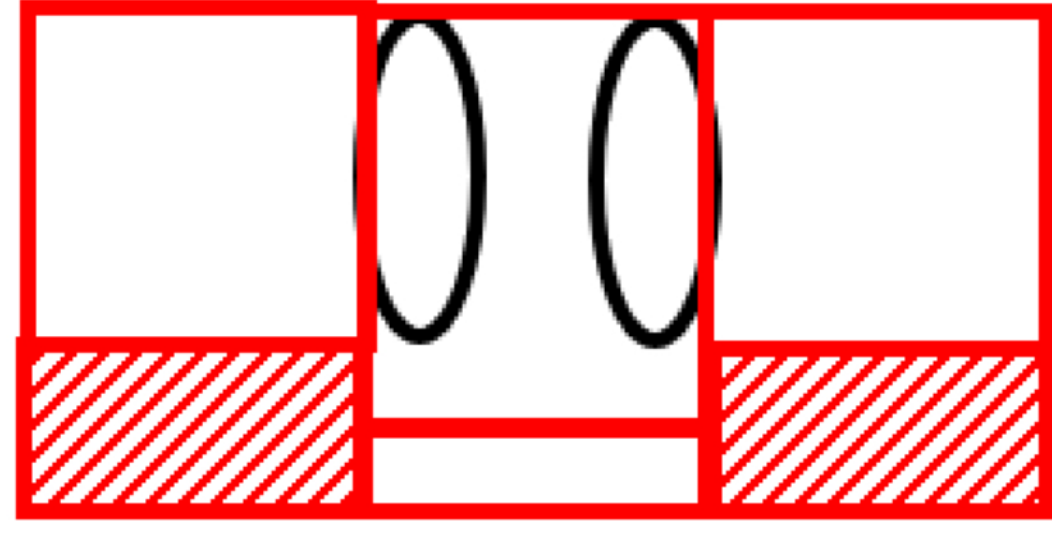


PR: Grade Control Structure

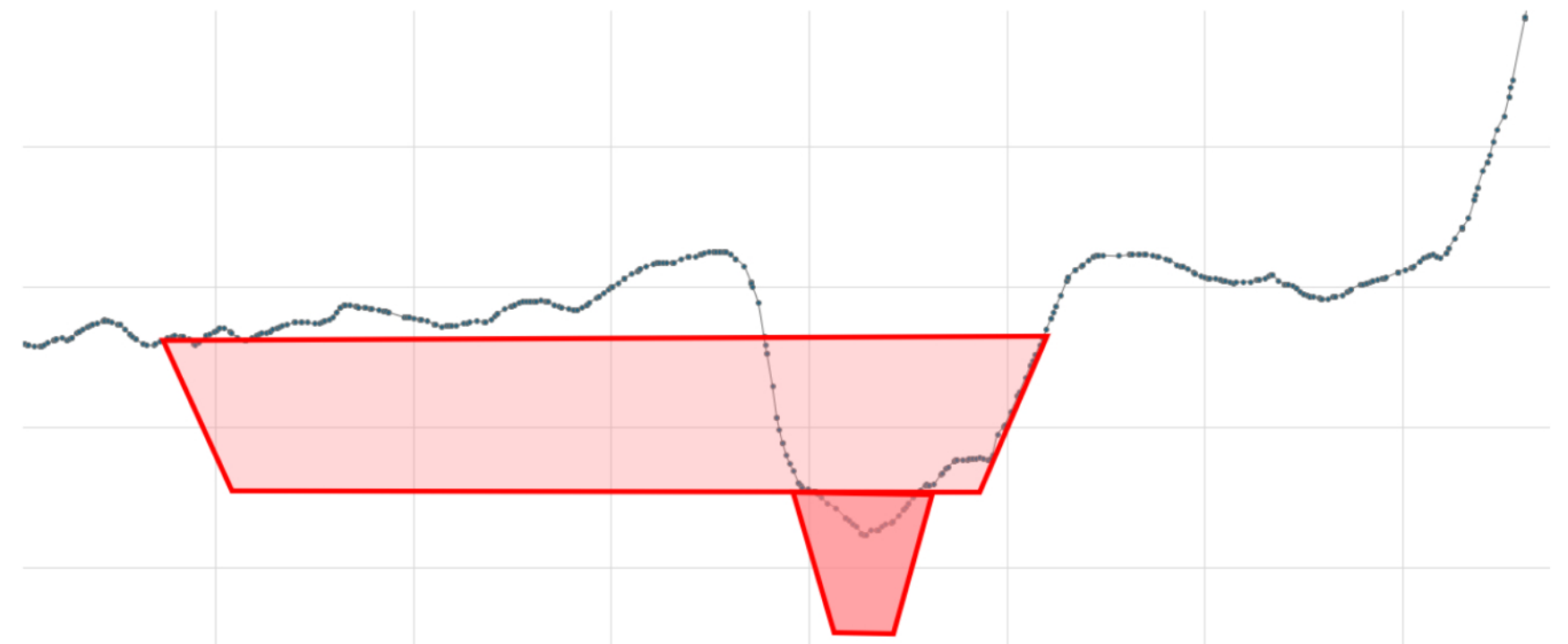


EX: 2 - 48"

PR: Box Culverts
3 - 12' x 6'



PR: Typical Stream and Floodplain Bench



PR: Raise Woodowl Drive
Overtopping Elevation
2.5'

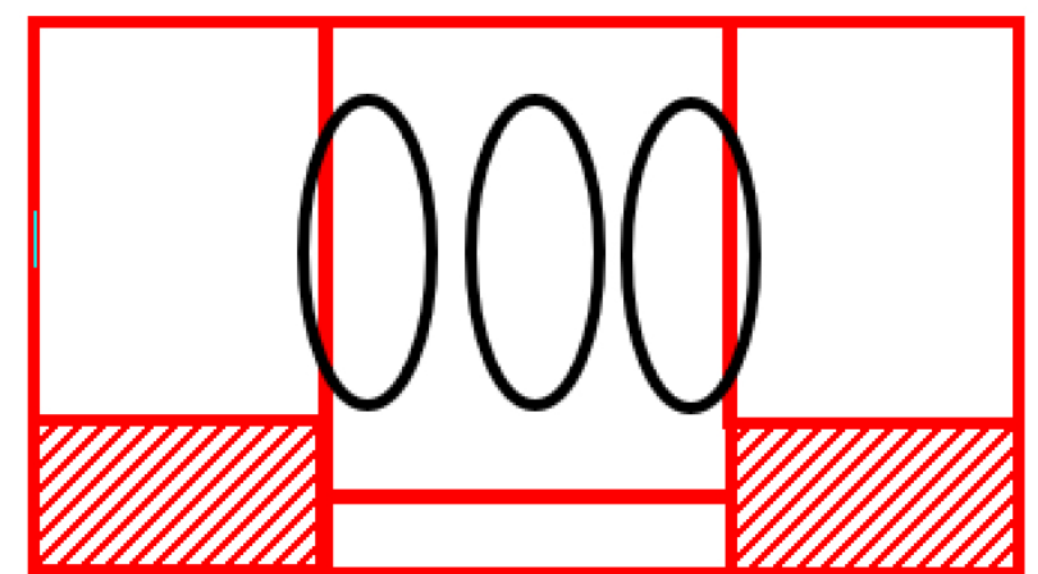


Legend

- Existing Culvert
- Open Channel
- Water Main
- Sewer Main
- Impacted Sewer and Water
- Proposed Culvert
- Property Lines
- Limits of Roadway Improvements
- Anticipated Limits of Disturbance
- Woodowl Profile Line

EX: 3 - 48" RCP

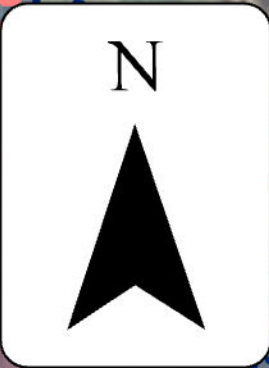
PR: Box Culverts
1 - 14' x 7'
2 - 10' x 7'



Option 1 Improvements

Whispering Branch

0 40 80 120 160 200
1 inch = 40 feet



	Depth (ft)	Overflow (cfs)	WSEL (ft)
	Whispering Branch Rd (A)	Whispering Branch Rd (A)	3806 Whispering Branch (B)
	100-YR	100-YR	100-YR
Existing	0.92	673.16	357.71
Option 1	0.03	2.79	356.68
Difference	0.89	670.37	1.03

(B) Yard Flooding
WSEL

Whispering Branch Rd

(A) Overtopping
Flow and Depth

Willow Bend Ln

(C) Overtopping
Flow and Depth

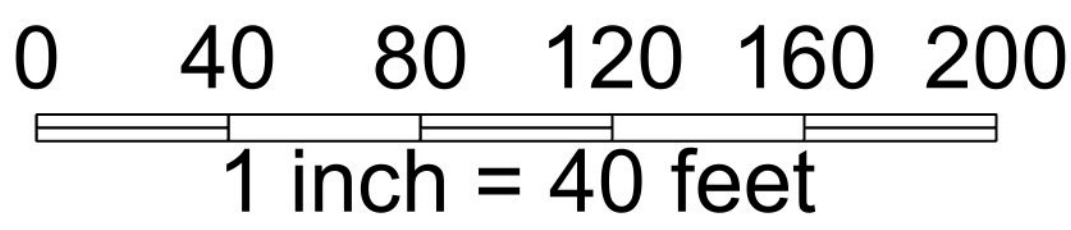
(D) Yard Flooding
WSEL

Legend

- Existing Culvert
- Open Channel
- Proposed Culvert
- Property Lines
- 100 Year Existing Flood Condition
- 100 Year Proposed Flood Condition

Option 1
Results

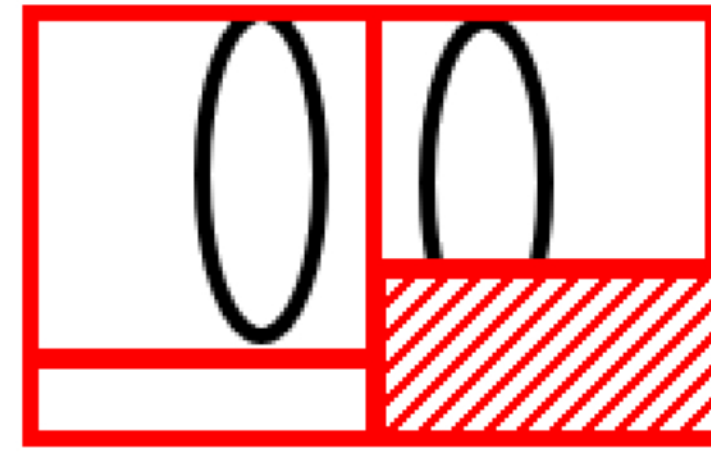
Whispering Branch



	Depth (ft)	Overflow (cfs)	WSEL (ft)
	Woodowl Dr (C)	Woodowl Dr (C)	3797 Woodowl (D)
	100-YR	100-YR	100-YR
Existing	2.10	862.63	351.71
Option 1	0	0	351.44
Difference	2.1	862.63	0.27



EX: 2 - 48" RCP
PR: Box Culverts
2 - 12' x 5'



Whispering Branch Rd

PR: Grade Control Structure

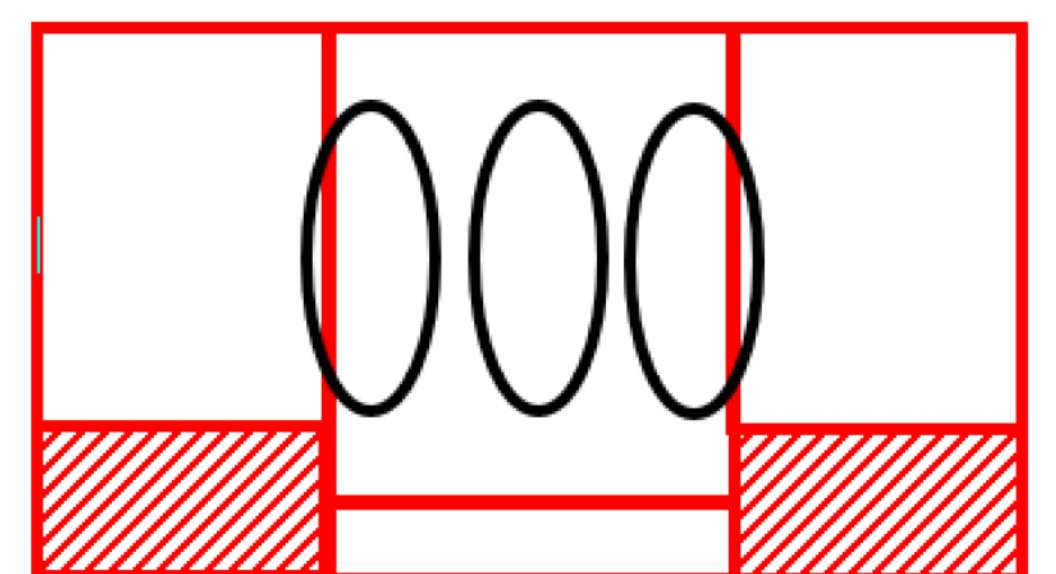


PR: Raise Woodowl Drive
Overtopping Elevation
2.5'



Willow Bend Ln

EX: 3 - 48" RCP
PR: Box Culverts
1 - 14' x 7'
2 - 10' x 7'



Option 2 Improvements

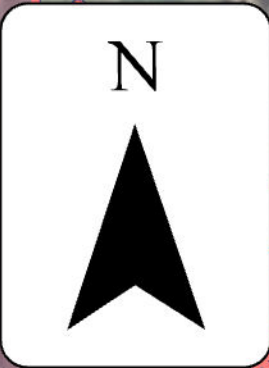
Whispering Branch

0 40 80 120 160 200
1 inch = 40 feet

NC CGIA, Microsoft, Vantor

Legend

- Existing Culvert
- Open Channel
- Water Main
- Sewer Main
- Impacted Sewer and Water
- Property Lines
- Limits of Roadway Improvements
- Anticipated Limits of Disturbance
- Woodowl Profile Line



	Depth (ft)	Overflow (cfs)	WSEL (ft)
	Whispering Branch Rd (A)	Whispering Branch Rd (A)	3806 Whispering Branch (B)
	100-YR	100-YR	100-YR
Existing	0.92	673.16	357.71
Option 2	0.66	295.9	357.35
Difference	0.26	377.26	0.36

(B) Yard Flooding
WSEL

Whispering Branch Rd

(A) Overtopping
Flow and Depth

Willow Bend Ln

Legend

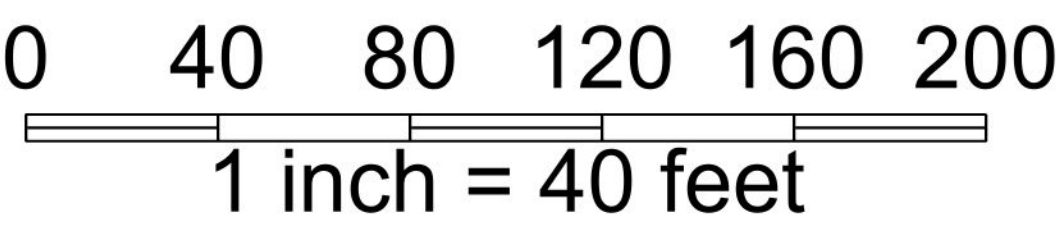
- Existing Culvert
- Open Channel
- Proposed Culvert
- Property Lines
- 100 Year Existing Flood Condition
- 100 Year Proposed Flood Condition

(C) Overtopping
Flow and Depth

(D) Yard Flooding
WSEL

Option 2
Results

Whispering Branch



NC CGIA, Microsoft, Vantor

	Depth (ft)	Overflow (cfs)	WSEL (ft)
	Woodowl Dr (C)	Woodowl Dr (C)	3797 Woodowl (D)
	100-YR	100-YR	100-YR
Existing	2.10	862.63	351.71
Option 2	0.00	0	351.49
Difference	2.10	862.63	0.22