CENTRAL UTAH WATER

Utah Lake Elevation and Water Quality

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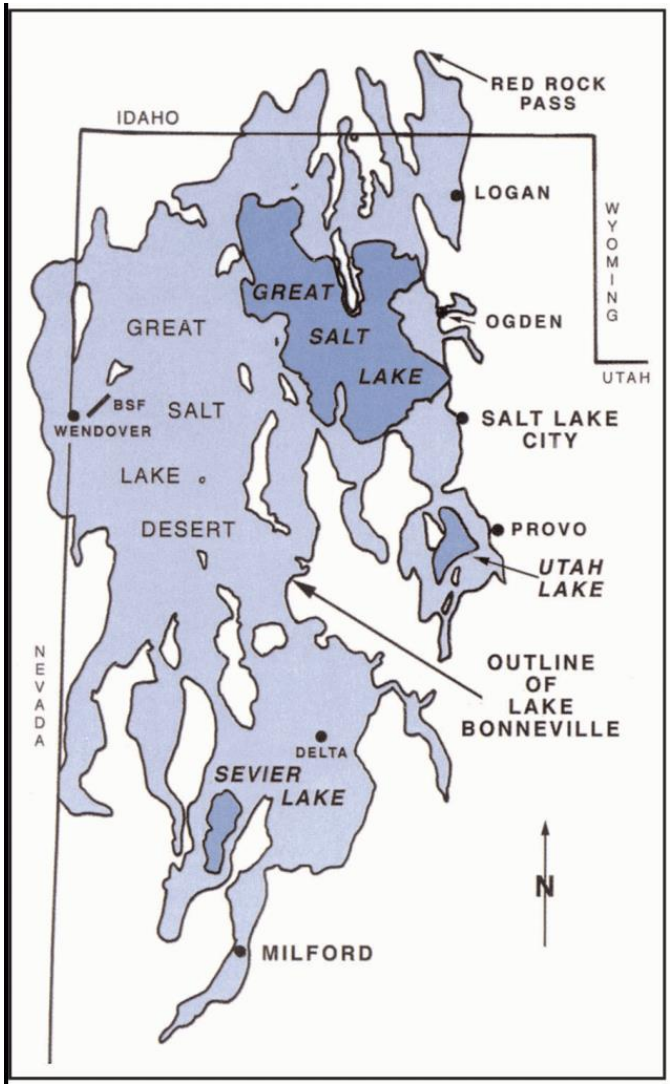
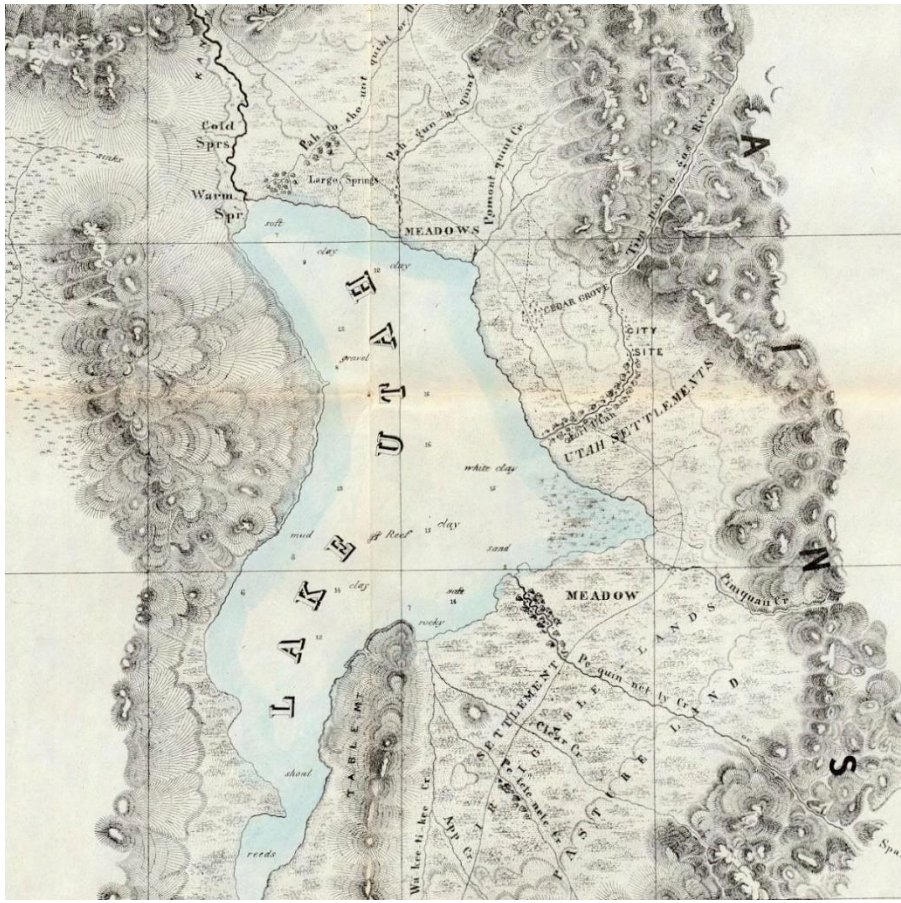
History

- Lake Bonneville
  - As much as 750,000 years ago
- Max elevation 5090’ above sea level
  - More than 600’ above compromise
- ~12,000 years ago Great Salt Lake and Utah Lake were separated
- Native American burial site near Mosida (~5,300 years old) at 4483’



Pre-Water Development

- Natural Outlet 4485.7’
- Level sometimes dropped below outlet elevation (late 1850s)
- 1862 – 10’ above outlet
- Average annual variation 2.1’ (model estimate)



Post-Water Development

- 1872 dam constructed at Jordan Narrows – Utah Lake becomes Utah's first major storage reservoir
- 1885 lawsuit between Utah County landowners and Salt Lake County water users – "compromise agreement"
- 1986 Flood Management Plan, new outlet works, Jordan River dredged, current operating agreement – compromise 4489.045'

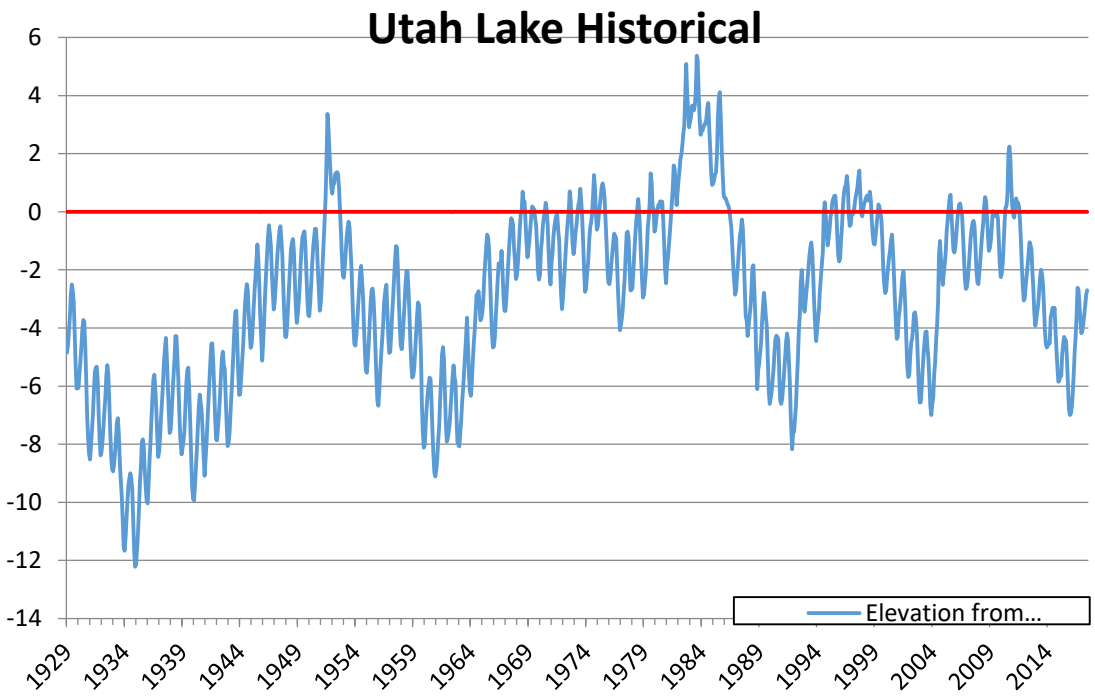
Post-Water Development

- 1902 Pumping plant added at outlet
  - Allowed access to water below the outlet elevation
- Utah Lake total capacity 870,000 acre feet
- 160,000 acre feet inactive storage (8.71 feet below compromise)

Post-Water Development

- Under the direction of the State Engineer, Utah Lake is operated for water supply purposes according to the Utah Lake Interim Distribution Plan by the Utah Lake and Jordan River Commissioner to meet the water needs of the downstream water right holders.
- Modifications to the outlet and Jordan River channel allow more water to be held in storage than would occur naturally and more water to be released than would flow by gravity.
- Water level tends to be higher in winter/spring and draw down quicker in summer/fall.
- Average annual variation = 3.5 feet, over the course of 4-5 dry years water level can approach inactive storage level.

The Only Constant is Change



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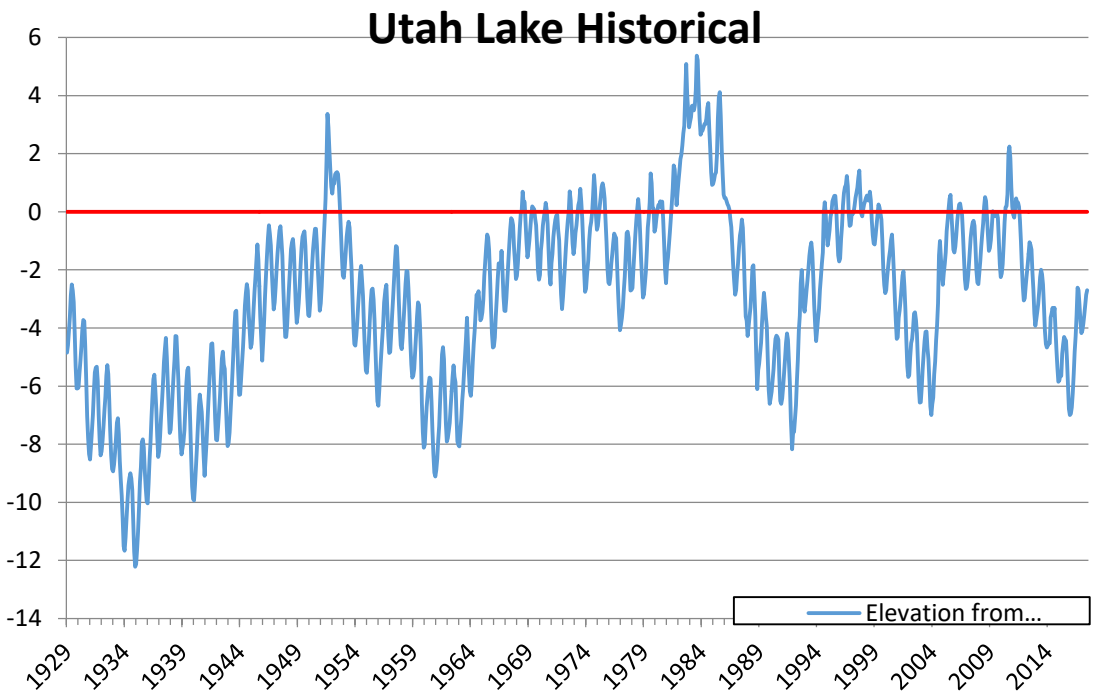
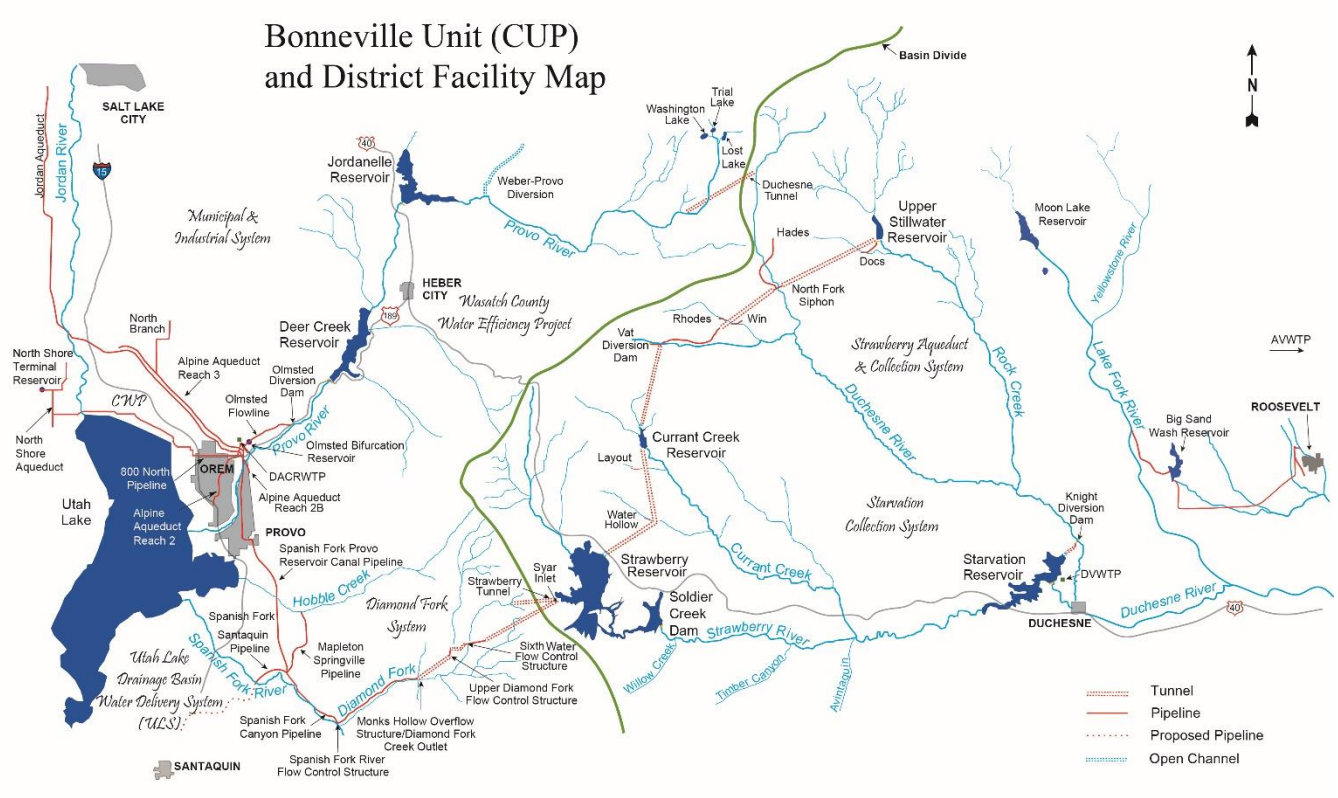


The Role of Utah Lake in the Central Utah Project



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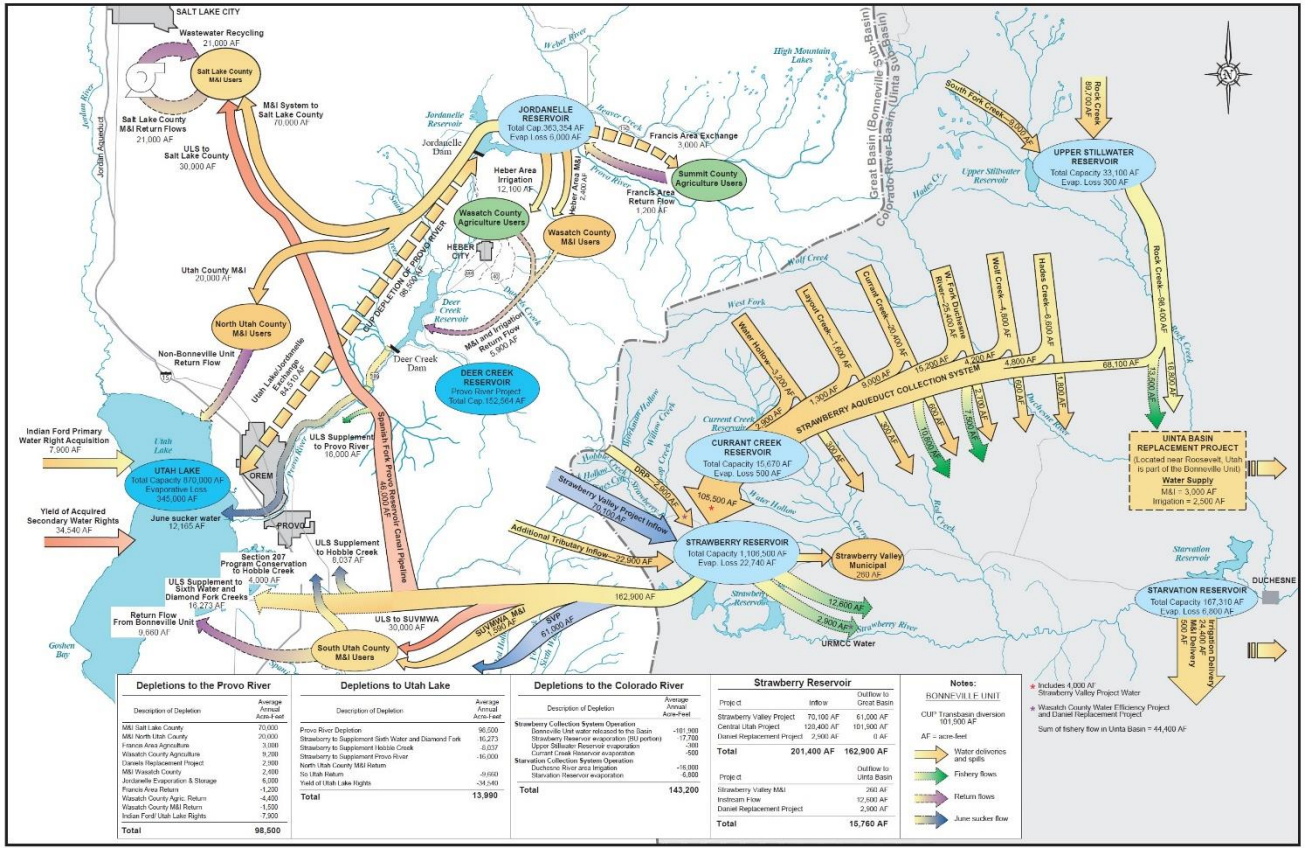
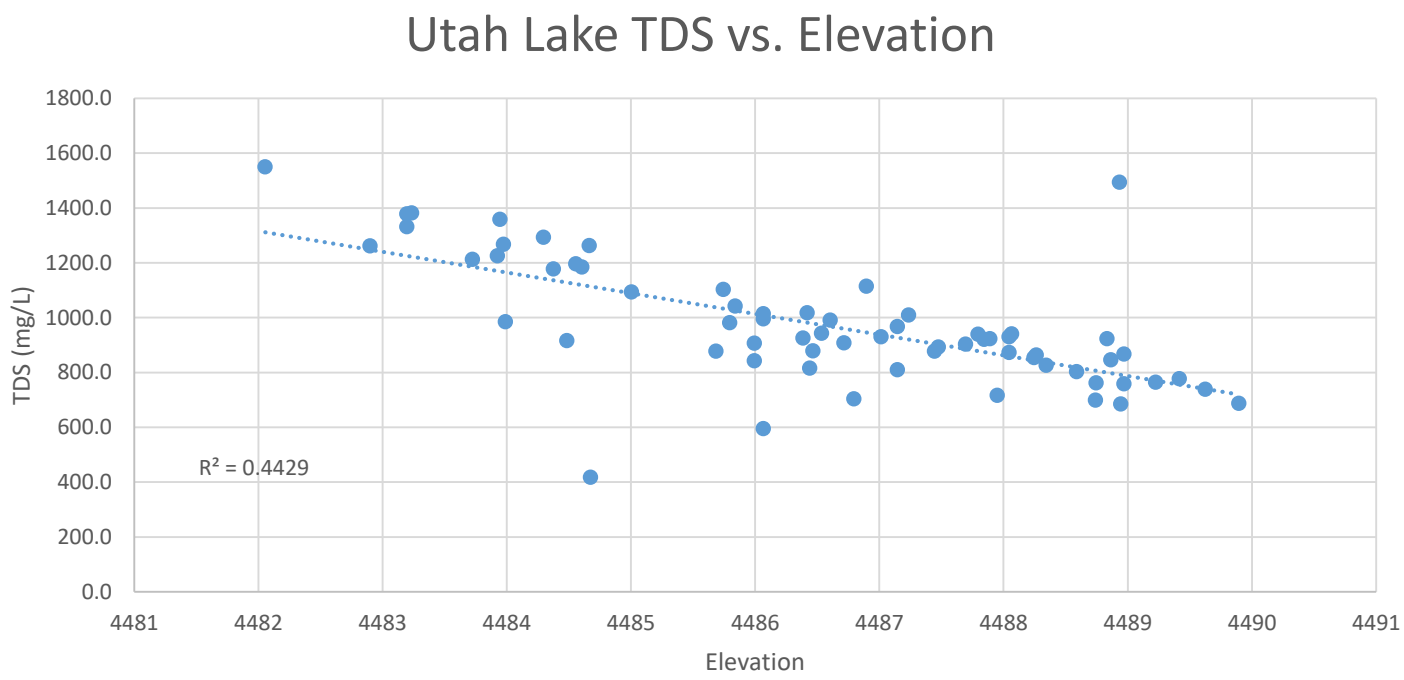


The Role of Utah Lake in the Central Utah Project

- Utah Lake's water rights are some of the earliest in the State
- Central Utah Project, Bonneville Unit water rights are junior to those of Utah Lake
- Utah Lake water rights must be kept whole for the CUP to operate and deliver water to over 1 million people

Lake Elevation and Water Quality



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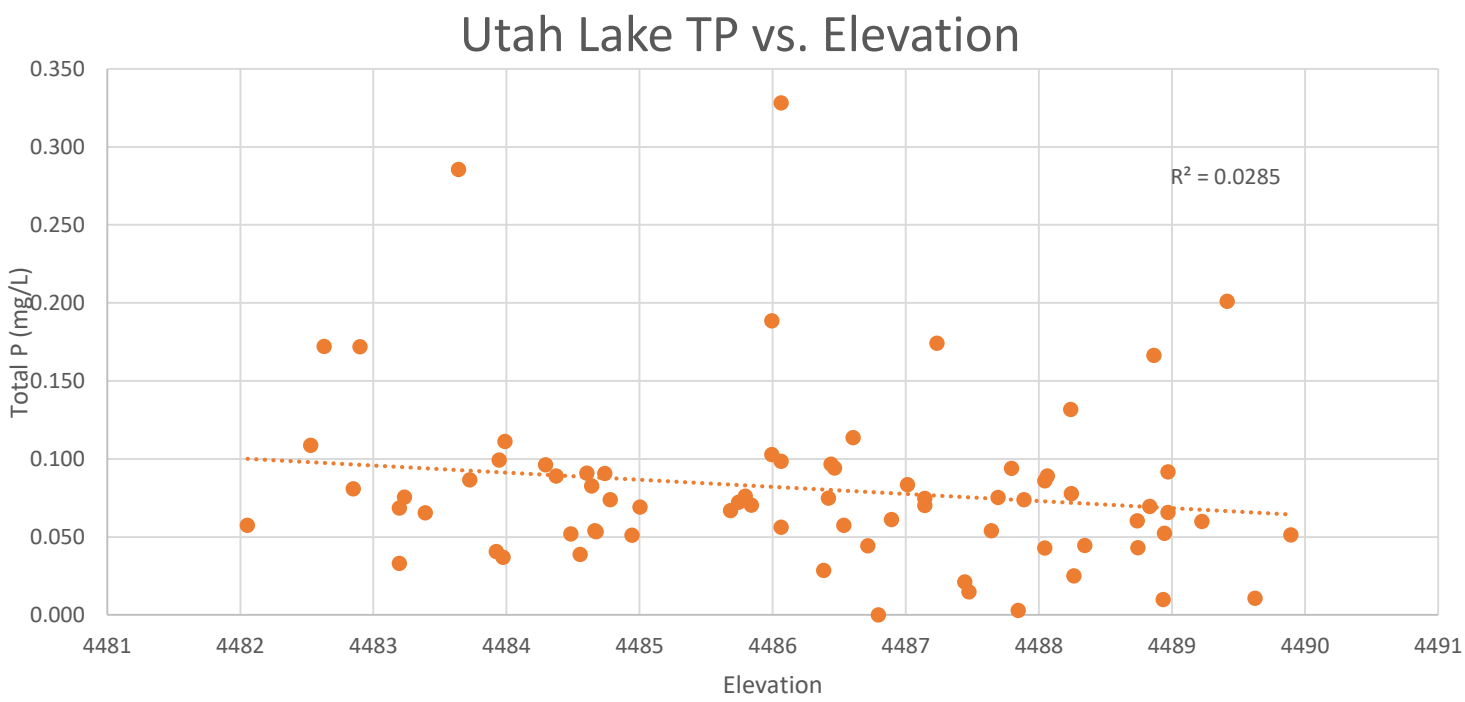

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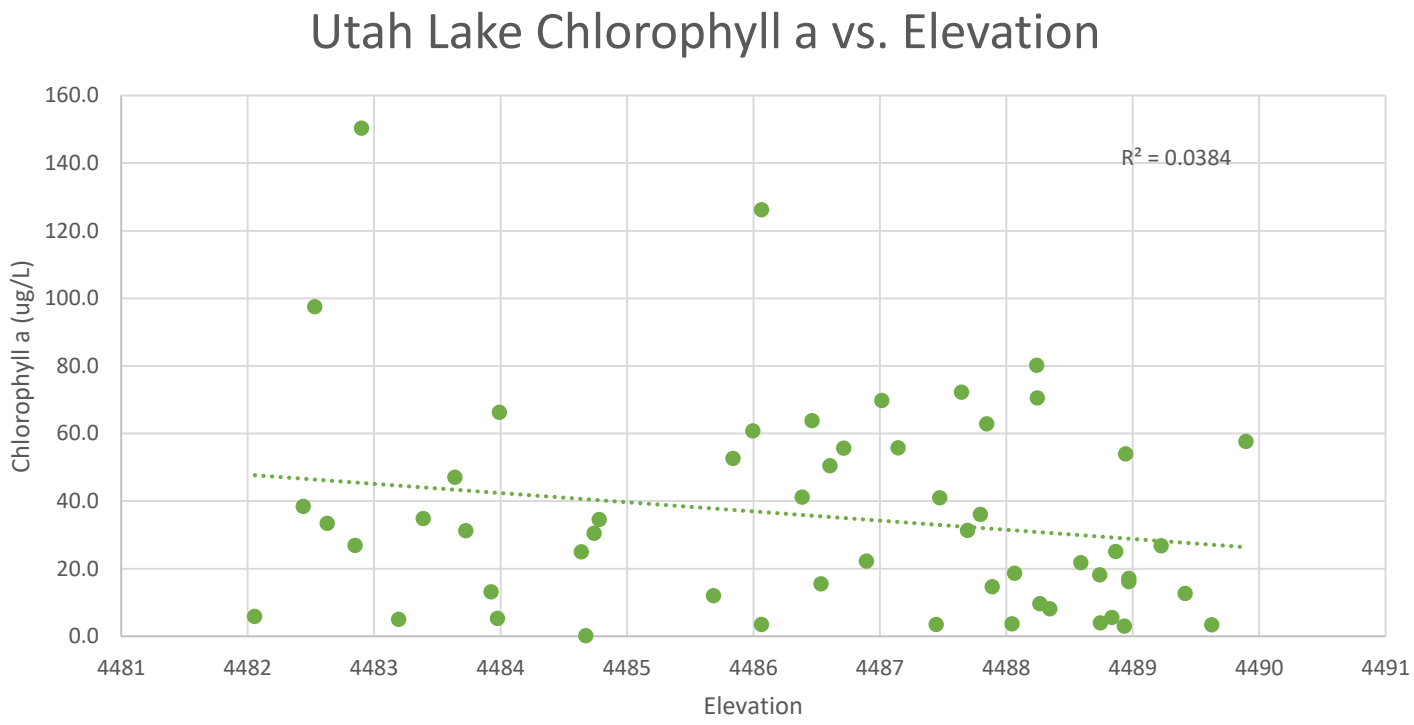
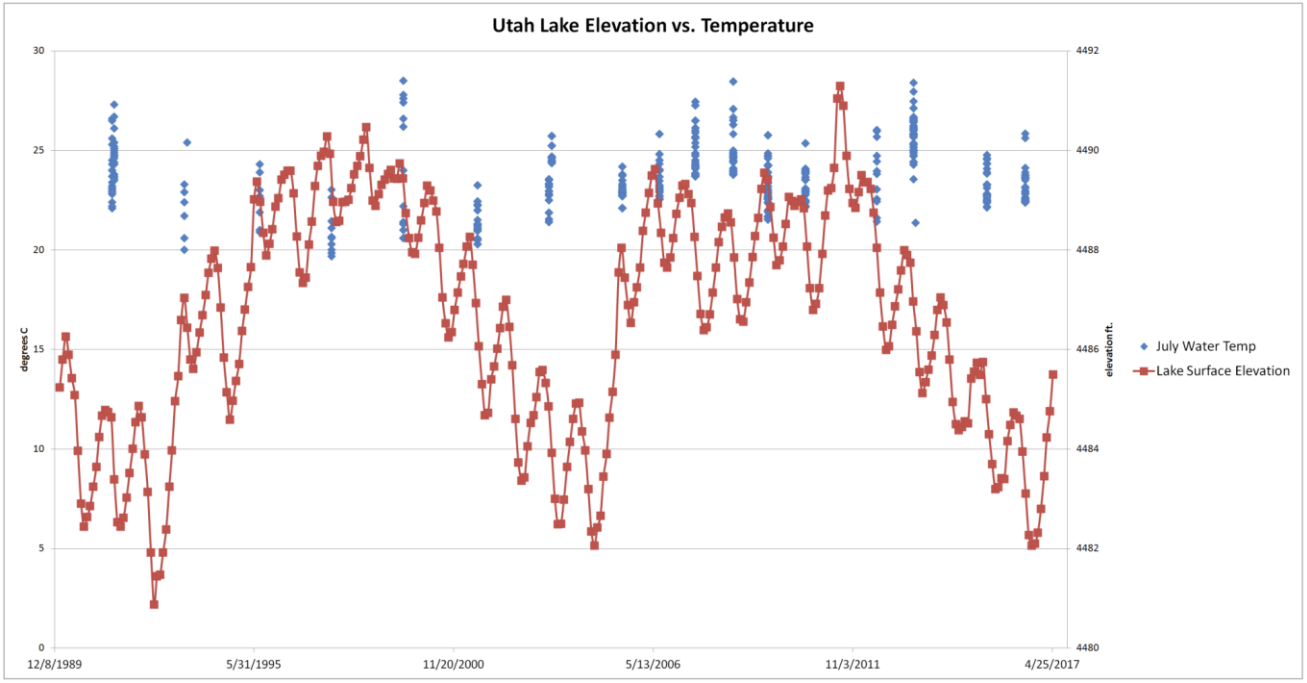
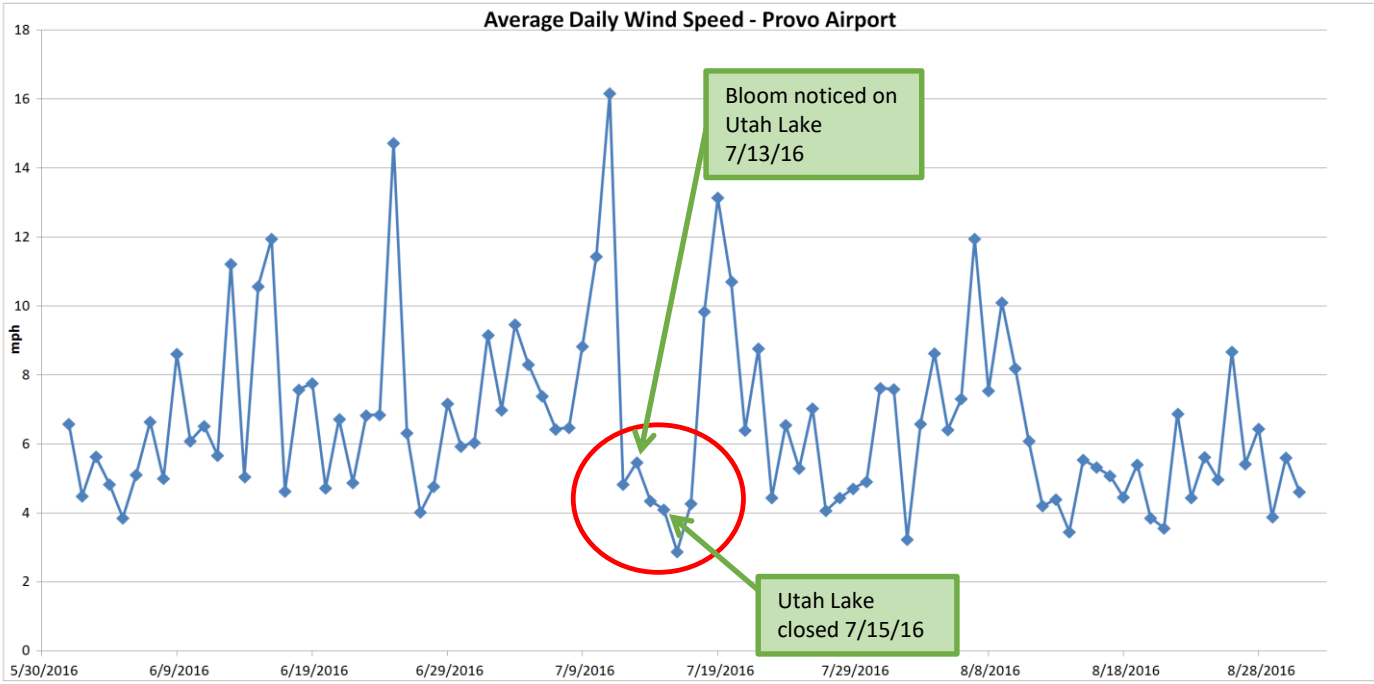


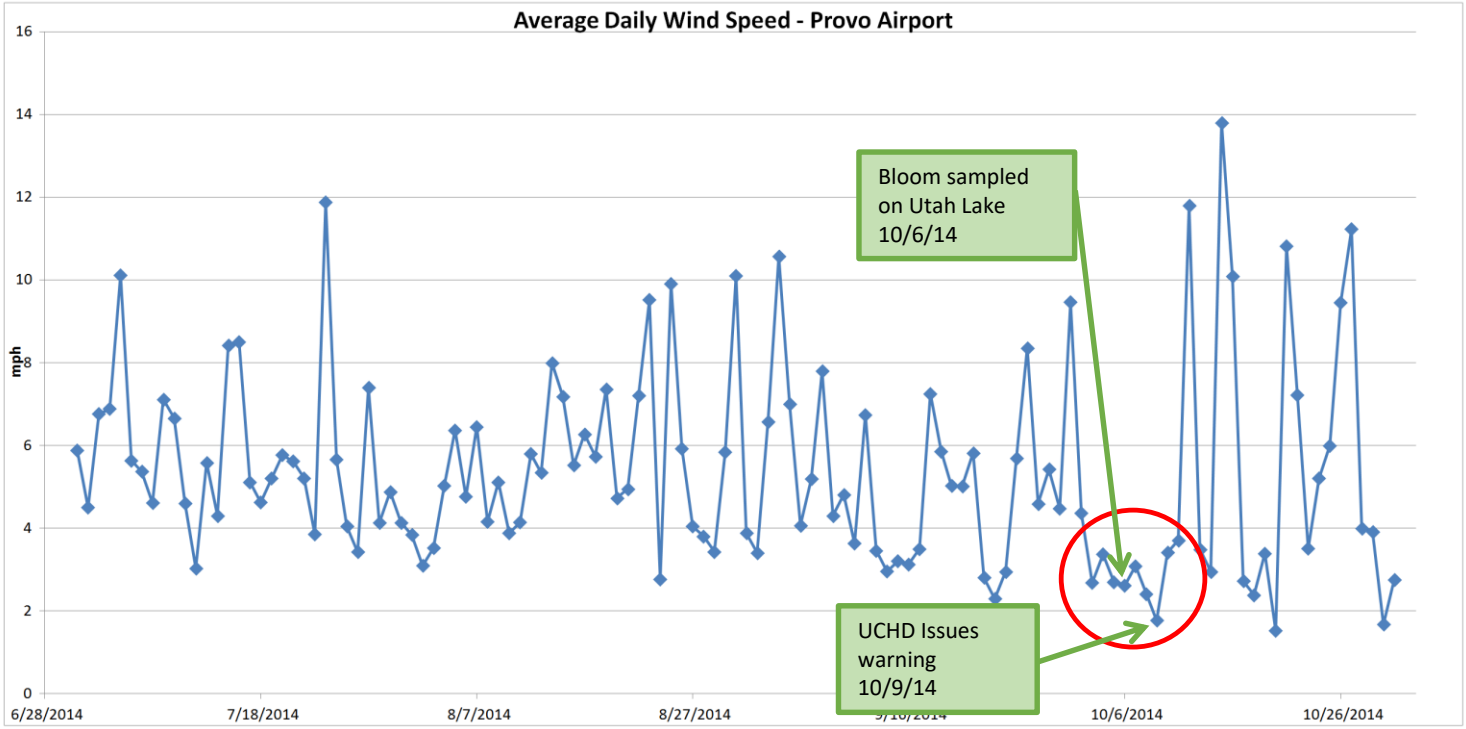
Lake Elevation and Water Temperature



Wind


Average Daily Wind Speed - Provo Airport
mph
18
16
14
12
10
8
6
4
2
0
5/30/2016
6/9/2016
6/19/2016
6/29/2016
7/9/2016
7/19/2016
7/29/2016
8/8/2016
8/18/2016
8/28/2016
Bloom noticed on Utah Lake 7/13/16
Utah Lake closed 7/15/16

Wind


Average Daily Wind Speed - Provo Airport
mph
16
14
12
10
8
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4
2
0
6/28/2014
7/18/2014
8/7/2014
8/27/2014
10/6/2014
10/26/2014
Bloom sampled on Utah Lake 10/6/14
UCHD Issues warning 10/9/14

Summary - Conclusions

- Utah Lake functions as an important water storage reservoir for water users in Utah.
- Utah Lake plays a critical role in the CUP.
- Utah Lake is dynamic and has experienced extreme high and low level events.
- There are many unknowns as to how lake level vs other environmental factors effects water quality and HABs.

Summary – Needed Research

- Better understanding of WQ/operational/environmental conditions that trigger HABs in Utah Lake
- Limiting factors on Utah Lake
- What factors favor one species of cyanobacteria vs. another?
- Are there year-to-year dynamics? (akinete influence)

Questions?