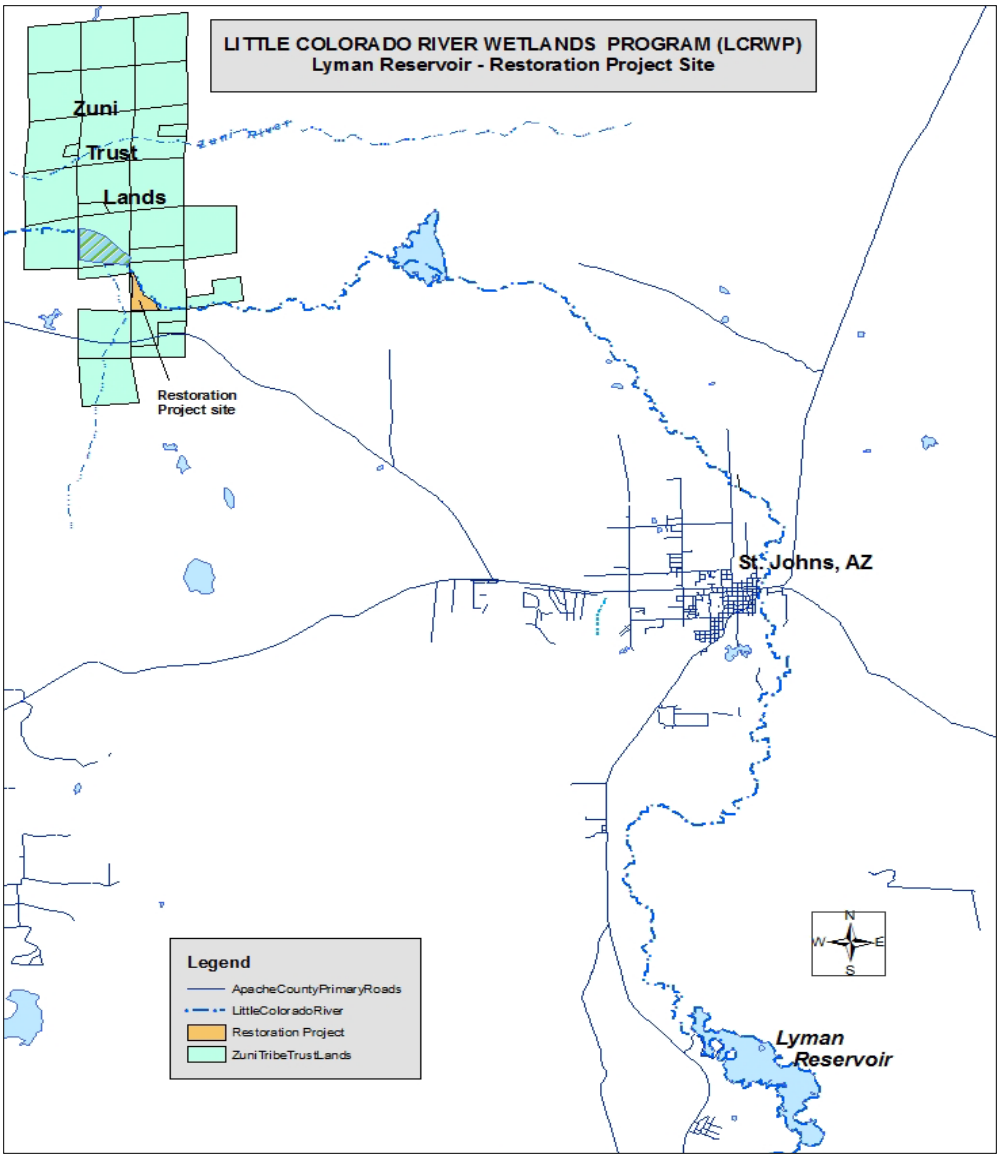
# ZUNI TRIBE
# LITTLE COLORADO RIVER WETLANDS PROGRAM (LCRWP)




2011-2016 Little Colorado River Stream Discharge-Flood Flow Monitoring and Conveyance Assessments

**PRIORITIZING CONVEYANCE IMPROVEMENTS of IDENTIFIED PROBLEM AREAS**

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**Zuni Cultural Map of the Zuni River Basin and Grand Canyon, including the Little Colorado River corridor in Hunt Valley, St. John's, AZ.**

**Photo: Circa 1879 of the Zuni River and village, New Mexico.**

**Photo: Circa 1879 of the Zuni River and village, New Mexico.**
**Typical waffle gardens along the Zuni river and outskirts of the village.**

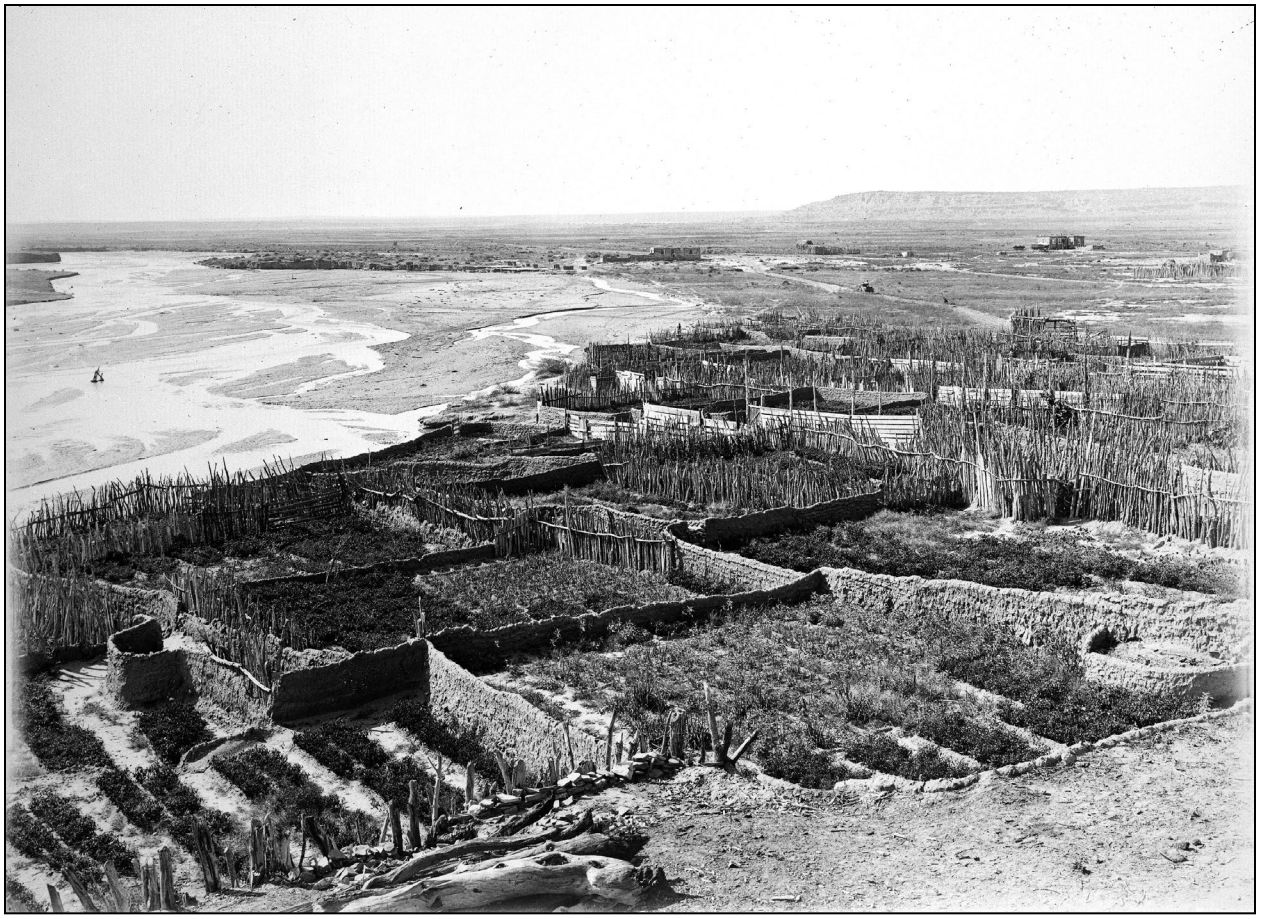
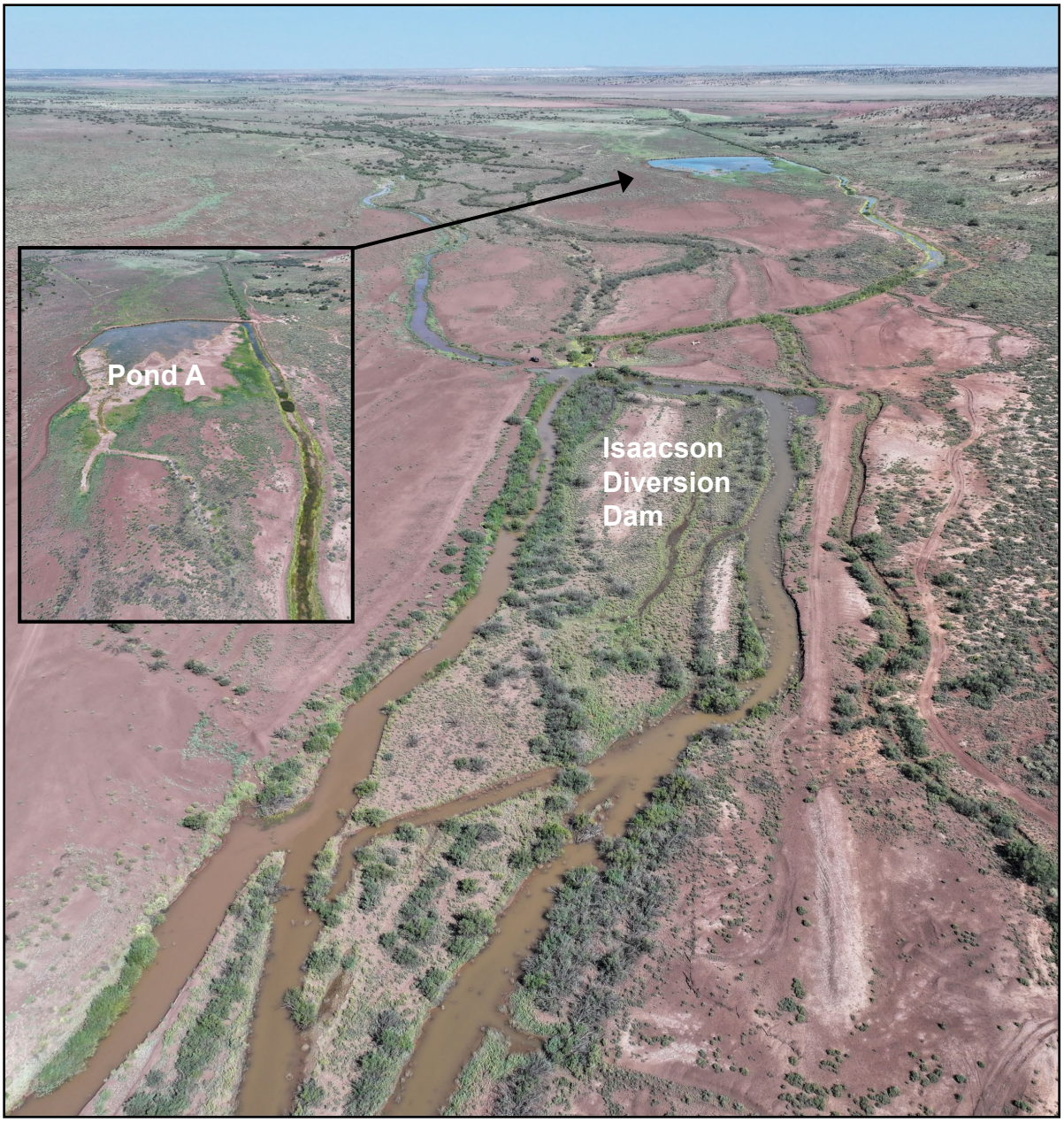


**Photo: Circa Unknown- Zuni River and village, New Mexico.**
**Typical waffle gardens along the Zuni river of the village.**


**2024 Drone Photo View South: Zuni Wetland & Riparian Restoration Project.**
Initial Wetlands.

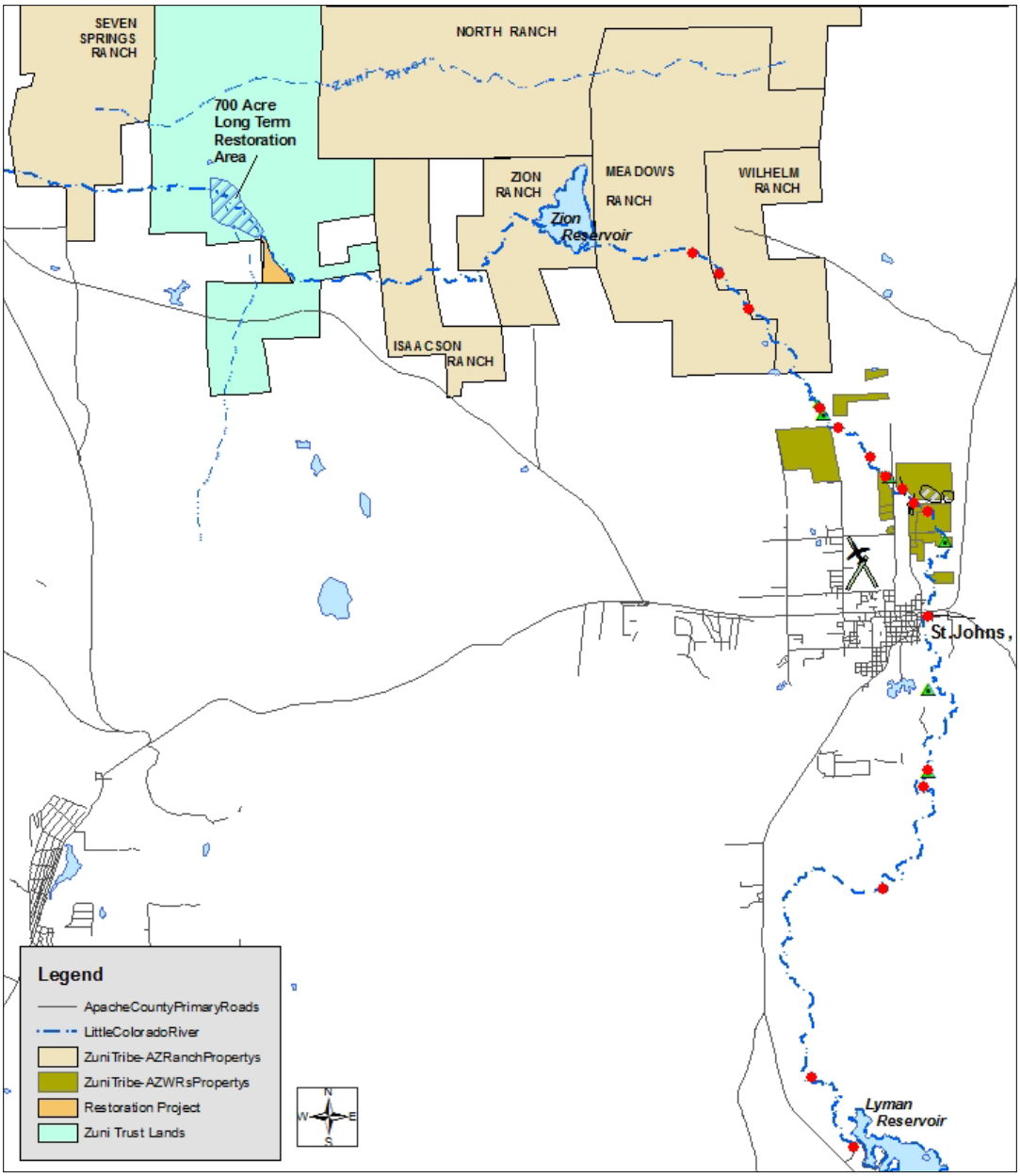
**2024 Drone Photo View West: Zuni Wetland & Riparian Restoration Project.**
Secondary Wetlands Development Area_Isaacson Diversion Dam and Pond A.



**2011-2016 LCR Stream Discharge - Flood Flow Monitoring and Assessments**
**Estimated Assessments Conducted to Date @ 50% - 60%**

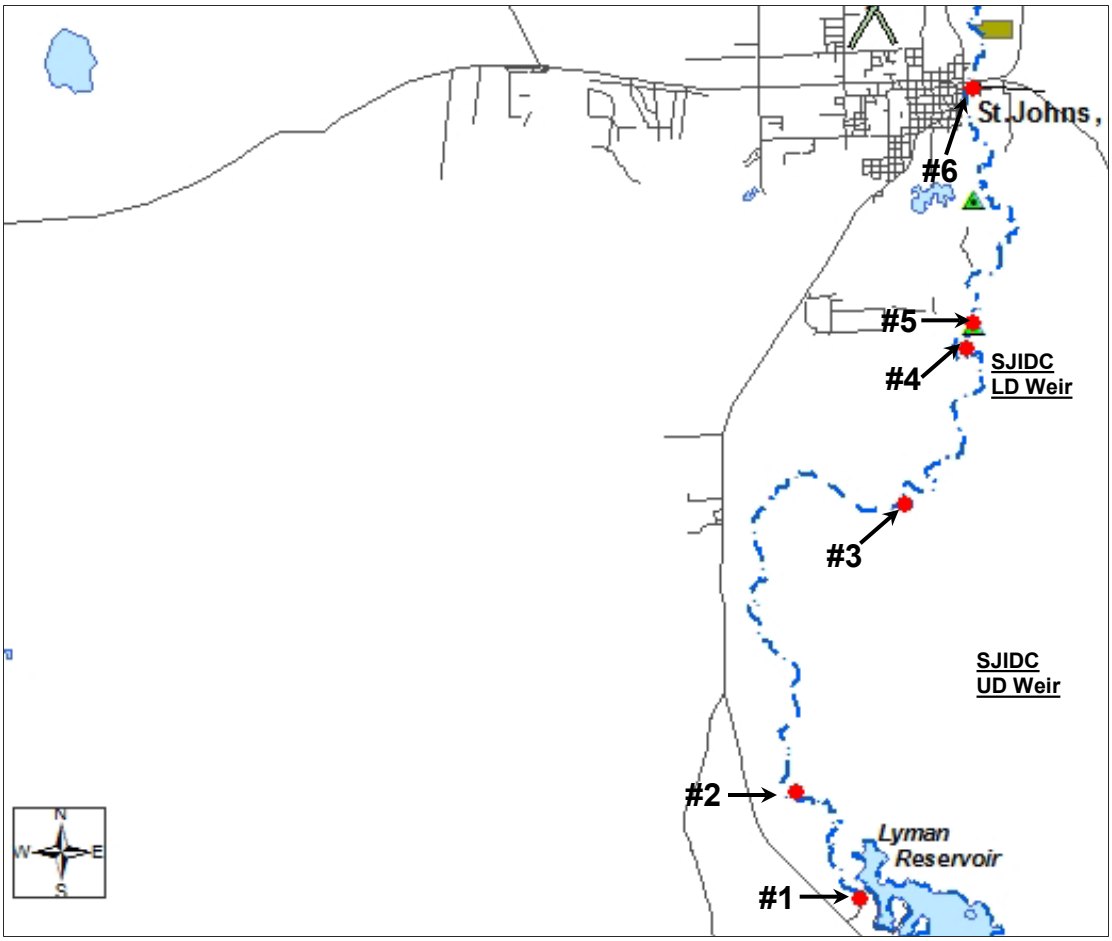
- **16 IDENTIFIED CONVEYANCE PROBLEM AREAS (to date)**

*Conveyance problem areas monitored, documented and assessed for corrective measures_39 River Miles



**Lyman Reservoir to St. Johns Irrigation Ditch Company's (SJIDC) Lower Diversion Weir 18 River Miles Common Interest of Water Conveyance Issues.**

Problems:
*Channel obstructions, sediment deposition, salt cedar growth, re-channeling, channel stablelization, reduced discharge velocity and sediment transport.



**16 IDENTIFIED CONVEYANCE PROBLEM AREAS. Here are some**

**1 of 16_River Mile 0**
**Grover's Hill Irrigation District** _Lyman Reservoir Storage, Discharge & Operation
**LCR Below Lyman Gage _**infrastructure needs upgrade

Problem:
*Gaging Infrastructure needs upgrade for higher cfs releases.
[*maximum 20+ cfs? ]*

*Corrective Measure:*
*Costs for upgrade in 2023 estimated at $141,400.
*Sole Expense of Tribe or shared costs with Salt River Project.

**LCR Discharge Above 1.09 Stage Exceeds Threshold**
Discharge Data Errors Occur Over 14.45 CFS (SRP/Stratos Data)
Maximum Releases over 15 cfs not viable

***Zuni Objectives**: Release of high flows to create flushing flows downstream from Lyman Reservoir for sediment transport and aggrading the LCR channel at the restoration project site.*

*Map source indicates approximately a 1 mile+ length of water impoundment. Reduced water discharge/velocity for sediment transport, conveyance problem for Tribe

***Map Source: Google***

**River Mile 9.8 to 10.5 _Beaver Ponds (3)**

*Water impoundment, reduced water discharge/velocity for sediment transport, conveyance problem for Tribe**.**

**River Mile 9.8 to 10.5 Cont'd.**

Problems:

Obstructions, salt cedar growth, sediment deposition, reduced discharge velocity.

Proposed Corrective Measures:

*Salt cedar removal _ estimated total of 600-700 ft. from the three ponds.

*Construct/install "Beaver Dam Drain Tubes" , "Clemson Beaver Pond Leveler", or other?

*Create annual overflows during entitlement releases, obstruction clearing

**4 of 16_River Mile 14.1 Cont'd.**

Problems:

*Discharge loss area, re-channeling, sediment deposition, discharge diversions, salt cedar growth along L&R banks of channel, diversion weir for Little Reservoir (LR) fill canal inadequate operation [*discharge losses to fill canal observed during Tribes releases -2011, 2014, 2016*]

Proposed Corrective Measures:

*Salt cedar removal _estimated total length of 724 ft. (*left bank*).
*Annual assessment prior to SJIDC irrigation and Tribes entitlement releases for sediment obstruction removal _estimated removal of 400-600 ft (*dependent on deposition*).
*Stream Bank Stabelization _stabelize left and right banks of an estimated 1,600 to 1,650 ft.
*Annual sediment dredging along channel and stream bank maintenance.
*Diversion weir structure improvement /re-design

**4 of 16_River Mile14.1 Cont'd._600 ft. downstream**

Problems:

*LCR channel obstruction, 2013 Feb.-SJIDC removed 500+ feet of sediment deposition and re-channeled the LCR problem area with heavy equipment.

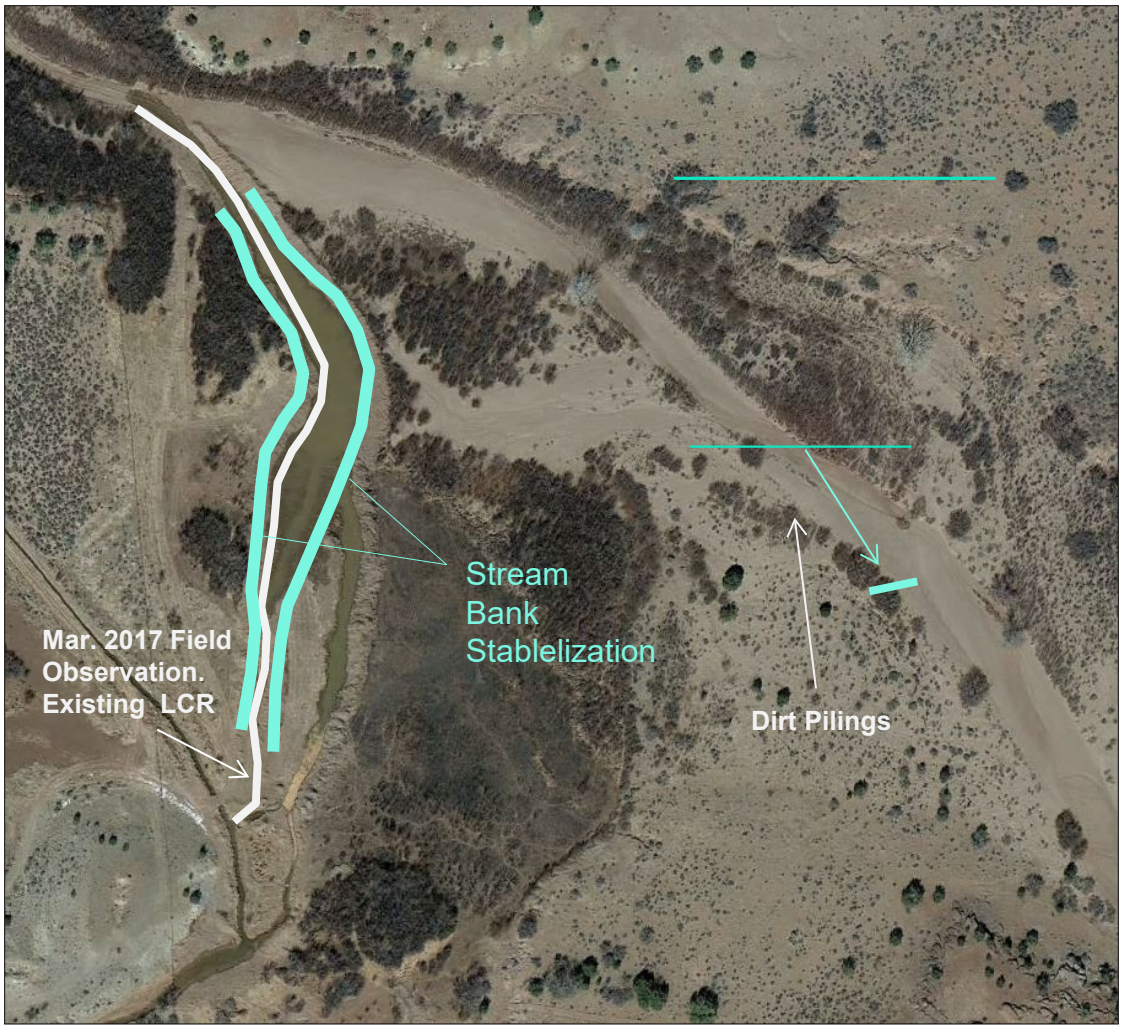
*Continued periodic maintenance to remove silt and stablelize left and right banks needs to be undertaken annually by Tribe (or assist SJIDC).

Proposed Corrective Measure:

*Obtain approval /permission with SJIDC for diversion weir /LR fill canal weir improvements.

*Contact property owner, obtain permission to access property and construct erosion structures to deflect flood flows to minimize sediment deposition of LCR channel that gets obstructed during high flood flows.

*[construct Benway Weirs?_4 x 100' weirs _ cu yds rock ?]*



**River Mile 18.6_SJIDC Lower Diversion (LD) Site**

Problem:

*Separating Tribes water from SJIDC's water during same timeframe as their irrigation season April 15th to September 15th, inadequate structure to separate Tribes Water Right from SJIDC's member use.

*SJIDC's lower diversion weir assessed and in need of repair / improvement, including improvements to head gates for east and west ditches.

SJIDC LD weir

SJIDC LD weir during flood flows.

**River Mile 18.6 Cont'd.**

*LCR stream flows diverted to east and west ditches for members Apr.15th to Sep. 15th annually.

*When the Tribe request's for their water releases, the east and west ditches are backfilled with dirt using a backhoe loader to re-divert water into the LCR and raise the water level over the weir for conveyance downstream.

**Beginning of West Ditch_Current ditch gate condition**

**Beginning of East Ditch.**

**East Ditch gate current condition. Located 100 ft . (est.) from bend in canal in photo at left.**

**River Mile 29.6 to 31.9_Zuni/Meadows Ranch Property**

Problems:

*Channel Diversions, Sediment Deposition, Salt Cedar Growth

*Channel depths measured from 6” to less than 12” for approximately 10,000+ft. (2mi.)

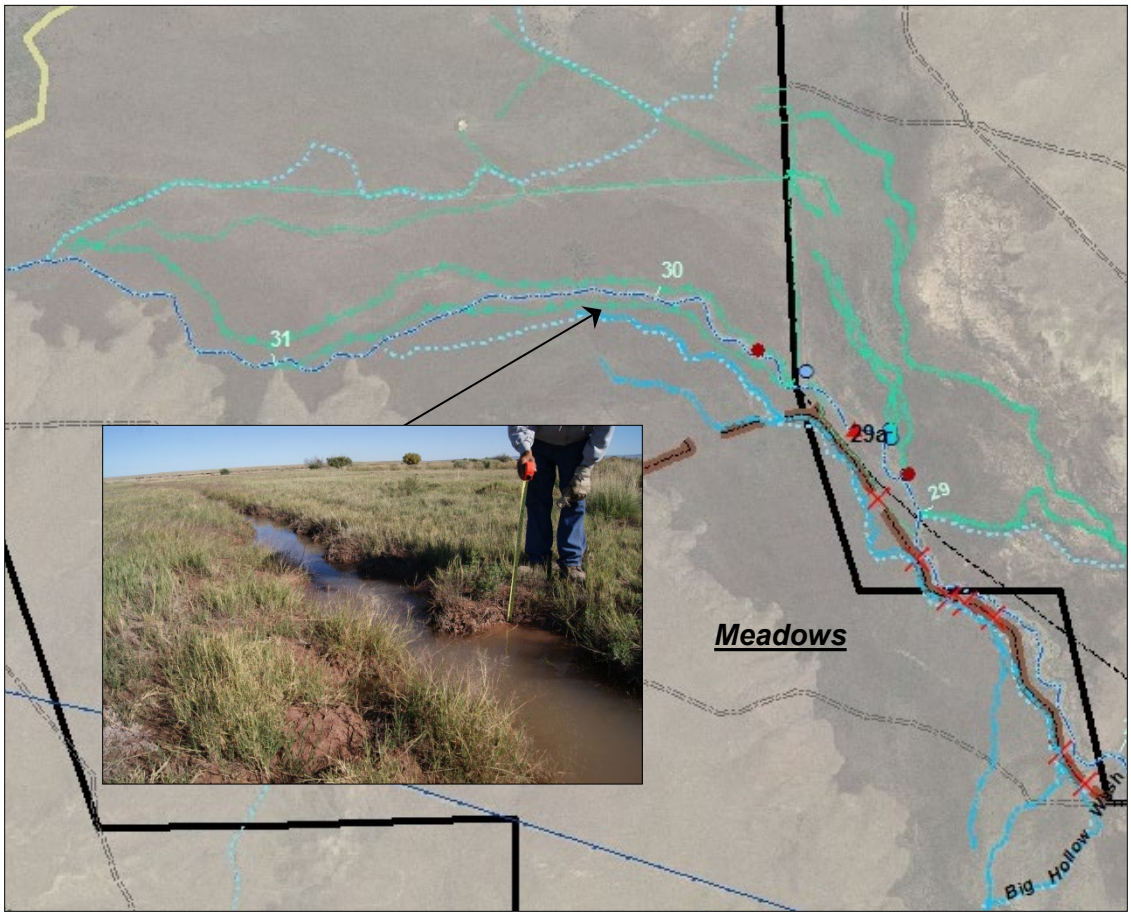
Proposed Corrective Measures:

*Salt cedar removal -estimated total length of salt cedar removal at 200 ft.

*Re-channel/sediment deposition removal of 7,500 to 10,000 ft._*AZ lands(40 acres)*

*Repair/maintain breached Big Hollow wash flood control levees_total length of 697 ft.

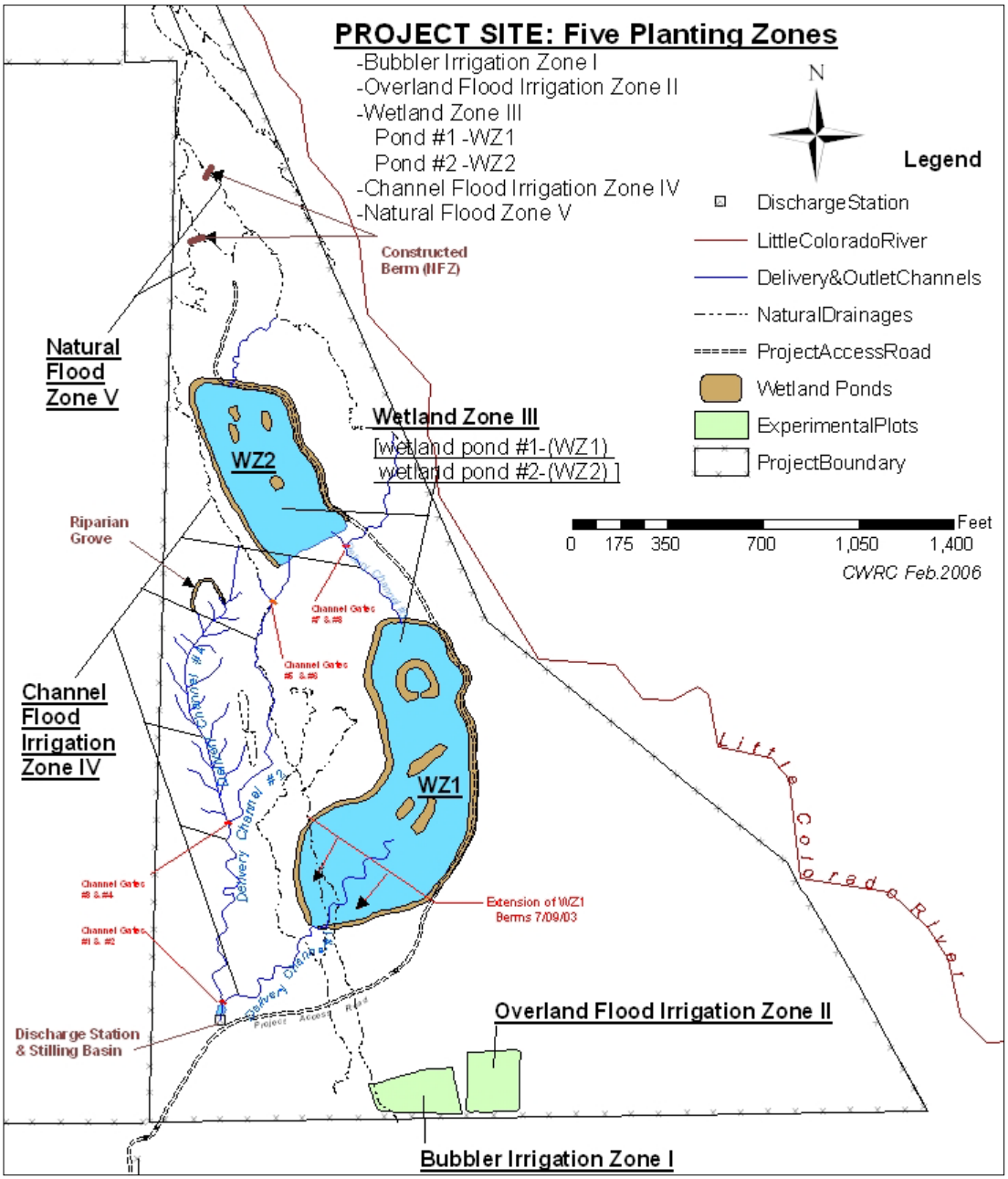
*Stream Bank Stablelization: stablelize left and right banks along LCR segment(s) where necessary.



**River Mile 40**

**Existing Initial Wetland & Riparian Restoration Project Site**

One of the Zuni Objectives is for the release of high flows to create flushing flows downstream from Lyman Reservoir for sediment transport and aggrading the LCR channel at the restoration project site area.



Another objective is the development of the Long Term Wetland & Riparian Restoration Area to entail 700 acres(+/-)

*Preliminary preparation of estimated 20 acre pond in anticipation of 2016 water release reaching this location. The 36 acre is currently a conceptual plan for long term development when conveyance problems are improved and sufficient waters reach this long term wetland and riparian development area.

*Impounding Water Right Entitlement releases to develop within the 700+/- acres for wetland ponds and riparian areas in Section 15 by re-storing /re-designing the old Isaacson dam. Re-designing of Isaacson dam will divert water to areas of Section 15 for conveyances to constructed ponds. No cost estimates developed as yet.