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hydrology • geomorphology

Memorandum

DATE July 25, 2022

TO Sandra Phillips, PE, CFM, ENV SP/Assistant Public Works Director
City of Sedona Public Works Department

FROM Nathan Logan, P.E., CFM/JE Fuller

RE Sunset Lofts Hydraulic Modeling and Scour Analysis

1. Introduction

The Sunset Lofts Project site (Project) is a proposed multifamily housing development located generally southeast of the State Route 89A and Coffee Pot Dr. intersection in the City of Sedona (City). The site is currently undeveloped and contains an existing natural wash corridor. The wash is known as Coffee Pot Creek and is a tributary to Carroll Canyon Wash and is on the east side of the Project site and is narrow and incised. The Project site is not within a designated FEMA Special Flood Hazard Area floodplain but is in a FEMA designated Zone X. However, the wash is within a locally regulated floodplain that was delineated in 1994. The locally regulated floodplain is being revised as part of the Storm Water Master Plan Update (SWMPU) currently being prepared for the City. The location of the Project is shown on **Figure 1**. The Project development will occur on the western portion of APN 408-26-030C adjacent to Coffee Pot Creek. The majority of the drainage corridor for Coffee Pot Creek will remain undisturbed and in its existing conditions based on the Project site plan.

The revised locally regulated floodplain for Coffee Pot Creek is based on the FLO-2D model results as opposed to a 1-dimensional HEC-RAS model since the watercourse has many flow splits as it traverses through the city through urbanized areas. The reach within the Project site is riverine and would be appropriate for a 1-D hydraulic model which would be more practical to evaluate hydraulic impacts of the proposed development. The purpose of this memo is to document and summarize the hydraulic analysis of Coffee Pot Creek for pre-Project and post-Project conditions.

2. Data Collection and Hydrology

The SWMPU is being prepared for the City by JEF and information related to the Project has been collected as part of the SWMPU study. The SWMPU is a hydrology and hydraulics modeling update for the City using FLO-2D to develop the hydrology. As part of the SWMPU, data has been collected and was available for use on this Project analysis. This includes information on culverts, existing surface elevation data, and hydraulic conditions/photographs. Additionally, site specific elevation data of the Project site was provided by Sefton Engineering Consultants (Sefton) for the existing and proposed conditions.

2.1 Elevation Data

The existing surface data provided by Sefton only covered the Project site and a small area around it, the proposed surface covered just the proposed grading on the Project site. The data was transformed and reprojected to State Plane Coordinates and to the NAVD 88 vertical datum to match with the City data used in the SWMPU. The LiDAR data (acquired in 2016) developed for the 2018 Oak Creek Floodplain Delineation Study was used for areas outside of the data provided by Sefton. The mapping areas are shown on **Figure 2**.

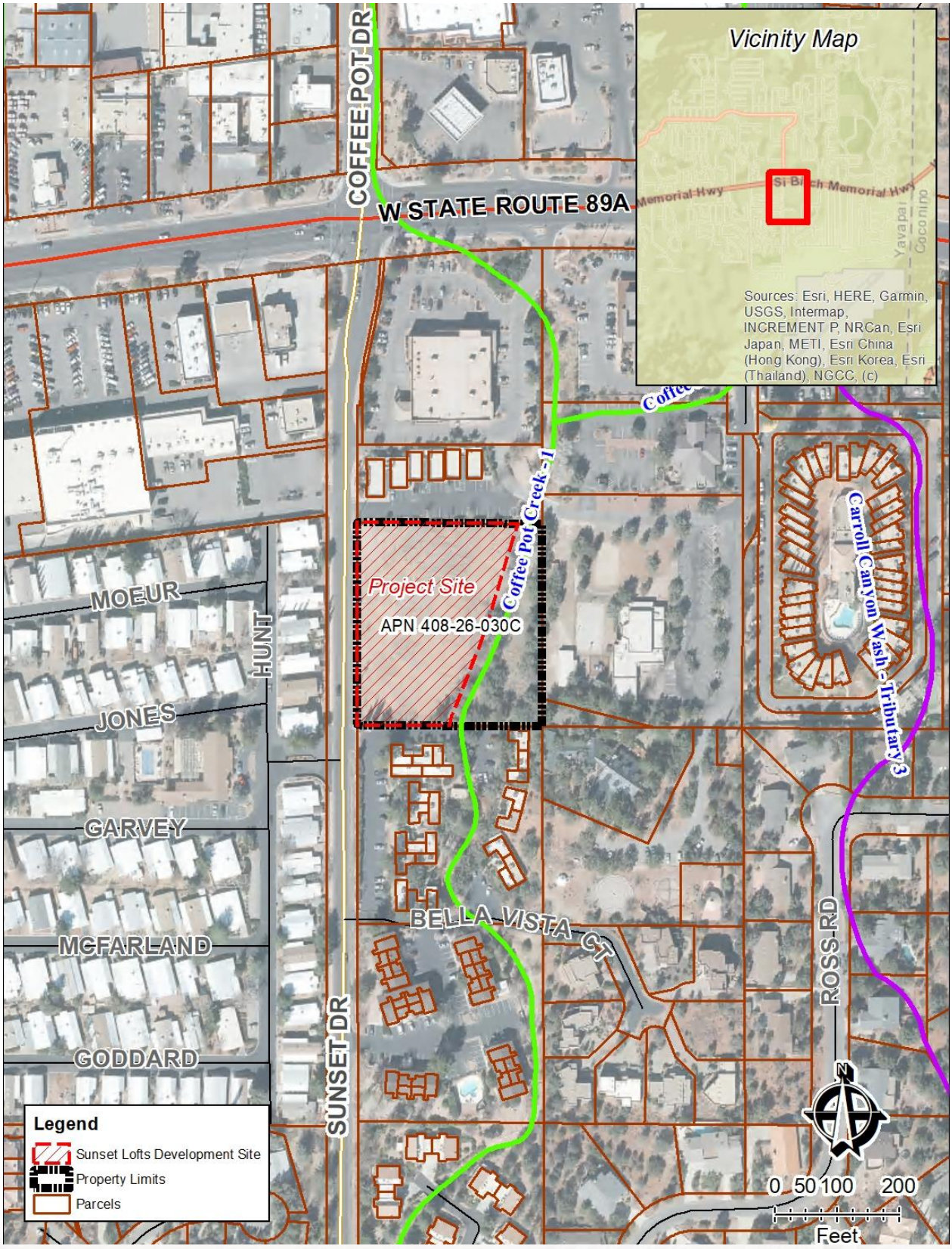


Figure 1 Vicinity Map

2.2 Culvert Data

There are several culverts along the Coffee Pot Creek drainage that affect the hydraulic modeling. The SWMPU culvert information was used to include three culverts in the analysis as summarized below.

- 4-24” CMP pipes in a concrete low water crossing located immediately upstream of the Project site
- 2-48” CMP pipes under an access driveway immediately downstream of the Project site
- 2-48” CMP pipes under Bella Vista Ct. downstream along Coffee Pot Creek

The locations of the culverts are shown on **Figure 2.**

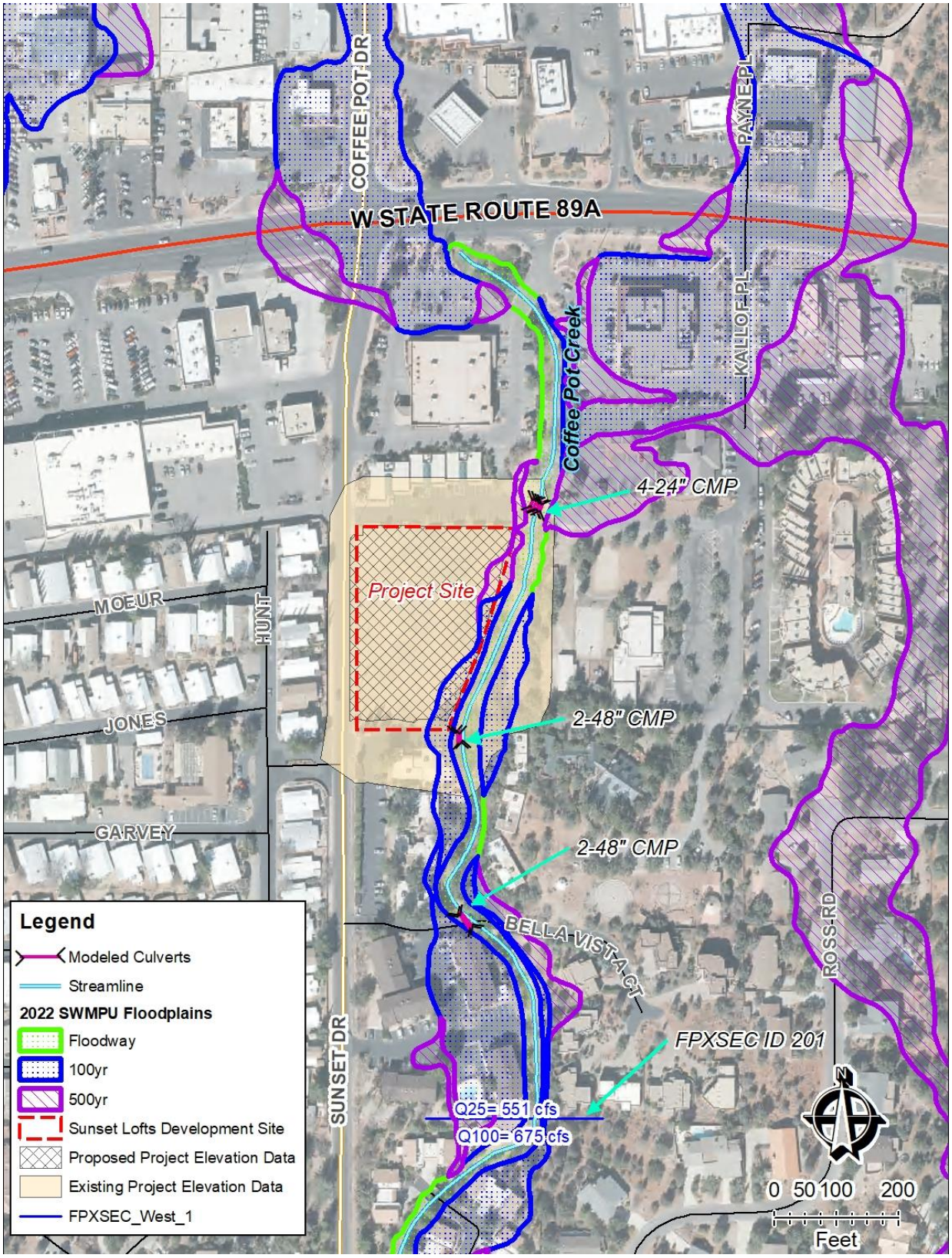


Figure 2 Data Collection Map

2.3 Hydrology

The hydrology for the Project was extracted from the FLO-2D modeling prepared as part of the SWMPU study. A FLO-2D floodplain cross-section (FPXSEC) was located downstream of the Project site and was used for the hydrograph (discharge) input. The data is from the 'West-1' FLO-2D model and is FPXSEC ID 201, the location is shown on **Figure 2**. The 25-year and 100-year 24-hour events were modeled for the SWMPU and extracted for this Project site hydraulic analysis. The peak discharges are summarized in **Table 1** and the hydrographs are shown on **Figure 3**.

It should be noted that the onsite drainage design is being performed by Sefton and is documented in a separate report. Detention basins and underground storage containers are designed to maintain existing conditions peak flows per Sedona Development Standards. Therefore, there will be no increase in runoff peak flows as a result of the project.

Table 1 – Peak Discharge Summary

Event	Peak Discharge (cfs)
25-Year	551
100-Year	675

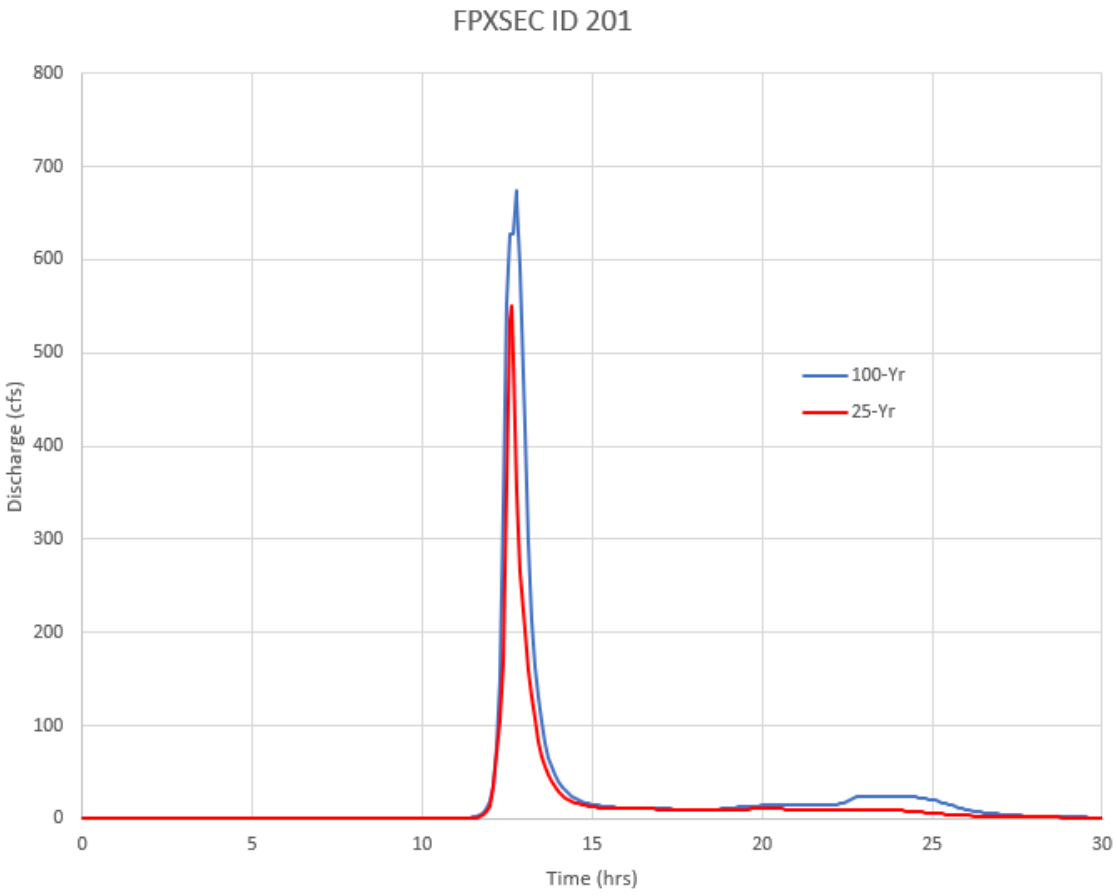


Figure 3 Inflow Hydrographs

3. Hydraulic Modeling

The hydraulics of Coffee Pot Creek and the impacts from the Project were modeled using HEC-RAS v 6.1.0. The analysis was performed using an unsteady flow analysis for the 25-year and 100-year events under Pre-Project and Post-Project conditions. The natural wash contains areas of dense vegetation and a narrow and incised channel, the bed is strewn with rocks and small boulders as shown in **Photograph 1**.

Photograph 1 – Typical Channel

The natural channel has a fairly steep slope, approximately 2 to 2.5%, the unsteady HEC-RAS analysis was performed using a mixed flow regime to maintain volume conservation and model stability.

3.1 HEC-RAS Data

Elevation

The limits of the HEC-RAS model extend from roughly 300-feet upstream of the Project site to approximately 500-feet downstream of the Bella Vista Ct crossing, see **Figure 4**. The cross-sections were sampled using the elevation data provided by Sefton in priority over the SWMPU elevation data.

Manning's n-value

The Manning's n-values used in the analysis are summarized in **Table 2**. The overbank n-values are typically 0.065 with a few locations set to 0.070 for stability.

Table 2 – Manning's n-Values Summary

Reach	ROB	CHNL	LOB
Coffee Pot Creek	0.070-0.065	0.055	0.070-0.065

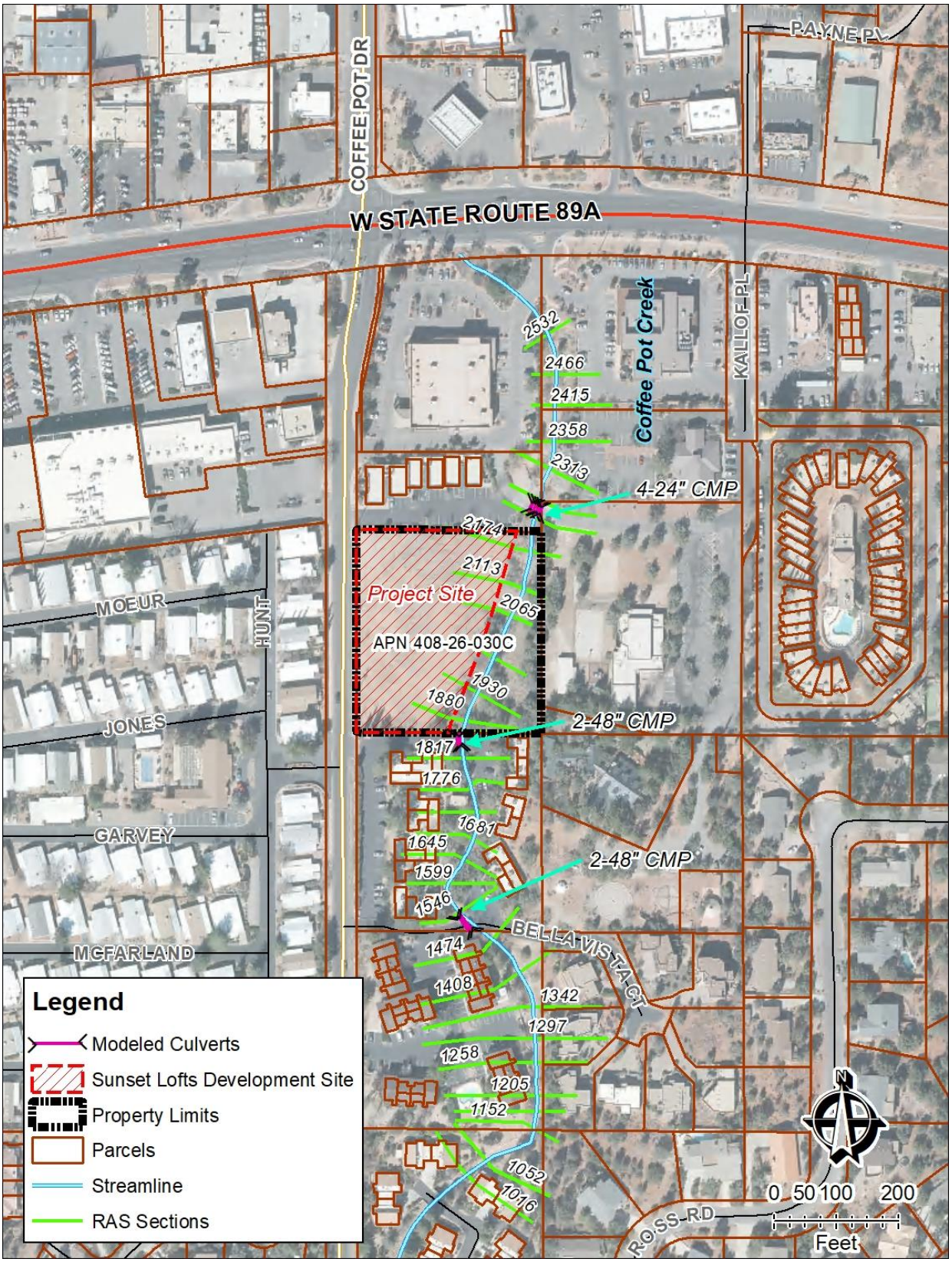


Figure 4 HEC-RAS Schematic

Obstructions/Ineffective Flow Areas/ Expansion and Contraction Coefficients

Given the developed condition of most of the reach, several cross-sections intersect buildings. The buildings were modeled as blocked obstructions in the sections. Locations of backwater immediately upstream and downstream of culverts included ineffective flow areas. Expansion and Contraction coefficients were set to 0.1 and 0.3 respectively except immediately upstream and downstream of culverts which were set to 0.3 and 0.5 respectively.

Model Control

As previously noted, the analysis was performed using an unsteady flow analysis with a mixed flow regime. To maintain model stability, a small timestep of 0.1 second was used.

3.2 HEC-RAS Model Results

The existing conditions 100-year HEC-RAS results show that the peak flows are generally contained within the channel until the downstream limits of the Project site. Flows begin to break out and impact structures on the river right (west) bank of the wash, see the maximum flow depths on Figure 5. Total velocities of the reach are high and range from generally 5 ft/sec to 10 ft/sec.

The proposed conditions model results with the proposed grading in place shows small increases in the water surface elevations (WSEL) on the Project site. However, the WSEL upstream and downstream of the Project are not impacted. The grading extents on-site encroach on the river right (west) overbank, but the majority of the flow is within the channel and contained for that portion of the reach. Figure 6 shows the 100-year maximum flow depths for the proposed conditions.

Table 3 summarizes the HEC-RAS model results and a comparison of the differences between the 100-year existing and proposed conditions. As shown, despite minor differences in peak discharges and velocities, the WSEL differences are limited to on-site. There are no changes in WSEL upstream or downstream of the proposed Project development. The last cross-section on the Project site parcel is immediately upstream of the 2-48” culvert at Bella Vista Ct., the model indicates no change in the WSEL at this point.

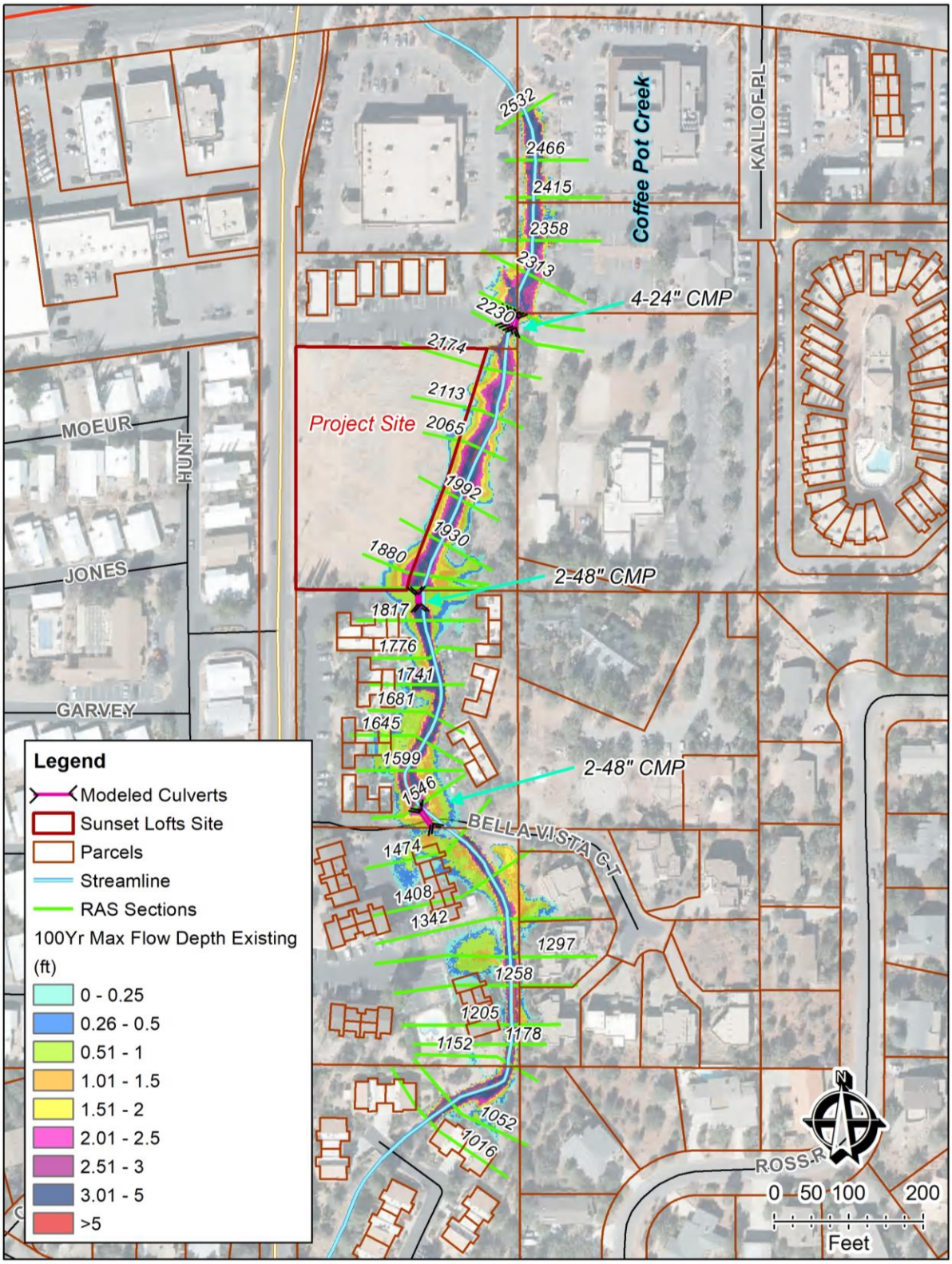


Figure 5 100-Year Existing Conditions Maximum Flow Depths

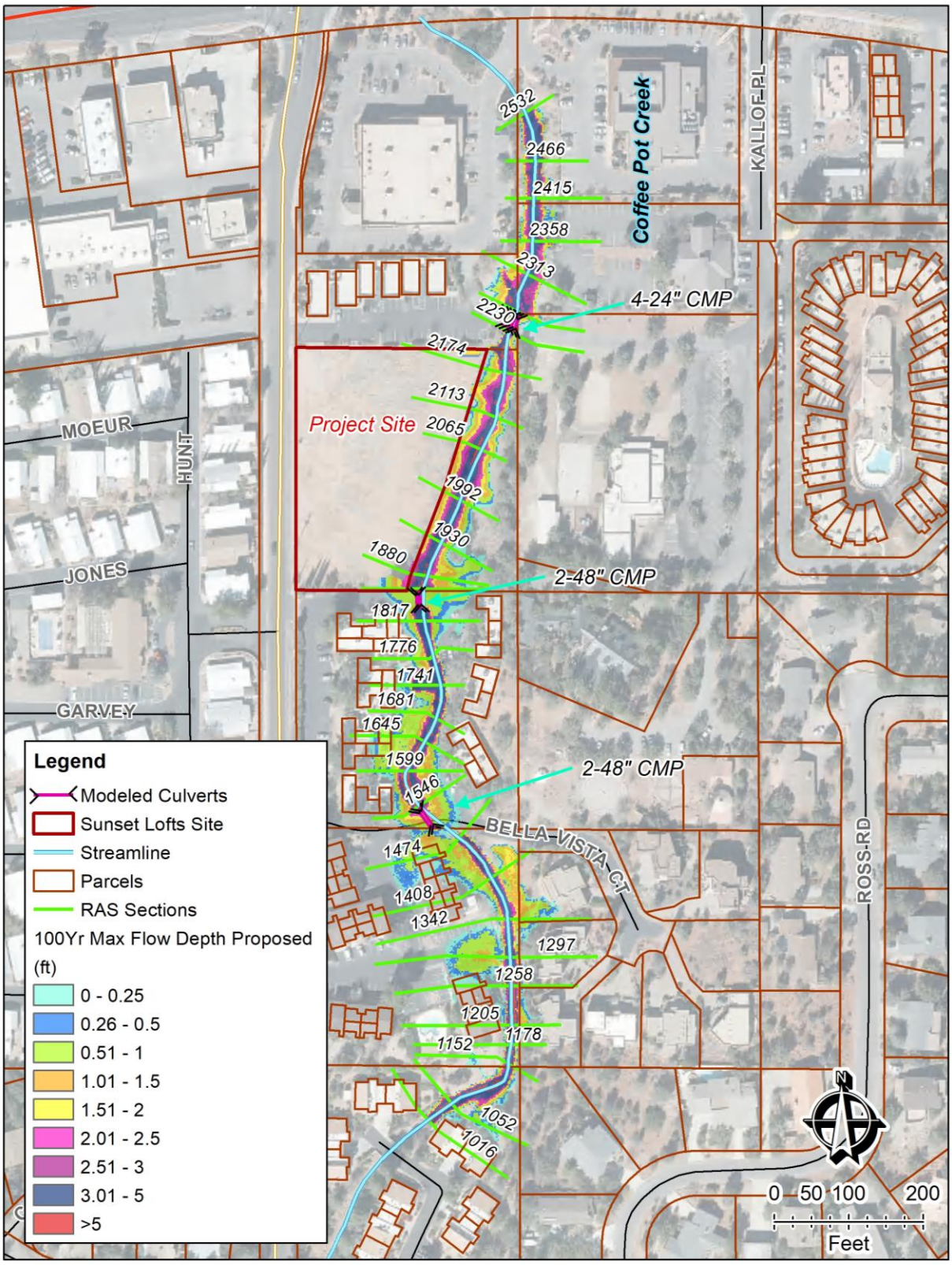


Figure 6 100-Year Proposed Conditions Maximum Flow Depths

Table 3 – 100-Year HEC-RAS Results Comparison

River Sta	Existing				Proposed				Difference			
	Q Total	W.S. Elev	Vel Chnl	Vel Total	Q Total	W.S. Elev	Vel Chnl	Vel Total	ΔQ*	ΔWSEL*	ΔVel Chnl*	ΔVel Total*
	(cfs)	(ft)	(ft/s)	(ft/s)	(cfs)	(ft)	(ft/s)	(ft/s)	(cfs)	(ft)	(ft/s)	(ft/s)
2532	674.96	4399.57	8.22	7.99	674.95	4399.57	8.22	7.99	-0.01	0	0	0
2466	674.64	4398.51	7.09	6.22	674.6	4398.51	7.09	6.22	-0.04	0	0	0
2415	673.97	4397.67	9.32	8.22	673.97	4397.67	9.32	8.22	0	0	0	0
2358	673.51	4396.44	8.05	5.78	673.71	4396.44	8.05	5.78	0.2	0	0	0
2313	673.16	4395.7	7.73	6.16	673.33	4395.7	7.73	6.16	0.17	0	0	0
2260	672.87	4394.97	4.19	3.36	672.9	4394.97	4.19	3.36	0.03	0	0	0
2245	Culvert				Culvert							
2230	673.13	4391.16	9.09	9.09	673.1	4391.15	9.09	9.09	-0.03	-0.01	0	0
2174	672.89	4389.53	10.89	8.24	672.91	4389.51	10.98	8.31	0.02	-0.02	0.09	0.07
2113	672.53	4387.49	10.45	7.13	672.72	4387.47	10.37	7.48	0.19	-0.02	-0.08	0.35
2065	672.04	4386.36	7.65	4.82	672.71	4386.34	7.56	5.18	0.67	-0.02	-0.09	0.36
1992	671.63	4385.25	8.87	6.14	671.95	4385.25	8.78	6.38	0.32	0	-0.09	0.24
1930	671.38	4384.08	8.98	6.19	671.77	4384.12	8.87	6.08	0.39	0.04	-0.11	-0.11
1880	671.18	4383.37	5.43	3.69	671.47	4383.43	5.74	4.52	0.29	0.06	0.31	0.83
1861	671.32	4383.23	4.81	2.95	671.58	4383.23	4.8	2.94	0.26	0	-0.01	-0.01
1839	Culvert				Culvert							
1817	671.18	4381.31	7.88	6.57	671.58	4381.31	7.88	6.57	0.4	0	0	0
1776	671.23	4380.03	10.65	8.22	671.5	4380.03	10.65	8.22	0.27	0	0	0
1741	671.37	4378.91	9.09	7.84	671.5	4378.91	9.09	7.84	0.13	0	0	0
1681	671.12	4377.96	8.98	6.6	671.19	4377.96	8.97	6.6	0.07	0	-0.01	0
1645	670.72	4377.32	8.11	5.72	671.06	4377.32	8.11	5.72	0.34	0	0	0
1599	670.59	4376.77	5.93	4.26	670.74	4376.77	5.93	4.26	0.15	0	0	0
1546	670.27	4376.45	5.2	3.47	670.5	4376.45	5.2	3.47	0.23	0	0	0
1510	Culvert				Culvert							
1474	670.33	4374.61	8.82	7.18	670.7	4374.61	8.82	7.18	0.37	0	0	0
1408	670.27	4373.33	8.37	5.25	670.64	4373.33	8.37	5.25	0.37	0	0	0
1342	670.07	4371.62	11.17	8.12	670.24	4371.62	11.17	8.12	0.17	0	0	0
1297	669.97	4369.83	9.33	5.86	669.93	4369.83	9.33	5.86	-0.04	0	0	0
1258	670.43	4369.08	7.81	7.42	669.64	4369.08	7.8	7.42	-0.79	0	-0.01	0
1205	669.54	4368.15	9.44	7.94	669.6	4368.15	9.45	7.94	0.06	0	0.01	0
1178	669.4	4367.16	11.2	11.2	669.54	4367.16	11.2	11.2	0.14	0	0	0
1152	669.26	4366	10.11	9.68	669.5	4366	10.11	9.68	0.24	0	0	0
1052	669.15	4363.46	8.06	6.72	669.2	4363.46	8.06	6.72	0.05	0	0	0
1016	669.03	4362.57	9.96	8.92	669.11	4362.57	9.97	8.92	0.08	0	0.01	0

*Differences are based on proposed minus existing

4. Scour Analysis and Erosion Protection

A Level 1 Lateral Erosion analysis was performed to identify a minimum setback from Coffee Pot Creek using the 1996 Arizona Department of Water Resources State Standard[1] as follows:

$$\text{Setback} = Q100^{0.5}$$
$$\text{Therefore, } (675 \text{ cfs})^{0.5} = 26 \text{ ft}$$

The 26-foot Erosion Hazard Setback is within the proposed improvements (the parking lot), therefore, erosion protection will be needed. There is observed bedrock within the channel and channel banks (see **Photographs 1** through **3**). And there is a stable grade control structure at the Private Drive just downstream of the Site. Therefore, no significant channel degradation or scour is anticipated. It is fully anticipated that bedrock is at or near the channel invert and may likely be encountered within the channel banks if eroded. However, there is no sign of significant erosion on the channel banks within the study reach. Therefore, a riprap revetment has been designed to blend in with the natural environment to minimize disturbance to the channel and channel bank and to provide a launchable toe that can deform if bank erosion does occur. The toe-down elevation will be set at either the existing channel bottom elevation or at bedrock if encountered as shown in **Figure 7**. The riprap will be native material to blend in with the bed material in the Creek and exposed bedrock.

Photograph 2 – Bedrock and Stable Banks

[1] ADWR, State Standard for Watercourse System Sediment Balance, 1996

Photograph 3 – Bedrock and Stable Banks

Photograph 4 – Downstream Grade Control at Private Drive

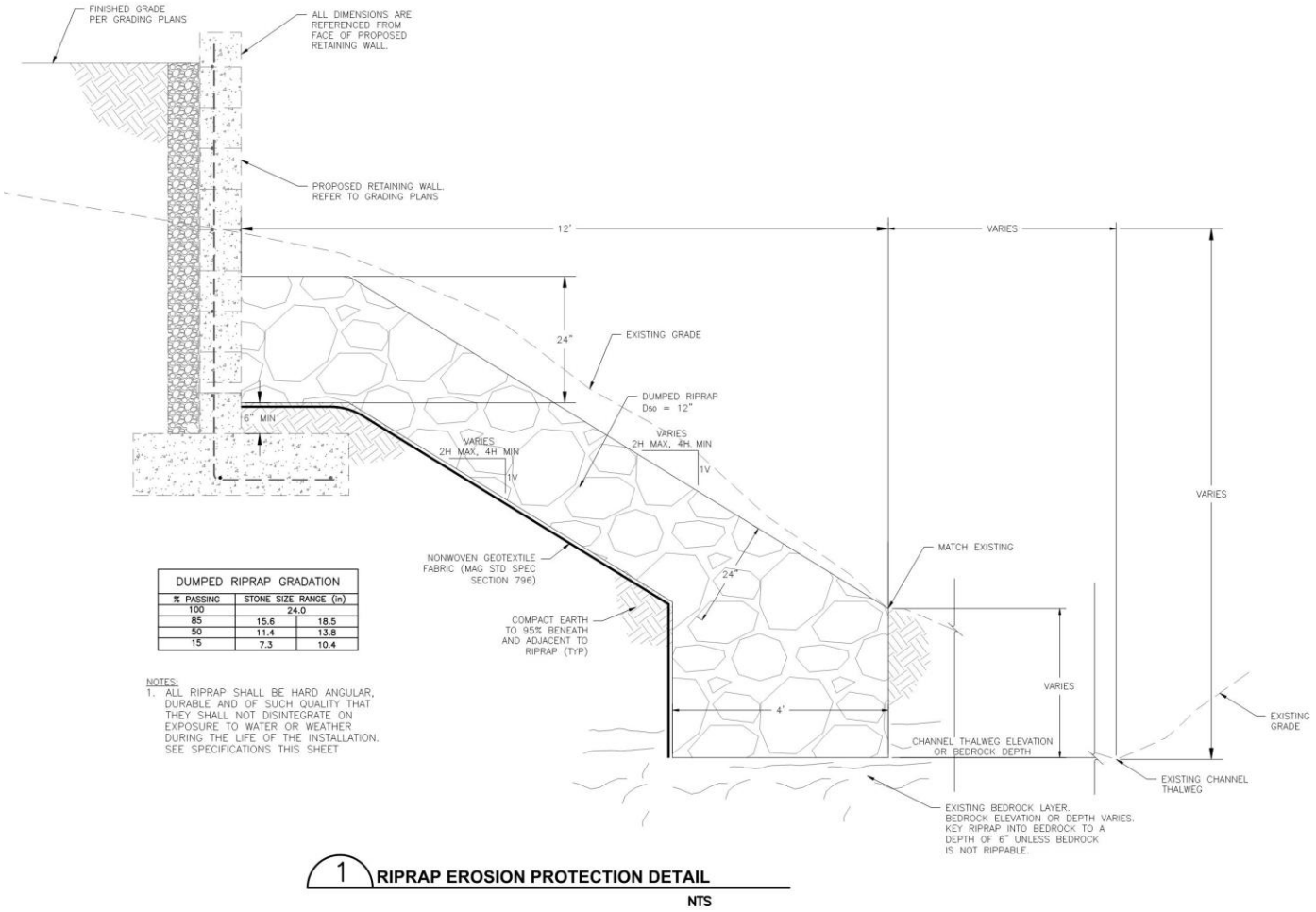


Figure 7 Erosion Protection Detail

5. Conclusion

Based on this analysis, the proposed development from the Sunset Lofts Project will not have an adverse impact on the off-site hydraulics upstream or downstream of the Project site. The development is limited to relatively minor encroachment on a limited portion of the river right (west) overbank. However, the 100-year flows are generally contained within the incised wash corridor, which remains intact and undisturbed per the provided proposed conditions surface. There is very little overbank flow in the area of proposed development. Therefore, the minor encroachment into the overbank area does not have a significant impact on the 100-year WSEL. Any change in on-site WSEL is mitigated before exiting the parcel on which the development is proposed.

Riprap erosion protection will be placed at or below existing grade to prevent lateral erosion and undermining of the proposed retaining wall on the east side of the site. Riprap will be native red rock material to blend in with existing rock and rock outcrop in Coffee Pot Creek. Furthermore, there will be no increase in runoff peak flows as a result of the project as documented in a separate Drainage Design Report by Sefton Engineering Consultants.

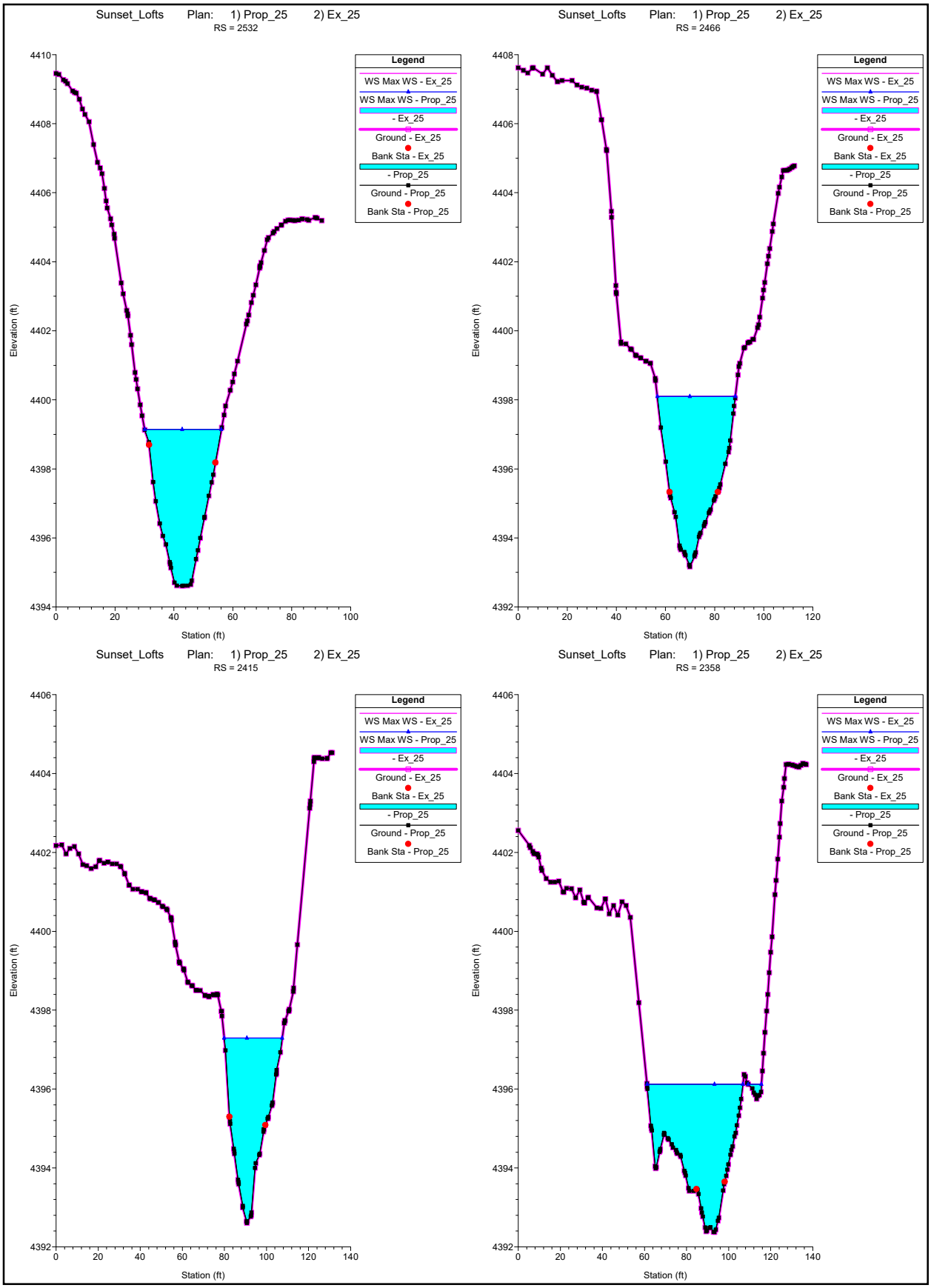
Appendix

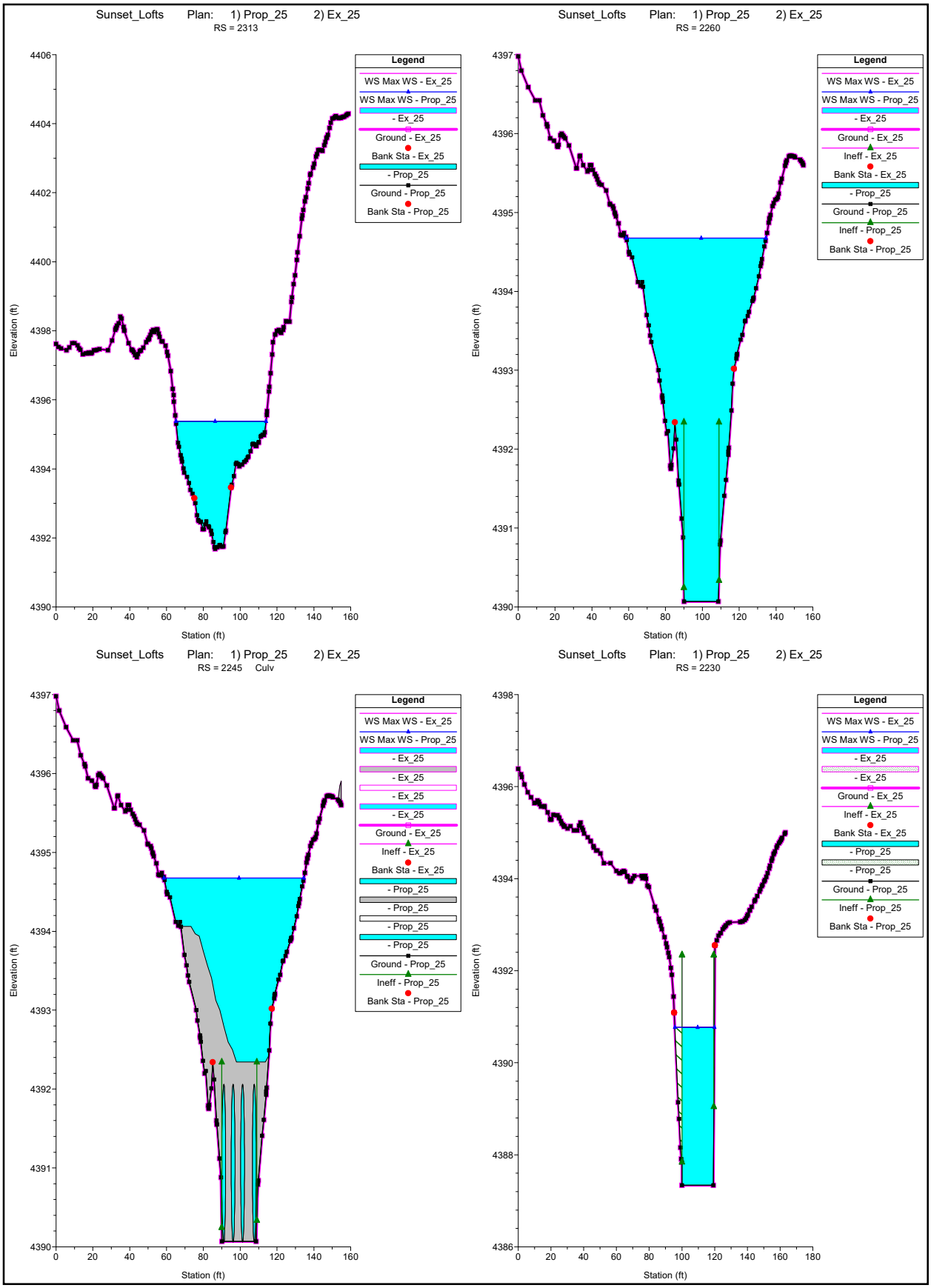
HEC-RAS Output

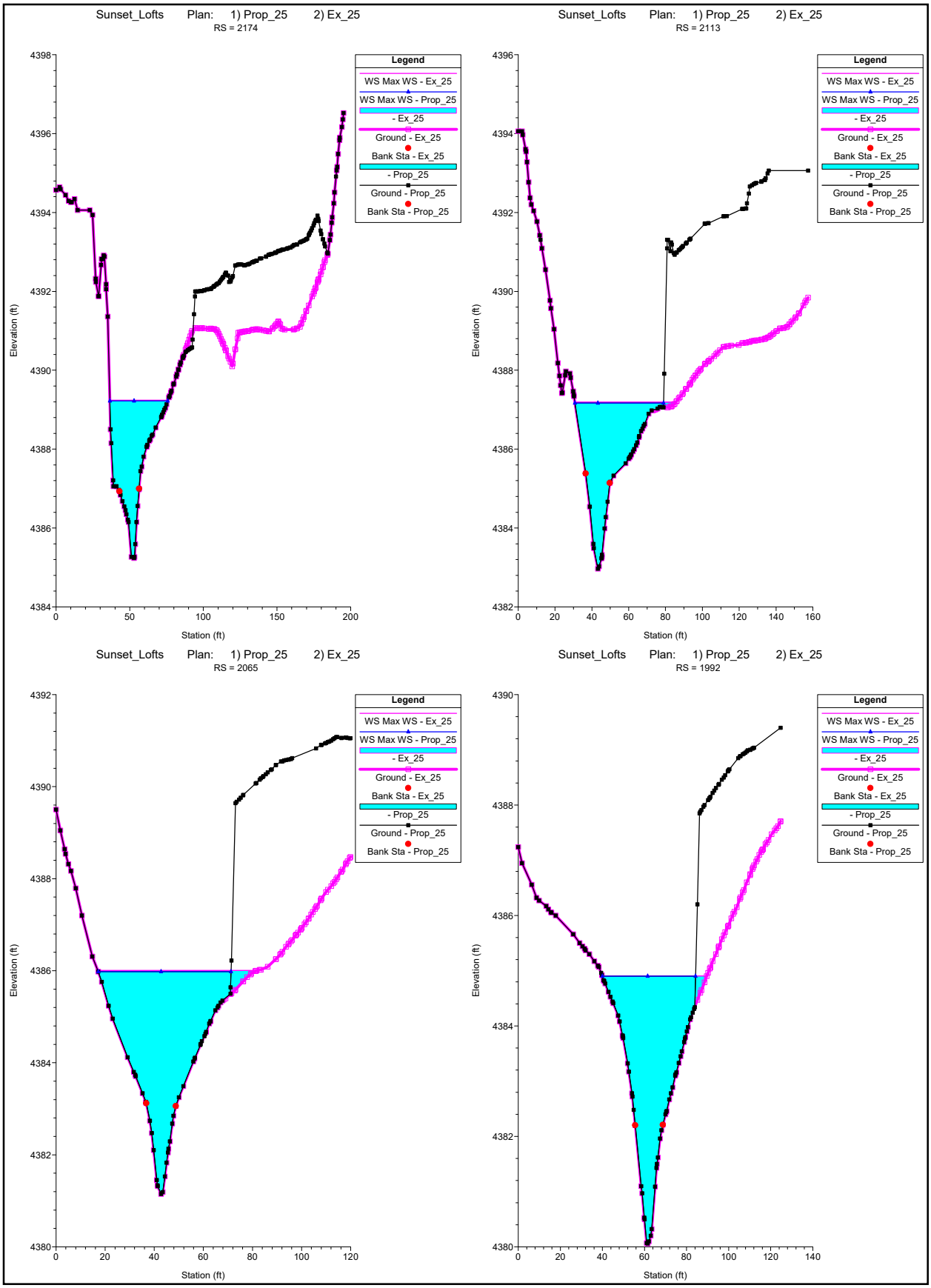
100-Year

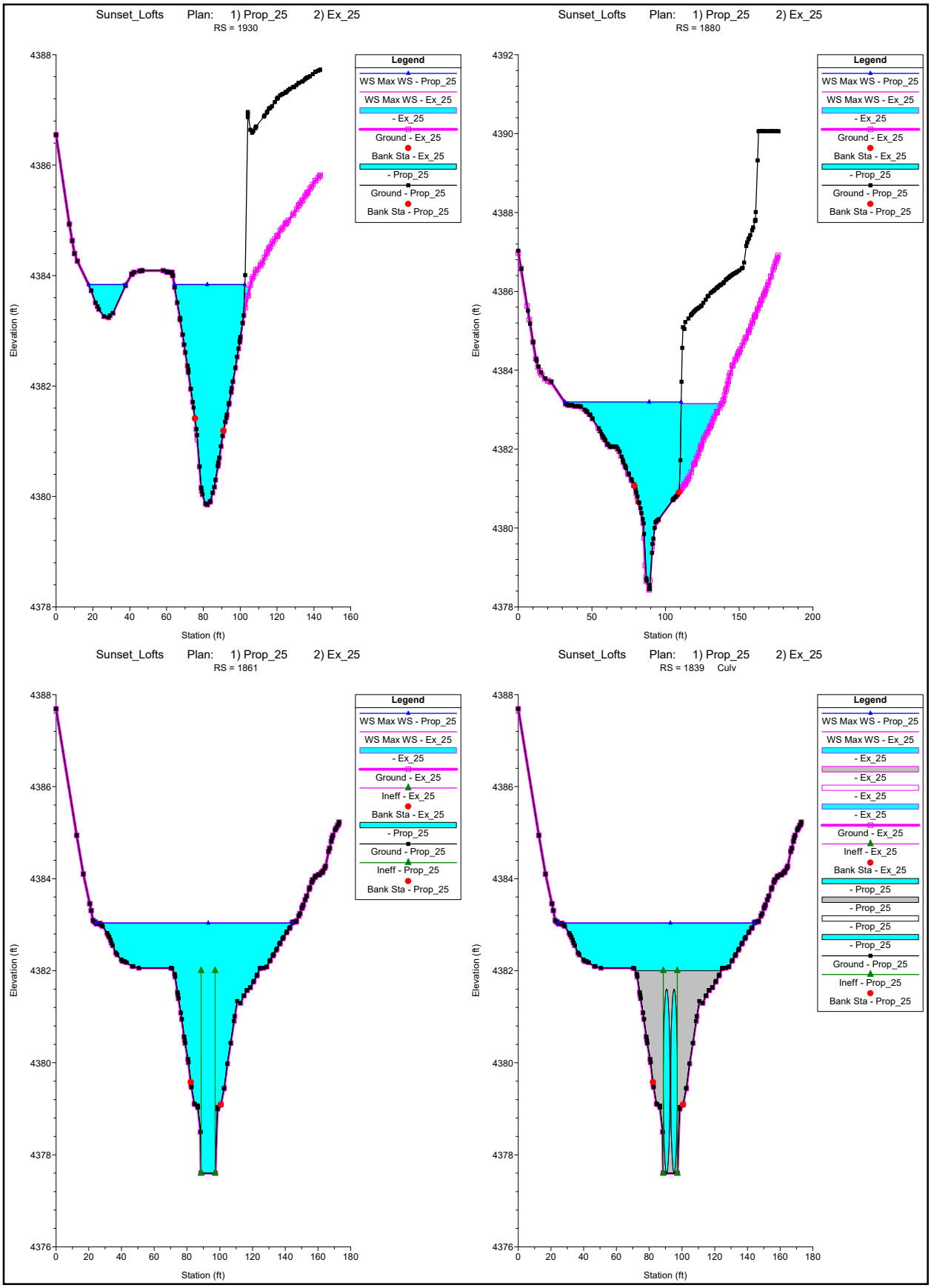
HEC-RAS River: River 1 Reach: Reach 1 Profile: Max WS

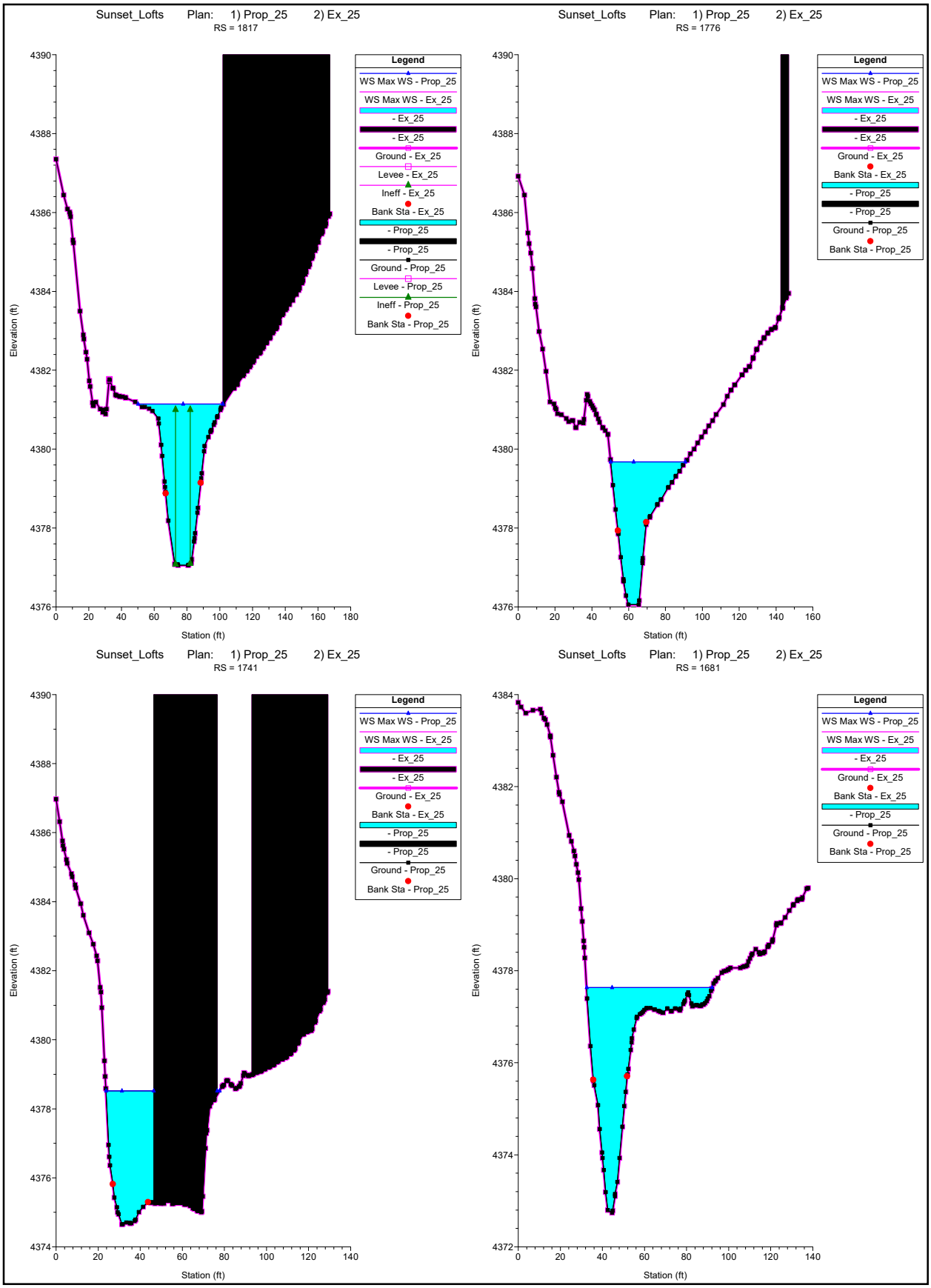
Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Max Chl Dpth	Hydr Depth	Vel Total
				(cfs)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(ft)	(ft/s)
Reach 1	2532	Max WS	EX_100	674.96	4394.61	4399.57	4400.61	0.018414	8.22	84.44	27.88	0.76	4.96	3.03	7.99
Reach 1	2532	Max WS	Prop_100	674.95	4394.61	4399.57	4400.61	0.018413	8.22	84.44	27.88	0.76	4.96	3.03	7.99
Reach 1	2466	Max WS	EX_100	674.64	4393.17	4398.51	4399.22	0.010259	7.09	108.51	33.15	0.60	5.34	3.27	6.22
Reach 1	2466	Max WS	Prop_100	674.60	4393.17	4398.51	4399.22	0.010258	7.09	108.51	33.15	0.60	5.34	3.27	6.22
Reach 1	2415	Max WS	EX_100	673.97	4392.61	4397.67	4398.91	0.021329	9.32	81.98	29.34	0.84	5.06	2.79	8.22
Reach 1	2415	Max WS	Prop_100	673.97	4392.61	4397.67	4398.91	0.021329	9.32	81.98	29.34	0.84	5.06	2.79	8.22
Reach 1	2358	Max WS	EX_100	673.51	4392.37	4396.44	4397.15	0.016339	8.05	116.51	55.35	0.74	4.07	2.10	5.78
Reach 1	2358	Max WS	Prop_100	673.52	4392.37	4396.44	4397.15	0.016339	8.05	116.51	55.35	0.74	4.07	2.10	5.78
Reach 1	2313	Max WS	EX_100	673.16	4391.68	4395.70	4396.46	0.016467	7.73	109.34	50.14	0.74	4.02	2.18	6.16
Reach 1	2313	Max WS	Prop_100	673.16	4391.68	4395.70	4396.46	0.016467	7.73	109.34	50.14	0.74	4.02	2.18	6.16
Reach 1	2260	Max WS	EX_100	672.87	4390.07	4394.97	4395.21	0.003667	4.19	200.41	84.19	0.36	4.90	2.38	3.36
Reach 1	2260	Max WS	Prop_100	672.98	4390.07	4394.97	4395.21	0.003669	4.19	200.41	84.19	0.36	4.90	2.38	3.36
Reach 1	2245			Culvert											
Reach 1	2230	Max WS	EX_100	673.13	4387.34	4391.16	4392.44	0.021470	9.09	74.07	24.71	0.82	3.81	3.80	9.09
Reach 1	2230	Max WS	Prop_100	673.19	4387.34	4391.15	4392.44	0.021493	9.09	74.06	24.71	0.82	3.81	3.80	9.09
Reach 1	2174	Max WS	EX_100	672.89	4385.24	4389.53	4390.98	0.034351	10.89	81.68	42.42	1.04	4.29	1.93	8.24
Reach 1	2174	Max WS	Prop_100	672.97	4385.24	4389.51	4390.99	0.035130	10.98	80.95	42.26	1.05	4.27	1.92	8.31
Reach 1	2113	Max WS	EX_100	672.53	4382.97	4387.49	4388.77	0.030407	10.45	94.34	61.48	0.98	4.52	1.53	7.13
Reach 1	2113	Max WS	Prop_100	672.72	4382.97	4387.47	4388.74	0.030206	10.37	89.98	49.81	0.98	4.50	1.81	7.48
Reach 1	2065	Max WS	EX_100	672.04	4381.15	4386.36	4386.96	0.012452	7.65	139.56	76.86	0.65	5.21	1.82	4.82
Reach 1	2065	Max WS	Prop_100	672.39	4381.15	4386.34	4386.93	0.012250	7.56	129.85	56.79	0.65	5.19	2.29	5.18
Reach 1	1992	Max WS	EX_100	671.63	4380.06	4385.25	4386.18	0.017419	8.87	109.34	58.61	0.77	5.19	1.87	6.14
Reach 1	1992	Max WS	Prop_100	672.17	4380.06	4385.25	4386.17	0.017072	8.78	105.28	49.73	0.76	5.19	2.12	6.38
Reach 1	1930	Max WS	EX_100	671.38	4379.85	4384.08	4385.07	0.020084	8.98	108.38	79.28	0.83	4.23	1.37	6.19
Reach 1	1930	Max WS	Prop_100	671.56	4379.85	4384.12	4385.10	0.019239	8.87	110.49	89.18	0.81	4.27	1.24	6.08
Reach 1	1880	Max WS	EX_100	671.18	4378.43	4383.37	4383.69	0.008409	5.43	181.95	111.95	0.52	4.94	1.63	3.69
Reach 1	1880	Max WS	Prop_100	671.37	4378.45	4383.43	4383.87	0.009888	5.75	148.38	83.26	0.56	4.98	1.78	4.52
Reach 1	1861	Max WS	EX_100	671.32	4377.60	4383.23	4383.48	0.004200	4.81	227.83	127.02	0.38	5.63	1.79	2.95
Reach 1	1861	Max WS	Prop_100	671.25	4377.60	4383.23	4383.48	0.004199	4.81	227.83	127.02	0.38	5.63	1.79	2.95
Reach 1	1839			Culvert											
Reach 1	1817	Max WS	EX_100	671.18	4377.06	4381.31	4382.21	0.015220	7.88	102.13	59.56	0.72	4.25	1.71	6.57
Reach 1	1817	Max WS	Prop_100	671.56	4377.06	4381.31	4382.21	0.015220	7.88	102.19	59.58	0.72	4.25	1.72	6.57
Reach 1	1776	Max WS	EX_100	671.23	4376.06	4380.03	4381.53	0.032645	10.65	81.66	46.45	1.02	3.97	1.76	8.22
Reach 1	1776	Max WS	Prop_100	671.50	4376.06	4380.03	4381.53	0.032629	10.65	81.70	46.47	1.02	3.97	1.76	8.22
Reach 1	1741	Max WS	EX_100	671.37	4374.65	4378.91	4380.08	0.018415	9.09	85.63	35.17	0.81	4.26	2.44	7.84
Reach 1	1741	Max WS	Prop_100	671.58	4374.65	4378.91	4380.08	0.018410	9.09	85.67	35.17	0.81	4.26	2.44	7.84
Reach 1	1681	Max WS	EX_100	671.12	4372.74	4377.96	4379.03	0.019645	8.98	101.68	64.67	0.80	5.22	1.57	6.60
Reach 1	1681	Max WS	Prop_100	671.18	4372.74	4377.96	4379.03	0.019623	8.97	101.74	64.68	0.80	5.22	1.57	6.60
Reach 1	1645	Max WS	EX_100	670.72	4372.12	4377.32	4378.14	0.013817	8.11	117.29	63.45	0.68	5.20	1.85	5.72
Reach 1	1645	Max WS	Prop_100	670.97	4372.12	4377.32	4378.14	0.013811	8.11	117.35	63.45	0.68	5.20	1.85	5.72
Reach 1	1599	Max WS	EX_100	670.59	4370.75	4376.77	4377.22	0.007100	5.93	157.53	89.38	0.49	6.02	1.76	4.26
Reach 1	1599	Max WS	Prop_100	670.75	4370.75	4376.77	4377.22	0.007096	5.93	157.61	89.39	0.49	6.02	1.76	4.26
Reach 1	1546	Max WS	EX_100	670.27	4369.94	4376.45	4376.78	0.003875	5.20	193.18	85.42	0.38	6.51	2.26	3.47
Reach 1	1546	Max WS	Prop_100	670.52	4369.94	4376.45	4376.78	0.003878	5.20	193.18	85.42	0.38	6.51	2.26	3.47
Reach 1	1510			Culvert											
Reach 1	1474	Max WS	EX_100	670.33	4369.13	4374.61	4375.74	0.021384	8.82	93.40	61.59	0.75	5.48	1.52	7.18
Reach 1	1474	Max WS	Prop_100	670.55	4369.13	4374.61	4375.74	0.021375	8.82	93.46	61.60	0.75	5.48	1.52	7.17
Reach 1	1408	Max WS	EX_100	670.27	4368.13	4373.33	4374.11	0.014898	8.37	127.74	86.10	0.70	5.20	1.48	5.25
Reach 1	1408	Max WS	Prop_100	670.28	4368.13	4373.33	4374.11	0.014899	8.37	127.74	86.10	0.70	5.20	1.48	5.25
Reach 1	1342	Max WS	EX_100	670.07	4367.69	4371.62	4373.26	0.040348	11.17	82.56	64.71	1.12	3.93	1.28	8.12
Reach 1	1342	Max WS	Prop_100	670.52	4367.69	4371.62	4373.27	0.040402	11.18	82.56	64.71	1.12	3.93	1.28	8.12
Reach 1	1297	Max WS	EX_100	669.97	4364.47	4369.83	4370.90	0.023809	9.33	114.28	99.69	0.83	5.36	1.15	5.86
Reach 1	1297	Max WS	Prop_100	670.12	4364.47	4369.83	4370.90	0.023819	9.33	114.28	99.69	0.83	5.36	1.15	5.86
Reach 1	1258	Max WS	EX_100	670.43	4362.71	4369.08	4370.02	0.014064	7.81	90.31	34.29	0.64	6.37	2.63	7.42
Reach 1	1258	Max WS	Prop_100	670.39	4362.71	4369.08	4370.02	0.014062	7.81	90.31	34.29	0.64	6.37	2.63	7.42
Reach 1	1205	Max WS	EX_100	669.54	4361.44	4368.15	4369.38	0.020917	9.44	84.29	29.67	0.77	6.71	2.84	7.94
Reach 1	1205	Max WS	Prop_100	669.40	4361.44	4368.15	4369.38	0.020908	9.44	84.29	29.67	0.77	6.71	2.84	7.94
Reach 1	1178	Max WS	EX_100	669.40	4361.09	4367.16	4369.11	0.047768	11.20	59.77	18.27	1.09	6.07	3.27	11.20
Reach 1	1178	Max WS	Prop_100	669.54	4361.09	4367.16	4369.11	0.047788	11.20	59.77	18.27	1.09	6.07	3.27	11.20
Reach 1	1152	Max WS	EX_100	669.26	4360.69	4366.00	4367.57	0.030709	10.11	69.15	33.91	0.95	5.31	2.04	9.68
Reach 1	1152	Max WS	Prop_100	669.39	4360.69	4366.00	4367.57	0.030720	10.11	69.15	33.91	0.95	5.31	2.04	9.68
Reach 1	1052	Max WS	EX_100	669.15	4357.36	4363.46	4364.42	0.015964	8.06	99.56	73.51	0.71	6.10	1.35	6.72
Reach 1	1052	Max WS	Prop_100	669.54	4357.36	4363.46	4364.42	0.015965	8.06	99.63	73.53	0.71	6.10	1.36	6.72
Reach 1	1016	Max WS	EX_100	669.03	4357.16	4362.57	4363.92	0.027026	9.96	74.98	22.38	0.90	5.41	3.35	8.92
Reach 1	1016	Max WS	Prop_100	669.18	4357.16	4362.57	4363.92	0.027039	9.97	74.98	22.38	0.90	5.41	3.35	8.93

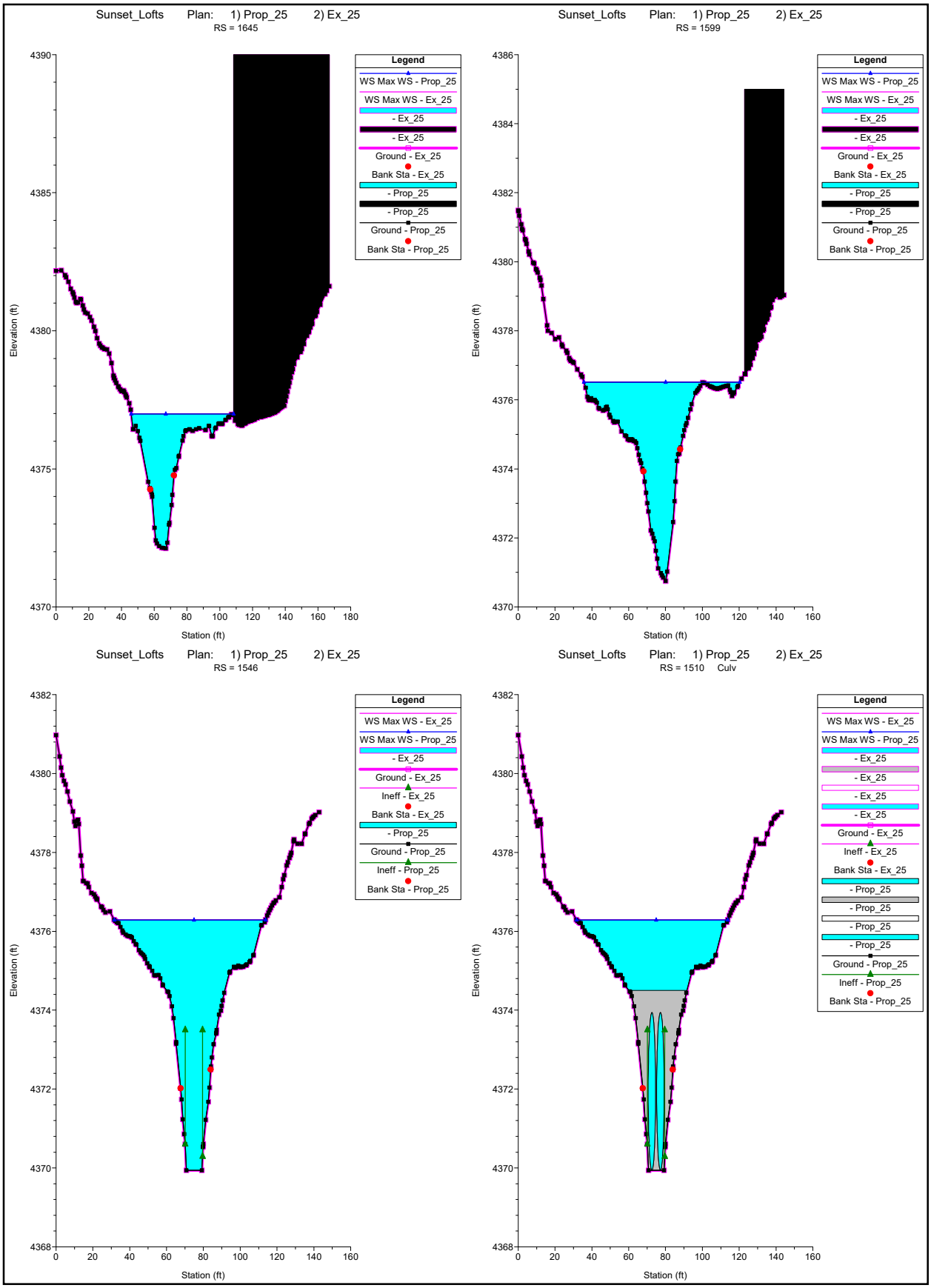

Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2532
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2466
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2415
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2358
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)

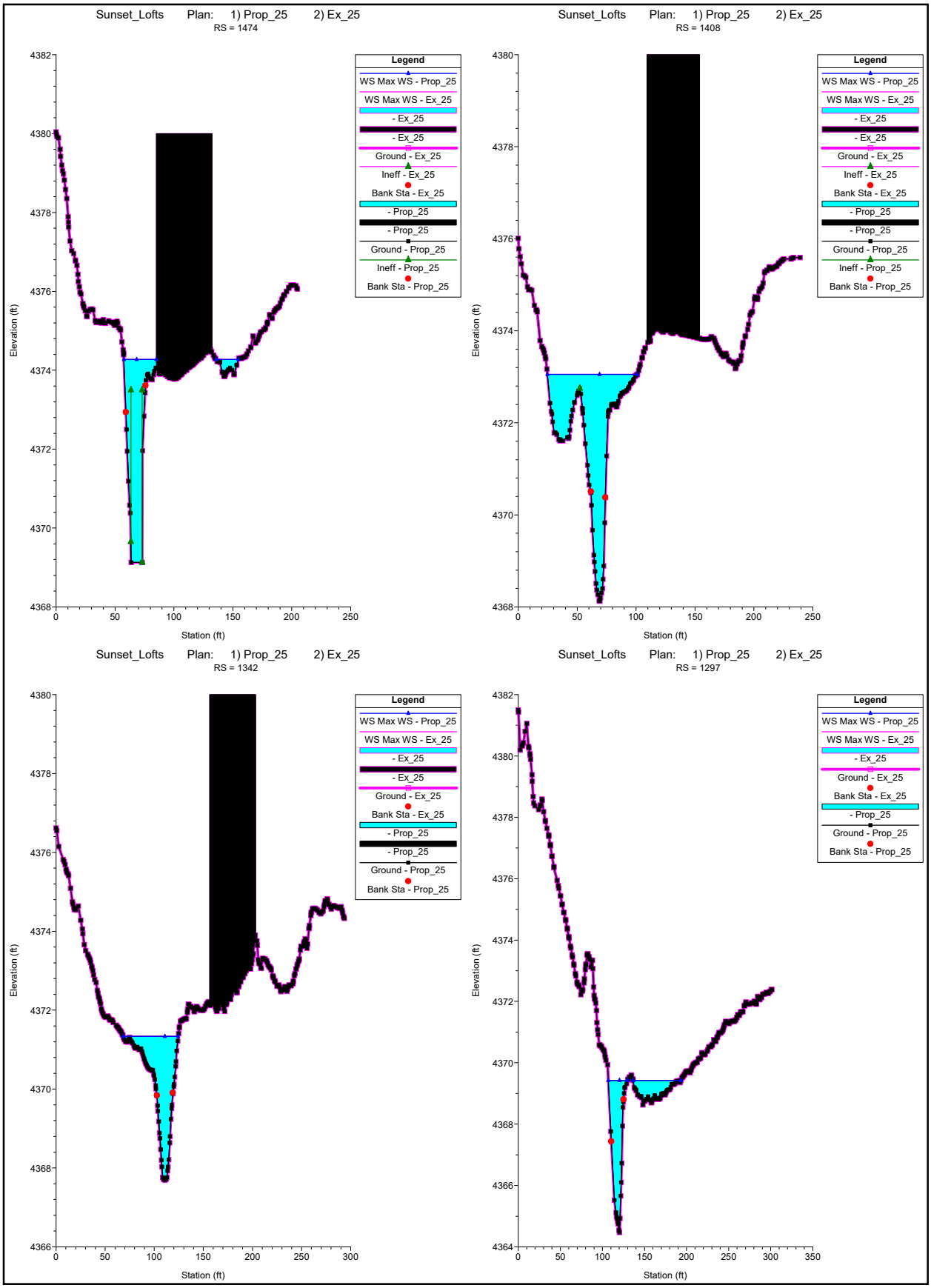

Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2313
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2260
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
Ground - Ex_25
Ineff - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Ineff - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2245 Culv
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
- Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Ineff - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
- Prop_25
- Prop_25
Ground - Prop_25
Ineff - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2230
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
- Ex_25
Ground - Ex_25
Ineff - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Ineff - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)

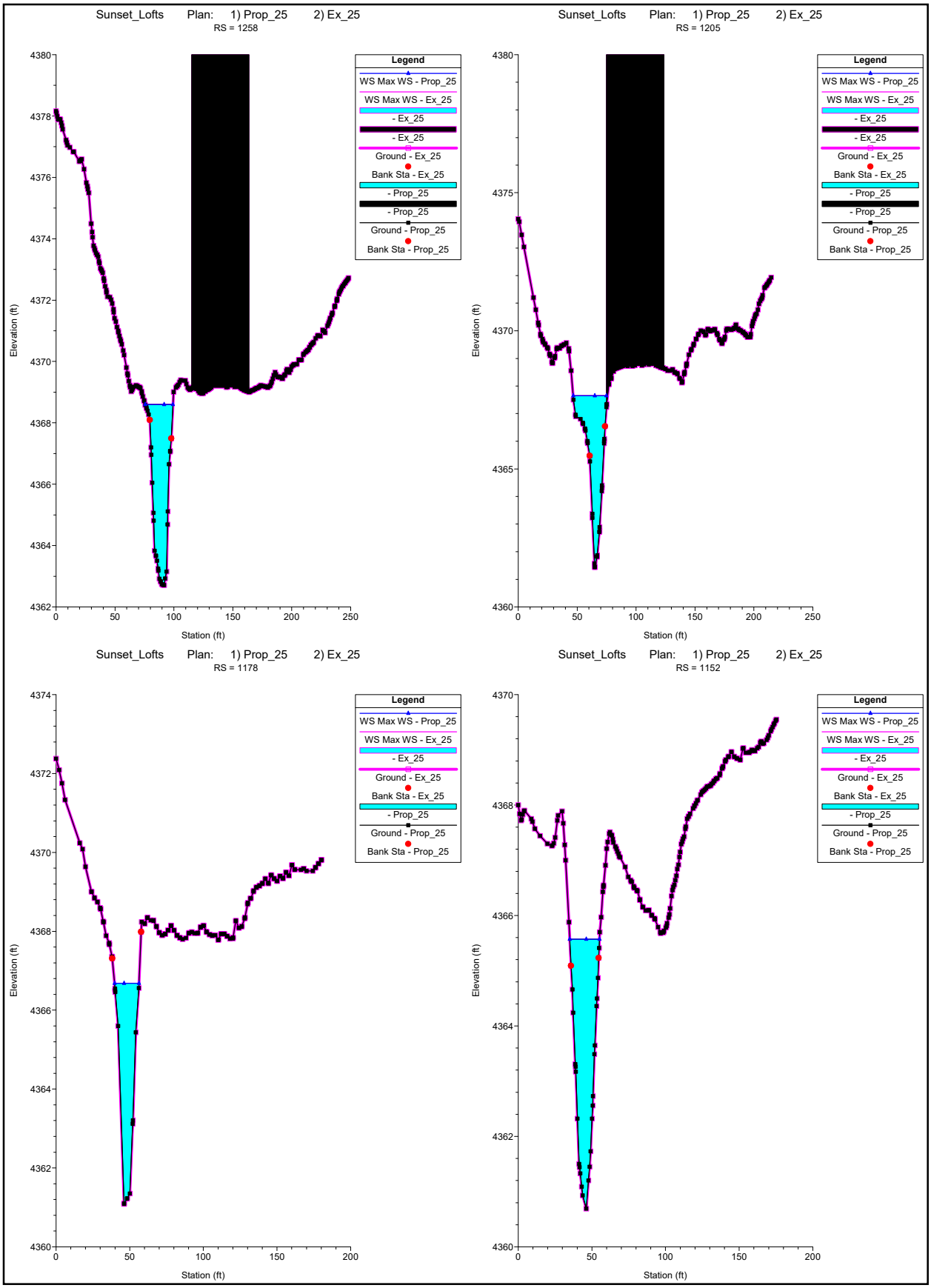

Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2174
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2113
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2065
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1992

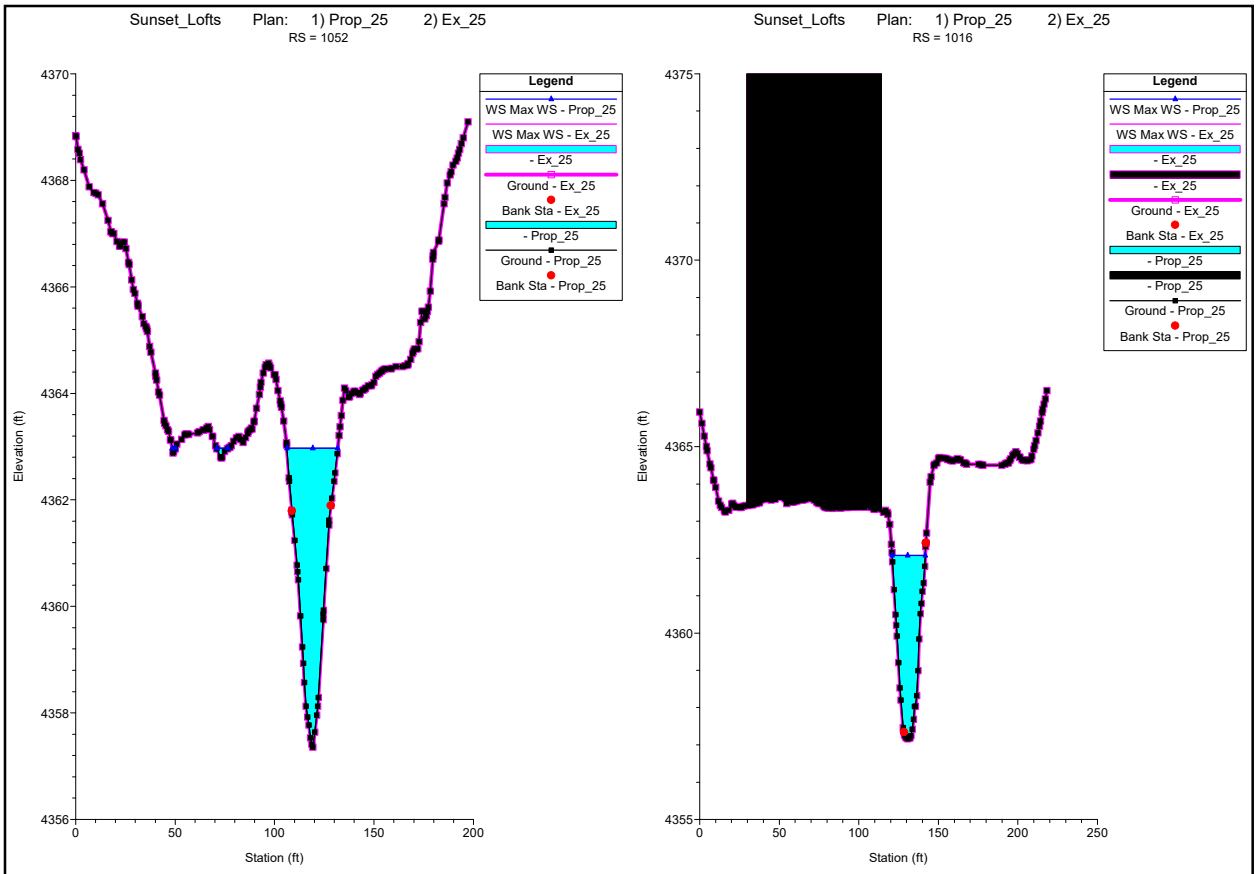

Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1930
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1880
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1861
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
Ground - Ex_25
Ineff - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Ineff - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1839 Culv
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Ineff - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
- Prop_25
- Prop_25
Ground - Prop_25
Ineff - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)


Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1817
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Levee - Ex_25
Ineff - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Levee - Prop_25
Ineff - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1776
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1741
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1681
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)


Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1645
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1599
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1546
Ineff - Ex_25
Ineff - Prop_25
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1510 Culv


Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1474
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1408
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1342
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1297
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Ineff - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Ineff - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)


Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1258
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1205
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1178
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1152
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)


Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1052
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
4370
4368
4366
4364
4362
4360
4358
4356
0
50
100
150
200
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1016
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
4375
4370
4365
4360
4355
0
50
100
150
200
250

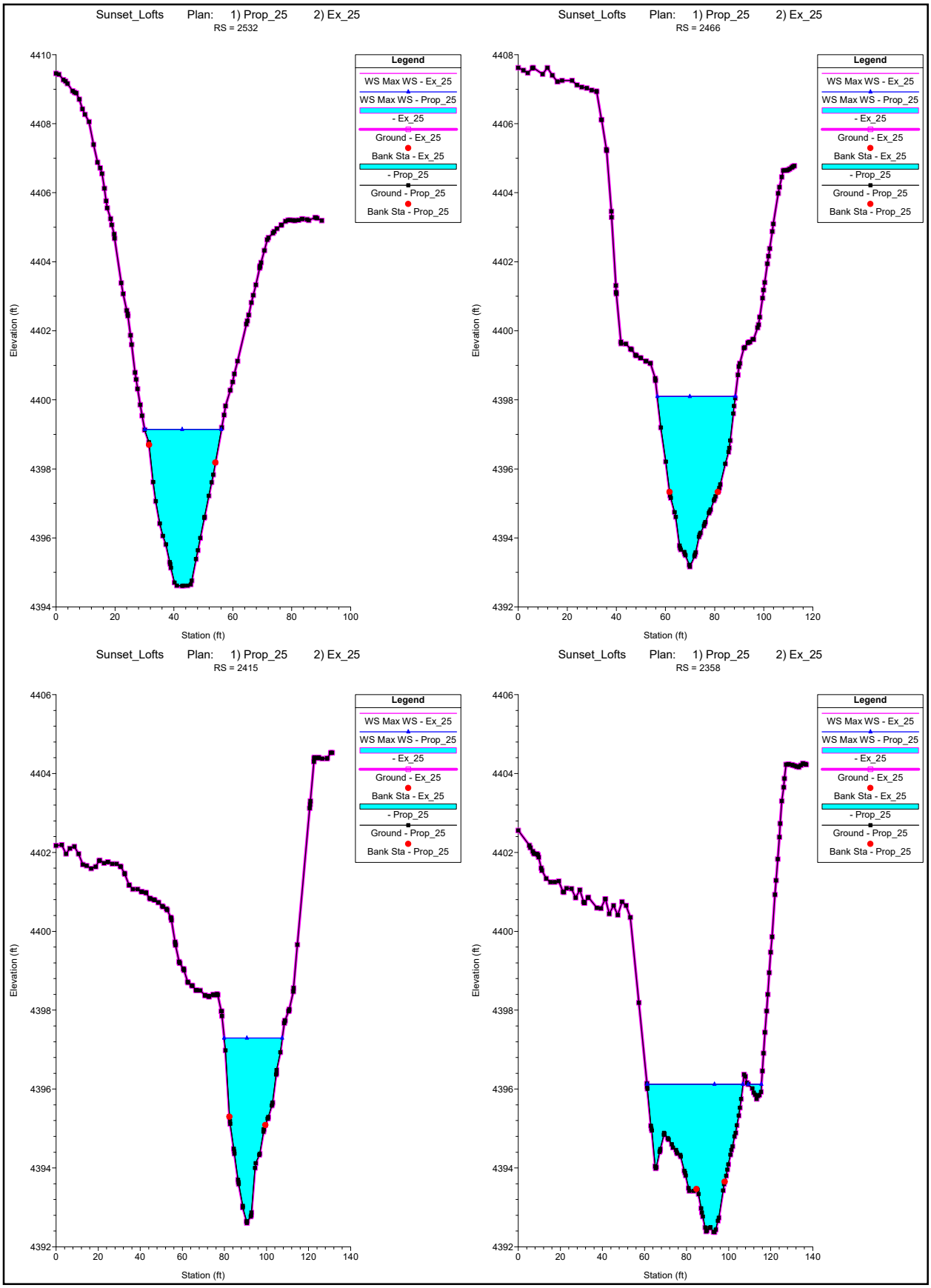
25-Year

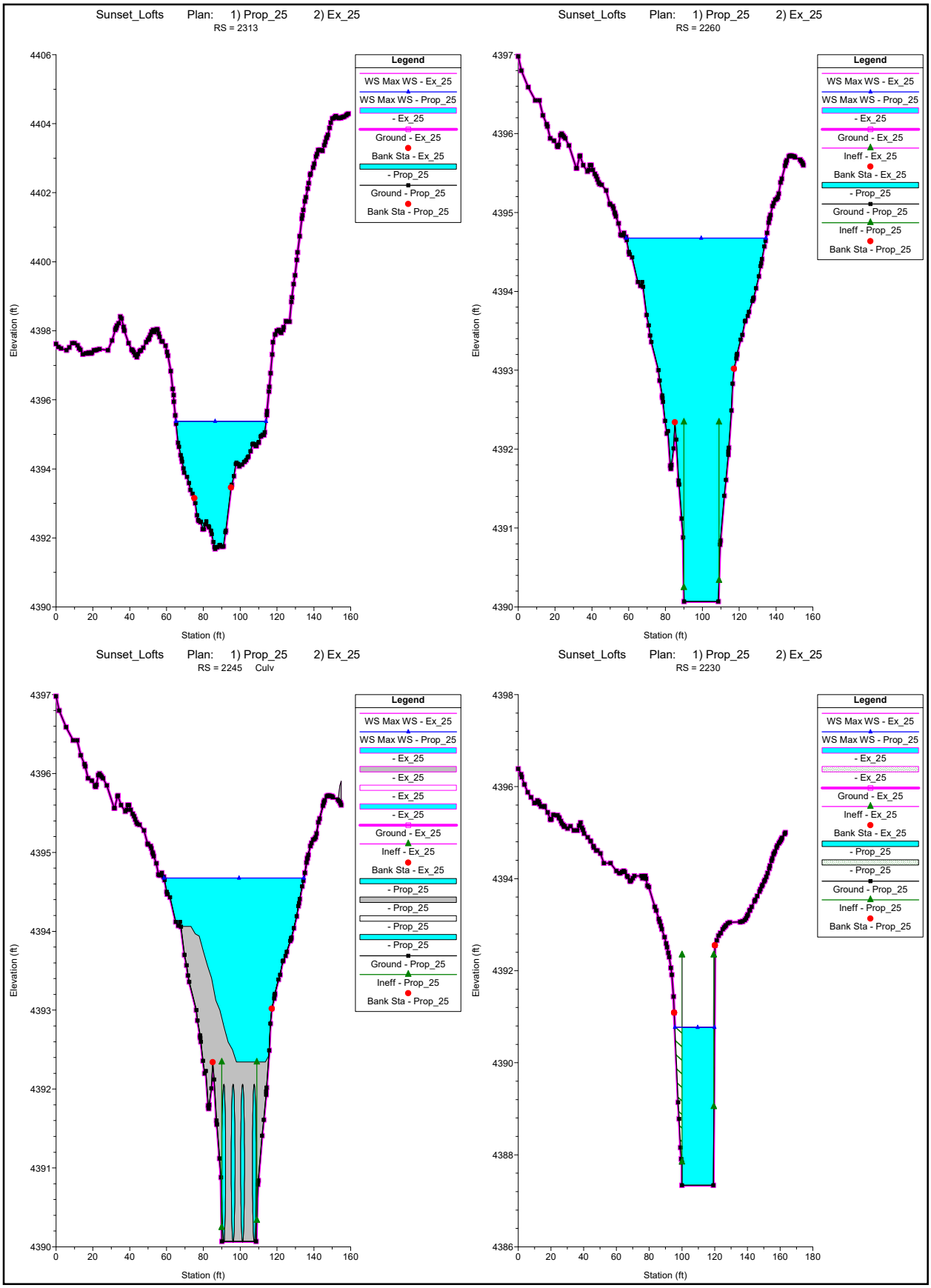
HEC-RAS River: River 1 Reach: Reach 1 Profile: Max WS

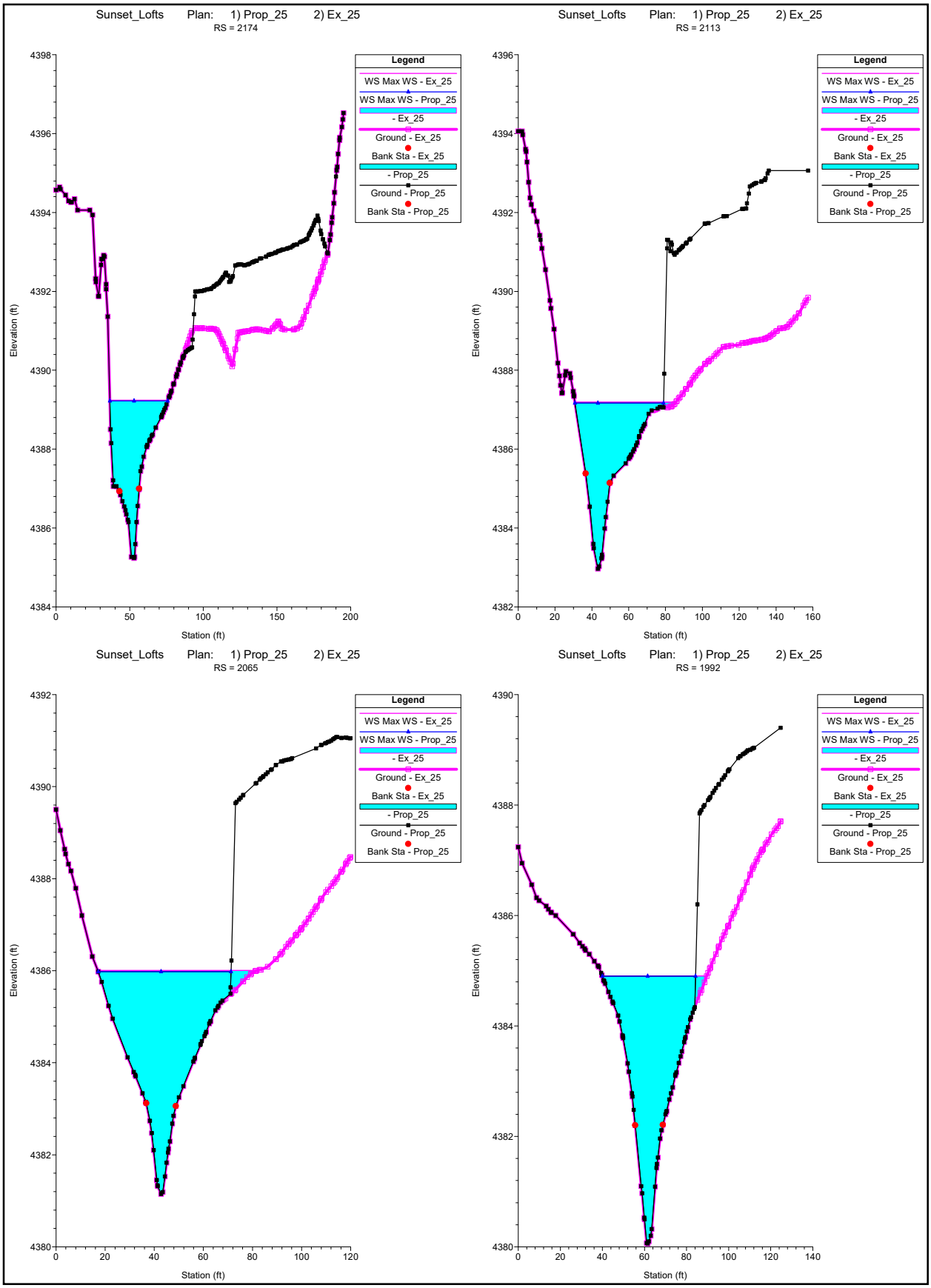
Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Max Chl Dpth	Hydr Depth	Vel Total
				(cfs)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(ft)	(ft/s)
Reach 1	2532	Max WS	Ex_25	550.22	4394.61	4399.14	4400.05	0.018856	7.65	72.91	26.01	0.76	4.53	2.80	7.55
Reach 1	2532	Max WS	Prop_25	550.24	4394.61	4399.14	4400.05	0.018858	7.65	72.91	26.01	0.76	4.53	2.80	7.55
Reach 1	2466	Max WS	Ex_25	548.88	4393.17	4398.10	4398.70	0.009854	6.49	95.11	31.74	0.58	4.93	3.00	5.77
Reach 1	2466	Max WS	Prop_25	548.84	4393.17	4398.10	4398.70	0.009852	6.49	95.11	31.74	0.58	4.93	3.00	5.77
Reach 1	2415	Max WS	Ex_25	548.45	4392.61	4397.29	4398.36	0.020699	8.57	71.31	27.60	0.81	4.68	2.58	7.69
Reach 1	2415	Max WS	Prop_25	548.45	4392.61	4397.29	4398.36	0.020700	8.57	71.31	27.60	0.81	4.68	2.58	7.69
Reach 1	2358	Max WS	Ex_25	547.69	4392.37	4396.12	4396.75	0.015965	7.48	99.17	51.78	0.72	3.75	1.92	5.52
Reach 1	2358	Max WS	Prop_25	547.77	4392.37	4396.12	4396.75	0.015970	7.48	99.17	51.78	0.72	3.75	1.92	5.52
Reach 1	2313	Max WS	Ex_25	547.46	4391.68	4395.38	4396.07	0.016588	7.26	93.46	48.83	0.73	3.70	1.91	5.86
Reach 1	2313	Max WS	Prop_25	547.53	4391.68	4395.38	4396.08	0.016592	7.26	93.46	48.83	0.73	3.70	1.91	5.86
Reach 1	2260	Max WS	Ex_25	547.01	4390.07	4394.68	4394.87	0.003242	3.75	176.49	75.92	0.33	4.60	2.32	3.10
Reach 1	2260	Max WS	Prop_25	547.14	4390.07	4394.68	4394.87	0.003244	3.75	176.49	75.92	0.33	4.60	2.32	3.10
Reach 1	2245			Culvert											
Reach 1	2230	Max WS	Ex_25	547.32	4387.34	4390.77	4391.82	0.020226	8.22	66.61	24.14	0.78	3.43	3.42	8.22
Reach 1	2230	Max WS	Prop_25	547.33	4387.34	4390.77	4391.82	0.020245	8.22	66.59	24.14	0.78	3.43	3.41	8.22
Reach 1	2174	Max WS	Ex_25	547.11	4385.24	4389.24	4390.53	0.033437	10.13	69.85	39.43	1.01	4.00	1.77	7.83
Reach 1	2174	Max WS	Prop_25	547.01	4385.24	4389.22	4390.54	0.034116	10.20	69.28	39.28	1.02	3.98	1.76	7.90
Reach 1	2113	Max WS	Ex_25	546.50	4382.97	4387.19	4388.45	0.031750	10.05	76.81	54.88	0.99	4.22	1.40	7.11
Reach 1	2113	Max WS	Prop_25	546.70	4382.97	4387.17	4388.41	0.031762	10.01	74.99	48.17	0.99	4.19	1.56	7.29
Reach 1	2065	Max WS	Ex_25	545.41	4381.15	4386.00	4386.58	0.012706	7.29	113.77	64.76	0.65	4.85	1.76	4.79
Reach 1	2065	Max WS	Prop_25	546.14	4381.15	4385.98	4386.54	0.012449	7.19	110.16	54.09	0.64	4.83	2.04	4.96
Reach 1	1992	Max WS	Ex_25	545.24	4380.06	4384.90	4385.75	0.017049	8.29	90.80	49.60	0.75	4.84	1.83	6.00
Reach 1	1992	Max WS	Prop_25	545.44	4380.06	4384.90	4385.73	0.016650	8.19	89.23	44.30	0.74	4.84	2.01	6.11
Reach 1	1930	Max WS	Ex_25	544.44	4379.85	4383.79	4384.64	0.018406	8.16	89.60	59.78	0.78	3.94	1.50	6.08
Reach 1	1930	Max WS	Prop_25	544.97	4379.85	4383.84	4384.63	0.017131	7.93	91.30	58.40	0.75	3.98	1.56	5.97
Reach 1	1880	Max WS	Ex_25	544.18	4378.43	4383.15	4383.44	0.007721	4.98	158.44	106.01	0.49	4.72	1.49	3.43
Reach 1	1880	Max WS	Prop_25	544.80	4378.45	4383.20	4383.57	0.008933	5.20	130.06	79.10	0.53	4.75	1.64	4.19
Reach 1	1861	Max WS	Ex_25	544.23	4377.60	4383.03	4383.24	0.003508	4.28	203.41	119.89	0.35	5.43	1.70	2.68
Reach 1	1861	Max WS	Prop_25	544.79	4377.60	4383.04	4383.24	0.003511	4.28	203.53	119.93	0.35	5.44	1.70	2.68
Reach 1	1839			Culvert											
Reach 1	1817	Max WS	Ex_25	544.50	4377.06	4381.14	4381.83	0.011964	6.78	93.22	51.85	0.63	4.08	1.80	5.84
Reach 1	1817	Max WS	Prop_25	544.80	4377.06	4381.15	4381.83	0.011964	6.78	93.27	51.88	0.63	4.08	1.80	5.84
Reach 1	1776	Max WS	Ex_25	544.43	4376.06	4379.67	4381.11	0.034814	10.21	66.04	40.51	1.03	3.61	1.63	8.24
Reach 1	1776	Max WS	Prop_25	544.97	4376.06	4379.68	4381.11	0.034789	10.21	66.12	40.54	1.03	3.61	1.63	8.24
Reach 1	1741	Max WS	Ex_25	544.67	4374.65	4378.51	4379.49	0.017455	8.25	73.78	23.76	0.77	3.86	3.11	7.38
Reach 1	1741	Max WS	Prop_25	545.12	4374.65	4378.52	4379.49	0.017467	8.26	73.81	23.77	0.77	3.87	3.11	7.39
Reach 1	1681	Max WS	Ex_25	543.94	4372.74	4377.63	4378.66	0.019900	8.53	81.45	59.64	0.79	4.89	1.37	6.68
Reach 1	1681	Max WS	Prop_25	544.17	4372.74	4377.63	4378.66	0.019890	8.53	81.51	59.65	0.79	4.89	1.37	6.68
Reach 1	1645	Max WS	Ex_25	543.02	4372.12	4376.99	4377.77	0.013746	7.68	96.52	62.50	0.67	4.87	1.54	5.63
Reach 1	1645	Max WS	Prop_25	543.86	4372.12	4376.99	4377.78	0.013771	7.69	96.58	62.51	0.67	4.87	1.55	5.63
Reach 1	1599	Max WS	Ex_25	320.13	4370.75	4376.51	4376.65	0.002202	3.17	134.65	84.60	0.27	5.76	1.59	2.38
Reach 1	1599	Max WS	Prop_25	320.61	4370.75	4376.51	4376.65	0.002204	3.18	134.78	84.62	0.27	5.76	1.59	2.38
Reach 1	1546	Max WS	Ex_25	398.86	4369.94	4376.29	4376.42	0.001603	3.28	179.35	82.15	0.24	6.35	2.18	2.22
Reach 1	1546	Max WS	Prop_25	398.88	4369.94	4376.29	4376.42	0.001603	3.28	179.35	82.15	0.24	6.35	2.18	2.22
Reach 1	1510			Culvert											
Reach 1	1474	Max WS	Ex_25	542.61	4369.13	4374.27	4375.27	0.020061	8.09	74.57	46.53	0.72	5.14	1.60	7.28
Reach 1	1474	Max WS	Prop_25	543.18	4369.13	4374.27	4375.27	0.020082	8.10	74.62	46.56	0.72	5.14	1.60	7.28
Reach 1	1408	Max WS	Ex_25	542.70	4368.13	4373.05	4373.80	0.014429	7.89	105.91	76.21	0.68	4.92	1.39	5.12
Reach 1	1408	Max WS	Prop_25	543.12	4368.13	4373.05	4373.80	0.014431	7.90	105.98	76.23	0.68	4.92	1.39	5.12
Reach 1	1342	Max WS	Ex_25	542.37	4367.69	4371.33	4372.93	0.042074	10.69	65.35	56.08	1.12	3.64	1.17	8.30
Reach 1	1342	Max WS	Prop_25	542.86	4367.69	4371.34	4372.93	0.042079	10.69	65.41	56.09	1.13	3.65	1.17	8.30
Reach 1	1297	Max WS	Ex_25	541.96	4364.47	4369.43	4370.72	0.029538	9.66	77.64	79.58	0.91	4.95	0.98	6.98
Reach 1	1297	Max WS	Prop_25	542.52	4364.47	4369.43	4370.73	0.029553	9.67	77.72	79.61	0.91	4.96	0.98	6.98
Reach 1	1258	Max WS	Ex_25	542.43	4362.71	4368.60	4369.38	0.013490	7.12	77.64	23.57	0.61	5.89	3.29	6.99
Reach 1	1258	Max WS	Prop_25	543.05	4362.71	4368.60	4369.39	0.013500	7.12	77.69	23.58	0.61	5.89	3.29	6.99
Reach 1	1205	Max WS	Ex_25	542.18	4361.44	4367.65	4368.81	0.022261	9.03	69.77	28.21	0.78	6.21	2.47	7.77
Reach 1	1205	Max WS	Prop_25	542.38	4361.44	4367.65	4368.81	0.022234	9.03	69.82	28.21	0.78	6.21	2.47	7.77
Reach 1	1178	Max WS	Ex_25	541.82	4361.09	4366.68	4368.41	0.045909	10.55	51.37	16.56	1.06	5.59	3.10	10.55
Reach 1	1178	Max WS	Prop_25	542.21	4361.09	4366.68	4368.41	0.045904	10.55	51.41	16.57	1.06	5.59	3.10	10.55
Reach 1	1152	Max WS	Ex_25	541.77	4360.69	4365.57	4366.94	0.031595	9.39	57.95	20.18	0.94	4.88	2.87	9.35
Reach 1	1152	Max WS	Prop_25	542.11	4360.69	4365.57	4366.94	0.031601	9.40	57.97	20.18	0.94	4.88	2.87	9.35

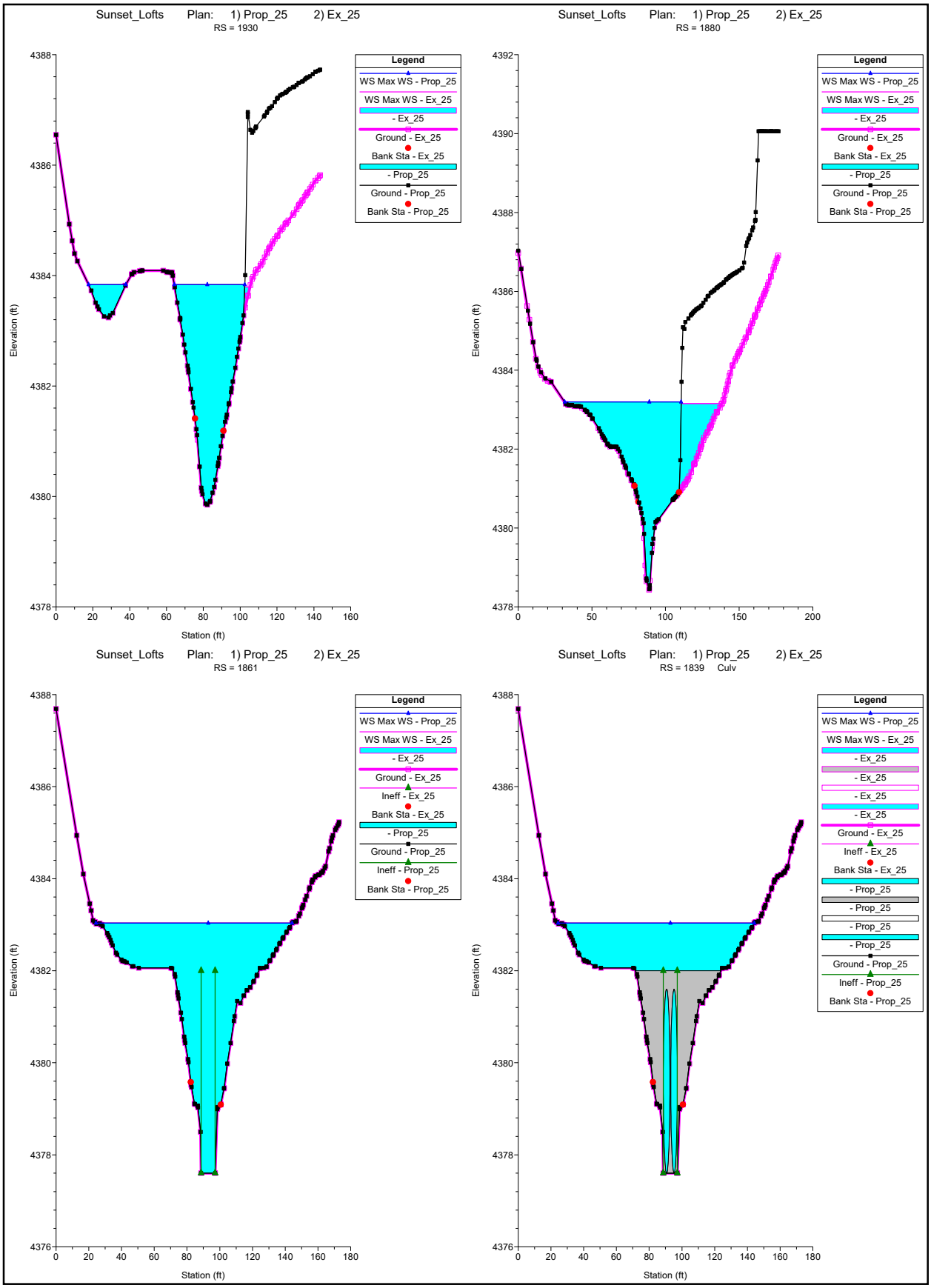
HEC-RAS River: River 1 Reach: Reach 1 Profile: Max WS (Continued)

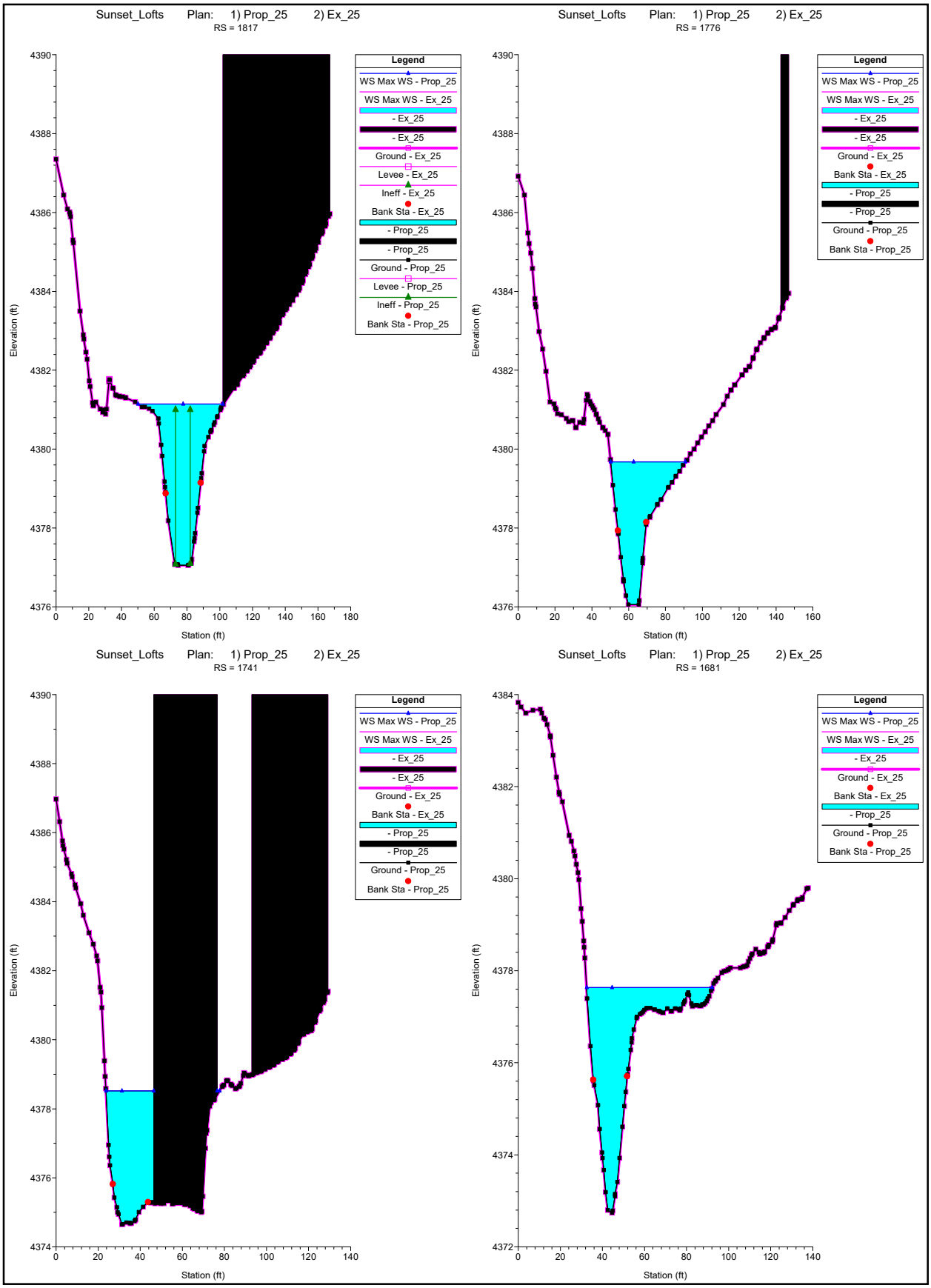
Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Max Chl Dpth	Hydr Depth	Vel Total
				(cfs)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(ft)	(ft/s)
Reach 1	1052	Max WS	Ex_25	541.29	4357.36	4362.97	4363.89	0.017513	7.74	72.97	32.79	0.73	5.61	2.23	7.42
Reach 1	1052	Max WS	Prop_25	541.76	4357.36	4362.97	4363.89	0.017509	7.74	73.03	32.92	0.73	5.61	2.22	7.42
Reach 1	1016	Max WS	Ex_25	541.19	4357.16	4362.08	4363.26	0.027098	9.32	64.34	20.79	0.89	4.92	3.09	8.41
Reach 1	1016	Max WS	Prop_25	541.57	4357.16	4362.08	4363.26	0.027089	9.32	64.38	20.80	0.89	4.92	3.10	8.41

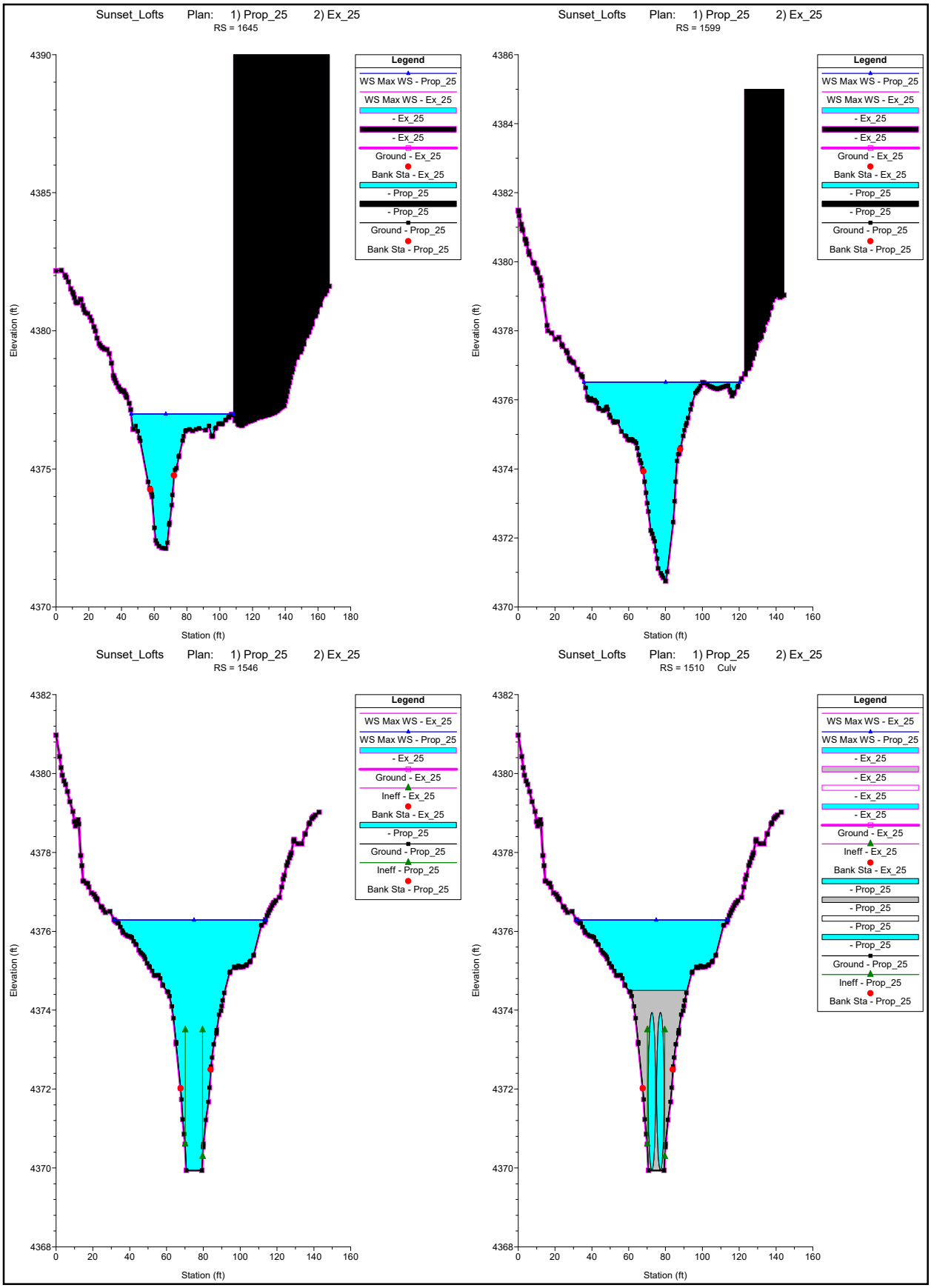

Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2532
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2466
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2415
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2358
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)

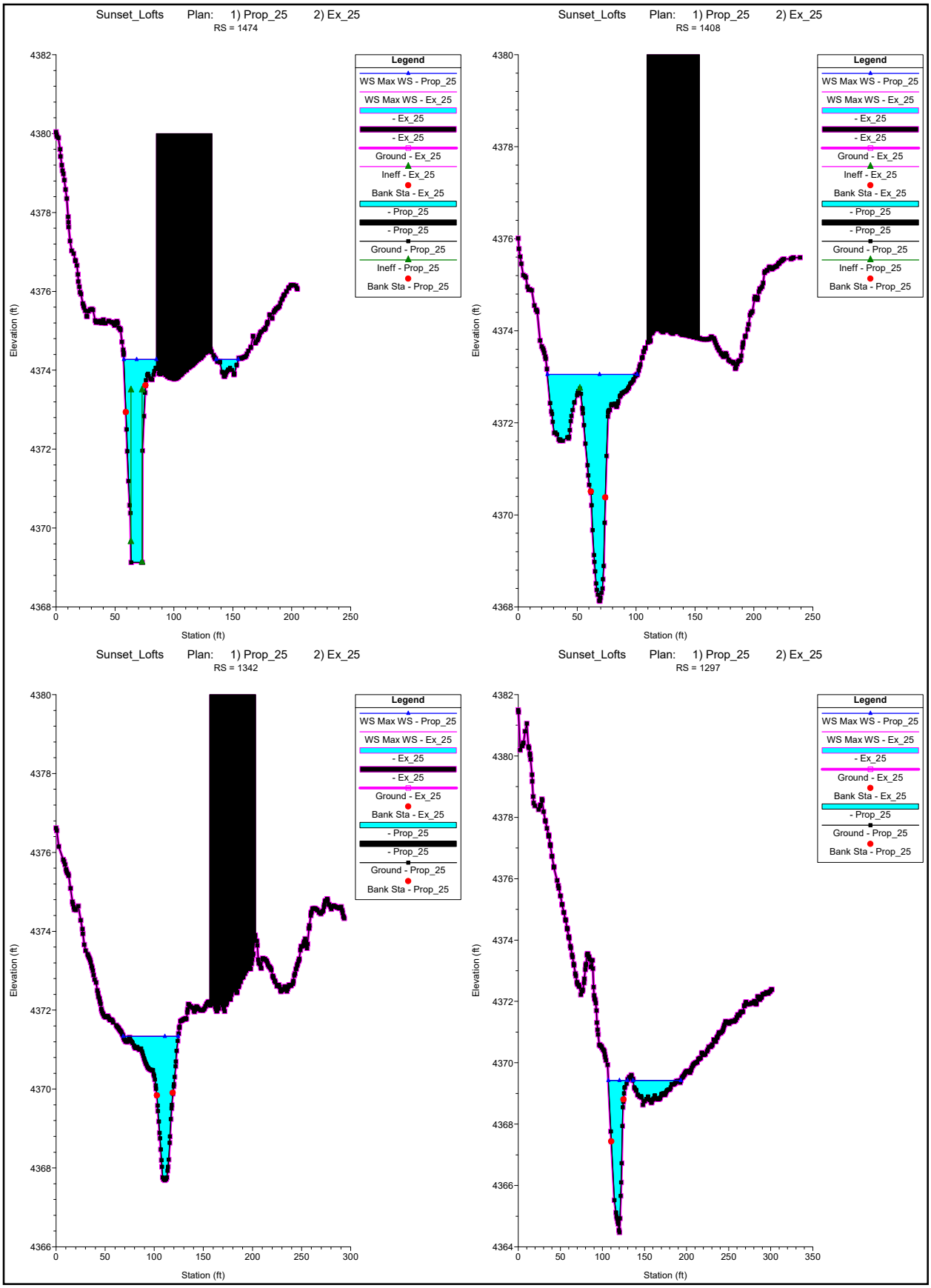

Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2313
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2260
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
Ground - Ex_25
Ineff - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Ineff - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2245 Culv
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
- Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Ineff - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
- Prop_25
- Prop_25
Ground - Prop_25
Ineff - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2230
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
- Ex_25
Ground - Ex_25
Ineff - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Ineff - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)

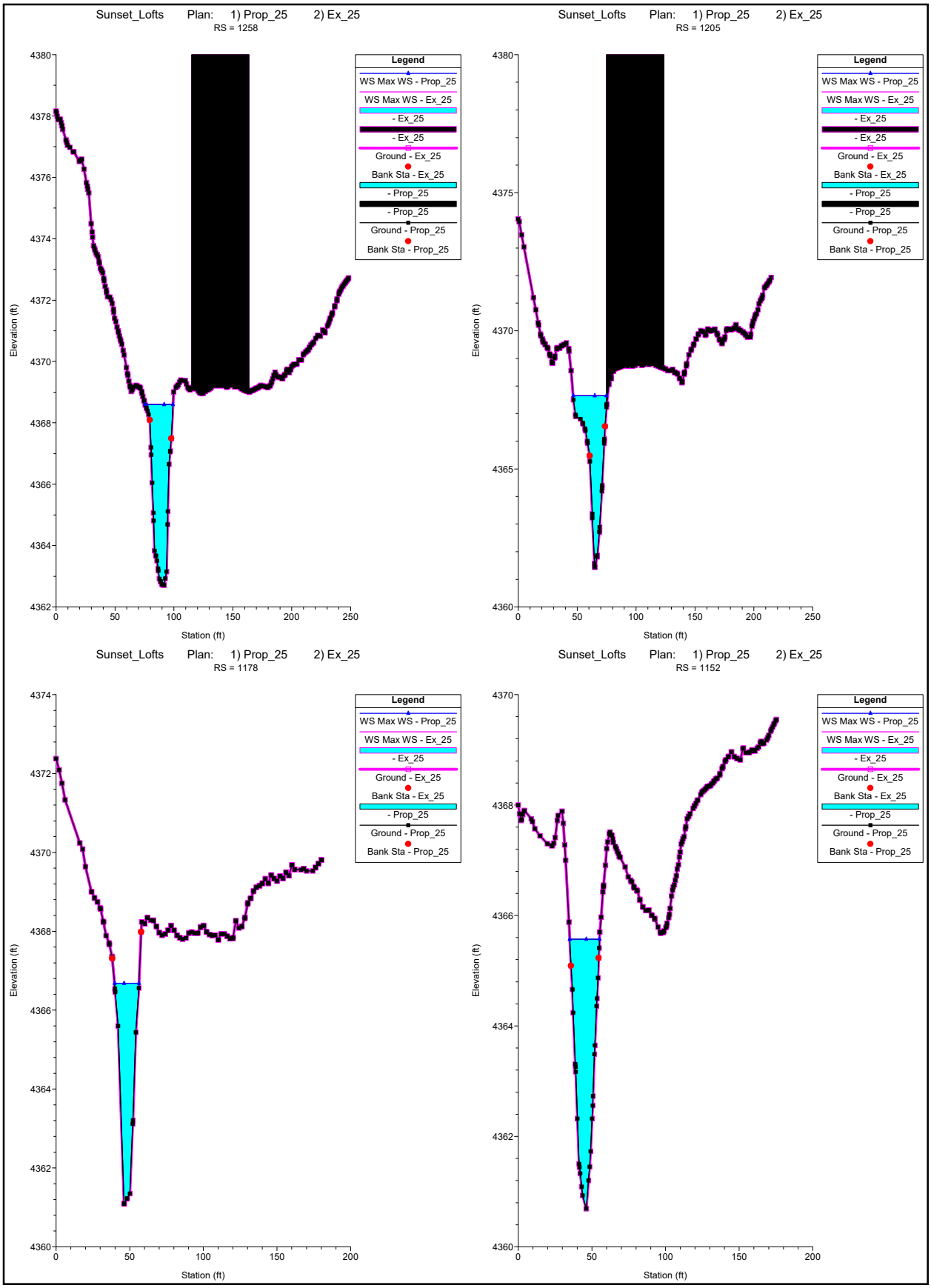

Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2174
Legend
WS Max WS - Ex_25
WS Max WS - Prop_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2113
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 2065
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1992

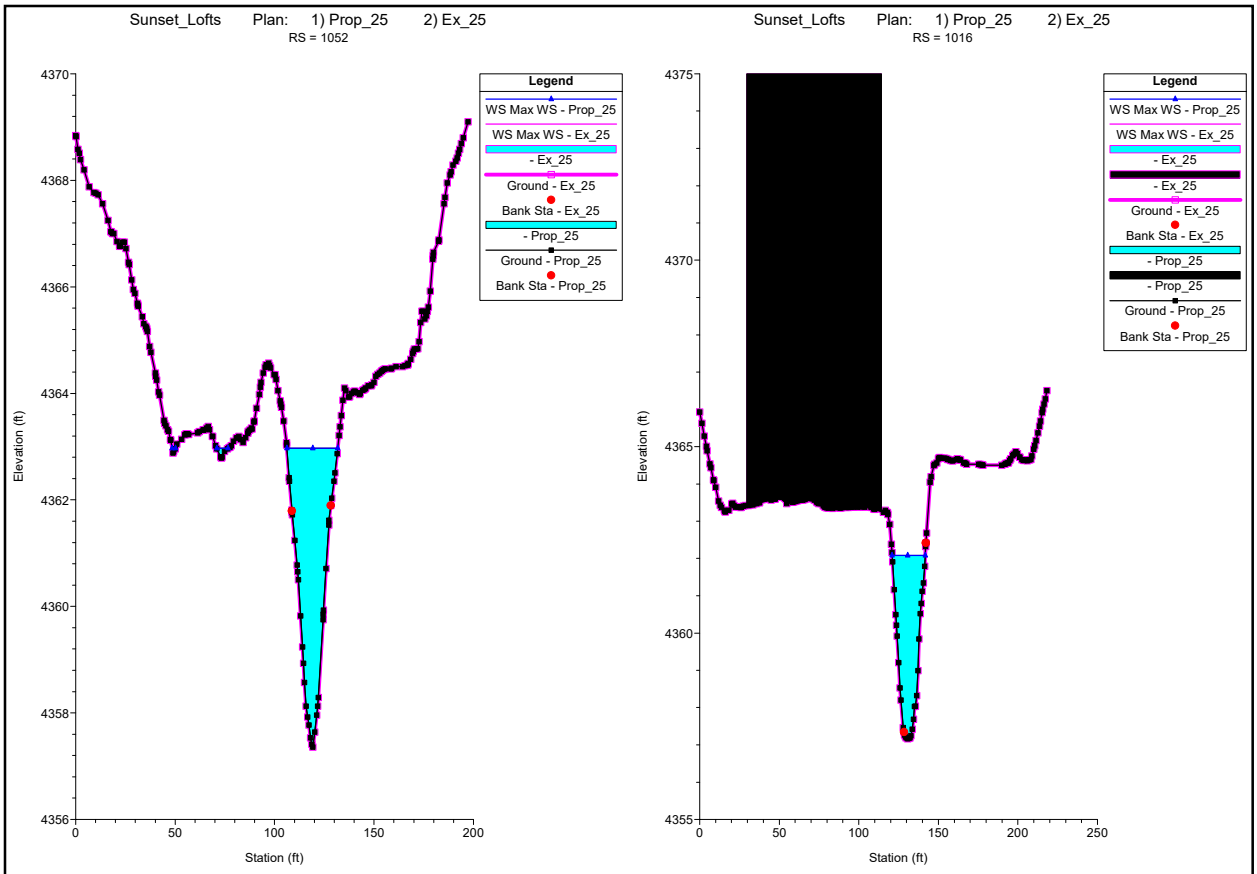

Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1930
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1880
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1861
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
Ground - Ex_25
Ineff - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Ineff - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1839 Culv
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Ineff - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
- Prop_25
- Prop_25
Ground - Prop_25
Ineff - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)


Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1817
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Levee - Ex_25
Ineff - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Levee - Prop_25
Ineff - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1776
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1741
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1681
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)


Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1645
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1599
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1546
Ineff - Ex_25
Ineff - Prop_25
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1510 Culv


Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1474
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1408
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1342
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1297
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Ineff - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Ineff - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)


Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1258
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1205
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1178
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1152
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)


Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1052
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
4370
4368
4366
4364
4362
4360
4358
4356
0
50
100
150
200
Sunset_Lofts Plan: 1) Prop_25 2) Ex_25
RS = 1016
Legend
WS Max WS - Prop_25
WS Max WS - Ex_25
- Ex_25
- Ex_25
Ground - Ex_25
Bank Sta - Ex_25
- Prop_25
- Prop_25
Ground - Prop_25
Bank Sta - Prop_25
Elevation (ft)
Station (ft)
4375
4370
4365
4360
4355
0
50
100
150
200
250