

Utah Water Development Commission

Walt Baker
June 14, 2016



Utah Division of Water Quality

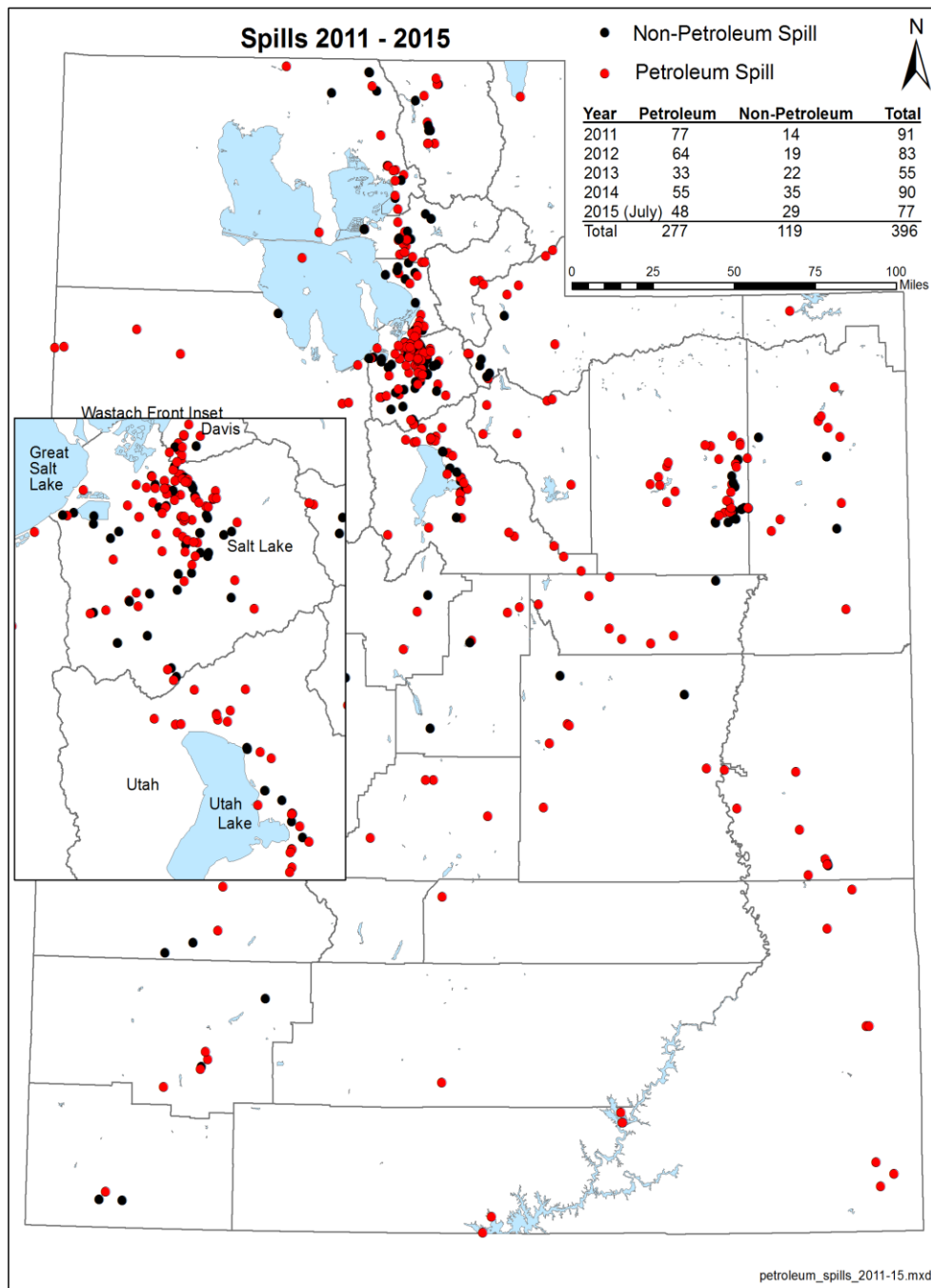
DWQ Priorities/Challenges

- **Nutrient Pollution**
- **Great Salt Lake**
- **Spills**



Spill Response





Spills

2013: 55
2014: 90
2015: 117

53% are
petroleum
spills

Impairment



Water Quality Standard



Increasing Pollutant Concentration



Antideg. Review



Assimilative Capacity

Ambient Condition



No Degradation

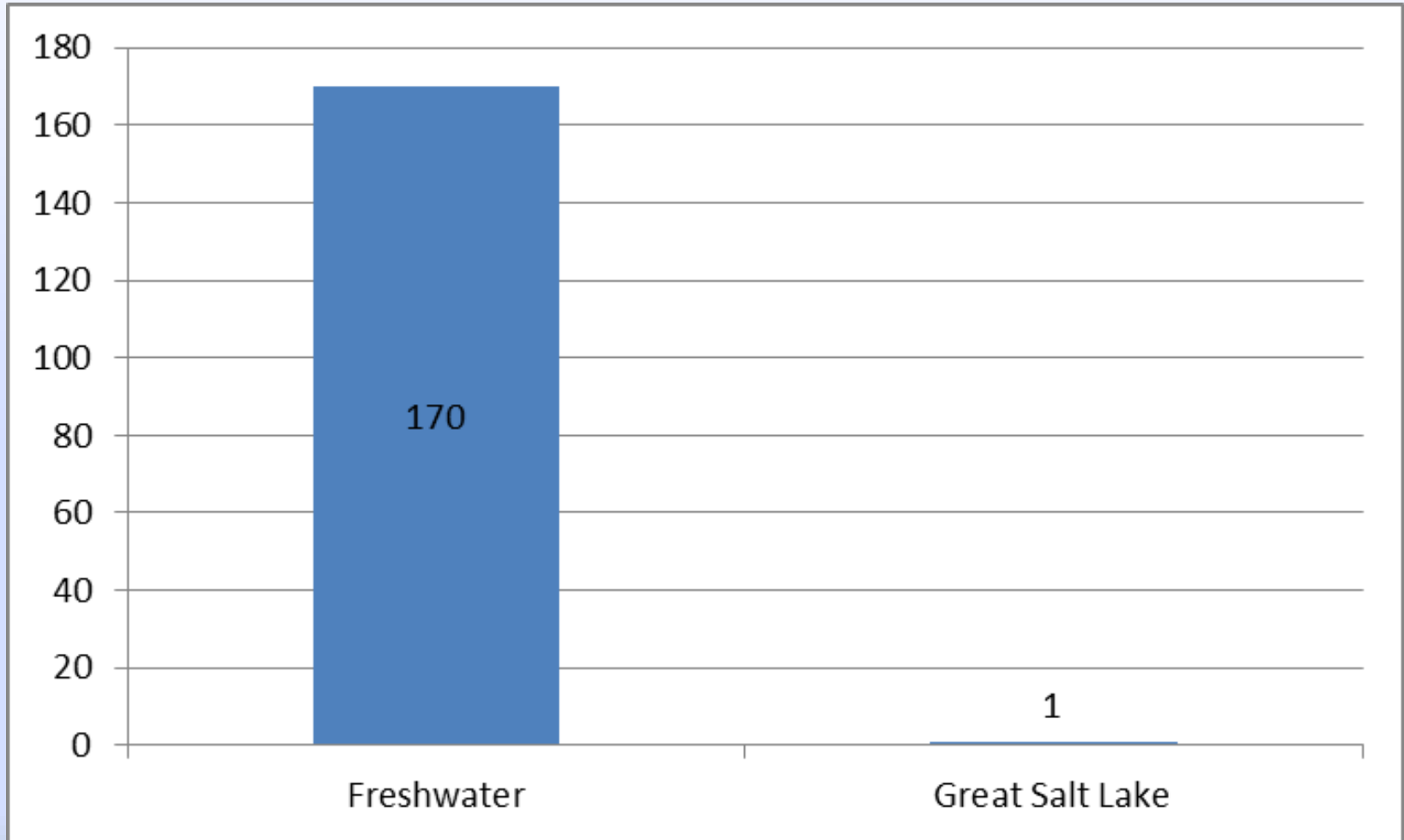


What's different about Great Salt Lake?

- ❖ Technical-based effluent limits apply
- ❖ Water-quality based effluent limits apply, but...



Number of Pollutants with numeric criteria



Great Salt Lake Designated Uses

❖ Secondary contact recreation

- For instance, swimming, wading, boating, duck hunting

❖ Waterfowl and their food chain

- Including ducks, shorebirds, brine shrimp, brine flies, algae



Photo M. McPherson,
2011



Summary

- ❖ DWQ is deriving numeric criteria for pollutants to Great Salt Lake
- ❖ Until numeric criteria are available, permittees take primary responsibility for providing DWQ information to document that uses will be protected.
- ❖ Implementation of chronic whole-effluent toxicity testing (when appropriate) will further ensure the uses are protected.



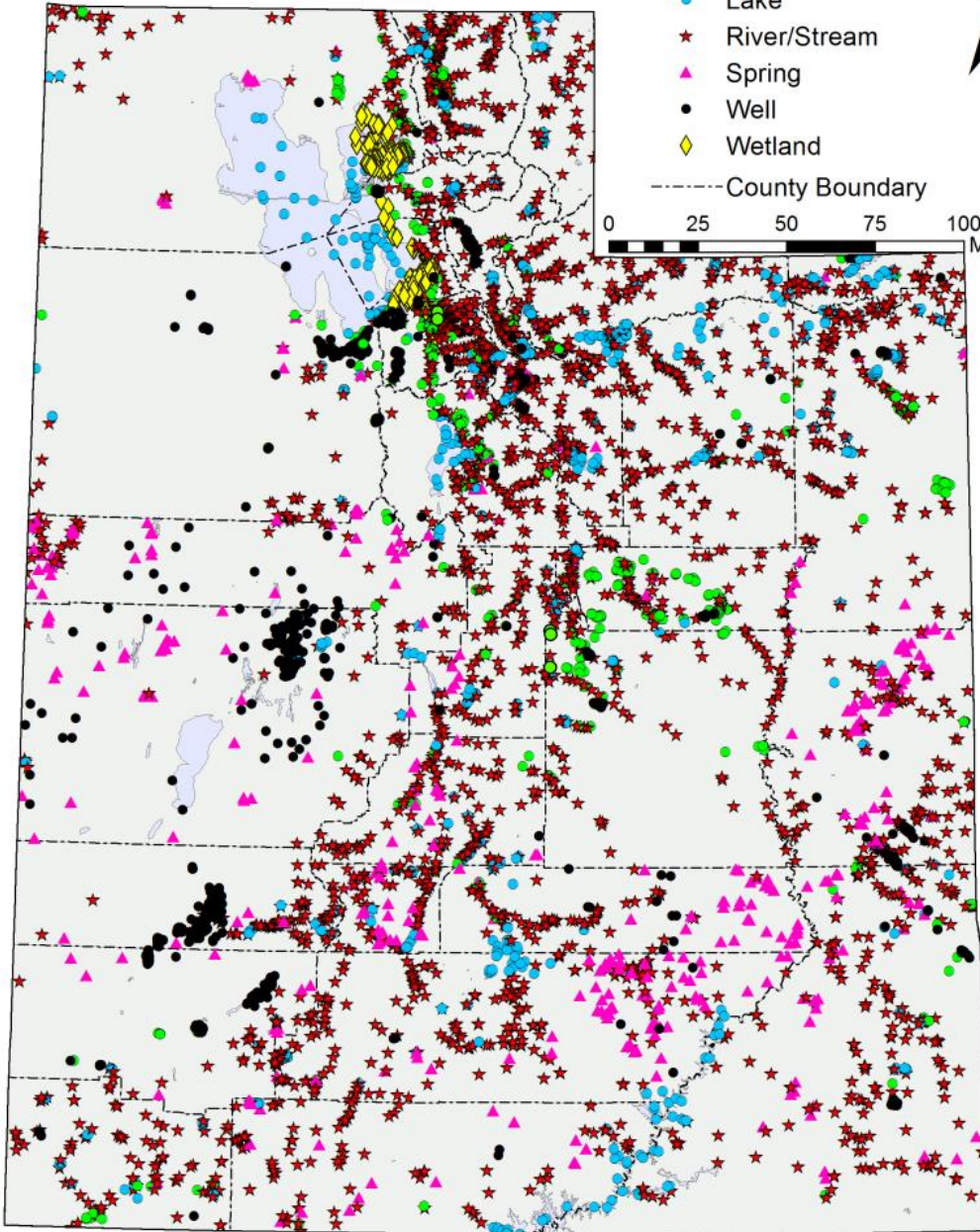
Utah's Water Quality Monitoring Sites

Location Type

- Facility
- Lake
- ★ River/Stream
- ▲ Spring
- Well
- ◇ Wetland

--- County Boundary

0 25 50 75 100 Miles



Monitoring

UTAH'S INTEGRATED REPORT



Perennial Rivers / Streams

15,583 miles



Lakes / Reservoirs / Ponds

376,676 acres



Freshwater Wetlands

510,359 acres

- Integrates 303(d) and 305(b) requirements of the Clean Water Act
- Evaluate water quality data against water quality standards using assessment methods
- Analysis at monitoring site level and rolled up into assessment units
- Required to use all readily available and credible data

Category	No. of Stream AUs	Stream miles	No. Lake of AUs	Lake Acres (freshwater only)
1 (Supporting)	76	1,606 (10%)	0	0
2 (No evidence of Impairment)	76	1,693 (11%)	58	57,368 (15%)
3 (Insufficient Data)	343	4,992 (32%)	22	30,730 (8%)
4 (Pollution Control in Place)	24	643 (4%)	11	22,323 (6%)
5 (Not Supporting)	240	6,649 (43%)	51	266,255 (71%)

CATEGORY
1
Supporting

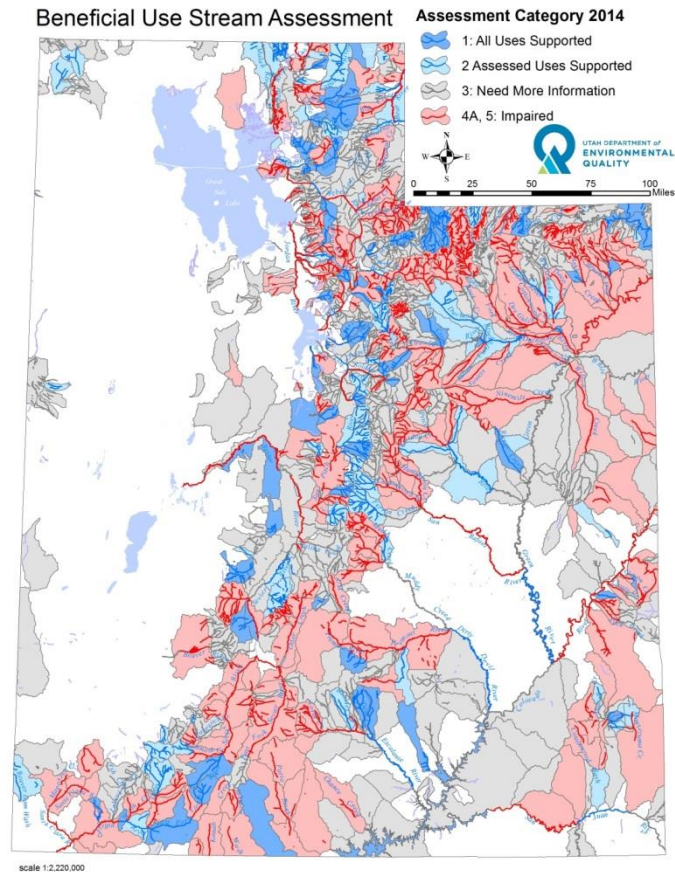
CATEGORY
2
No Evidence
of Impairment

CATEGORY
3
Insufficient
Data,
Exceedences

CATEGORY
4
Pollution
Control in
Place

CATEGORY
5
Not
Supporting

Utah's Impaired Waters



New in 2016 Integrated Report

UTAH'S 303(D) ASSESSMENT METHODOLOGY



- Public noticed assessment methods before *Integrated Report* (March 2015)
- 6 year period of record
- Integrated USGS Data
- Includes organic compounds
- Revised *E. coli* assessment method
- High frequency data
- Harmful Algal Bloom assessments
- Split Assessment Units with conflicting assessments

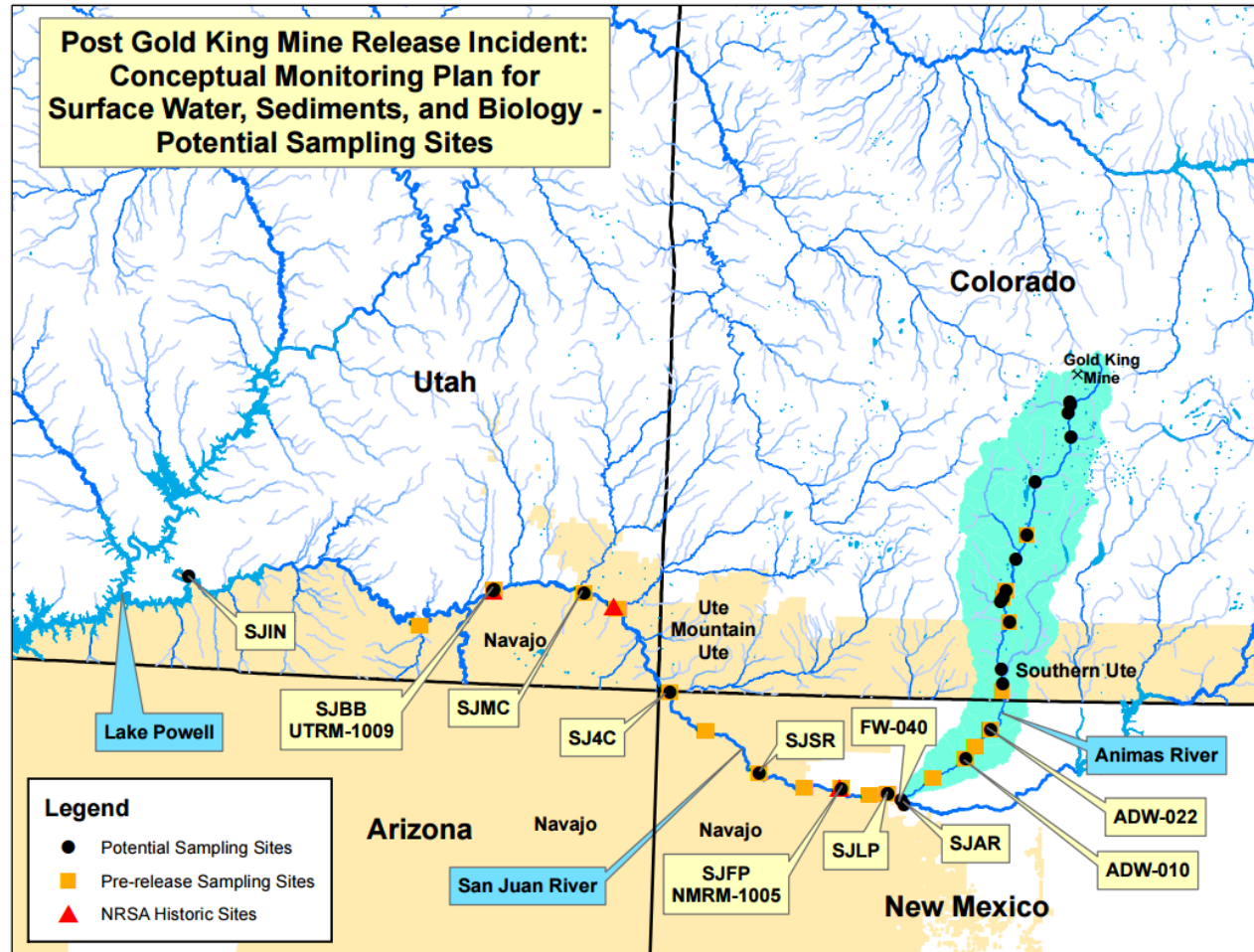
2016

Integrated Report

San Juan River Aquatic Life Impairments

Exceedances:

- Aluminum
- Cadmium
- Copper
- Iron
- Lead
- Mercury



High Priority Impaired Waters for TMDL Development

- Drinking water sources
 - ▣ Upper Provo River
 - ▣ Starvation Reservoir
- High recreation use waters
 - ▣ Utah Lake (State Park)
 - ▣ Virgin River (Zion National Park)
 - ▣ Jordan River + tributaries (Wasatch Front)
 - ▣ Freemont River (Capitol Reef National Park)
- Important Fisheries and Headwaters



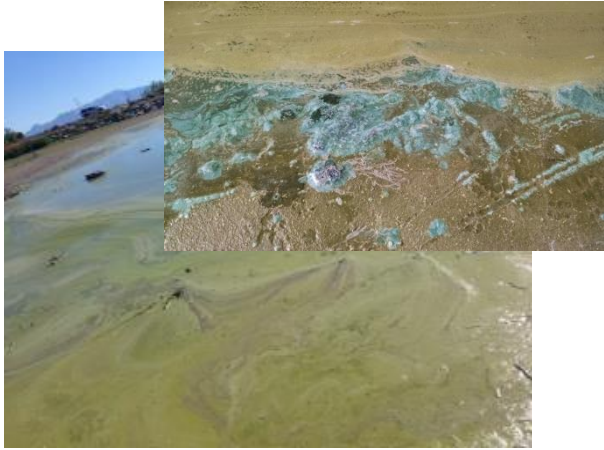
Narrative standard

“It shall be unlawful, and a violation of these rules, for any person to discharge or place any waste or other substance in such a way as will be or may become offensive such as **unnatural deposits, floating debris, oil, scum or other nuisances such as color, odor or taste**; or cause conditions which **produce undesirable aquatic life** or which produce objectionable tastes in edible aquatic organisms; or result in concentrations or combinations of substances which produce **undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects**, as determined by bioassay or other tests performed in accordance with standard procedures; or determined by biological assessments in Subsection R317-2-7.3.”

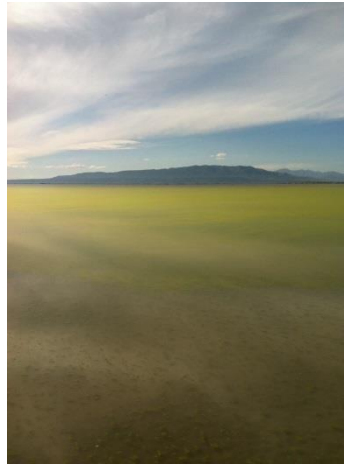
Assessing Lakes and Harmful Algal Blooms



Utah Lake Harmful Algal Bloom - 2014



Lindon Harbor – Oct 6



Provo Bay – Oct 8



Lindon Harbor – Oct 10

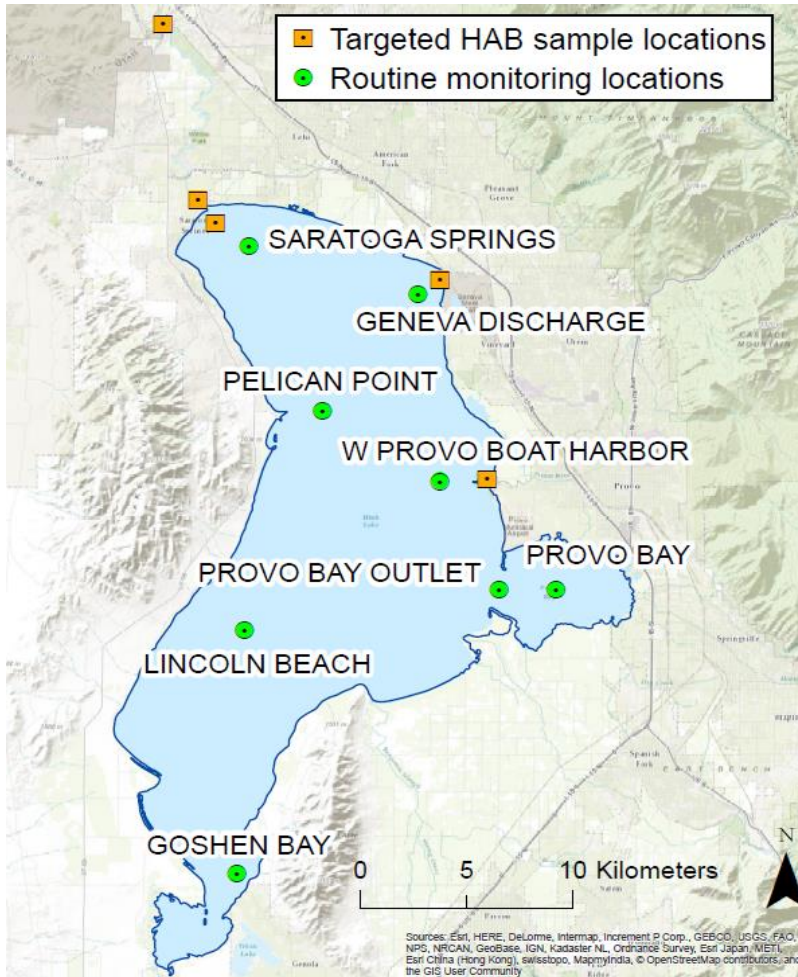


Utah Lake, west side – Oct 12



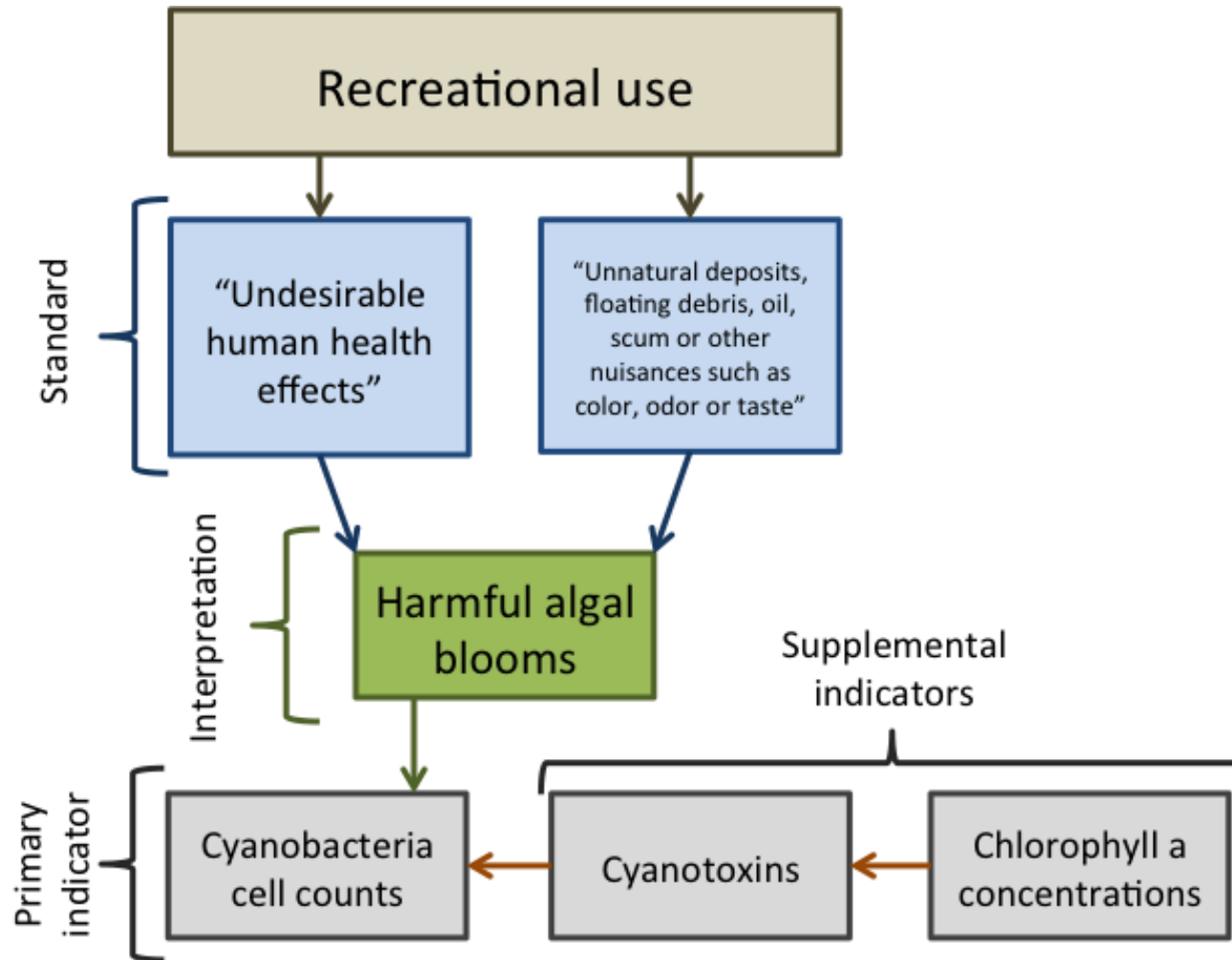
Lindon Harbor – Oct 22

Utah Lake data



- 150+ samples at 8 sites
- Water chemistry:
 - Nutrients
 - Ammonia
 - Total dissolved solids
 - Chlorophyll a
- Water column profiles:
 - Temperature
 - Dissolved oxygen
 - pH
- Phytoplankton (algae)

Harmful Algal Bloom Assessment Method





Five Pillars of the Nutrient Strategy

1. Adaptive Management Technology Based Limits
2. Category 1 – Headwaters Criteria Development
3. ACES Program & Funding for Agriculture
4. Prioritization for Criteria Development – Recovery Potential
5. Optimization of Existing Facilities

What Are Utah's Options?



1. Eco-regional criteria
2. Site-specific criteria
3. Technology-based adaptive criteria

EPA Ecoregional Nutrient Criteria - Utah

Western Forested Ecoregion (II)

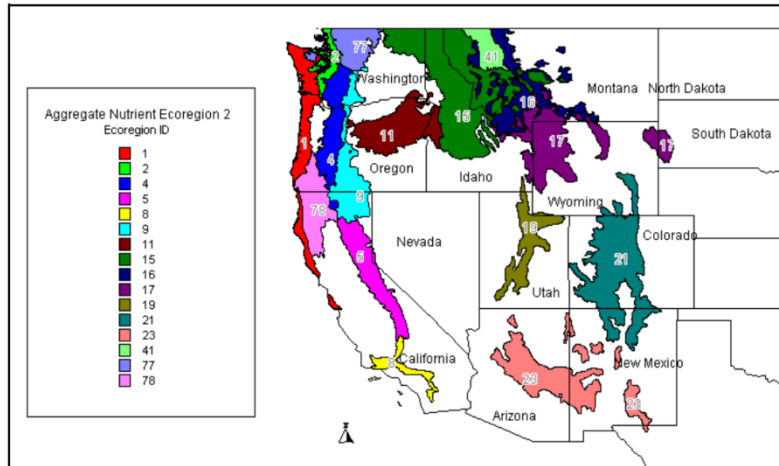


Figure 2. Aggregate Ecoregion II with level III ecoregions shown.

Xeric West Ecoregion (III)

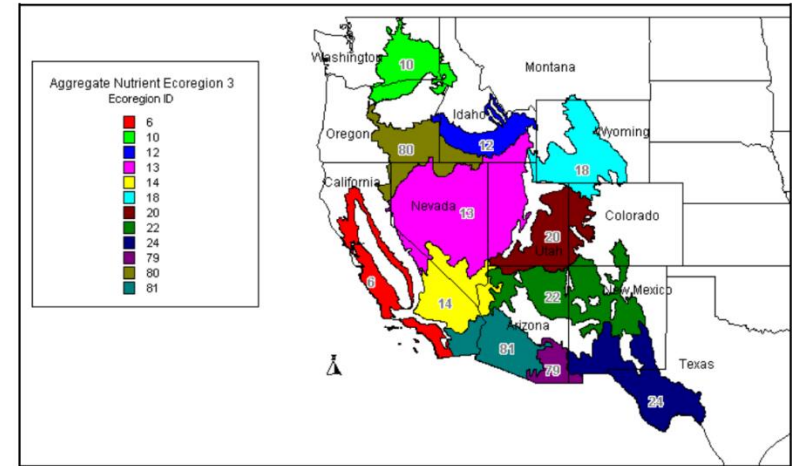
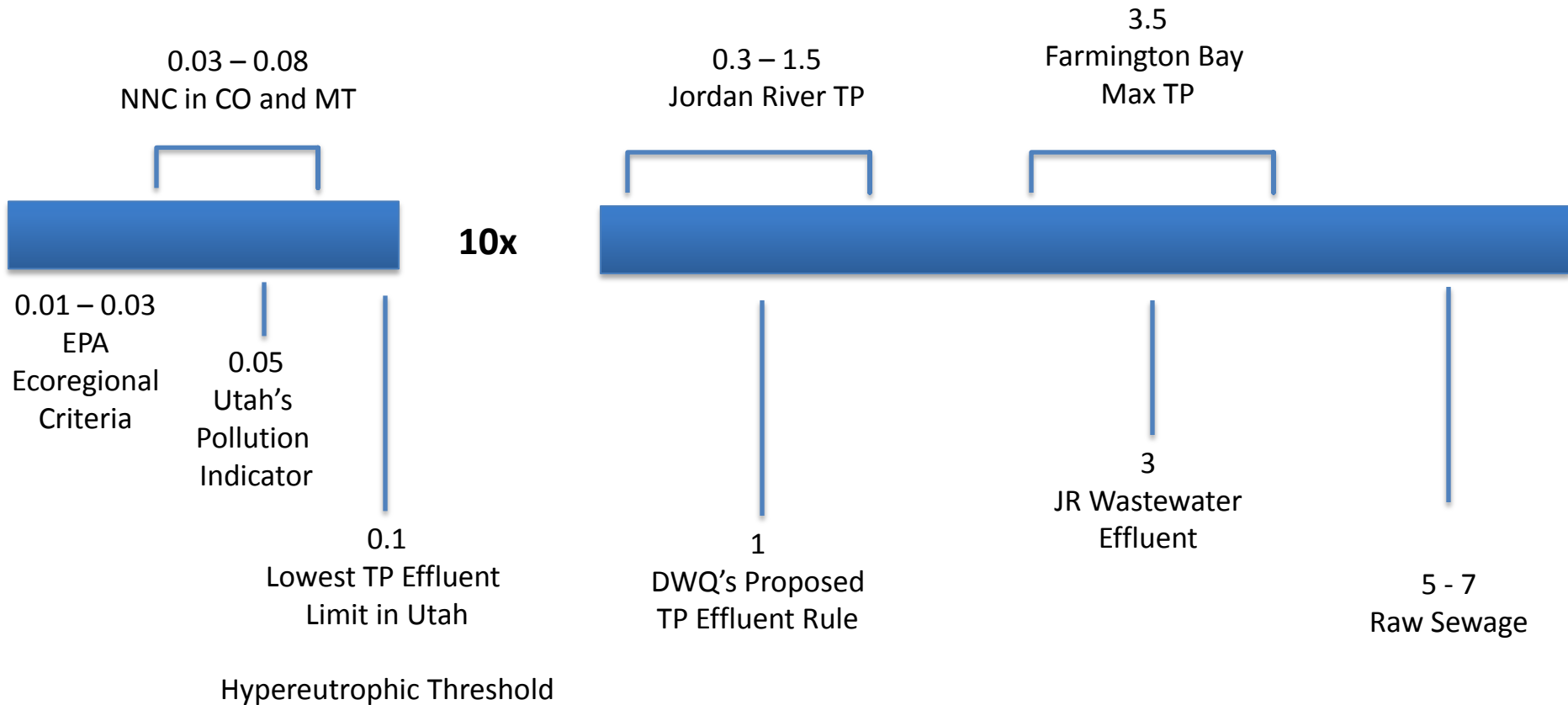


Figure 2. Aggregate Ecoregion III with level III ecoregions shown.

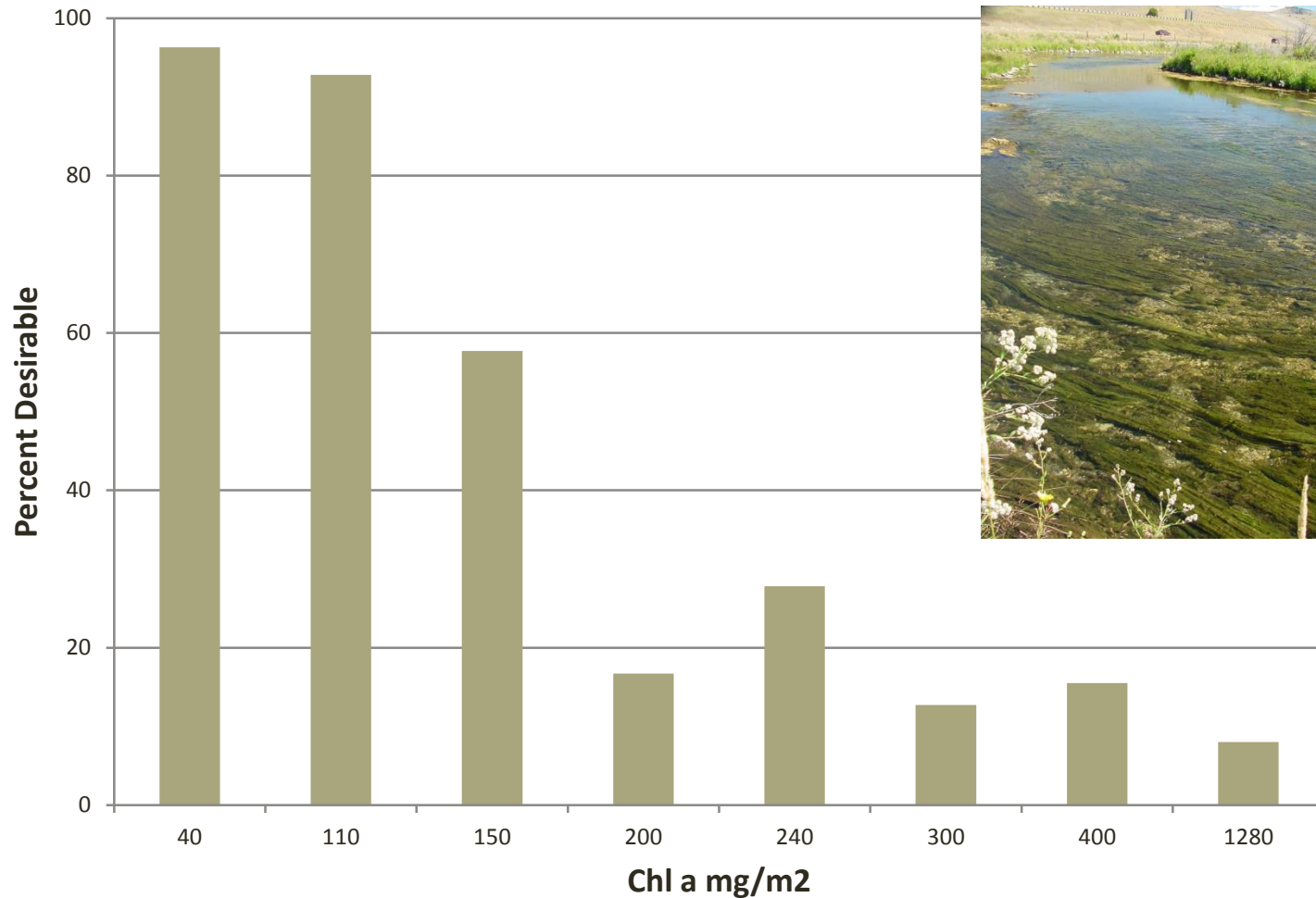
	Rivers and Streams		Lakes and Reservoirs	
	TP (mg/L)	TN (mg/L)	TP (mg/L)	TN (mg/L)
Western Forested Ecoregions (II) <i>Wasatch and Uintah Mountains (19)</i>	0.01	0.34	0.005	0.21
Xeric West Ecoregion (III) <i>Central Basin and Range Subcoregion (13)</i>	0.028	0.425	0.03	0.51
Xeric West Ecoregion (III) <i>Colorado Plateaus Subcoregion (20)</i>	0.02	0.553	0.003	0.15

Total Phosphorus (mg/L)



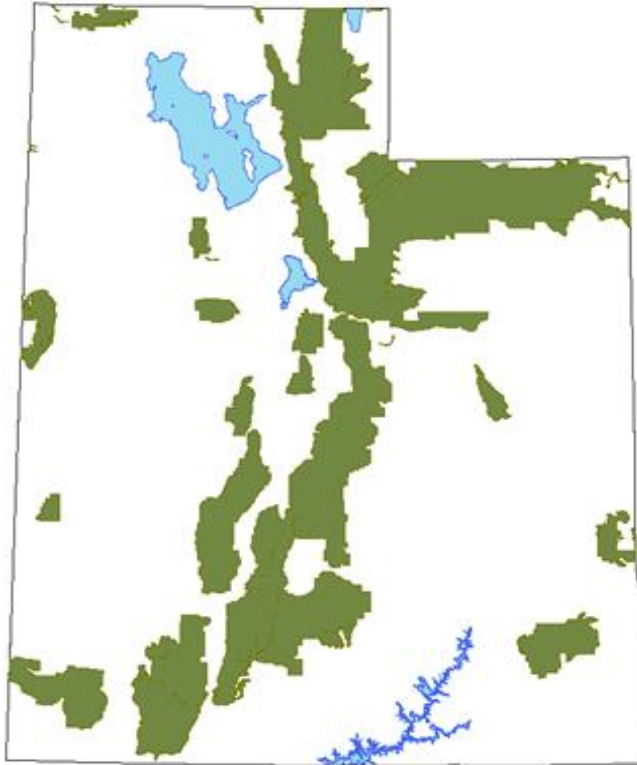
Aesthetics and Recreation

Recreation Survey



Benthic Chl a Response
Indicator ~150 mg/m²

Headwater Criteria



- Watersheds are defined by Utah's Antidegradation Classes
 - **Category 1:** No new discharge of treated wastewater
 - **Category 2:** New discharge permitted at background concentration
- Primarily within USDAFS boundaries
 - ~50% of Perennial Waters

Technology-Based Phosphorus Effluent Limits (TBPELs)

- Statewide Cost of Nutrients Removal by Utah POTWs completed 2010. Nutrient reduction benefits study completed in 2013
- Outreach in 2012 to every district and city in Utah potentially affected by proposed rule
- TBPEL Rulemaking and Public Comment completed 2014 with over 100 public meetings and 6 public hearings
- Latest revisions to the rule in December 2015



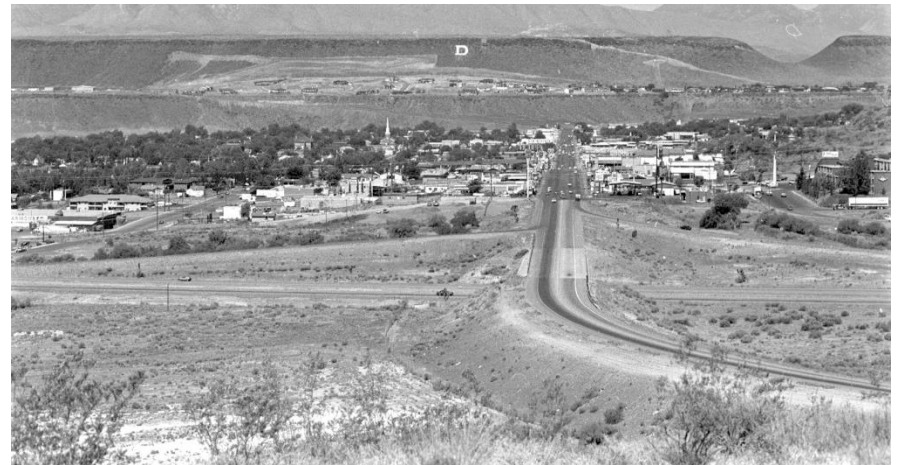
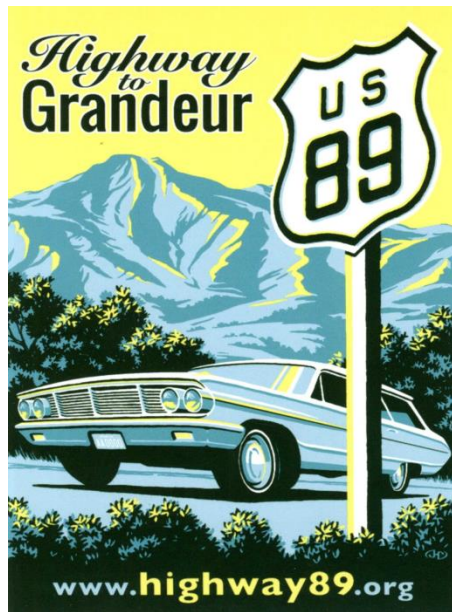
Current Rules Governing TBPELs

- Loading cap for discharging lagoons [125% of the WWTP's phosphorus load] will become effective on July 1, 2018. In the intervening time DWQ will determine the level of the cap.
- The TBPEL must be met by January 1, 2020. An extension until January 1, 2025 will be allowed where a POTW can demonstrate due diligence.
- Innovative alternatives to meet the TBPEL are allowed, e.g., trading, seasonal offsets, land application/reuse, etc.
- The “clearly unnecessary” variance request must be made by January 1, 2018.
- A 10-year variance from any change in TIN WQBELs or TBELs, even those resulting from TMDLs, will be accorded for agreed-upon TIN optimization strategies (must be granted before 1/1/2020)

Salt Lake City Airport (1940's)



Looking Back to the 1950's



Evolution of Utah's Wastewater Treatment



1900's

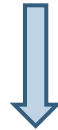
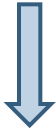


1950's

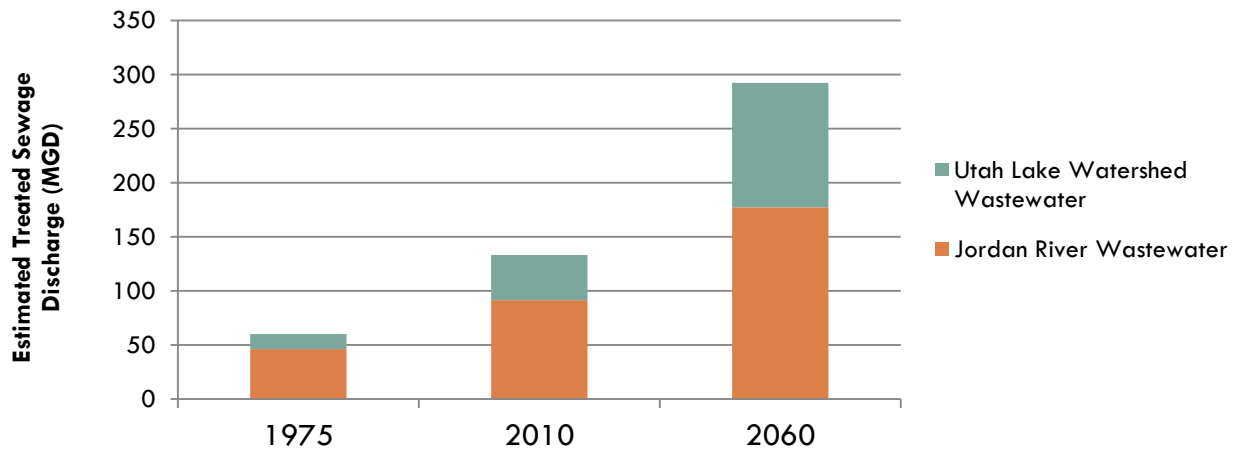
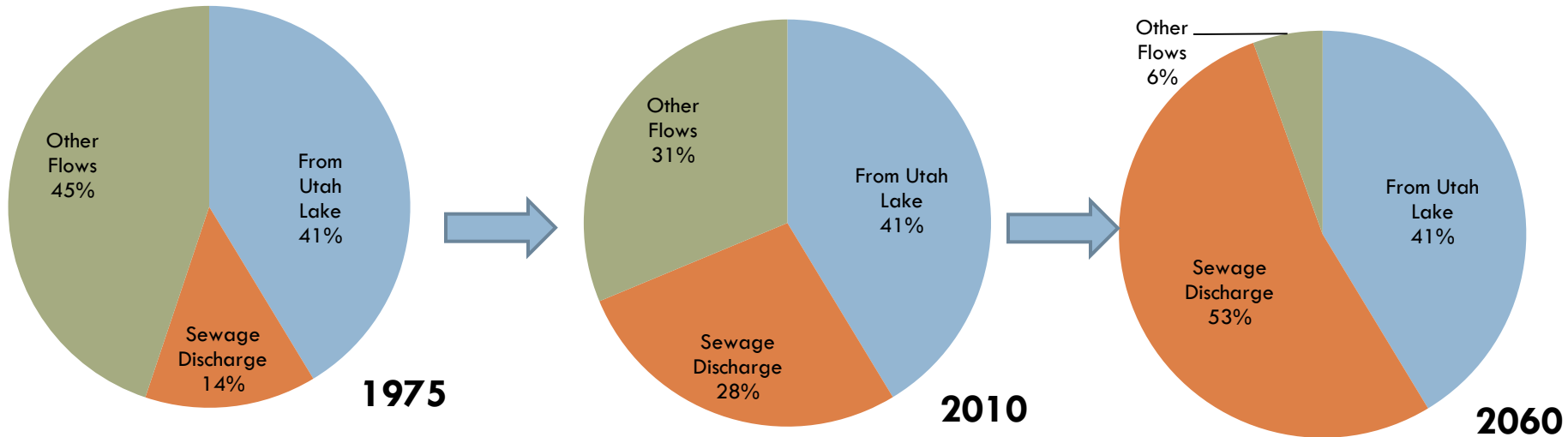


2015

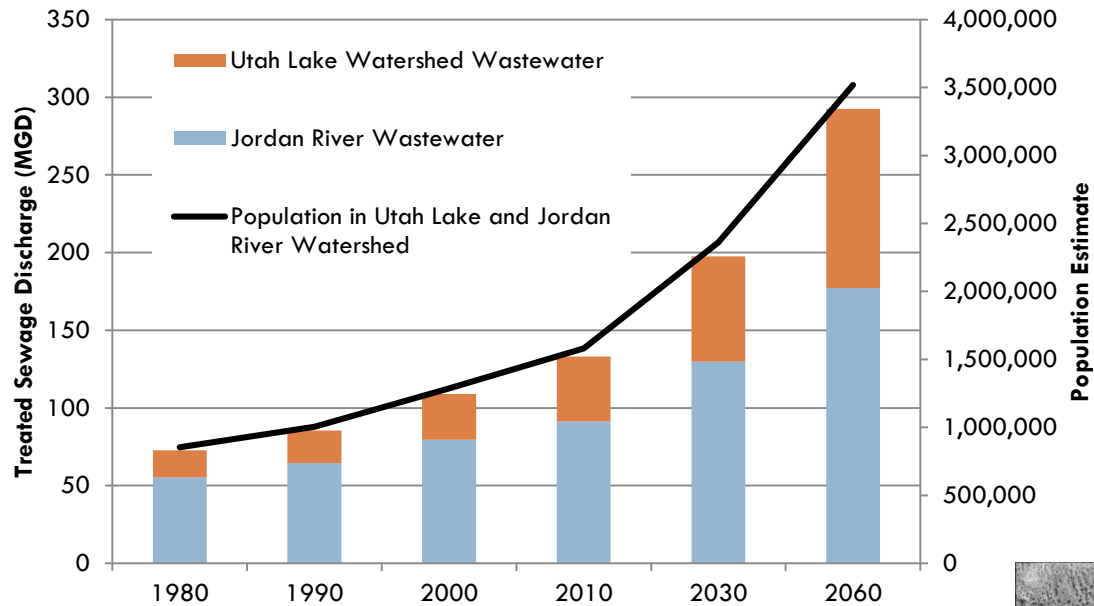
Need for Investment to accommodate growth and preserve Utah's Quality of Life



Proportion of Jordan River That is Treated Sewage

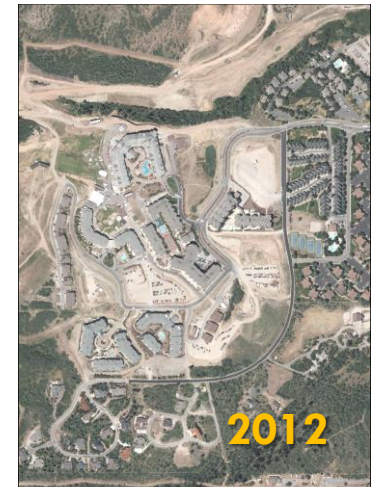


Population Growth



Projected Growth from 2010 to 2060

- State of Utah: 115%
- Jordan River Basin: 94%
- Utah Lake Basin: 176%



A young child with light-colored hair, wearing a yellow long-sleeved shirt and blue denim overalls, is leaning over a kitchen sink. The child is holding the chrome faucet handle with both hands, and a stream of water is flowing from the spout. The child's face is partially obscured by the text 'Questions?'. The background is a plain, light-colored wall.

Questions?