Waters of the West:
Utah Water Research Laboratory

Utah Water Research Laboratory
Utah State University
Logan, UT

‘Water Lab’ Expertise

- Drinking/waste water treatment
- Environmental quality management/remediation
- Surface/ground water quality/quantity
- Water conveyance, distribution, control
- Water resources planning/management
- Water education/technology transfer

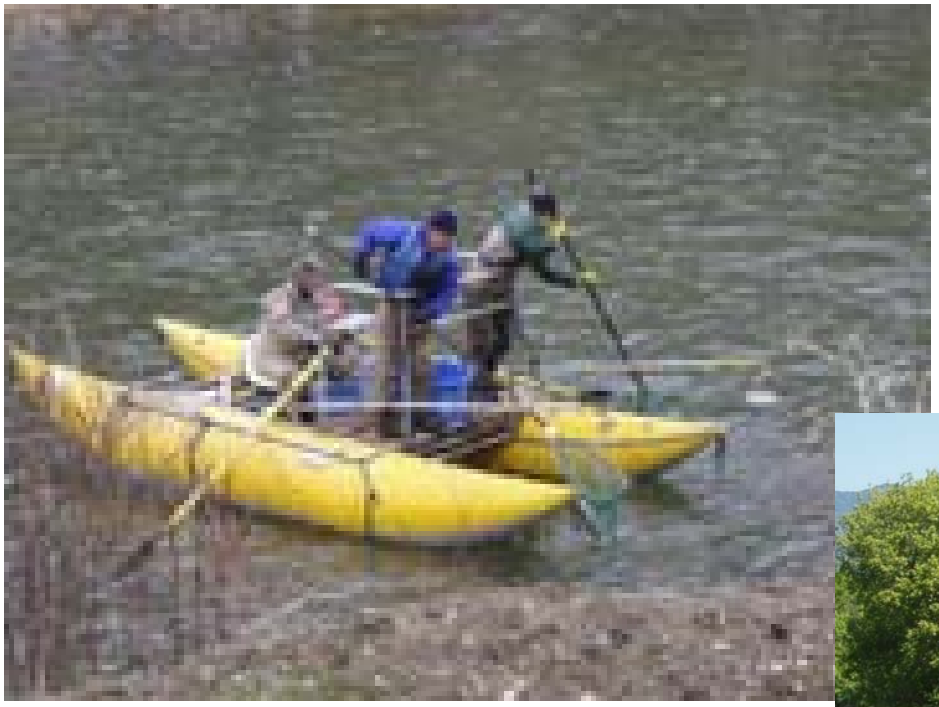
Hydraulics Laboratory

Two large spaces for physical modeling of hydrology/hydraulic systems

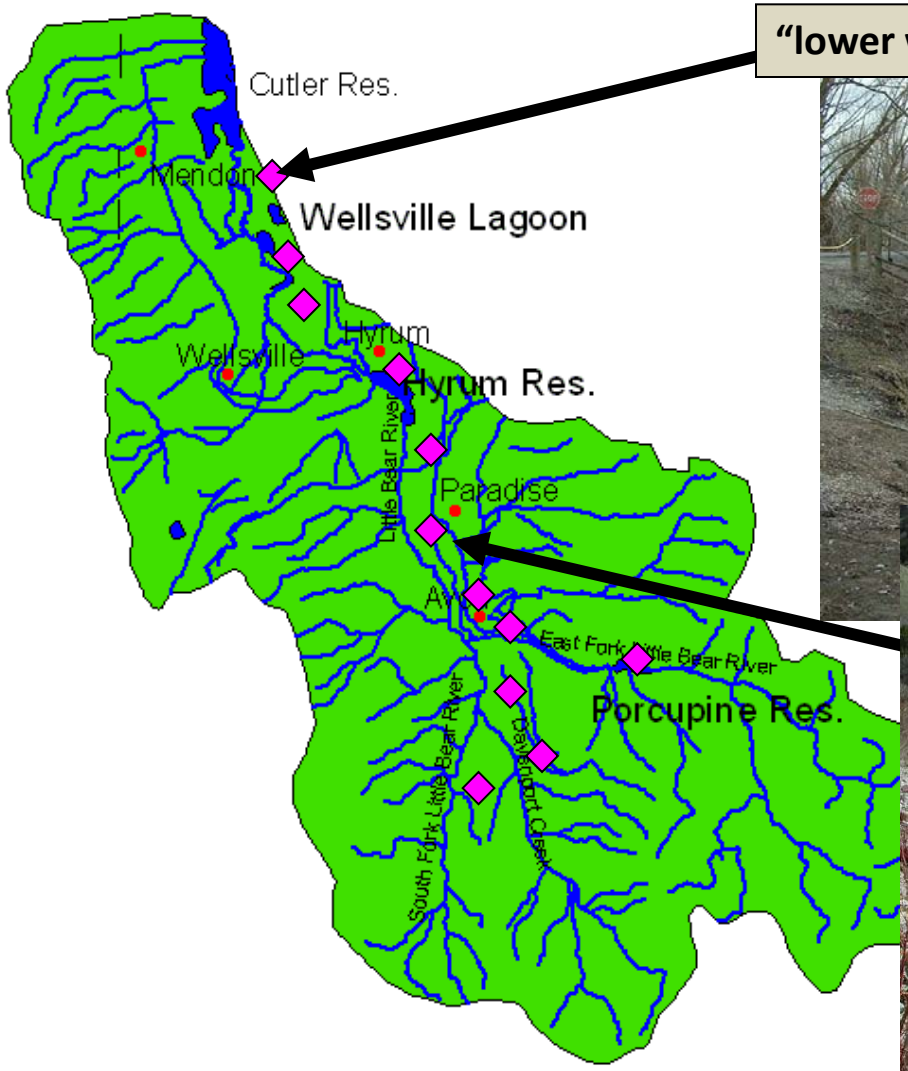
Environmental Quality Laboratory

ment/Pilot Plant space
rumentation

Water Resources



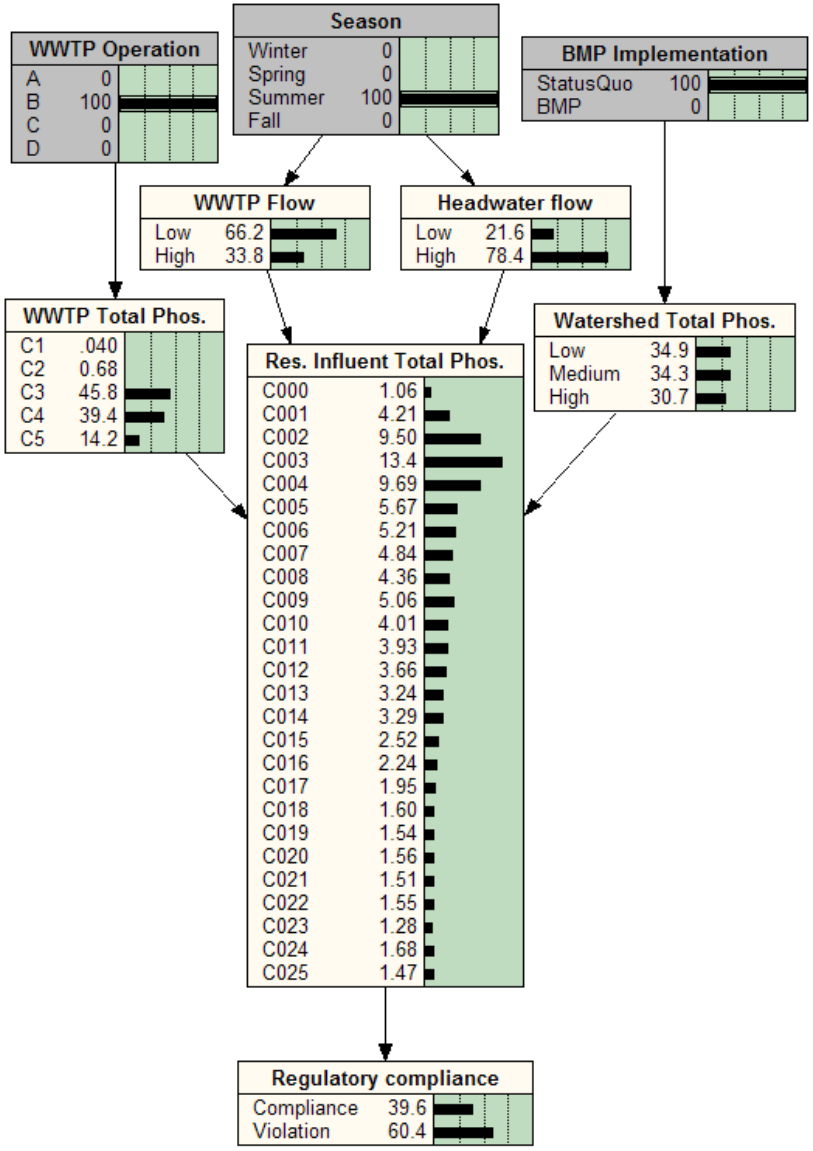
Little Bear Watershed

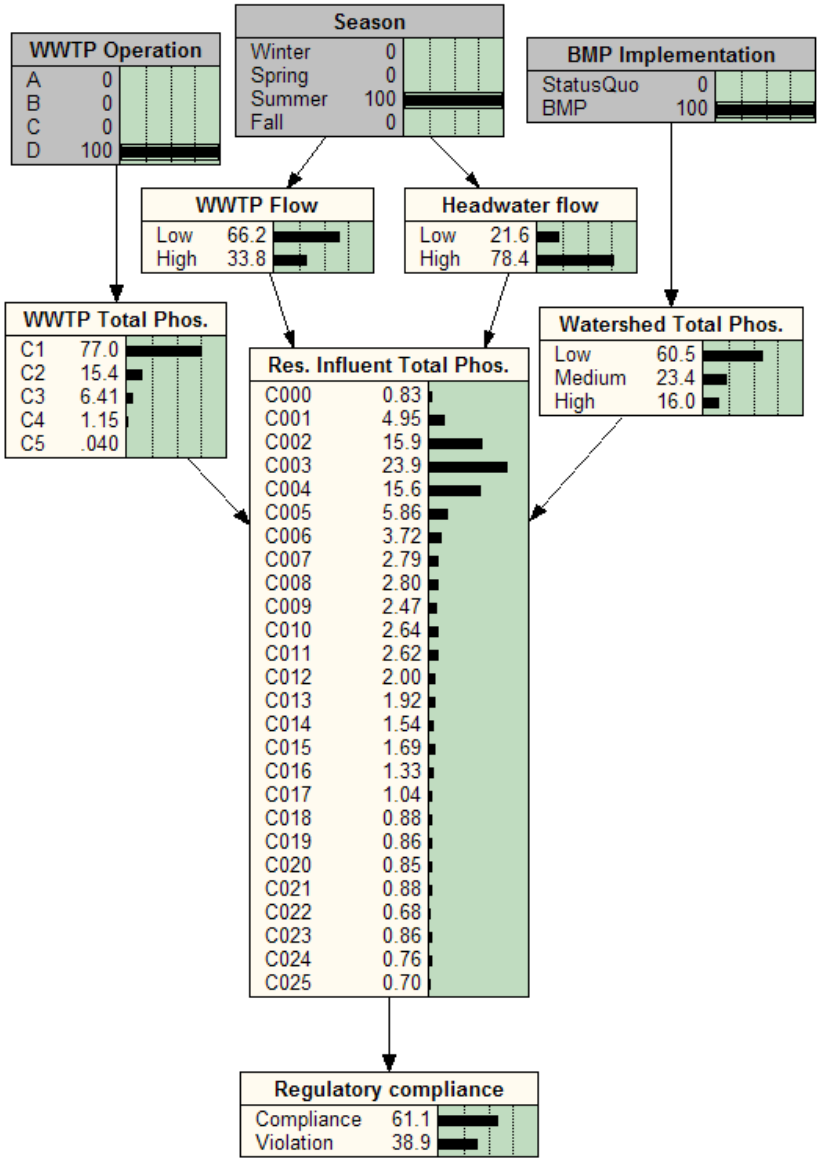


"lower watershed site"

"upper watershed site"

Pollution control assessment





Information management infrastructure

Data collection

Wet Chemistry Measurements

Sensors (Streamflow Water Quality Climate)

Telemetry Network

Sensor Bayes Network

A

B

C

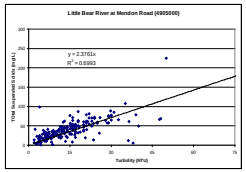
Central Observations Database

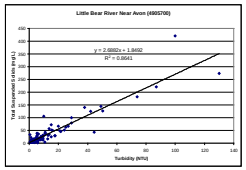
CUAHSI HIS ODM – central storage and management of observations data

Bayesian Networks to control monitoring for storm events and base flow

Bayesian Networks to construct water quality measures from surrogate sensor signals to provide high frequency estimates of water quality and loading the Little Bear river.

Correlations for TSS/TP vs. turbidity





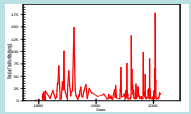
Constituent Bayes Net

A

B

C

Nutrient Estimates

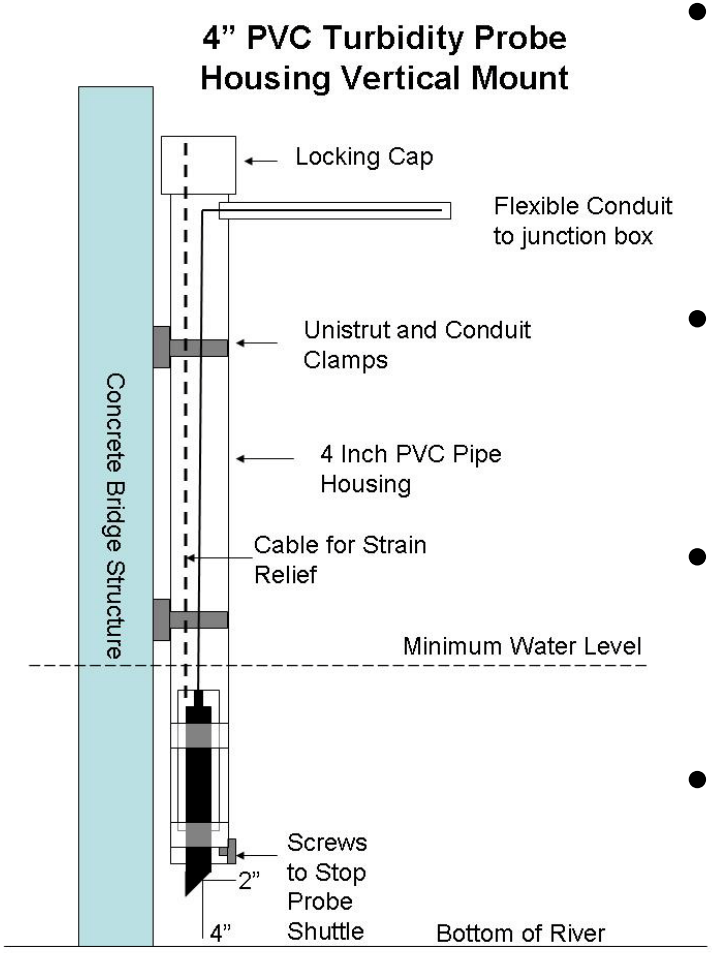


Exogenous Variables (GIS, Land Use, Management)

Integrated monitoring system

End result: high frequency estimates of nutrient concentrations and loadings

Little Bear River Sampling Program Continuous Monitoring Equipment



- Stage recording devices to estimate discharge

http://www.campbellsci.com

- Turbidity sensors to monitor water quality

http://www.ftsinc.com/

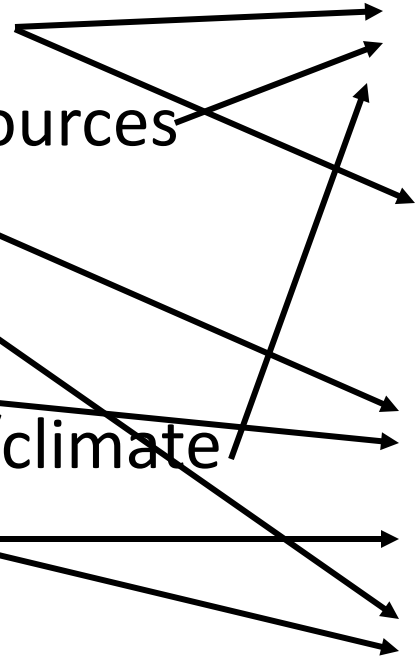
- Dataloggers and telemetry equipment
- Grab samples to correlate TP/TSS with turbidity and flow

http://www.campbellsci.com

Pollutant trading

Disciplines

- Engineering
- Natural Resources
- Economics
- Sociology
- Plants/soils/climate
- Regulation



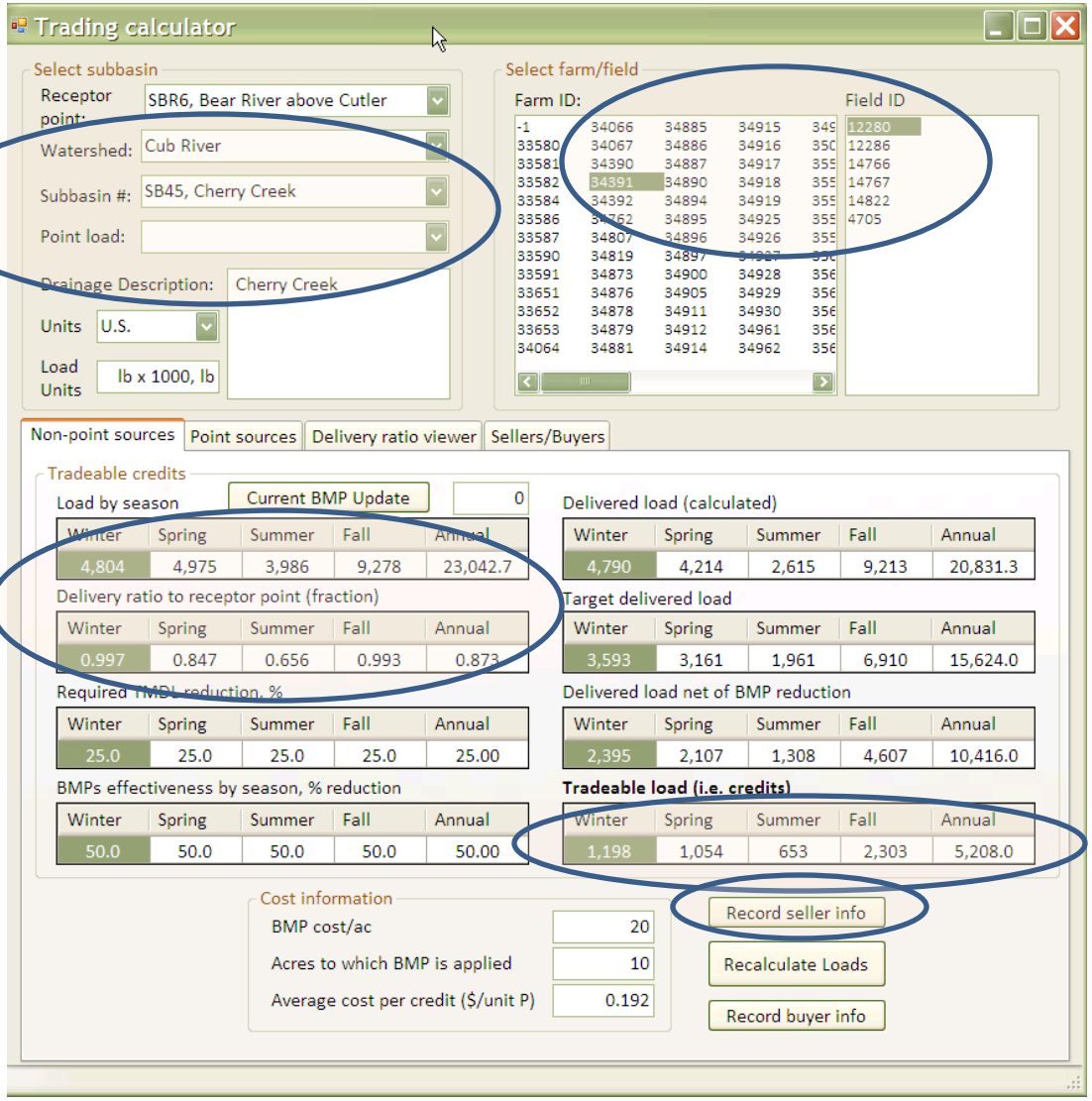
Analyses

- Water/watershed interactions
- Pollutant load estimation
- Management potential
- Exceedance assessment
- Motivation

Pollutant Trading

Cherry Creek

Calculated loads and delivery ratios

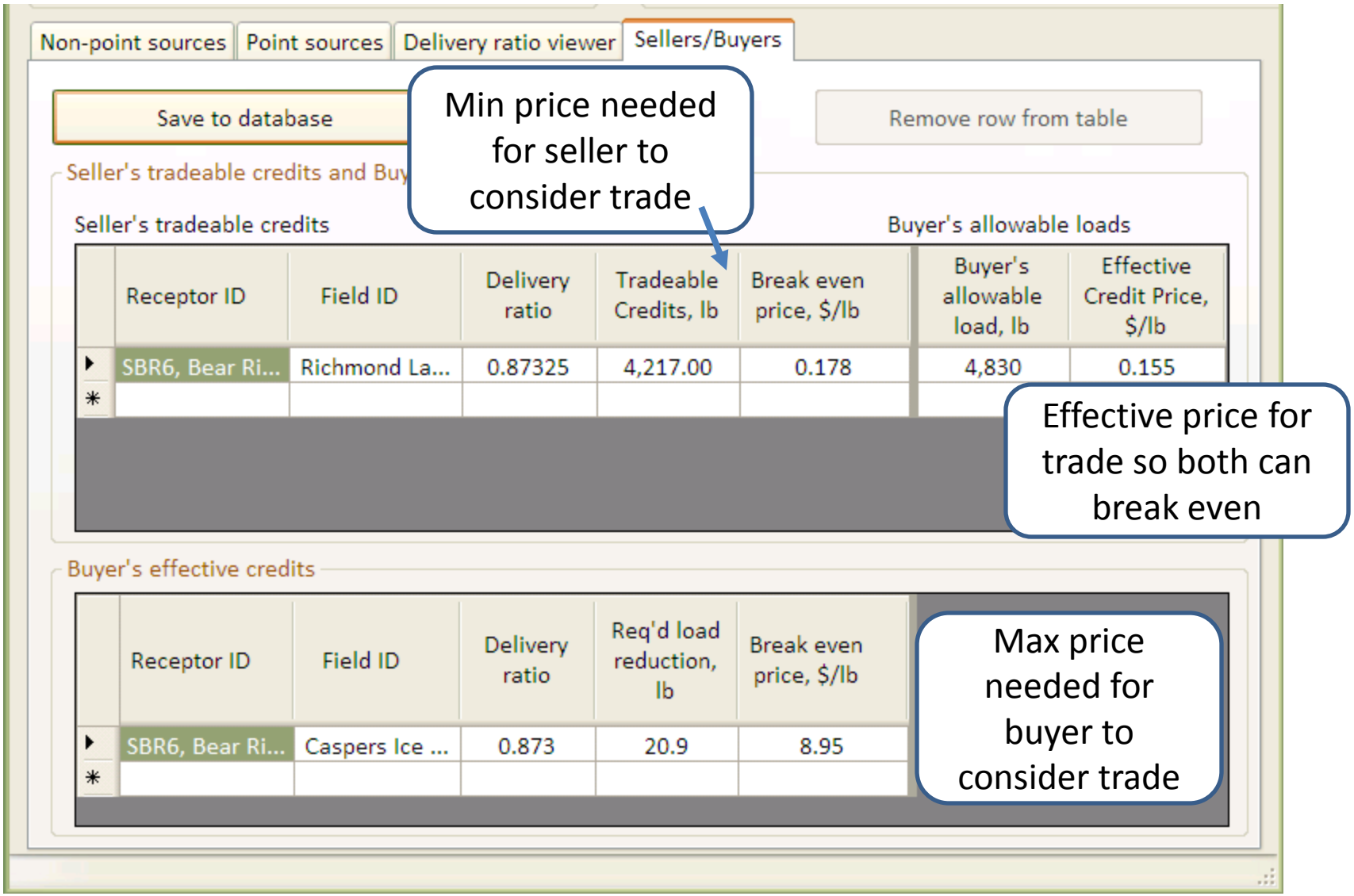


Farm and field info

Amount available to trade

Record to seller

… and two point loads



Monitoring system

Water

- temperature
- pH
- dissolved O_2
- specific conductance
- turbidity
- flow

Weather

- air temperature
- wind speed/direction
- barometric pressure
- solar radiation
- humidity

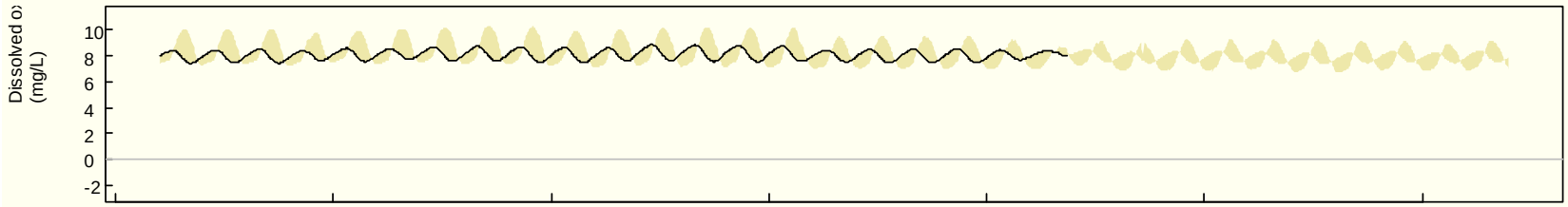
Field

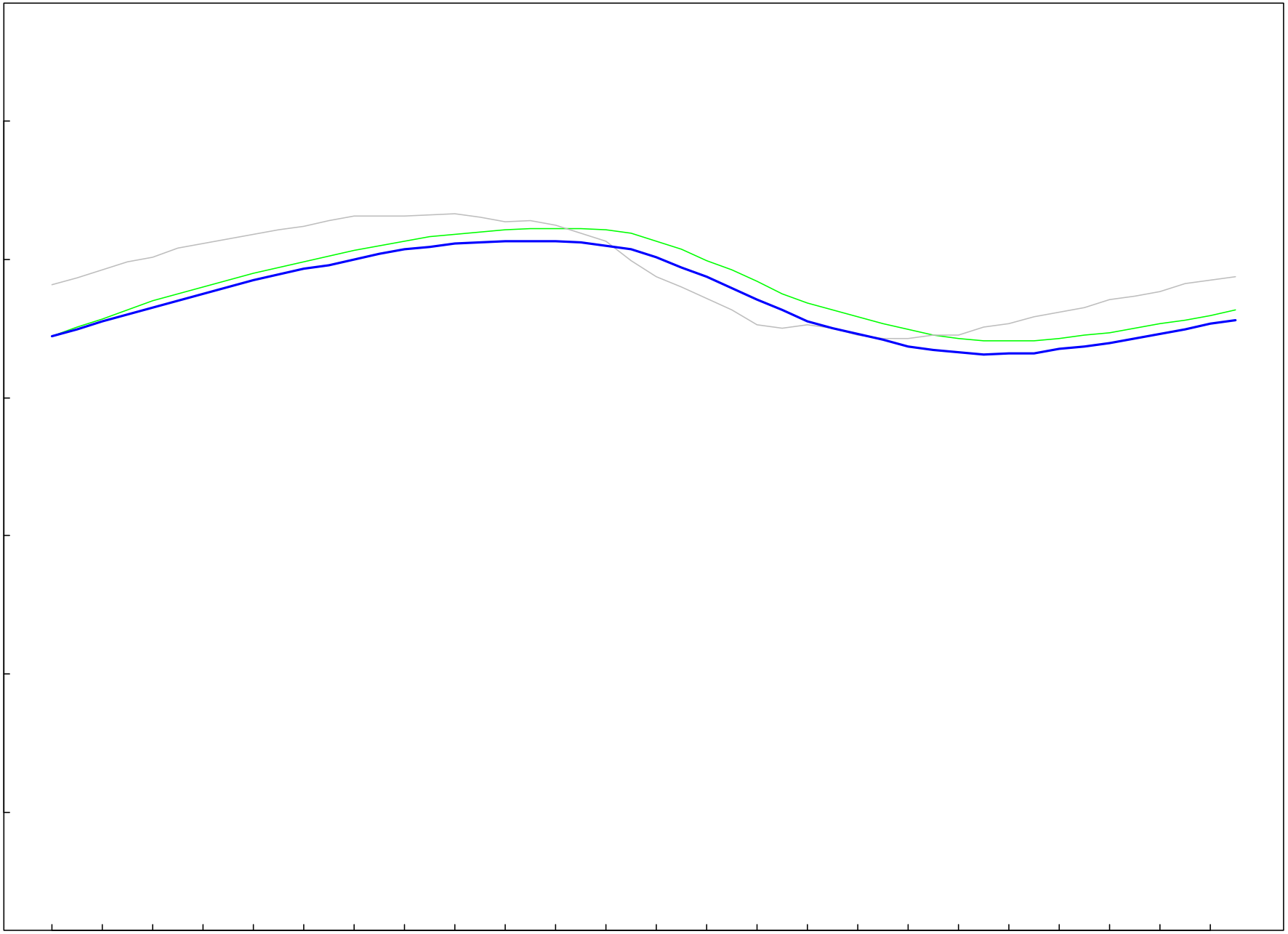
- total, dissolved P
- TSS
- 24 hr surveys/storms

(recent additions)

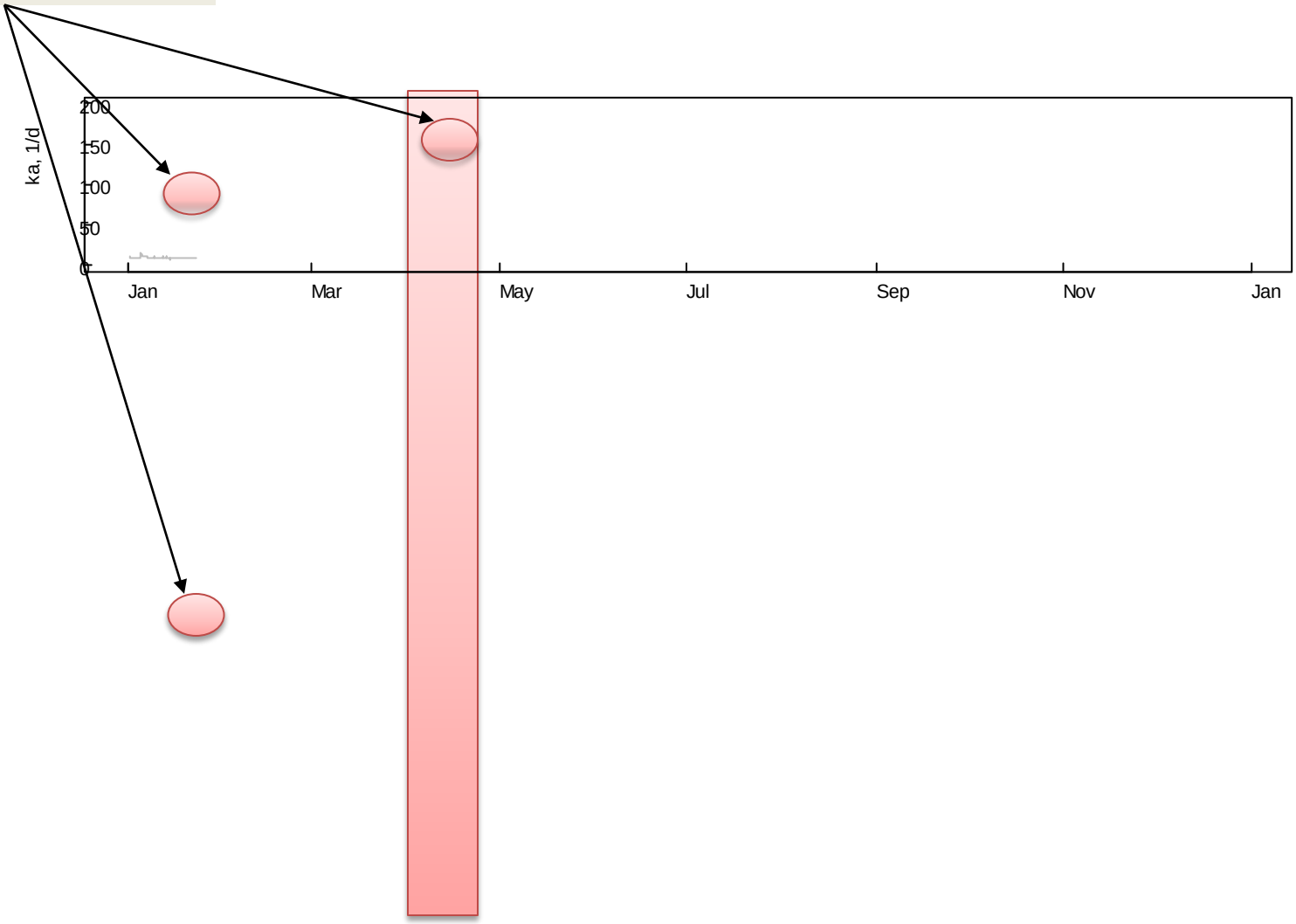
- alkalinity
- total, dissolved N

Example data traces, LBR @ Paradise, July 2008





… a few oddball values



UWRL Research Projects

- Drinking Water and Wastewater Treatment
- Environmental Quality Management and Remediation
- Surface and Groundwater Quality and Quantity
- Water Conveyance, Distribution, and Control
- Water Resources Planning and Management
- Water Education and Technology Transfer

Drinking/waste water

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Environmental Quality/Remediation

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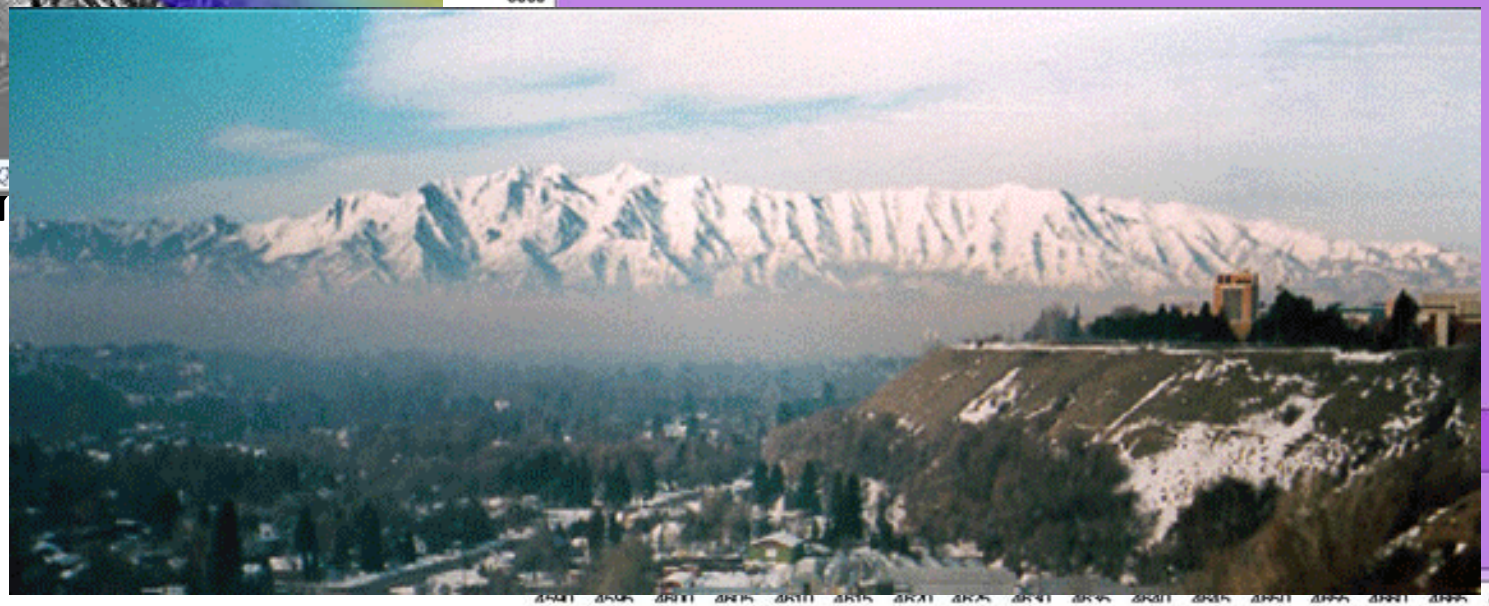
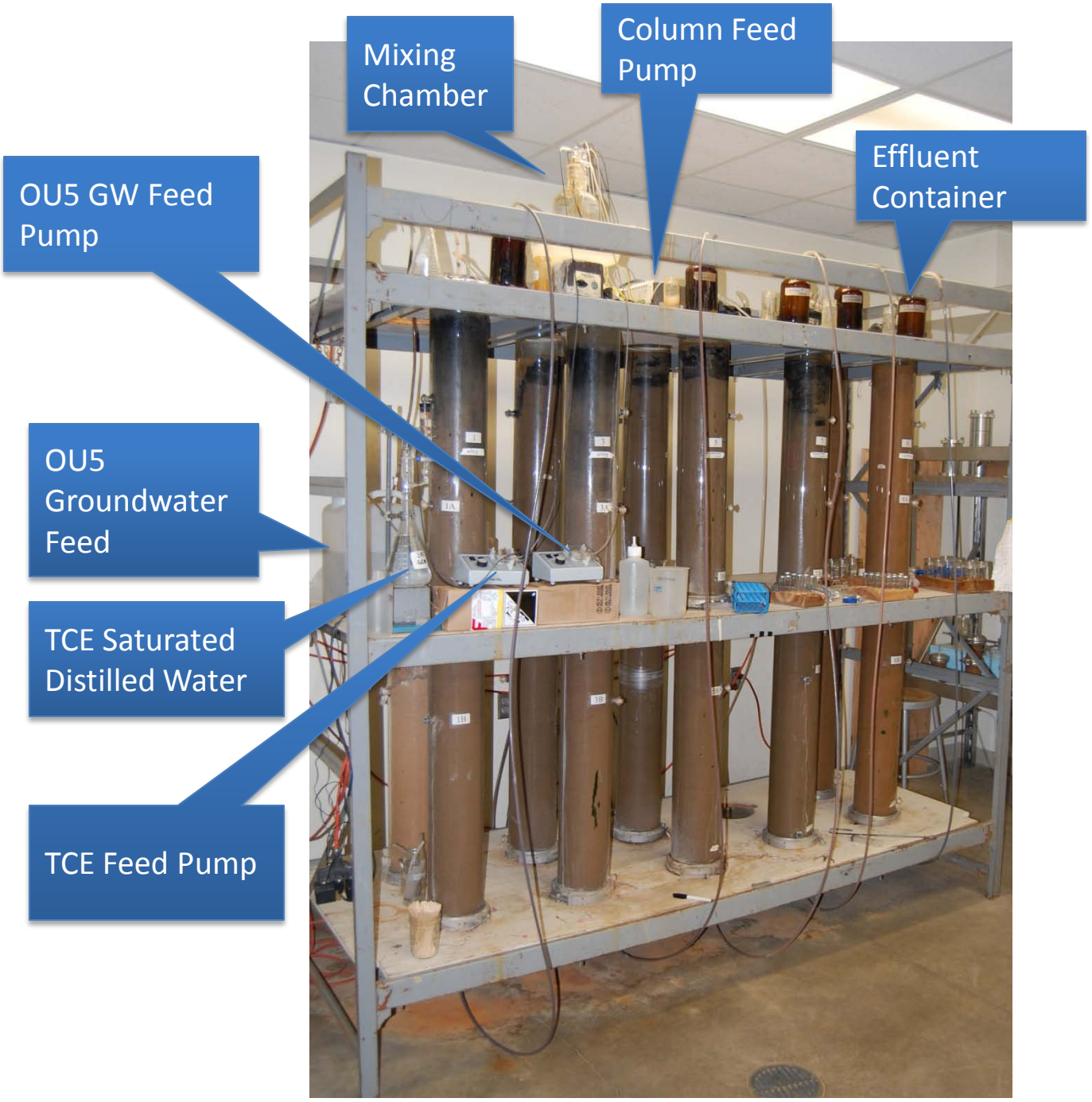
, Utah



- Soil Biol

Flowthrough Columns



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Aurora

Utah State University Water Res...

http://bearriverinfo.org/

Google

News feeds | Janeen Anderson (4) | Attorney | Quick Tip: Synergy on ... | New Computer | R Info | Running | Projects | Bookmarks

Search | Up | Highlight

Welcome

Sign In | Contact SEARCH GO

BRWIS

- Watershed Description
- Outreach & Education
- Water Quality Trading
- Watershed Data
- Data Tools
- GIS and Mapping
- Digital Resources
- People, Organizations, and Projects
- Calendar
- News
- Partners/Contact

Watershed-Friendly Tip

Request a sprinkler system audit from your local utility, usually offered as a fee service, to determine how to water more efficiently.

Features

Continuous Monitoring at the Bear Lake National Wildlife Refuge

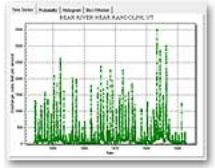
Access the Utah State University website for continuous monitoring data for Mud Lake at the Bear Lake National Wildlife Refuge.

USU Real-Time Monitoring in the Bear River Basin

Access the Utah State University Real-Time Water Quality Monitoring page for current measurements of water quality, streamflow, and weather observations from many different locations in the Bear River Basin.

Time Series Analyst

The Time Series Analyst allows you to visualize and extract all of the time series data stored in the Bear River WIS observations database. These data include streamflow, water quality, climate, groundwater, and other observations from many different data sources.



Bear River WIS Map Server

Explore the Bear River Basin using the interactive Bear River WIS Map Server. You can pinpoint water quality stations and dams, display land use and percipitation coverages, or even link to a powerful analyst tool with access to years of water quality data.

News

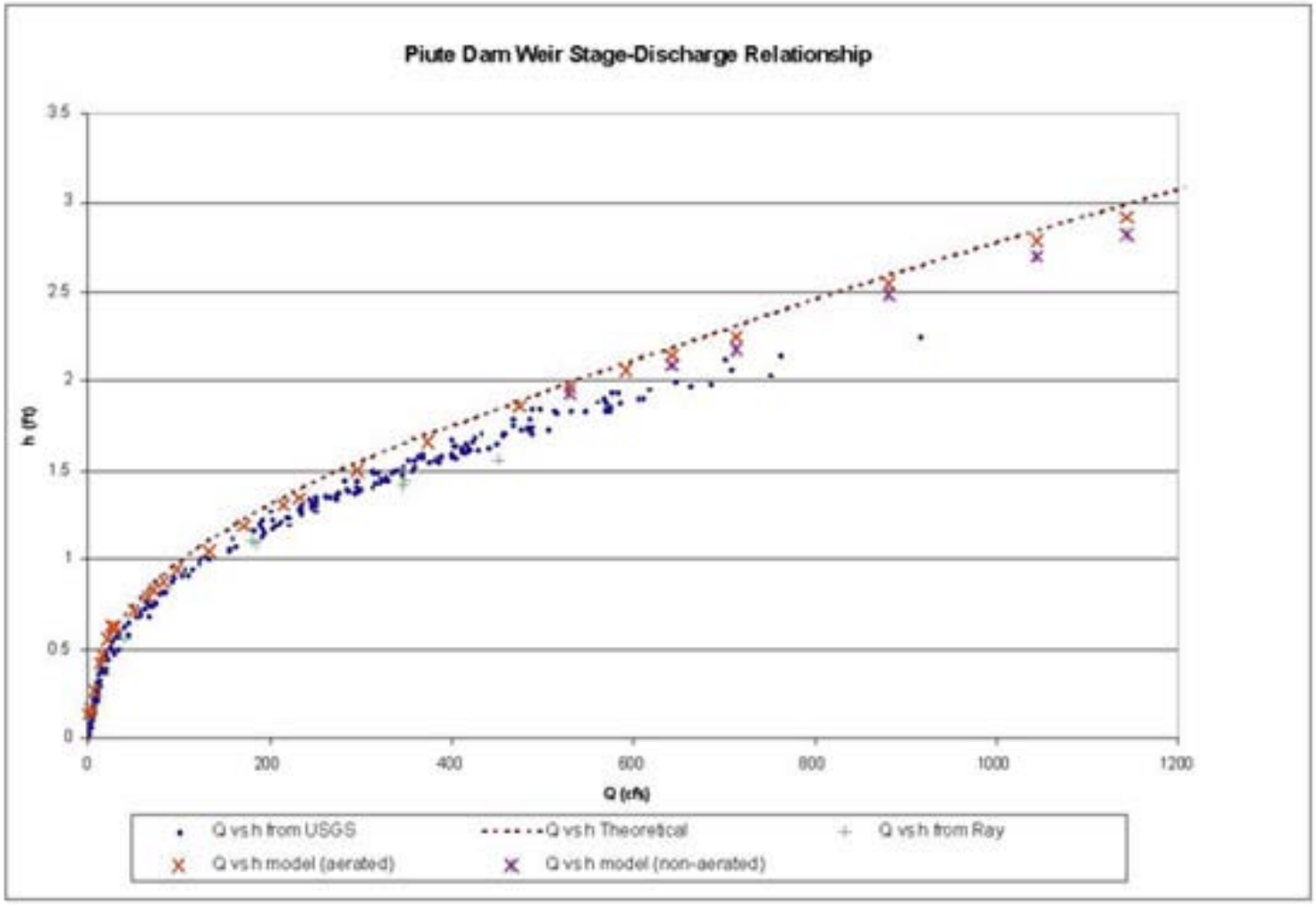
- **6/6/2009** Bear River Celebration!!!!
- **1/12/2009** Public Notice of Draft TMDL Water Quality Study
- **10/8/2008** Erosion control implemented by local rancher

Calendar

- **8/30/2011** Utah Water Quality Conference
- **11/14/2011** Water Quality Commission Meeting

Contact | Disclaimer

Water Conveyance, Distribution, and Control

- 

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Water Resources Planning and

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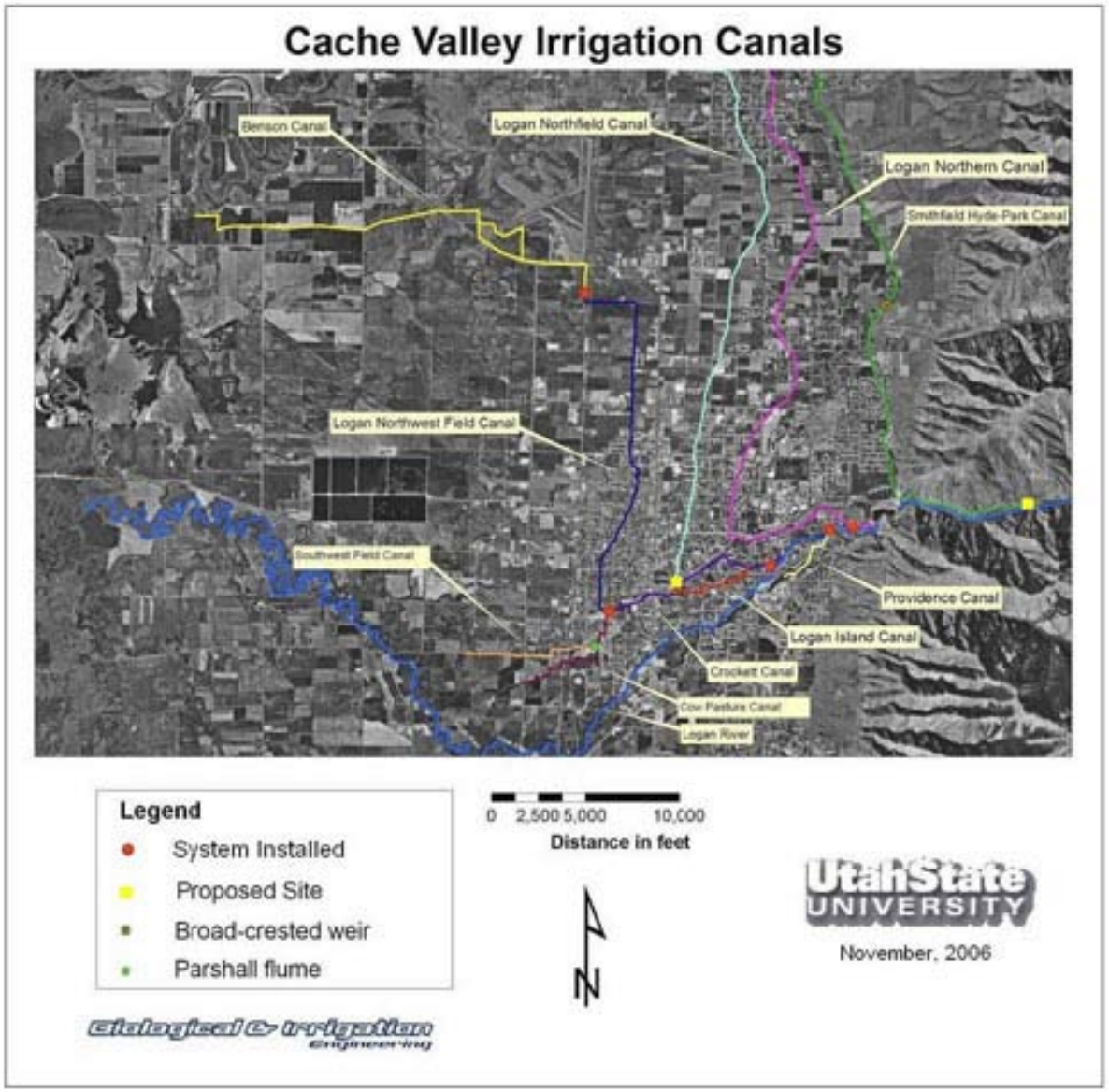

Water Education and Technology

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