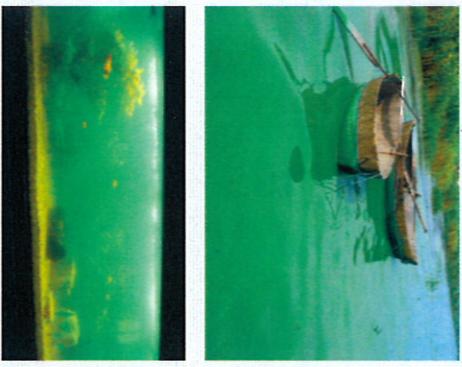


## Nutrient Pollution



## Utah Lakes and Reservoirs

- 97% of our lakes and reservoirs are assessed
- 48 of 132 priority lakes and reservoirs (36%) are not meeting their beneficial uses; all but 5 are "listed" due to nutrient pollution
- Matt Warner Reservoir – 2004  
18 cattle died due to ingesting blue-green algae

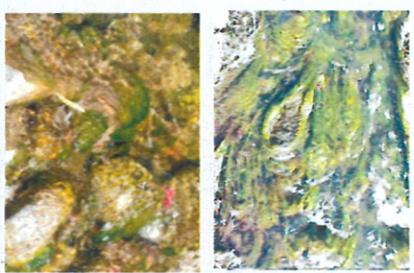


## Sources of Nutrient Pollution

- Wastewater treatment plants
- Chemical fertilizers
- Agriculture
- Urban run-off
- Fossil fuels



## Are these patterns seen in Utah streams?



- Data collected at 1197 water quality stations (not randomly selected) with compared against data collected at reference sites reveals:
  - 605 stations (51%) have high N
  - 525 stations (44%) have high P
  - 289 stations (24%) have high N & P

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NUTRIENT RESOURCES  
2010

## Nitrate Exceedances in Utah's Public Water Systems

## Cost of Removing Nutrients at Utah's 30 Mechanical Treatment Plants

Level of Removal	Phosphorus	Nitrogen	Total PV Cost	Monthly Cost (Average)
Minimal	1 mg/l	N/A	\$ 114 million	\$ 1.19 increase
Minimal +	1 mg/l	20 mg/l	\$ 232 million	\$ 2.97 increase
Moderate	0.1 mg/l	N/A	\$ 1,090 million	\$ 12.41 increase
Significant	0.1 mg/l	10 mg/l	\$ 1,352 million	\$ 15.30 increase

## Water Quality Improvements

Since 2000 TMDLs

**Reservoir**

- Algal community no longer dominated by blue green species
- Oxygen conditions have improved
- Mean TP has been reduced by ~20%

**Creek**

- Significant reductions in nuisance algae
- Oxygen conditions have improved
- Nutrients no longer drive low DO in creek

## 15 - Member Team Working to Establish Utah's Approach To Nutrients

- DWQ
- UDAF (State Ag)
- NRCS (Federal Ag)
- Parks and Recreation
- Wildlife Resources
- Drinking Water Utilities
- POTWs
- Conservation Interests
- Storm Water
- Agricultural Producers
- GSL Artemia Association
- Science Expert
- Academia
- League of Cities and Towns
- EPA