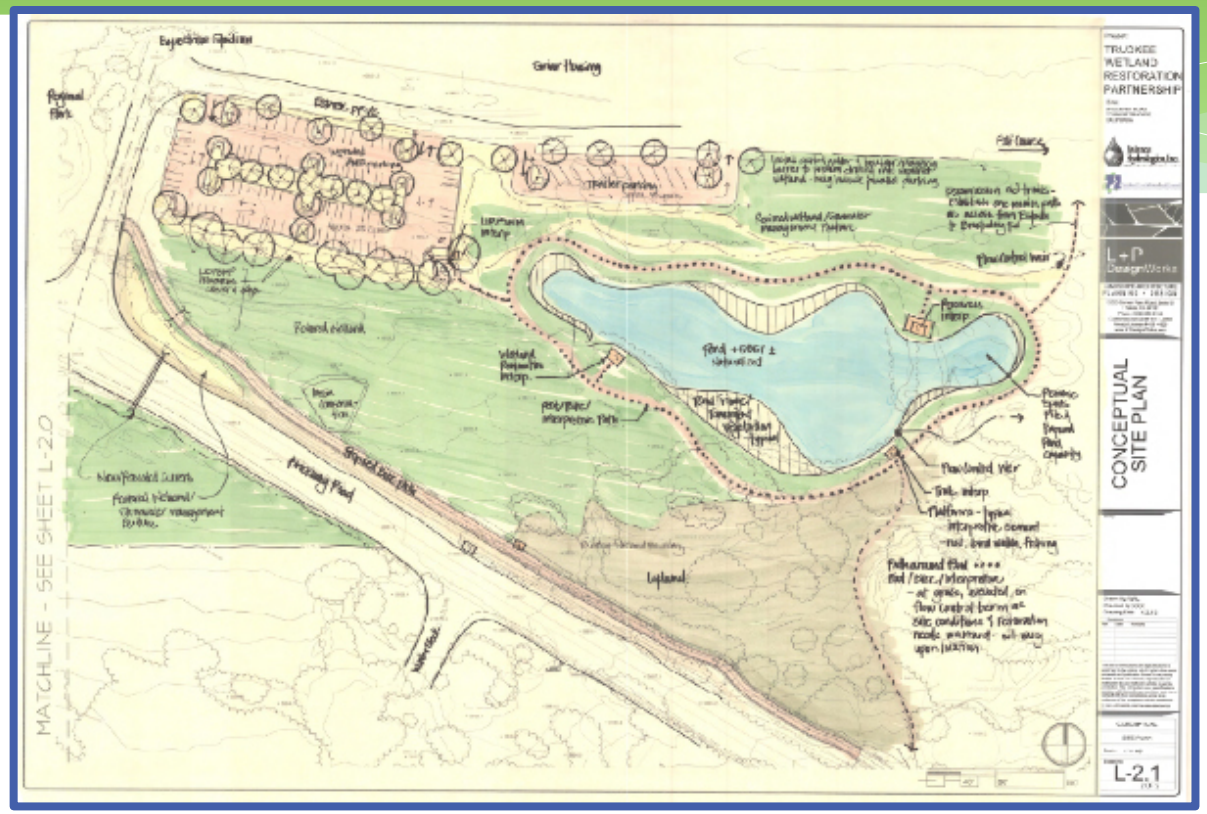
Truckee River Watershed Council

Collaborative solutions to protect, enhance and restore the Truckee River Watershed

Truckee Wetlands Restoration Project



TruckeeRiverWatershedCouncil

Collaborative solutions to protect, enhance and restore the Truckee River Watershed

Thank you to our Funders

Donors to the

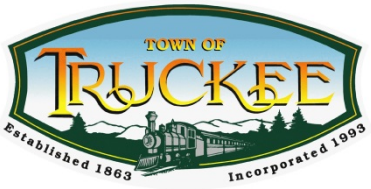
Truckee River Watershed Council

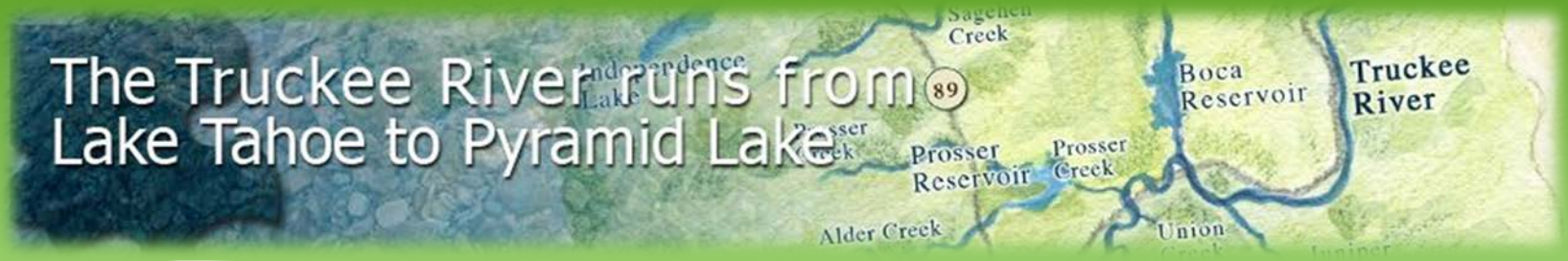
Collaborative solutions to protect, enhance and restore the Truckee River Watershed

TRUCKEE RIVER FUND

Enhancing and protecting our water resources

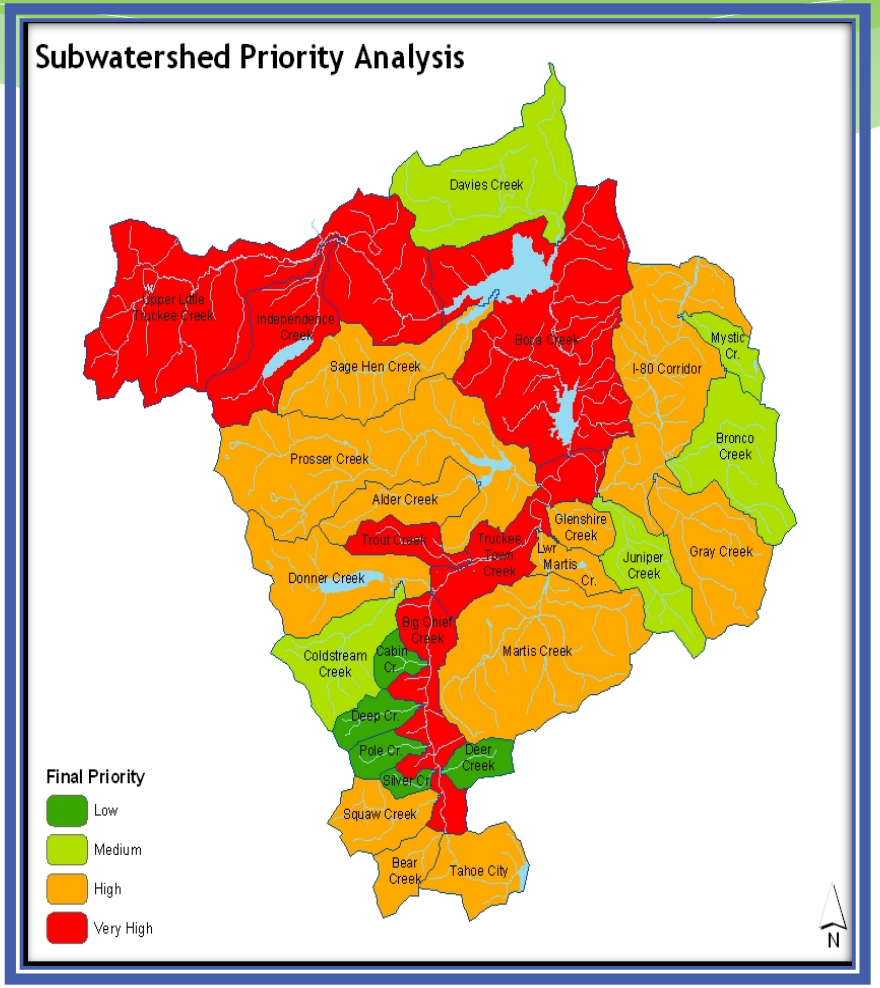
Department of Conservation





OUR VALUES

- PARTNERSHIPS
- ECOLOGICALLY SOUND
- ECONOMICS



Truckee River Watershed Council May 2002

TRWC's Programs

RESTORE:
Merrill Davies Stream & Meadow

PROTECT::
Adopt-a-Stream

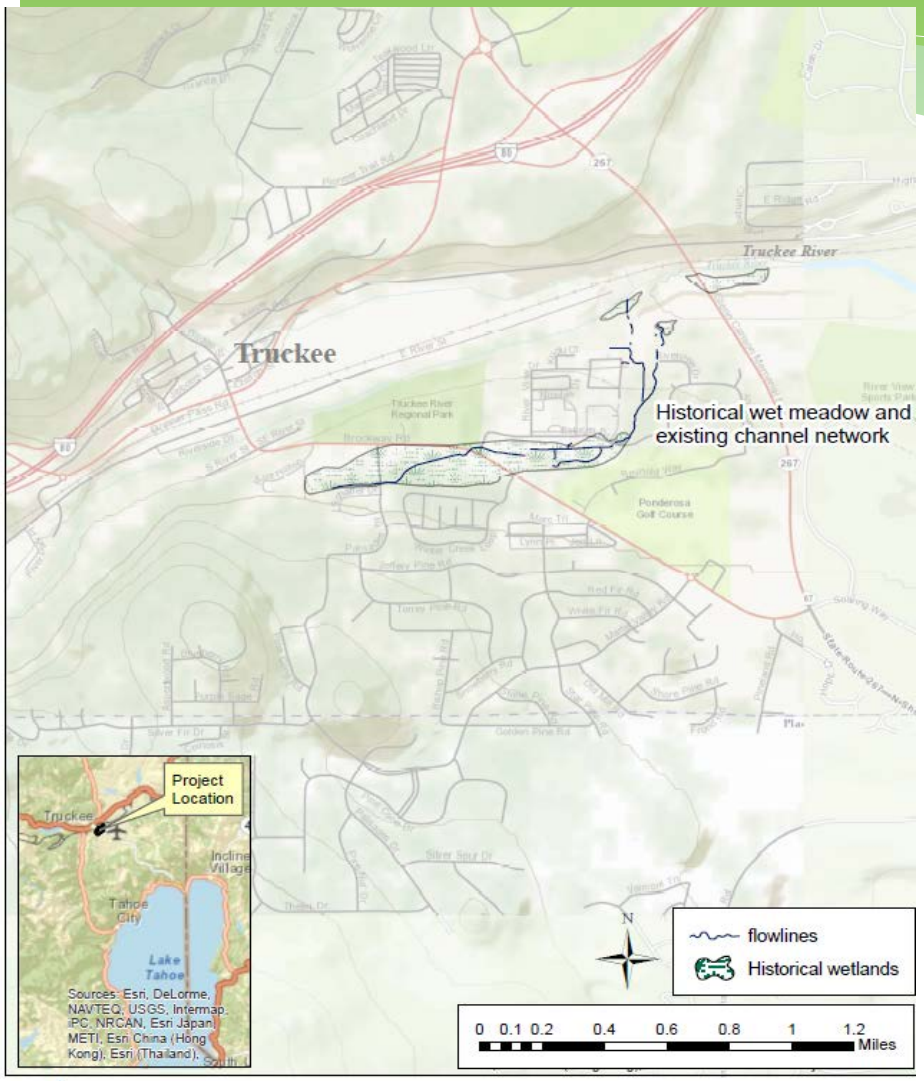
ENGAGE:
19th Annual Truckee River Day October 19, 2014

THE TRUCKEE RIVER IS NOT PRISTINE.

ROADS / DAMS / ERODING BANKS / DOWNCUTTING

RESTORED ECOLOGICAL FUNCTION / RAISED WATER TABLE / CLEANER WATER

Truckee Wetlands Restoration Project



Presented by
Jeannette Halderman, TRWC
David Shaw, Balance Hydrologics

Thank you Truckee Wetlands Restoration Partnership

* Town of Truckee
* Truckee Donner Public Utility District
* Truckee Donner Recreation and Park District
* Truckee Sanitation District
* Truckee Tahoe Airport District
* Truckee Donner Land Trust

Contact with adjacent land owners

What is the Problem?

* Fragmented wetland complex
* None of wetlands are fully functioning
  * Disconnected Hydrology
  * Significant storm Runoff
  * Significant Erosion
  * Inappropriate Land Use

Truckee Wetlands Restoration Partnership

* 2010 TRWC convened partnership of land managers, property owners, and stakeholders
* Goals:
  * Include all stakeholders
  * Understand what restoration is achievable
  * Work in conjunction with other projects
  * Restore connectivity and function

Project Area Historical and Now

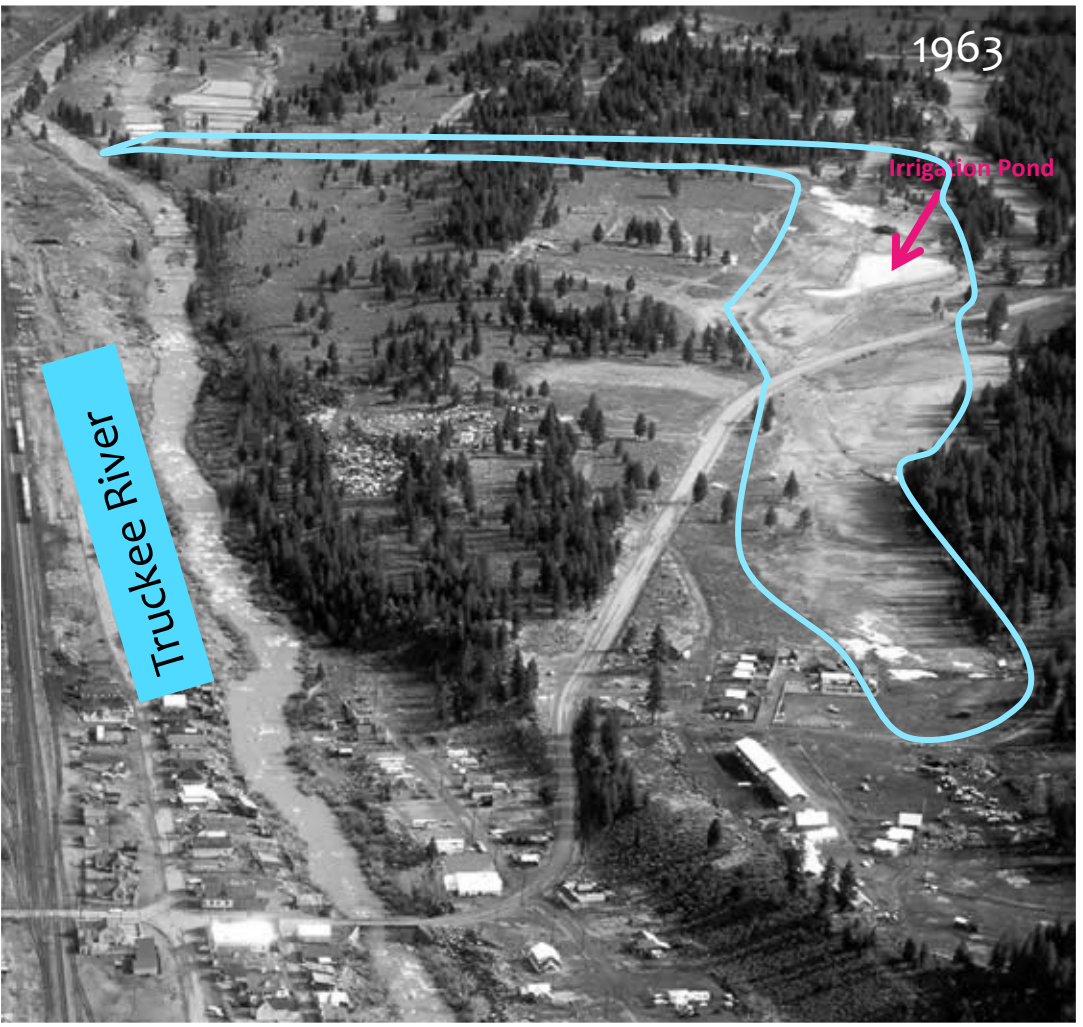
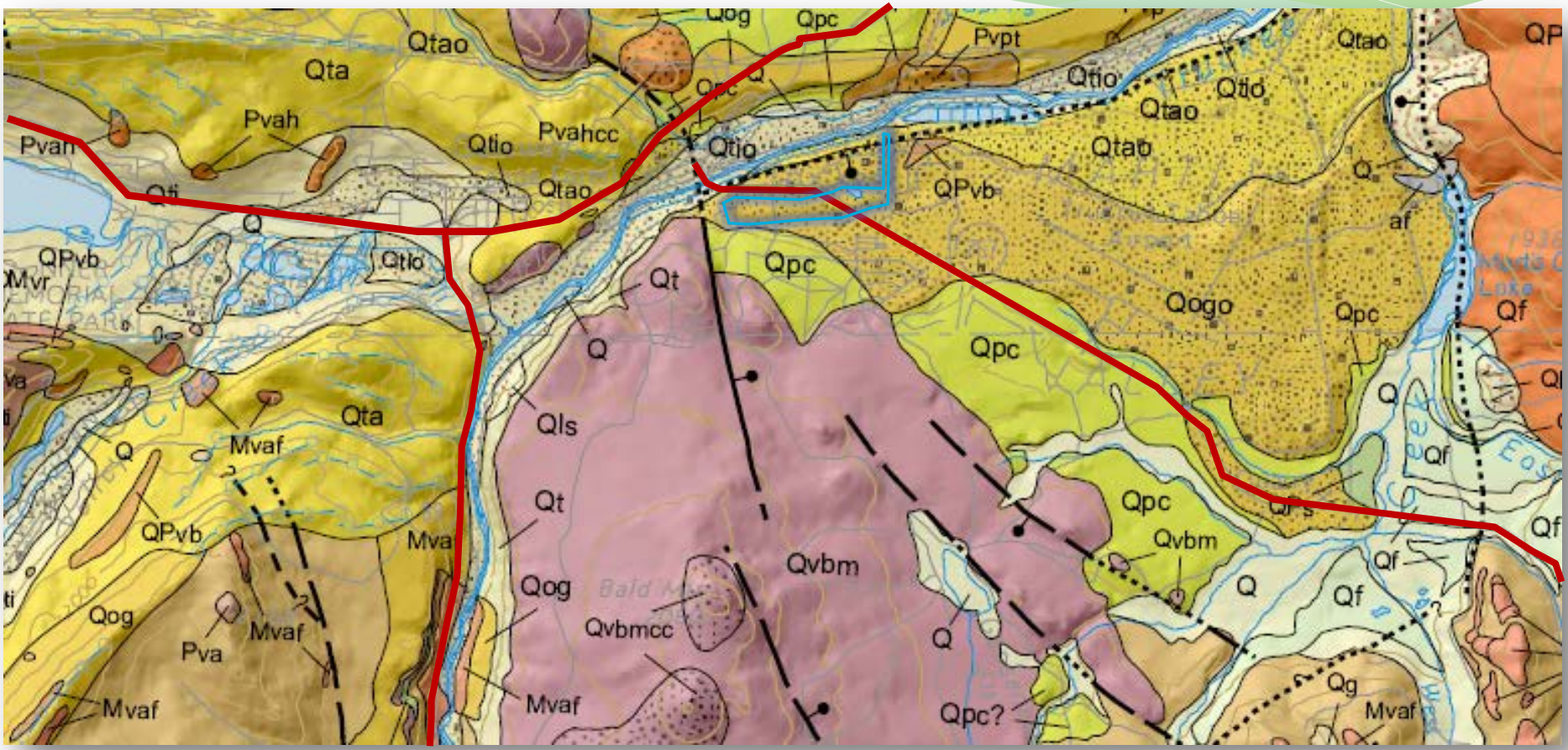


Photo Credit CA Dept of Transportation

Feasibility Study

* 2010 – TRWC and Balance compiled
* Brockway Trails Geotechnical Studies
* Historical Analysis (others and Balance Hydrologics)
* Wetland Delineations
* Current Conditions
* Soils maps
* Opportunities and constraints
* **Recommendation: restoration is possible**

Geology


Qtao
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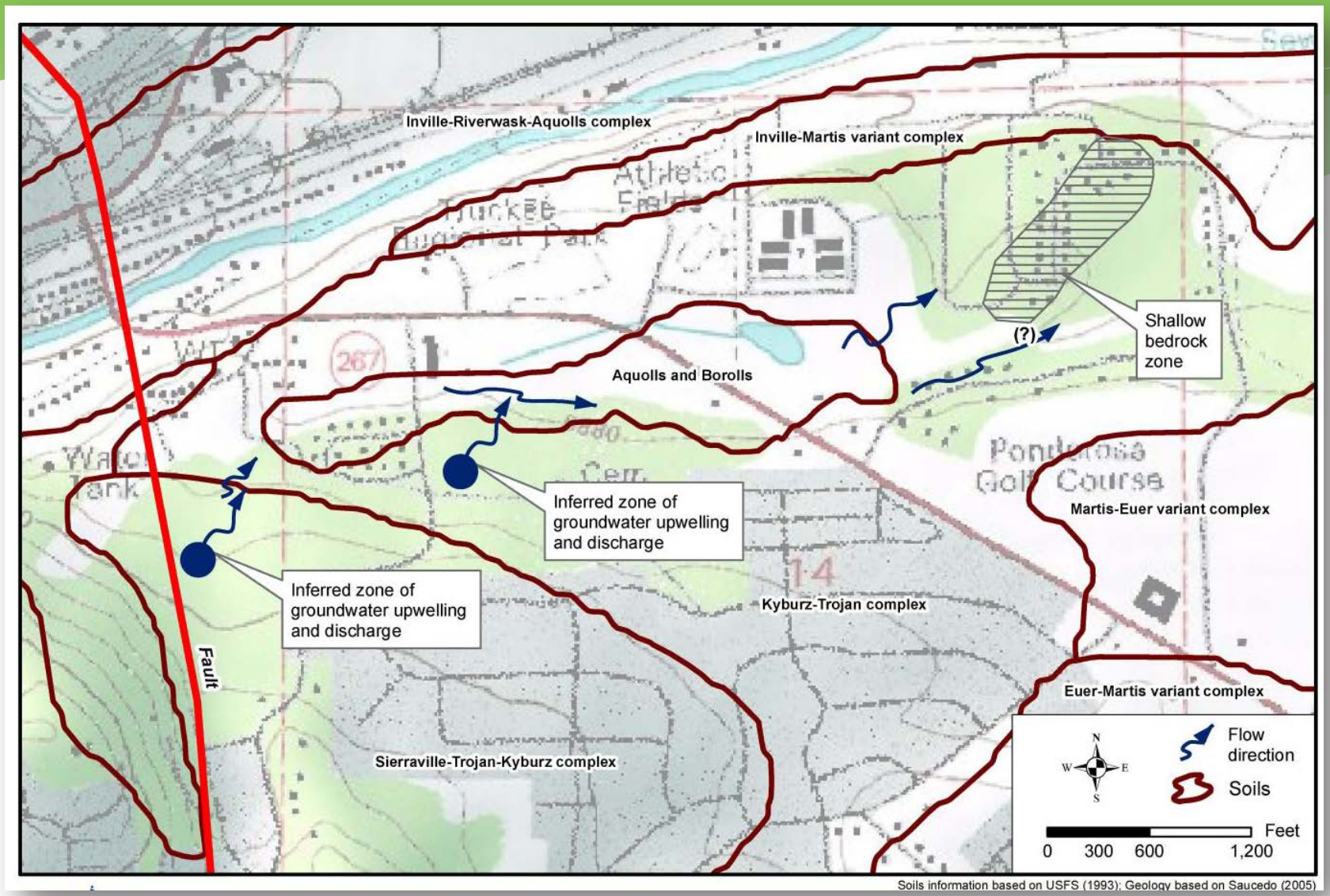
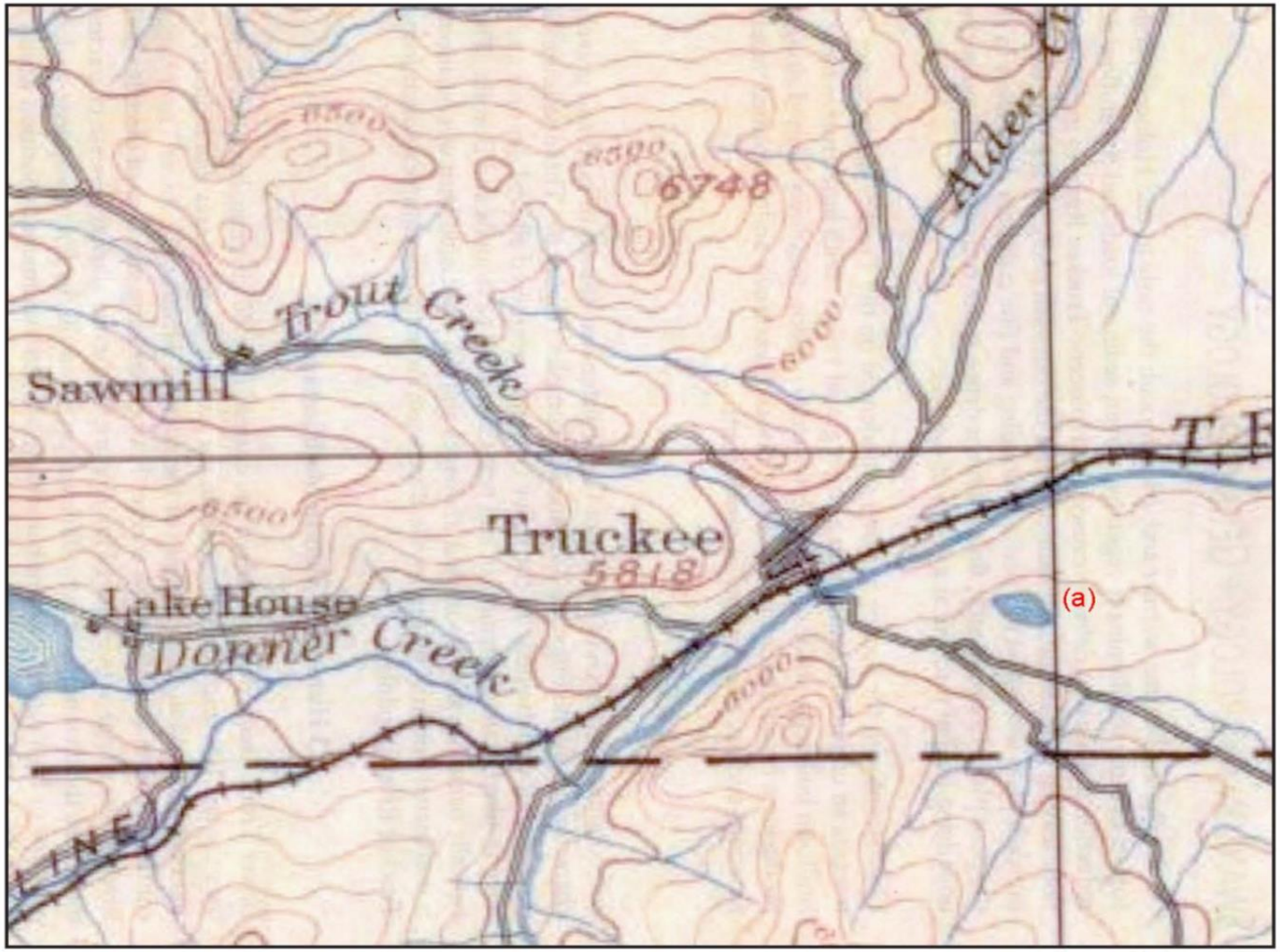
Historical Wetland Soils



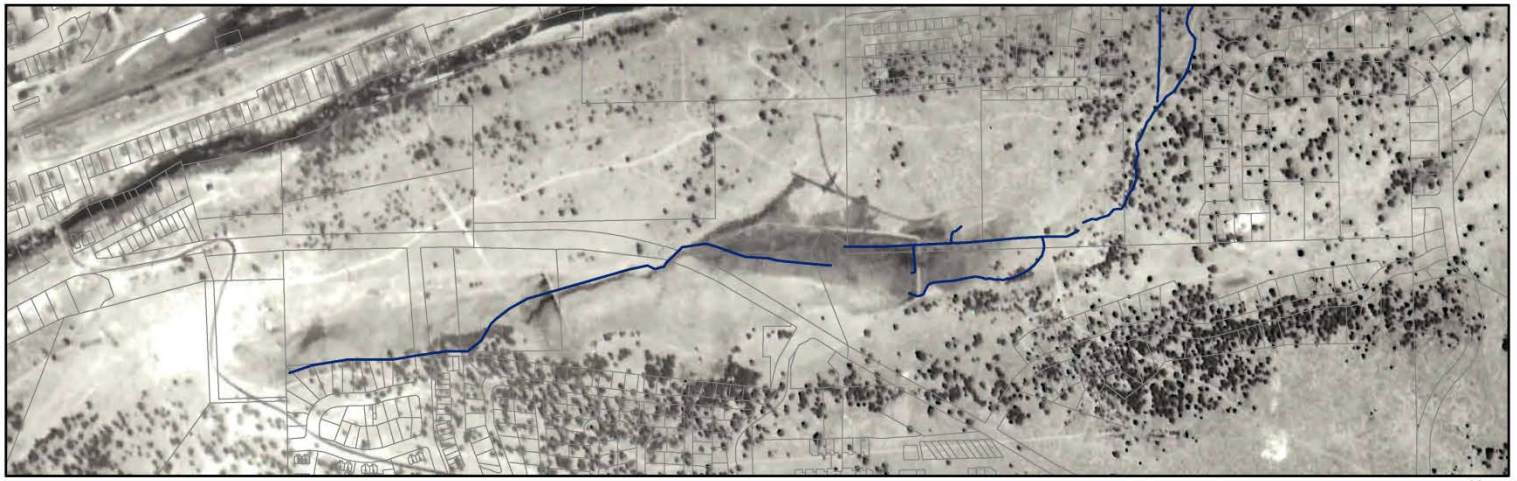
Historical Map



Source: Lindgren, 1897

1939 Aerial Photography

2010



1939

0 300 600 1,200 Feet

N

1972

(Source: USFS)

Inferred Historical Wetland Extent

Impaired Areas

Impaired Areas

Impaired Areas

Truckee Wetlands Restoration Project Assessment

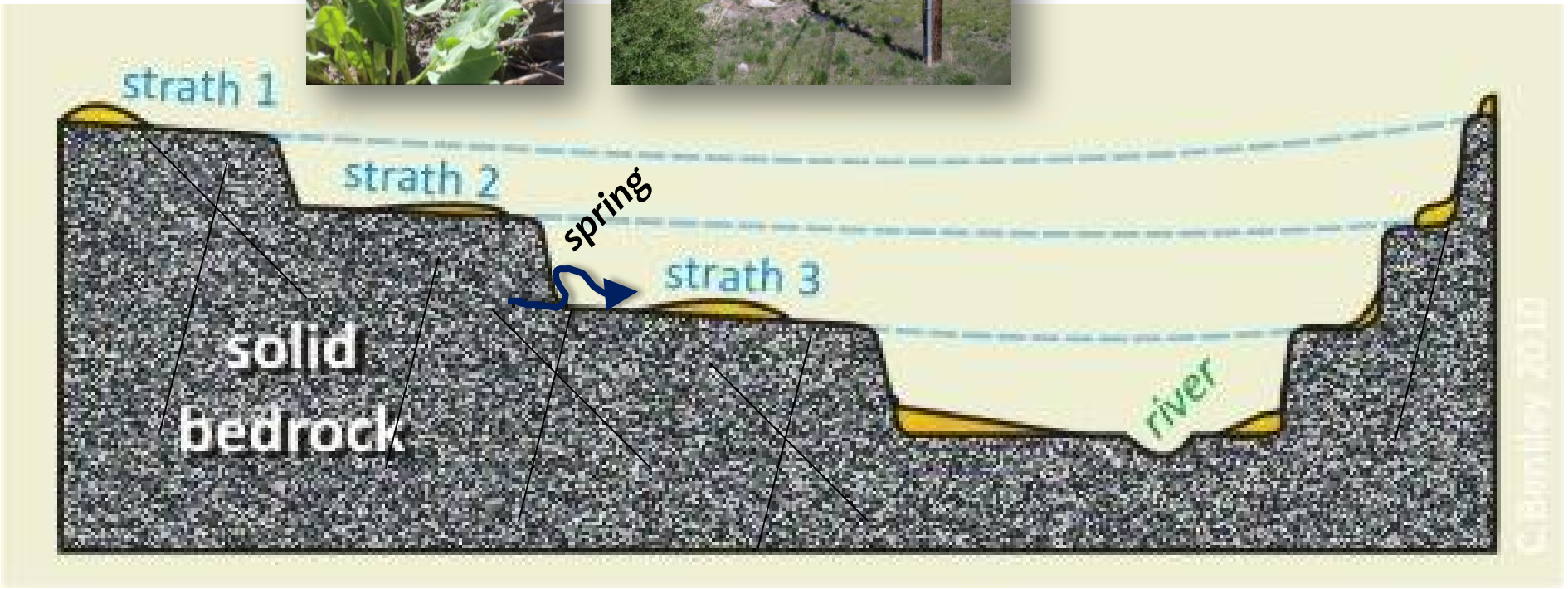
* Truckee Wetlands Restoration Feasibility Study
* Soil and Hydrology
* Analysis of Irrigation
* Conceptual Design
* Continued partner meetings

Soils and Hydrology

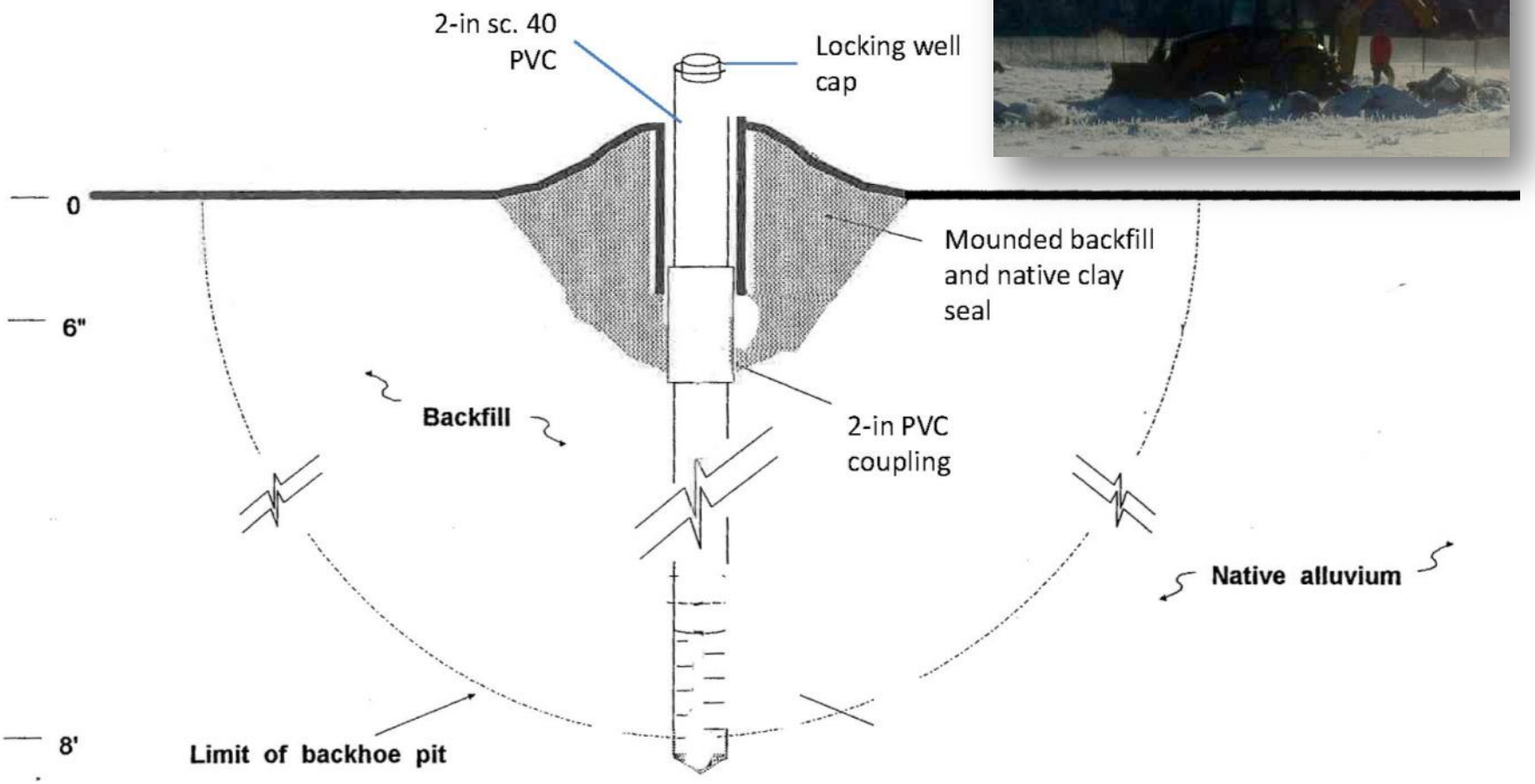
* Evaluate soils and their water-holding properties
* Estimate water volumes and expected flow rates
*
* Evaluate surface and groundwater interaction
* Collect baseline data

Soils and Hydrology

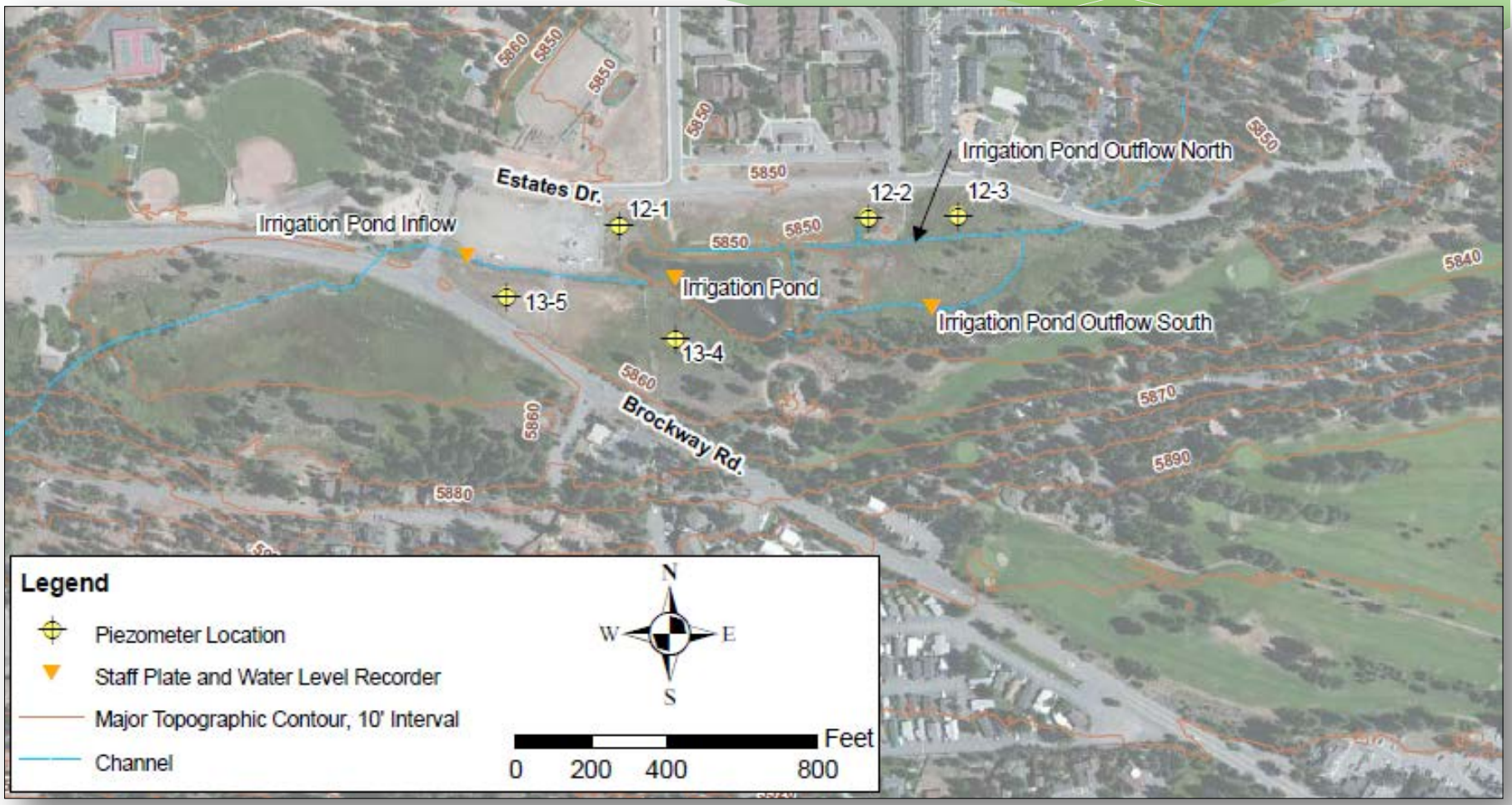
Inferred Geologic Structure



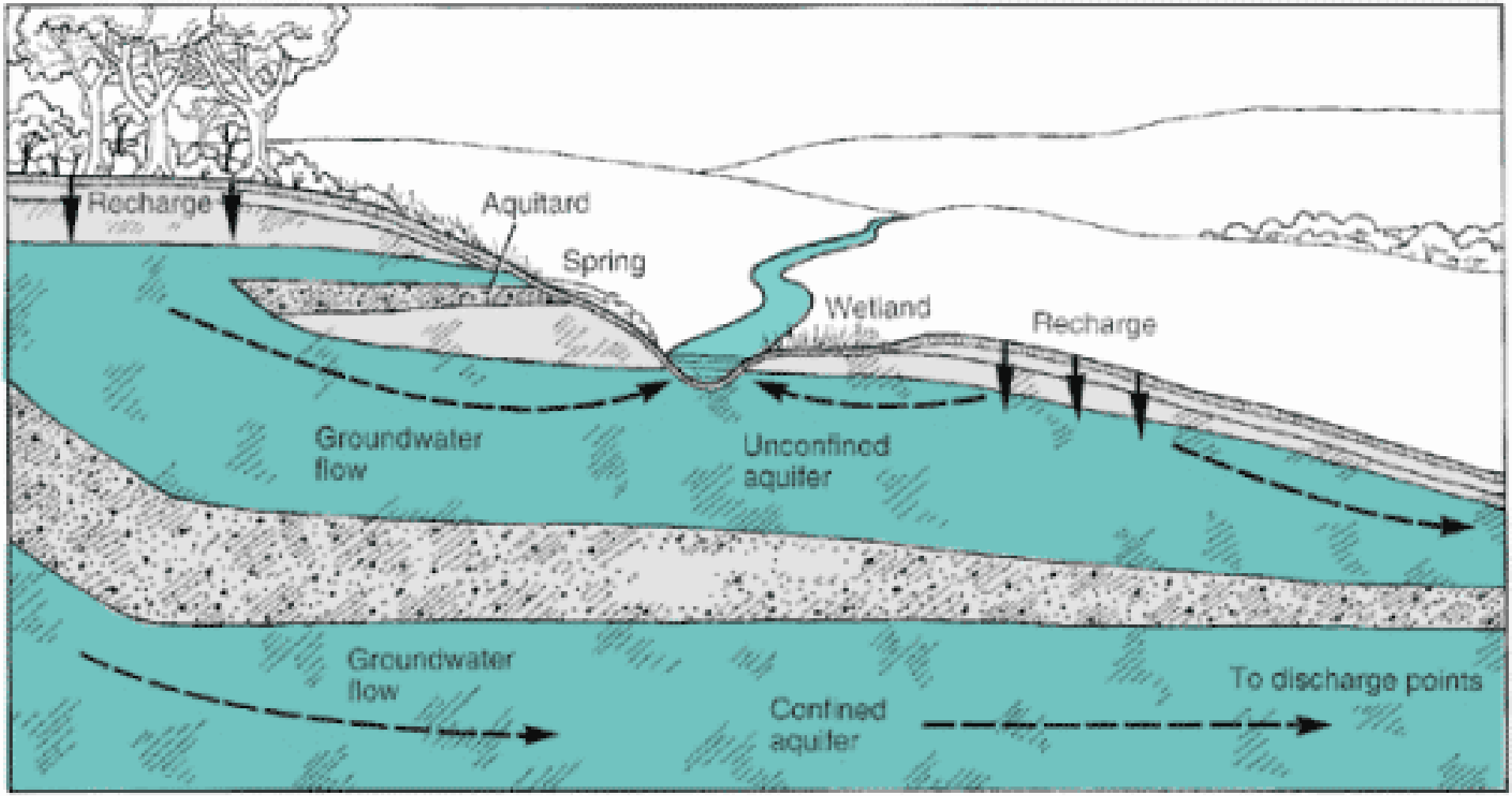
Soils & Groundwater Investigation



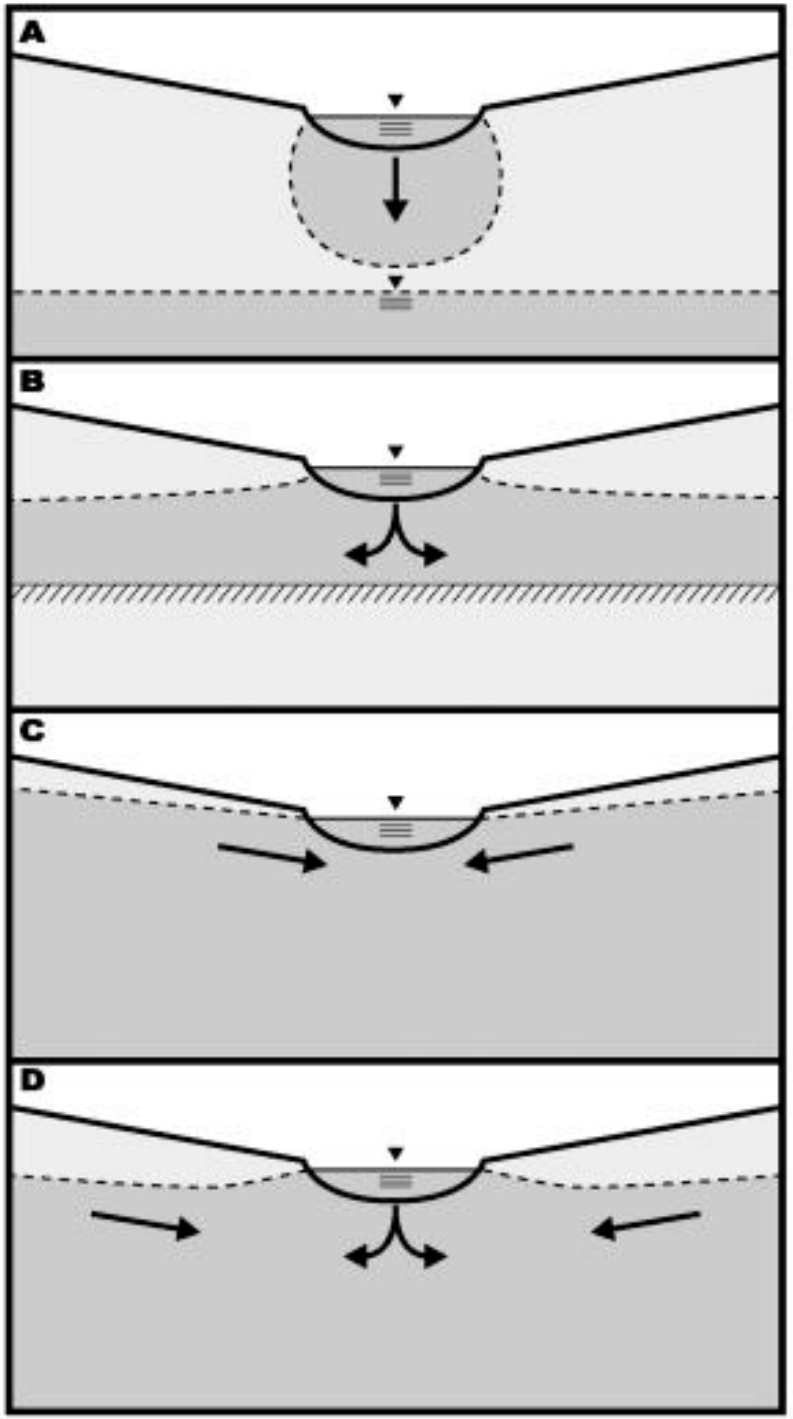
Surface and Groundwater Monitoring



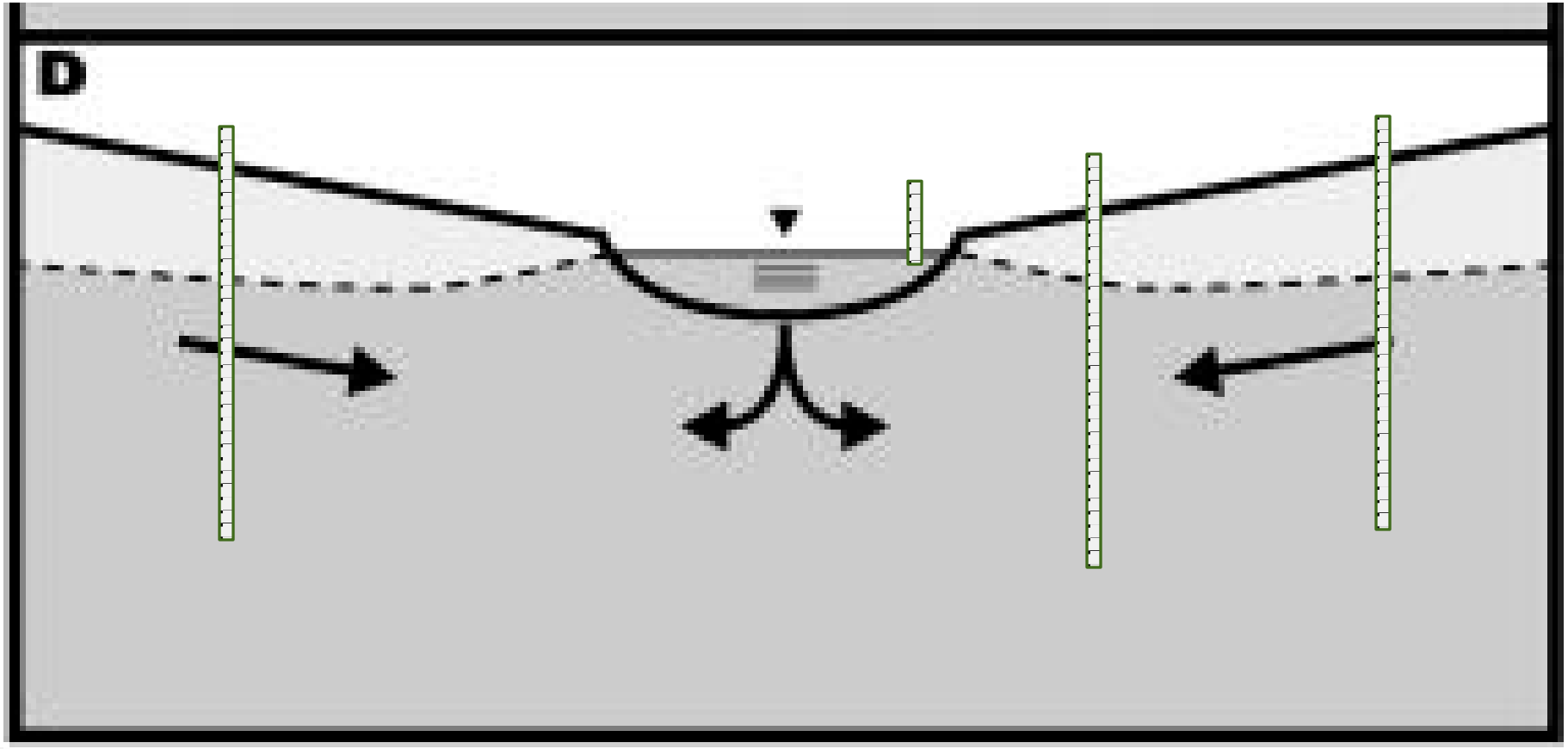
Surface – Groundwater Interaction



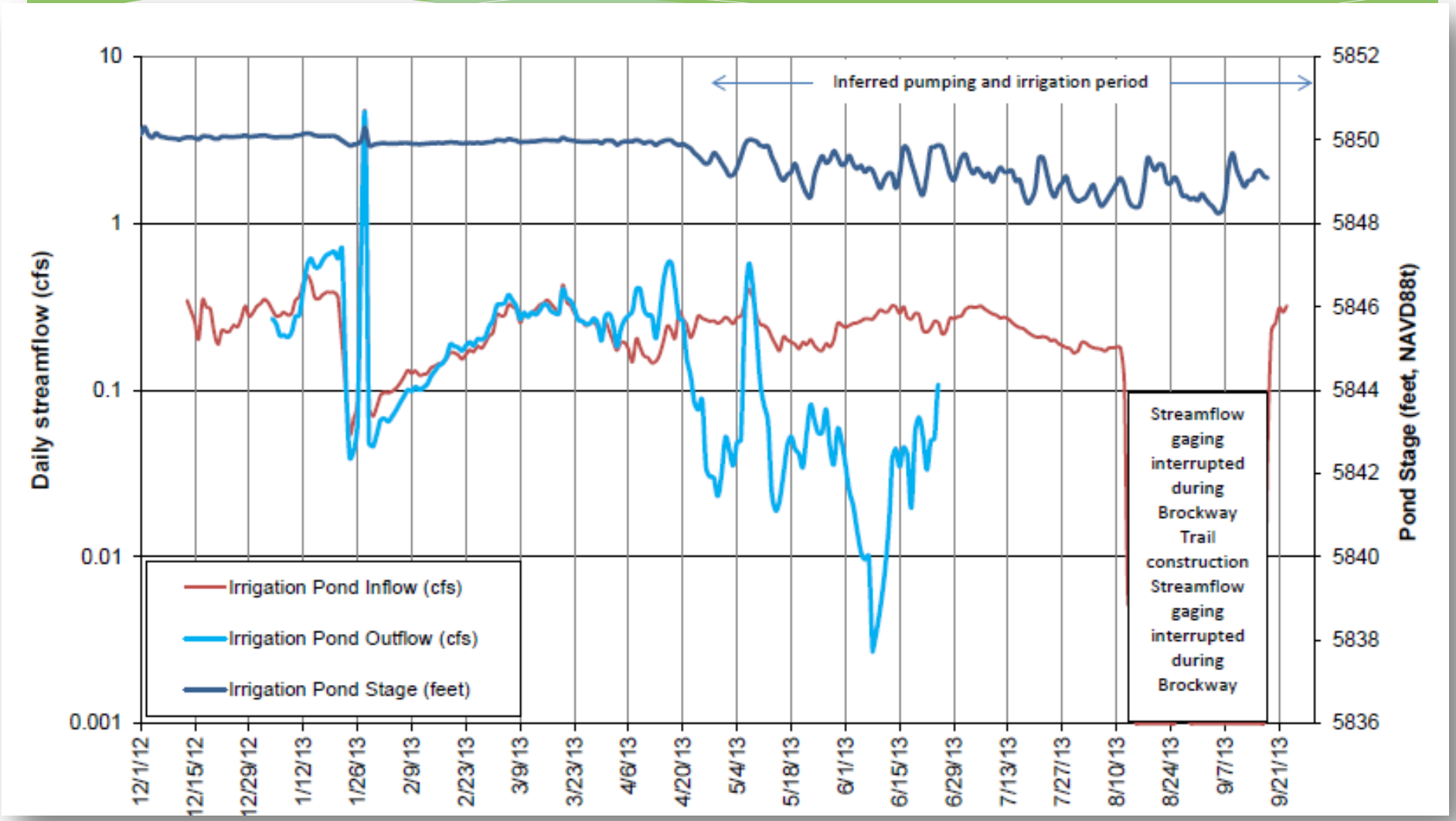
Surface – Groundwater Interaction



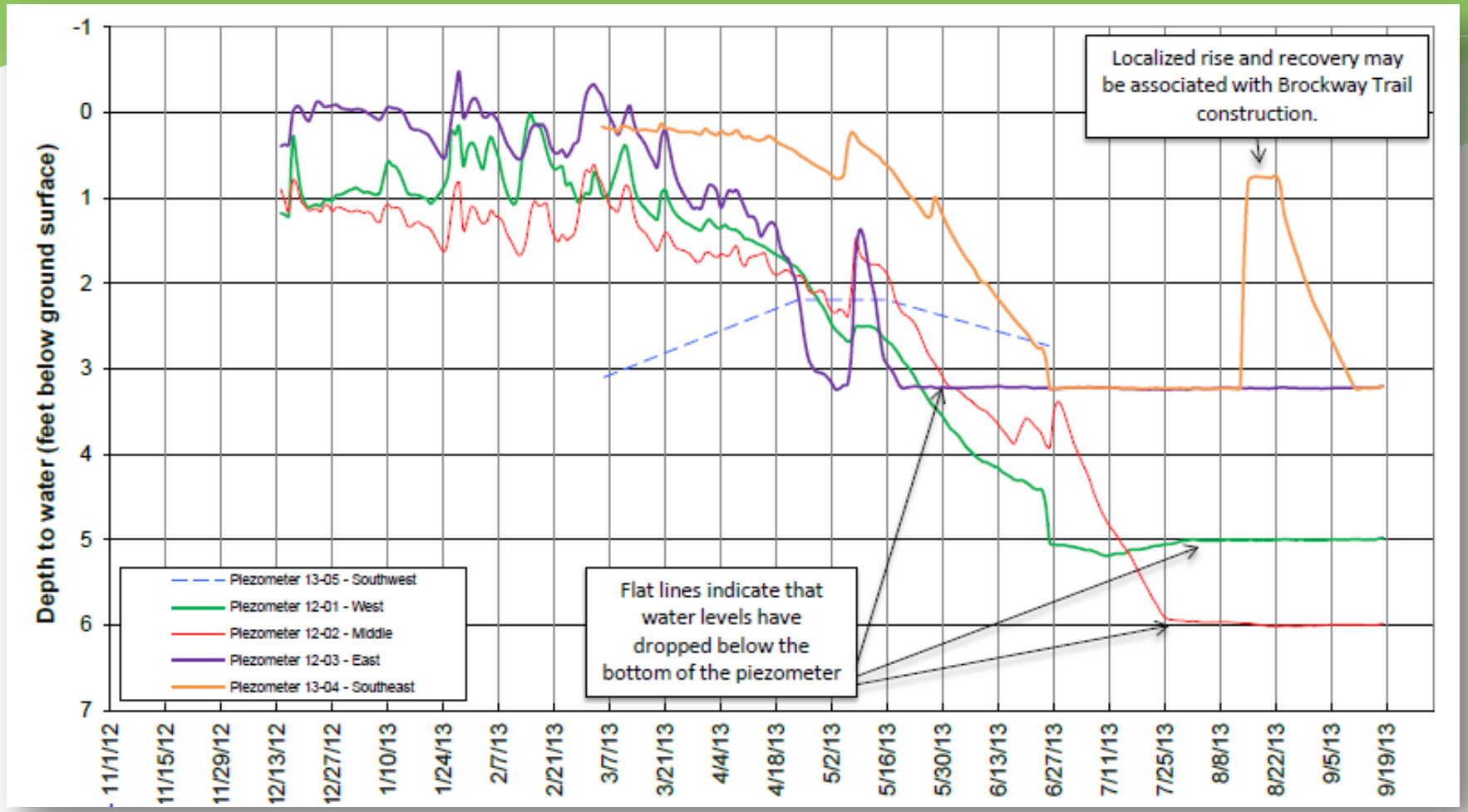
Surface – Groundwater Interaction



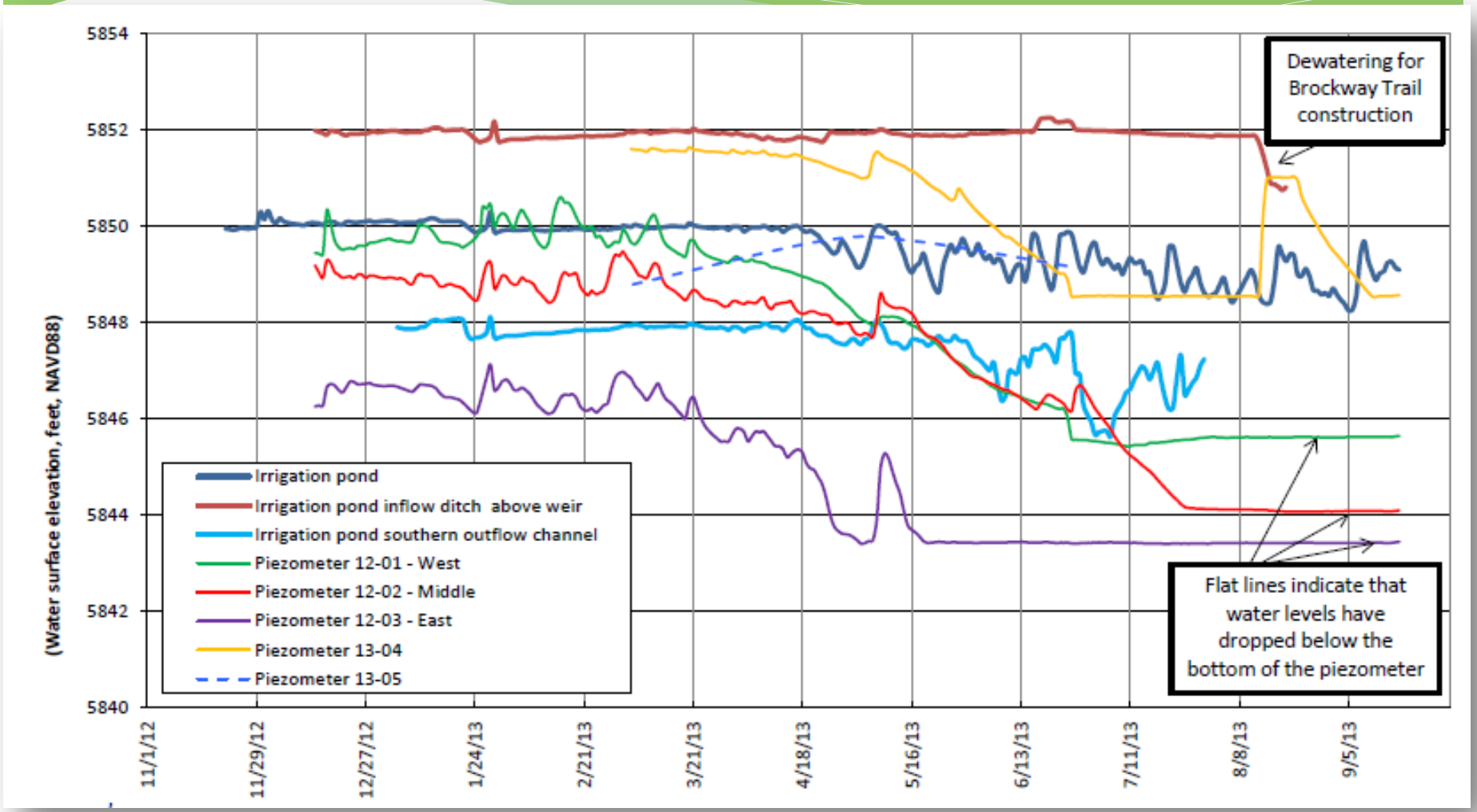
Irrigation Pond Water Level, Inflow, Outflow



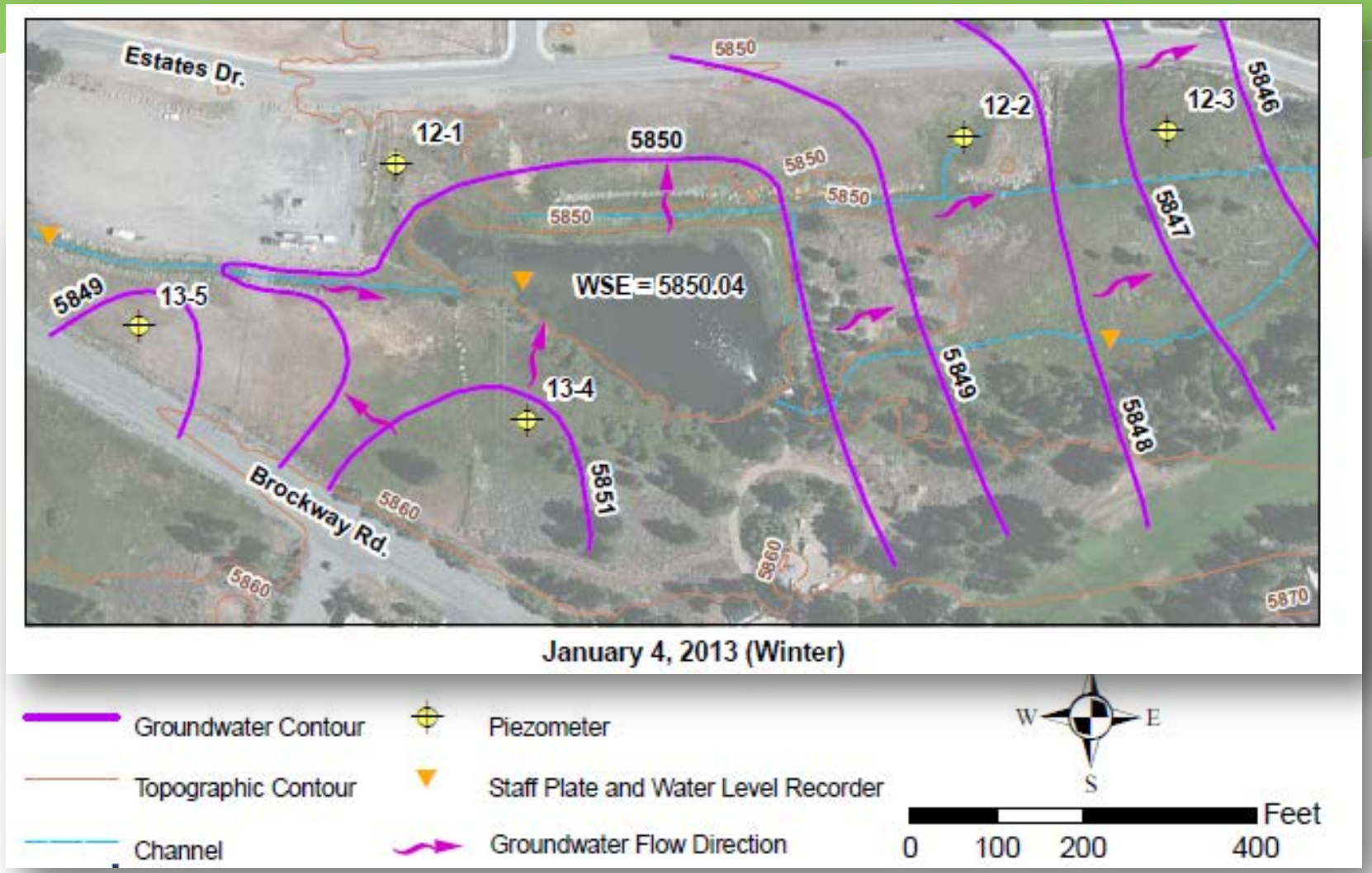
Depth to Groundwater



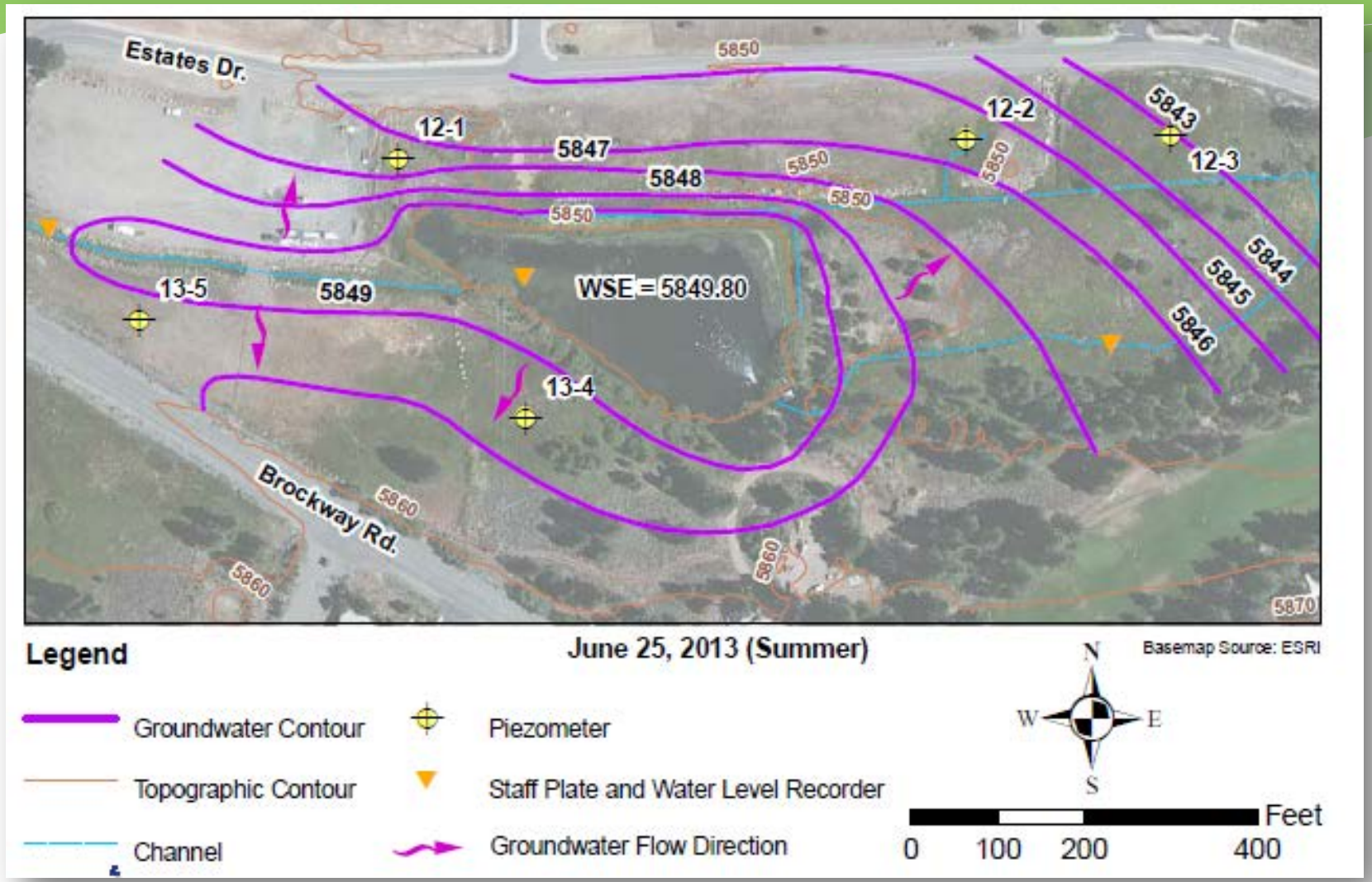
Groundwater Elevations



Shallow Groundwater Flow Direction (Winter)



Shallow Groundwater Flow Direction (Summer)



Analysis of Irrigation Pond Hydrology

	INFLOW				OUTFLOW							
	Inflow from ditch[1]		Direct Precipitation[2]		Pond outflow[1]		Estimated evaporation from pond[3]			Estimated Irrigation Use[4]		
	gpm	gpd	inches	gpd	gpm	gpd	ft	gpm	gpd	gpd	days/wk	gpm
October	80	115,200	1.58	1,799	nm	nm	0.45	4.2	6,092	120,000	6	70
November	121	174,493	6.05	7,118	nm	nm	0.31	2.9	4,241	0	0	0
December	120	172,800	7.33	8,346	nm	nm	0.22	2.1	2,989	0	0	0
January	206	297,285	0.48	547	224	323,136	0.13	1.2	1,708	0	0	0
February	63	90,478	0.13	164	58	84,015	0.08	0.8	1,139	0	0	0
March	130	187,419	1.47	1,674	135	193,882	0.11	1.0	1,509	0	0	0
April	94	135,717	0.51	600	108	155,105	0.17	1.6	2,306	120,000	6	70
May	103	148,643	1.78	2,027	40	58,164	0.29	2.8	4,014	120,000	6	70
June	121	174,493	0.45	529	13	19,388	0.41	3.9	5,665	120,000	6	70
July	108	155,105	0.03	34	0	0	0.56	5.3	7,600	120,000	6	70
August	81	116,329	0.01	11	0	0	0.59	5.6	8,113	120,000	6	70
September	126	180,956	0.85	1,000	0	0	0.53	5.0	7,259	120,000	6	70

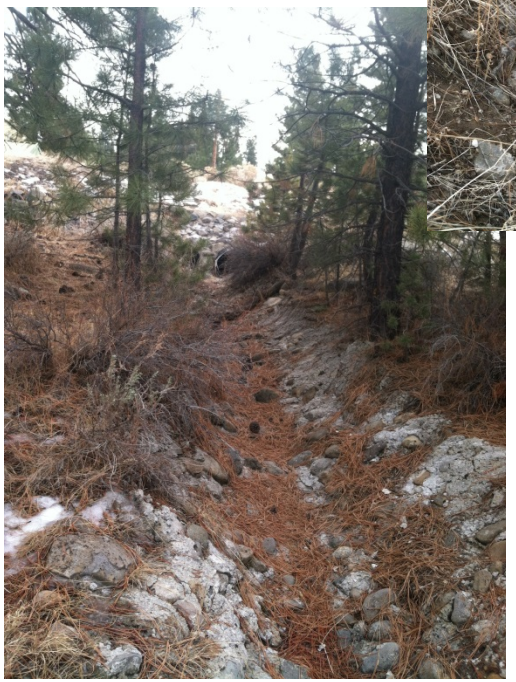
Summary of Findings

* Artificial fill on historical wetland soils in places, but not everywhere
* Bedrock terrace with seasonal and disconnected hydrology and limited groundwater storage
* Springflow conveyed across wetland; limited subsurface flow between pond and shallow groundwater
  * Surface flows should be used to restore hydrology

Restoration Objectives & Concept Design

* 5 Areas of focus
* Improve hydrology of meadow (remove ditches/channels)
* Attenuation
* Expand meadow and riparian habitat area
* Reduce Erosion/sedimentation
* Create recreation/education opportunities

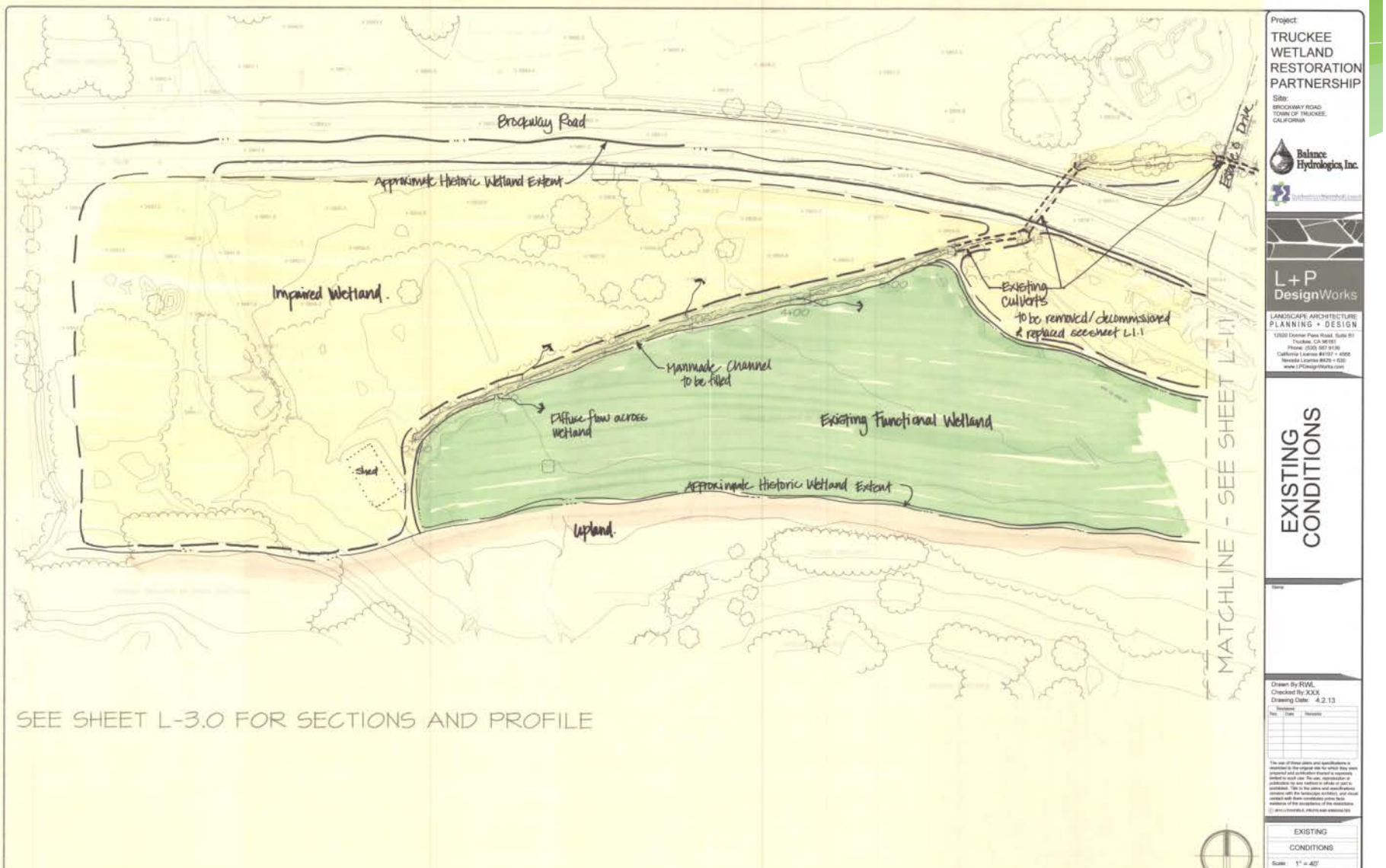
Outfall at Truckee River



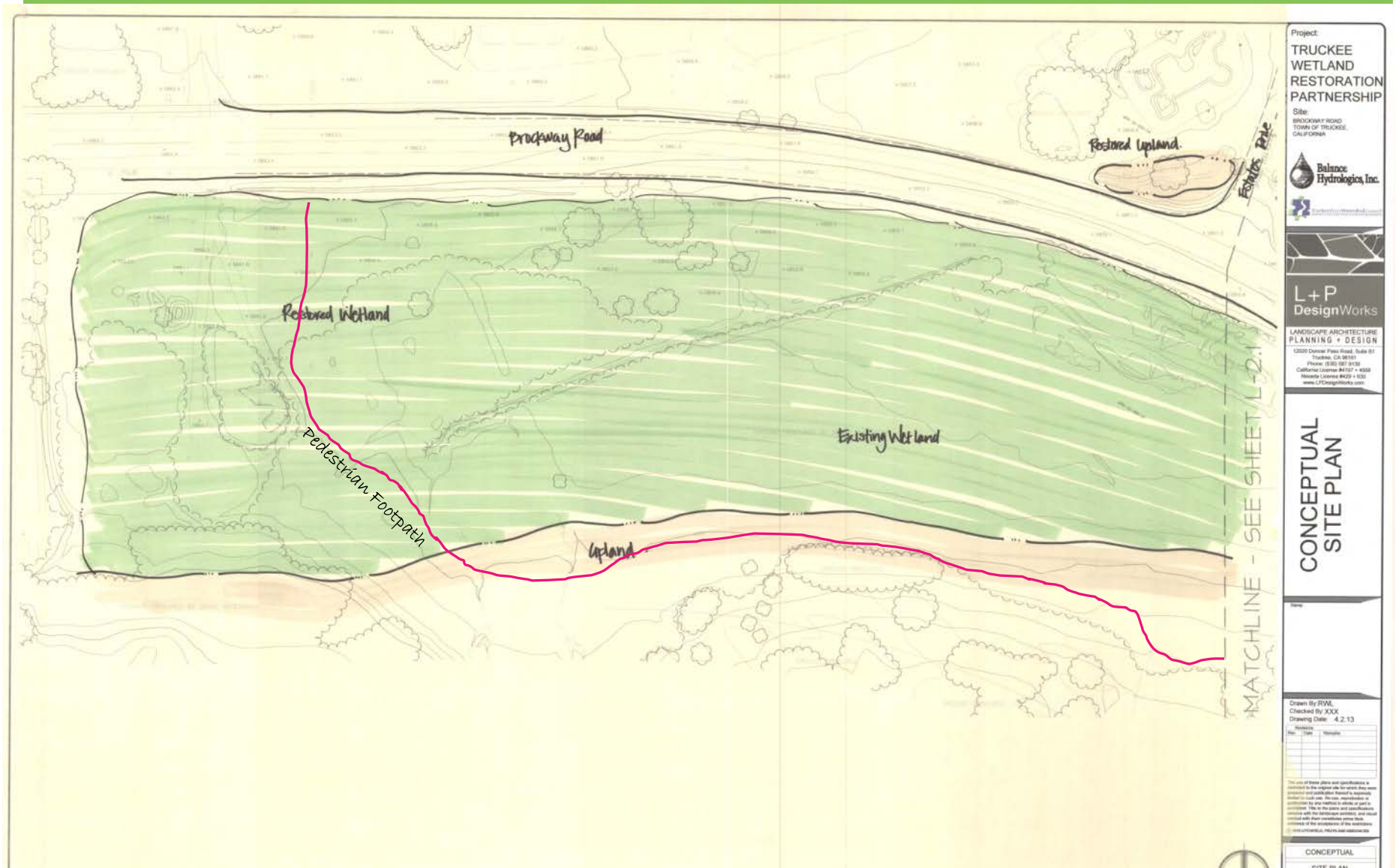
Culverts under Legacy Trail - Outfall at Truckee River

5 Areas of Focus

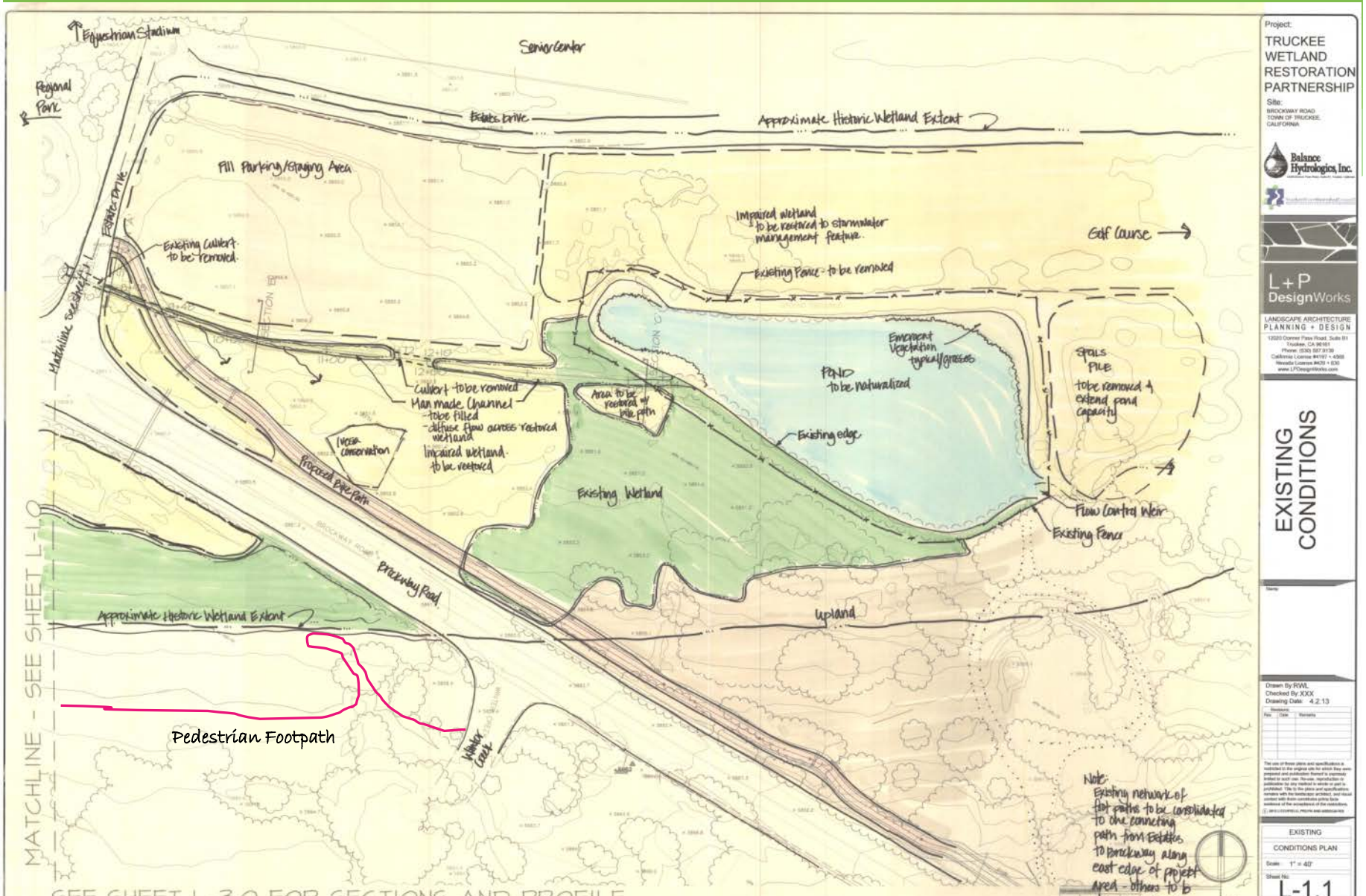
Focus Area 1 – Existing Conditions



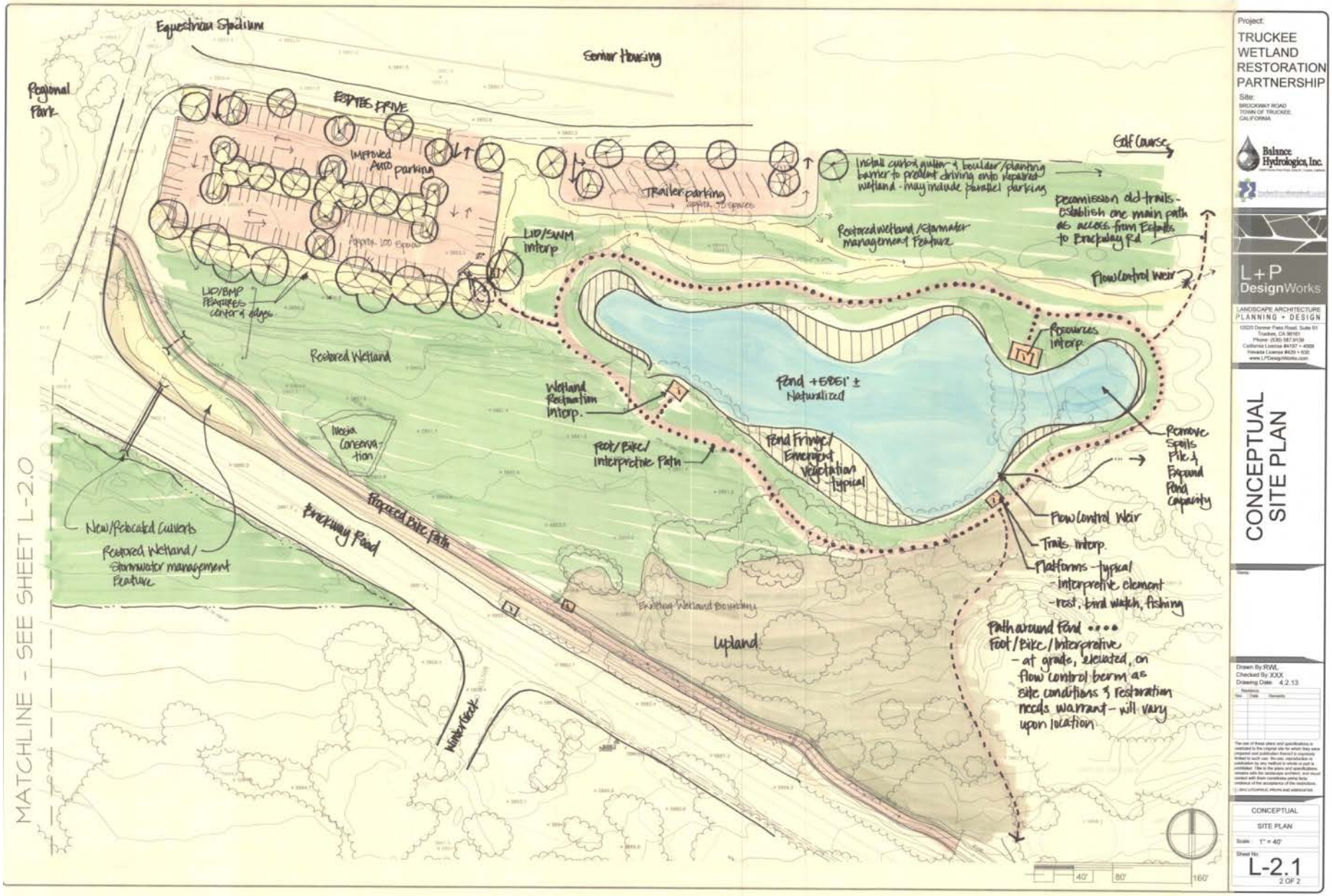
Focus Area 1 – Restored Condition



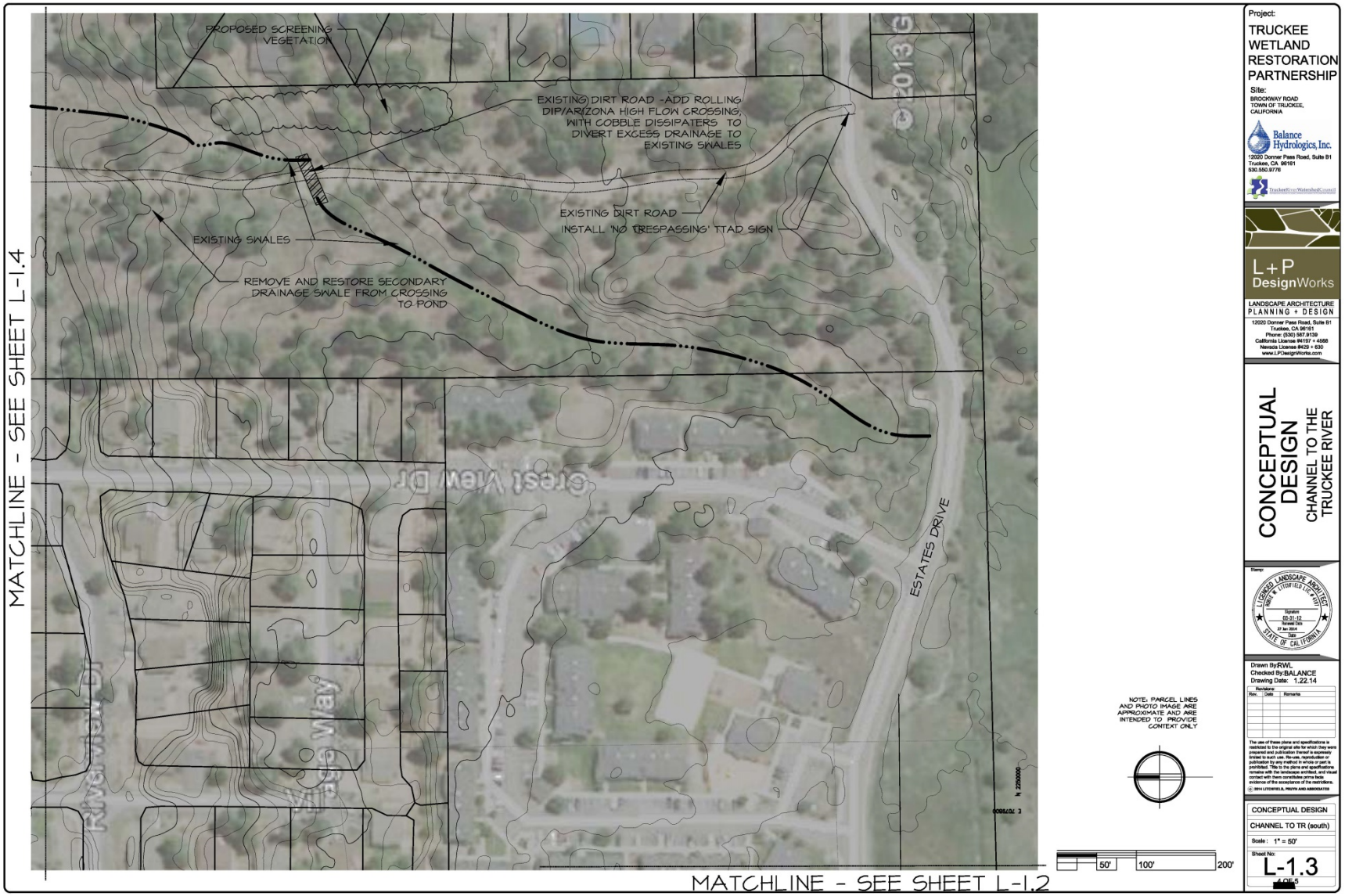
Focus Area 2 - Existing Conditions



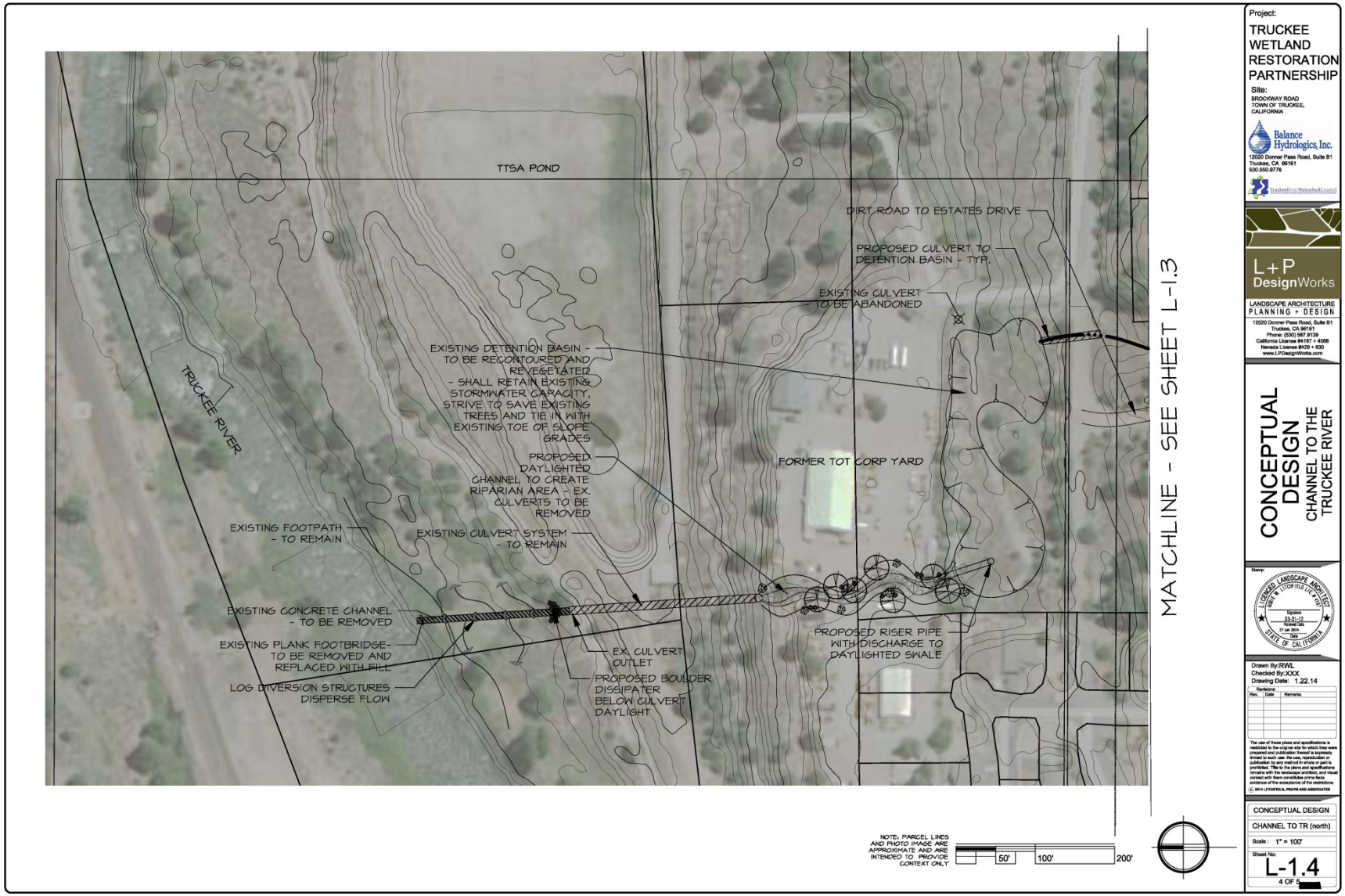
Focus Area 2 –Restored Condition



Focus Area 3 – Restored Condition



Focus Areas 3, 4 & 5 – Restored Condition



Next Steps

* 2014/2015 Design
* 2015-2018Phased Implementation
  * Focus Area 1, 2 &3
  * Focus Area 4
  * Focus Area 5
* 2015-2023 Post-Implementation Monitoring

THANK

YOU!!