Farm Creek Trunk Sewer Replacement Project
Alternative Route Analysis and
Second Response to Route Concerns

October 9, 2023

City of Washington, Illinois

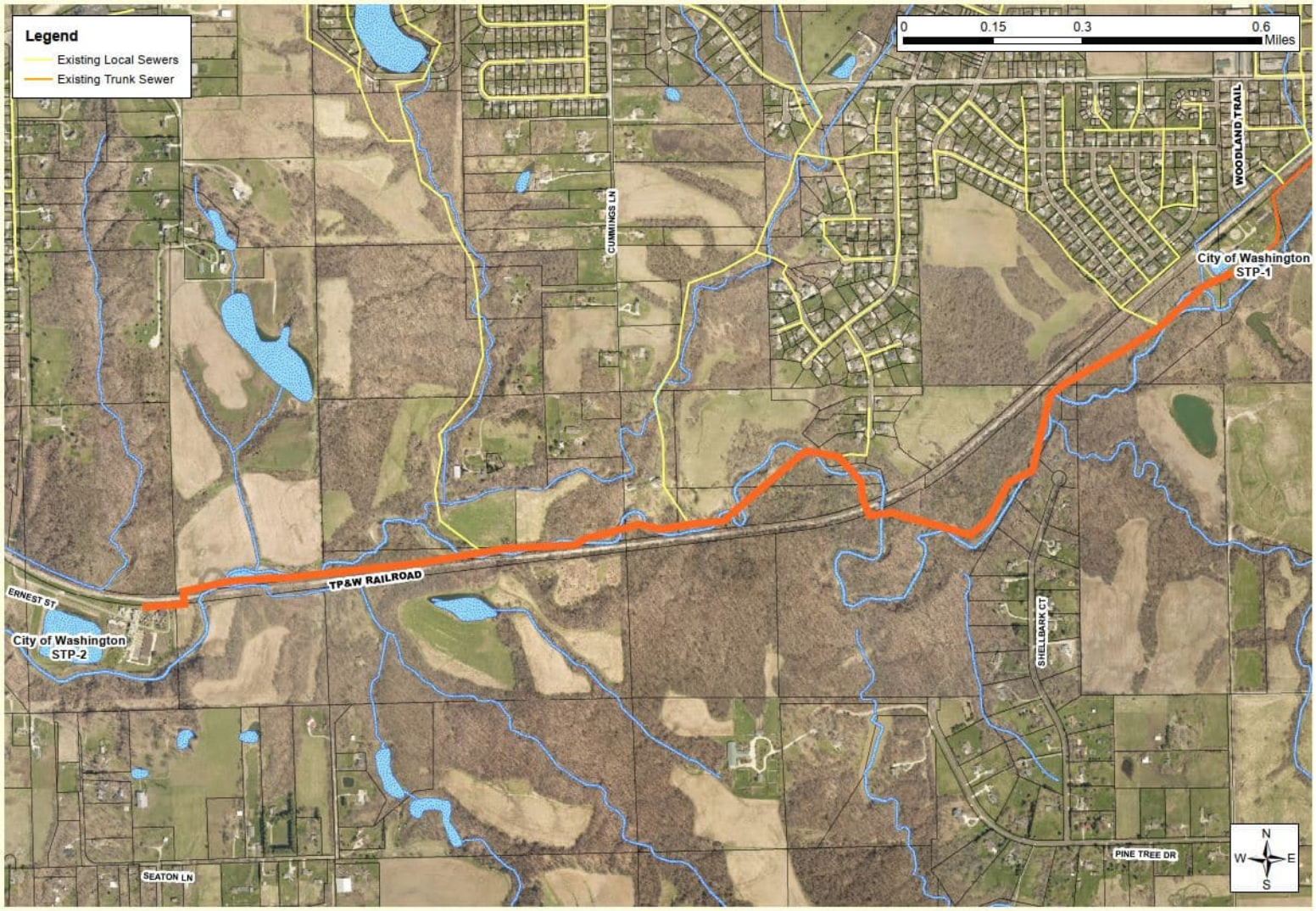
STRAND ASSOCIATES®

Presentation Overview

- Introduction
- Reminder of the Alternative Route Analyses Performed
- Route Characteristic Clarifications
- Review of Environmental Impacts and Permitting
- Address Undetermined Project Costs
- Final Comparison

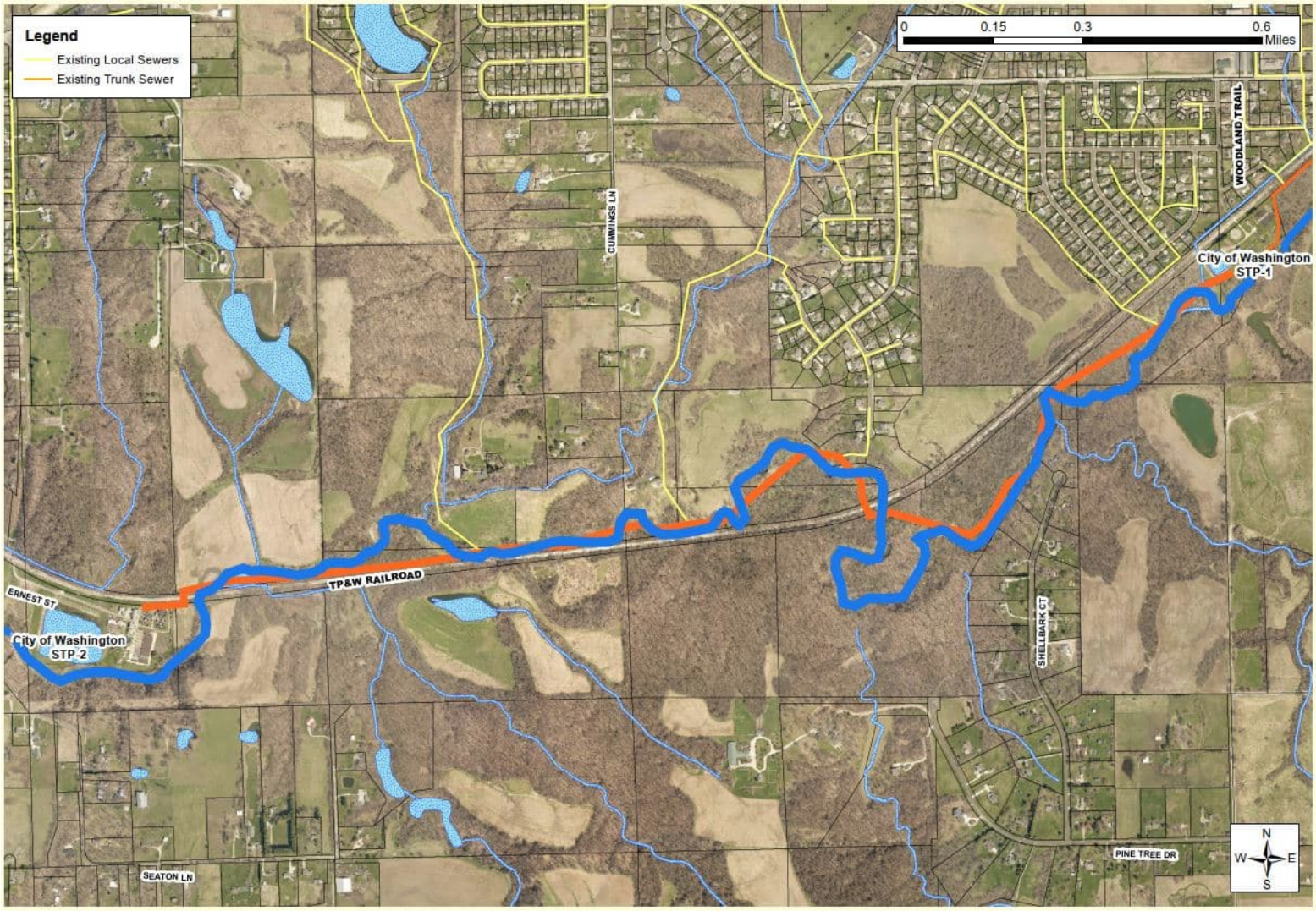
STRAND ASSOCIATES®

Existing Farm Creek Trunk Sewer (FCTS)



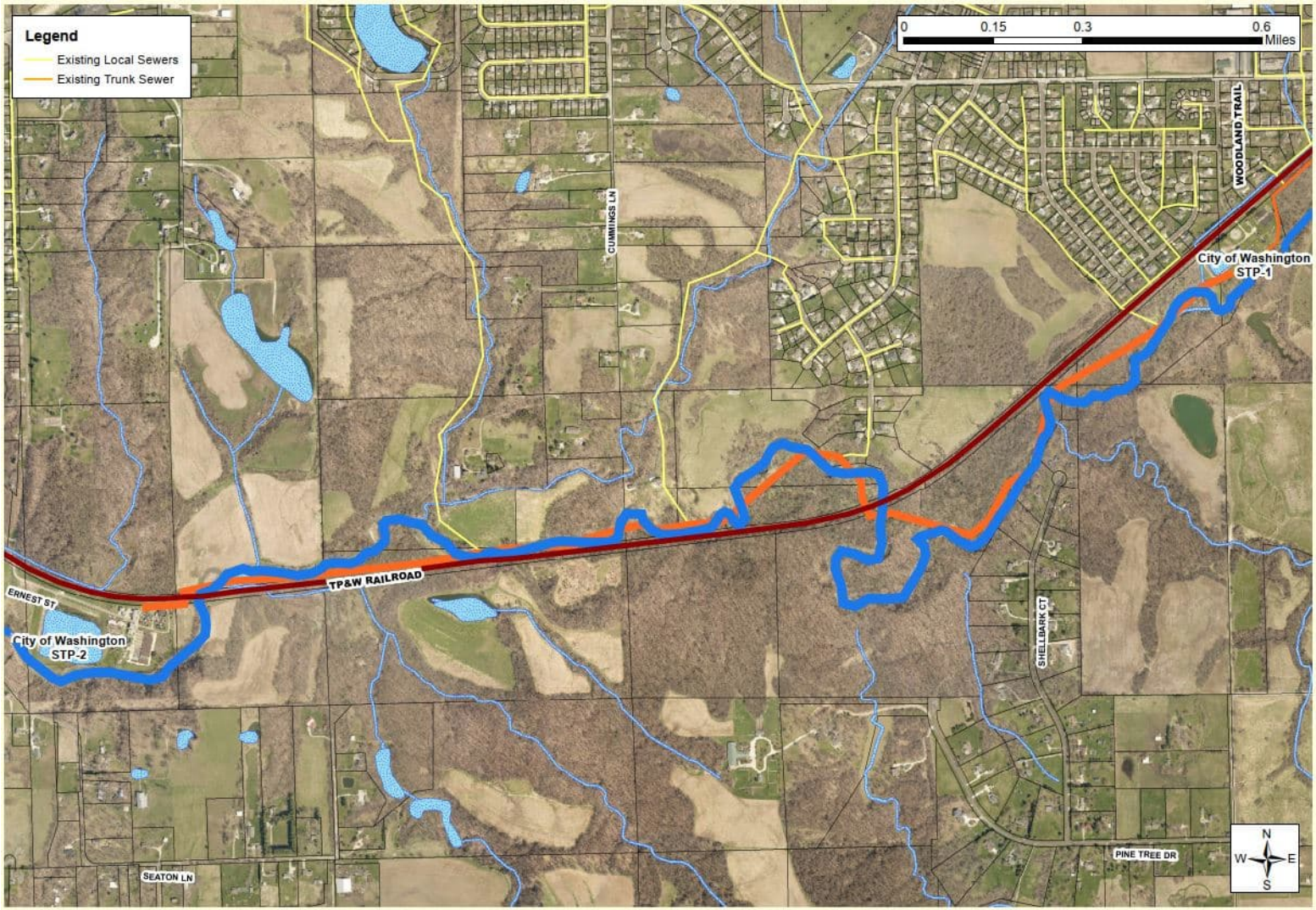
STRAND ASSOCIATES®

Existing Farm Creek Trunk Sewer (FCTS) – Farm Creek



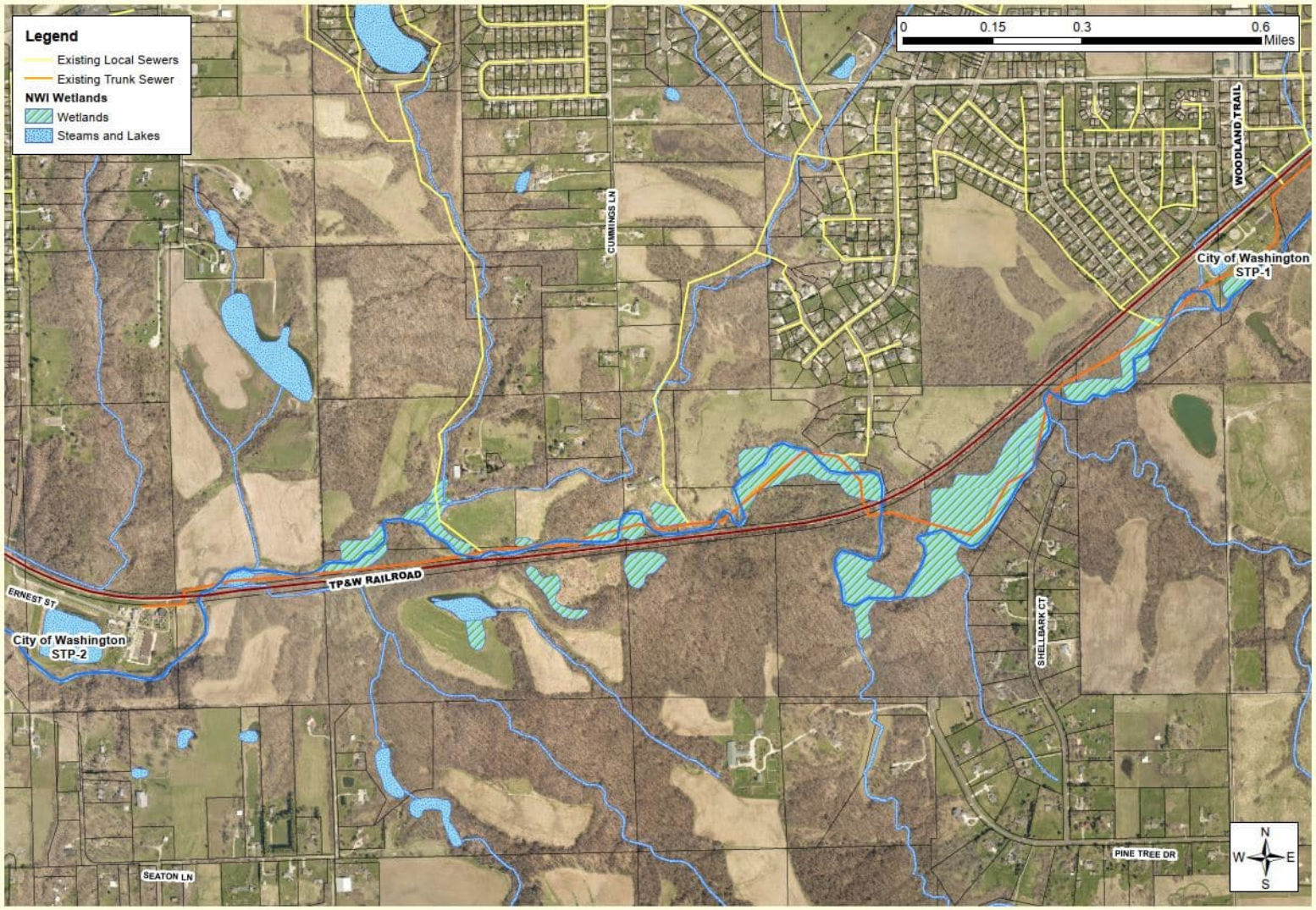
STRAND ASSOCIATES®

Existing Farm Creek Trunk Sewer (FCTS) - Railroad



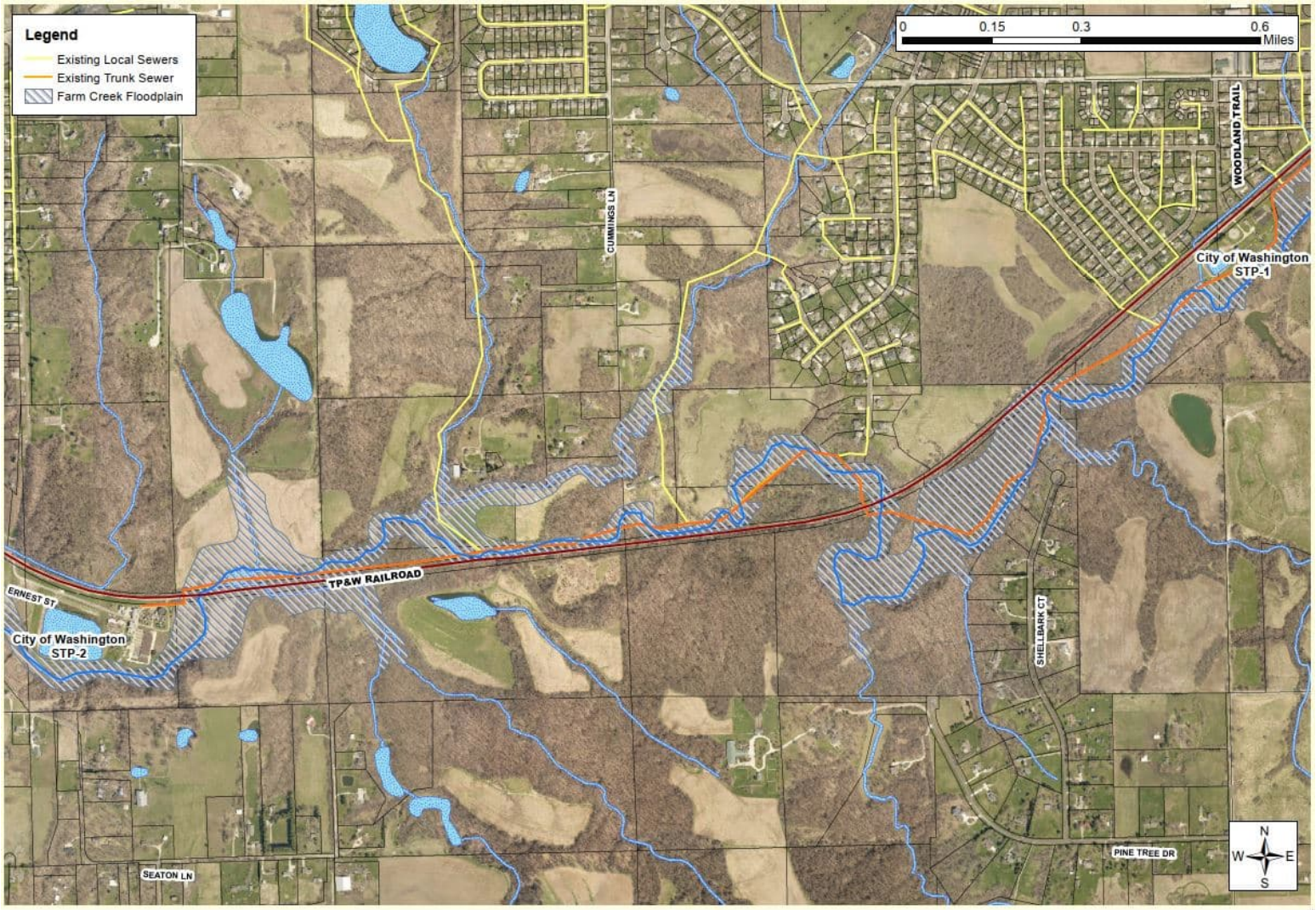
STRAND ASSOCIATES®

Existing Farm Creek Trunk Sewer (FCTS) – National Wetland Inventory

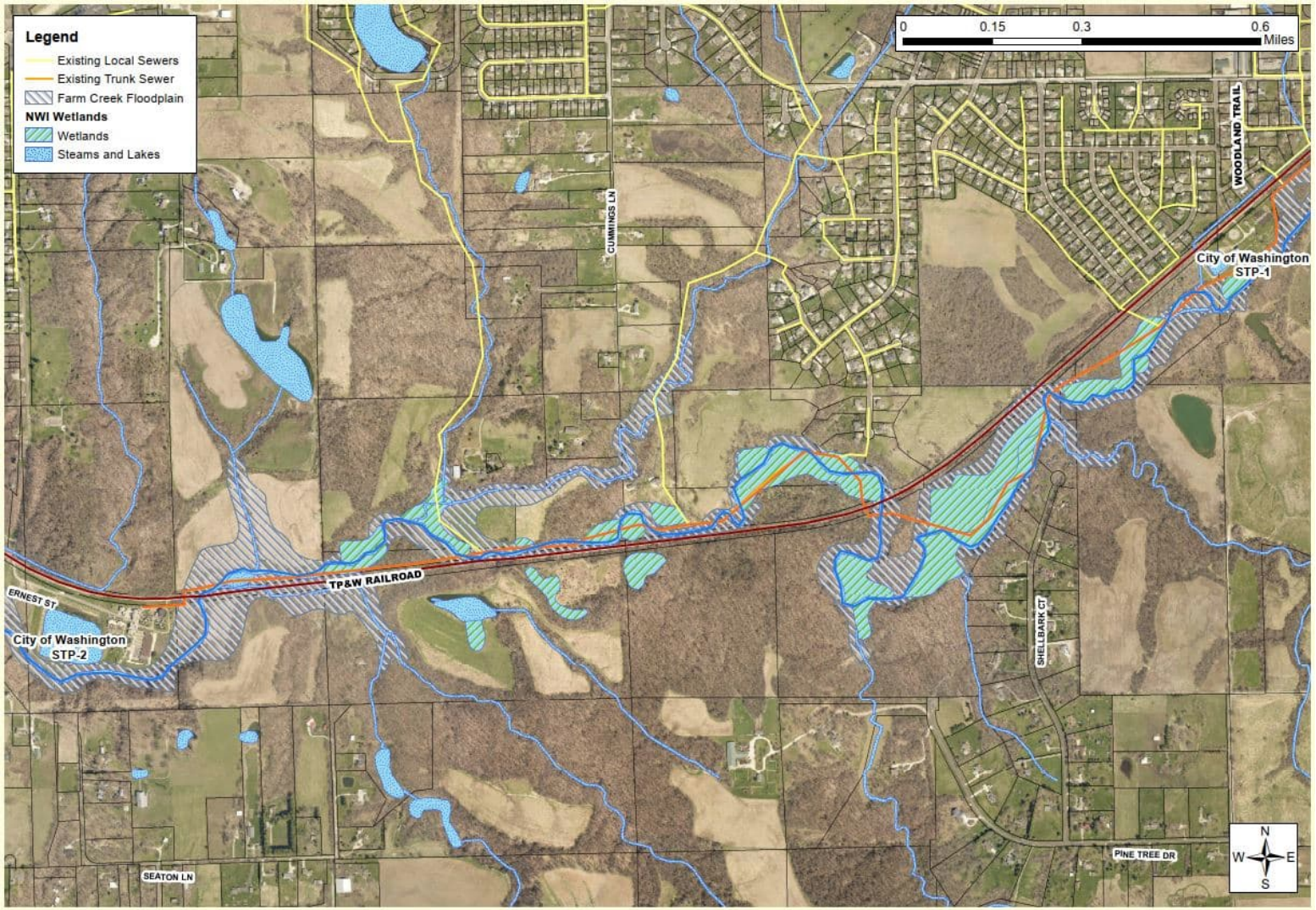


STRAND ASSOCIATES®

Existing Farm Creek Trunk Sewer (FCTS) – Mapped Flood Plain

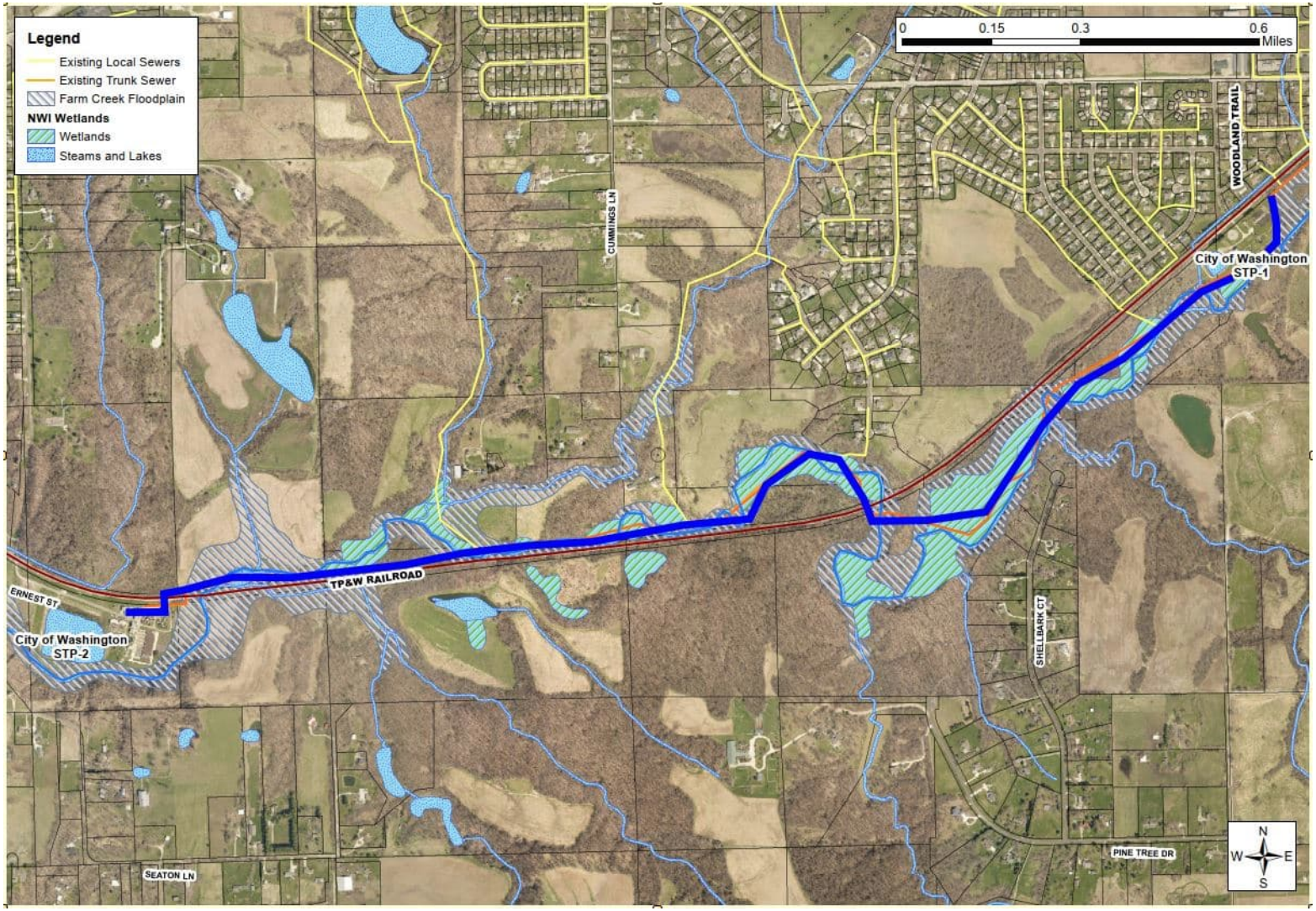


Existing Farm Creek Trunk Sewer (FCTS) – Existing Conditions



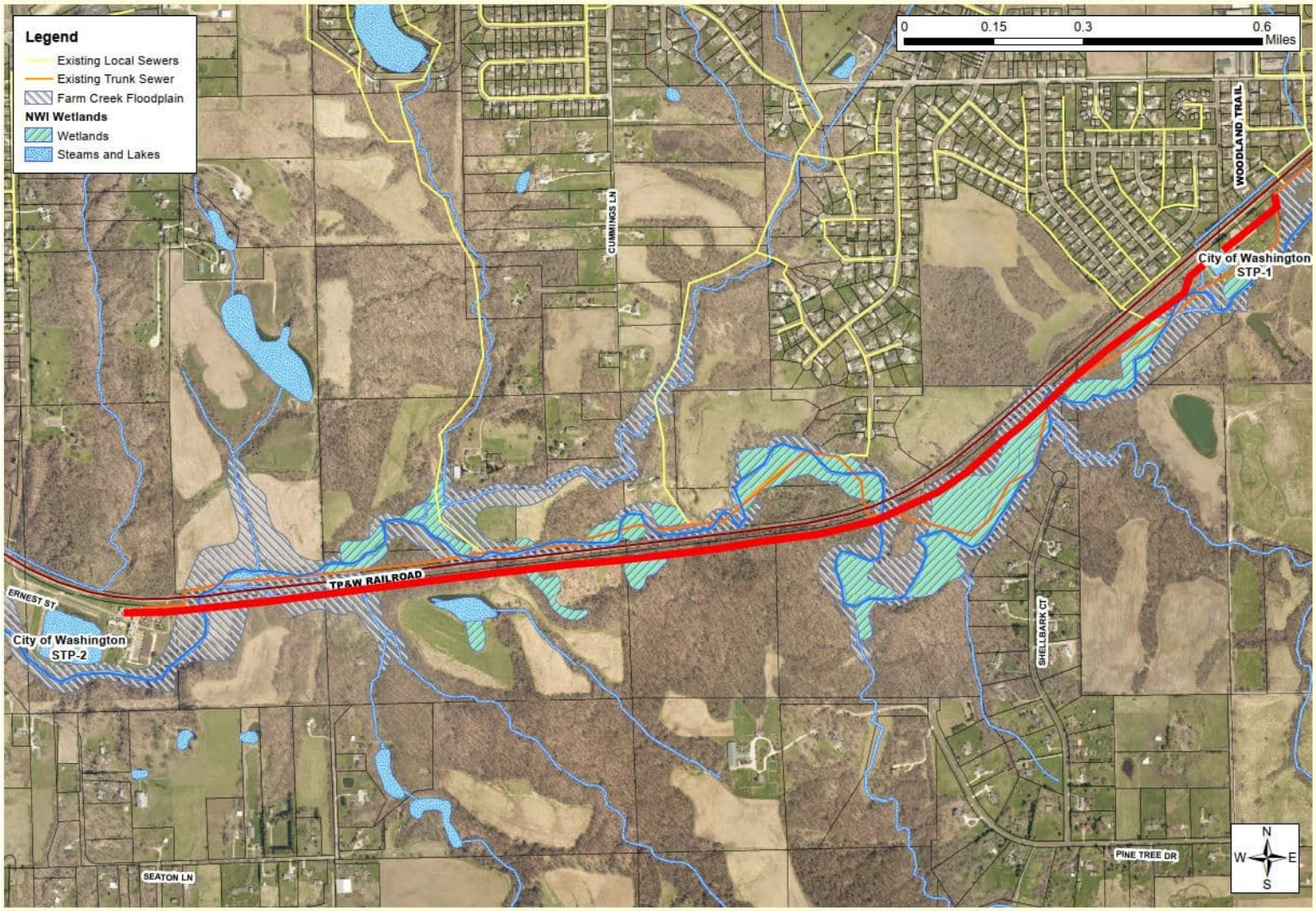
STRAND ASSOCIATES®

Existing Farm Creek Trunk Sewer (FCTS) – Route A



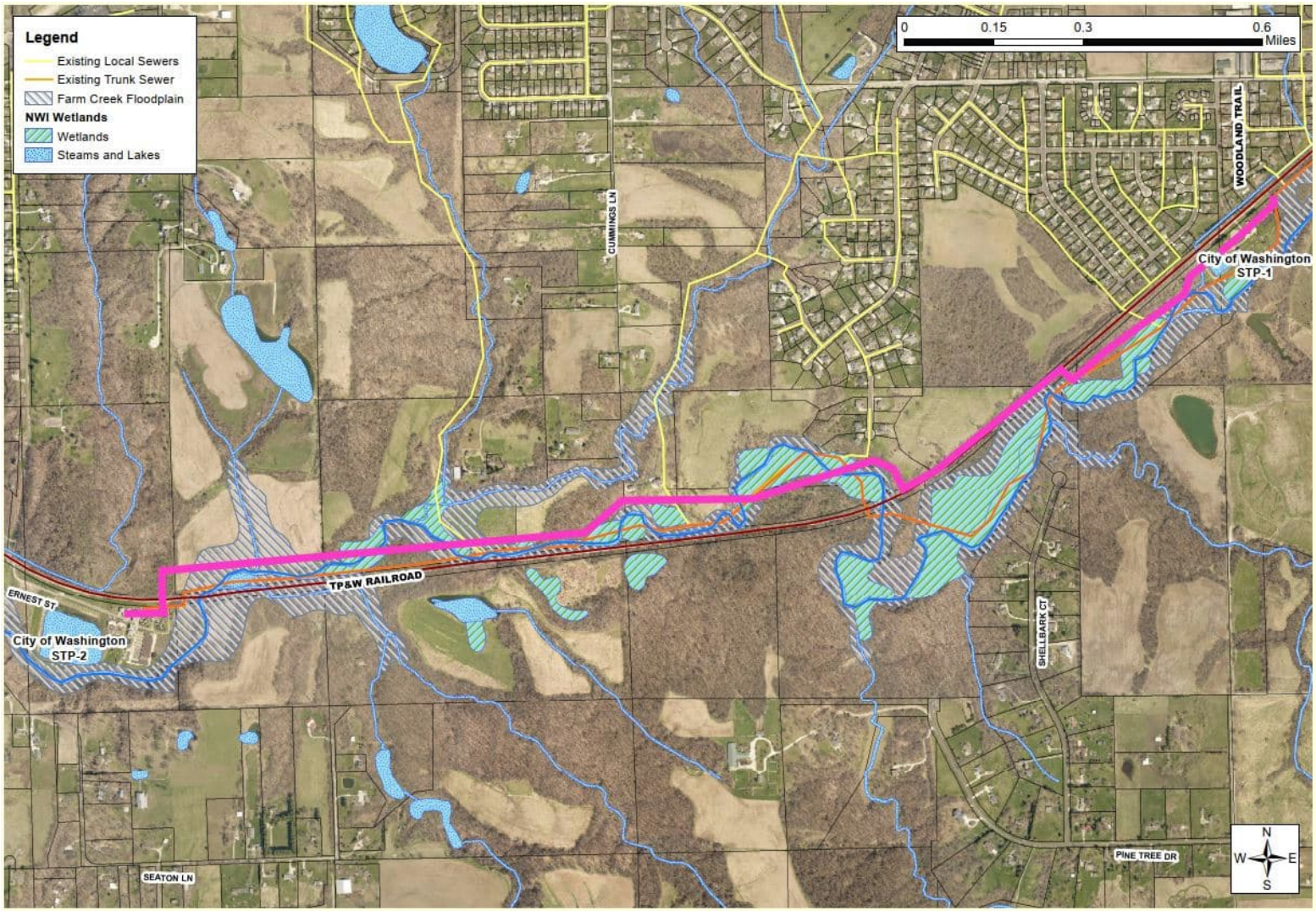
STRAND ASSOCIATES®

Existing Farm Creek Trunk Sewer (FCTS) – Route B

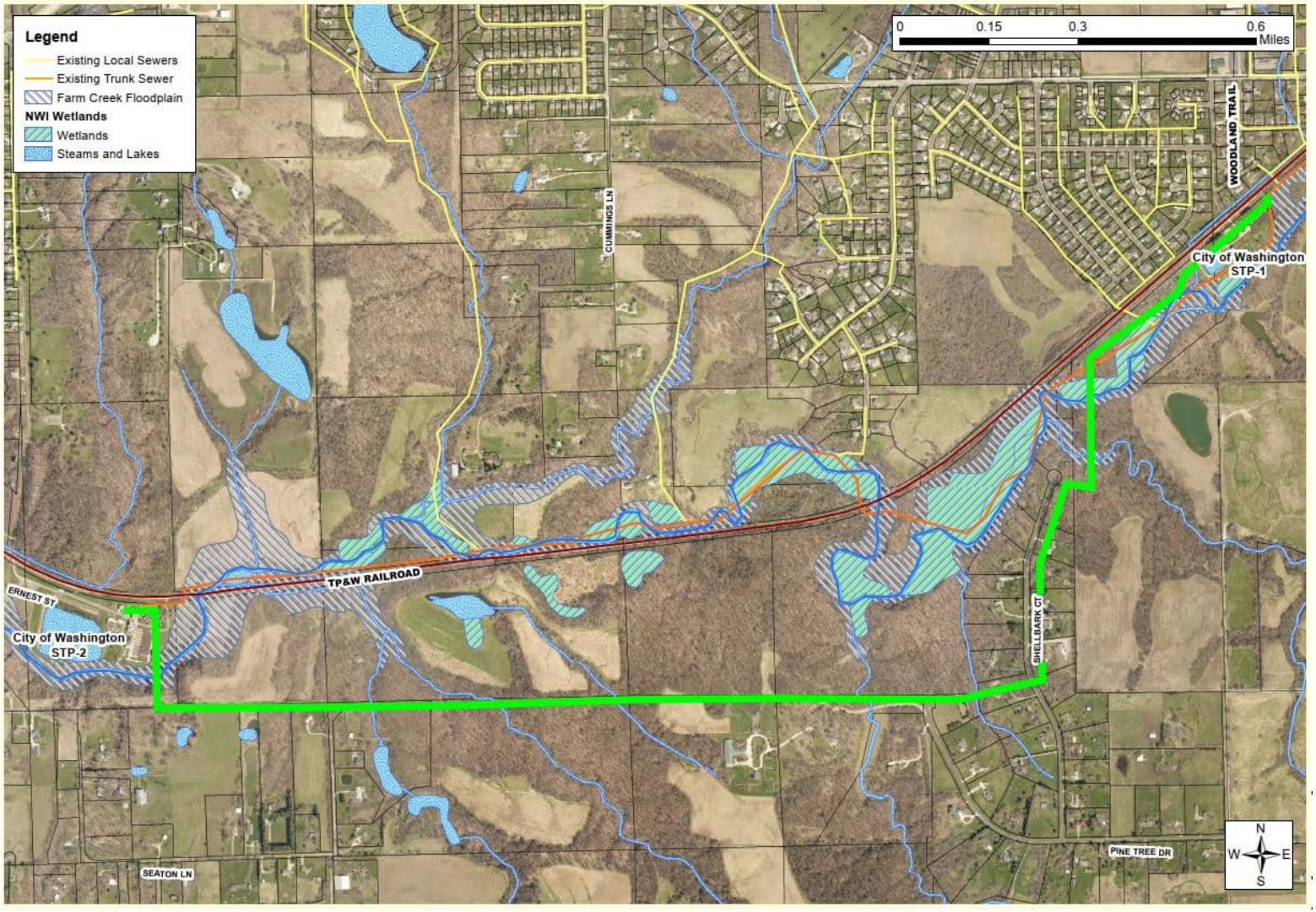


STRAND ASSOCIATES®

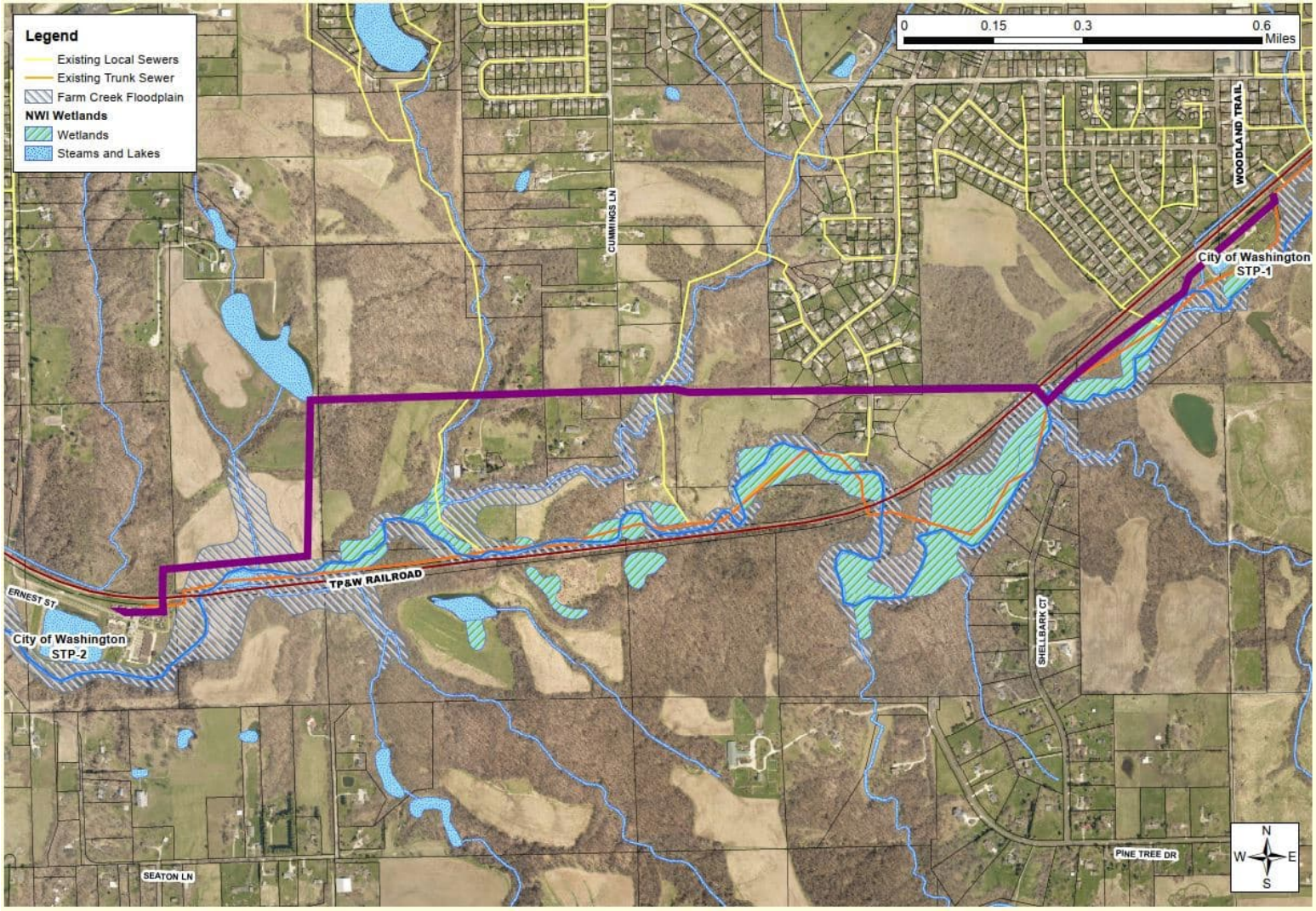
Existing Farm Creek Trunk Sewer (FCTS) – Route C



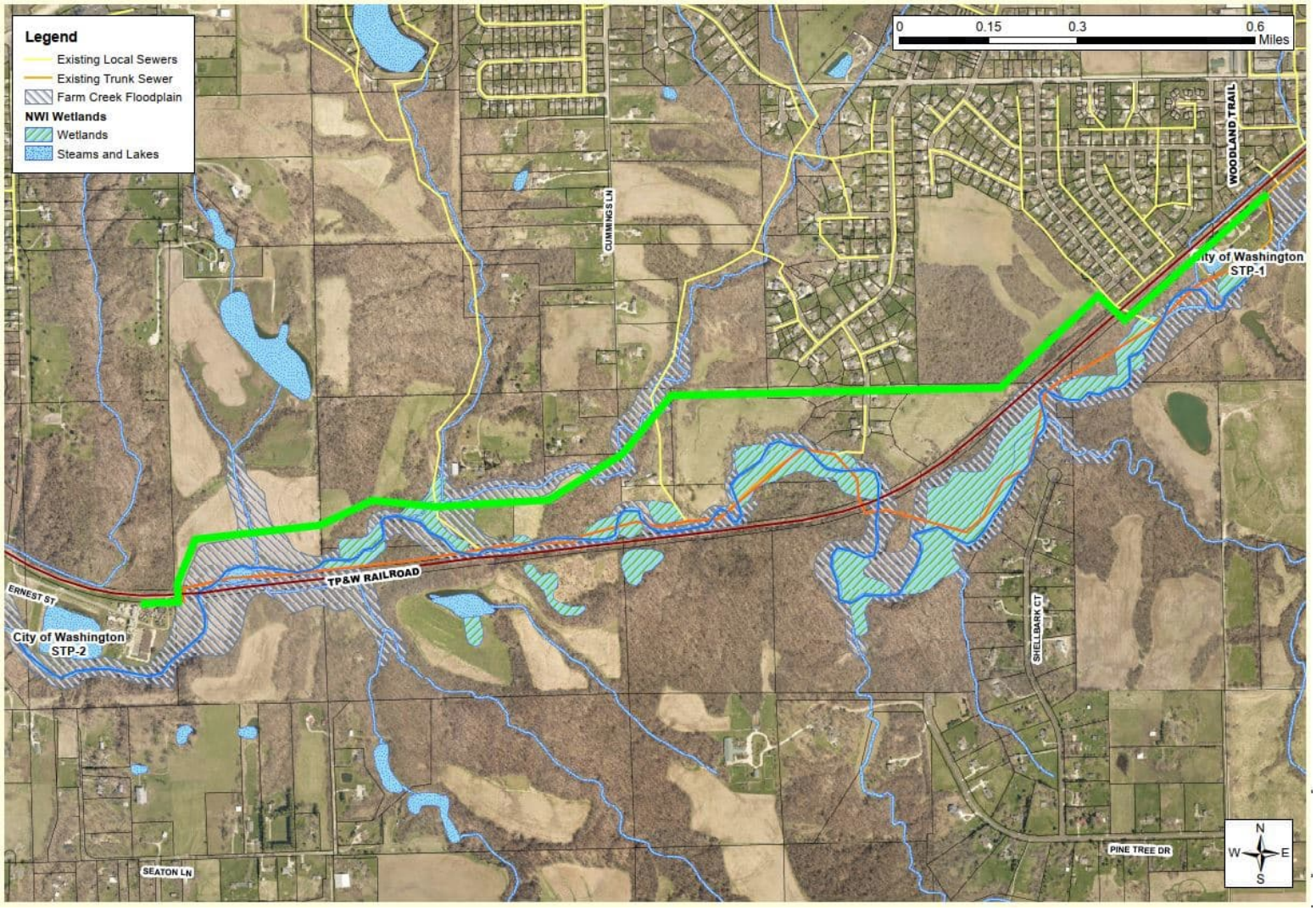
Existing Farm Creek Trunk Sewer (FCTS) – Route D



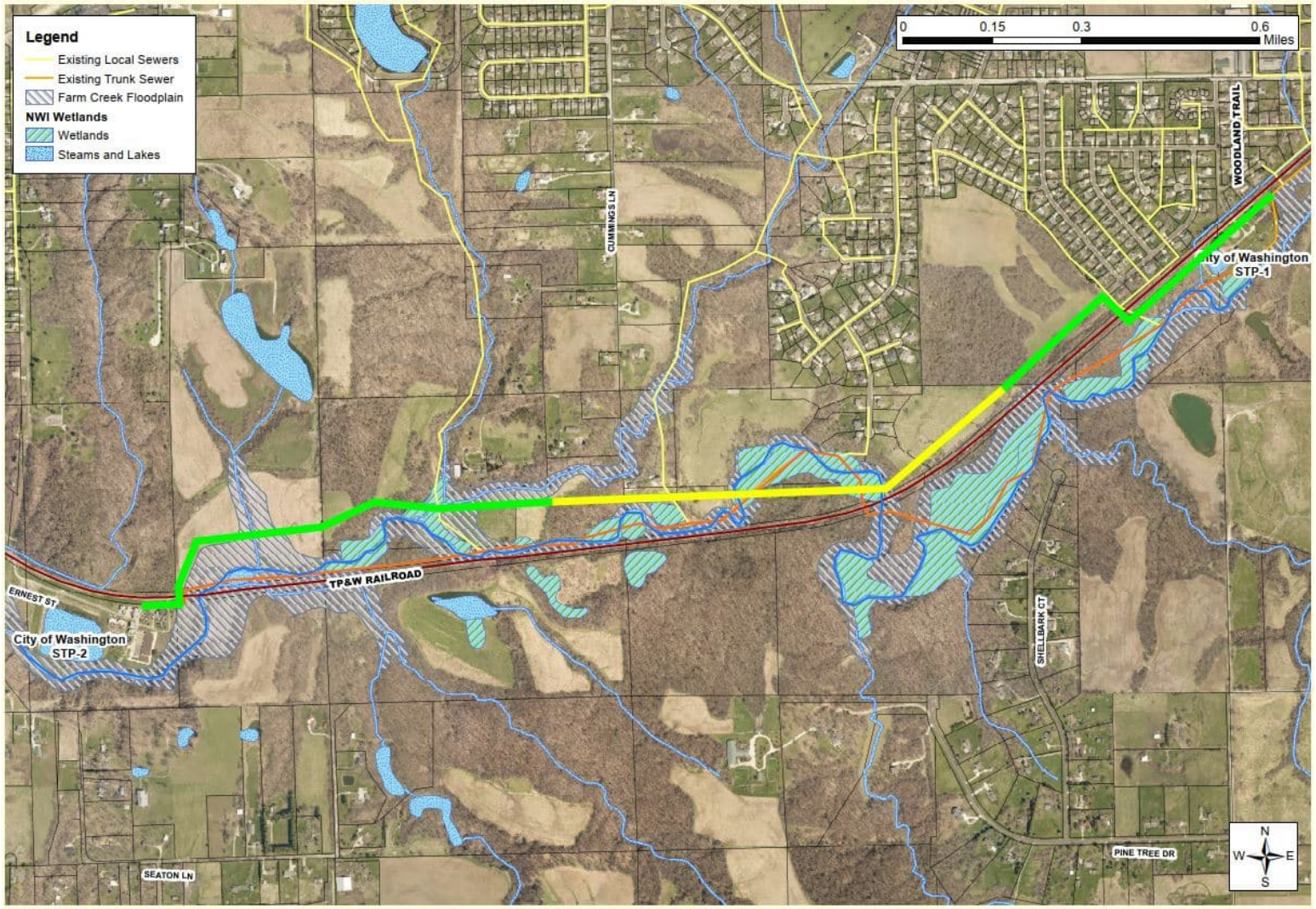
Existing Farm Creek Trunk Sewer (FCTS) – Route E



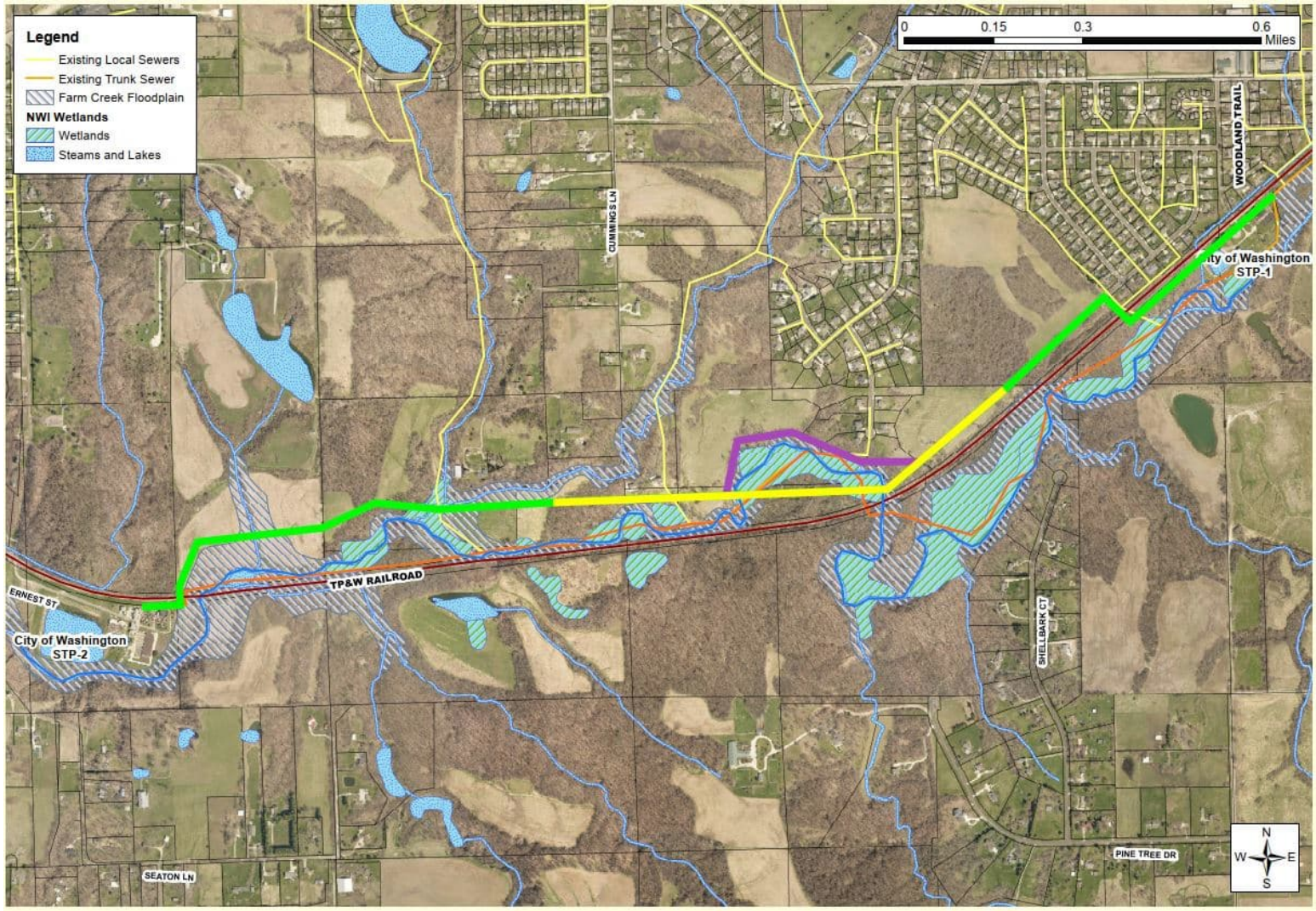
Existing Farm Creek Trunk Sewer (FCTS) – GST Route E-3



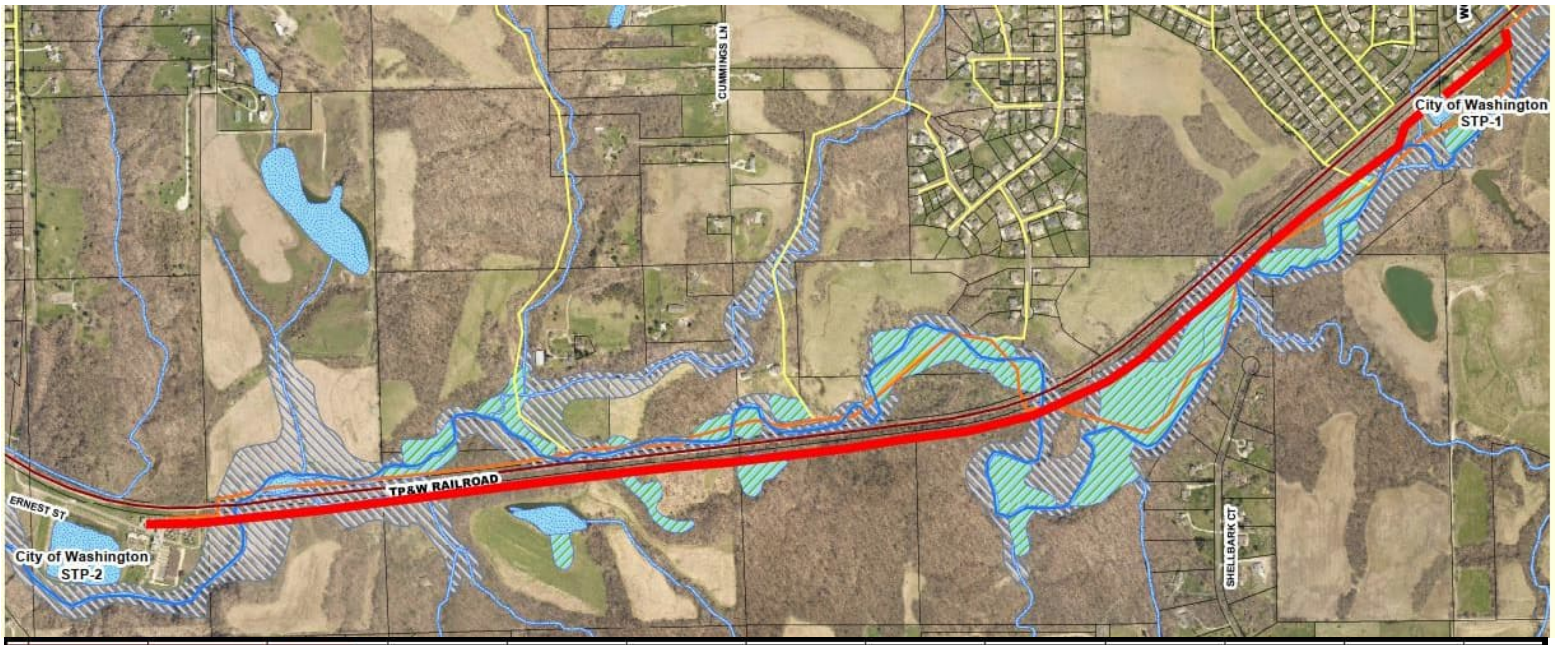
Existing Farm Creek Trunk Sewer (FCTS) – GST Route L-1

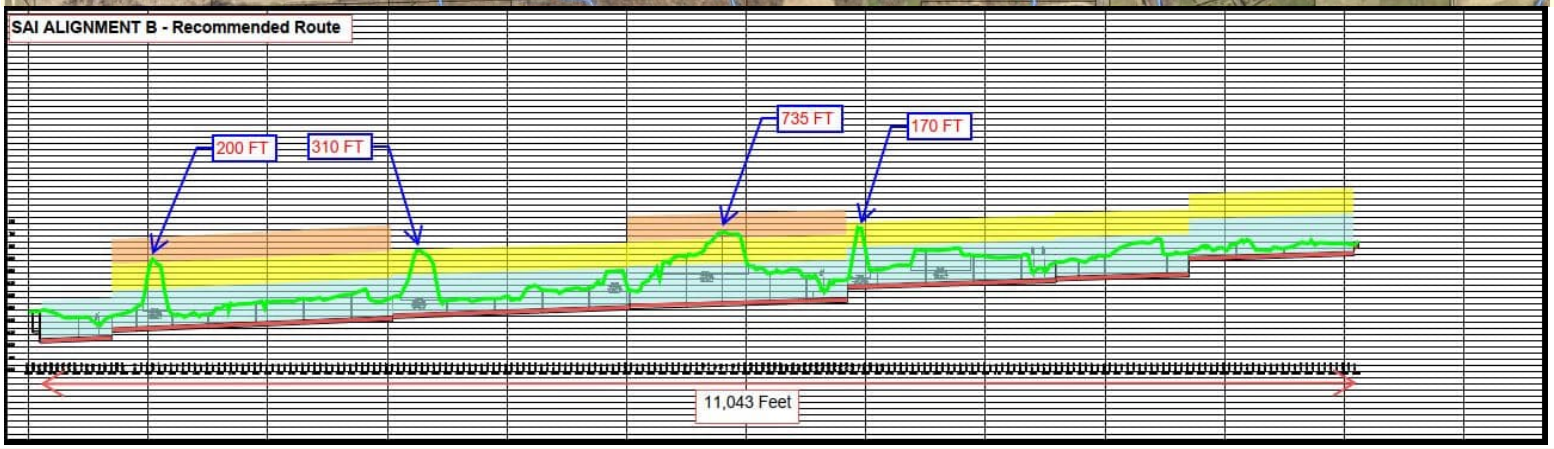


Existing Farm Creek Trunk Sewer (FCTS) – GST Route L-3



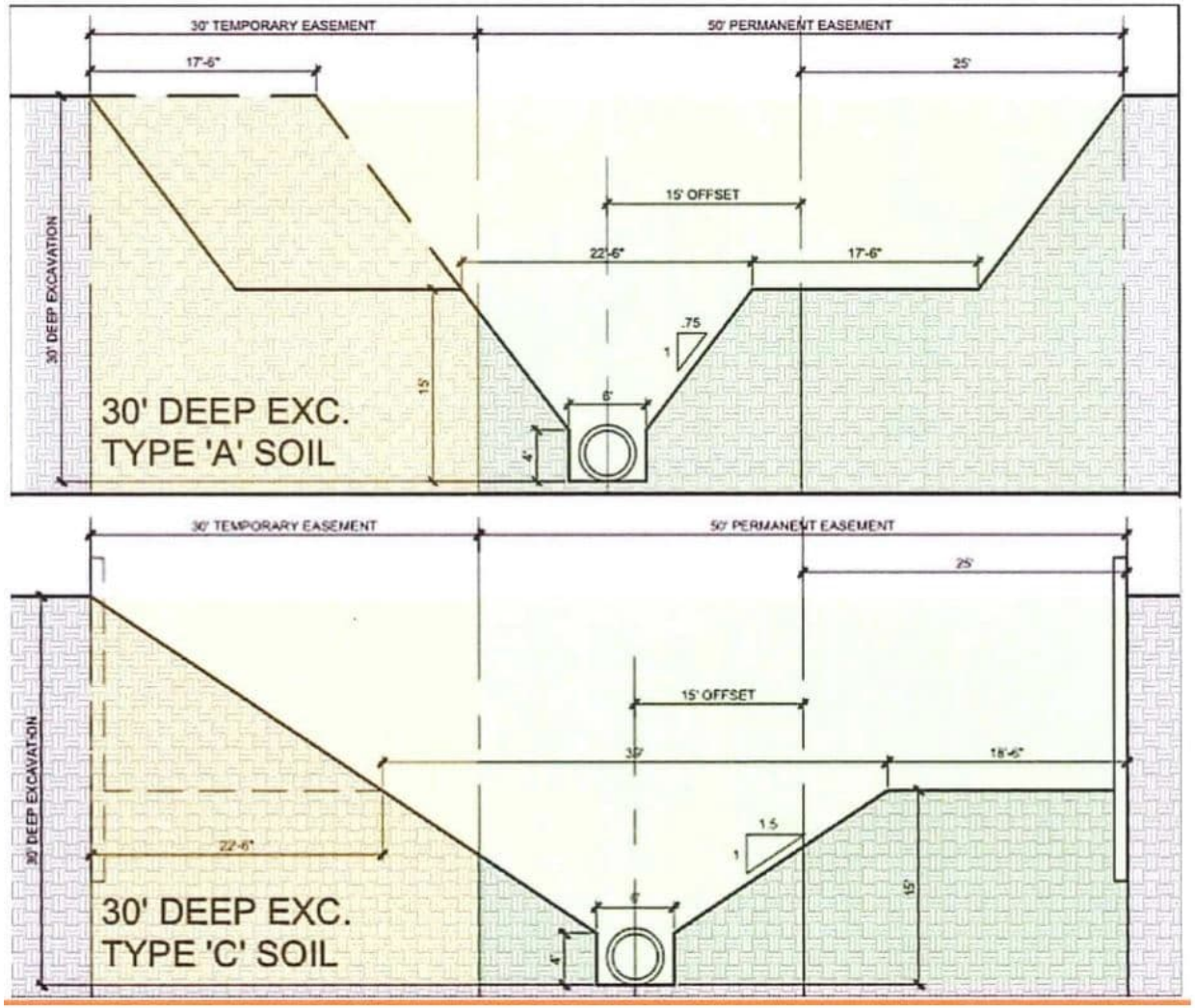
Design Methodology – Trenchless Construction



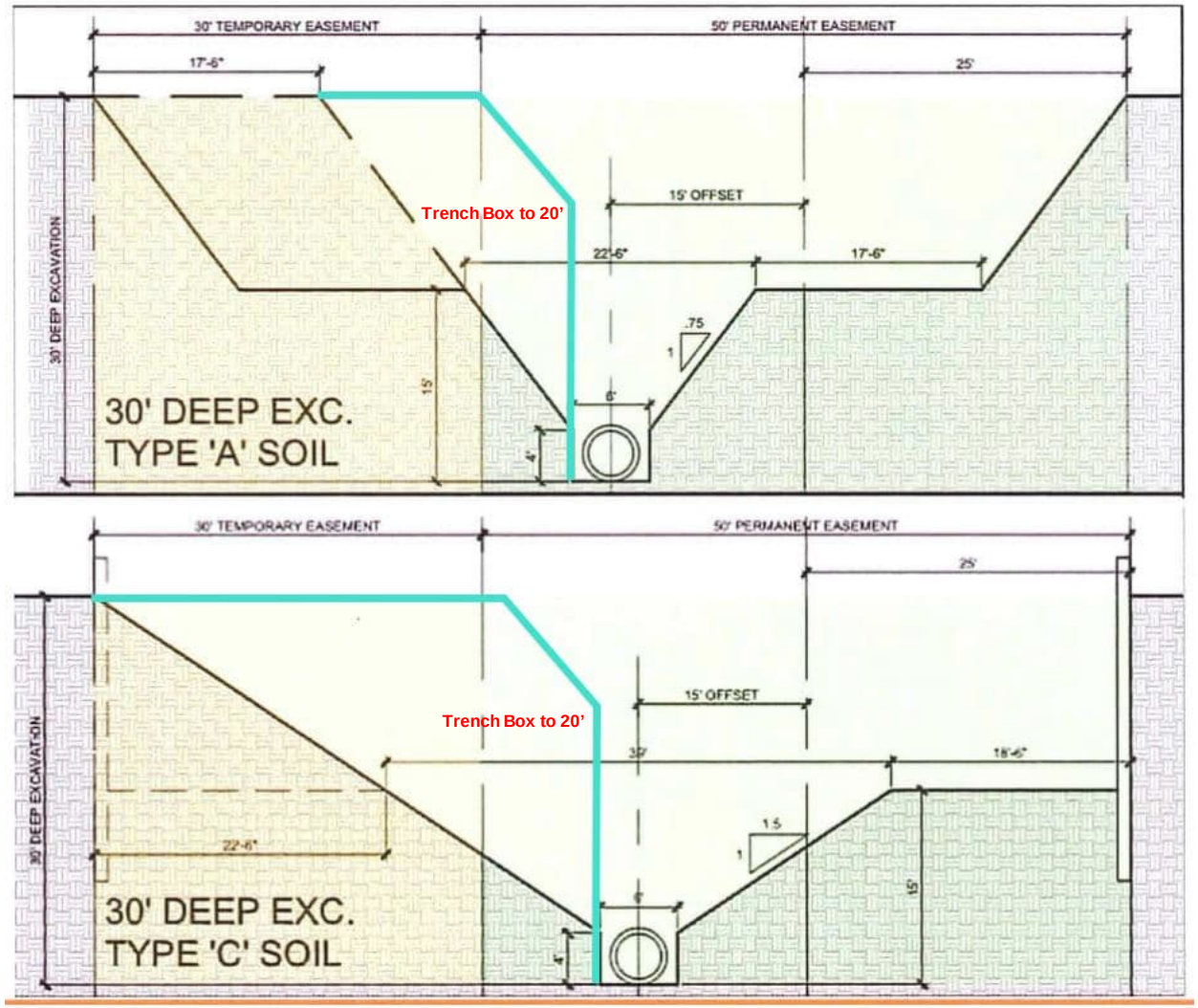


STRAND ASSOCIATES®

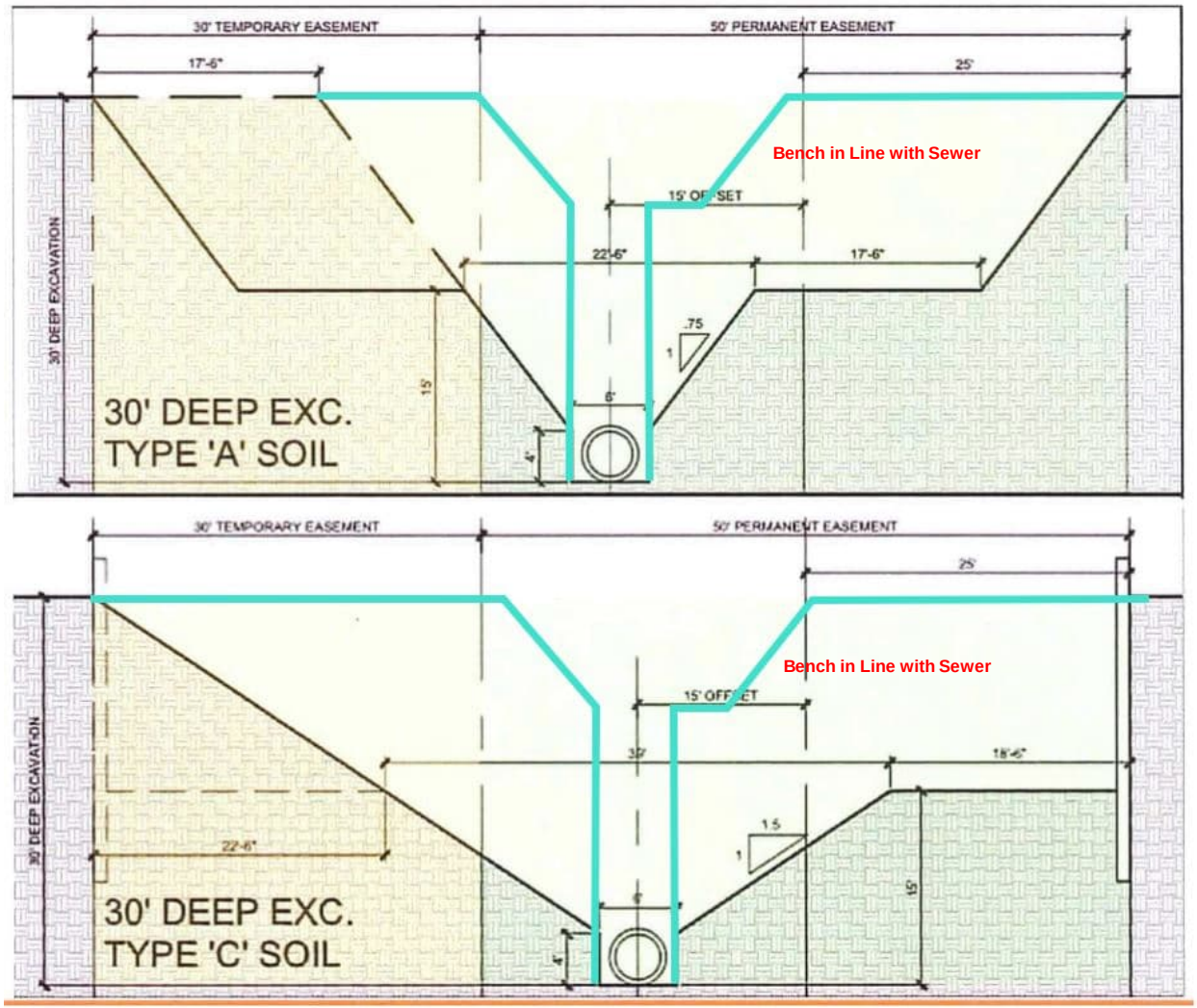
Design Methodology – Open Excavation Construction



Design Methodology – Open Excavation Construction



Design Methodology – Open Excavation Construction

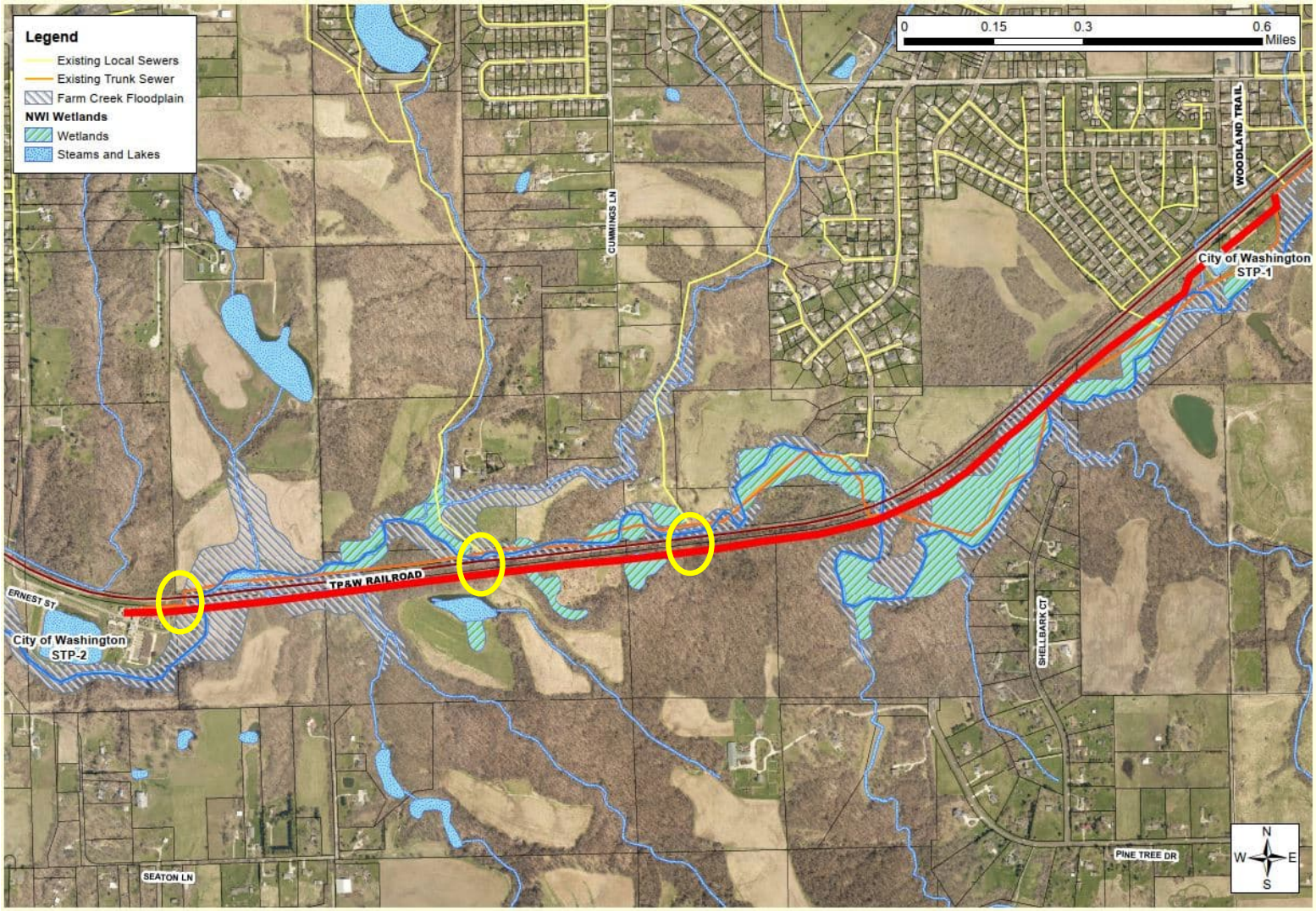


Comparison of Route Metrics

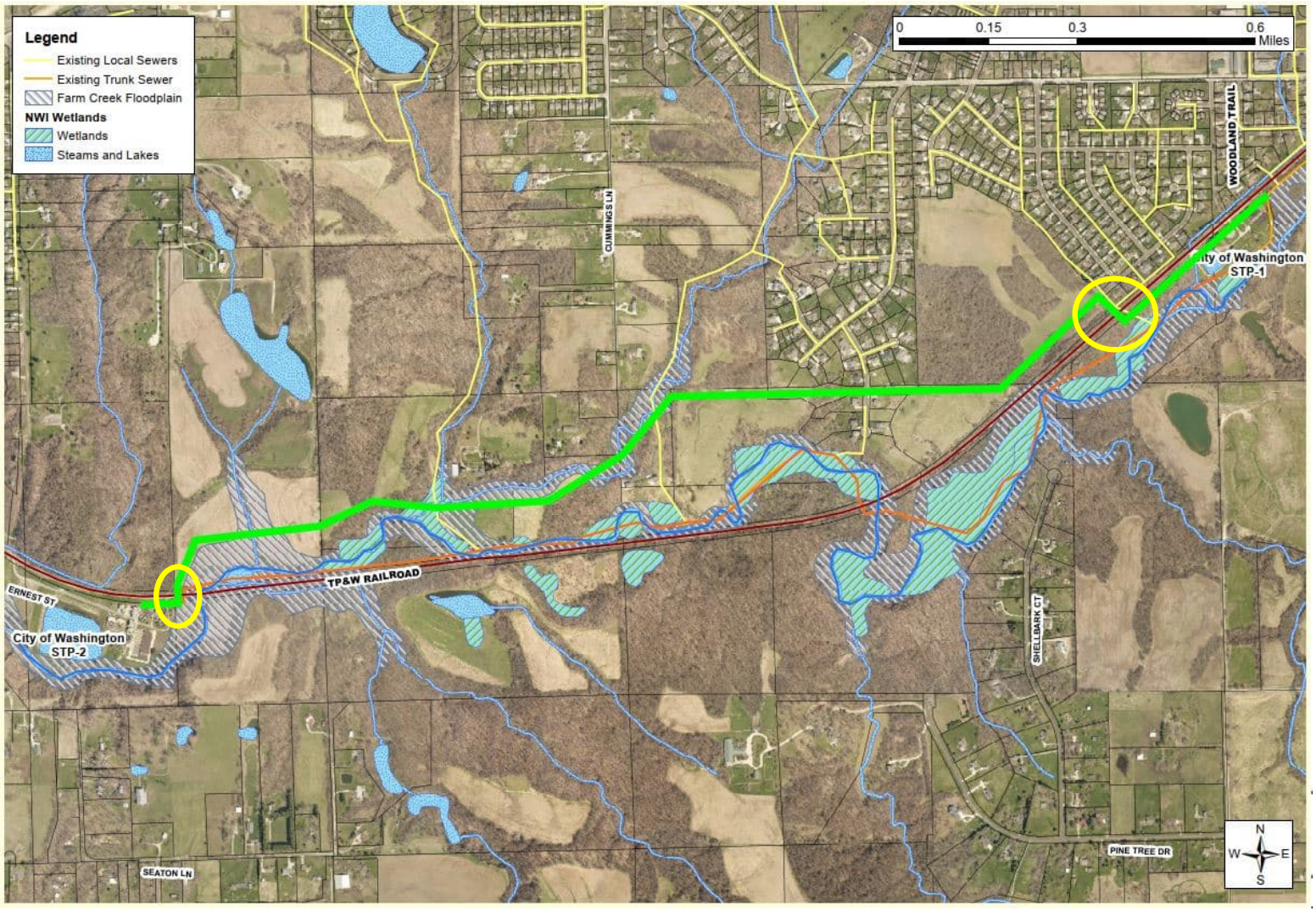
Feauture/Element	Proposed Route B		GSL Route E-3	
	9/11/23 GSL Presentation	10/9/23 SAI Determination	9/11/23 GSL Presentation	10/9/23 SAI Determination
Total Linear Feet - Trunk Sewer Only	12390	11160	12080	11580
Additional Linear Feet - Local Sanitary Sewer	0	480 (1230)	-	500
Total Length of Sewer	12390	11640	12080	12080
Trenchless Construction, Linear Feet	3784	1775	2102	2400
Jack and Bore Locations	7	7	7	7
Railroad Crossings	2	2	2	2
Maximum Manhole Depth, Feet	46	46	44	44
Average Manhole Depth, Feet	22.5	22.3	21.20	21
Quantity of Manholes Over 30 Feet Deep	4	4	4	4
Averge Sewer Depth, Feet	22.5	21.3	19.93	22.3
Farm Creek Crossings	6	4	0	0
Tributary Crossings	6	1	0	4
Wetland Crossing, Linear Feet	2200	812	200	575
Floodplain Crossings, Linear Feet	3300	2848	1310	1500
Easements Required - No. of Properties	6	5	6	6
Easements Required - Sewer in Linear Feet		8375		8275
Easements Required - Access in Linear Feet		2800		
Alignment in Public ROW, L.FT. (% of Route)	0 (0%)	2873 (26%)	2,000 (21%)	3260 (28%)
Open Access Corridors, L.FT. (% of Route)	650 (7%)	2047 (19%)	7145 (73%)	8026 (69%)
Forest/Forested Riparian, L.FT. (% of Route)	8,735 (93%)	8996 (81%)	2,580 (27%)	3602 (31%)

STRAND ASSOCIATES®

Railroad Crossings – Route B

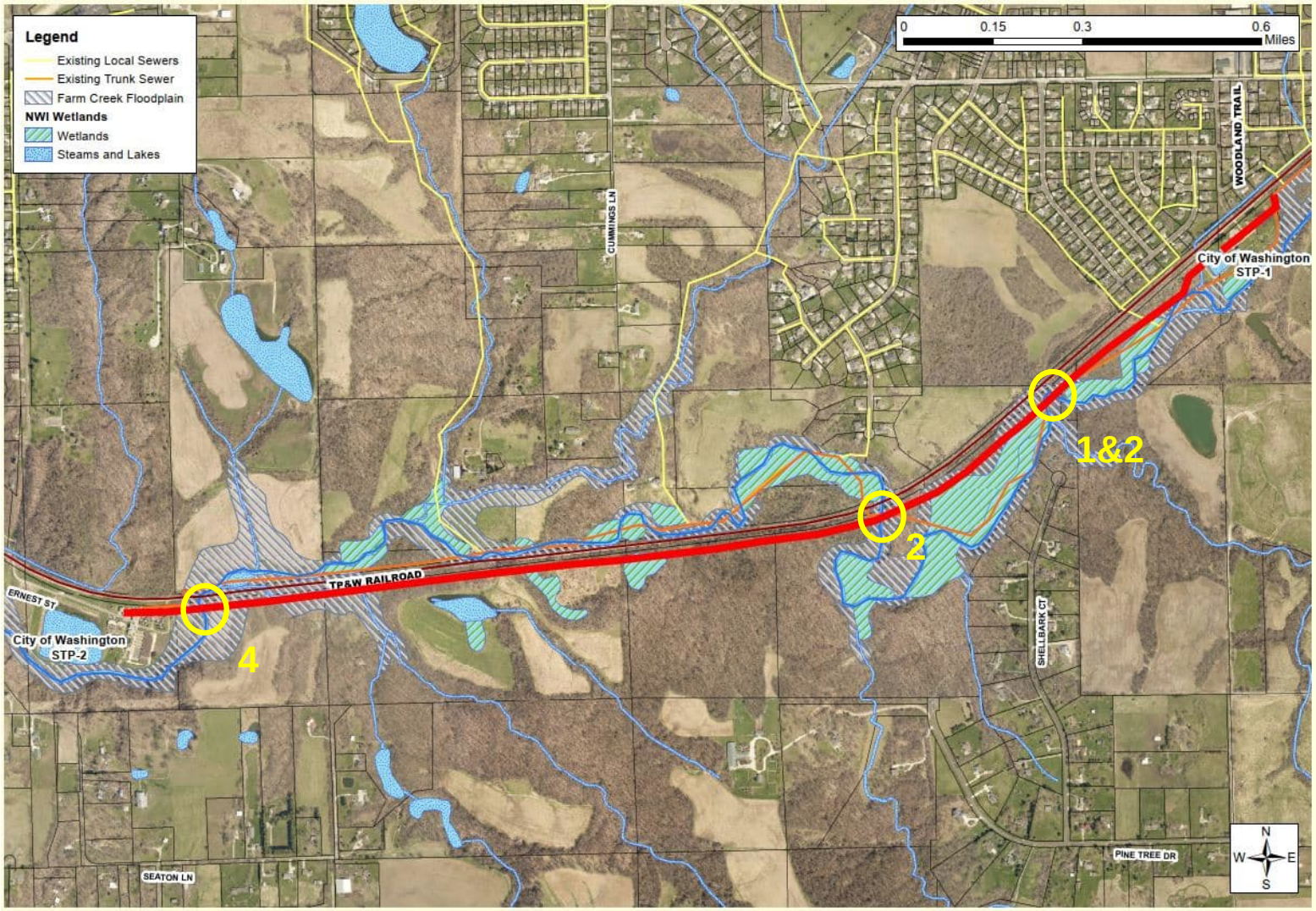


Railroad Crossngs – Route E-3, L-1, L-3

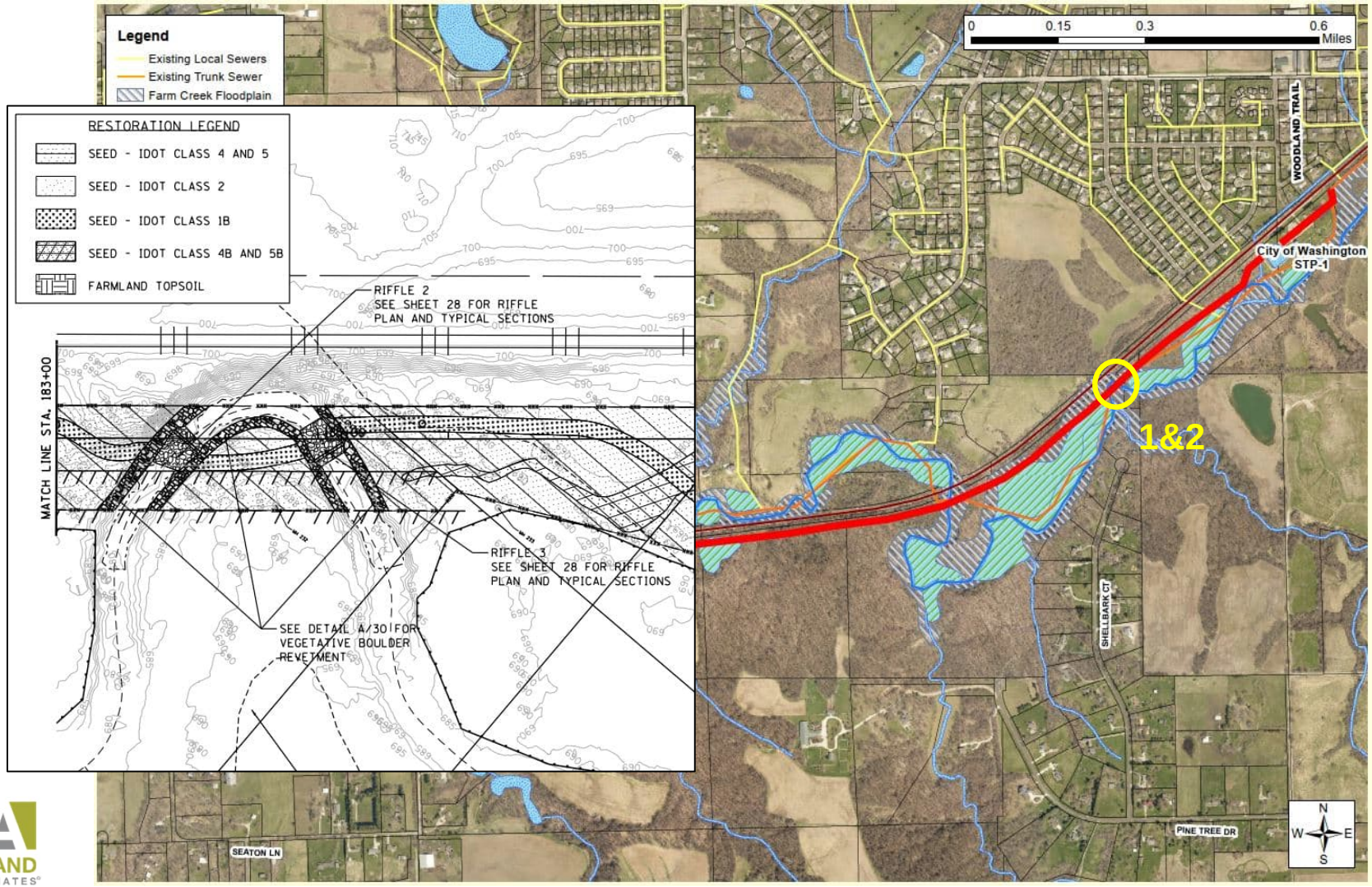


STRAND ASSOCIATES®

Accessibility – Route B – Farm Creek Crossings

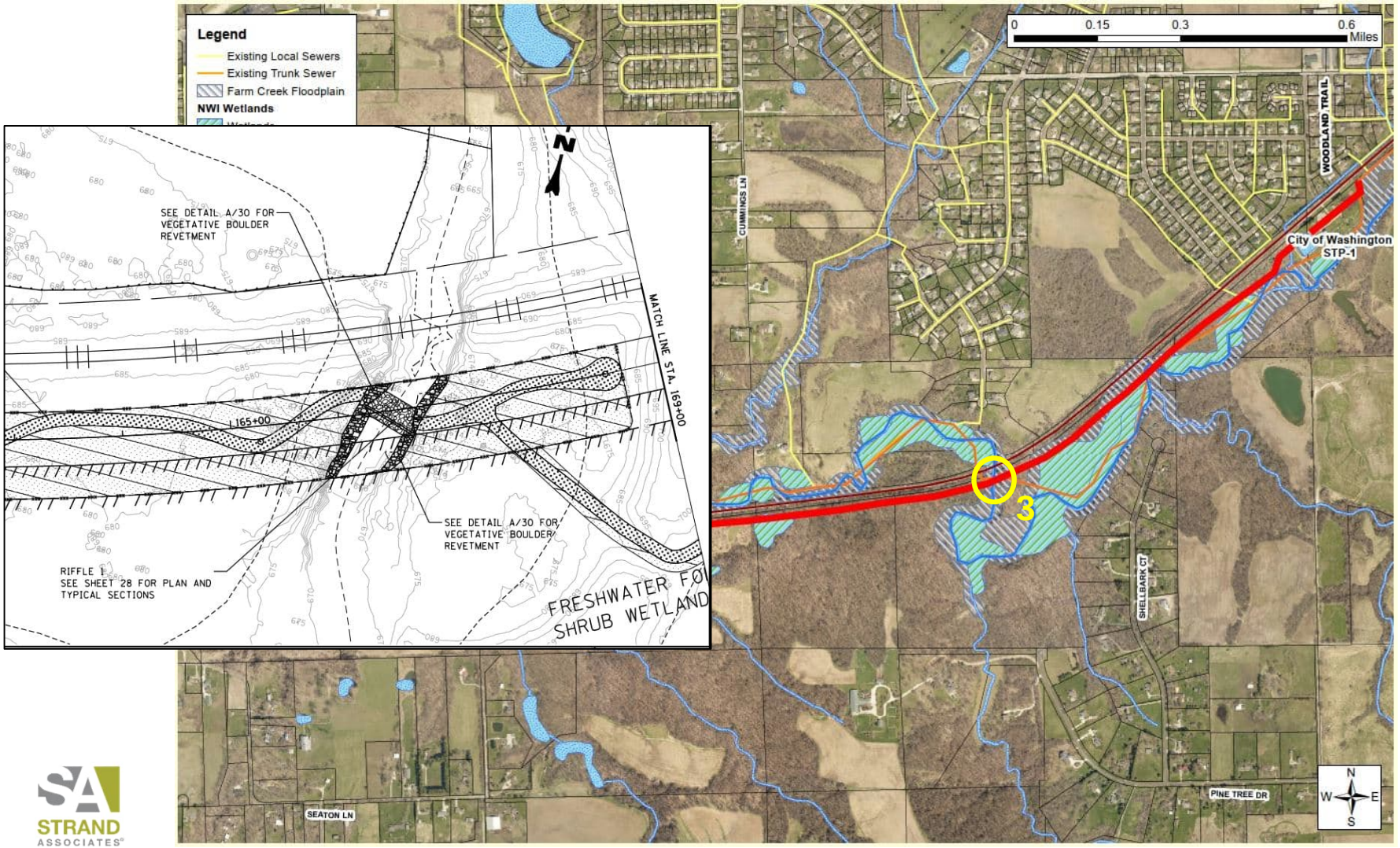


Accessibility – Route B Farm Crossing No. 1 & 2



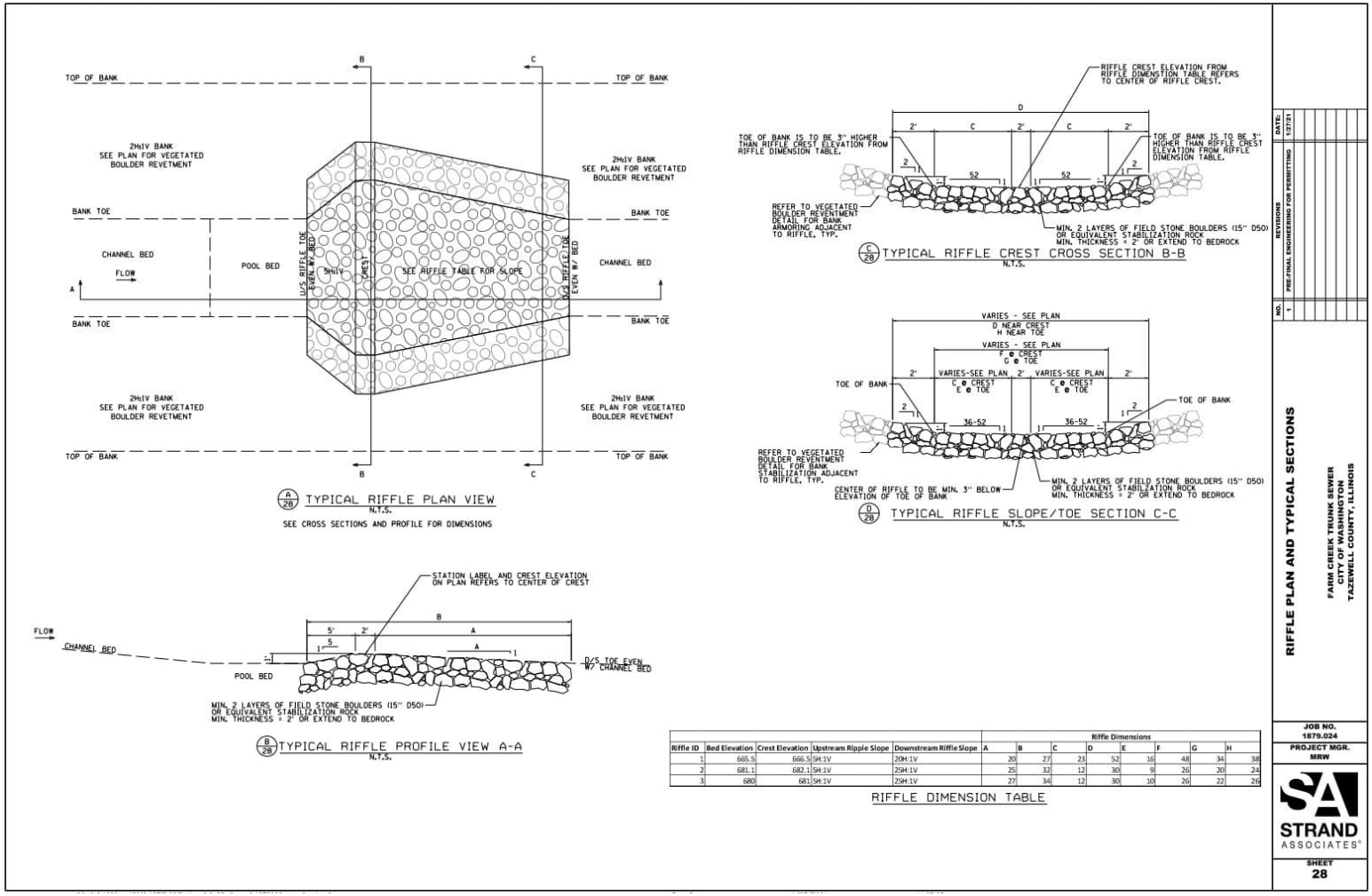
STRAND ASSOCIATES®

Accessibility – Route B Farm Crossing No. 3



STRAND ASSOCIATES®

Accessibility – Farm Creek Crossing Riffles



Riffle ID	Bed Elevation	Crest Elevation	Upstream Ripple Slope	Downstream Riffle Slope	Riffle Dimensions A	B	C	D	E	F	G	H
1	665.5	666.5	5H:1V	20H:1V	20	27	23	52	16	48	34	38
2	681.1	682.1	5H:1V	25H:1V	25	32	12	30	9	26	20	24
3	680	681	5H:1V	25H:1V	27	34	12	30	10	26	22	26

RIFFLE DIMENSION TABLE

NO. 1 — REVISIONS: PRE-FINAL ENGINEERING FOR PERMITTING — DATE: 12/7/21

RIFFLE PLAN AND TYPICAL SECTIONS

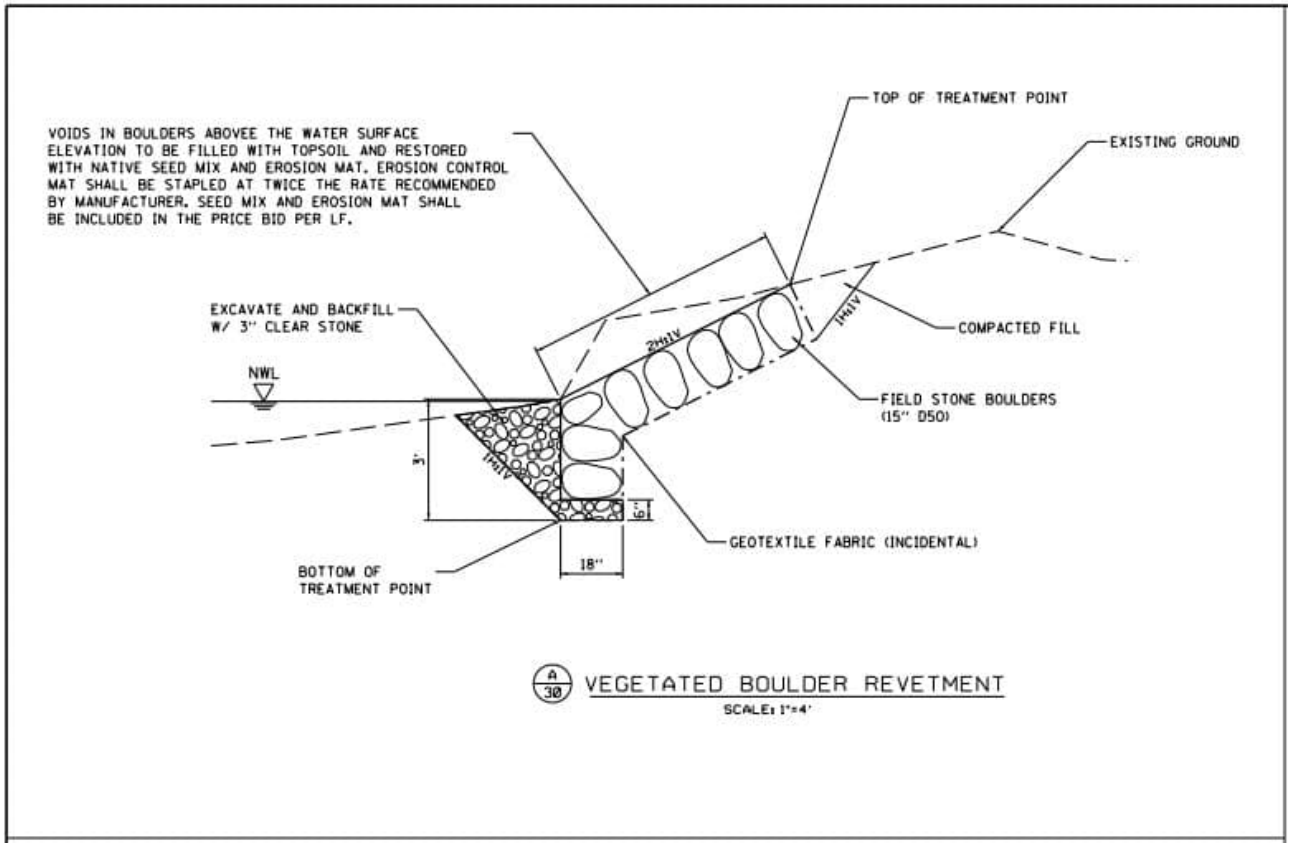
FARM CREEK TRUNK SEWER
CITY OF WASHINGTON
TAZEWELL COUNTY, ILLINOIS

JOB NO. 1879.024
PROJECT MGR. MRW

STRAND ASSOCIATES®

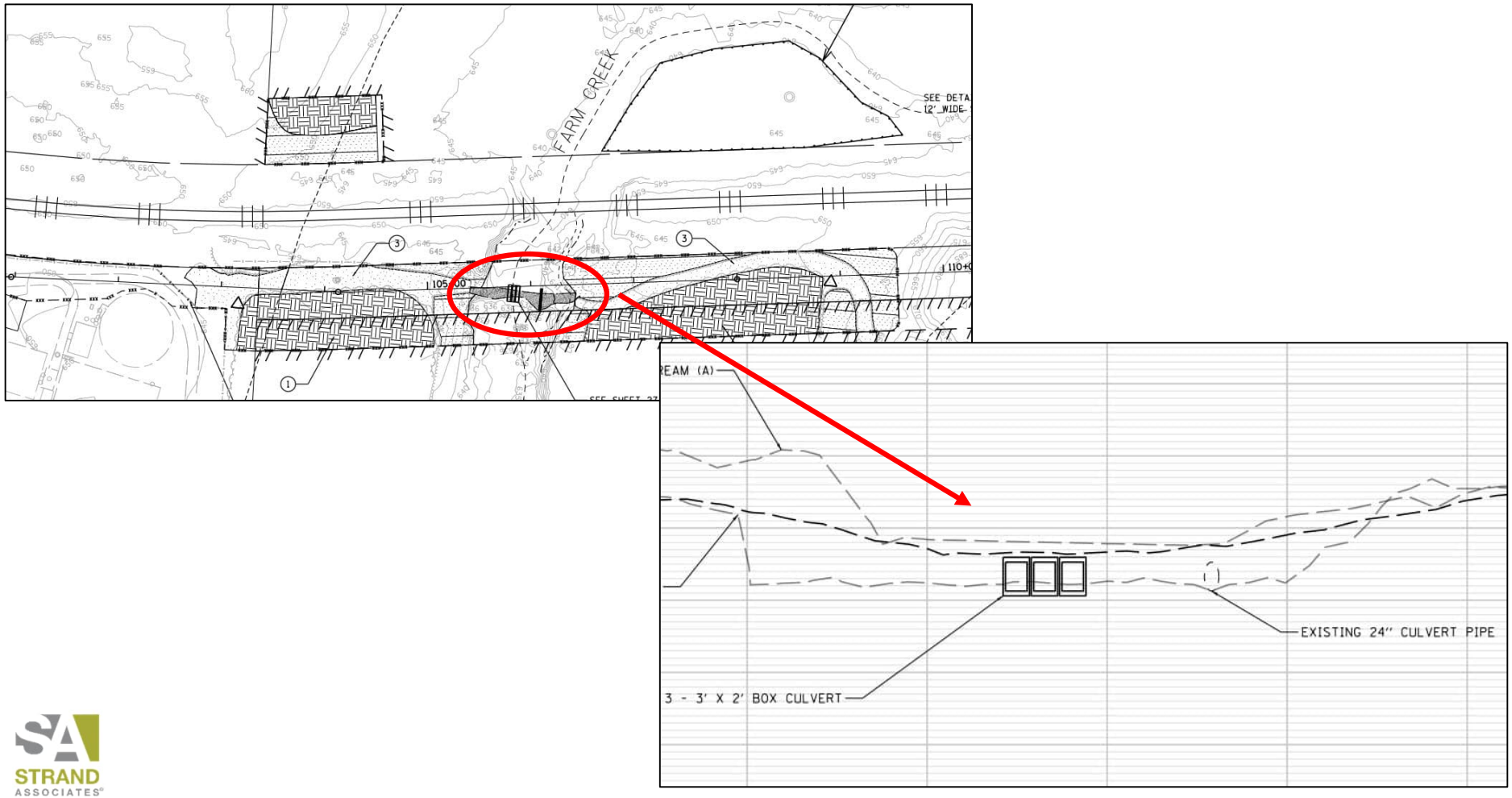
SHEET 28

Accessibility – Farm Creek Crossing Bank Stabilization

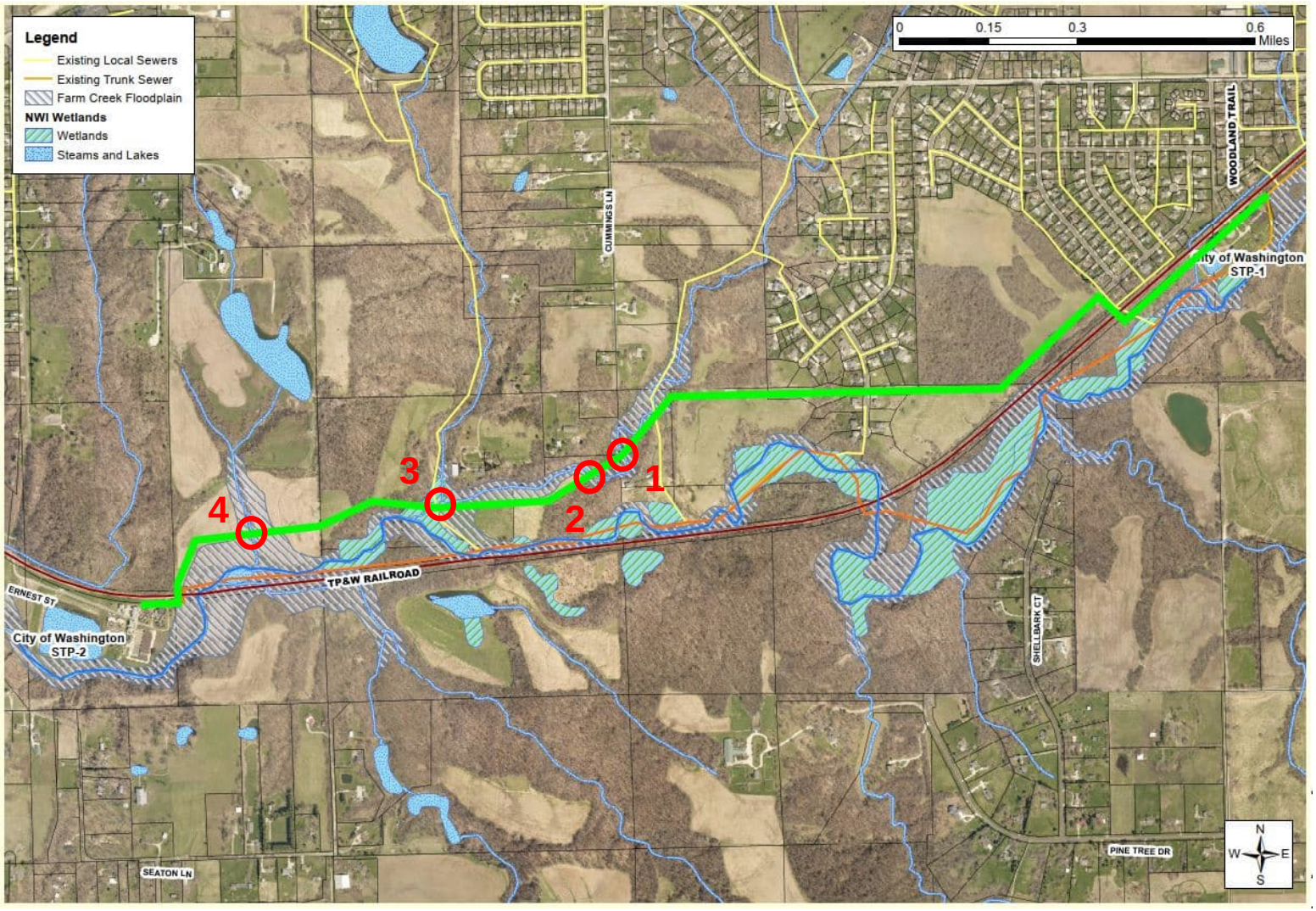


Accessibility – Route B Farm Crossing No. 4

Accessibility – Existing Farm Creek Crossing No. 4

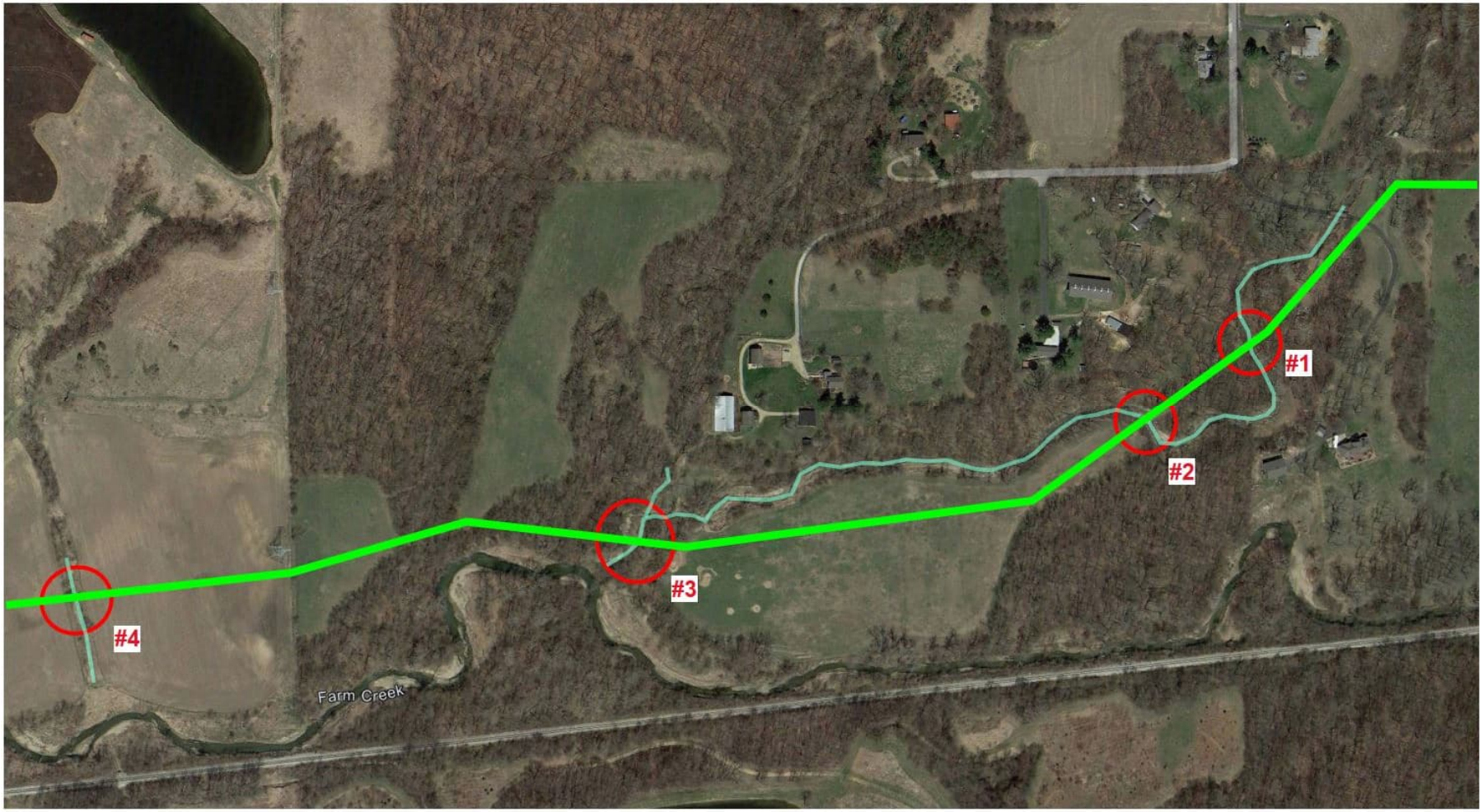


Accessibility – Route E-3 – Ravine Crossings



STRAND ASSOCIATES®

Accessibility – Route E-3 – Ravine Crossings



STRAND ASSOCIATES®

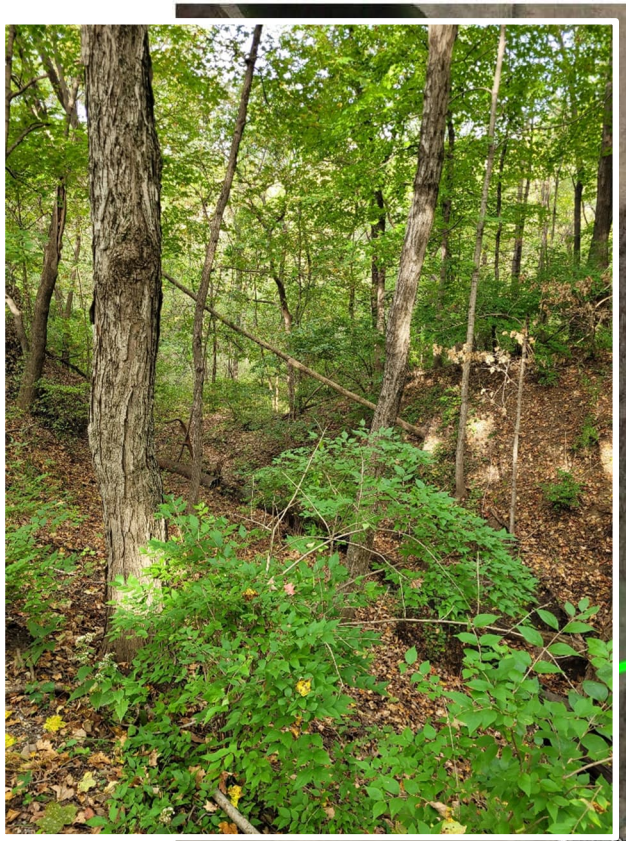
Accessibility – Route E-3 – Ravine Crossing No. 1

STRAND ASSOCIATES®

Accessibility – Route E-3 – Ravine Crossing No. 2

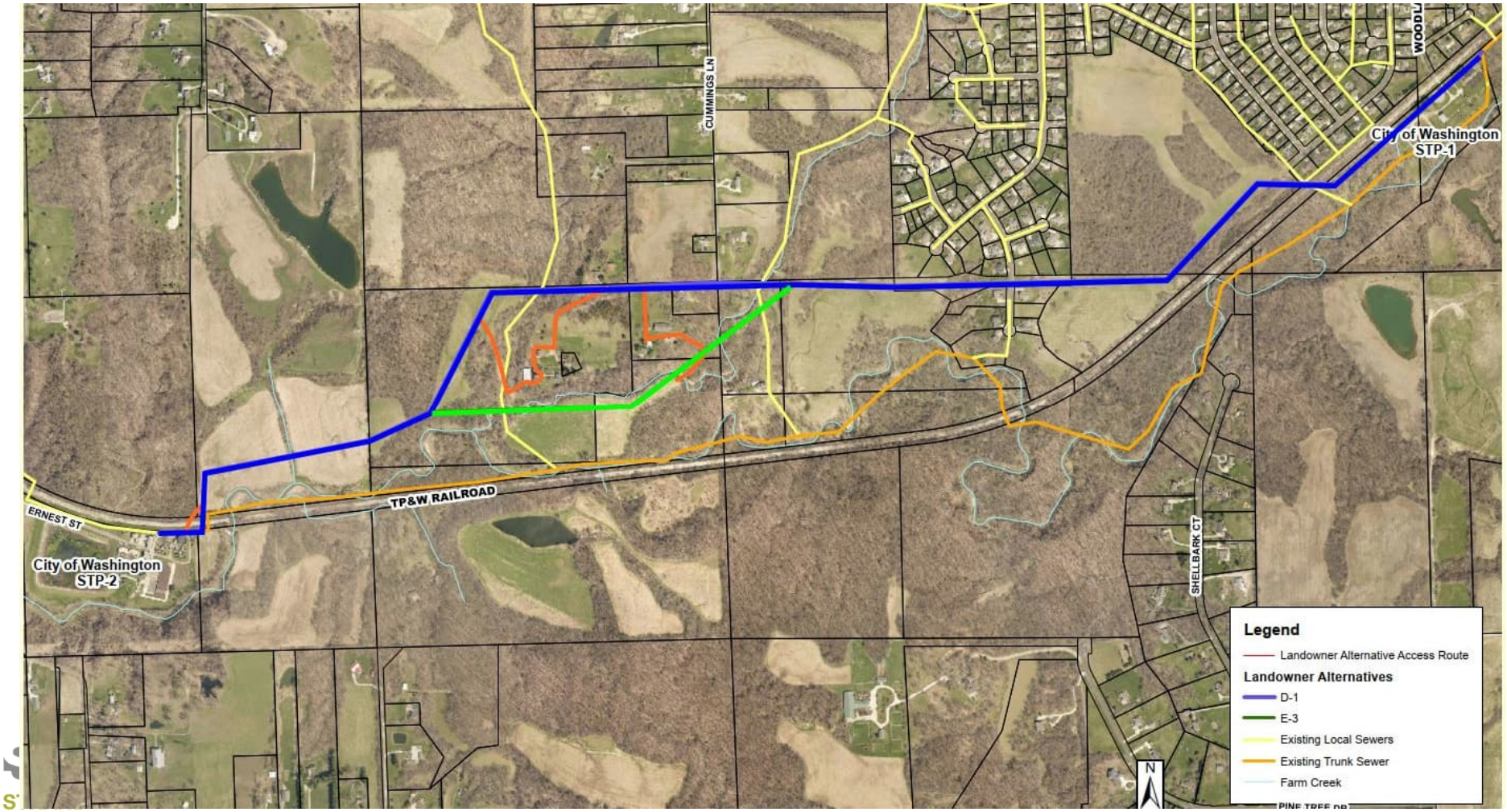
STRAND ASSOCIATES®

Accessibility – Route E-3 – Ravine Crossing No. 3

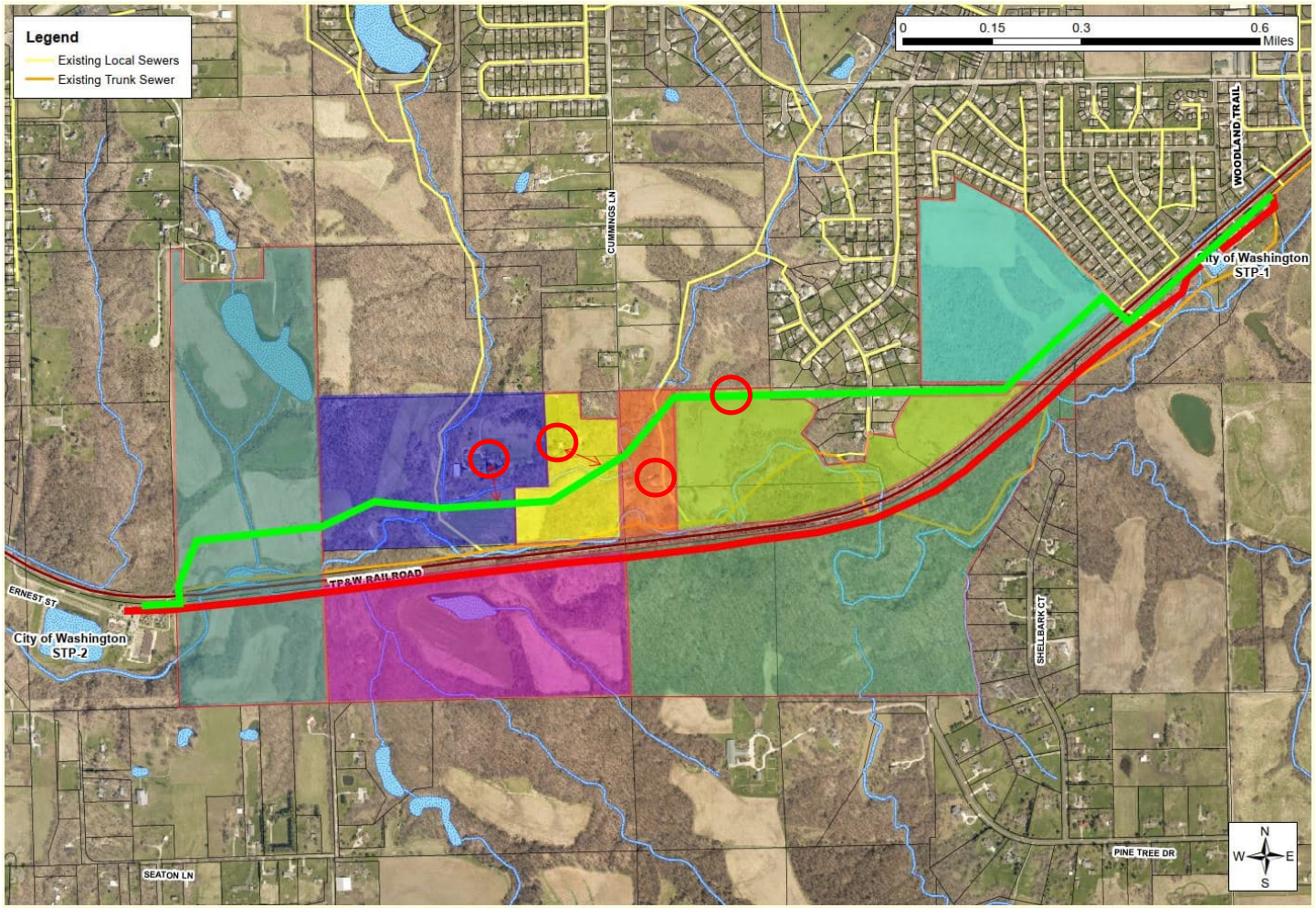


Accessibility – Route E-3 – Ravine Crossing No. 4

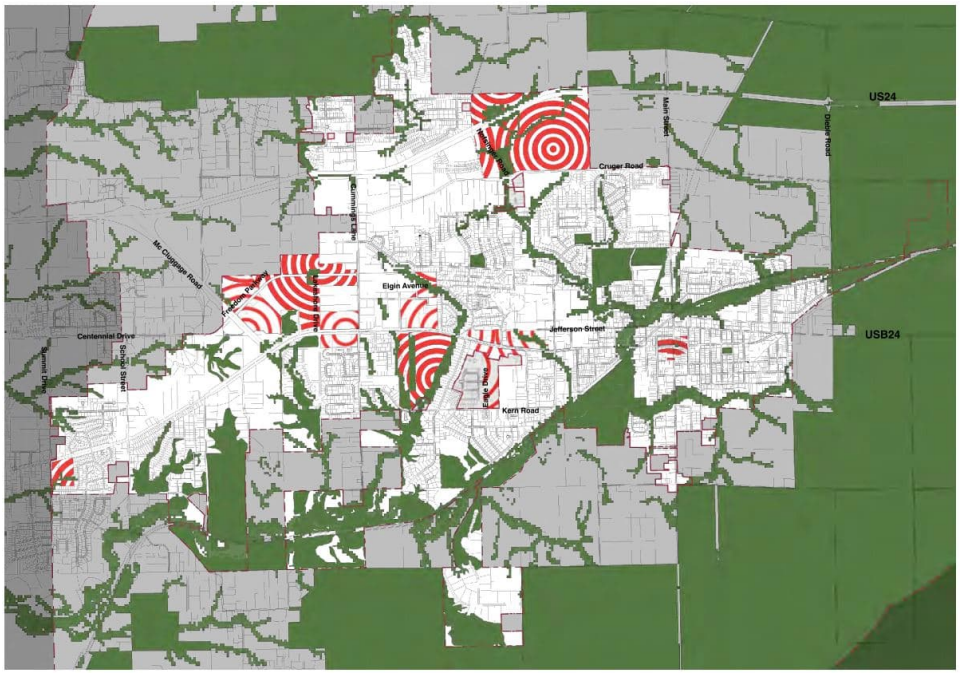
Accessibility – Alignment B (Proposed Route)



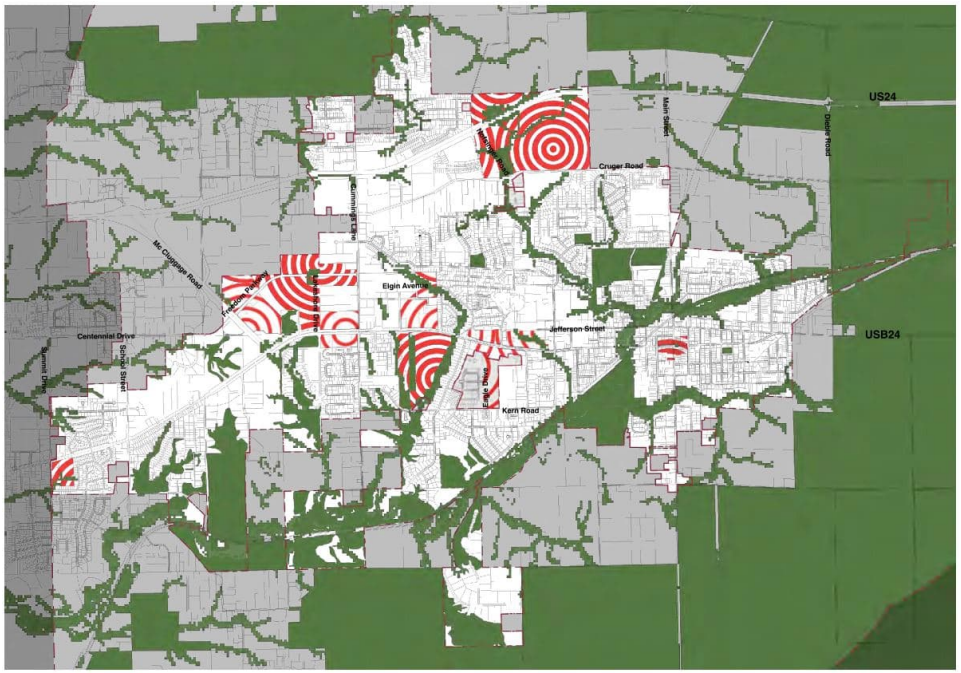
Property Owners and Easements and Existing Structures

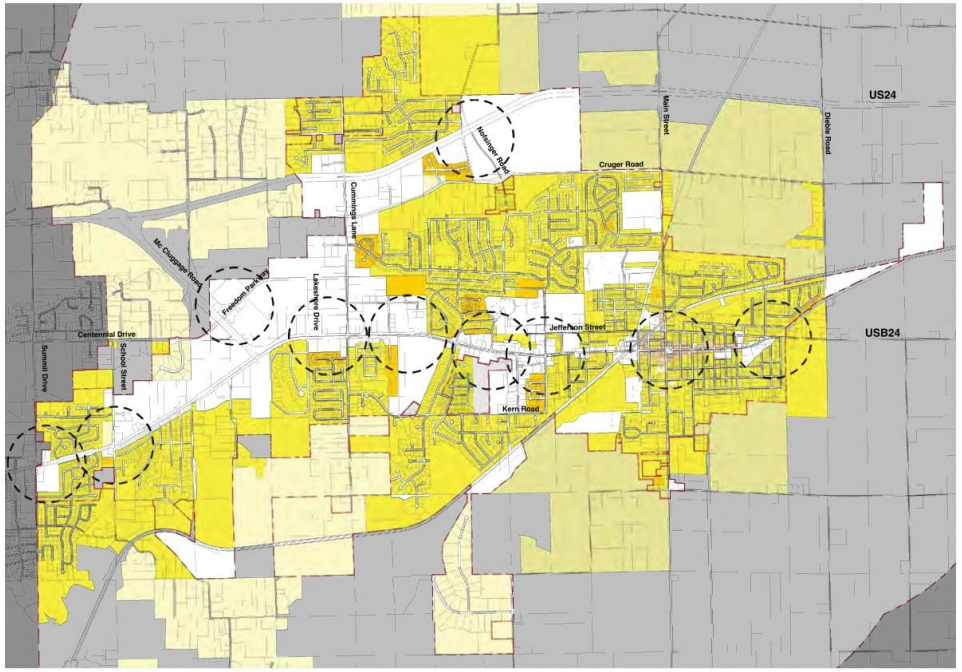


Service Area



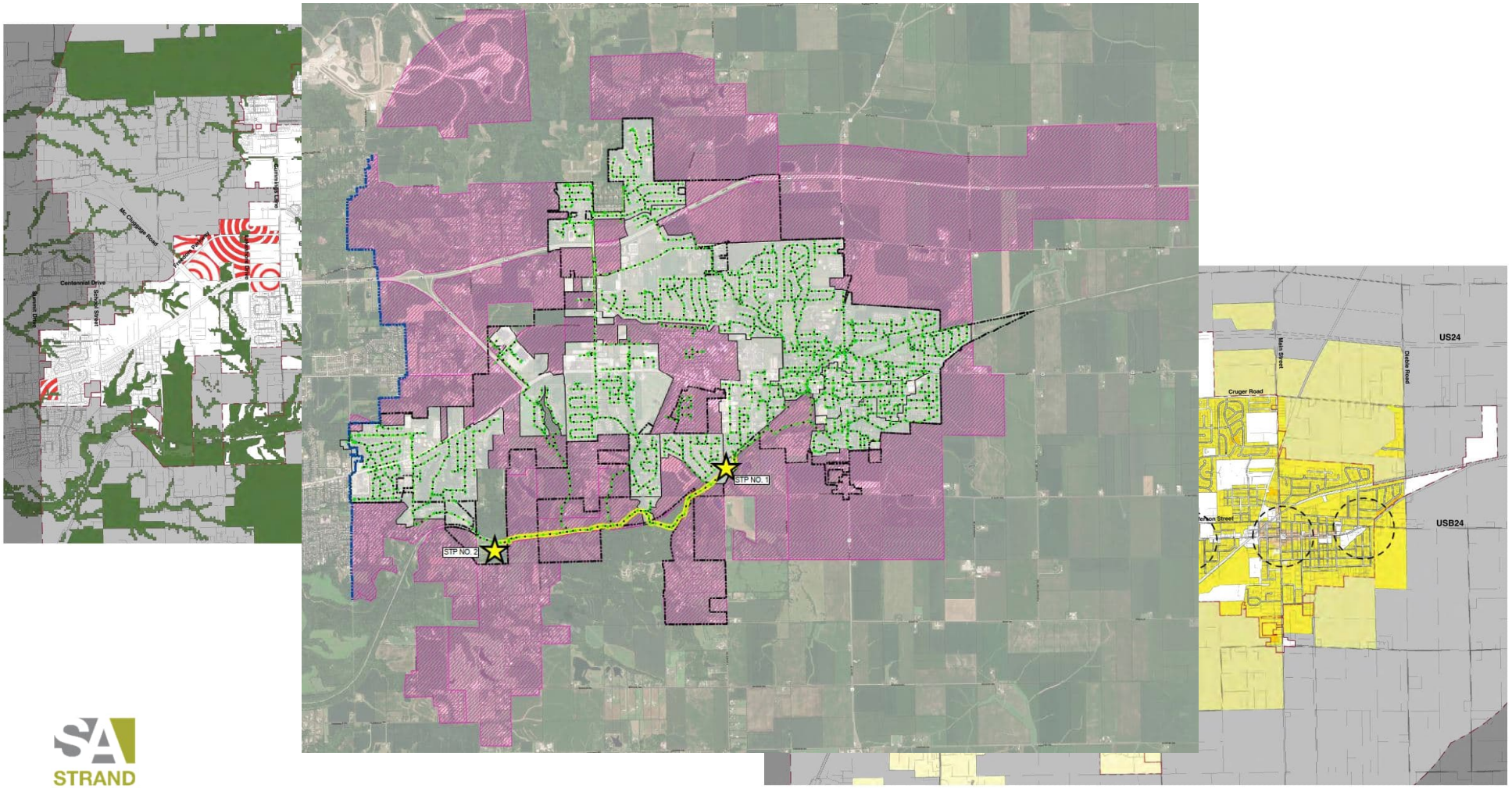
Service Area



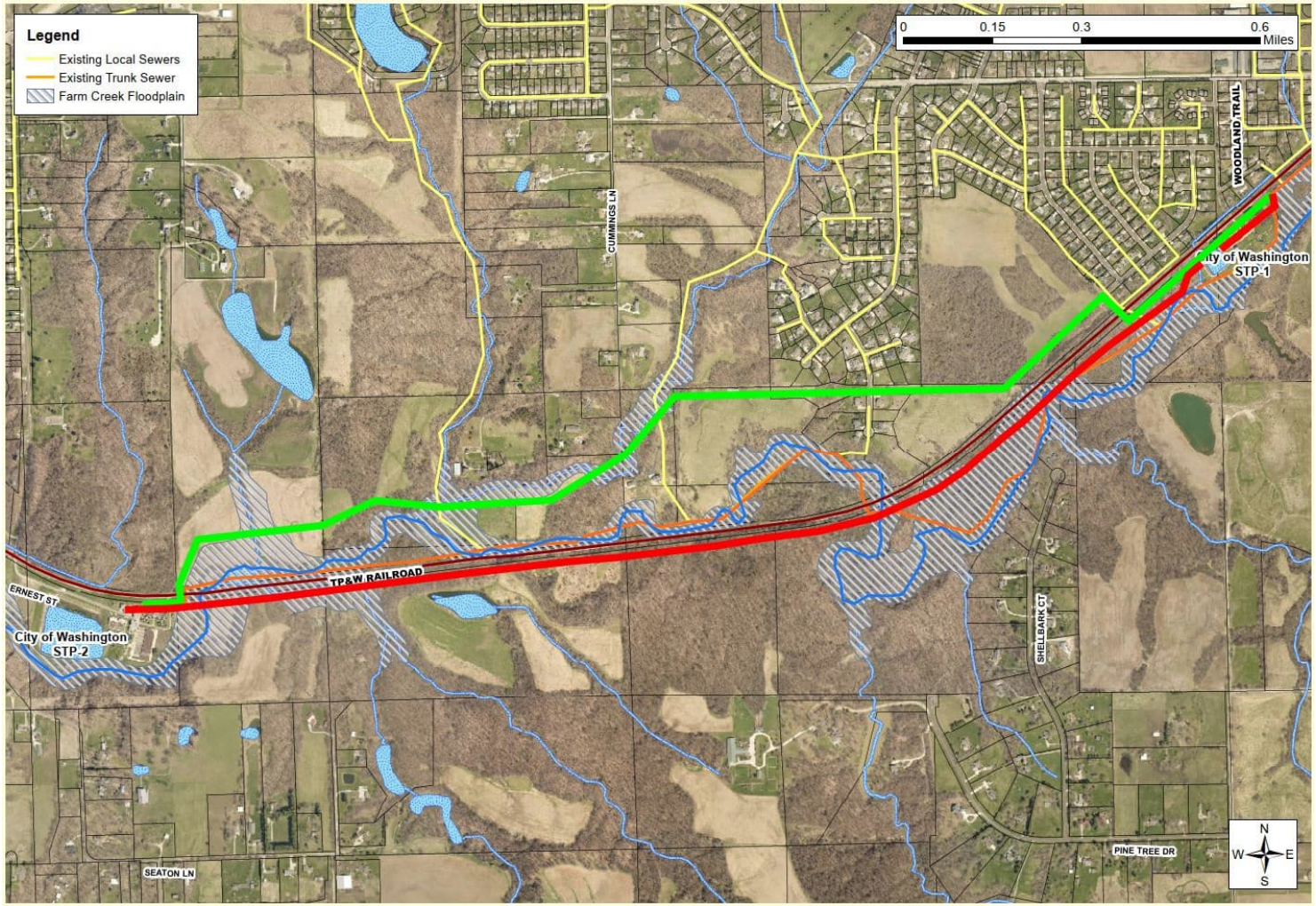


STRAND ASSOCIATES®

Service Area

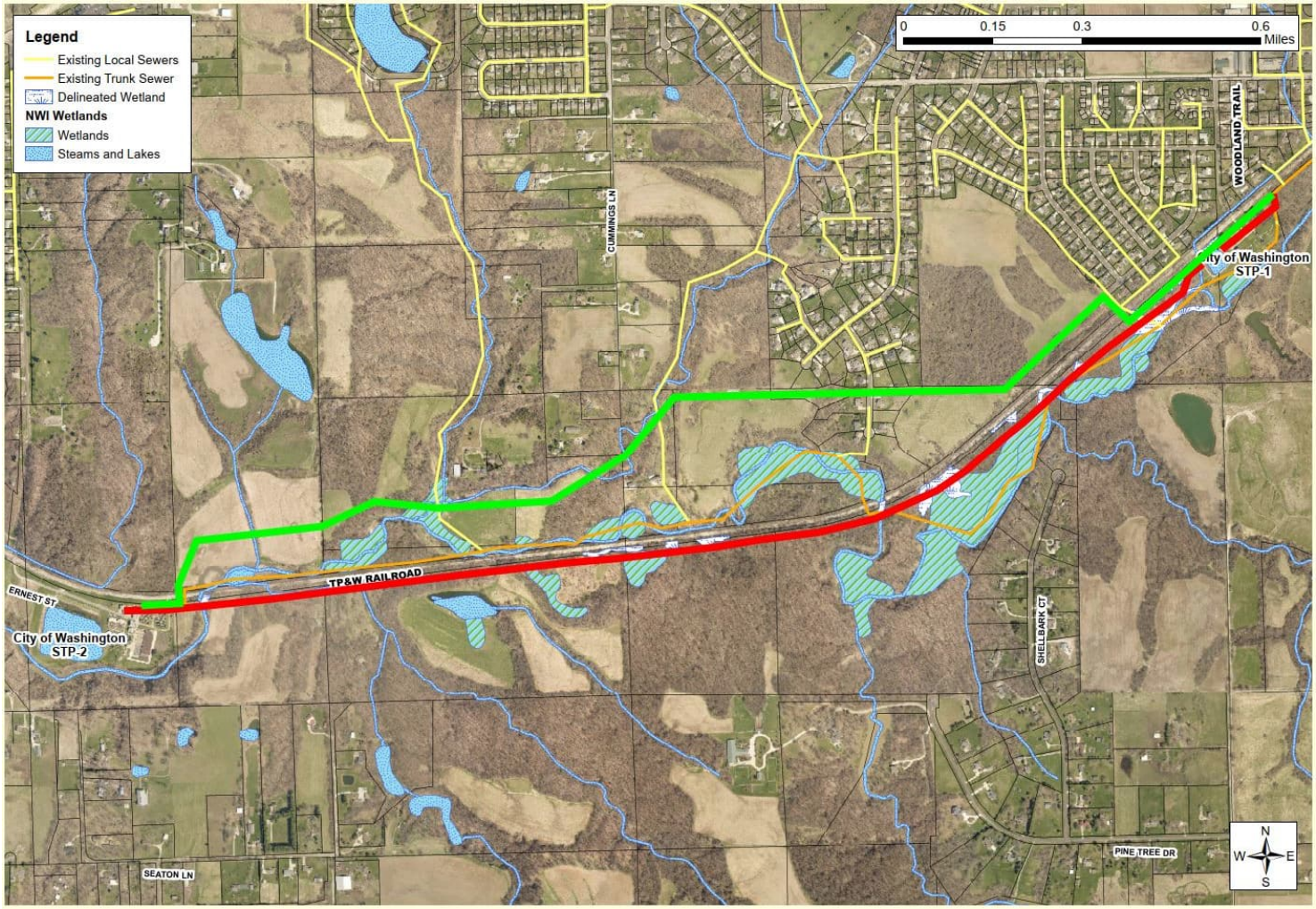


Environmental Impacts – Flood Plain



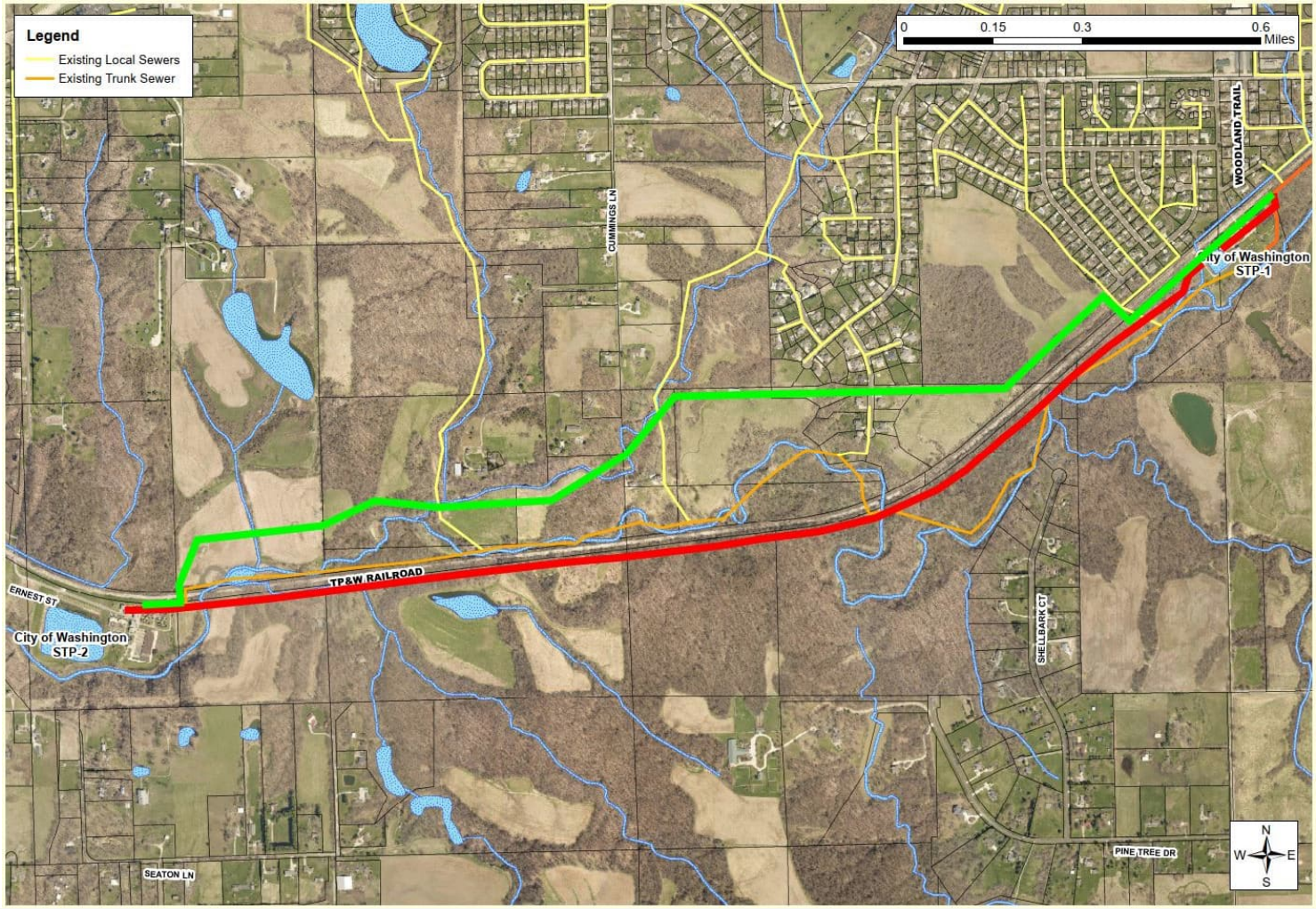
STRAND ASSOCIATES®

Environmental Impacts – Wetlands (National Inventory and Delineations)



STRAND ASSOCIATES®

Environmental Impacts - Trees



Cost Comparison

Item No.	Description	Units	Estimated Unit Price	STRAND OPCC (ROUTE B) Preliminary Engineering Report OPCC Estimated Quantity	STRAND OPCC (ROUTE B) Preliminary Engineering Report OPCC Estimated Probable Cost	GST (ROUTE E-3) Preliminary Engineering Report OPCC Estimated Quantity	GST (ROUTE E-3) Preliminary Engineering Report OPCC Estimated Probable Cost
1.01	SANITARY SEWER, 42-IN HOBAS - OPEN CUT	LF	$350.00	9385	$3,284,750.00	9,478	$3,317,300.00
1.02	SANITARY SEWER, 42-IN HOBAS - TRENCHLESS	LF	$800.00	1775	$1,420,000.00	1,862	$1,489,600.00
1.03	SANITARY SEWER, 42-IN HOBAS - BORE AND JACK 60" STEEL CASING (RAILROAD CROSSING)	LF	$1,000.00	0	$0.00	240	$240,000.00
1.04	WORK SHAFT - TRENCHLESS CONSTRUCTION - 42" SANITARY SEWER	EA	$12,000.00	14	$168,000.00	12	$144,000.00
1.05	SANITARY SEWER, 12-IN PVC SDR 26 - OPEN CUT	LF	$80.00	25	$2,000.00	500	$40,000.00
1.06	SANITARY SEWER, 18-IN PVC SDR 26 - OPEN CUT	LF	$140.00	150	$21,000.00	20	$2,800.00
1.07	TRENCHLESS CONSTRUCTION, 8-IN SANITARY SEWER WITH 20-IN STEEL CASING (RAILROAD	LF	$400.00	0	$0.00		$0.00
1.08	TRENCHLESS CONSTRUCTION, 18-IN SANITARY SEWER WITH 30-IN STEEL CASING (RAILROAD	LF	$450.00	305	$137,250.00		$0.00
1.09	NEW 12-IN INSIDE EXISTING 30-IN	LF	$1,250.00	135	$168,750.00		$0.00
1.1	FOUNDATION MATERIAL	CY	$52.00	417.12	$21,690.24	421	$21,892.00
1.11	PROTECT EXISTING SANITARY SEWER AT CROSSINGS	EA	$4,000.00	3	$12,000.00	3	$12,000.00
1.12	SELECT GRANULAR BACKFILL - CA7	CY	$30.00		$0.00		$0.00
1.13	SANITARY MANHOLE, TYPE A, 6-FT DIA, LESS THAN 20' DEEP	EA	$9,000.00	14	$126,000.00	12	$108,000.00
1.14	SANITARY MANHOLE, TYPE A, 6-FT DIA, 20' TO 25' DEEP	EA	$12,000.00	3	$36,000.00	3	$36,000.00
1.15	SANITARY MANHOLE, TYPE A, 6-FT DIA, 25' TO 30' DEEP	EA	$15,000.00	1	$15,000.00	4	$60,000.00
1.16	SANITARY MANHOLE, TYPE A, 6-FT DIA, 30' TO 35' DEEP	EA	$18,000.00	1	$18,000.00	2	$36,000.00
1.17	SANITARY MANHOLE, TYPE A, 6-FT DIA, 35' TO 40' DEEP	EA	$21,000.00	1	$21,000.00	1	$21,000.00
1.18	SANITARY MANHOLE, TYPE A, 6-FT DIA, 40' TO 45' DEEP	EA	$25,000.00		$0.00	1	$25,000.00
1.19	SANITARY MANHOLE, TYPE A, 6-FT DIA, 45' TO 50' DEEP	EA	$26,000.00	1	$26,000.00		$0.00
1.2	SANITARY MANHOLE, TYPE A, 6-FT DIA, 50' TO 55' DEEP	EA	$28,000.00		$0.00		$0.00
1.21	SANITARY MANHOLE, TYPE A, 6-FT DIA, 55' TO 60' DEEP	EA	$30,000.00		$0.00		$0.00
1.22	SANITARY MANHOLE, TYPE A, 6-FT DIA, 60' TO 65' DEEP	EA	$31,000.00		$0.00		$0.00
1.23	SANITARY MANHOLE, TYPE A, 6-FT DIA, 65' TO 70' DEEP	EA	$32,000.00		$0.00		$0.00
1.24	SANITARY MANHOLE, TYPE A, 6-FT DIA, 70' TO 75' DEEP	EA	$33,000.00		$0.00		$0.00
1.25	SANITARY MANHOLE, TYPE A, 6-FT DIA CONSTRUCTED ON EXISTING SEWER PIPE	EA	$12,000.00	3	$36,000.00		$0.00
1.26	SANITARY MANHOLE, TYPE A, 8-FT DIA, LESS THAN 20 FT DEEP	EA	$18,000.00	5	$90,000.00	5	$90,000.00
1.27	SANITARY MANHOLE, TYPE A, 8-FT DIA, 20 -25 FT DEEP	EA	$22,000.00	3	$66,000.00		$0.00
1.28	SANITARY MANHOLE, TYPE A, 8-FT DIA, 25-30 FT DEEP	EA	$26,000.00		$0.00		$0.00
1.29	SANITARY MANHOLE, TYPE A, 8-FT DIA JUNCTION MANHOLE	EA	$20,000.00	2	$40,000.00	1	$20,000.00
1.3	OUTSIDE DROP MANHOLE CONNECTION, 18"	EA	$8,000.00	1	$8,000.00		$0.00
1.31	RESTORATION-SEED, class 2 (topsoil,fertilizer,excelsior blanket, mulch incidental)	ACRE	$9,655.00	4.3	$41,709.60	4.4	$42,482.00
1.32	RESTORATION-SEED, class 4/5 (topsoil,fertilizer,excelsior blanket, mulch incidental)	ACRE	$9,655.00	4.3	$41,709.60	4.4	$42,482.00
1.33	RESTORATION-SEED, class 4B/5B (topsoil,fertilizer,excelsior blanket, mulch incidental)	ACRE	$9,655.00	4.3	$41,709.60	4.4	$42,482.00
1.34	SILT FENCE/EROSION CONTROLS	FT	$4.00	7508	$30,032.00	7,582	$30,328.00
1.35	STABILIZED CONSTRUCTION ACCESS	EA	$6,000.00	0	$0.00	0	$0.00
1.36	TREE REMOVAL (OVER 6 UNITS DIAMETER)	EA	$12.00	7508	$90,096.00	1,896	$22,752.00
	SUBTOTAL CONSTRUCTION				**$5,962,697.04**		**$5,844,118.00**
	MOBILIZATION	LS		2%	$119,253.94	2.00%	$116,882.36
	LEGAL AND LAND ACQUISITION	LS		5%	$298,134.85	5.00%	$292,205.90
	CONTIGENCIES	LS		25%	$1,490,674.26	25.00%	$1,461,029.50
	TOTAL BASE PROJECT				**$7,870,760.09**		**$7,714,235.76**

STRAND ASSOCIATES®

Undetermined Costs

- Wetland Mitigations
- Forest Removal
- Forest Preservation/Restoration
- Decommissioning of Existing Sewer
- Easements
- O&M


Q&A