

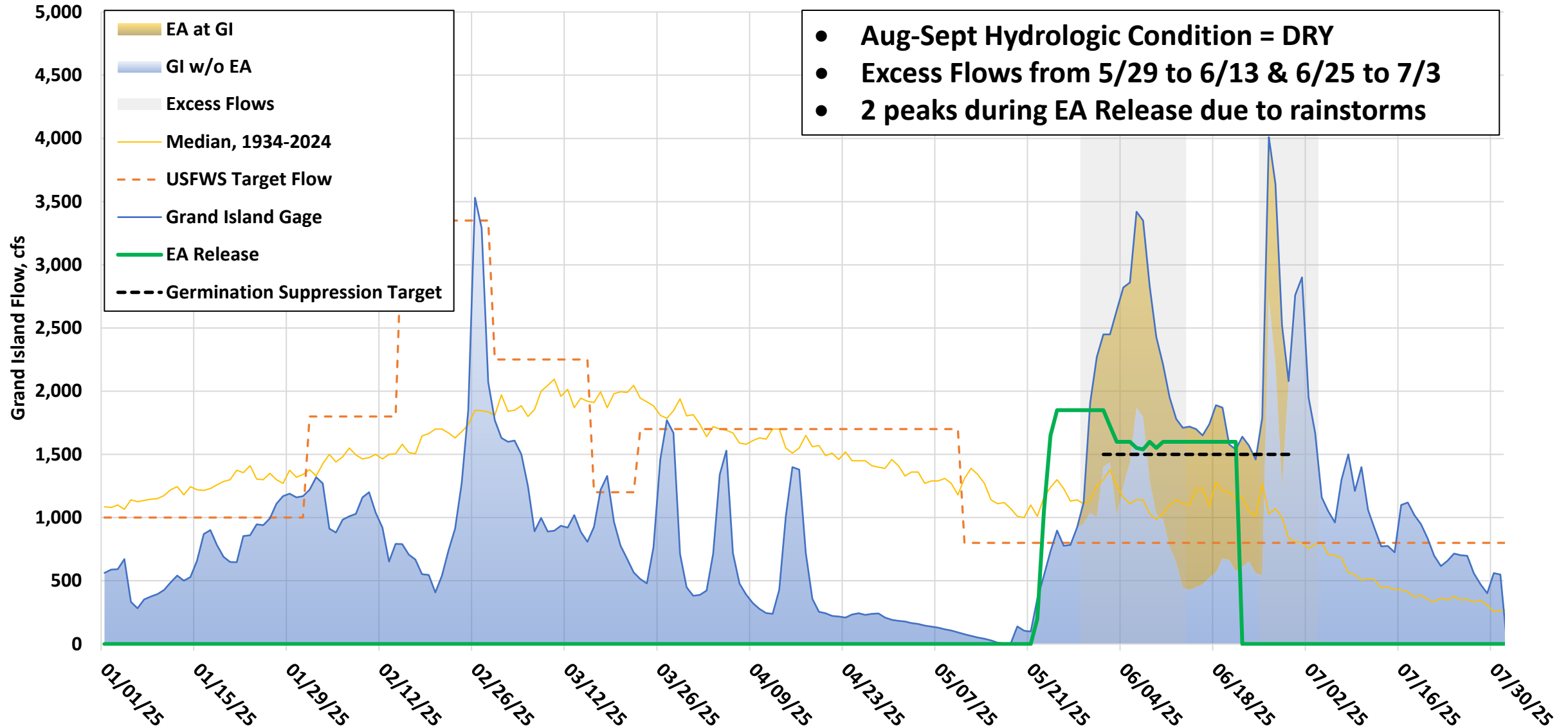
August 2025 Platte Basin Hydrology Update

Ed Weschler, E.I.

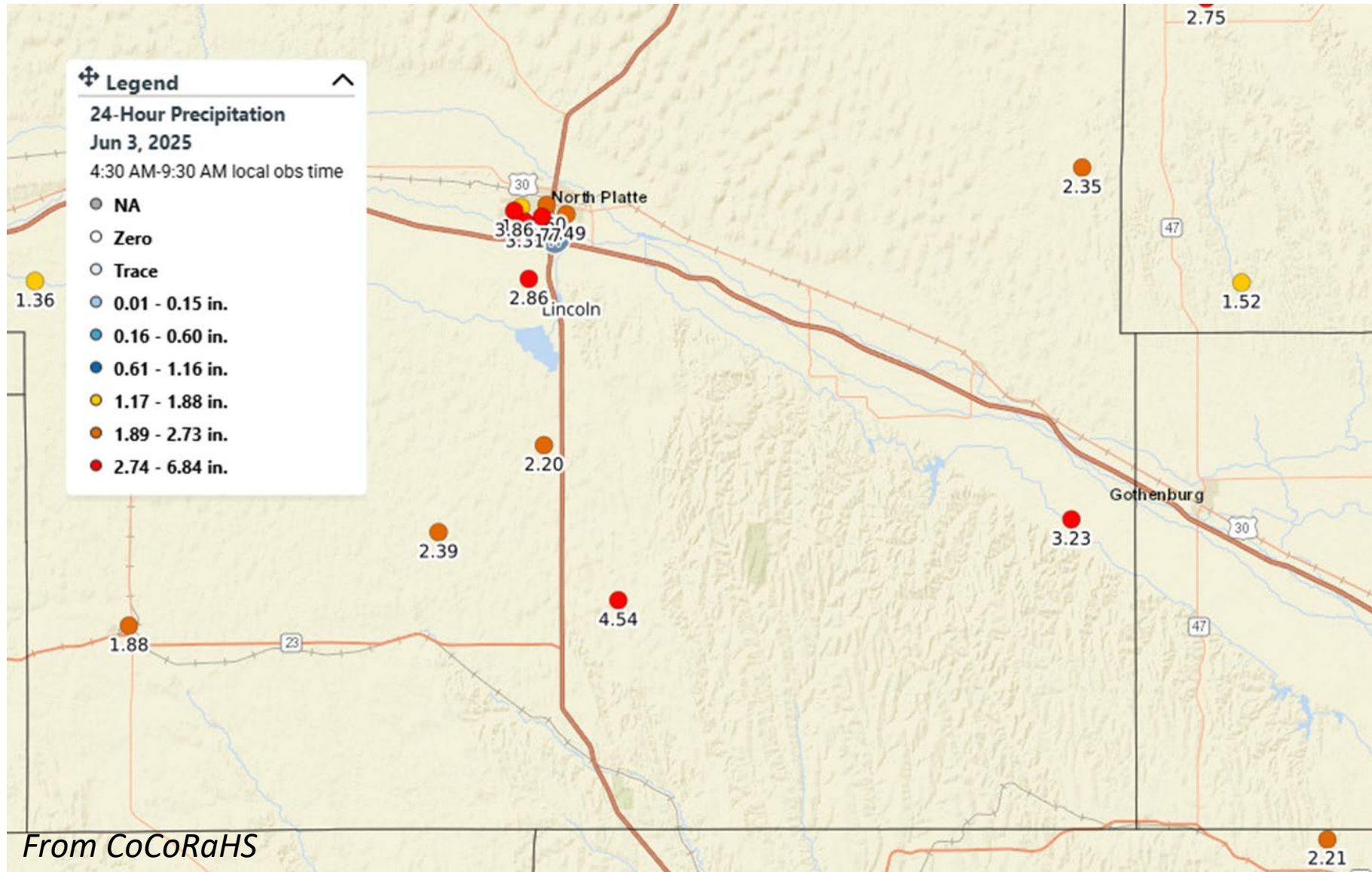
Water Advisory Committee Meeting

August 5, 2025

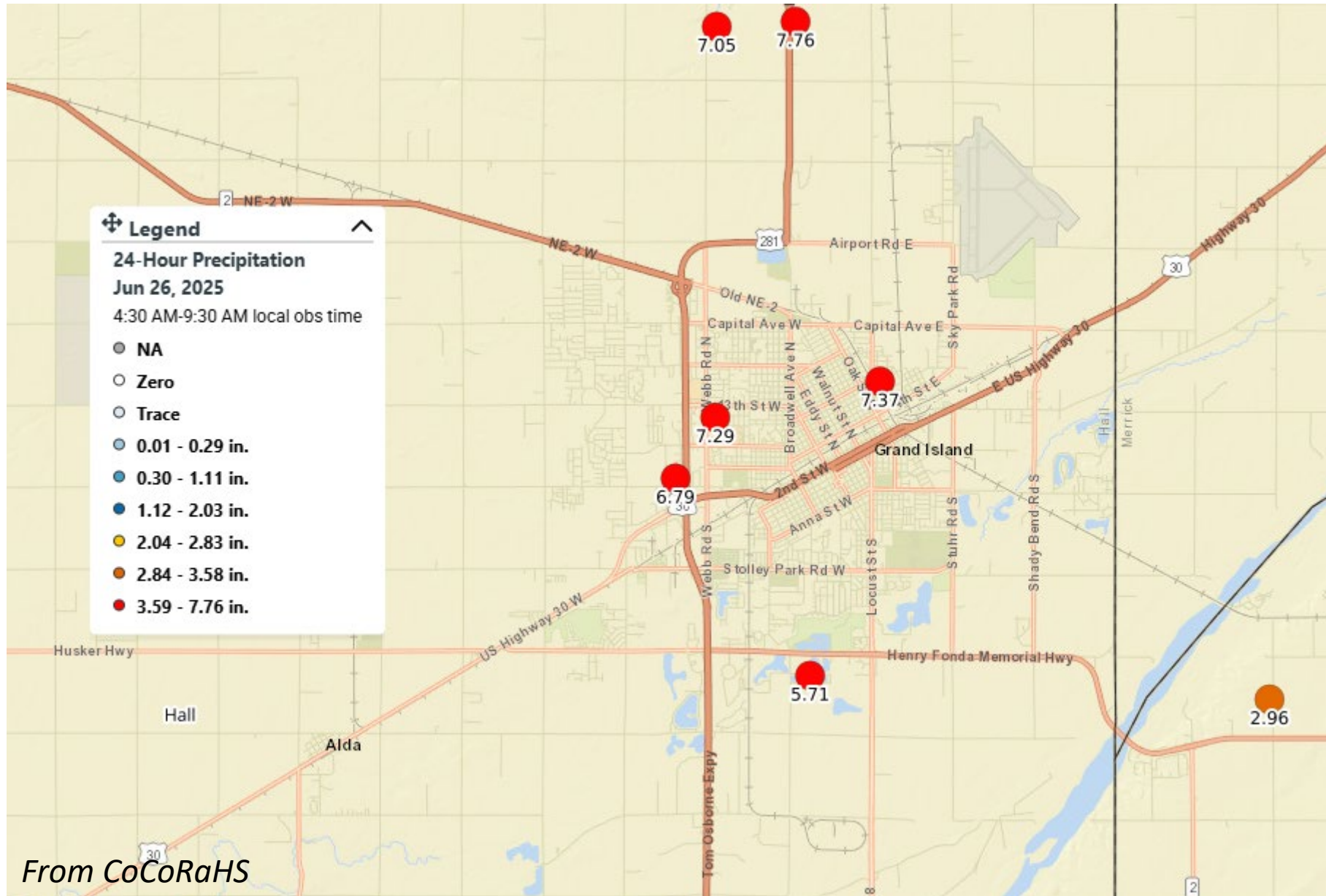
Flow updates



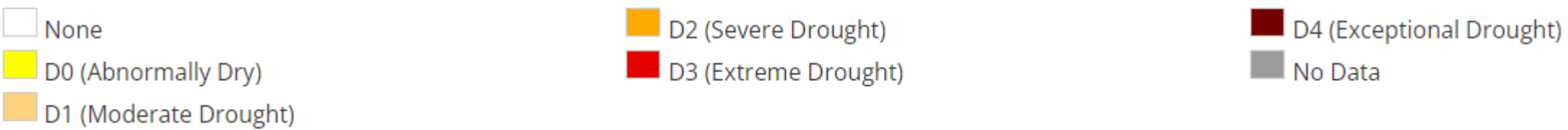
EA Release Precip Event – 6/3/25



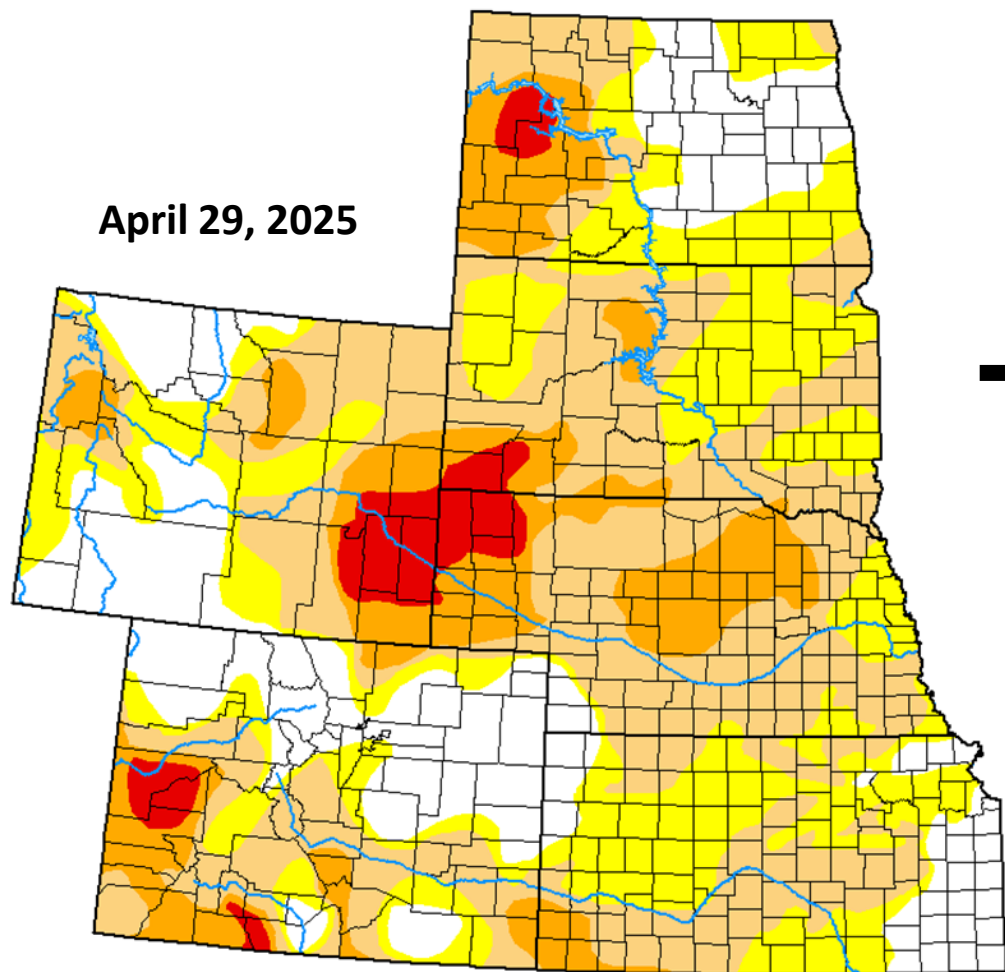
EA Release Precip Event - 6/26/25



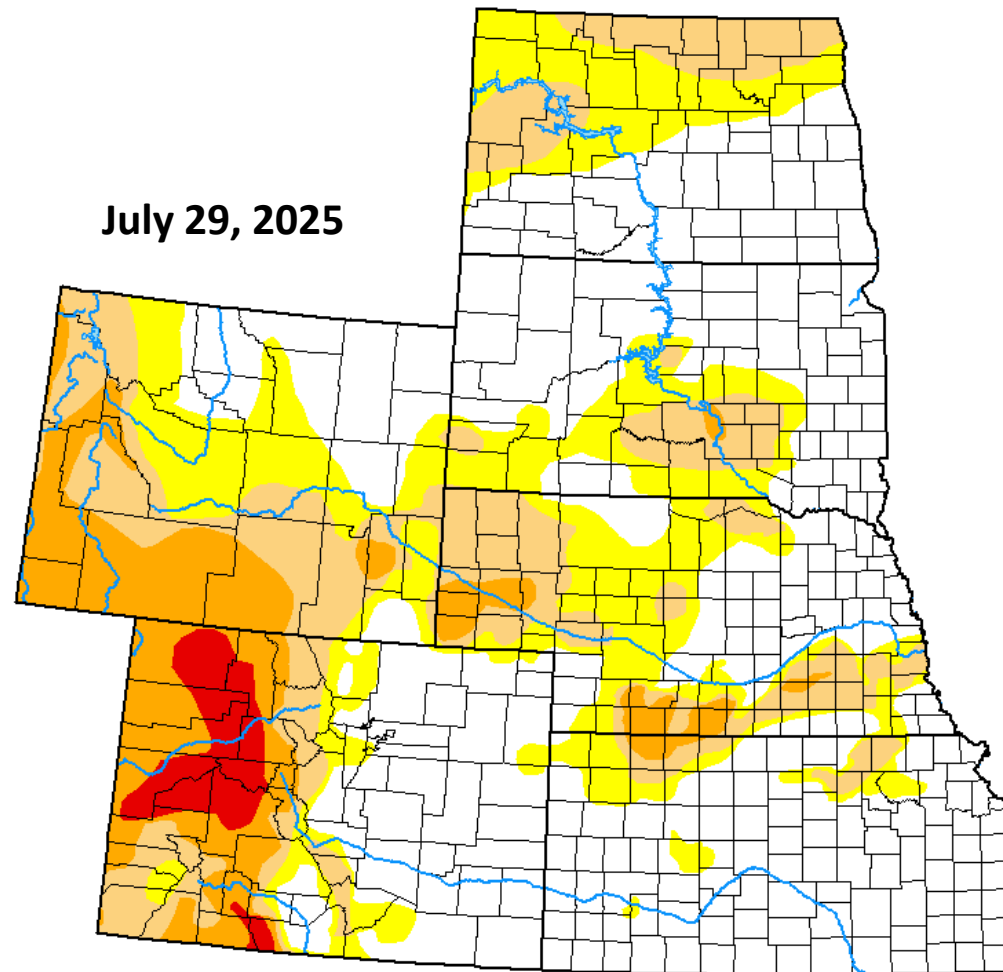
Drought Classification



April 29, 2025



July 29, 2025

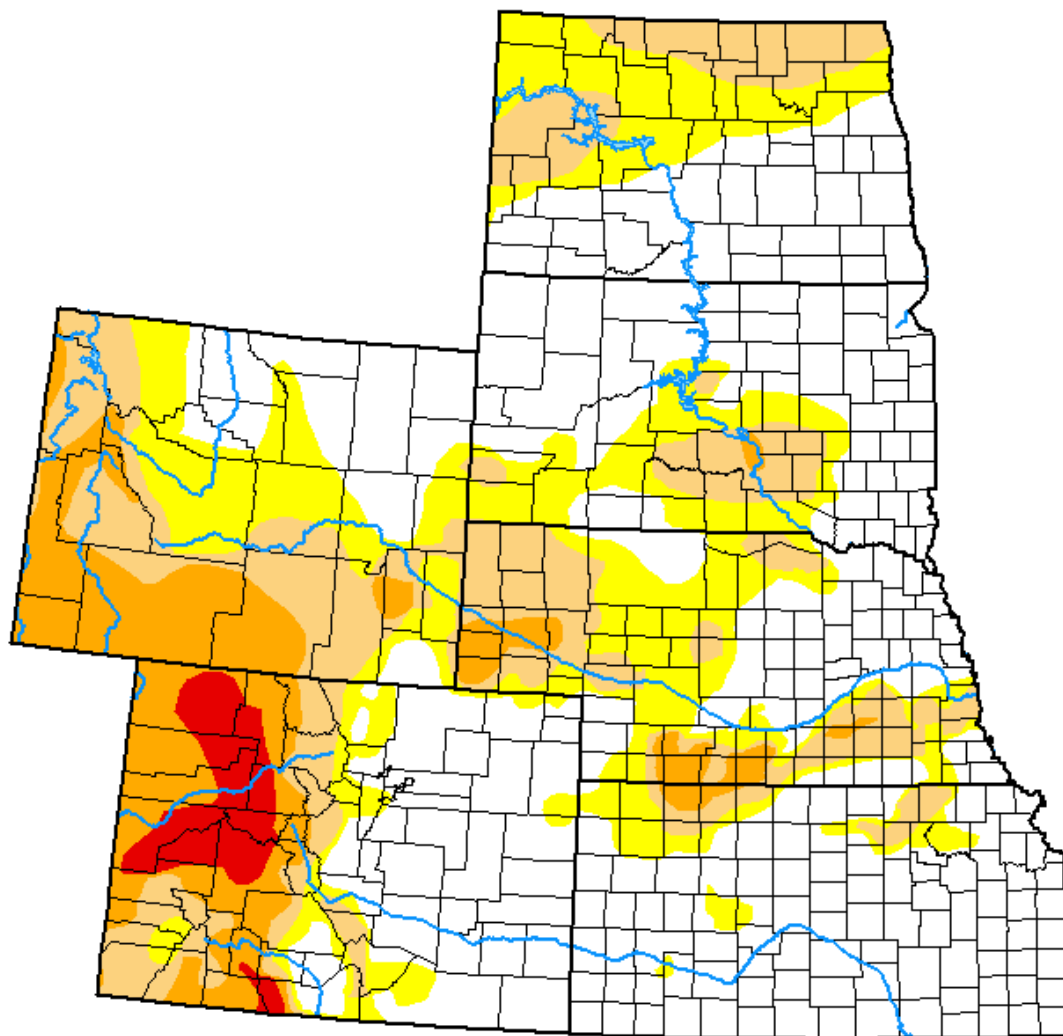


U.S. Drought Monitor High Plains

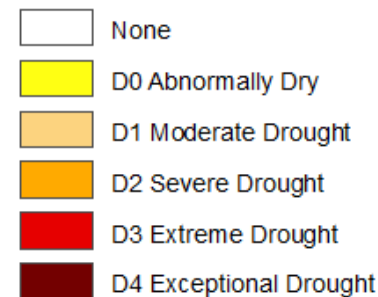
July 29, 2025

(Released Thursday, Jul. 31, 2025)

Valid 8 a.m. EDT



Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

David Simeral
Western Regional Climate Center



droughtmonitor.unl.edu

A photograph of a sunset over a body of water. The sky is a deep orange, and the water reflects the light. In the foreground, a bird is standing in the shallow water, its silhouette clearly visible. The text "Thank You!" is overlaid on the right side of the image in a white box.

Thank You!

August 2025 Water Plan Updates

Seth M Turner, PE
PRRIP Water Plan Coordinator
Water Advisory Committee Meeting
August 5, 2025

Leasing, Recharge, and Recapture Project Operations

Recharge and Recapture

- Excess flows available May 29-June 13 and June 25-July 3
- Elwood Reservoir recharge for Program (50% of total)
 - June 2-7 = 975 AF
 - June 25-July 3 = 1,818 AF
 - Total = 2,793 AF
- Recapture wells
 - 2025 Cumulative pumping = 1,700 AF
 - Wells ran between March 10 and May 28, resumed pumping July 8 (after EA release)

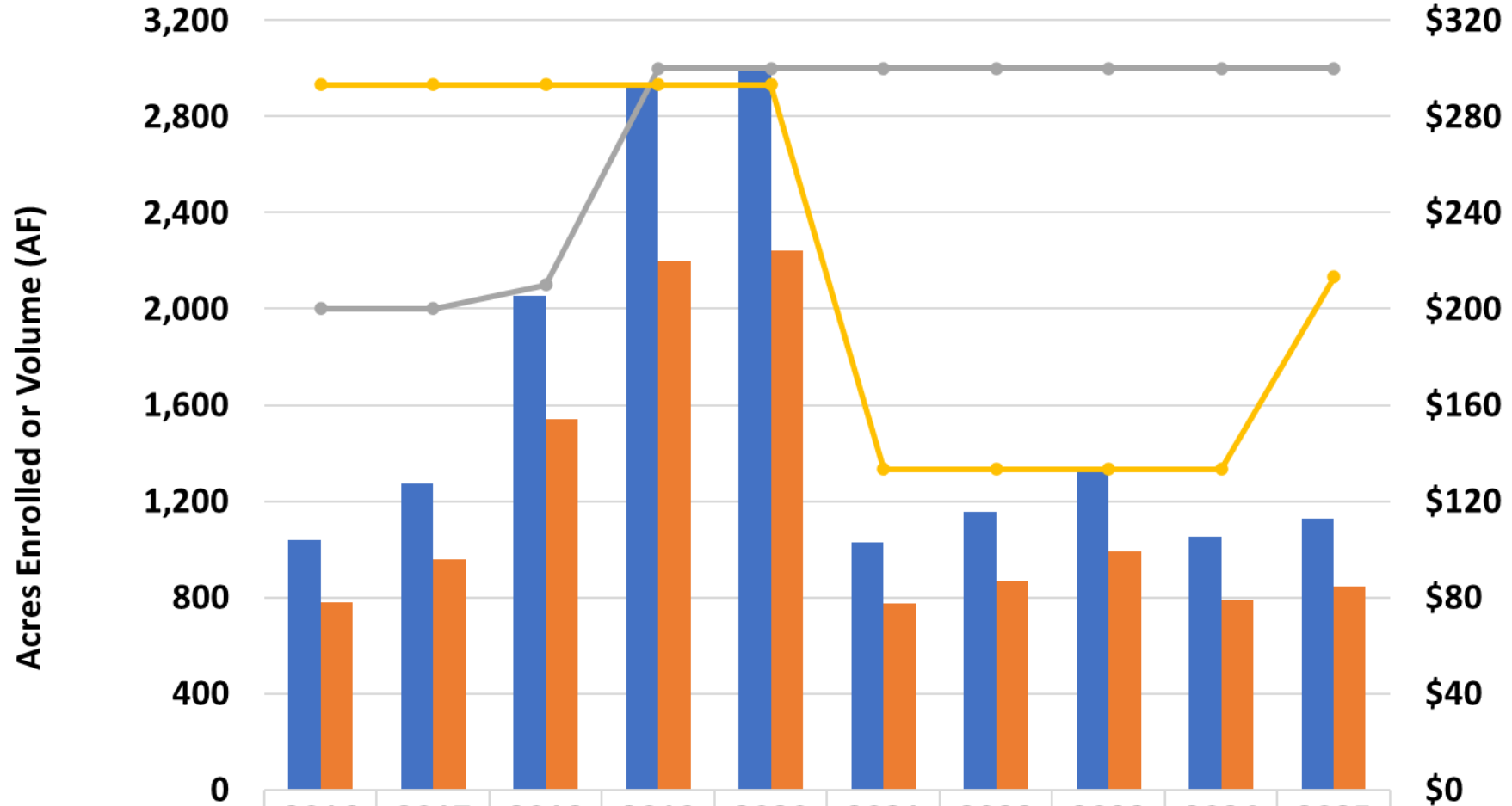
Surface Water Leases

- CPNRD and NPPD
 - GC approved 1-year agreements in July
 - CPNRD = 15,000 AF max, NPPD = 3,306 AF max, \$110/AF
- Pathfinder Municipal Account (20,000 AF capacity)
 - Did not fill, peak volume 15,768 AF on June 20
 - Program accepted lease offer of 4,800 AF at \$65/AF
- Pathfinder EA (33,493 AF capacity)
 - Did not fill, peak volume 11,278 AF on June 20
 - Evaporation losses deducted during rest of summer
 - Program receives all remaining EA water (WY in-kind contribution)
 - Deliveries to Lake McConaughy EA expected late August or September

CNPPID

Irrigator Lease

CNPPID Irrigator Lease, 2016-2025



■ Enrolled Acres	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
■ EA Credit (AF)	1,037	1,275	2,055	2,934	2,989	1,030	1,157	1,320	1,053	1,129
— Max Acres	778	956	1,541	2,201	2,242	773	868	990	790	847
— Unit Cost (\$/AF)	2,000	2,000	2,100	3,000	3,000	3,000	3,000	3,000	3,000	3,000
	\$293	\$293	\$293	\$293	\$293	\$133	\$133	\$133	\$133	\$213



CNPPID Irrigator Lease - Current Status

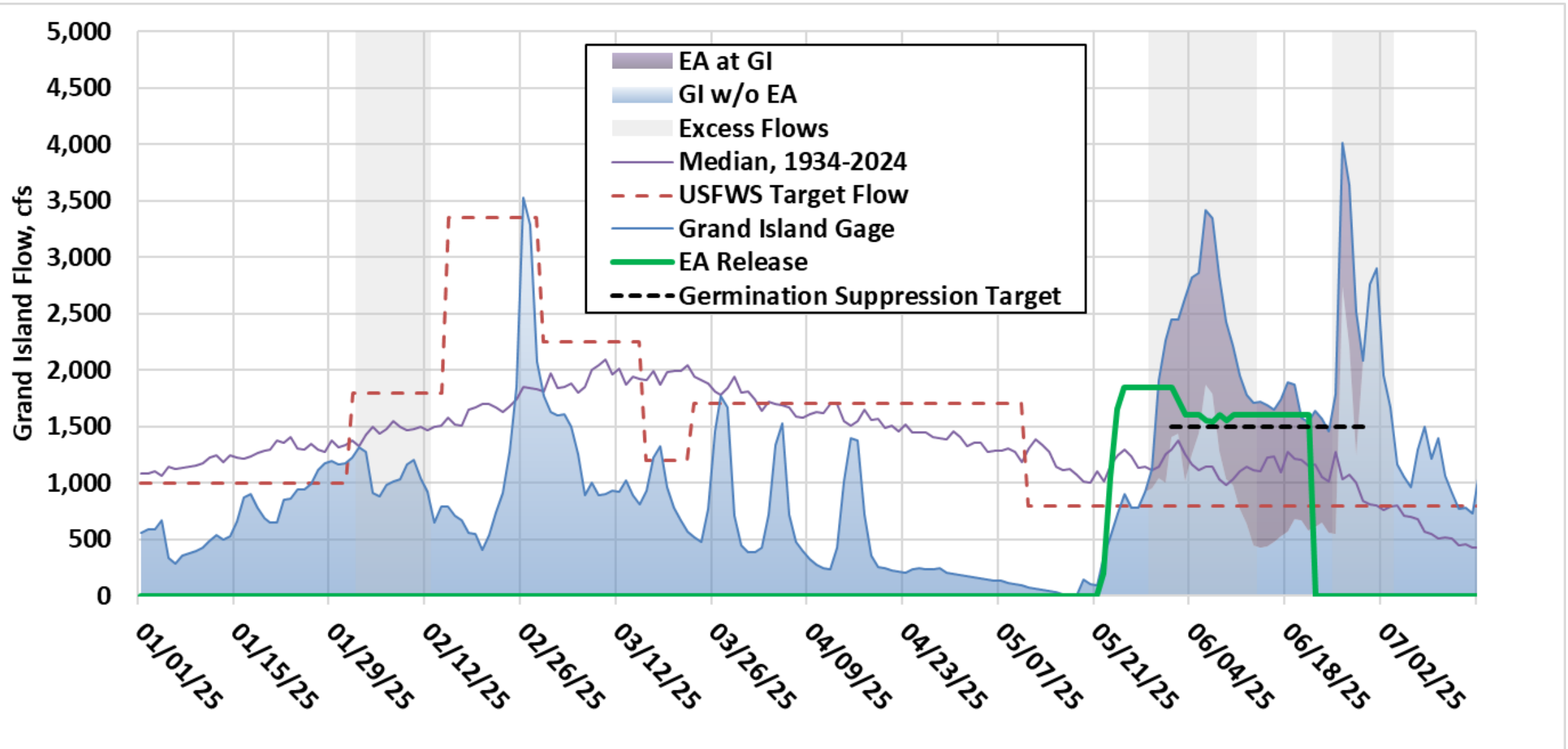
- 2025 enrollment
 - Increased payment from \$100/acre to \$160/acre
 - 1,129 acres enrolled (increase of 76 acres over 2024)
 - 847 AF to be credited to EA in October (9" or 0.75 AF/acre)
- Numbers to think about:
 - 10 years of irrigator lease, yield > 1,000 AF only 3 times
 - Average credit to EA, 2021-2025 = 854 AF
 - Monthly average EA evap + seepage losses, Jan '12-Dec '24 = 884 AF
- Will need decision for 2026 at September GC
 - Second 1-year extension of previous 5-year agreement
 - Unit price to pay per enrolled acre (highest price, lowest yield lease)
 - CNPPID prefers Nov-Dec enrollment (Jan-Feb was inconvenient)

Germination Suppression EA Release

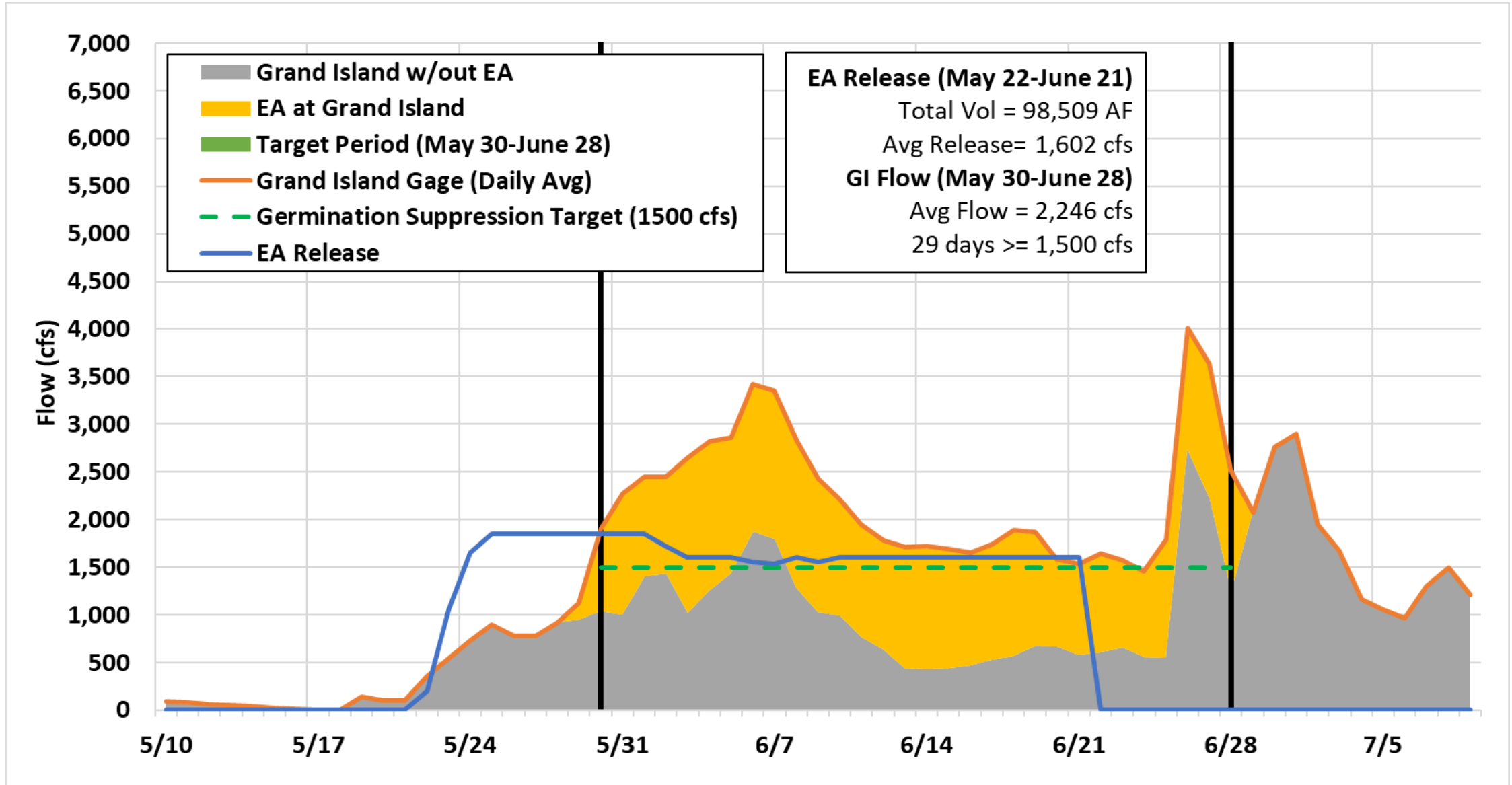
Germination Suppression Purpose

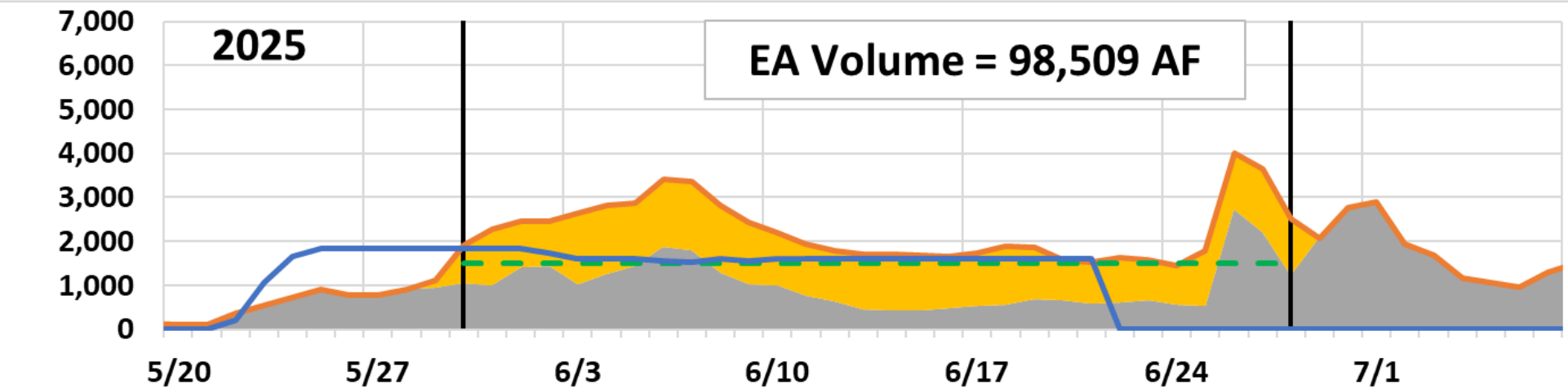
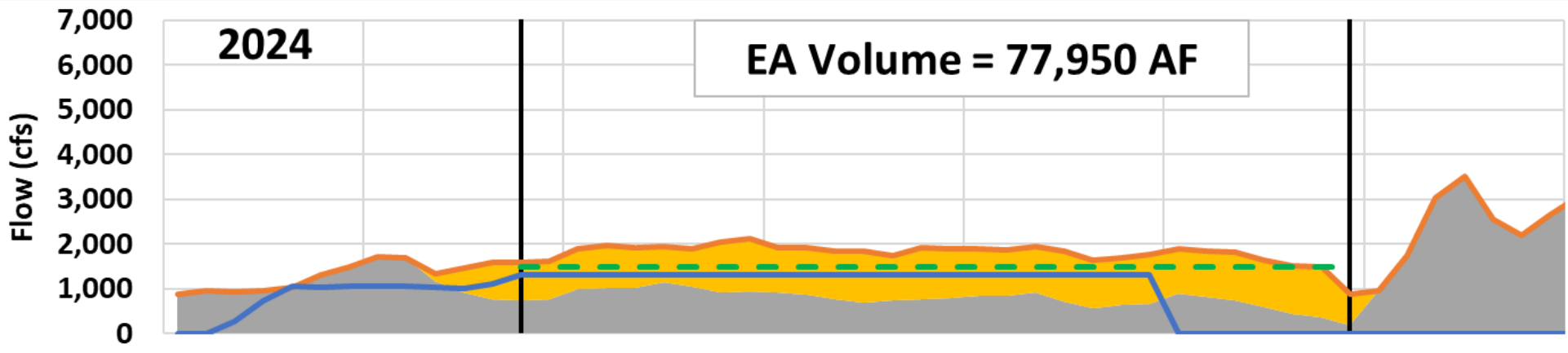
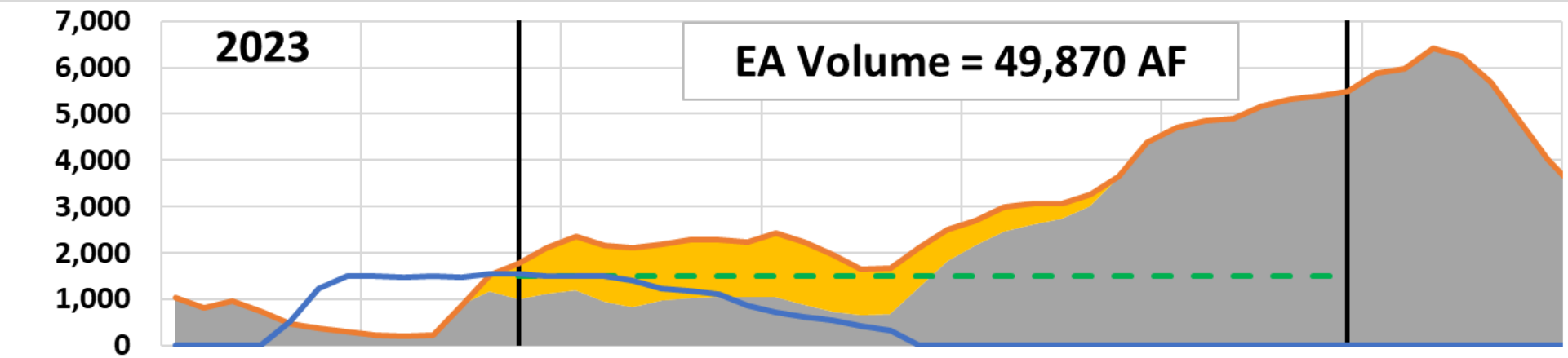
- Extension Big Questions: Maintain suitable WC roosting habitat
 - EBQ#1: How effective to use Program water?
 - EBQ#2: How effective is Program phragmites management?
- Management Hypotheses
 - EBQ#1: 30-day minimum flow target of 1,500 cfs between June 1-July 15 will suppress vegetation and slow expansion into the channel
 - EBQ#2: Same release in combination with continued herbicide spraying will slow expansion of phragmites
- 1,500 cfs flow target assessed at Grand Island (downstream end of AHR)
 - ~8 days travel time from Lake McConaughy
 - ~200 river miles
- 6th year of germination suppression EA release (2020-2025)

2025 Grand Island Year-to-Date Flow Summary



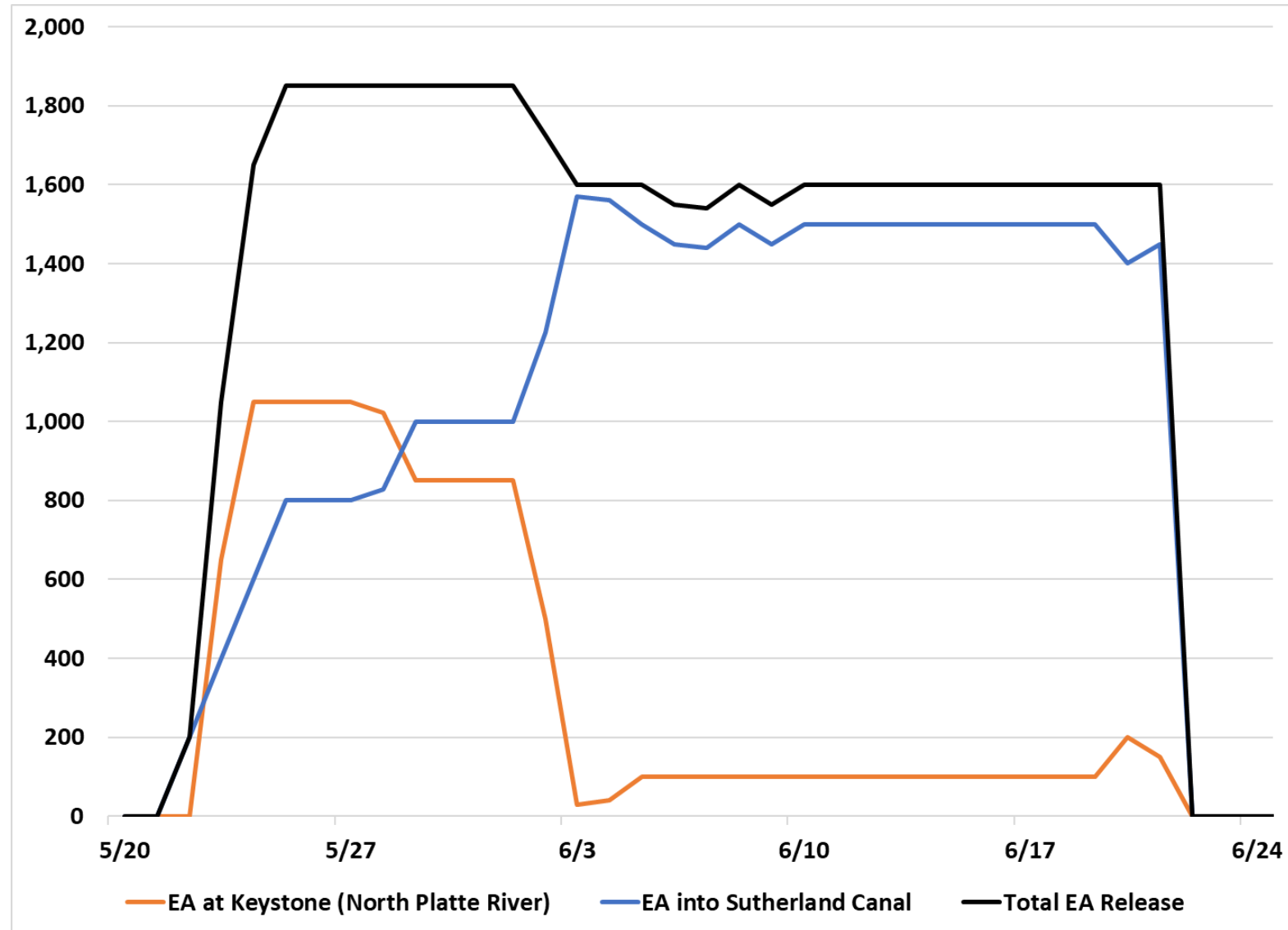
2025 EA Release for Germination Suppression





EA Release Routing – North Platte Chokepoint

- Faster ramping in NPR, then transition most to Sutherland Canal
- Overall Routing
 - North Platte River (24%)
 - Sutherland Canal (76%)
- NPR @ North Platte gage
 - At ~6.0 ft minor flood stage from June 17-20
 - No changes to EA release
- Only 10 days (in 2022) with Chokepoint capacity constraint in 5 years of EA releases for germination suppression



Thank You!!!

- USFWS (Steve, Matt, and Mark)
- CNPPID (Tyler)
- NPPD (Nick and Jeff)
- Nebraska DNR (Jeremy and Jim)

2024 Water Projects Accounting Updates

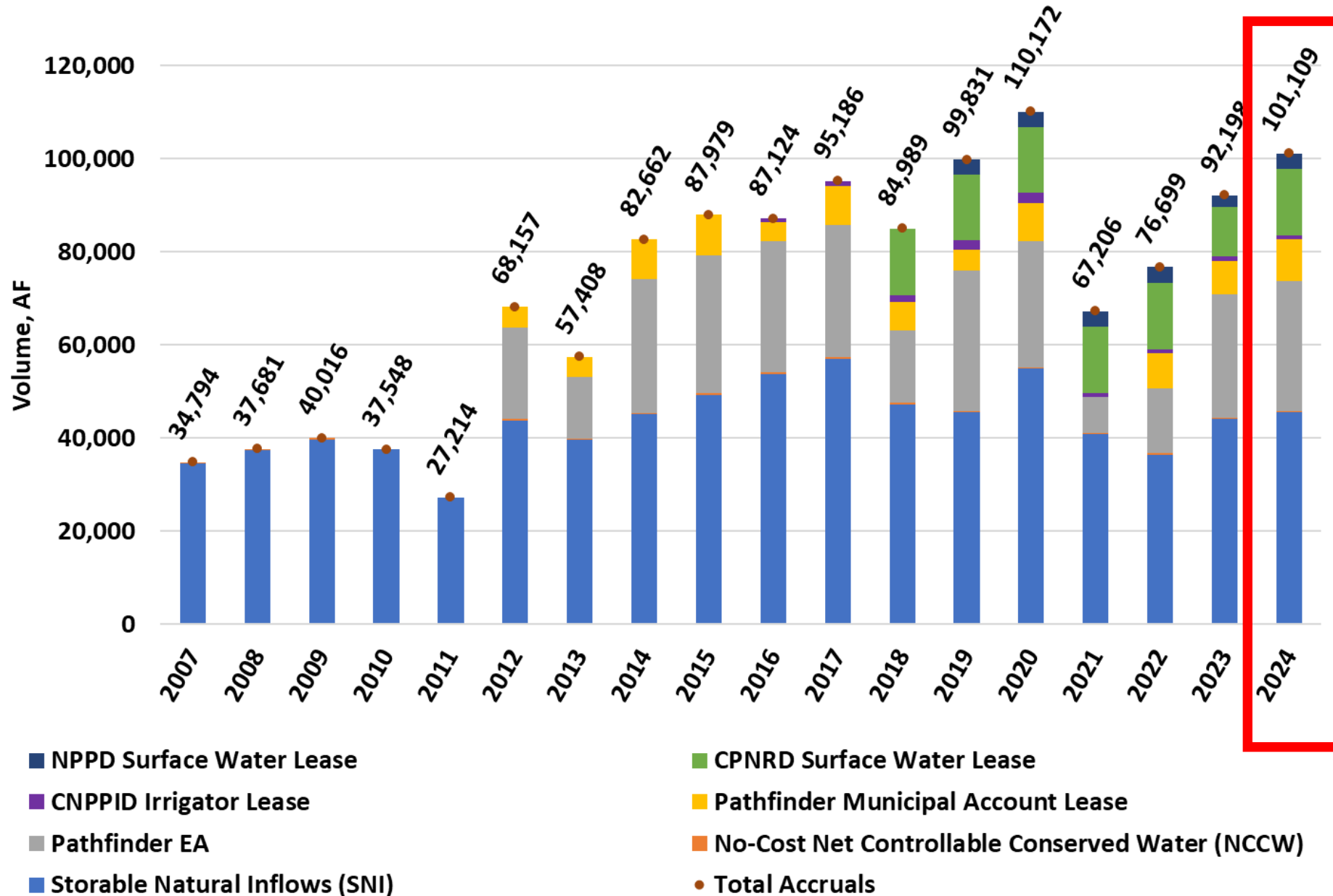
PRRIP Water Projects Accounting

- PURPOSE: Evaluate operations data for Program water projects to estimate resulting deficit reductions at Grand Island
- Scoring is model analysis to estimate project POTENTIAL deficit reductions with assumed operations
- Accounting shows what really happens
- Specified in Program Document
 - Attachment 2 Milestones Document, Steps 4.6 and 4.7
 - “...water produced by projects...is included in approved tracking and accounting procedures..”
 - Attachment 5, Section 11 Water Plan Reference Materials, Appendix B, item #7
 - “use...project operation data, stream gage data, and the Program’s water tracking and accounting reports...” to compare with modeling
 - “...actual annual operating data are not expected to ‘match up’ with the modeling assumptions...”

PRRIP Water Projects Accounting

- Original analysis for 2007-2018 documented in August 2019 memo
- Updates to include 2019-2020 documented in November 2021 memo
- Updates for 2021 presented to WAC in February 2023
- Updates for 2022-2023 presented to WAC in August 2024
- New updates for 2024
 - Lake McConaughy EA accruals and releases
 - Integrated accounting of Phelps recharge, Elwood recharge, and 8 recapture wells
 - CNPPID corrections to Elwood data for 2020, 2022, and 2023.
 - EDO adjusted 2022-2023 recapture well data based on pumping records.
 - Still no means of evaluating Cottonwood Ranch recharge
 - 1,144 AF in 2024
 - 4,254 AF total from 2020-2024

Lake McConaughy EA Contributions by Source, 2007-2024



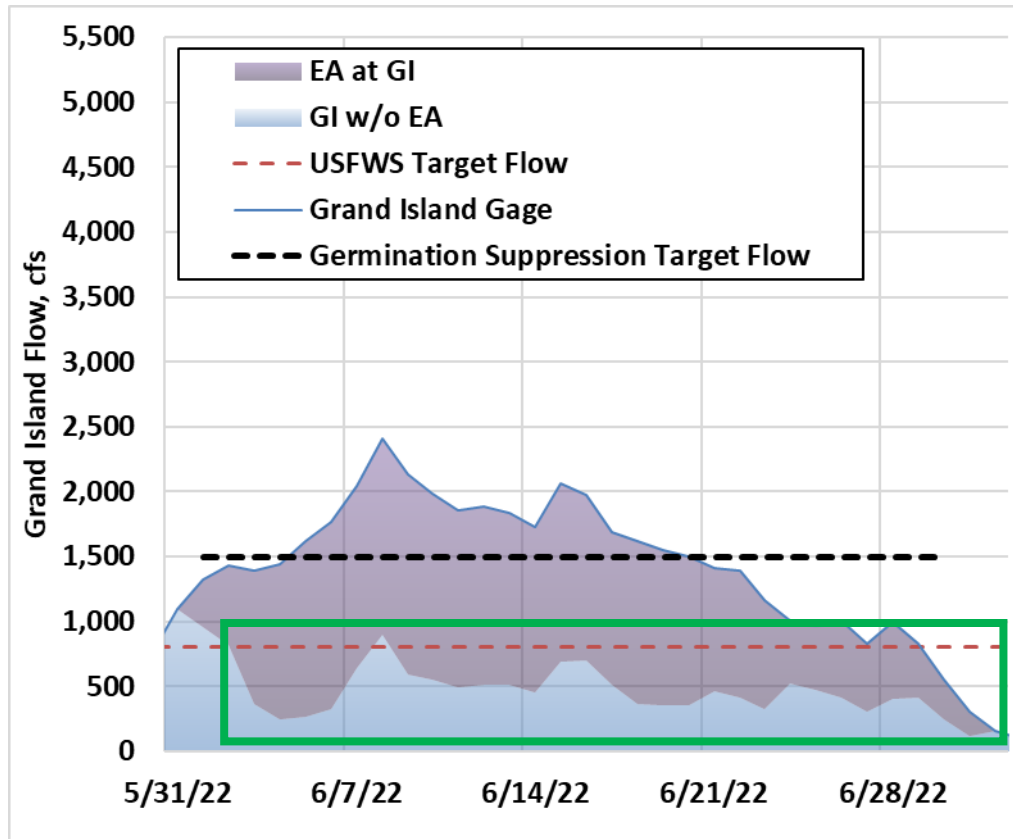
**Lake McConaughy EA
Overall Mass Balance:**

- **1/1/07 EA storage
= 125,473 AF**
- **Accruals
= 1,287,975 AF**
- **Evap, Seepage, and
Reset losses
= 270,662 AF**
- **Releases
= 1,023,510 AF**
- **12/31/23 EA storage
= 118,437 AF**
- **Error
= 839 AF**

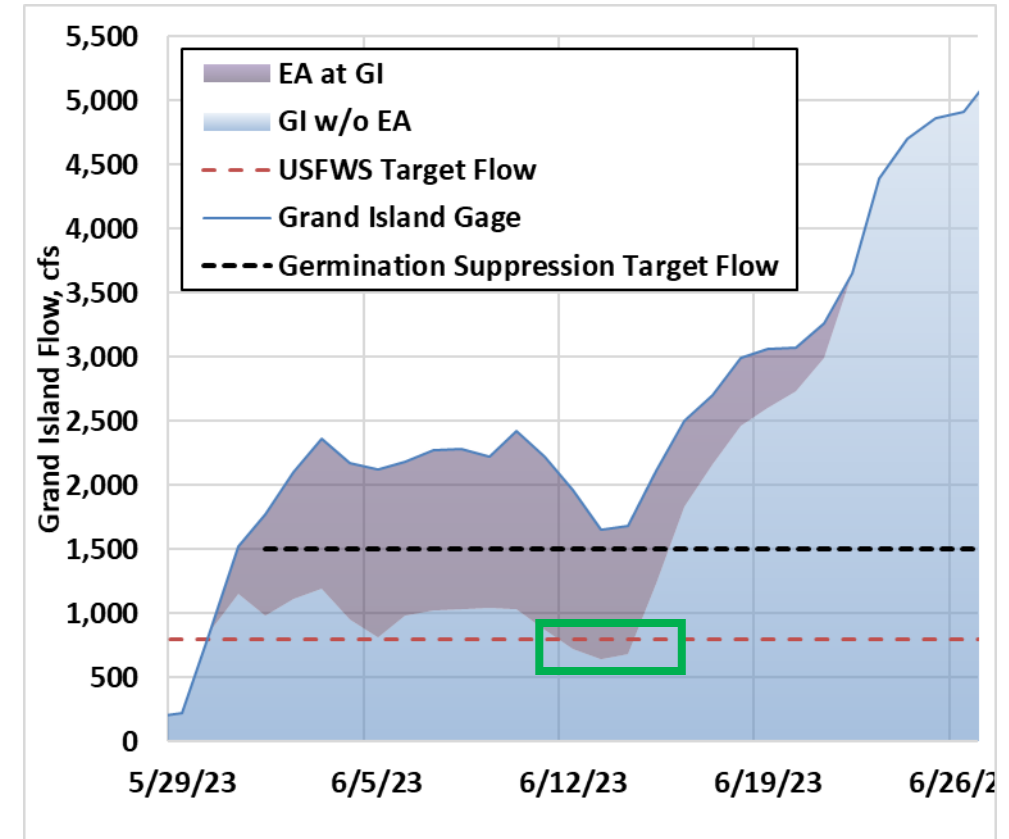
Year of Operation	Total Accruals to EA (AF)	Net Losses (AF)	Total EA Releases (AF)	EA Volume Reaching Grand Island (AF)	Reductions to Deficits (AF)
2007	34,794	17,282	34,374	24,406	13,000
2008	37,681	17,650	30,123	17,833	13,400
2009	40,016	9,199	22,953	13,313	8,200
2010	37,548	8,941	0	0	0
2011	27,214	47,194	0	0	0
2012	68,157	11,135	80,969	43,303	43,000
2013	57,408	5,449	74,642	56,025	28,900
2014	82,662	6,417	45,818	37,634	37,600
2015	87,979	9,296	51,459	43,452	42,600
2016	87,124	43,640	23,288	18,288	15,700
2017	95,186	7,566	142,336	118,175	90,100
2018	84,989	5,956	89,332	74,561	73,800
2019	99,831	9,746	5,653	5,105	900
2020	110,172	12,632	109,307	87,491	43,900
2021	67,206	13,163	70,375	53,458	32,000
2022	76,700	15,519	79,359	61,531	19,100
2023	92,198	14,886	49,870	40,342	700
2024	101,109	14,990	113,653	93,850	84,500
Total, 2007-2024	1,287,975	270,662	1,023,510	788,768	547,400
Average, 2007-2024	71,554	15,037	56,862	43,820	30,400
Total, 2012-2024	1,110,722	170,396	936,061	733,216	512,800
Average, 2012-2024	85,440	13,107	72,005	56,401	39,400

Accounting: EA Releases

Purple shaded area below red dashed line counts as deficit reduction

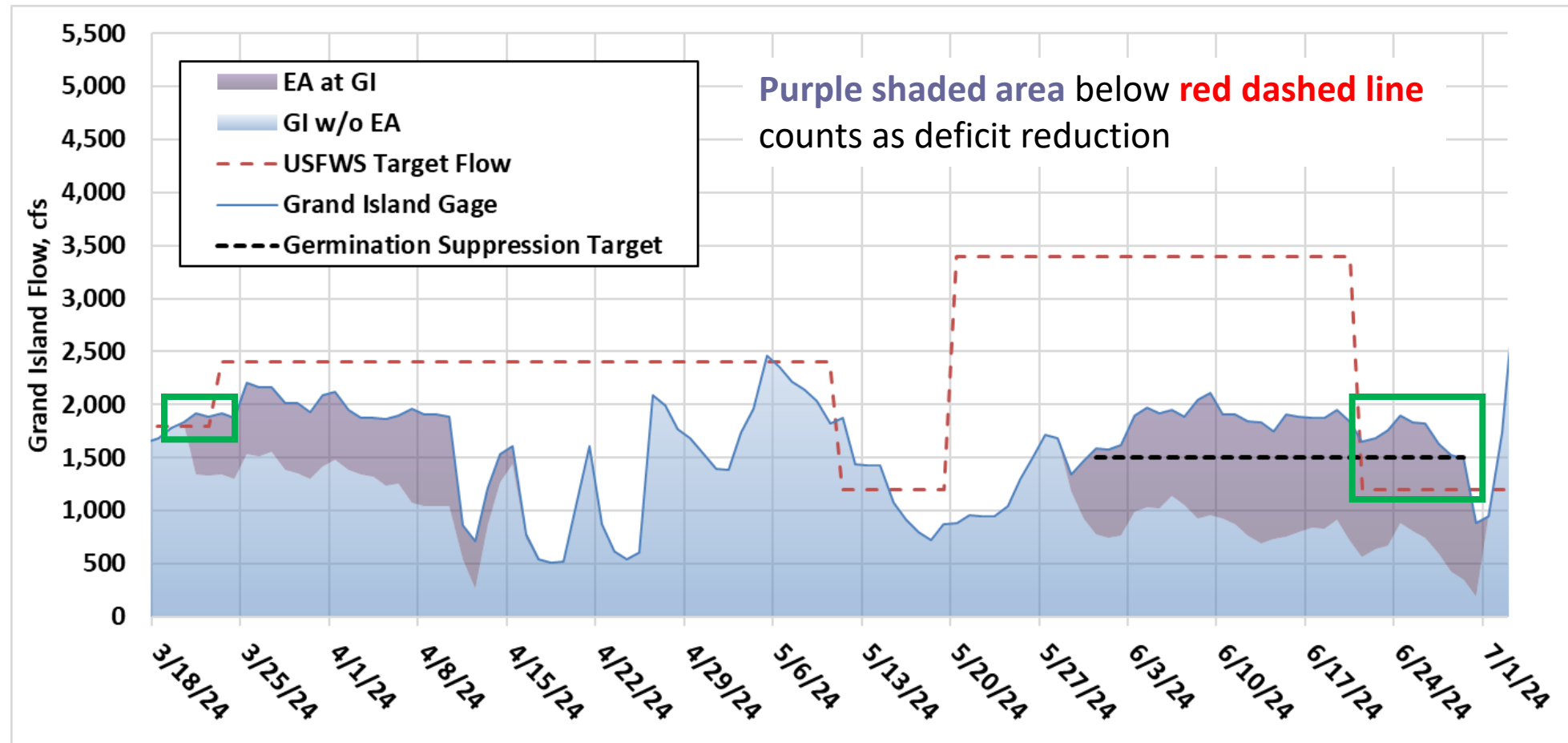


- 61,500 AF EA water at Grand Island
- 19,100 AF (31%) counted as deficit reduction



- 40,300 AF EA water at Grand Island
- 700 AF (1.7%) counted as deficit reduction

Accounting: EA Releases



- 30,613 AF EA water at Grand Island
- 30,196 (98.6%) counted as deficit reduction

- 63,237 AF EA water at Grand Island
- 54,351 (85.9%) likely counts as deficit reduction

Phelps, Elwood Recharge + Recapture

Year of Operation	Phelps		Elwood		Recapture Well Pumping ¹	Phelps + Elwood + Recapture Lagged Accretions near Overton	Accretions Reaching Grand Island ²	Reductions to Target Flow Deficits at Grand Island ²
	Invoiced Diversions	Volume Recharged	Invoiced Diversions	Volume Recharged				
	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)
2011	2,709	3,200	0	0	0	360	300	0
2012	1,685	1,900	0	0	0	1,500	1,200	780
2013	4,418	5,000	0	0	0	3,200	2,500	1,800
2014	1,173	1,300	0	0	0	1,600	1,400	1,000
2015	3,613	4,100	14,785	3,700	0	2,200	2,000	890
2016	5,182	5,900	2,880	5,800	117	4,500	4,000	1,300
2017	3,687	4,200	11,524	6,800	152	5,000	4,200	2,200
2018	3,258	3,700	14,914	8,500	59	5,100	4,500	2,800
2019	712	810	18,539	15,400	26	5,600	5,000	1,500
2020	1,986	2,200	0	8,900	217	5,800	5,000	2,300
2021	2,482	2,700	3,764	6,000	541	6,500	5,500	3,700
2022	400	420	0	2,800	2,261	6,000	4,100	3,300
2023	410	450	3,173	2,500	2,768	4,500	3,200	2,300
2024	1,402	1,600	5,423	2,400	2,440	3,900	3,400	2,800
Total	33,116	37,500	75,002	62,800	8,580	55,800	46,100	26,700
Average ^{3,4}	2,365	2,700	7,500	6,300	953	4,000	3,300	1,900

1 Recapture Well Pumping from 2016-2021 includes Cook well only; from 2022-2024 includes aggregate of Cook well + 7 new recapture wells near Cottonwood Ranch

2 Accretions and Deficit Reductions at Grand Island include Habitat Adjustment for the portion of Phelps recharge that returns downstream of Overton

3 Elwood averages include only 2015-2024

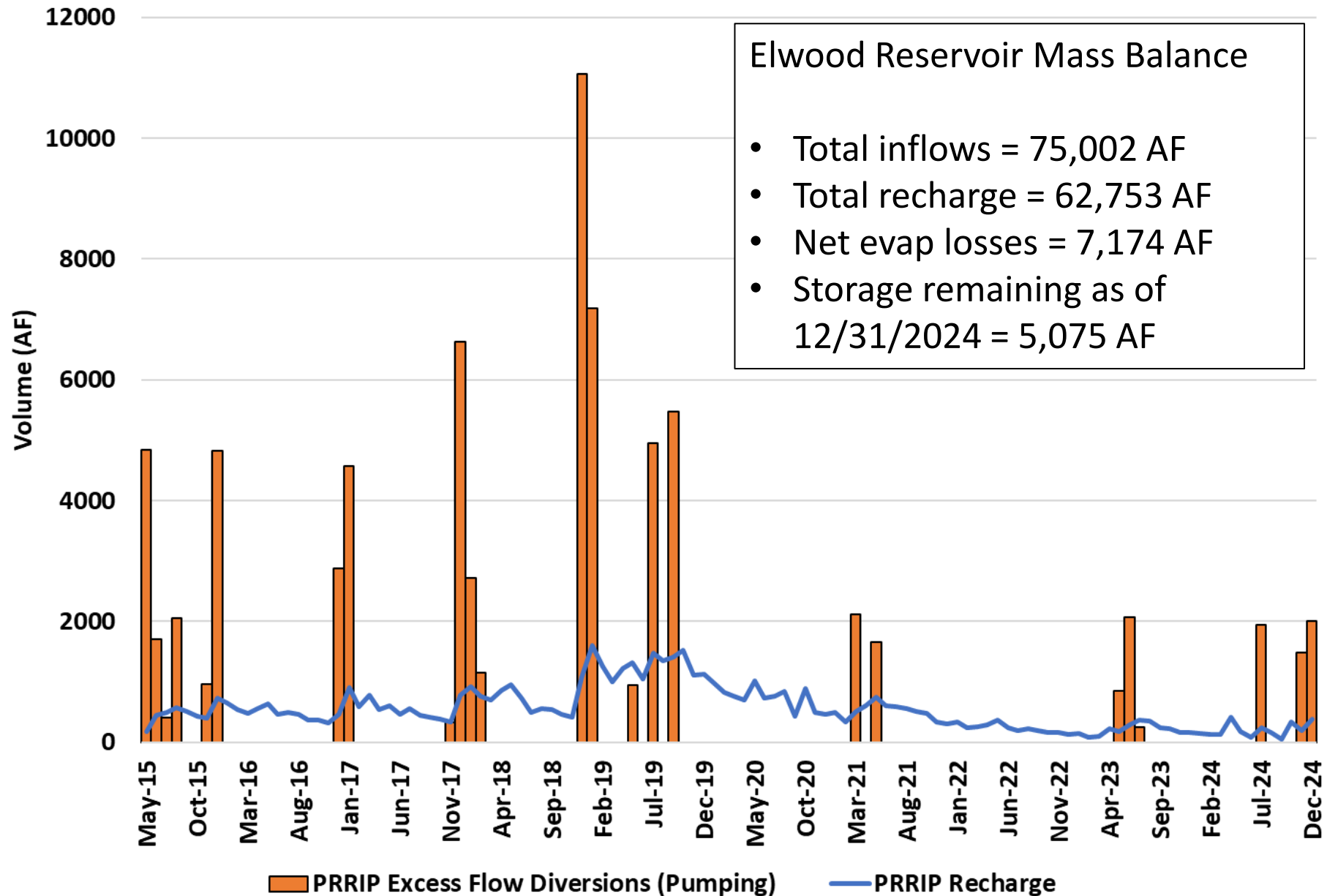
4 Recapture Well averages include only 2016-2026



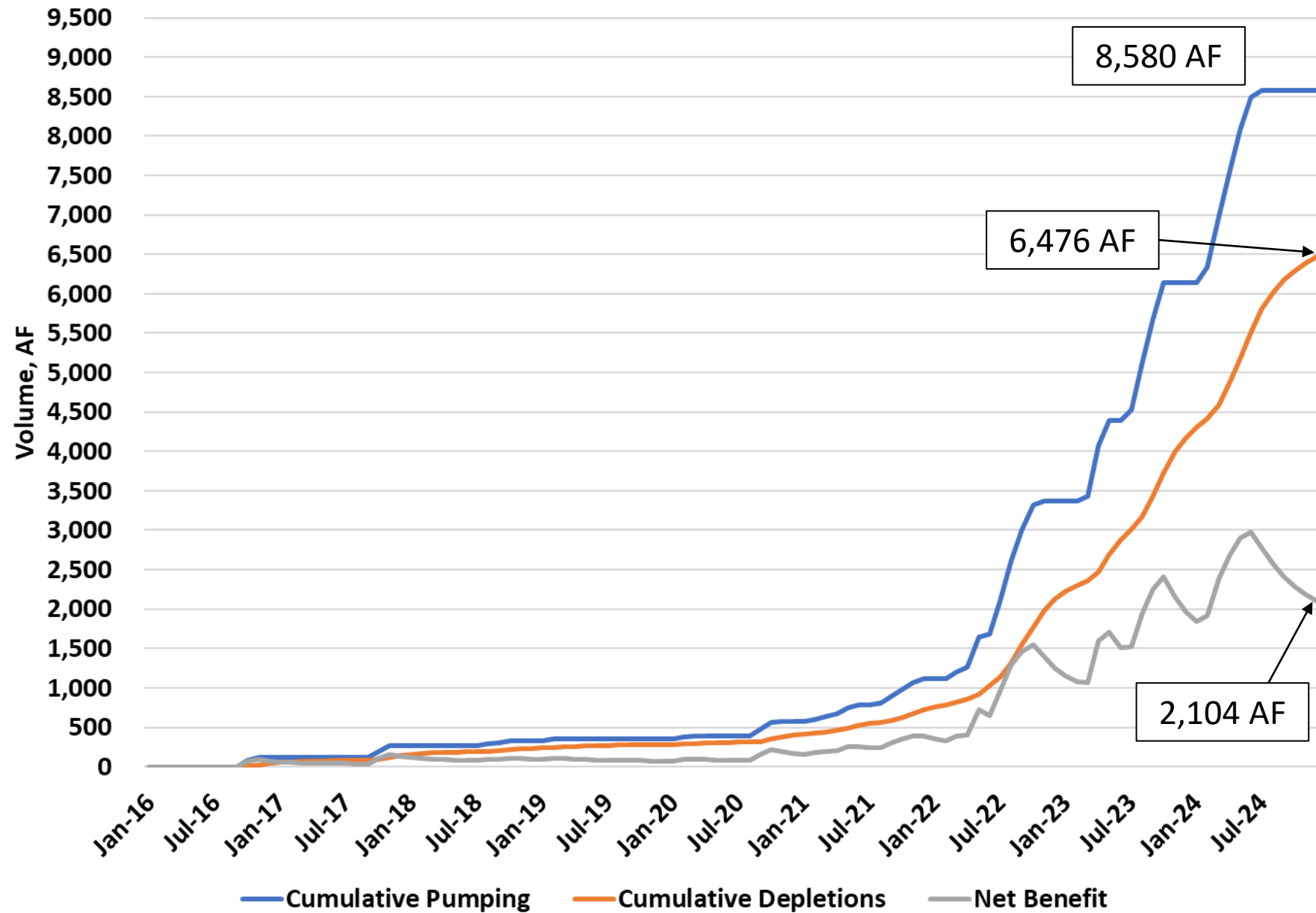
Phelps, Elwood Recharge + Recapture

- Total invoiced diversions, 2011-2024 = 108,118 AF
 - Phelps = 33,116 AF (80% from 2011-2019)
 - Includes ~4,100 AF of EA water during 2012-2013
 - Elwood = 75,002 AF (84% from 2015-2019)
- Total recharge, 2011-2024 = 100,200 AF
 - Includes Phelps recharge from headgate to MP 1.6 flume (not invoiced)
- Total recapture pumping, 2015-2024 = 8,580 AF
 - 87% from 2022-2024 after addition of 7 wells
 - Net benefit only 2,104 AF greater than accretions from recharge alone
- Total river returns, accretions + pumping, 2011-2024 = 55,800 AF
 - Accretions reaching Grand Island = 46,100 AF
 - Reductions to target flow deficits = 26,700 AF (~1,900 AF/yr)
- Volume remaining in aquifer storage as of 12/31/2024 = 44,400 AF

Elwood Reservoir Excess Flow Diversions and Recharge, 2015-2024



PRRIP Recapture Well Operations, 2016-2024



8,580 AF

6,476 AF

2,104 AF

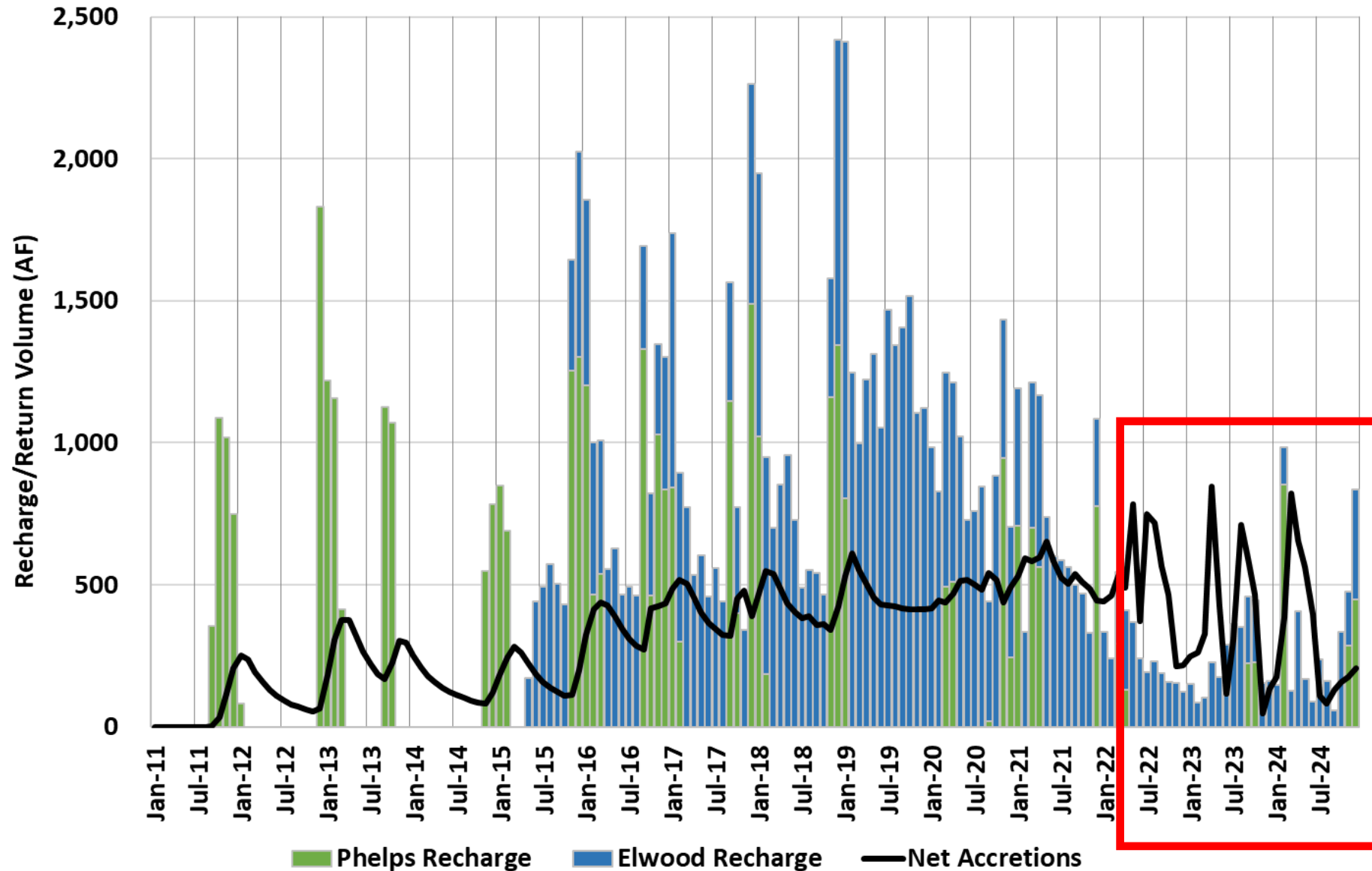
Cumulative Pumping

Cumulative Depletions

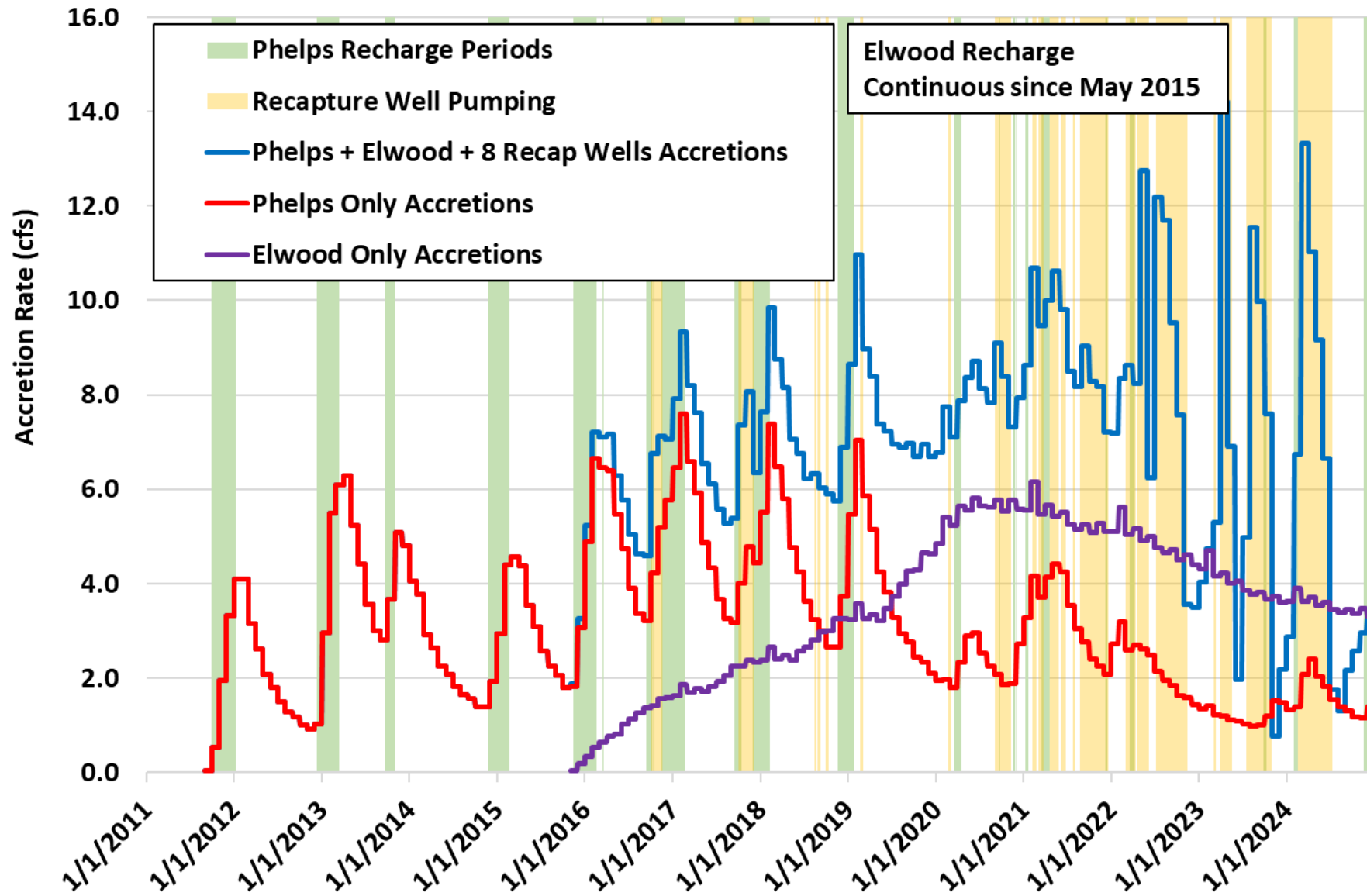
Net Benefit



Monthly Phelps + Elwood Recharge and Net Accretions with Recapture Pumping, 2011-2024



Phelps + Elwood Recharge and Recapture with Accretion Rates, 2011-2024



Elwood Recharge
Continuous since May 2015



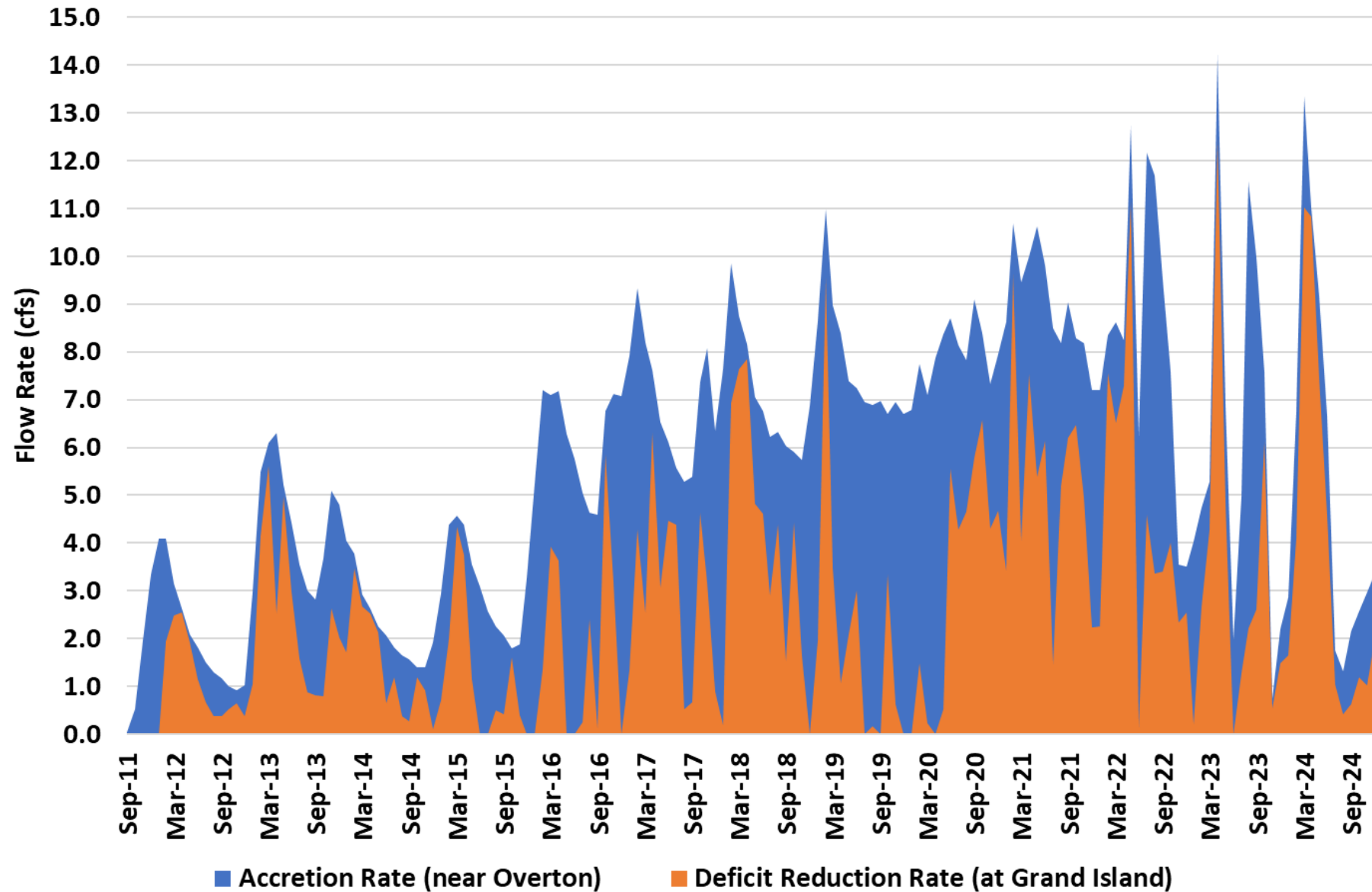
Sep 2011-Dec 2024
(since Phelps start)

- Avg accretions = 5.8 cfs
- Avg deficit reduction = 2.8 cfs

May 2015-Dec 2024
(since Elwood start)

- Avg accretions = 6.9 cfs
- Avg deficit reduction = 3.2 cfs

Phelps Recharge + Elwood Recharge + 8 Recapture Wells
Monthly Average Accretion and Deficit Reduction Rates, 2011-2024



Recharge Project Costs

- Excess flow diversions, 2011-2024
 - Total cost = \$4,499,424.76
 - Effective Unit Cost
 - Phelps \$25.40/AF
 - Elwood = \$52.29/AF
- Deficit Reductions
 - 48% of return flows result in deficit reductions @ GI
 - Effective Unit Cost (excluding recapture costs)
 - Phelps ~\$53/AF
 - Elwood ~110/AF
- Remaining pre-paid WSA with CNPPID (\$8.62 of \$9.15 million)
 - Phelps = 38,187 AF at \$35.92/AF
 - Elwood = 126,332 AF at \$54.54/AF

EA Project Costs

- Purchased EA contributions, 2007-2024
 - Total cost = \$20,869,962.88
 - Effective Unit Cost = \$100.93 (assume same for in-kind contributions)
 - Unit Cost Adjusted for EA Losses (21%) = \$127.79
- Deficit Reductions
 - 53% of EA releases result in deficit reductions @ GI
 - Effective Unit Cost ~\$240/AF

Program Water Project Costs

- Unit Costs for Deficit Reductions @ GI
 - Phelps ~\$53/AF
 - Elwood ~\$110/AF
 - EA ~\$240/AF
- Average Annual Deficit Reductions
 - Recharge, 2011-2024 = 1,900 AF/yr
 - EA, 2012-2024 = 39,400/yr
- Net Result
 - EA water costs 2.2-4.5x more per AF of deficit reduction
 - EA water creates 20.7x more deficit reductions



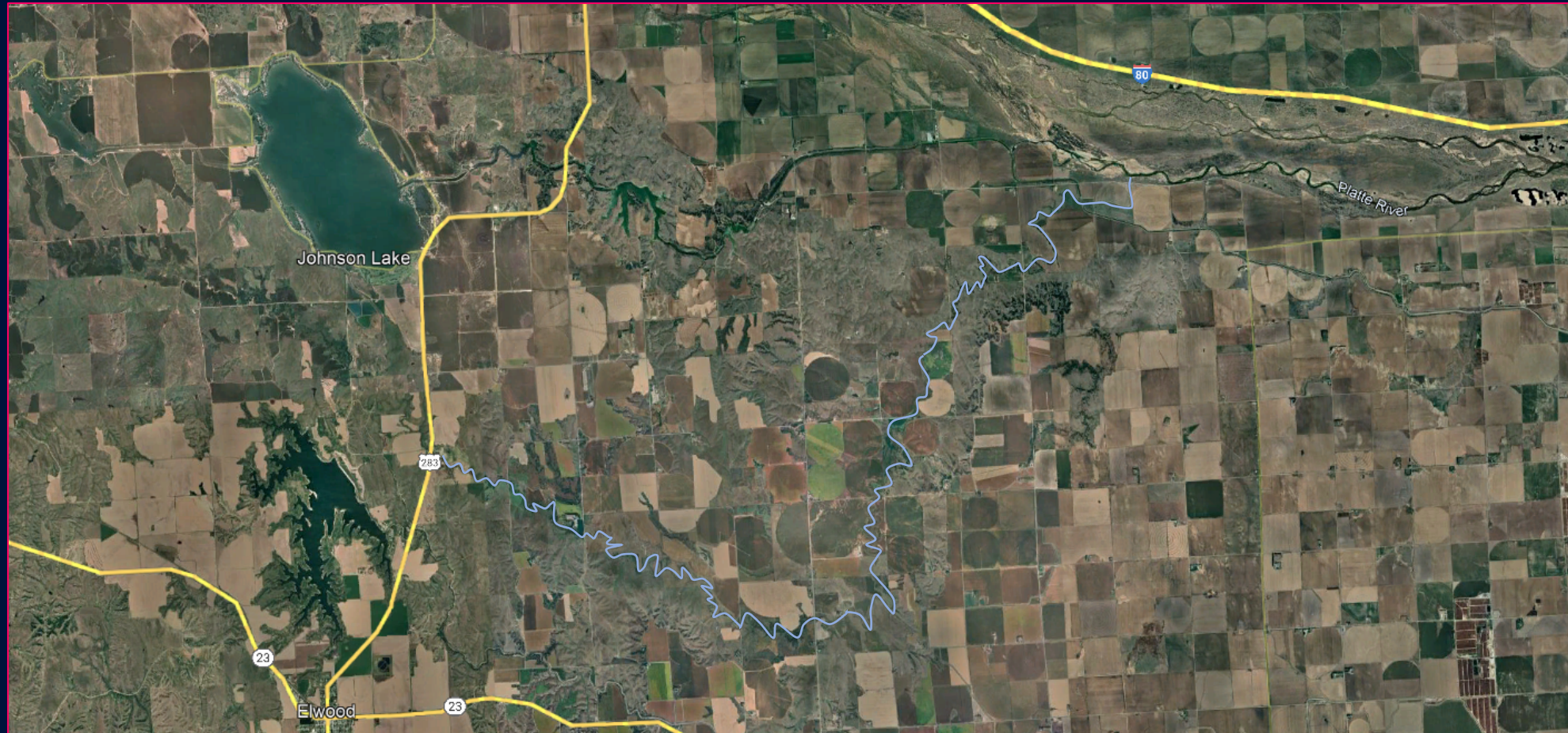
Platte River Recovery Improvement Project

Elwood Reservoir Outlet Feasibility Study 30 Percent Design Presentation

Aug 5, 2025

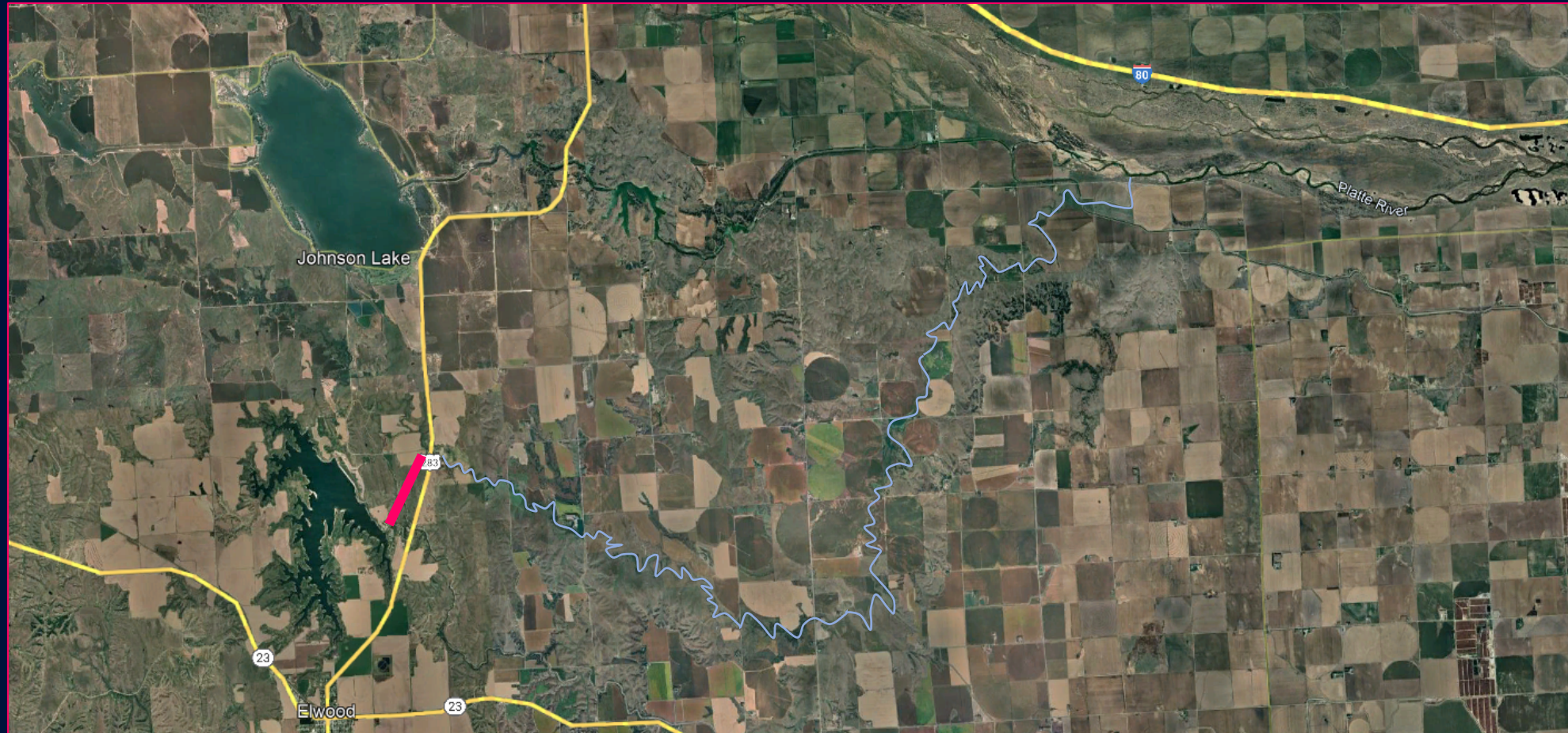
Objective

- **Project Objective:** Convey 100 cfs from Elwood Reservoir, through the E65 canal to Plum Creek, and through Plum Creek to the Platte River.



Objective

- **Project Objective:** Convey 100 cfs from Elwood Reservoir, through the E65 canal to Plum Creek, and through Plum Creek to the Platte River.



Agenda

1. Review of Concepts
2. Preferred Alternative
3. 30 Percent Design
4. Costs
5. Advancing the Project



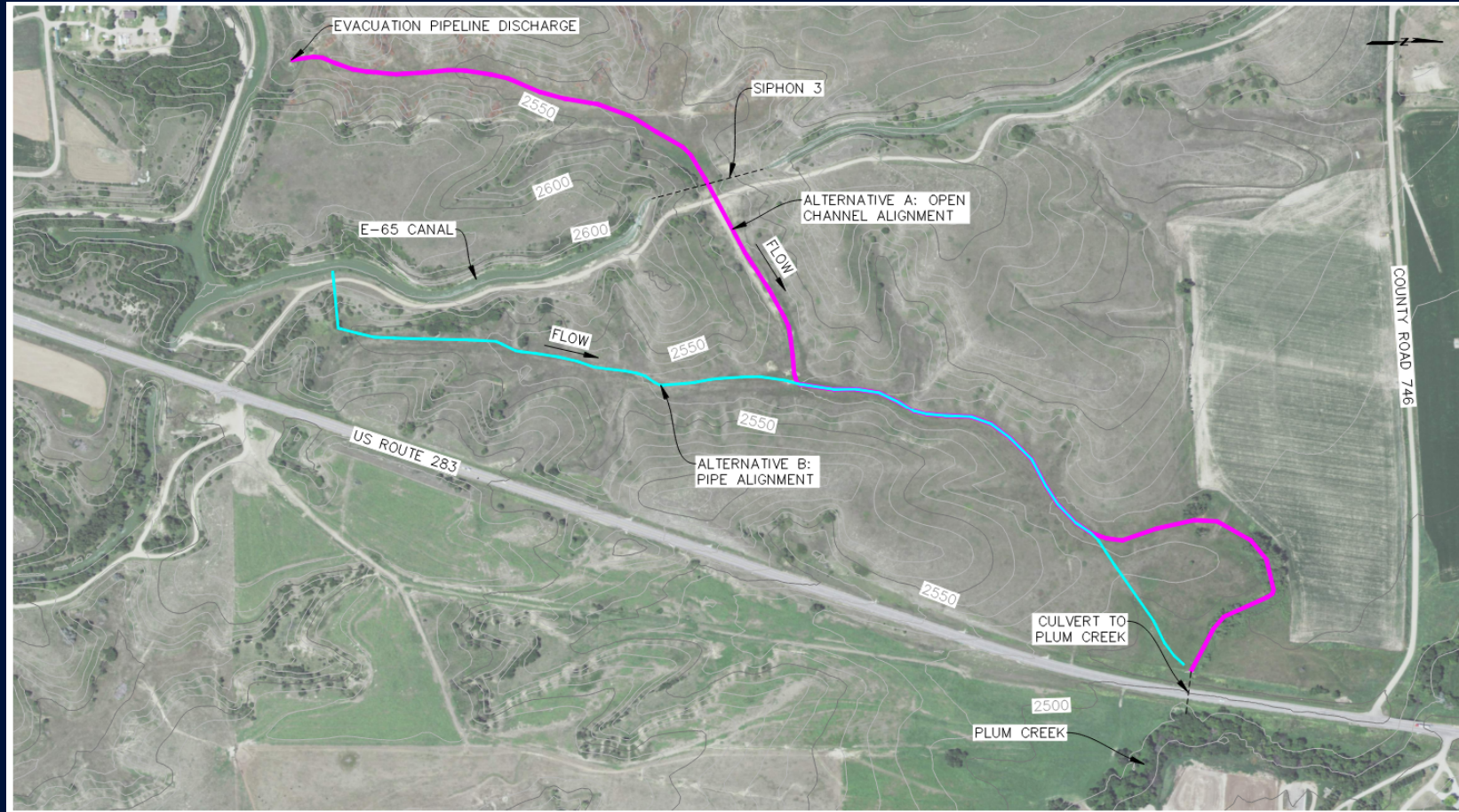
Review of Concepts

Planning Level Alternatives:

1. Central, Jane Jack, NDOT, Knoenzer - Pipeline
2. Central, O'Hanlon, Jane Jack, NDOT Knoenzer – Open Channel
3. Central (Siphon), Gosper County ROW, Jane Jack, Knoenzer - Pipeline



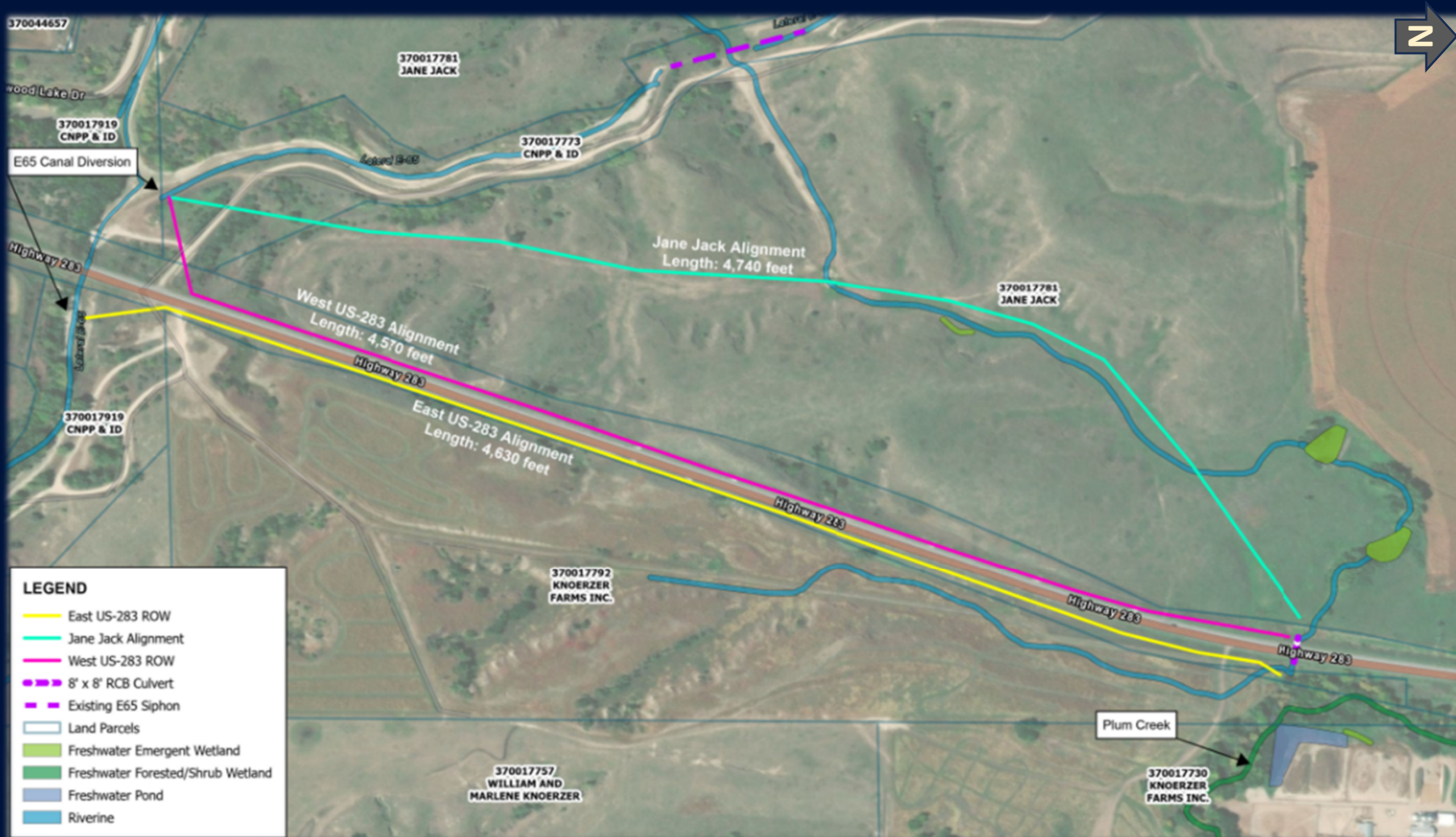
Review of Concepts



Two Alignments

1. Central, O'Hanlon, Jane Jack, NDOT Knoenzer – Open Channel
2. Central, Jane Jack, NDOT, Knoenzer - Pipeline

Review of Concepts

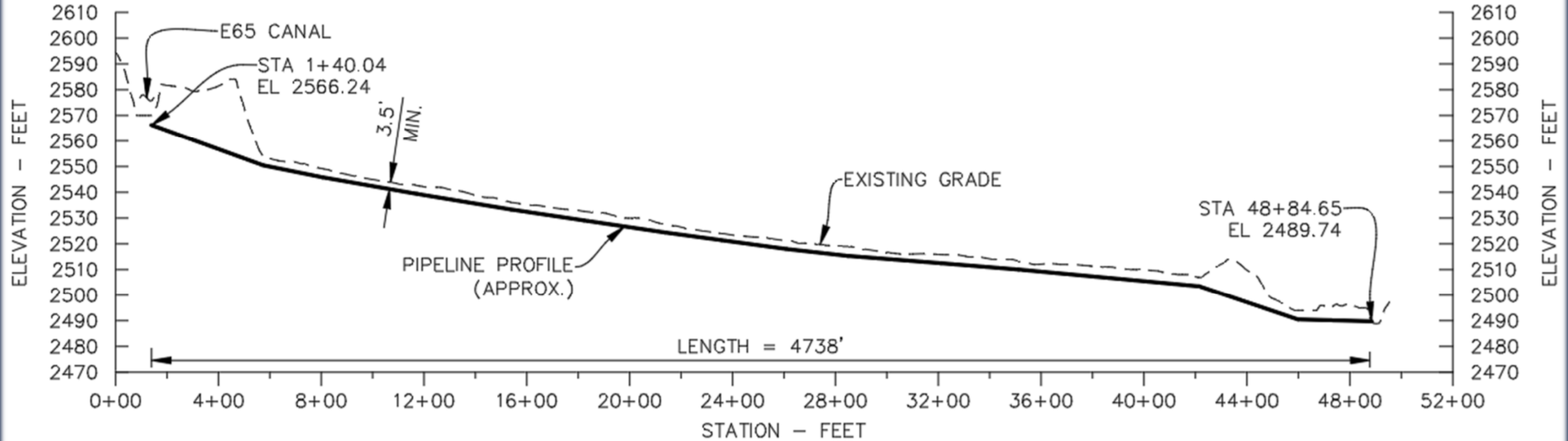


Three Alignments

1. Jane Jack - Pipeline
2. West NDOT ROW
3. East NDOT ROW

Profile

Jane Jack



JANE JACK PROFILE

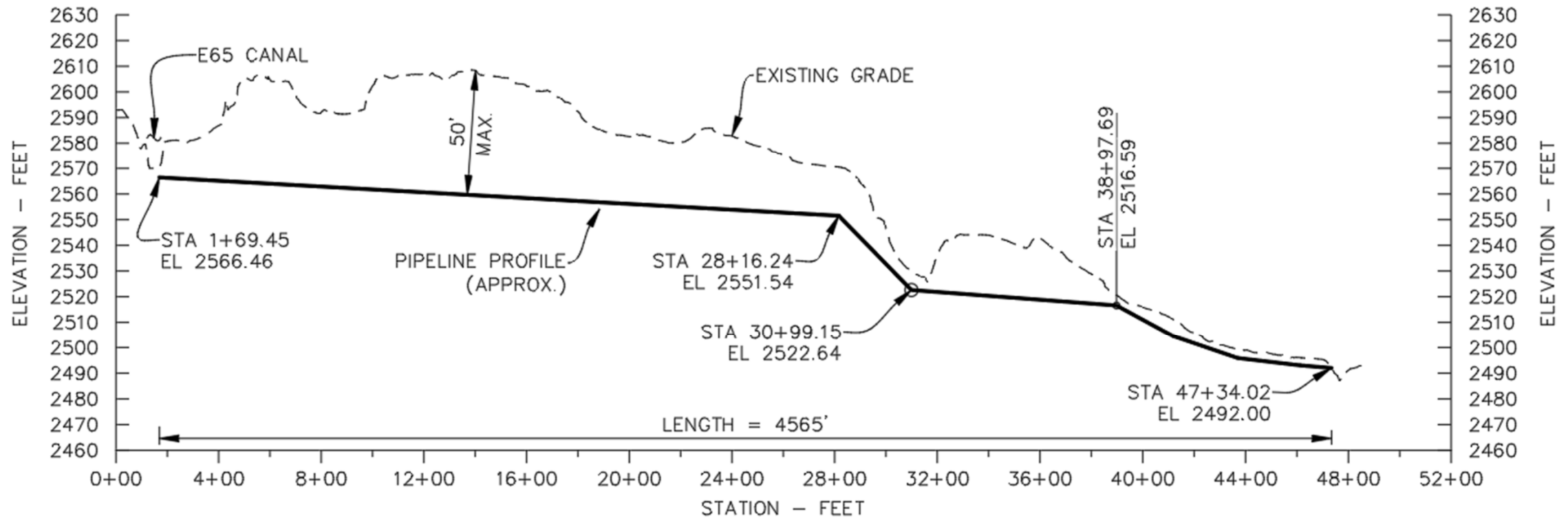
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HORIZ. SCALE: 1" = 500'

VERT. SCALE: 1" = 50'

Profile

West ROW



WEST R.O.W. PROFILE

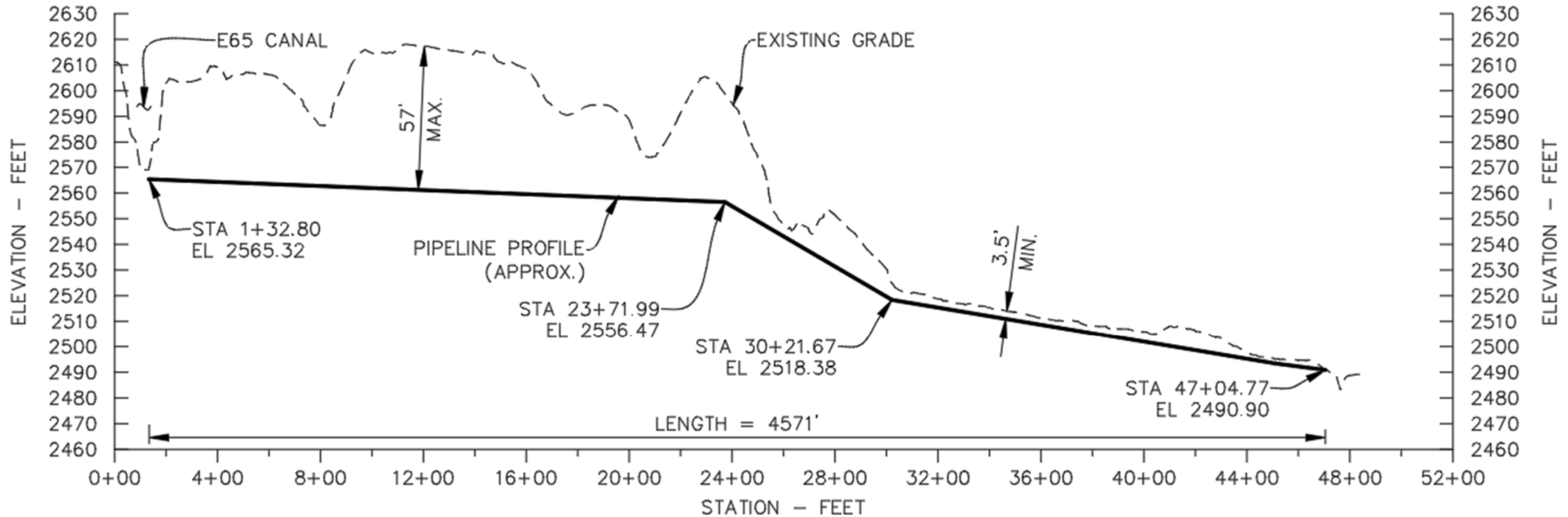
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HORIZ. SCALE: 1" = 500'

VERT. SCALE: 1" = 50'

Profile

East ROW



EAST R.O.W. PROFILE

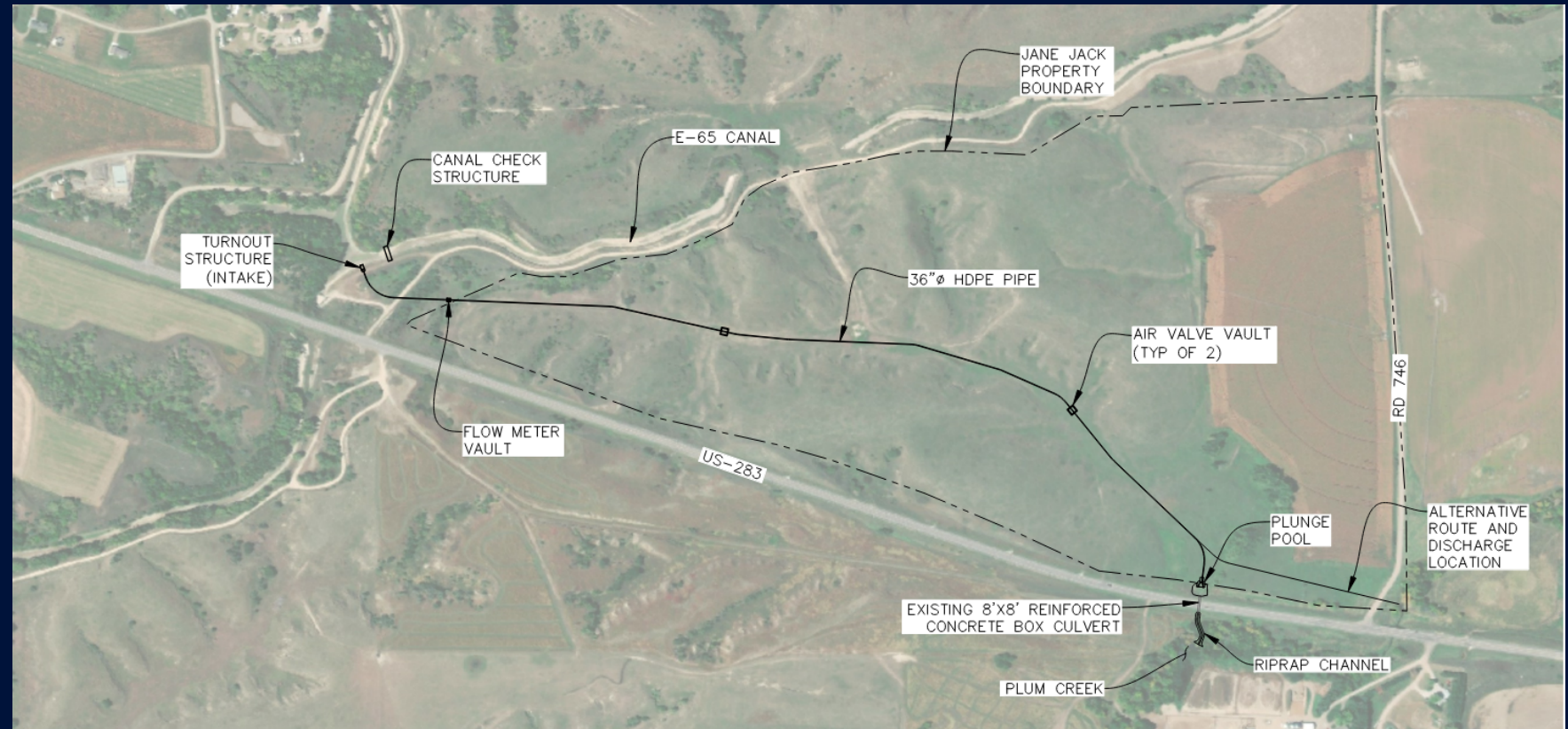
0 250 500 1000
HORIZ. SCALE: 1" = 500'
VERT. SCALE: 1" = 50'

Selection of Preferred Alternative

- *Engineering and Performance*
- *Land Ownership/ROW*
- *Cost*
- *Constructability*
- *Permitting*

Selection of Preferred Alternative

- *Engineering and Performance*
- *Land Ownership/ROW*
- *Cost*
- *Constructability*
- *Permitting*



Selection of Preferred Alternative (HDPE Pipe)

Advantages

- Low initial cost
- Resistant to corrosion
- Watertight joints
- Easy to install, heat welded and flexible



Disadvantages

- Shorter service life (less than 50 years)
- Requires field welding and hydrostatic testing
- Specialized fusion equipment
- Cannot be lined in the future, requires removal and replacement
- Prone to damage during construction and installation
- Less case history compared to other materials
- High thermal expansion
- Longer staging area

Selection of Preferred Alternative (Steel Pipe)

Advantages

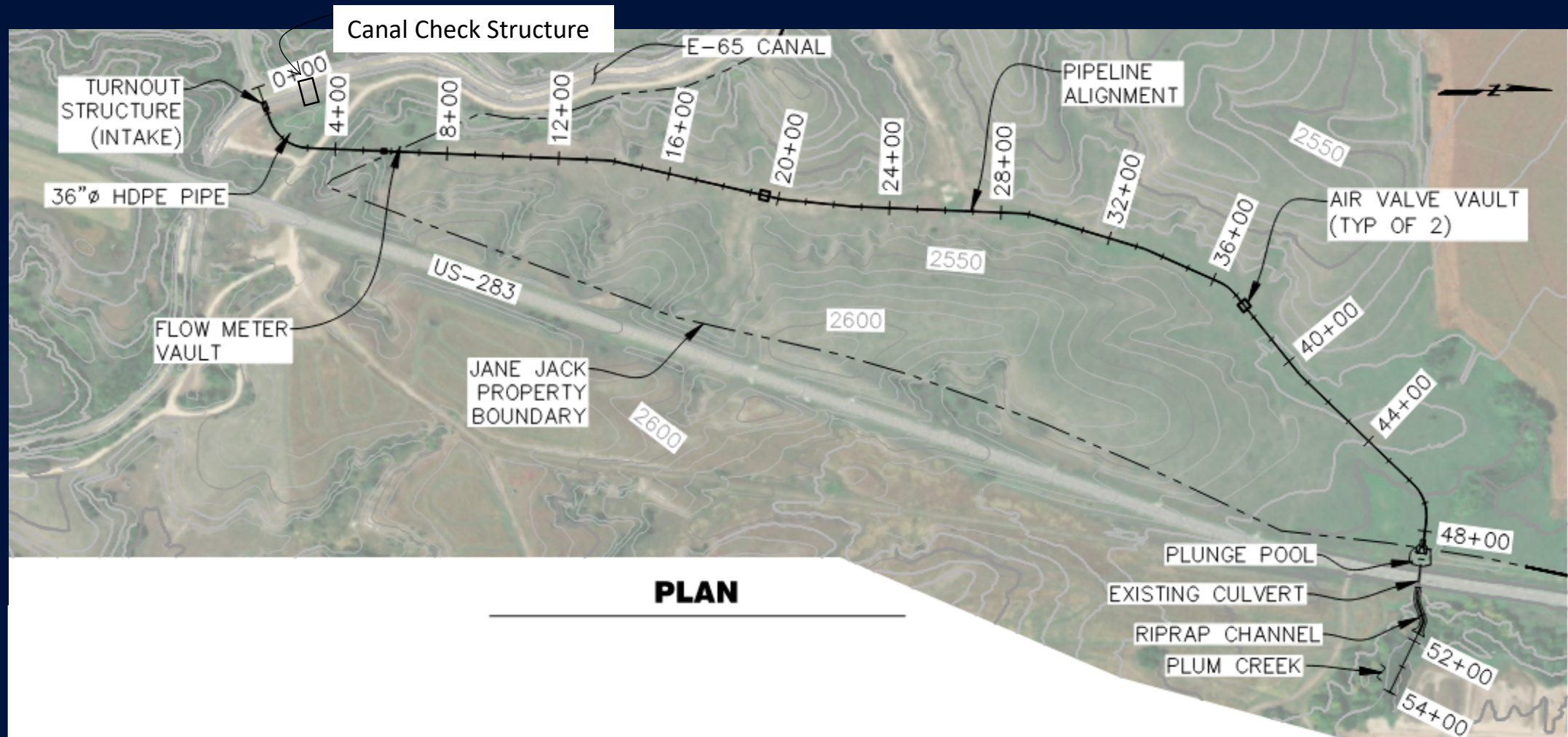
- Design life over 100 years
- Joints are reliable and watertight
- Deforms and accommodates differential settlement
- Restrained joints
- High strength
- Custom fabricated bends and specials
- Large case history

Disadvantages

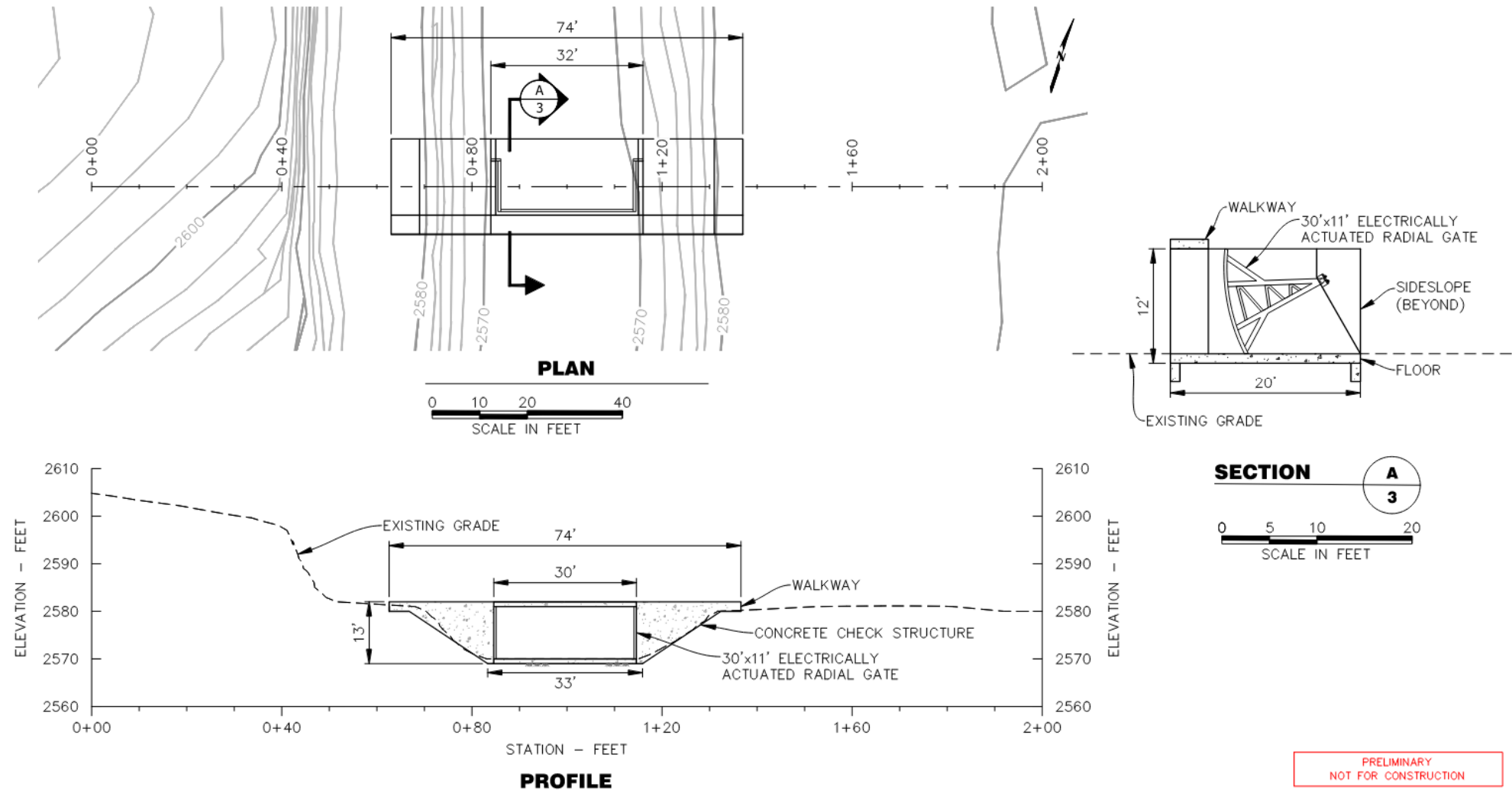
- Corrosion control is required
- Requires field coating of holdbacks
- Requires field welding and hydrostatic testing
- High initial cost



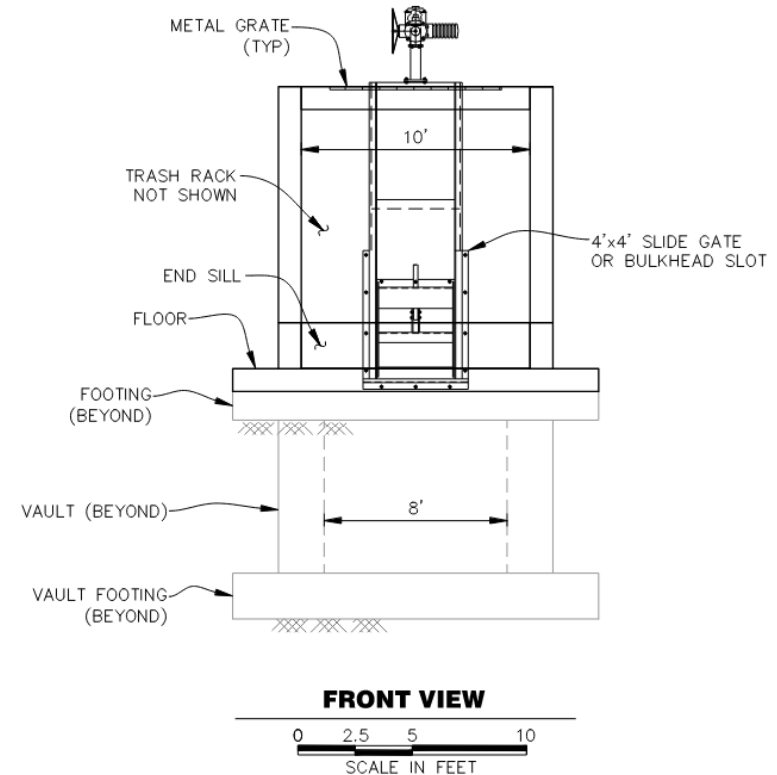
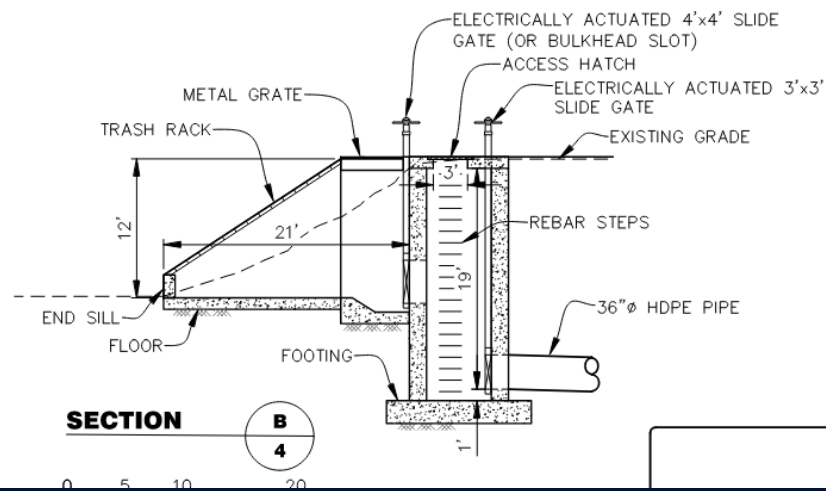
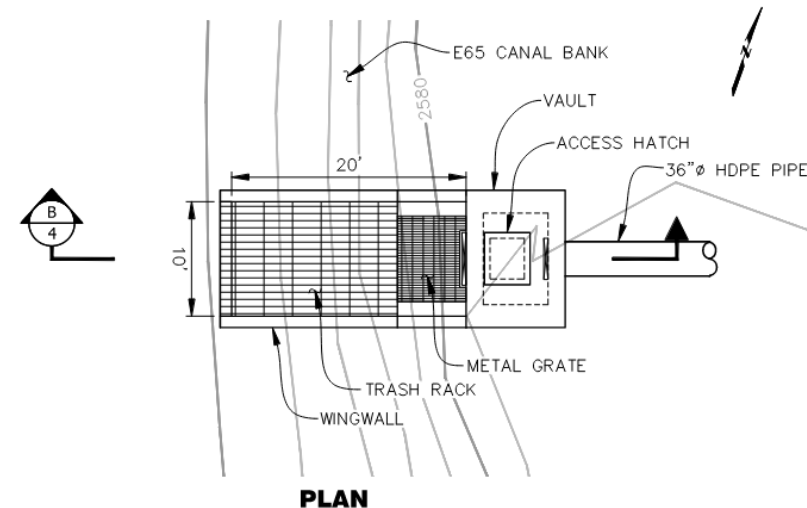
Selection of Preferred Alternative



30% Design - Canal Check Structure



30% Design – Turnout Structure



PRELIMINARY
NOT FOR CONSTRUCTION



ELWOOD OUTLET
FEASIBILITY STUDY -
PHASE 1 OUTLET DESIGN

TURNOUT STRUCTURE
(INTAKE)

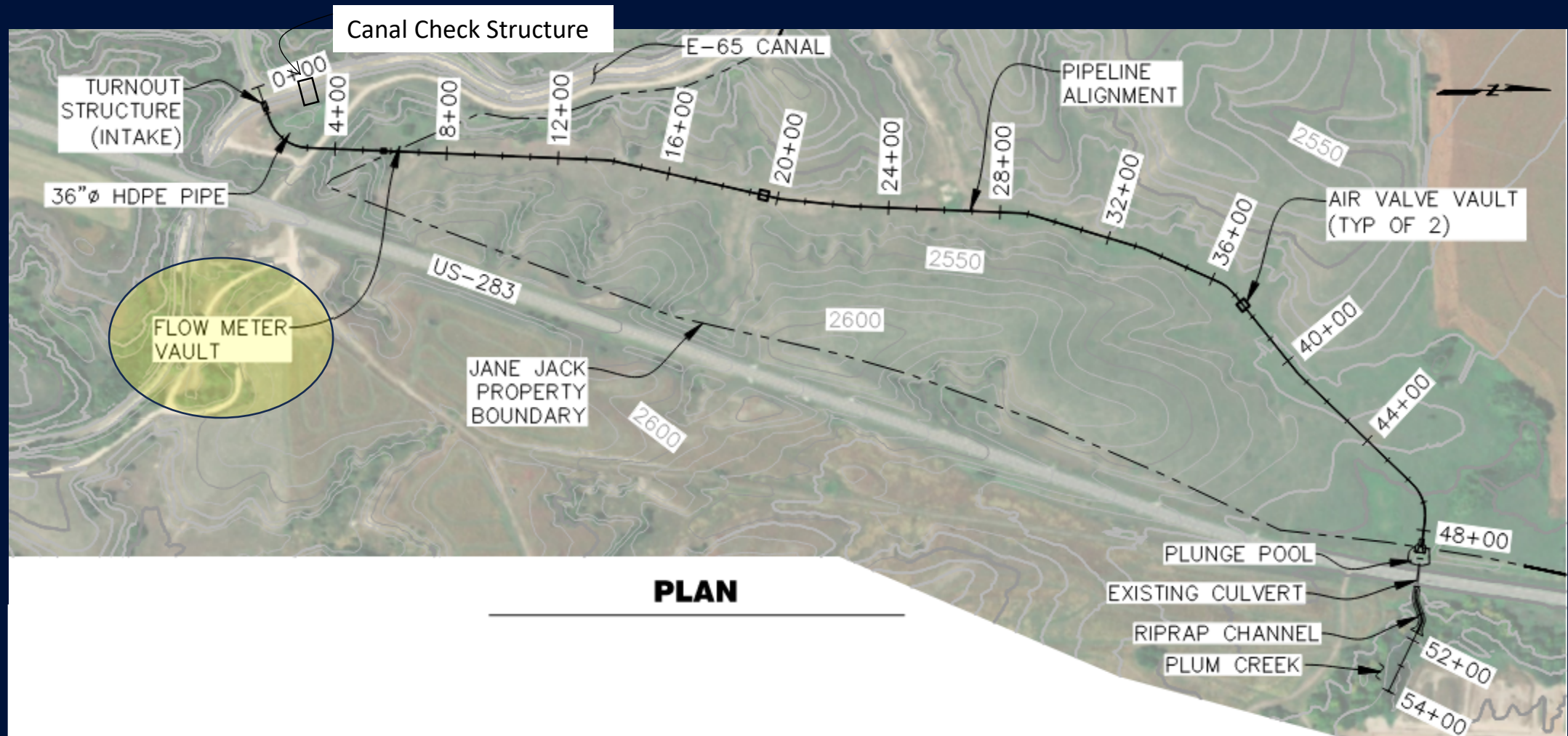
30% Design – Turnout Structure



CHECK STRUCTURE

TURNOUT

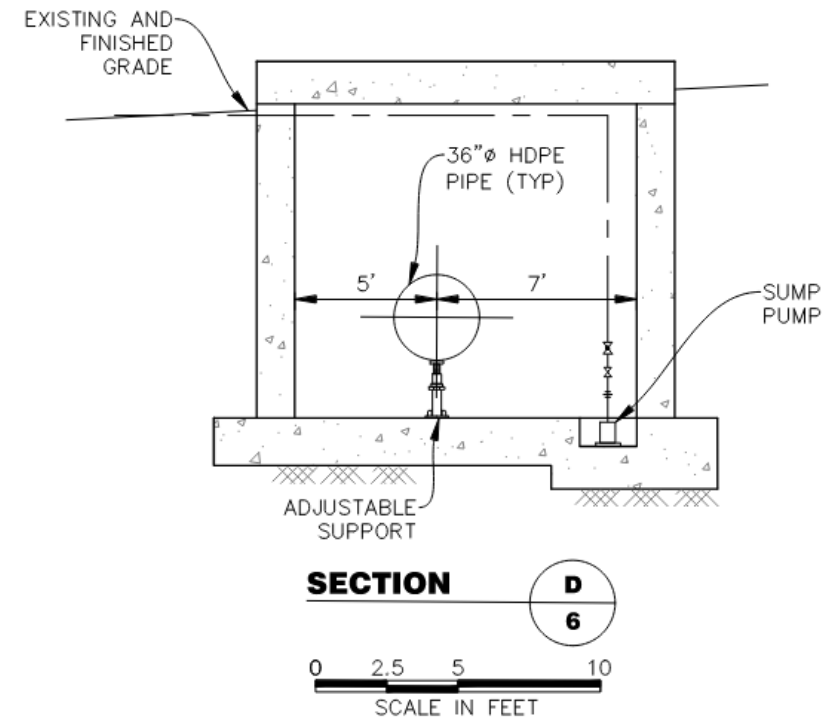
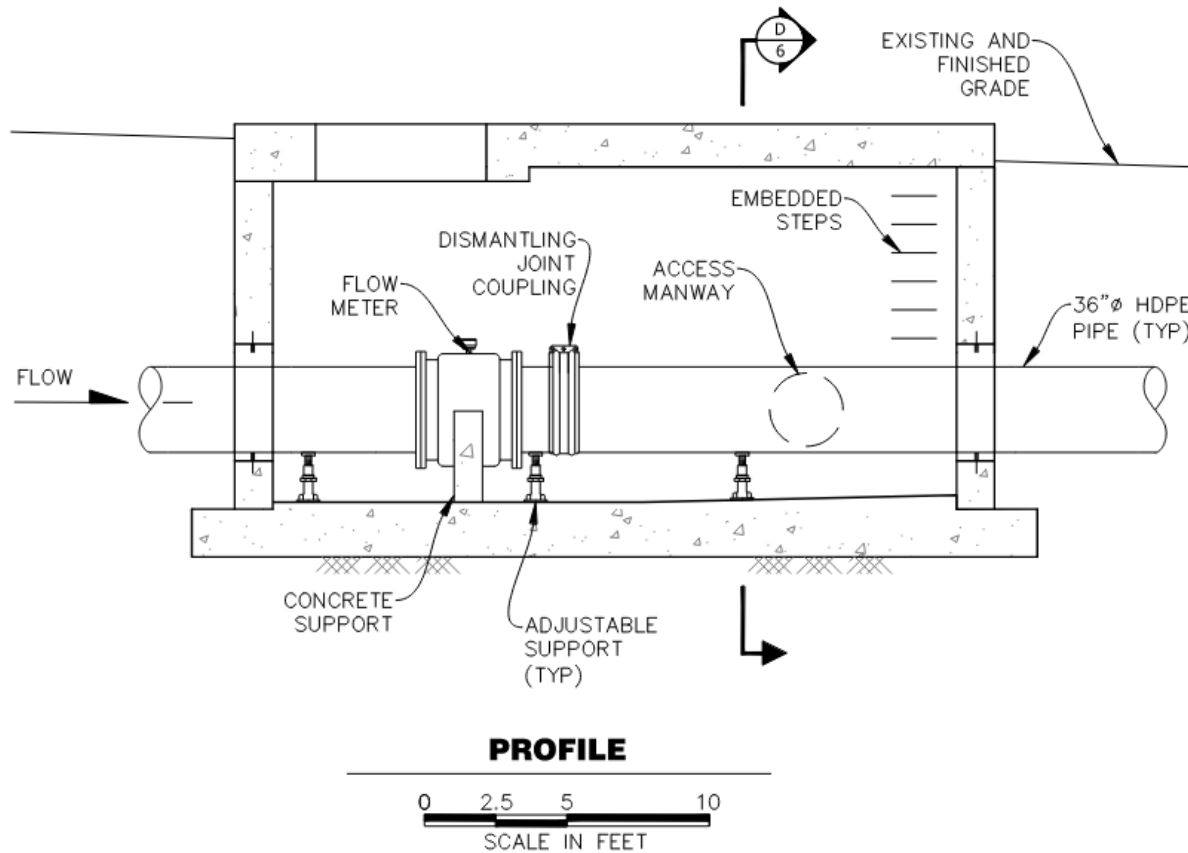
30% Design – Flowmeter Vault



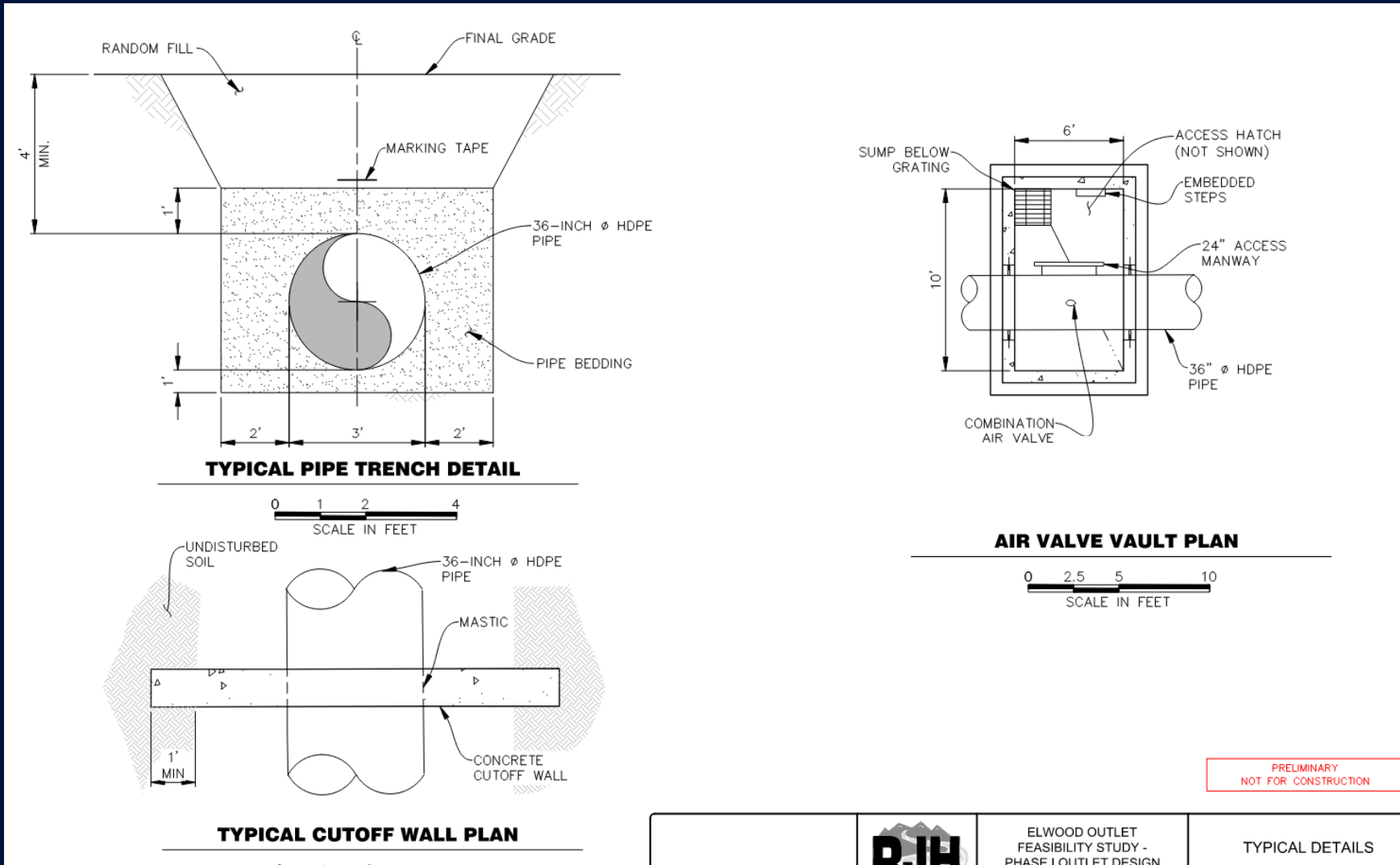
30% Design – Flowmeter Vault



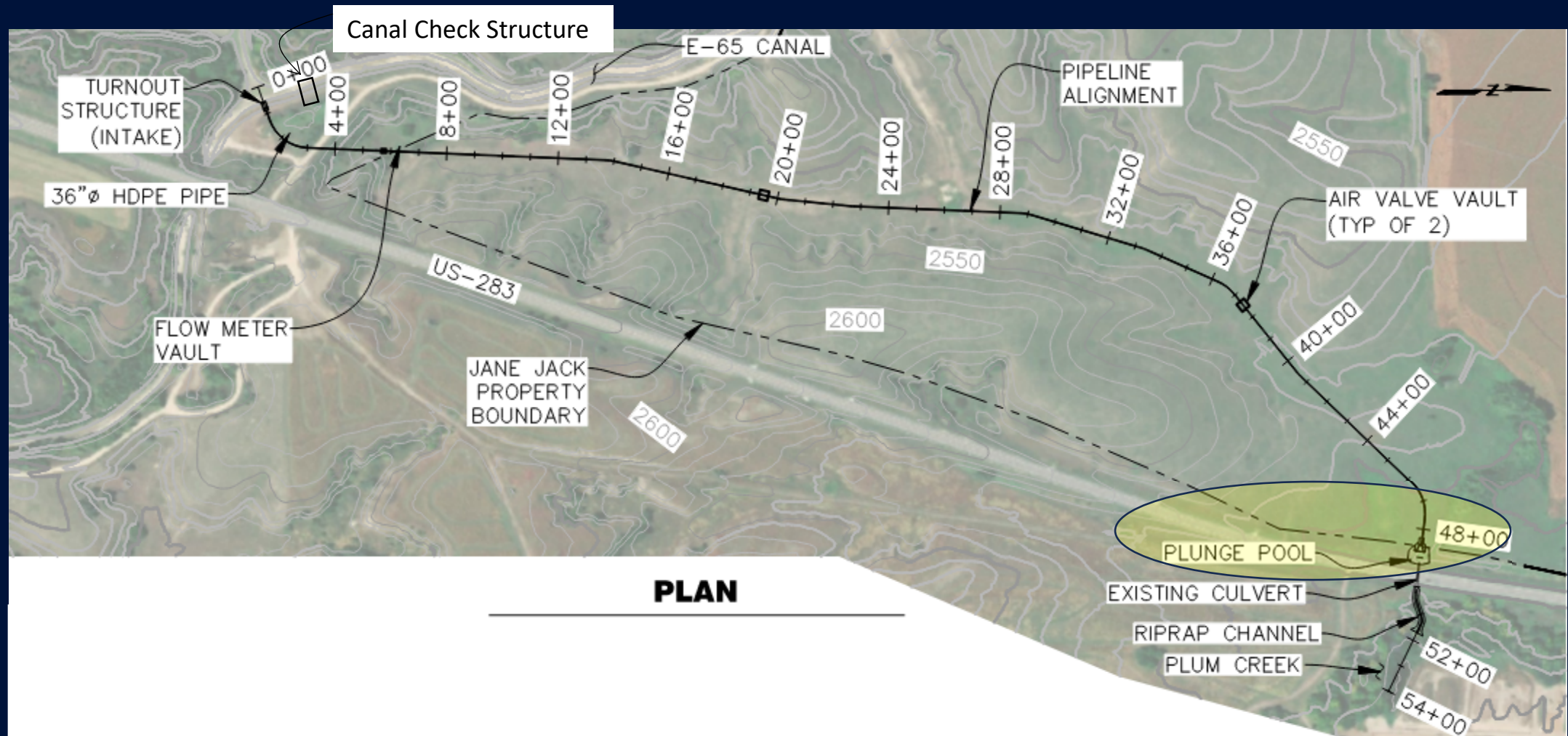
30% Design – Flowmeter Vault



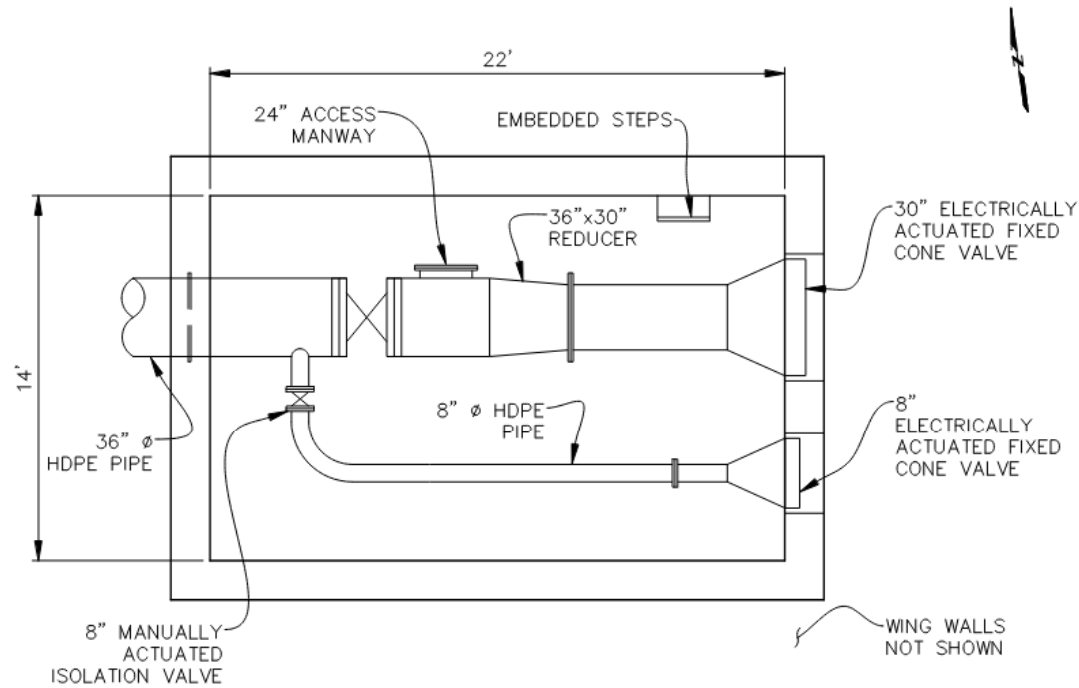
30% Design – Pipeline



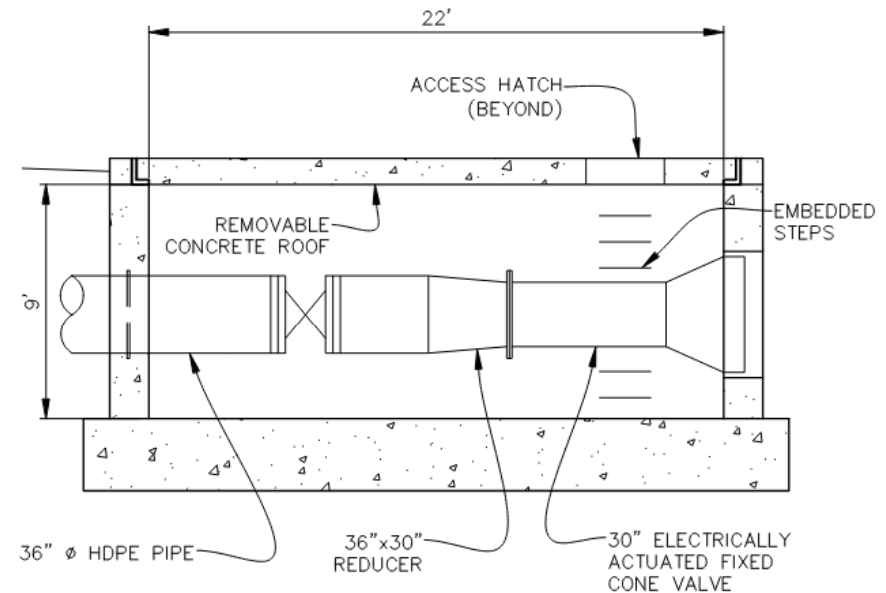
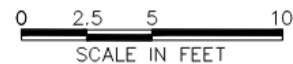
30% Design – Flowmeter Vault



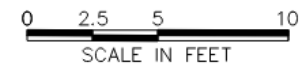
30% Design – Valve Vault (Discharge)



PLAN

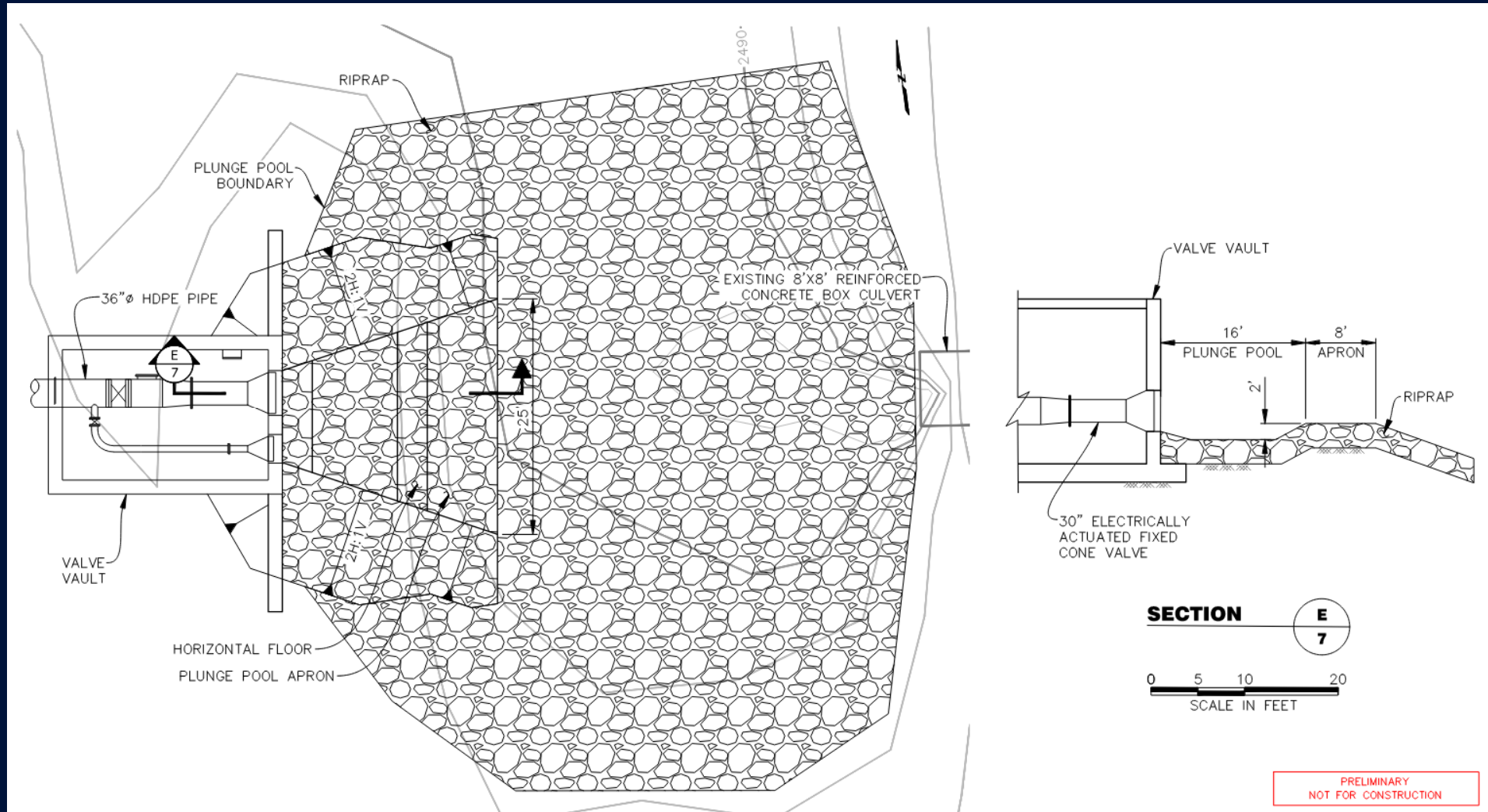


PROFILE



PRELIMINARY
NOT FOR CONSTRUCTION

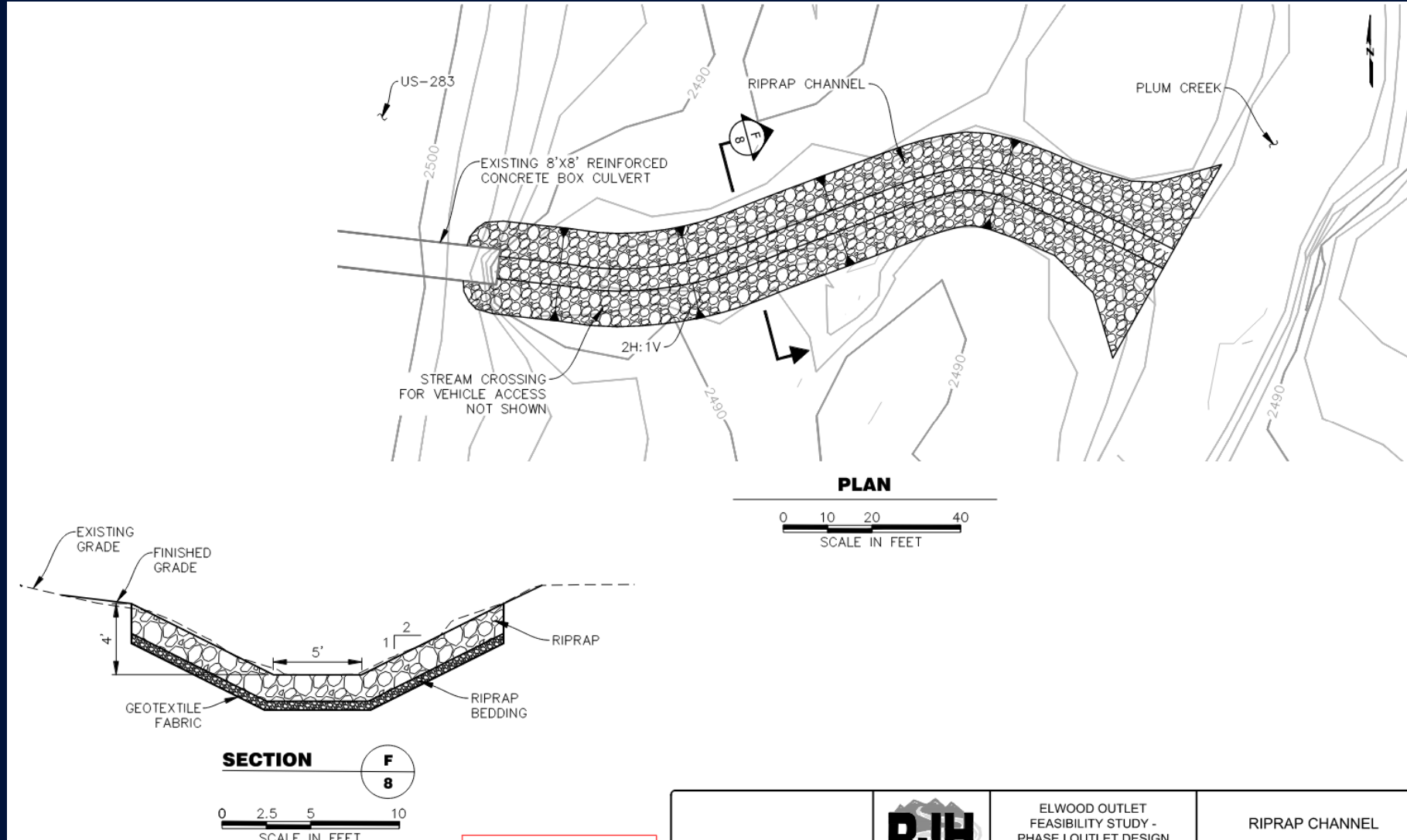
30% Design – Valve Vault (Discharge)



30% Design – Valve Vault (Discharge)



30% Design – Valve Vault (Discharge)



30% Design – Discharge to Plum Creek



30% Design – Discharge to Plum Creek



Selection of Preferred Alternative

Item No.	Item	Unit	Estimated Quantity	Unit Price (\$)	Total Price (\$)
<i>General</i>					
1	Mobilization and Demobilization	LS	1	50,000	50,000
2	Clearing and Grubbing	LS	1	30,000	30,000
3	Dewatering	LS	1	250,000	250,000
4	SCADA and Instrumentation	LS	1	250,000	250,000
5	Access Roads	LS	1	30,000	30,000
<i>HDPE Pipeline</i>					
6	36" HDPE Pipe	LF	4,760	165	785,400
7	Excavation, Pipe Bedding, Backfill	LF	4,760	250	1,190,000
8	Trench Boxes	LS	1	100,000	100,000
9	Air Valve Vault	LS	2	70,000	140,000
10	Flow Meter Vault	LS	1	250,000	250,000
11	Turnout Structure and Vault, Slide Gates	LS	1	400,000	400,000
12	Fixed Cone Valve Vault w/ Bifurcation	LS	1	400,000	400,000
<i>Other Structures</i>					
13	Canal Check Structure w/ Radial Gate	LS	1	1,500,000	1,500,000
14	Riprap Plunge Pool	LS	1	50,000	50,000
15	Riprap Channel (d/s of US-283 Culvert)	LS	1	60,000	60,000
Base Construction Cost (BCC)					5,485,400
Unlisted Items (10% of BCC)					548,540
Design and Construction Contingency (30% of BCC)					1,645,620
Design Engineering (10% of BCC)					548,540
Construction Engineering and Management (15% of BCC)					822,810
Opinion of Probable Construction Cost (OPCC)					9,050,910

- **BCC = \$5.5 Million**
- **OPCC = \$9.05 Million**

Next Steps

- 1. Topographic and Boundary Survey.
- 2. Obtain NDOT Permission for use of Culvert.
- 3. Obtain Easements from Jane Jack.
- 4. Perform a Geotechnical Exploration
- 5. Obtain Environmental Permitting requirements.
- 6. Perform Final Analyses and Design



Discussion

By RJH Consultants, Inc.