Wingfield Whitewater Park Maintenance – Truckee River

PREPARED FOR: Reno Recreation and Park Commission
PREPARED BY: Gary Lacy, PE - Recreation Engineering & Planning, Inc. (REP)
MEETING DATE: June 16, 2026

Background

- I was whitewater designer of the original Wingfield Whitewater Park in 2003-2004.
- The Park has been an incredible public asset, recreationally and economically, for over 20 years.
- The Reno Whitewater Festival was held annually after project completion and became one of the premier river festivals in the country.
- All drop structures have functioned and are structurally sound as originally designed. A few years ago, a significant flood event deposited material within some of the pools in the north channel causing some of the whitewater features to not function as designed.
- The organizers of the river festival decided to move the event from Wingfield Park due to the features not functioning.
- As part of the 2024-2025 in-stream portion of the Wingfield Park master plan, REP recommended the pools in the north channel were to be excavated back to the original design grades as well as pool grading at drop 5 and reconstruction of drop 2. (see attached design plan).
- The master plan was presented to the Reno Parks and Recreation Commission on January 28, 2025, and funds were approved to complete the maintenance work during the time that the park was closed due to the Arlington Bridge replacement project.
- RTC (Regional Transportation Commission) agreed to reconstruct drop 2 within the north channel as part of the Arlington Bridge Project. REP designed the new feature in conjunction with the RTC bridge replacement project. The structure was constructed in 2025 at an approximate cost of $2.6 million.
- The pool downstream of the new drop 2 was not completed at the correct hydraulic elevation causing the new feature to not function as designed. The pool is also too shallow, creating a hazard for in-stream users that swim or capsize below the drop.
- The recommended channel/pool maintenance was never completed by the RTC bridge contractor. In addition, a large flow event occurred during construction depositing larger material into the pools possibly creating a hazard for in-stream users, especially non-experienced swimmers and tubers.

Recommendations:

- Place temporary sandbag/super sacks at the downstream (tailwater) location at pool 2 at the correct hydraulic elevation to observe the performance/function of the new drop 2 for a season. This work will be completed by volunteers at no cost to the city. Direct city staff to aid in approval and execution of this effort.
- Complete the designed maintenance project as currently designed and previously funded as well as the correct pool shaping at pool 2. This maintenance work qualifies under a general maintenance permit using the appropriate water quality control measures.

Attachments

1. Wingfield Whitewater Park Maintenance Design Plans (5/12/2025)
2. Wingfield Whitewater Park Maintenance Recommendations Technical Memorandum (5/15/2025 – Updated 10/22/2025)

CITY OF RENO

WINGFIELD WHITEWATER PARK MAINTEANCE

MAY 2025

PROJECT LOCATION:

LATITUDE: 39° 31' 28.4" N
LONGITUTE: 119° 48' 57.3" W

WASHOE COUNTY

VICINITY MAP

SCALE: 1"=2000' (FOR 22X34" SHEETS)

SHEET INDEX:

LEGEND:

- EXISTING CONTOURS
- PROPOSED CONTOURS
- BOULDER TERRACING
- NEW CONCRETE
- STONE RIPRAP
- SAND
- NEW VEGETATION
- STAGING AREA
- DEMOLITION
- PROTECT EXISTING
- STRUCTURAL FILL
- PARKING LOT SURFACING

ABBREVIATIONS:

AVG	AVERAGE
DTL	DETAIL
E	EAST
ELEV	ELEVATION
FT	FEET
IN	INCHES
MAX	MAXIMUM
MIN	MINIMUM
N	NORTH
NTS	NOT TO SCALE
OC	ON CENTER
OHWM	ORDINARY HIGH WATER MARK
SHT	SHEET
STA	STATION
STD	STANDARD
TYP	TYPICAL

PROJECT OWNER:

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1 EAST FIRST STREET
RENO, NV 89501

HILLARY SCHIEVE	MAYOR
KATHLEEN TAYLOR	WARD 1
NAOMI DUERR	WARD 2
MIGUEL MARTINEZ	WARD 3
MEGHAN EBERT	WARD 4
DEVON REESE	WARD 5
BRANDI ANDERSON	WARD 6

APPROVALS:

KERRIE KOSKI, P.E. - CITY OF RENO
DIRECTOR, PUBLIC WORKS

DATE

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WINGFIELD WHITEWATER PARK MAINTEANCE
RENO, NEVADA
TRUCKEE RIVER
PRELIMINARY
COVER SHEET

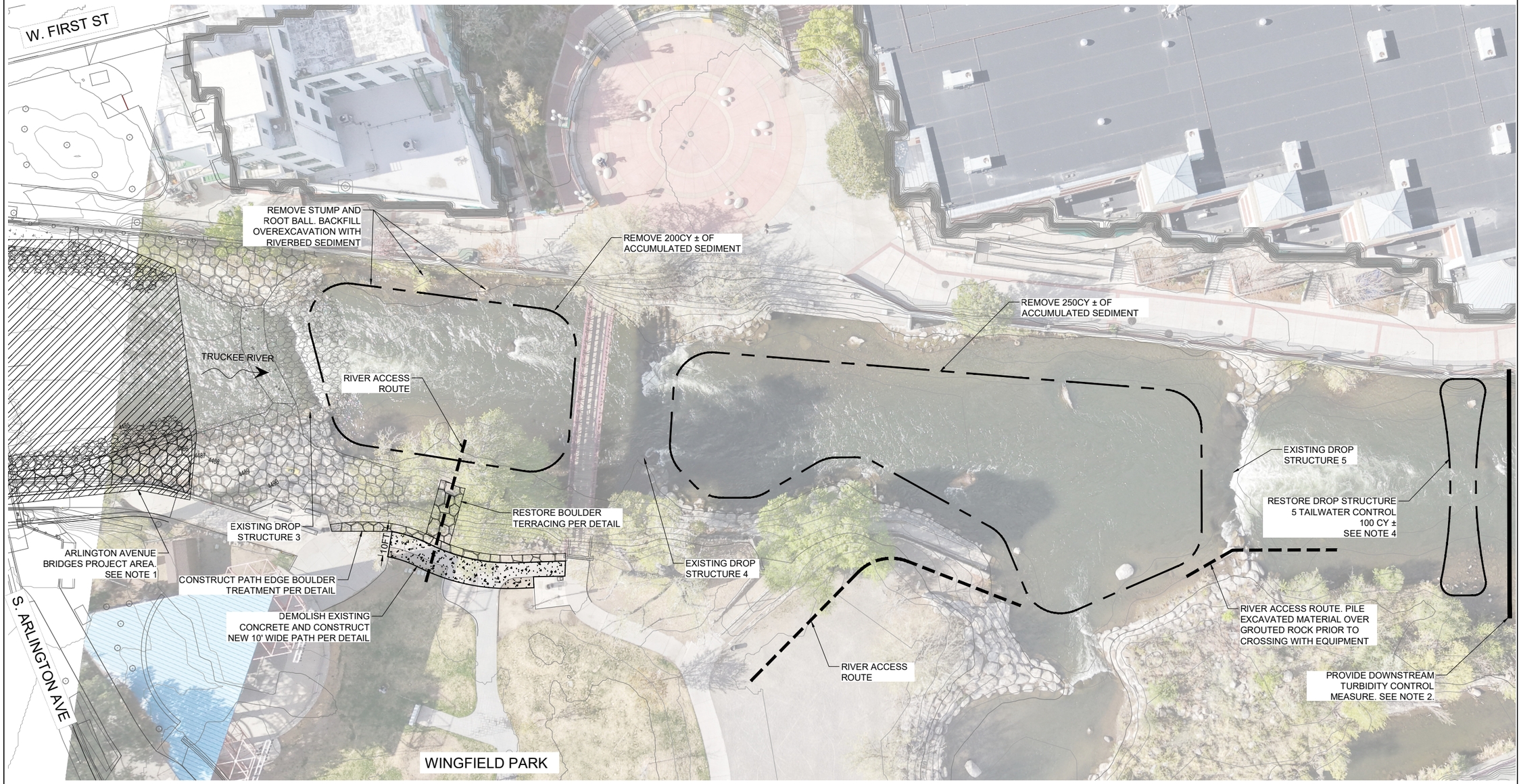
REVISIONS:

NO.	DATE

DESIGNED: GL DRAFTED: JK
CHECKED: SL
PLOT DATE: 5/12/2025

DRAWING NO.

1



WINGFIELD PARK MAINTENANCE OVERALL PLAN

NOTES:

1. ADJACENT WORK FOR ARLINGTON AVENUE BRIDGES, RTC PROJECT NUMBER 0212061.01. PWP-WA-2024-208. SITE ACCESS TO BE COORDINATED WITH CITY OF RENO AND ARLINGTON AVENUE BRIDGE CONSTRUCTION MANAGER AT RISK. MAINTENANCE ACTIVITIES SHALL NOT IMPACT PERFORMANCE OF THE ARLINGTON AVENUE BRIDGES PROJECT.
2. TURBIDITY CONTROLS SHOWN SCHEMATICALLY ONLY. ENVIRONMENTAL CONTROLS SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF SEDIMENT REMOVAL.
3. WATER CONTROL TO BE PROVIDED BY ARLINGTON AVENUE BRIDGES PROJECT. PERFORM MAINTENANCE WORK DURING NORTH CHANNEL DEWATERING.
4. AT CONTRACTOR'S OPTION, NEW OR SALVAGED ONSITE BOULDERS NOT MEETING AESTHETIC REQUIREMENTS OF THE ARLINGTON AVENUE BRIDGES PROJECT MAY BE USED FOR TAILWATER CONTROL. CONTRACTOR SHALL COORDINATE PROCUREMENT OF ONSITE BOULDERS WITH ARLINGTON AVENUE BRIDGES CONSTRUCTION MANAGER AT RISK.

N

SCALE BAR 1"=20'
20 0 20
CONTOUR INTERVAL 1FT

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RENO, NEVADA

TRUCKEE RIVER

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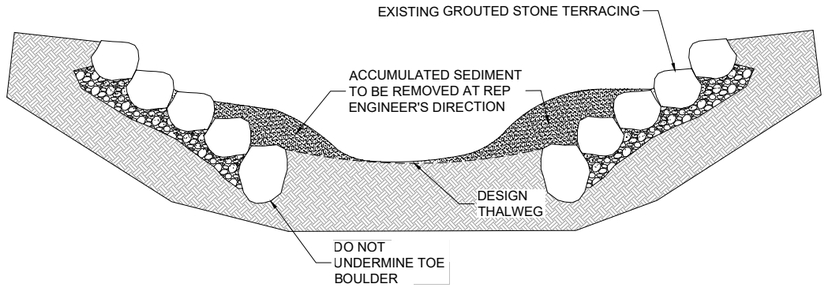
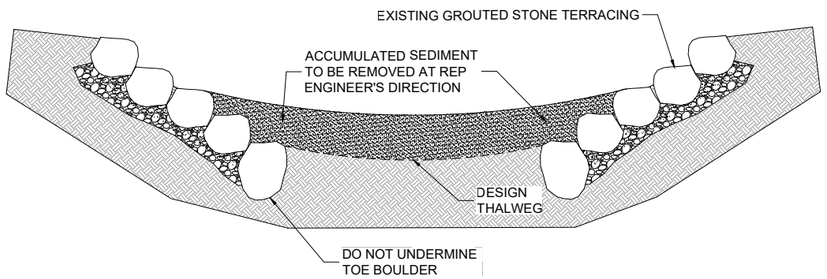
2



TYPICAL SEDIMENT REMOVAL SECTION 1

NOT TO SCALE



TYPICAL SEDIMENT REMOVAL SECTION 2

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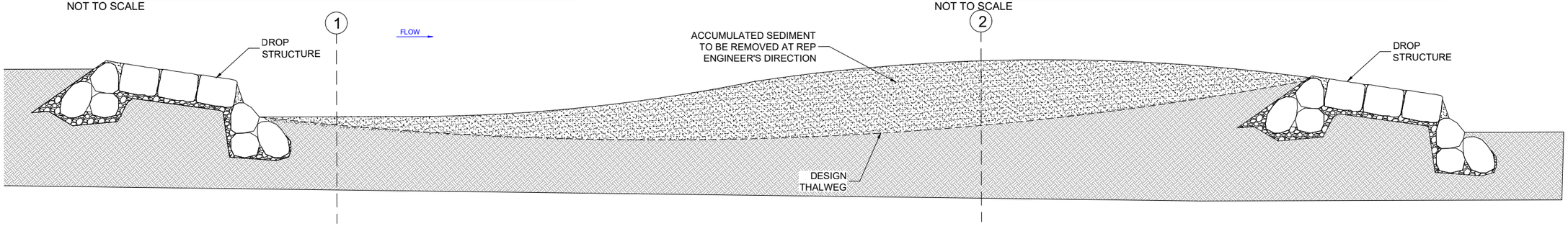
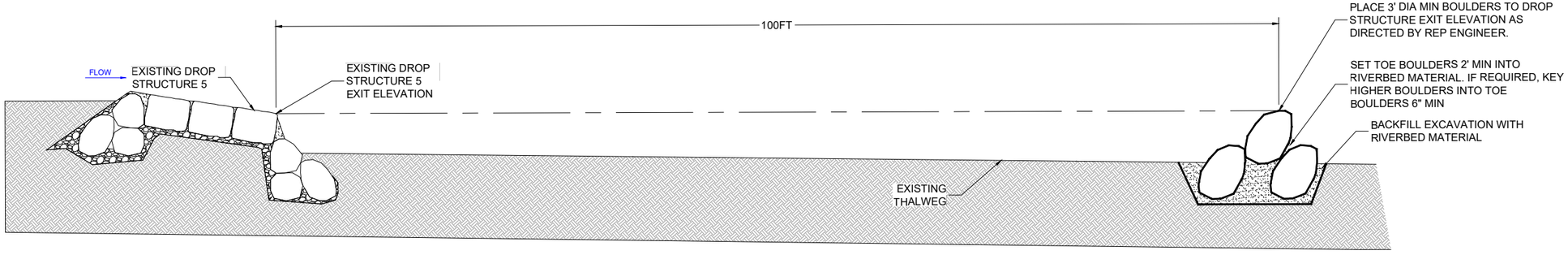


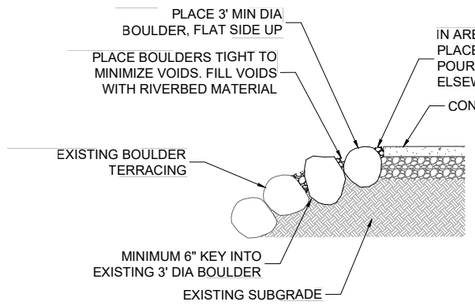
TYPICAL SEDIMENT REMOVAL THALWEG PROFILE

NOT TO SCALE



DROP 5 TAILWATER CONTROL RESTORATION PROFILE

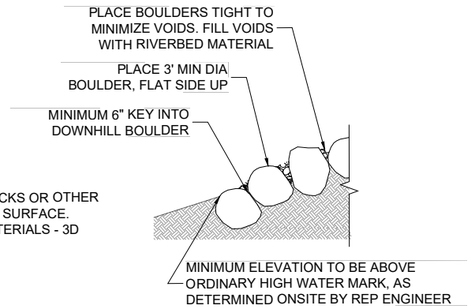
NOT TO SCALE



PATH EDGE BOULDER TREATMENT DETAIL

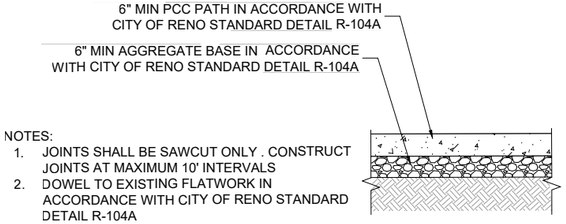
NOT TO SCALE

BOULDER TERRACING NOTES:
BOULDERS SHALL BE DENSE, SOUND, FREE FROM CRACKS OR OTHER DEFECTS. BOULDERS SHALL HAVE AT LEAST ONE FLAT SURFACE. BOULDER SOURCE: REUSED EXISTING OR DAYTON MATERIALS - 3D CONCRETE, OR APPROVED EQUAL.



BOULDER TERRACE RESET DETAIL

NOT TO SCALE



NOTES:
1. JOINTS SHALL BE SAWCUT ONLY . CONSTRUCT JOINTS AT MAXIMUM 10' INTERVALS
2. DOWEL TO EXISTING FLATWORK IN ACCORDANCE WITH CITY OF RENO STANDARD DETAIL R-104A

CONCRETE PATH DETAIL

NOT TO SCALE

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RENO, NEVADA
TRUCKEE RIVER

PRELIMINARY

REVISIONS:

NO.	DATE

DESIGNED:	GL	DRAFTED:	JK
CHECKED:	SL		

PLOT DATE: 5/12/2025

DRAWING NO.

3

Wingfield Whitewater Park Maintenance Recommendations

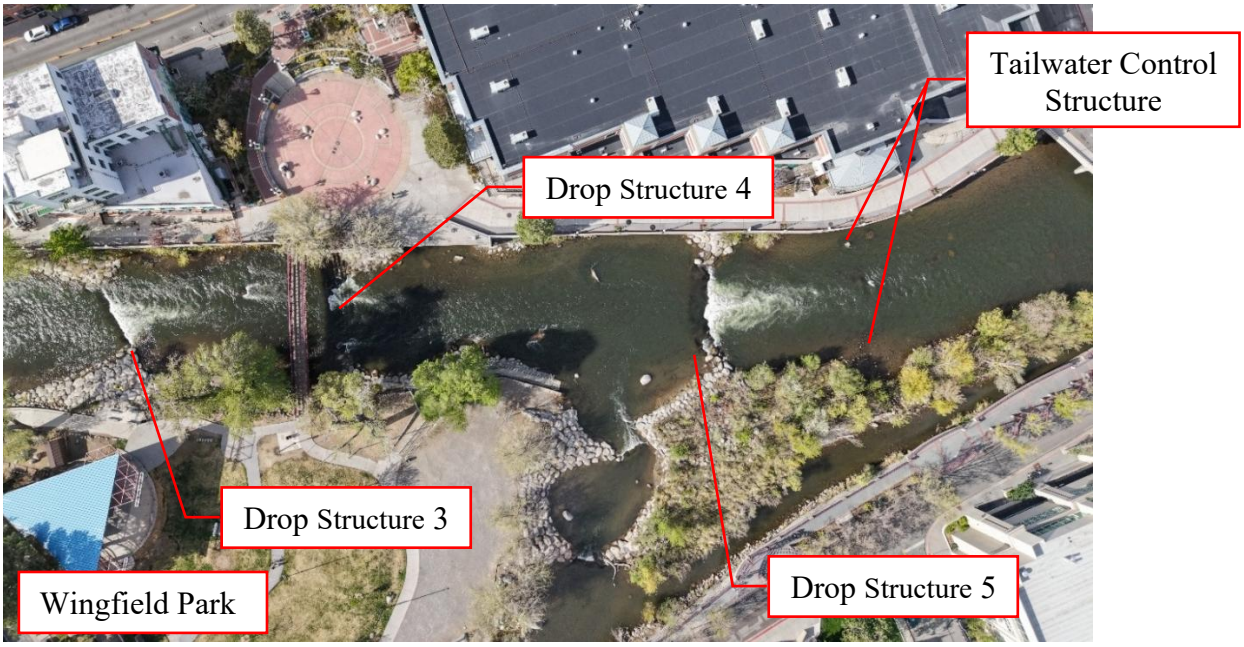
PREPARED FOR: Justin George, P.E. City of Reno; Matt Brezina, City of Reno
PREPARED BY: Gary Lacy, P.E., Recreation Engineering & Planning, Inc. (REP)
DATE: May 15, 2025 Updated October 22, 2025

Kayak Park Design Narrative

Please see the attached plans for maintenance activities at Wingfield whitewater park. Recreation Engineering and Planning President Gary Lacy, who designed the original improvements in the early 2000s, has reviewed current site conditions. Since construction, high-flow events have mobilized sediment and damaged important river features, particularly the downstream tailwater control structure. At the request of the City of Reno, REP has prepared these maintenance plans to restore the river channel to its originally constructed condition.

The replacement of the Arlington Avenue Bridges provides a unique opportunity to perform the recommended maintenance while the north channel of the river is dewatered, which will result in significant cost savings for the city. Restoration of the channel elevations will ensure the park meets its original function. Granite Construction was unable to perform the recommended maintenance during the north channel dewatering. North channel dewatering was removed September 26, 2025. On October 21, 2025, Gary Lacy visited the park and swam each feature of the north channel to evaluate the impacts of the Arlington Avenue Bridges Replacement Project on the whitewater park.

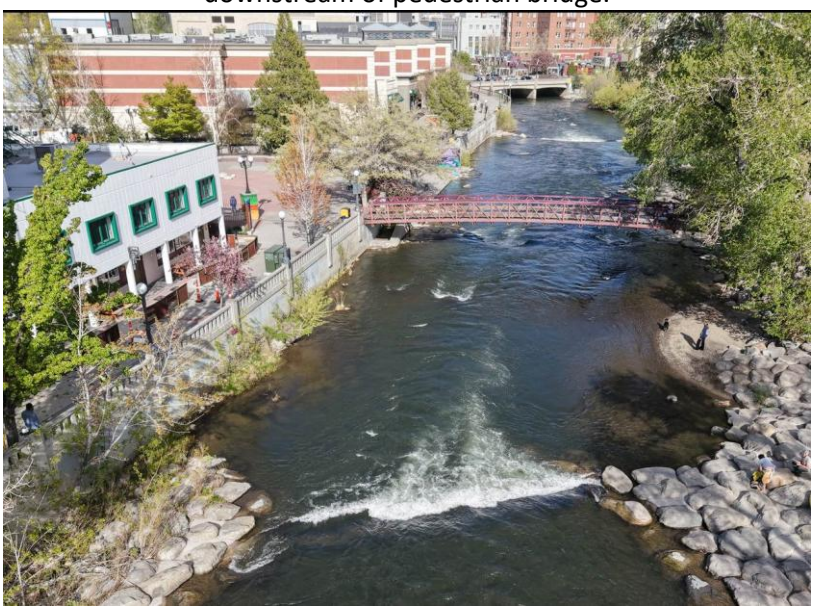
The specific work areas are shown below:



Drop Structures 3 and 4:

Drop structure 3 is located immediately downstream of the Arlington Avenue Bridge, in the north channel. Drop structure 4 is located downstream of the pedestrian bridge. Sediment has accumulated in the channel below drop structure 3 and drop structure 4, impacting the hydraulic character of the drop and filling in eddies. See photos below of original and current conditions.

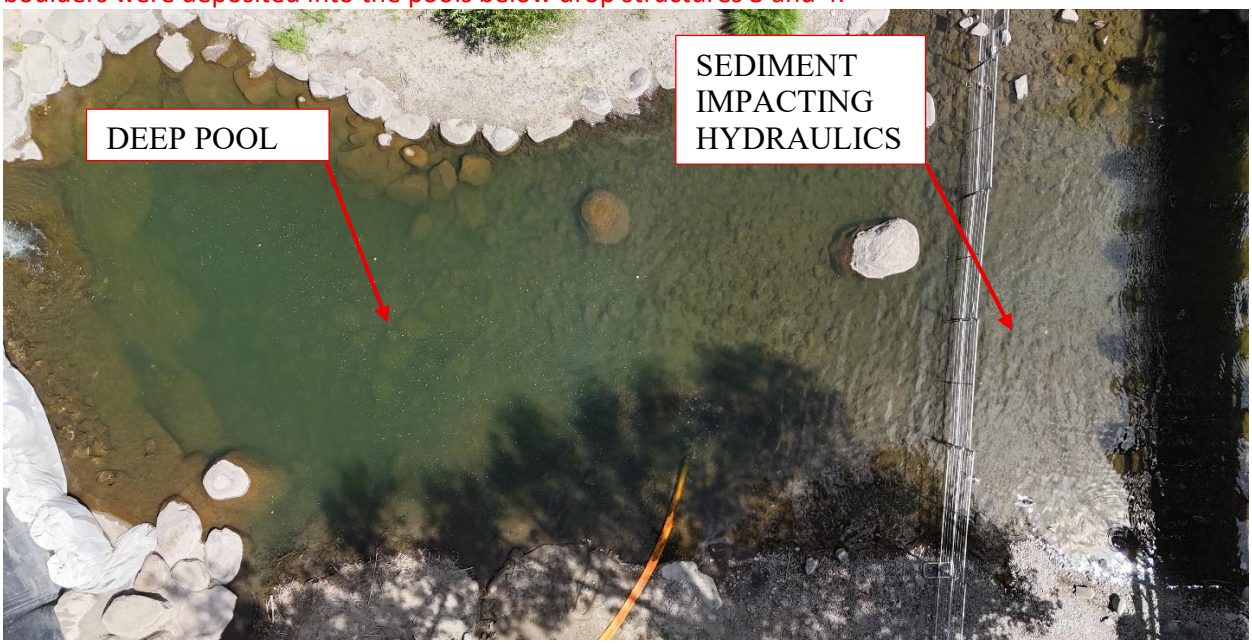
Original design: Deep water downstream of Drop Structure 3, pronounced Drop Structure 4 is visible downstream of pedestrian bridge.



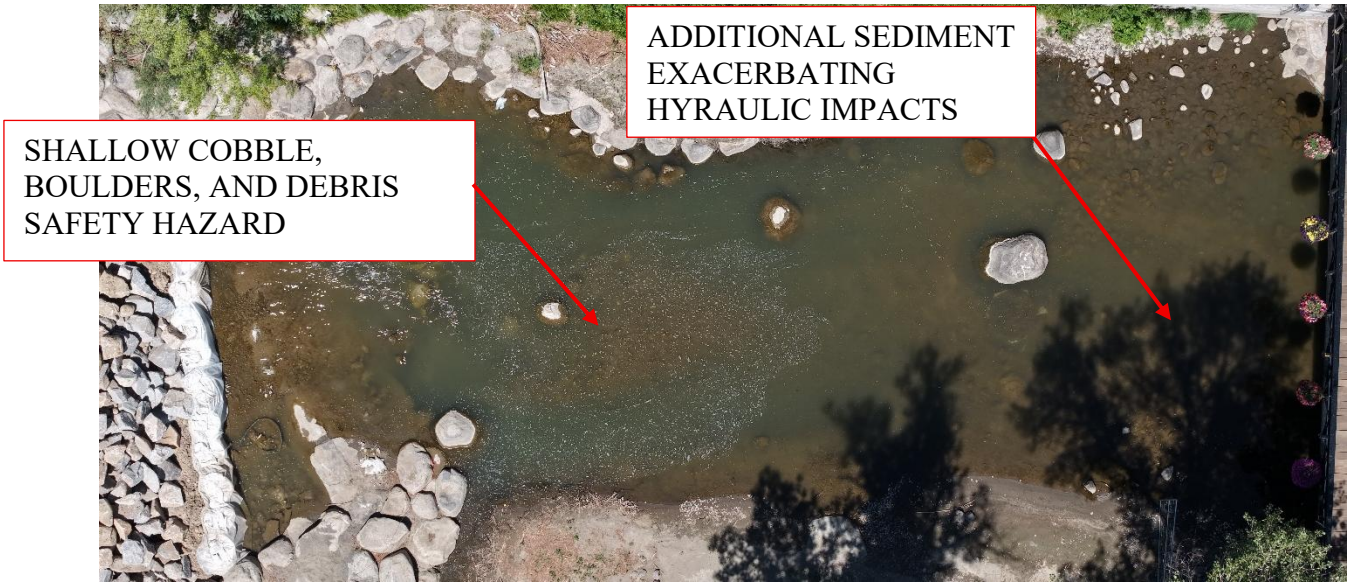
Current Conditions: Accumulated sediment, especially evident at right bank. Drop Structure 4 is drowned out due to downstream deposition.

10/22/2025 Update

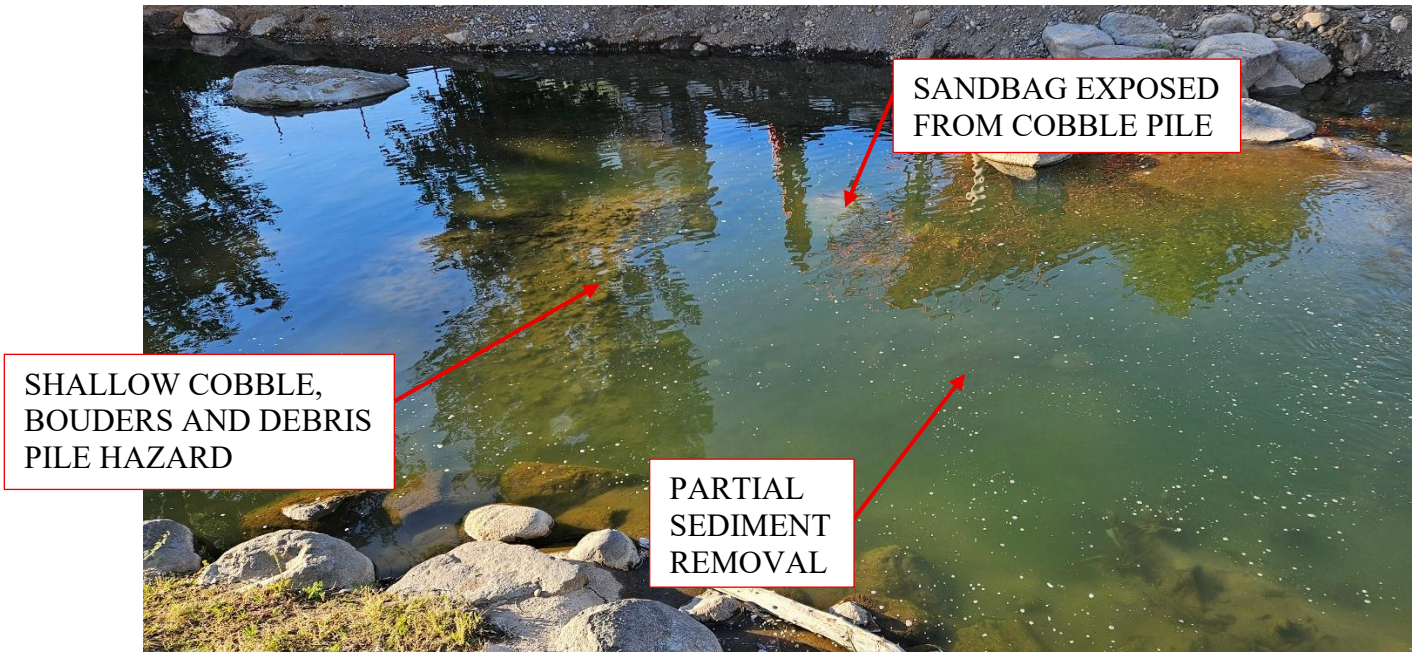
Granite could not perform the maintenance during the north channel dewatering phase. Additionally, a flash flood during the construction dewatering washed out an earthen cofferdam that was built above drop 3. During the flood, construction debris and riverbed material, including sandbags, cobbles and large boulders were deposited into the pools below drop structures 3 and 4.



July 25, 2025, 467 cfs



August 8, 2025, 349 cfs

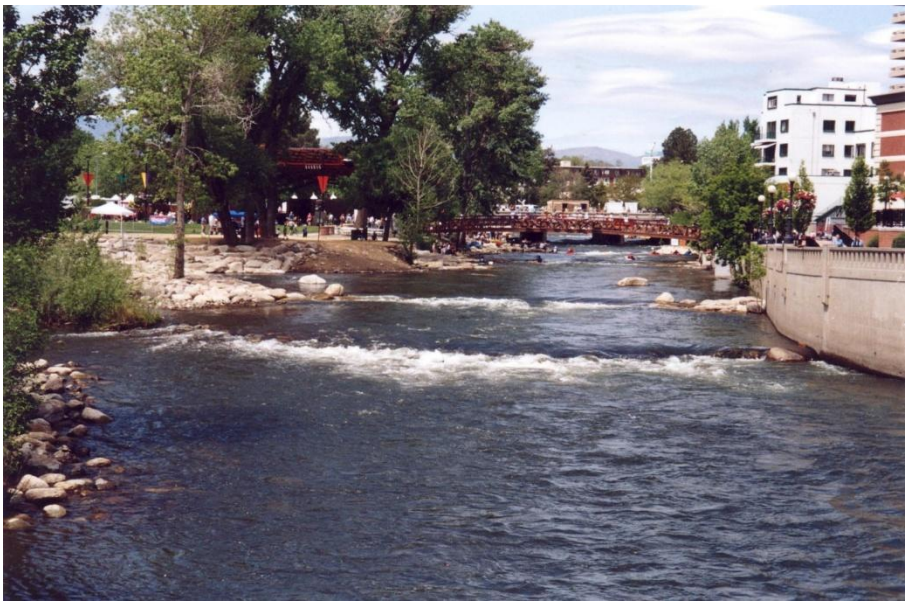


Pool 3 after partial sediment removal

Partial flood debris and sediment removal was performed in the immediate downstream vicinity of drop structure 3. Due to the methods used, shallow deposits of flood debris remain in pool 3. Large visible boulders were removed but it is likely that additional boulders and sandbags exist in the remaining flood deposition, as were discovered during the partial sediment removal (See photo).

Drop Structure 5 and Tailwater Control Structure

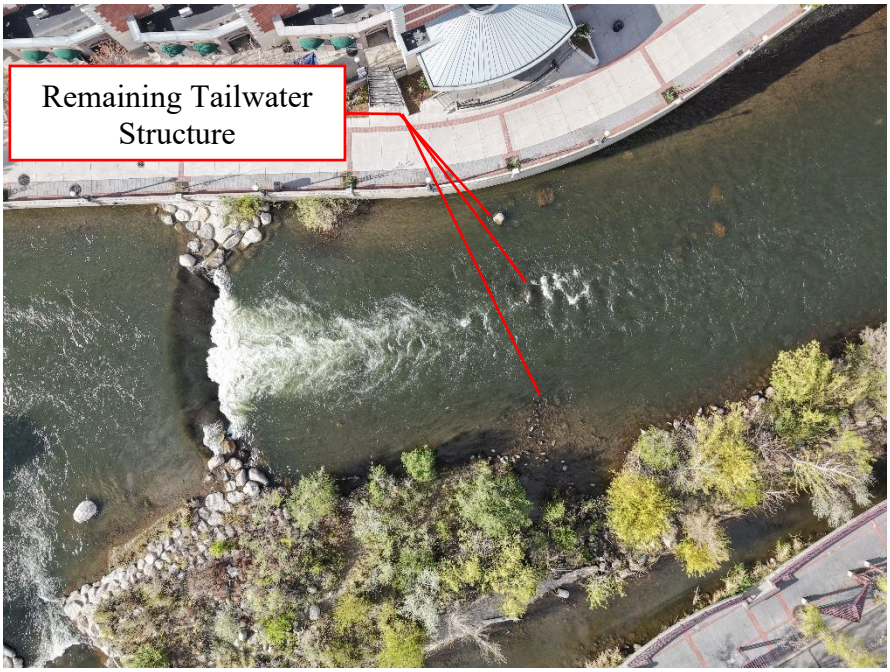
Drop Structure 5 is located at the downstream extent of Wingfield Park, upstream of Sierra St. The original design consisted of the grouted boulder drop structure and a downstream ungrouted boulder tailwater control structure. The ungrouted tailwater control structure provided downstream tailwater elevation control critical the character of the hydraulic jump produced. High flows have significantly impacted the grade control structure as seen in the photos below.



Original Design: Tailwater control structure in foreground, drop structure 5 in background.

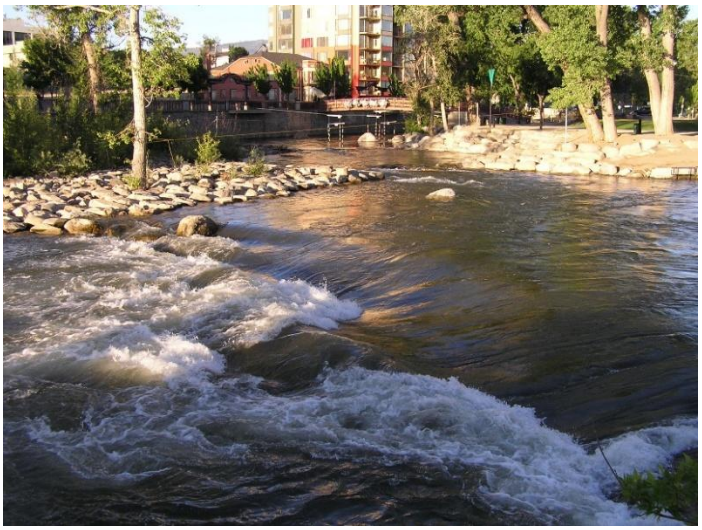
Original Design: Tailwater control structure maintaining grade upstream (right)

Current Conditions: Remaining tailwater control boulders visible at the left flood wall and right bank, but thalweg is impacted such that grade control is no longer provided.

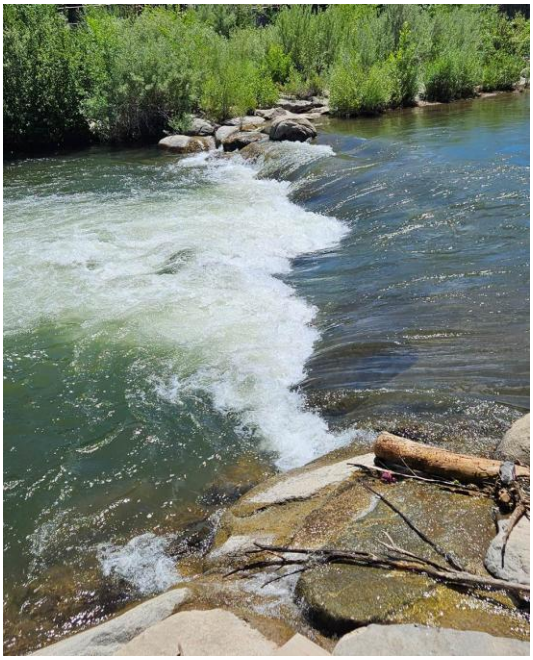


Current Conditions: Remaining tailwater control boulders visible at the left flood wall, center channel, and right bank. Displaced boulders can be seen downstream.

The impact of the degradation of the tailwater control structure is that drop structure 5 no longer functions as designed. A recirculating hydraulic is formed due to water plunging off of the drop structure face. The resulting hydraulic can capsize watercraft and be retentive to watercraft or swimmers. With few river exit points available downstream, a capsize in this location would be difficult to recover. Restoration of this structure to its original function is recommended to protect public safety.



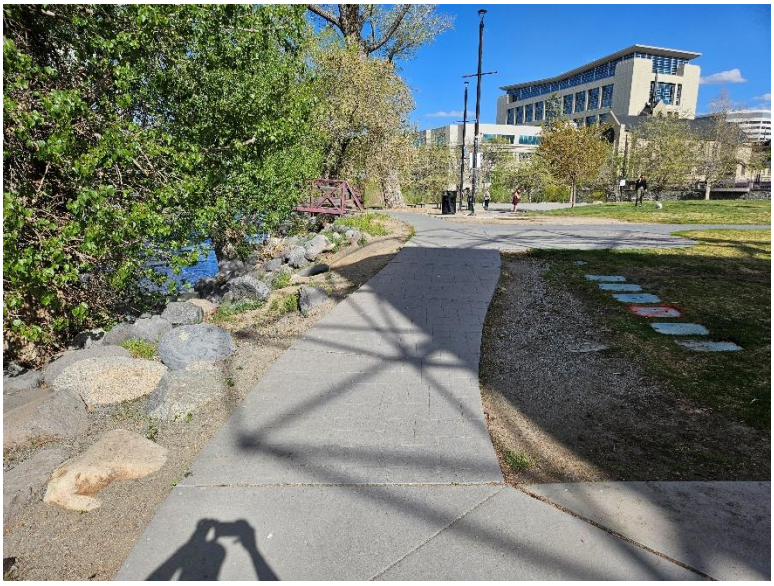
Original Design: Wave type hydraulic jump, lower overall drop across the structure



Current Conditions: Recirculating, powerful “plunging conditions” hydraulic jump due to dropping off the end of the structure and higher than designed head differential

Wingfield Park Upland Components

Upland of pool 3, the concrete path narrows to 6’ width. This is a bottleneck for the otherwise 10’ wide paths throughout Wingfield Park. 10’ is the minimum width for a bidirectional shared use path per AASHTO standards. The abrupt narrowing, and non-conformance with shared use path standards has caused erosion on both sides as users must tread next to the relatively narrow concrete. On the north side, this is contributing to erosion of the bank. North of the path, users accessing the pool below drop 3 have also contributed to erosion down the bank.



Narrow path with foot traffic erosion on each side.

Eroded path down to pool 3

Recommendations

REP recommends excavating accumulated sediment in the pools below Drop Structure 3 and 4 to restore the design river thalweg and cross section elevations. Remaining flood debris shall be removed from the channel. At Drop Structure 5, REP recommends restoration of the tailwater control structure with large diameter boulders, installed with large diameter toe boulders to provide tailwater control in conformance with the original design and prevent future degradation.

Recommended upland improvements include widening the existing concrete path to 10' to be consistent with the other onsite paths, constructing a boulder edge treatment on the river facing side of the path to prevent future riverbank erosion, and resetting boulder terracing on the eroded user trail to pool 3.

Thank you,

Gary Lacy, P.E.
Recreation Engineering and Planning