \$344K

Summary:

This is a multi-phased, multiple year project that started in 2016. The entire project site is 2.4 miles long. Before work began on this project, the road was very rutted and almost impassable. Water would channelize in the wheel ruts and bypass the existing drainage pipes. The township added a lot of material before the first phase of the project started in summer 2016 with drainage work.

Solution:

Phase 1, 2016: 23 Shallow Cross Pipes

- Shallow cross pipes installed on a sharp angle to help direct the water into the pipe—cut the inlet of pipe
- Create a water break to keep the water from continuous flow down the road

Phase 2, 2017: 20 Shallow Cross Pipes and 1200 feet of udrain

- Ground water table rose and we found lots of water!

Phase 3, 2018: Additional underdrain (Township in-kind) and 2.4 miles of Shale (10,000 tons)

- Three separate areas had ground water pumping springs in the middle of the road!
- Added 10,000 tons of material to base and established 4-6% crown

Phase 4, 2018: 2,795 tons Driving Surface Aggregate



Berks County, Shade Road
\$46K Grants, \$24K In-kind

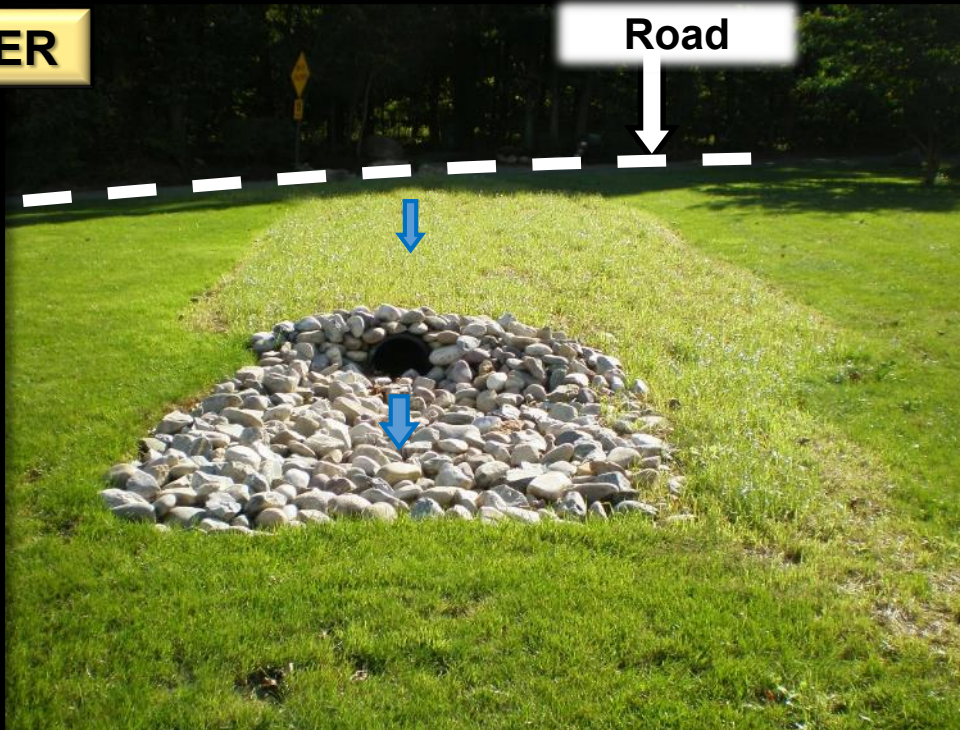
Summary:

- Filled entrenched road
- Placed DSA
- Improved drainage by establishing swales and adding pipes
- Innovative Off-ROW pipe discharges

BEFORE



AFTER



2018 LVR 1/1

Northumberland County, South Lily Road

Summary:

- Raise road to establish sheet flow
- New crosspipes and drop inlets
- Off-ROW infiltration work
- Removed 2/3 of stormwater

BEFORE



AFTER



DURING



AFTER



BEFORE



**Outlet to
stream**

2018 LVR

Montgomery County, Yost Road
\$65K Grant, \$80K In-kind

1/1

AFTER

Summary:

- Removed failing storm sewer
- Established stabilized ditch with new outlets
- Significant bank and utility work

BEFORE



**Clogged
drop inlet**

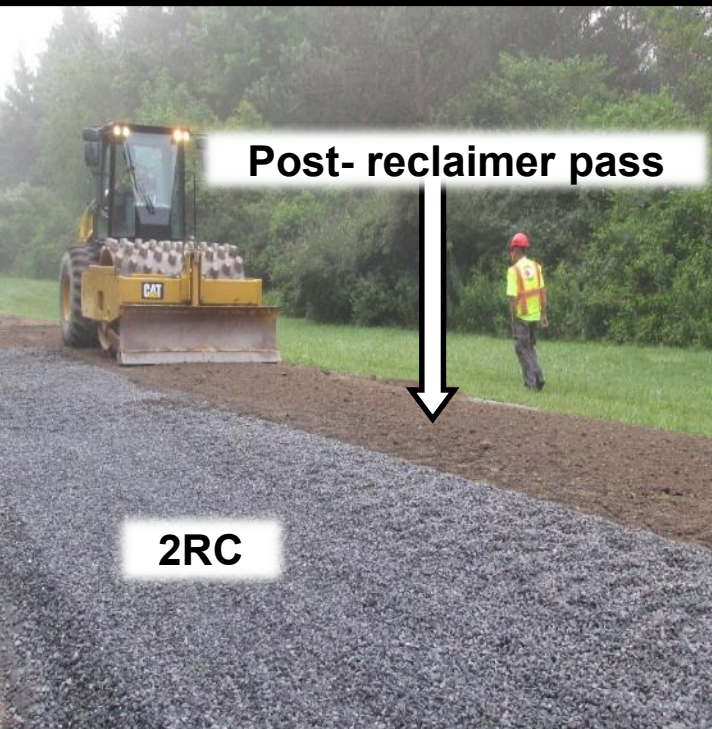


2018 LVR **1/1**
Somerset County, Wood Duck Road
\$54K Grant, \$13K In-Kind

- Summary:**
- COUNTY owned road in very poor condition
 - 7 replaced and 3 new pipes
 - 1,800 tons 2RC placed over road, then Full Depth Reclamation, then tar and chip application

BEFORE

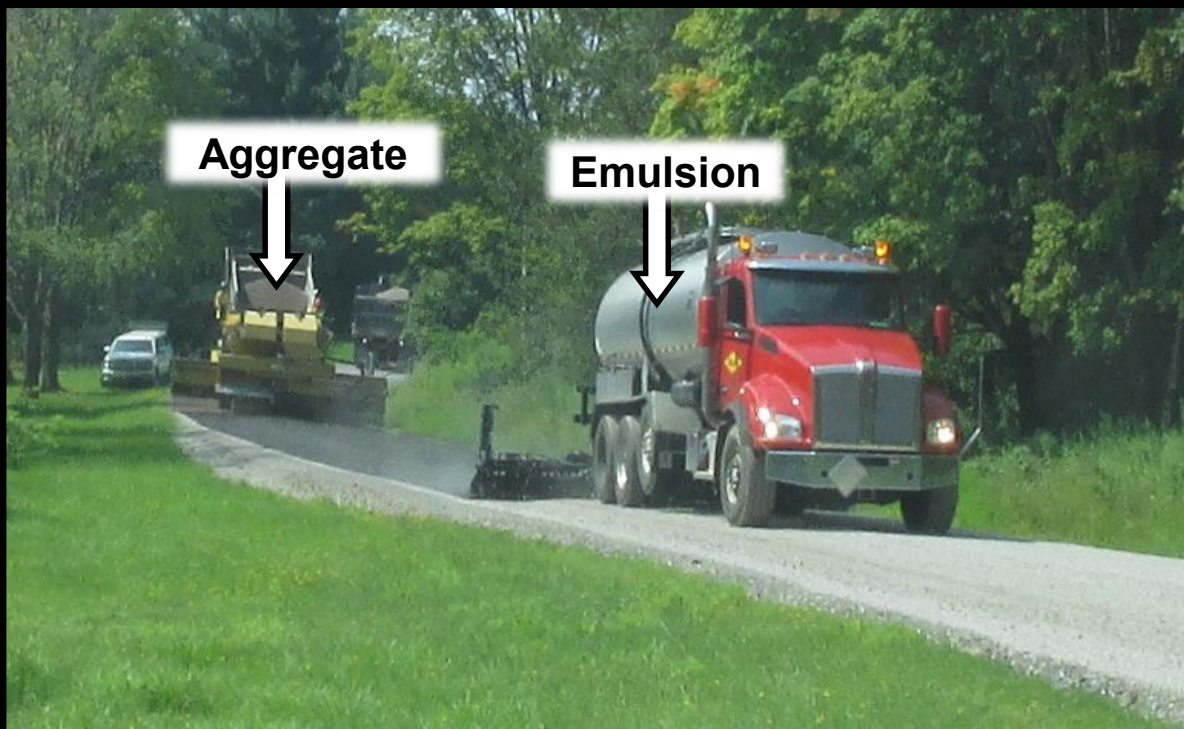
AFTER



Post- reclaimer pass



2RC



Aggregate



Emulsion



- Summary:**
- Stormwater improvements
 - Off ROW drainage improvements
 - Base addition and Driving Surface Aggregate

BEFORE

AFTER



DGLVR Webinar

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- Stream Encroachments
- Stream Crossing Replacement

Type questions in Q&A or Chat. I will stop after each section to try to address

1/1

Summary:

- 15 crosspipes (8 replaced and 7 new)
- Large French mattress
- Graded, base added, DSA placed



BEFORE

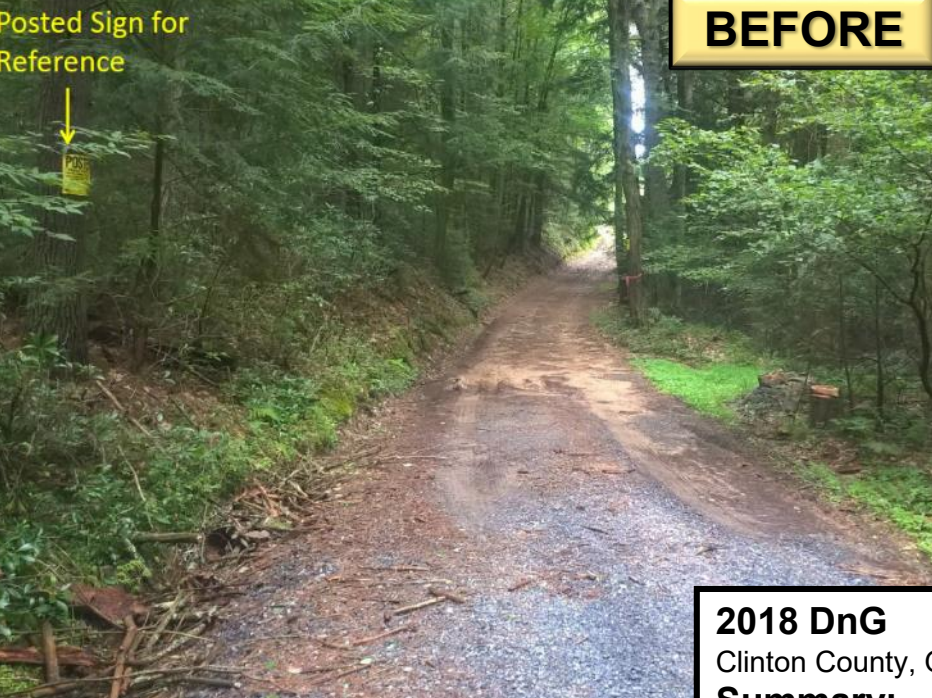


AFTER



2018/10/15

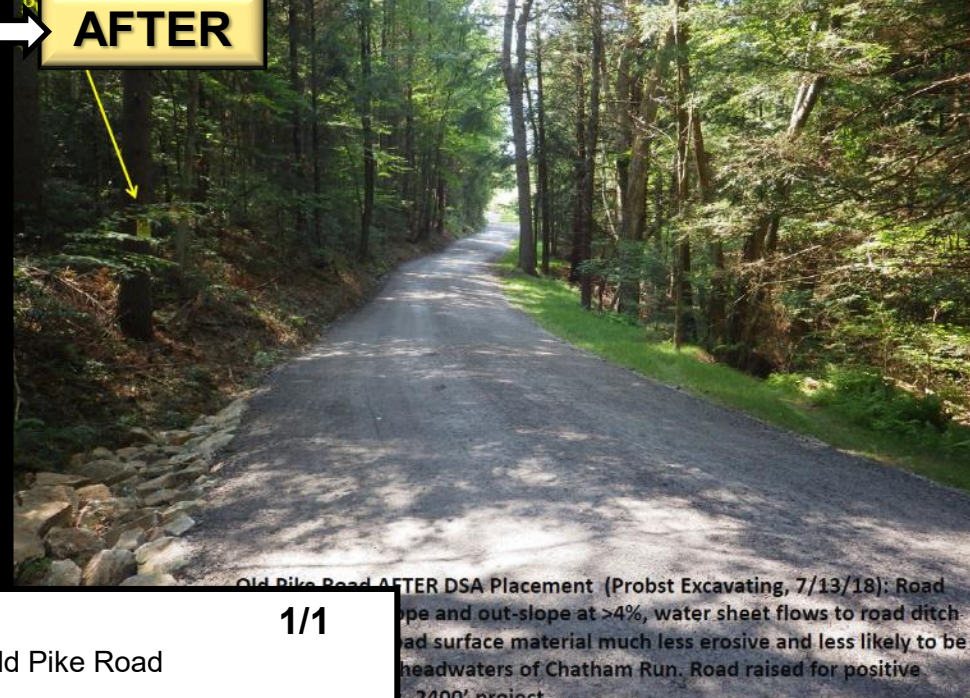
Posted Sign for Reference



BEFORE



AFTER



2018 DnG

1/1

Clinton County, Old Pike Road

Summary:

- Substantial fill and drainage improvements, DSA on 2,400' site

Old Pike Road AFTER DSA Placement (Probst Excavating, 7/13/18): Road crown and out-slope at >4%, water sheet flows to road ditch and road surface material much less erosive and less likely to be washed into the headwaters of Chatham Run. Road raised for positive drainage. Approx. 2400' project total.

Tree for Reference



BEFORE



AFTER



Old Pike Road AFTER DSA Placement (Probst Excavating, 7/13/18): Road crown with in-slope and out-slope at >4%, water sheet flows to road ditch or into woods, road surface material much less erosive and less likely to be washed into the headwaters of Chatham Run. Stream hydrology reconnected by stream bed and end wall protection. Approx. 2400' project total.

BEFORE

Looking West
Road has lots of Potholes
and Rutting

AFTER

Looking West
New End Wall, pipe sits at
ground level

2018 DnG 1/1

Wayne County, Adams Pond Road
\$92K Grants, \$17K In-kind

Summary:

- Mile long site with poor base
- 9 New shallow crosspipes installed, ditches reshaped and stabilized
- Base improvement and DSA

Finished road is properly
crowned for sheet flow,
sides are keyed in for a
neater finish

BEFORE

AFTER

BEFORE



DURING



2018 DnG

1/1

Bradford County, Jung Road
\$92K Grants, \$15K In-kind

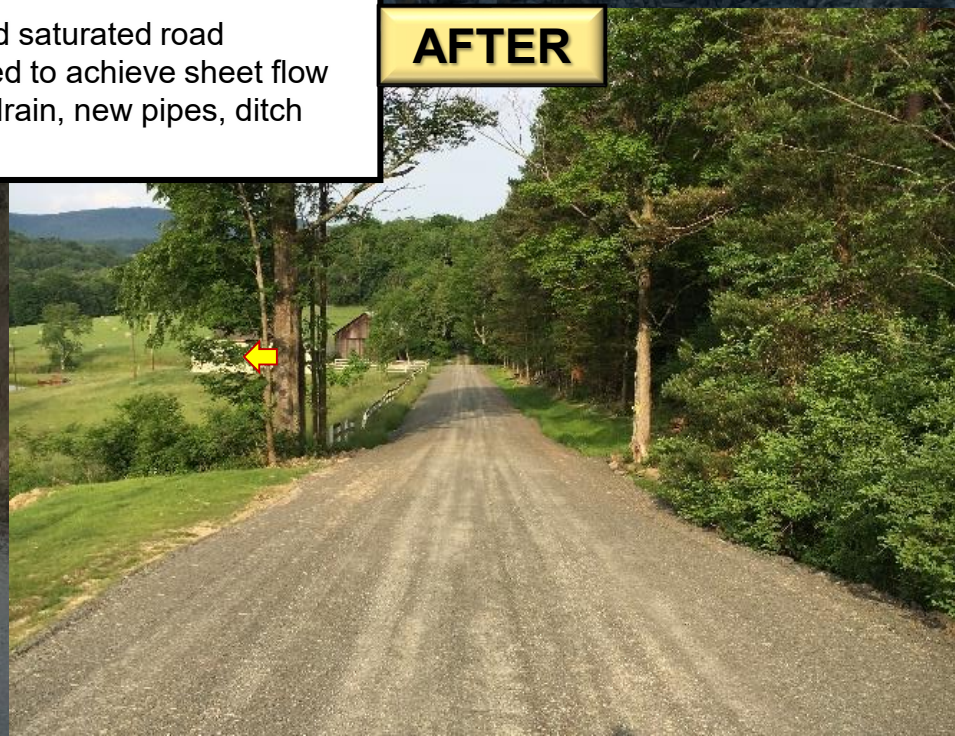
Summary:

- Severely entrenched saturated road
- ~9,000 tons fill added to achieve sheet flow
- 1,300 feet of underdrain, new pipes, ditch stabilization

DURING



AFTER



DGLVR Webinar

Project Sharing Session Summaries

- General Drainage / Surface
- Road Fill and Drainage
- Mattress / Underdrain
- Urban / Infiltration
- Stream Encroachments
- Stream Crossing Replacement

Type questions in Q&A or Chat. I will stop after each section to try to address



BEFORE → **AFTER**



2018 DnG

1/1

Centre County, Yeager Hollow Road

\$35K Grant

Summary:

- Frequently flooded and soft section of road
- Large French Mattress and road fill



DURING →



DURING →



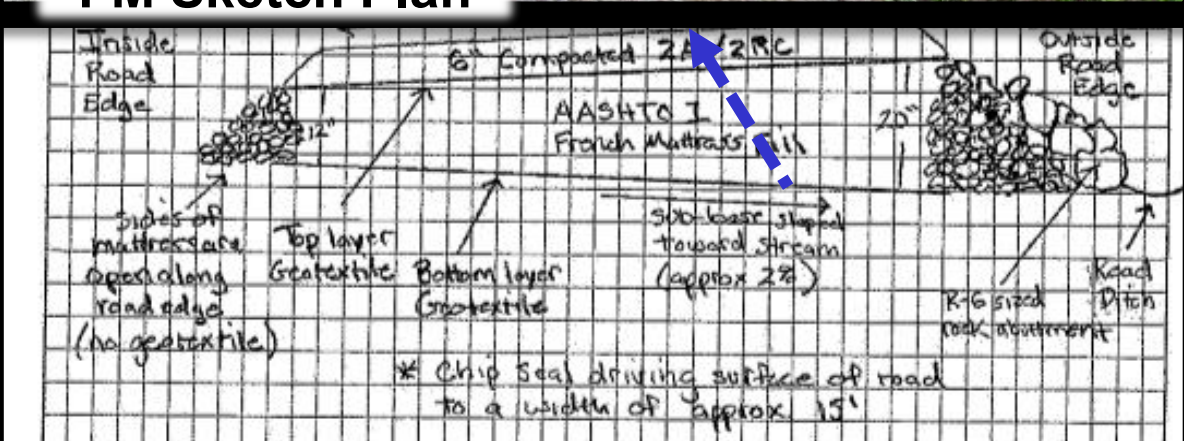
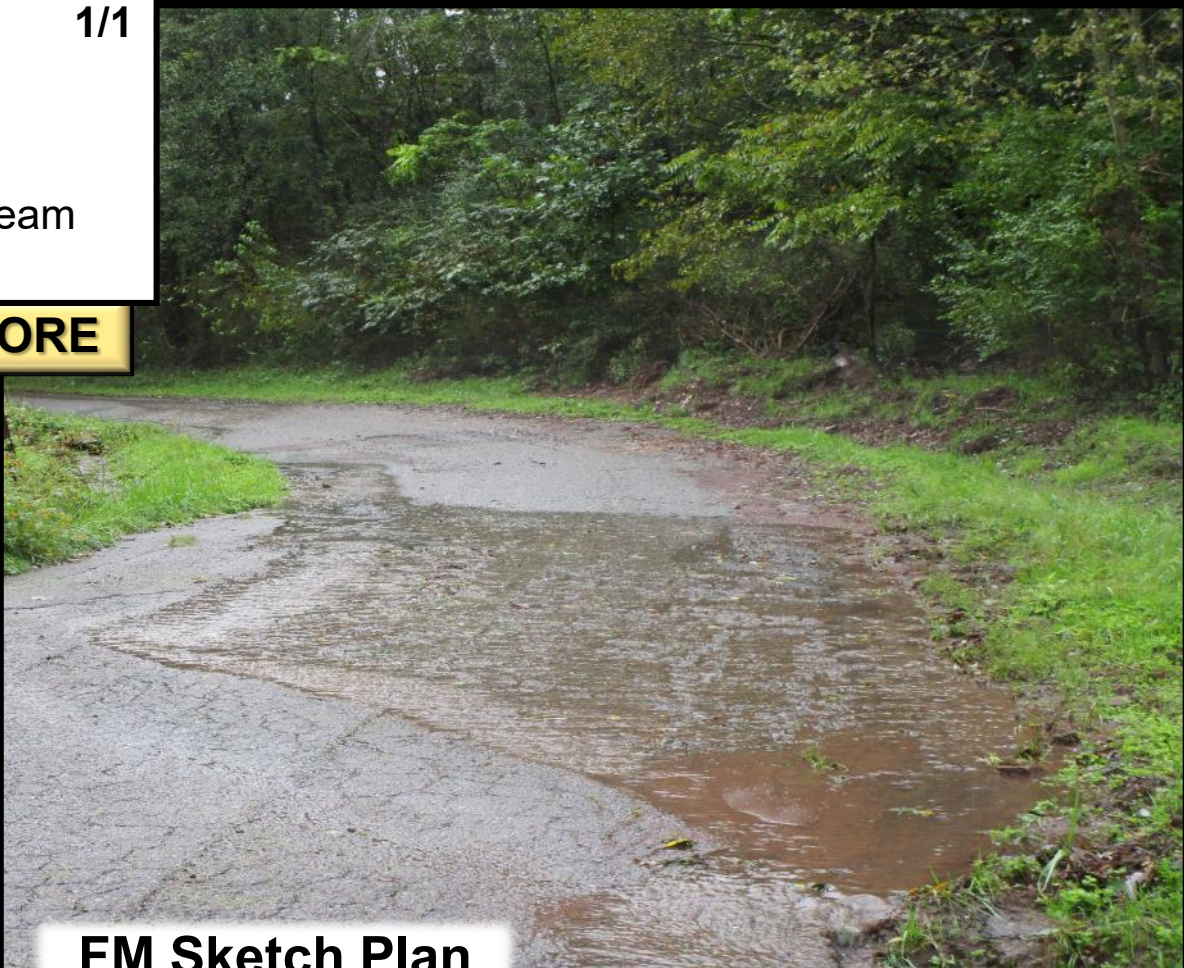
DURING

Fulton County, Brush Creek Road
EST \$12K Grant, \$8K In-Kind

- Summary:**
- Frequent flooding from adjacent stream
 - Build road up with French Mattress



BEFORE





2018 DnG

Clinton County, Falls Road

\$51K Grant, \$41K In-Kind

Summary:

- Off ROW drainage work
- Large French Mattress, underdrain, and road fill

1/1



BEFORE

AFTER

2018 DnG
Huntingdon County, Geisler Run
\$31K Grant, \$19K In-Kind

1/1

Summary:

- French Mattress with pipe
- Paved to unpaved conversion

DURING



BEFORE



AFTER

DGLVR Webinar

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BEFORE

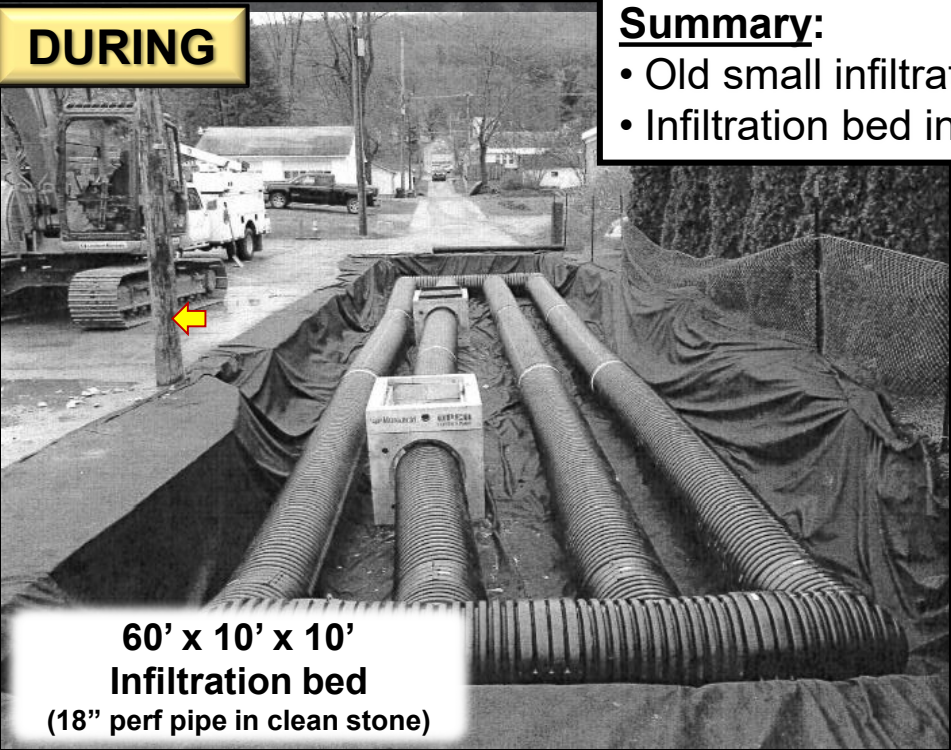


BEFORE



2018 LVR **1/1**
Cumberland County, Wood Ave
\$18K Grant, \$16K In-kind
Summary:
• Old small infiltration cistern failing
• Infiltration bed installed under road

DURING



60' x 10' x 10'
Infiltration bed
(18" perf pipe in clean stone)

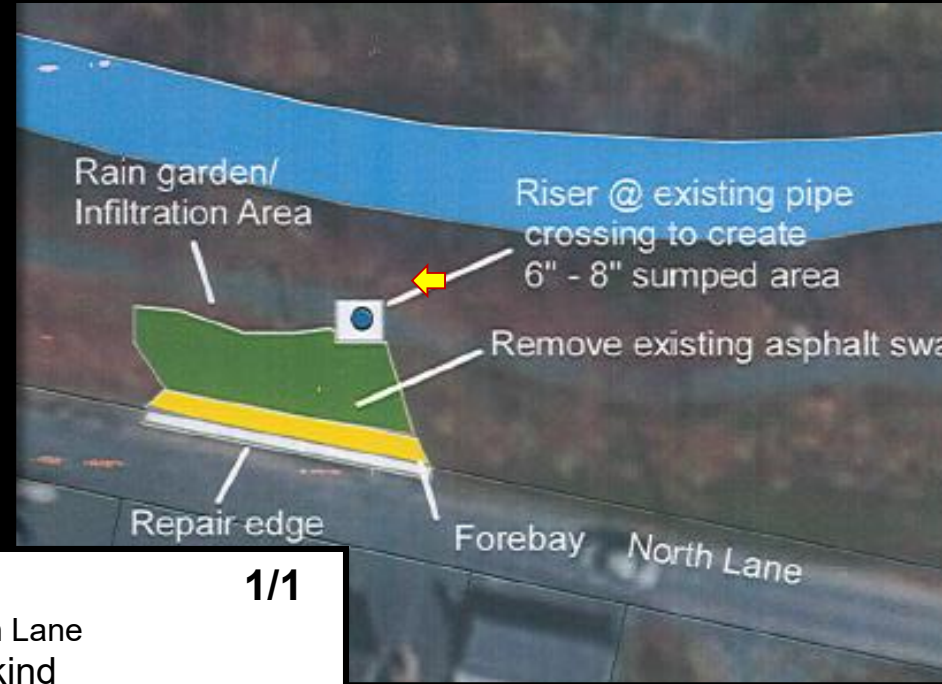
AFTER



BEFORE



Outlets to stream



DURING



2018 LVR

1/1

Lancaster County, North Lane
\$14K Grant, \$3K In-kind

Summary:

- Reprofile road edge and add forebay
- Rain garden between road and stream

60' x 10' x 10'
Infiltration bed
(18" perf pipe in clean stone)

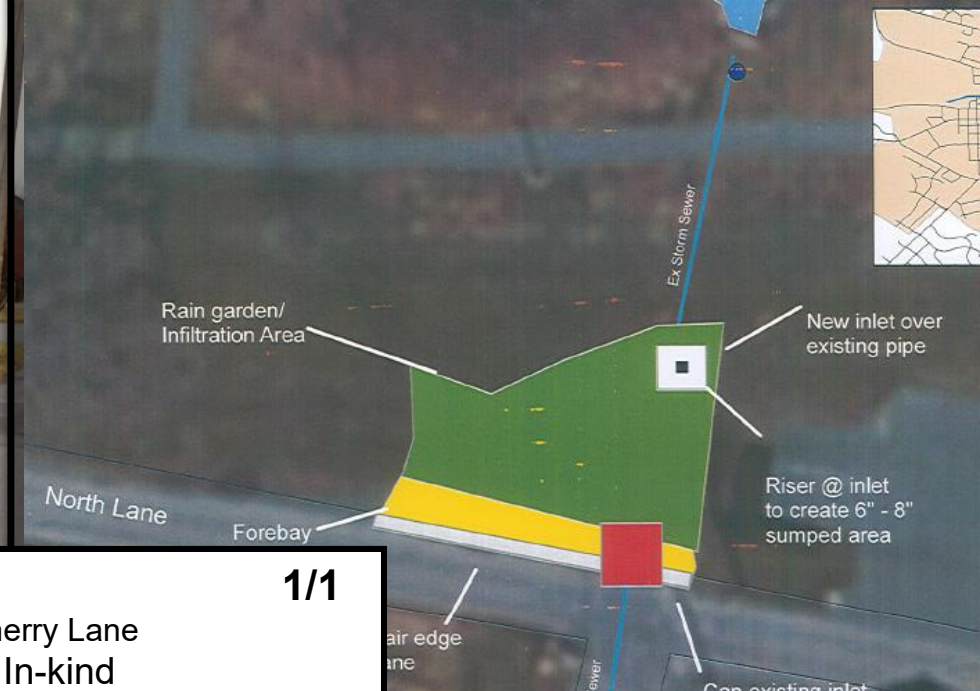
AFTER



BEFORE



Drop Inlet to Stream



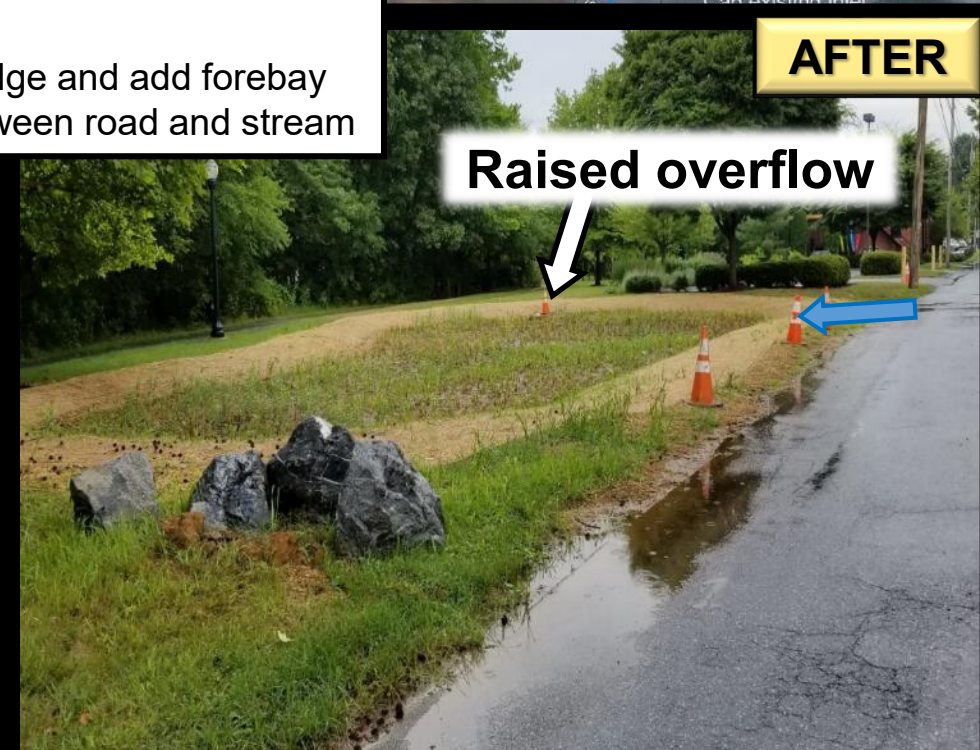
2018 LVR 1/1
Lancaster County, Cherry Lane
\$13K Grant, \$23K In-kind
Summary:
• Reprofile road edge and add forebay
• Rain garden between road and stream

DURING



60' x 10' x 10'
Infiltration bed
(18" perf pipe in clean stone)

AFTER



Raised overflow

PROJECT SPOTLIGHT

2018 LVR Project

Dauphin County

31st & Charles Street

\$93K Spent

~\$8K in kind

Problems:

- Large runoff volume eroding road, downslope trail, and stream

Practices Used:

- Inlets and infiltration bed
- Infiltration trench at outlet



PROJECT SPOTLIGHT

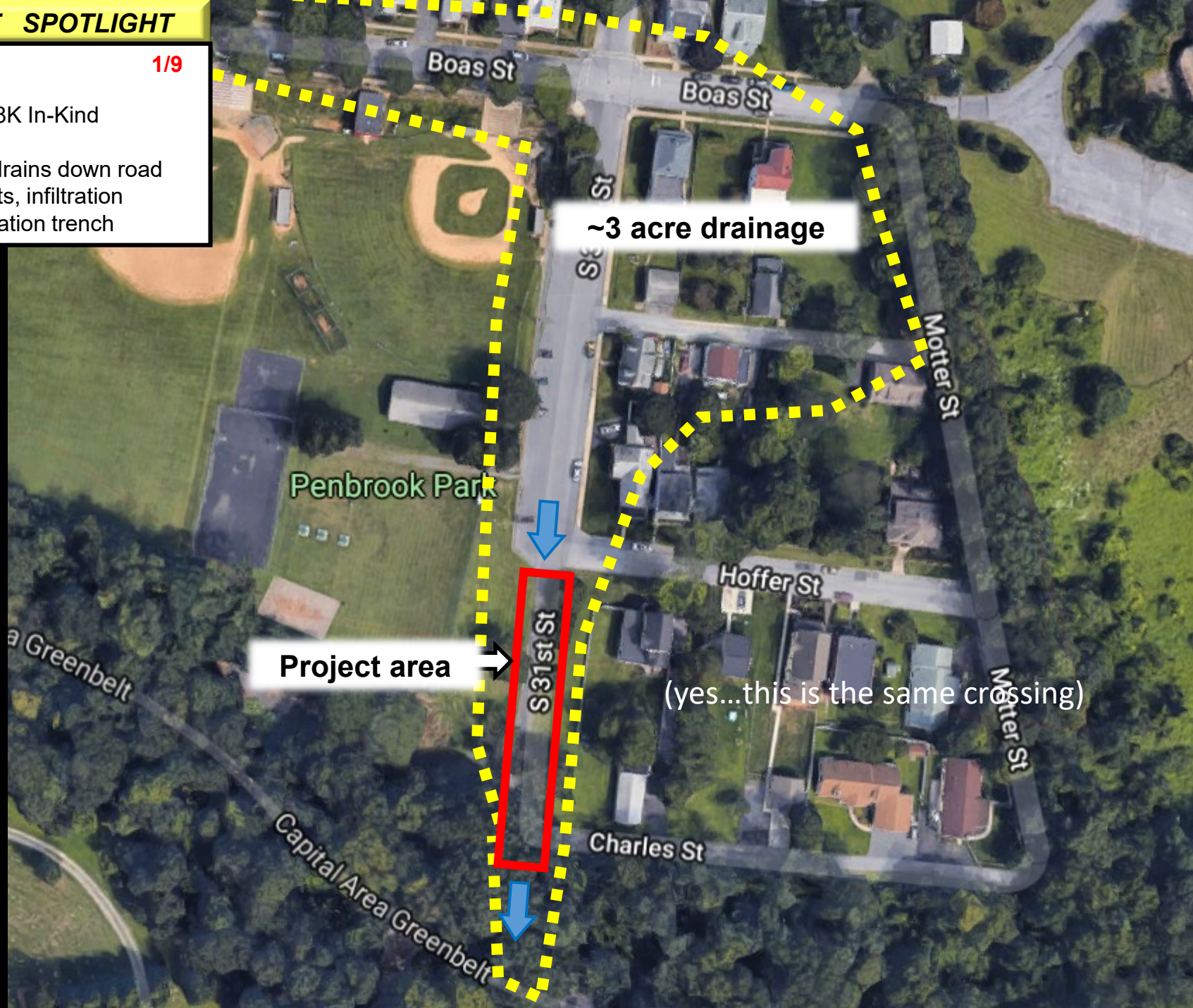
2018 LVR

1/9

Dauphin County
\$93K Grant, \$8K In-Kind

Summary:

- Urban area drains down road
- Installed inlets, infiltration basins, infiltration trench



PROJECT SPOTLIGHT

2018 LVR

2/9

Dauphin County
\$93K Grant, \$8K In-Kind

Summary:

- Urban area drains down road
- Installed inlets, infiltration basins, infiltration trench



BEFORE

- 3-acre urban runoff collection area
- Runoff erodes road and adjacent area
- Overflow parking for baseball fields
- Washes over greenbelt trail and into stream

**“Capitol Greenbelt”
Trail and Stream**



PROJ

2018 LV
Dauphin C
\$93K Gr
Summa
• Urban
• Install
basins

BEFORE

PLAN



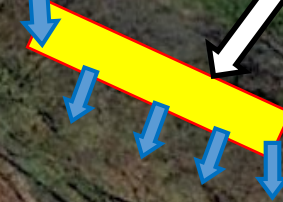
**"Capitol Greenbelt"
Trail and Stream**



**New
Inlets**



**Infiltration
Beds**



**Infiltration
Outlet Trench**

PROJECT SPOTLIGHT

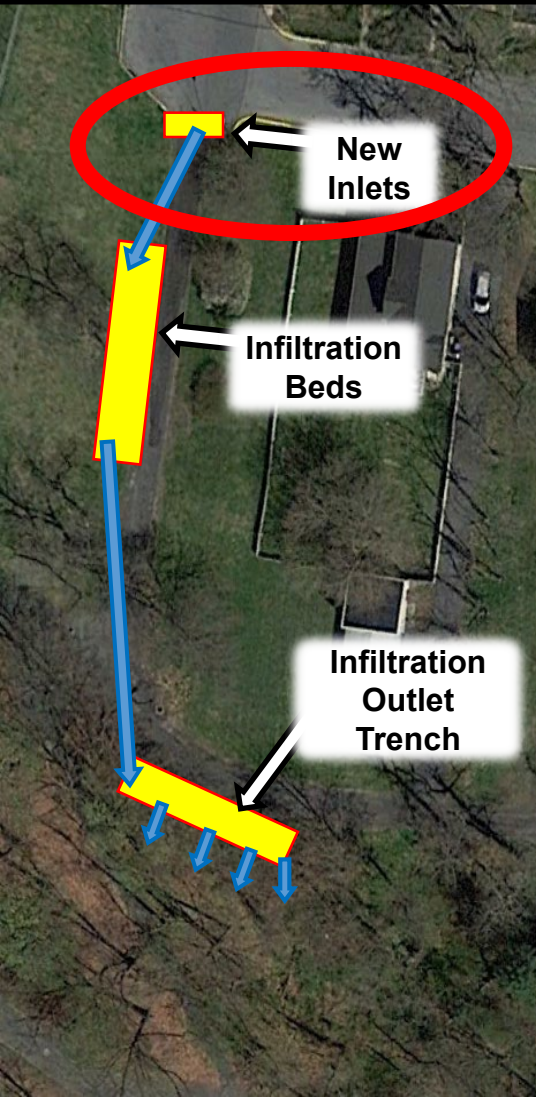
2018 LVR

4/9

Dauphin County
\$93K Grant, \$8K In-Kind

Summary:

- Urban area drains down road
- Installed inlets, infiltration basins, infiltration trench



PROJECT SPOTLIGHT

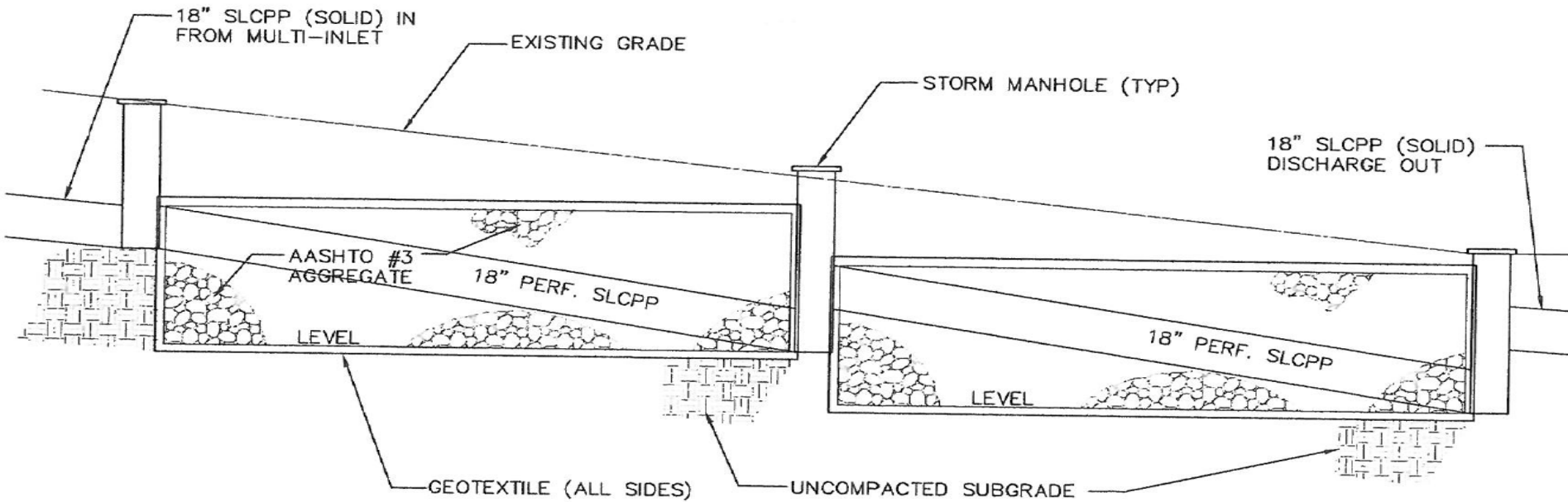
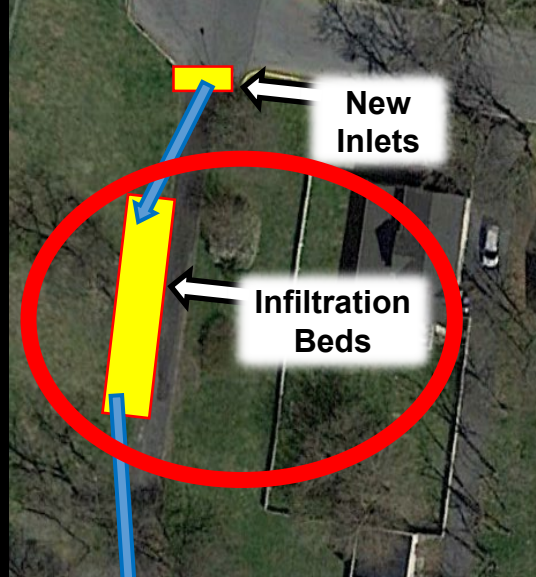
2018 LVR

5/9

Dauphin County
\$93K Grant, \$8K In-Kind

Summary:

- Urban area drains down road
- Installed inlets, infiltration basins, infiltration trench



SUBSURFACE INFILTRATION BMP

NOT TO SCALE
SD\SD080

PROJECT SPOTLIGHT

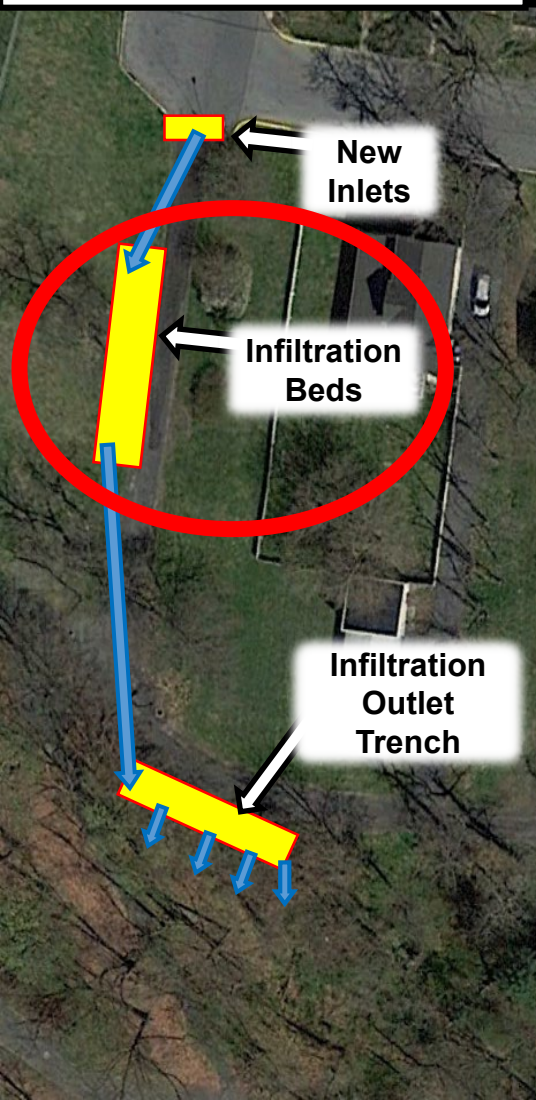
2018 LVR

6/9

Dauphin County
\$93K Grant, \$8K In-Kind

Summary:

- Urban area drains down road
- Installed inlets, infiltration basins, infiltration trench



PROJECT SPOTLIGHT

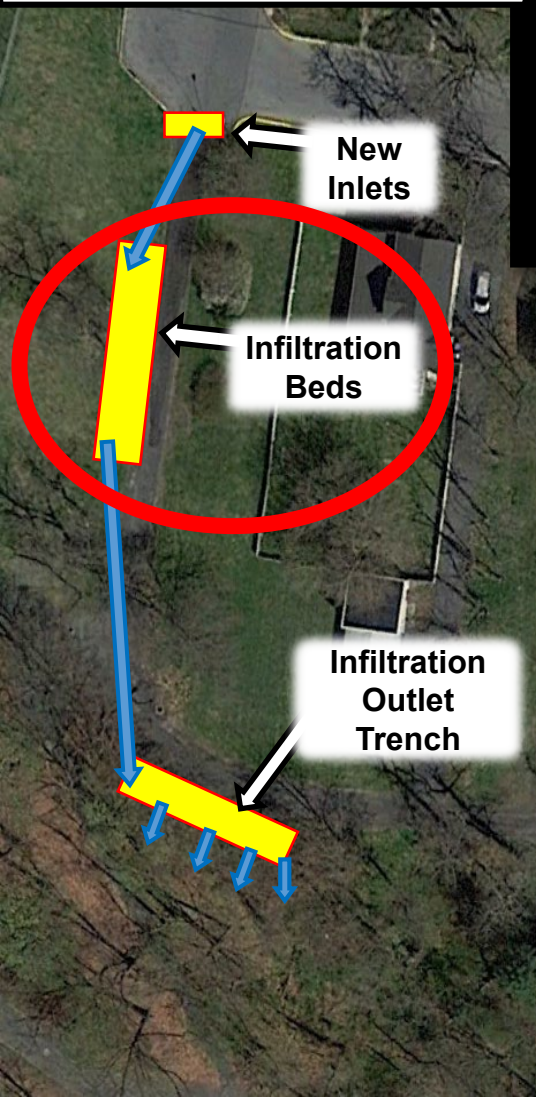
2018 LVR

7/9

Dauphin County
\$93K Grant, \$8K In-Kind

Summary:

- Urban area drains down road
- Installed inlets, infiltration basins, infiltration trench



Swale over infiltration boxes



Cleanout below infiltration boxes

PROJECT SPOTLIGHT

BEFORE → AFTER

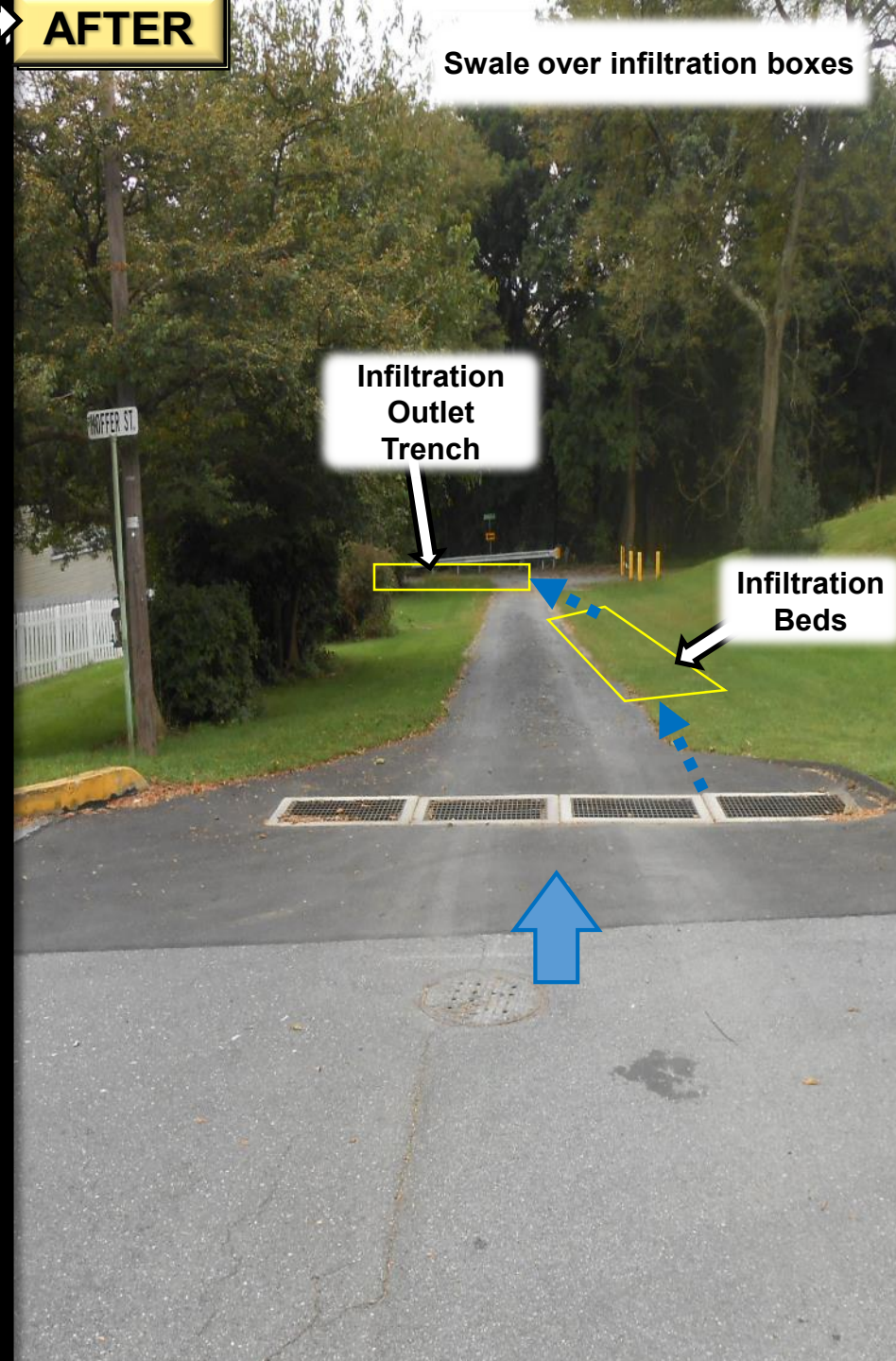
2018 LVR

8/9

Dauphin County
\$93K Grant, \$8K In-Kind

Summary:

- Urban area drains down road
- Installed inlets, infiltration basins, infiltration trench



BEFORE → AFTER



Infiltration
Outlet
Trench

Infiltration
Beds

PROJECT SPOTLIGHT

2018 LVR

9/9

Dauphin County
\$93K Grant, \$8K In-Kind

Summary:

- Urban area drains down road
- Installed inlets, infiltration basins, infiltration trench

DGLVR Webinar

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Type questions in Q&A or Chat. I will stop after each section to try to address

Problem:

- Stream encroaching on road
- Planned slope stabilization project

Plan:

- Excavate and stabilize slope
- Flow control in stream
- Shift road away from stream slightly

CONTRACT CANCELED:

- Contractor would not do site as bid
- Eventually canceled Contract
- Township refunded advance, plus interest





BEFORE



AFTER

2018 DnG

1/1

Wayne County, Rutledge Road
\$37K Grants, \$6K In-kind

Summary:

- 200' French Mattress
- Streambank stabilization
- 6" fill and 6" Driving Surface aggregate

Looking down stream
Stream bank has been
stabilized and road is raised



Looking Upstream or SW
Road is saturated and
rutted



BEFORE

AFTER

Looking Upstream
French Mattress installed
Road can properly drain

2018 DnG

1/1

Elk County, Yeager Hollow Road

\$60K Grant, 52K In-kind

Summary:

- Road in poor shape, encroaching on stream
- Road shifted away from stream
- Log veins, armoring, tree planting



BEFORE



AFTER

DGLVR Webinar

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Huntingdon County, Ponderosa Road

Summary:

- “Minor” crossing issues
- 3’ pipe in 11’ bankfull channel
- Proposed 12’ arch pipe with baffles



Outlet



Inlet

PLANNED LVR

1/1

Montgomery County, Yost Road

POTENTIAL

Summary:

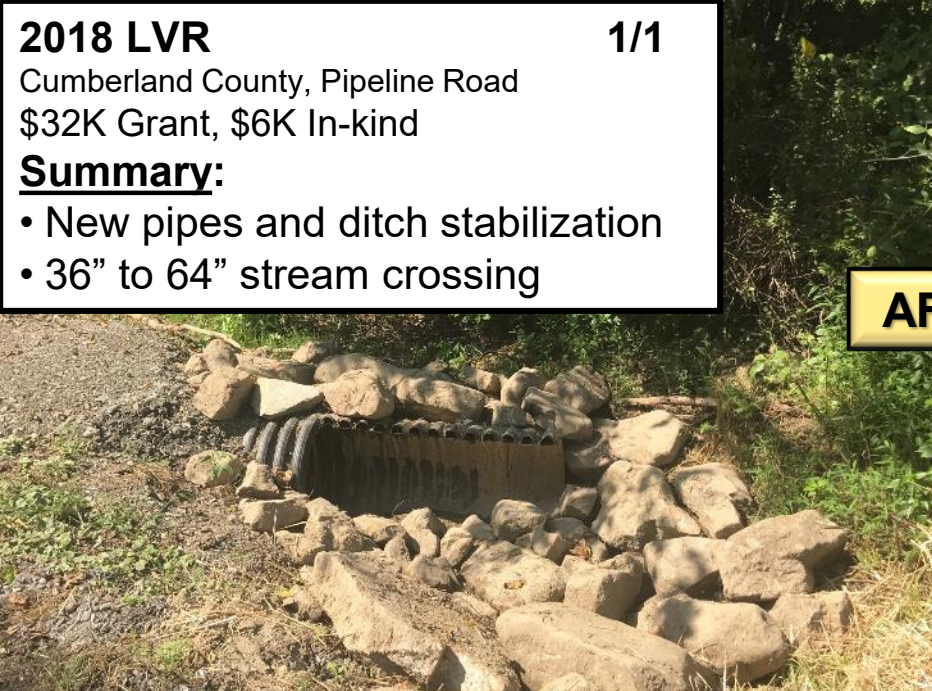
- Proposed 12' bottomless arch on concrete footers due to ~10" channel slope
- Shallow bedrock, multiple channels converging.
- Significant grade controls required



BEFORE



2018 LVR 1/1
Cumberland County, Pipeline Road
\$32K Grant, \$6K In-kind
Summary:
• New pipes and ditch stabilization
• 36" to 64" stream crossing

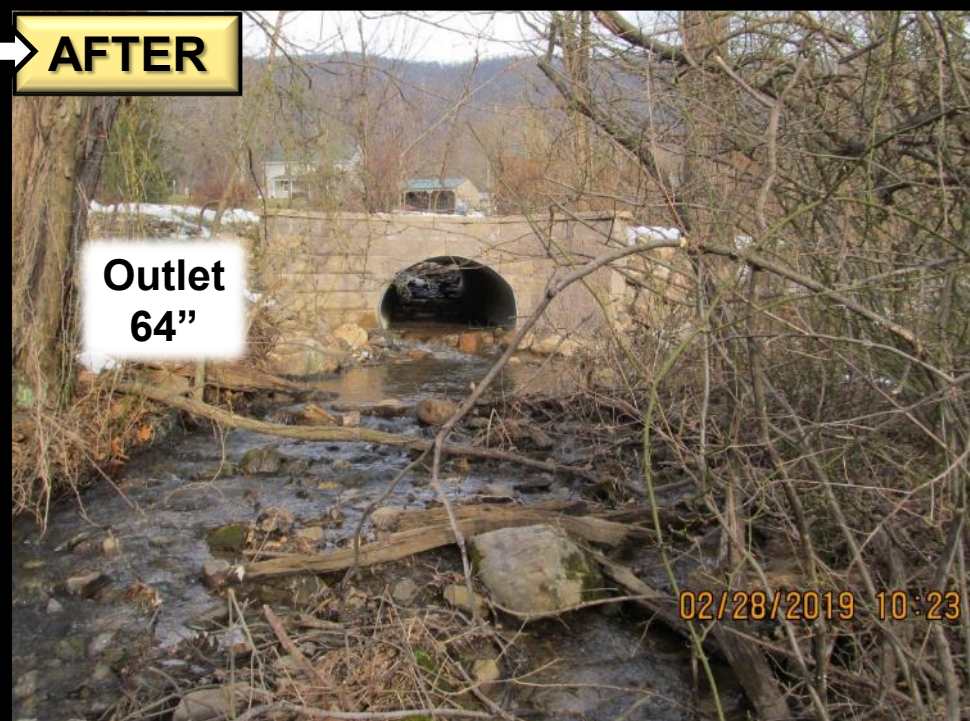


AFTER



**Outlet
36"**

BEFORE → AFTER



**Outlet
64"**

02/28/2019 10:23

2018 LVR

1/1

Columbia County, Welliversville Road

summary:

- ~3' round pipe to ~10' arch pipe
- Meander bend eliminated above inlet

BEFORE



AFTER



2018 LVR 1/1

Berks County, Four Points Road
\$100K Grants, \$41K In-kind

Summary:

- Stormwater from PennDOT Road causing severe erosion
- 1,000' of storm sewer, 13 catch basins, 8 crosspipes, detention basin
- 1,100' rock swale
- Small steam crossing replacement

BEFORE



BEFORE → AFTER



Inlet

DURING



Outlet

Summary:

- Double pipes to old concrete arch
- Aluminum arch constructed on road and lifted into place



BEFORE

Inlet



BEFORE

Outlet



Inlet

AFTER



2018 LVR

Columbia County, Welliversville Road

1/2

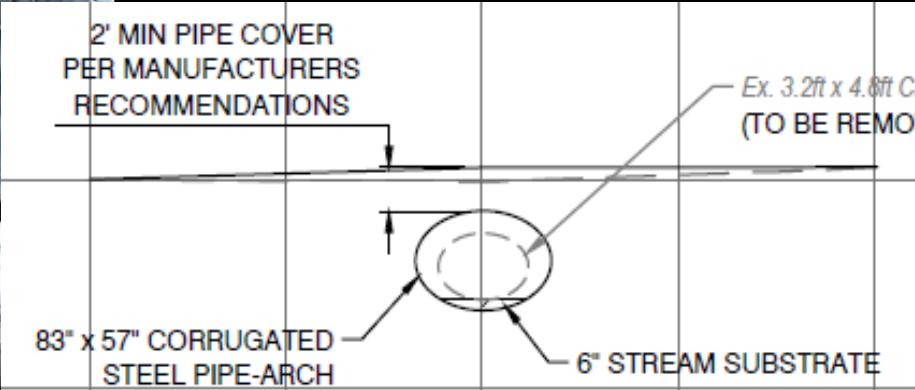
BEFORE

Summary:

- 4' round to 7' squash pipe in EV Stream
- Project done without notification
- No material in pipe



AFTER – before remediation



Summary:

- CDGRS and TU assisted CD with remediation and placing material in pipe

DURING remediation



PROJECT SPOTLIGHT

2017 LVR Project

Elk County

Shellenberger Road

\$66K Spent

\$51K in kind

Problems:

- Failing stream crossing frequently floods road

Practices Used:

- 12' Plate Arch Pipe
- Realigned with stream channel, 92' in length

BEFORE



PROJECT SPOTLIGHT

2018 LVR

1/9

Elk County

\$66K Grant, \$51K In-Kind

Summary:

- Failing Structure floods road
- 12' x 92' Aluminum plate arch

BEFORE

Inlet



Outlet

(yes...this is the same crossing)

PROJECT SPOTLIGHT

2018 DnG

2/9

Elk County

\$66K Grant, \$51K In-Kind

Summary:

- Failing Structure floods road
- 12' x 92' Aluminum plate arch

Survey with TU help

BEFORE

06/06/2018 09:55

Inlet



bypass

PROJECT SPOTLIGHT

2018 DnG

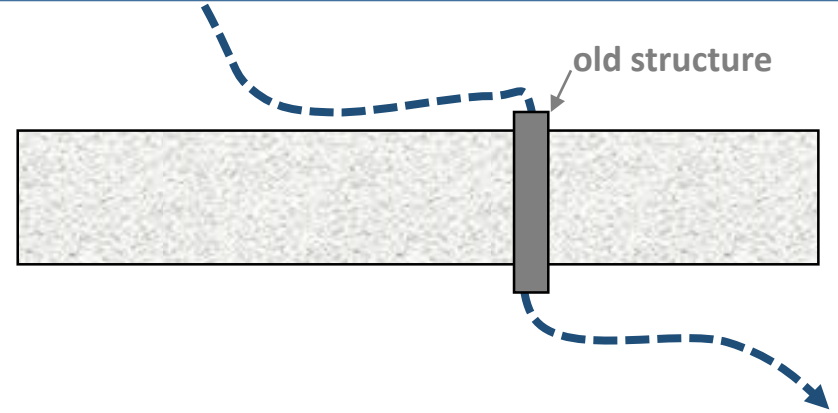
3/9

Elk County

\$66K Grant, \$51K In-Kind

Summary:

- Failing Structure floods road
- 12' x 92' Aluminum plate arch



New structure eliminates multiple 90 degree turns and aligns channel. As result, structure is 92' in length.



PROJECT SPOTLIGHT

2018 DnG

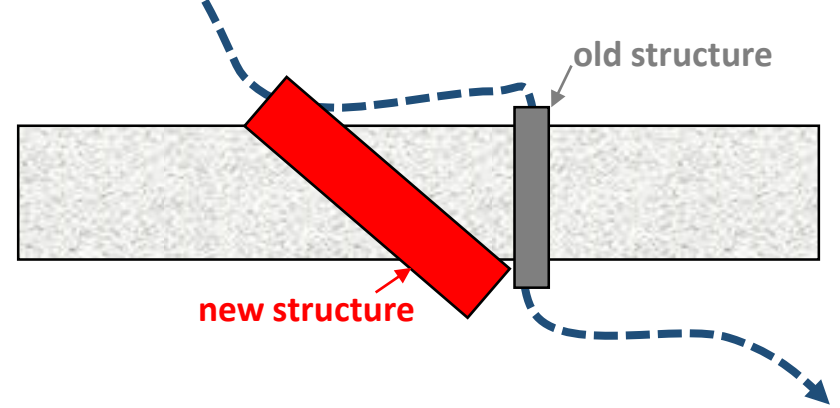
4/9

Elk County

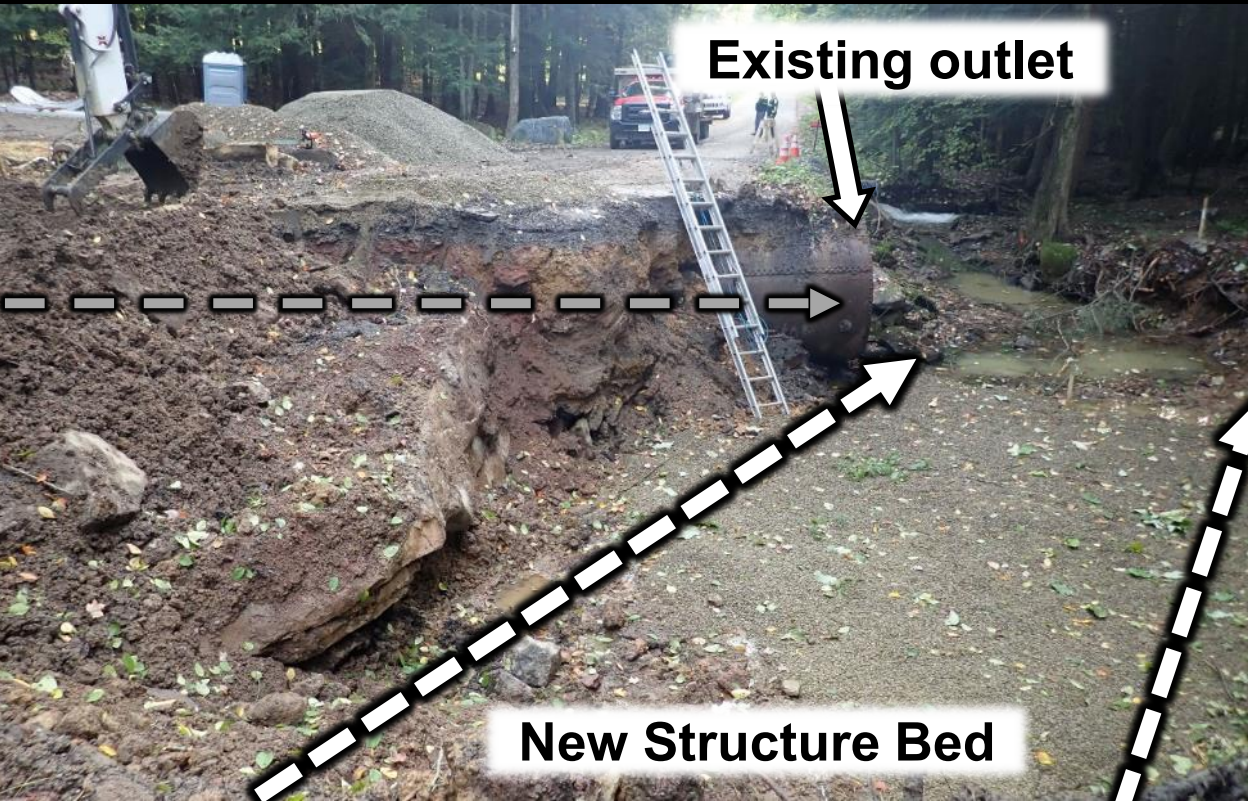
\$66K Grant, \$51K In-Kind

Summary:

- Failing Structure floods road
- 12' x 92' Aluminum plate arch



New structure eliminates multiple 90 degree turns and aligns channel. As result, structure is 92' in length.



PROJECT SPOTLIGHT

2018 DnG

5/9

Elk County

\$66K Grant, \$51K In-Kind

Summary:

- Failing Structure floods road
- 12' x 92' Aluminum plate arch



PROJECT SPOTLIGHT

2018 DnG

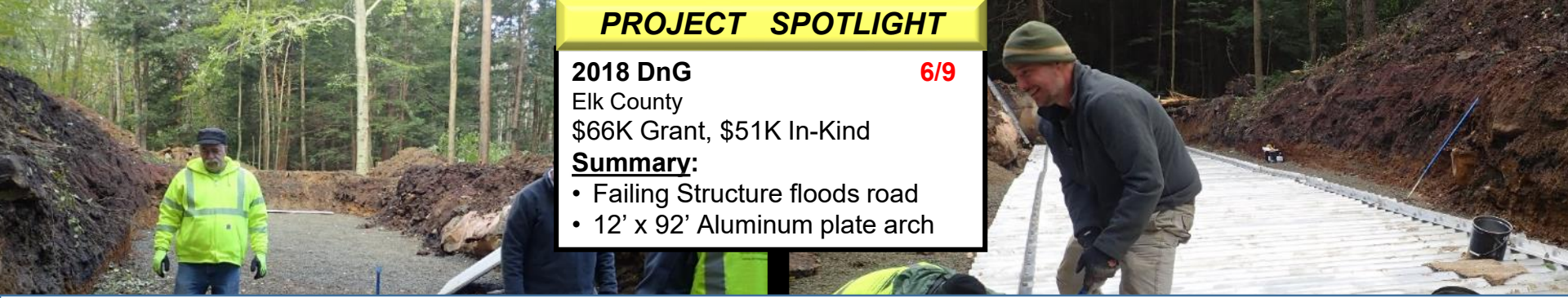
6/9

Elk County

\$66K Grant, \$51K In-Kind

Summary:

- Failing Structure floods road
- 12' x 92' Aluminum plate arch



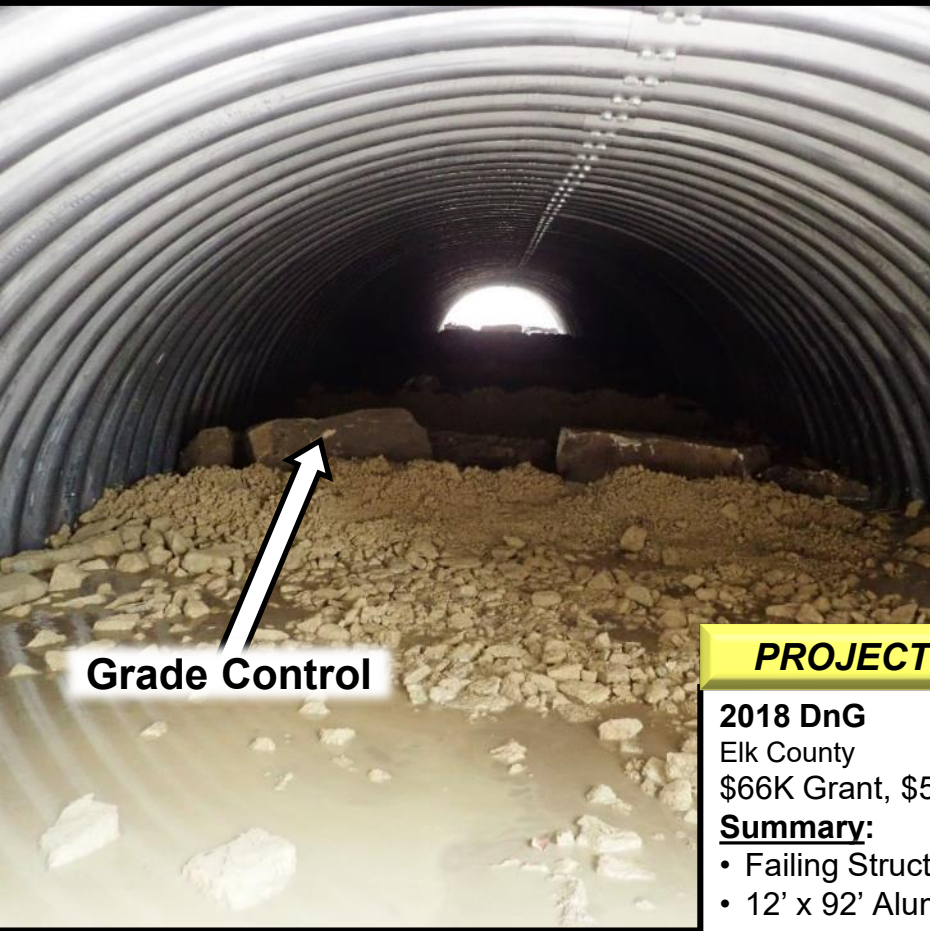
**12' X 92' Arch =
3,167 Nuts + 3,167 Bolts
19 Five Gallon Buckets of Nuts and Bolts!**



- Grade Control above, below, and in structure
- Material in Structure

how did material get in there?

Grade Control



Grade Control



Grade Control

PROJECT SPOTLIGHT

2018 DnG

7/9

Elk County

\$66K Grant, \$51K In-Kind

Summary:

- Failing Structure floods road
- 12' x 92' Aluminum plate arch

2018 DnG

8/9

Elk County

\$66K Grant, \$51K In-Kind

Summary:

- Failing Structure floods road
- 12' x 92' Aluminum plate arch

The Grasshopper



BEFORE

AFTER

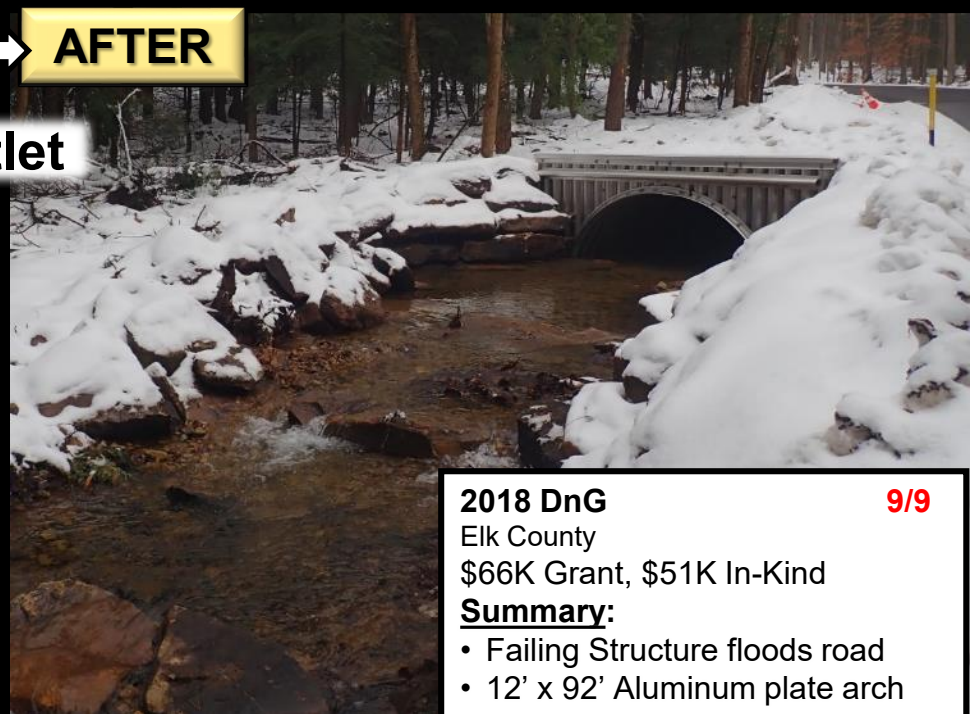
Inlet



BEFORE

AFTER

Outlet



2018 DnG

9/9

Elk County

\$66K Grant, \$51K In-Kind

Summary:

- Failing Structure floods road
- 12' x 92' Aluminum plate arch

Thank You for Sharing!

- **For more information:**
 - Recording available online
 - **Contact the project-owning District**
 - Questions
 - Visit to completed projects
 - Visit sites in progress
 - Recording of past year's sharing sessions webinars available online as well

If you use any of these projects or pictures in your educational efforts, please give credit to the Conservation District that supplied them.