



RECREATION PERCEPTION SURVEYS TO ESTABLISH WATER QUALITY OBJECTIVES FOR UTAH LAKE

Utah Lake Steering Committee Meeting | Virtual |
Thursday, March 17, 2022

Jordan W. Smith, Ph.D. & Anna B. Miller, Ph.D.



ABOUT

- Founded in 1998 by the Utah State Legislature
- Housed in Extension
- Mission:
 1. Provide data for the Legislature and state agencies in their decision-making processes on issues relating to tourism and outdoor recreation
 2. Assist community officials as they attempt to balance the economic, social, and environmental tradeoffs in tourism development
 3. Lead interdisciplinary approach of research and study on outdoor recreation and tourism



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PROGRAMS



SERVICES



Visitor Use Monitoring and Management



Mobile Location Analytics



Needs Assessments

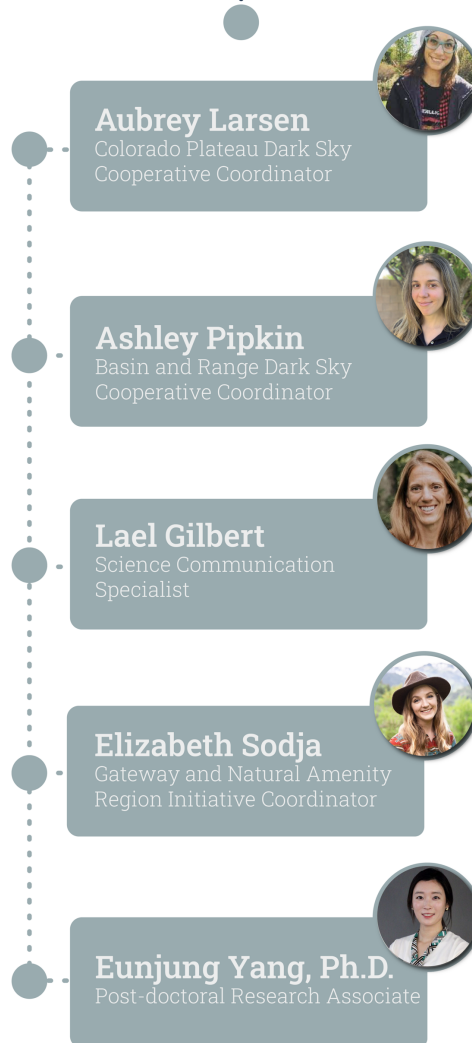


Recreation Economics

LEADERSHIP



STAFF



FACULTY FELLOWS



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Jordan W. Smith, Ph.D.

- Social psychology
- Recreation economics
- Geospatial analysis

Research examines the adaptive behavior of outdoor recreationists and natural resource dependent communities affected by climate change, natural hazards, and crisis events.



Anna B. Miller, Ph.D.

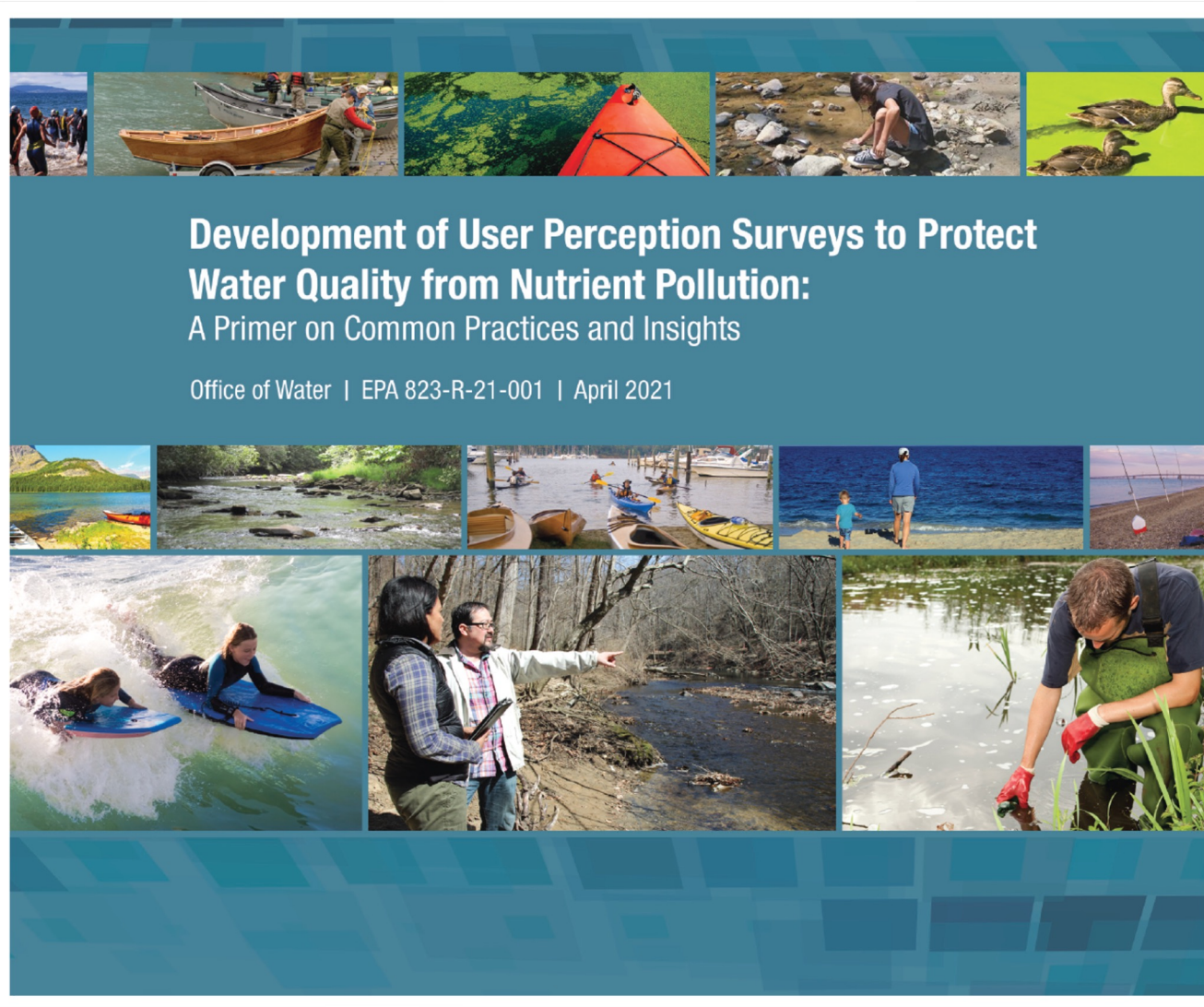
- Ecology
- Wildlife dependent recreation

Research integrates concepts and data from the natural and social sciences to understand how recreationists affect biophysical characteristics of recreation settings.



Our vision is to use well-established methods from the fields of survey research and recreation economics to develop an empirically grounded and scientifically defensible understanding of the various preferences for water clarity and quality amongst those who currently do or potentially could recreate on Utah Lake.

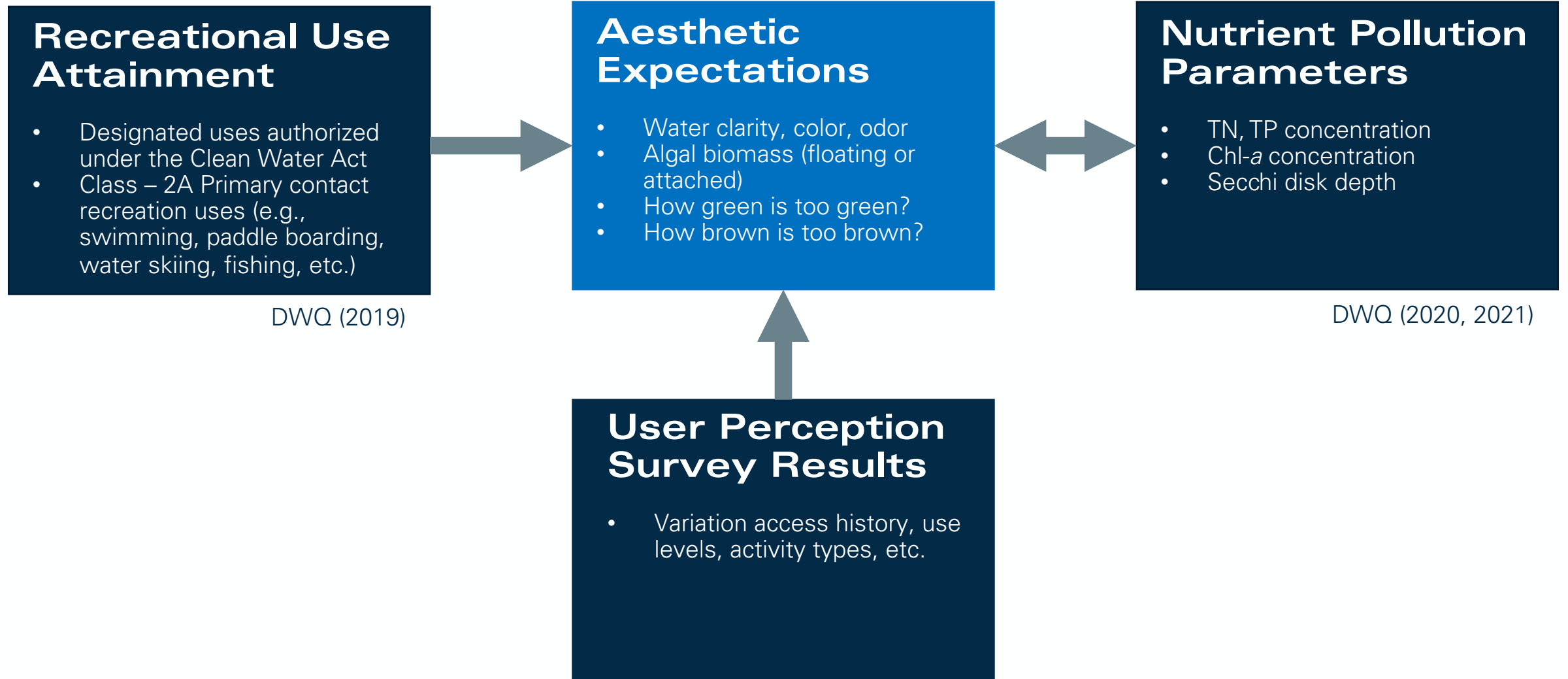
EPA Guidance

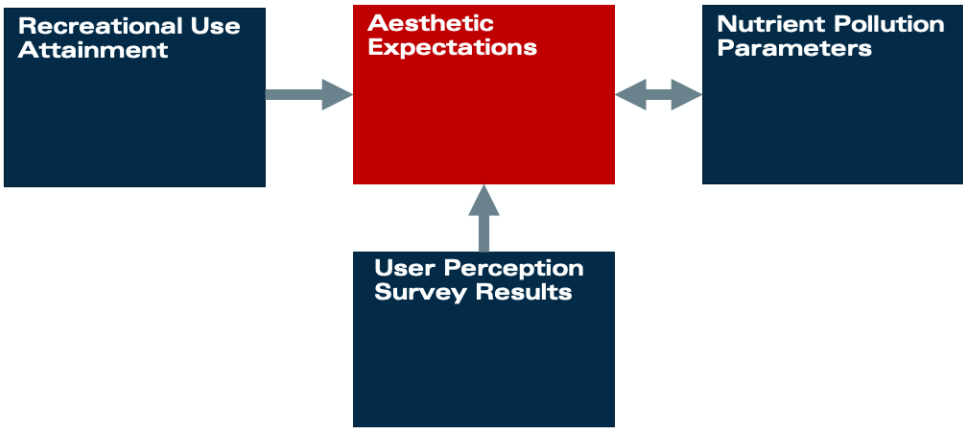


**Development of User Perception Surveys to Protect
Water Quality from Nutrient Pollution:**
A Primer on Common Practices and Insights

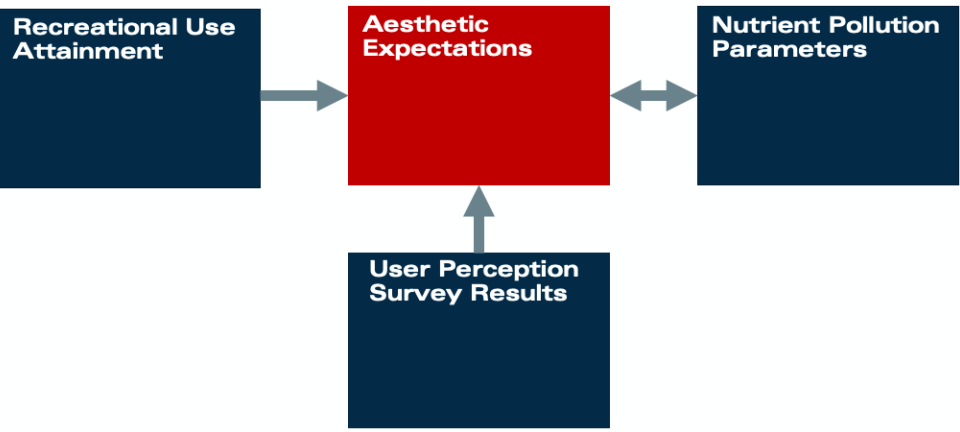
Office of Water | EPA 823-R-21-001 | April 2021

The Relationship Between Aesthetic Expectations and Nutrient Criteria





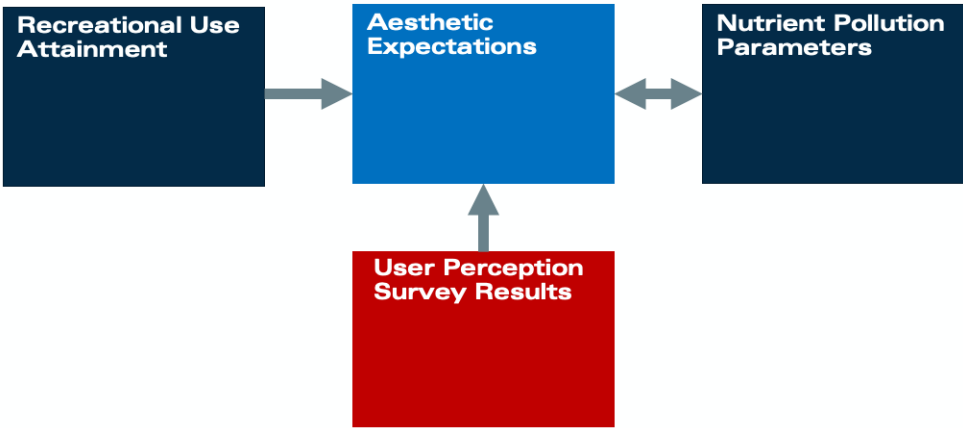
How to determine how green is too green and how brown is too brown.



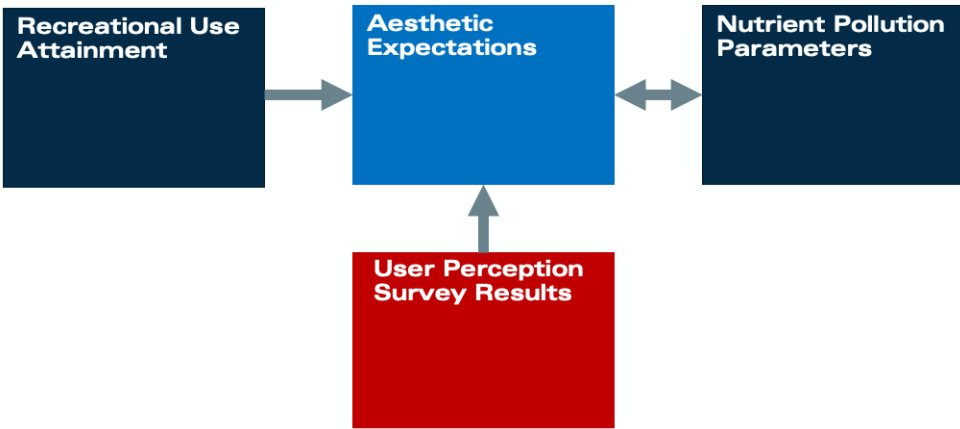
How to determine how green is too green and how brown is too brown.

Range of Chl-a and clarity

Image Type	Very low	Medium low	Medium	Medium high	High
Landscape					
Beach					
Water only					
Water with prop					
Water in flask					



Who's determining aesthetic expectations? And how are we controlling for factors that might bias their opinions?



Who's determining aesthetic expectations?

Sample 1 – Residents Living Near The Lake

Mail/online survey

- Salt Lake County
- Utah County

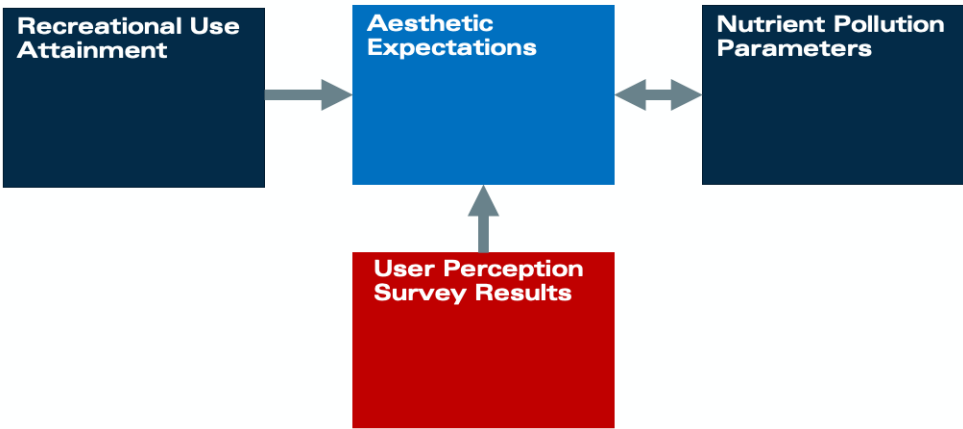
Maybe within a smaller proximity of the Lake dependent upon input from the steering committee.

Sample 2 – Recreationists Using the Lake

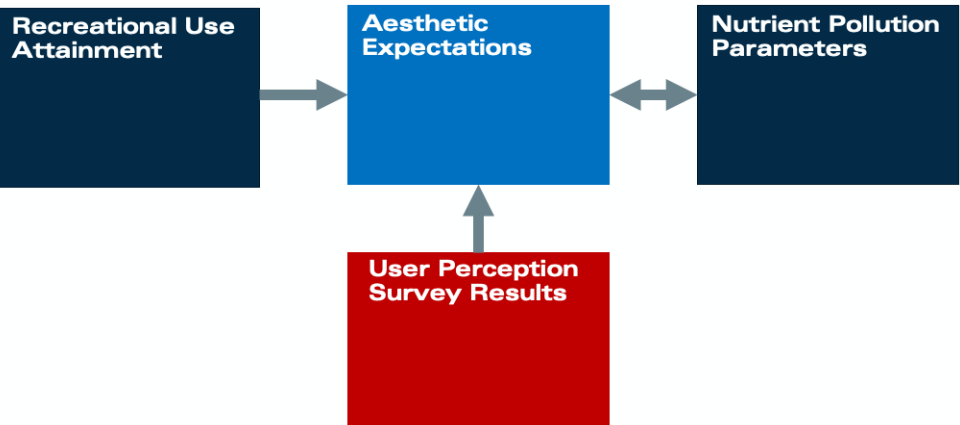
On-site intercept survey

- At select access points
- 2-weeks of surveying in late spring 2022

Access points to be determined by input from steering committee.



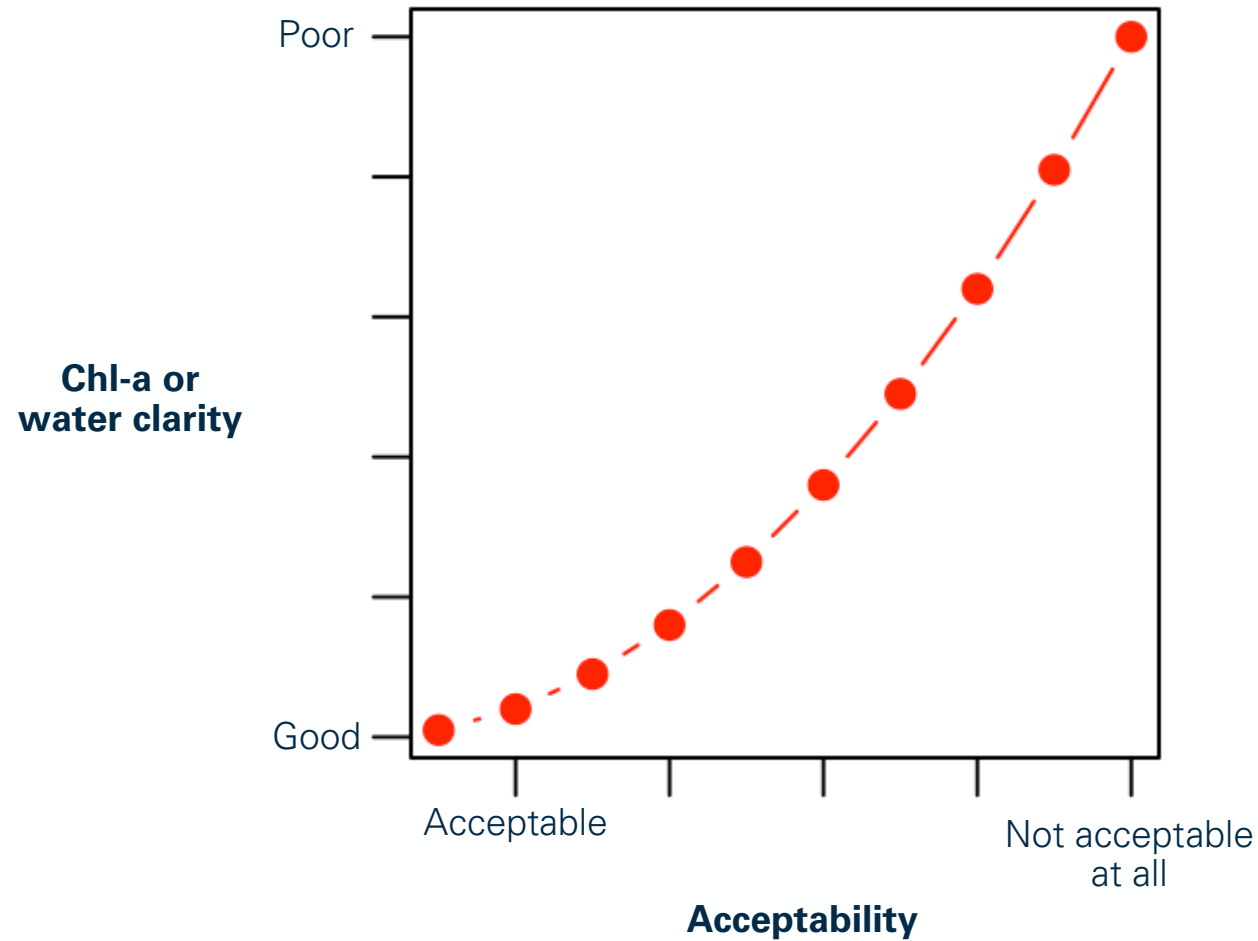
And how are we controlling for factors that might bias their opinions?



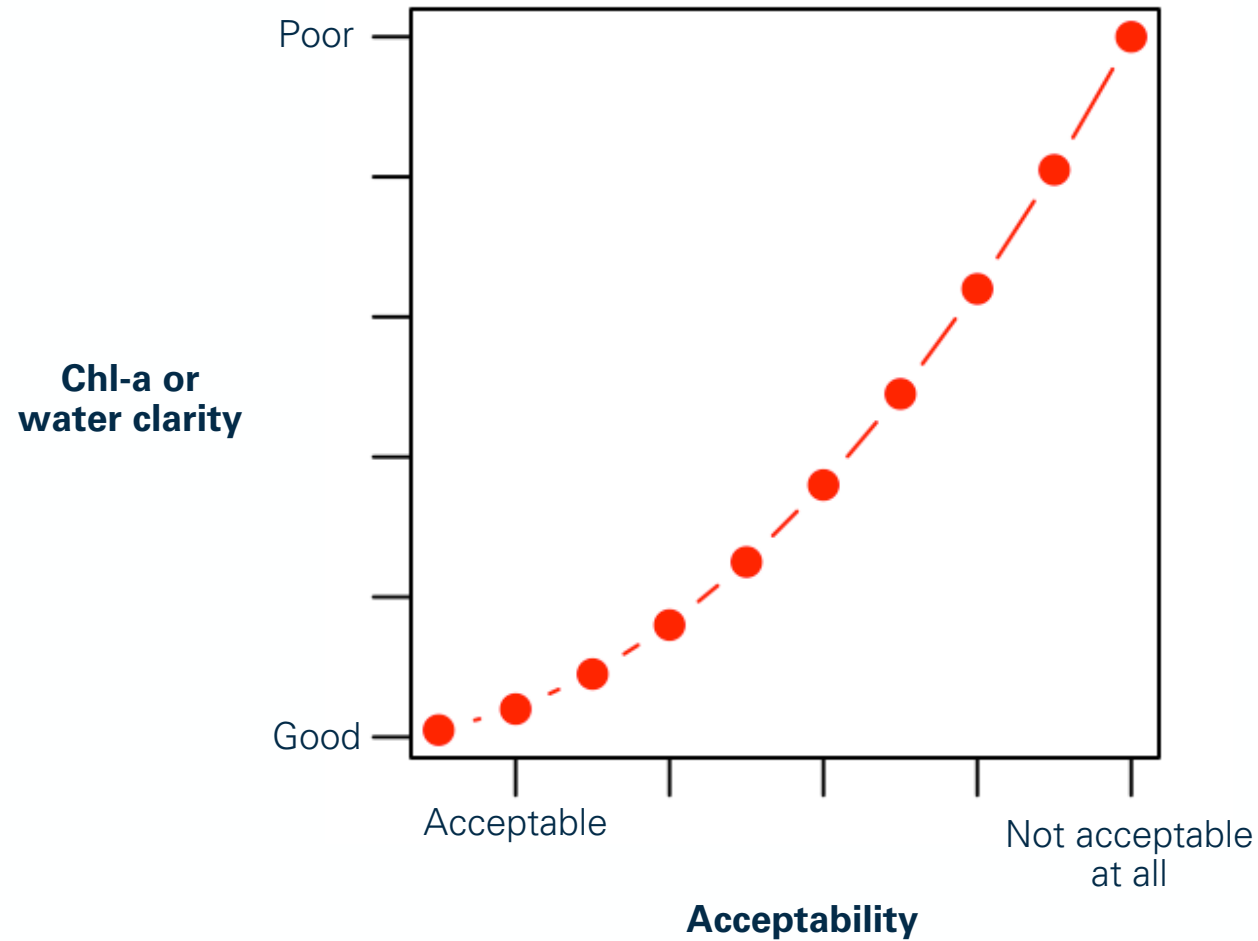
And how are we controlling for factors that might bias their opinions?

Factors known to affect perceptions of water quality	Sample	
	Mail/online survey	On-site intercept survey
Outdoor recreation participation	✓	✓
Geographic proximity to the waterbody	✓	✓
Length of residence proximate to the water body	✓	✓
Prior experience with warnings about, and/or closures to, the water body	✓	✓
Age	✓	✓
Education	✓	✓
Gender	✓	✓
Income	✓	✓
Race	✓	✓
Religion	✓	✓

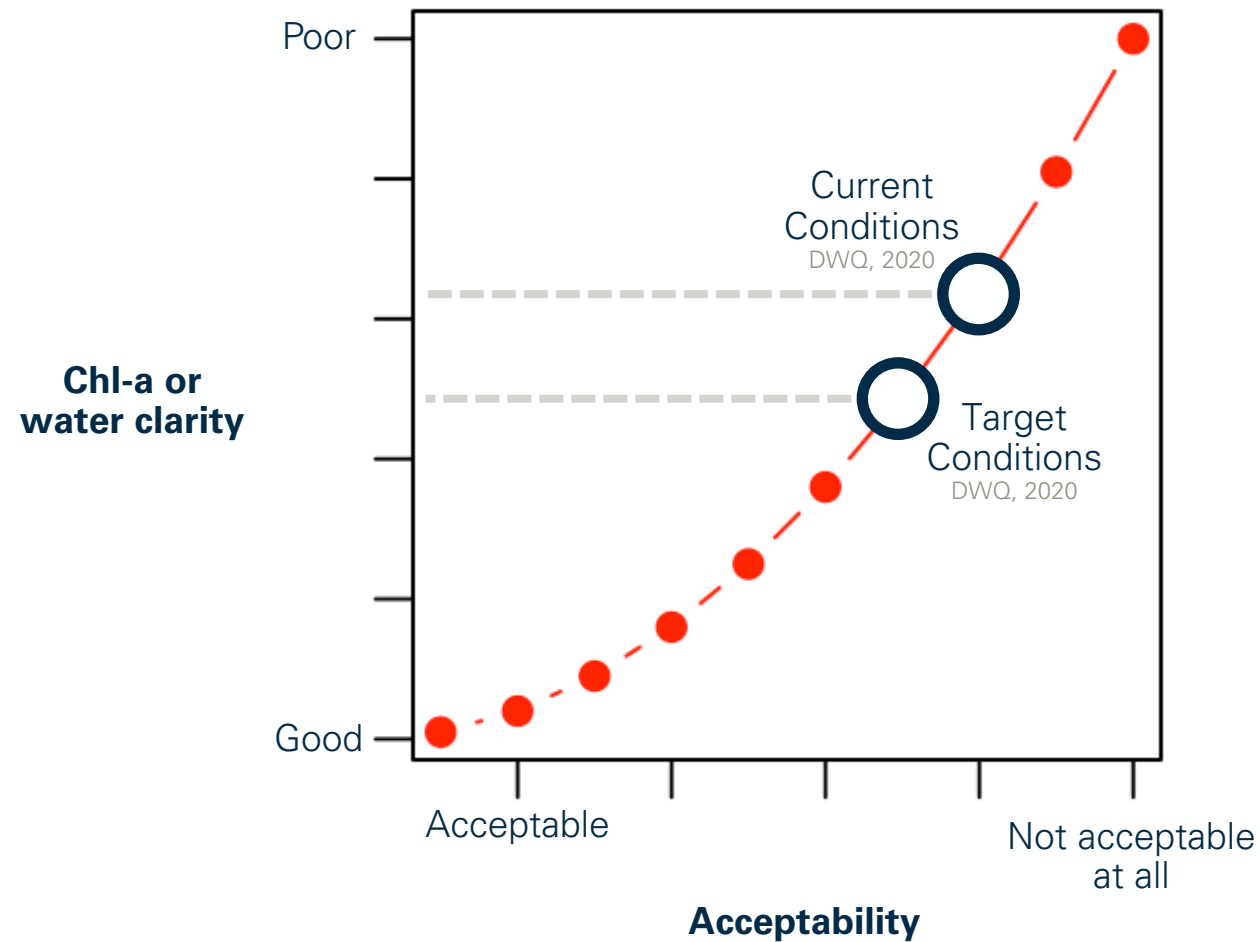
Connecting the Data Back to Nutrient Criteria



Connecting the Data Back to Nutrient Criteria



Connecting the Data Back to Nutrient Criteria



Timeline

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Sample Analysis Plan development	✓	✓	✓					
Survey development			✓					
Data collection				✓	✓			
Data analysis					✓	✓		
Reporting							✓	✓

References

DWQ. (2019). *Water Quality Assessment and Analysis: Utah Lake Water Quality Study*. Available online (accessed 5/16/22): <https://documents.deq.utah.gov/water-quality/locations/utah-lake/DWQ-2019-001841.pdf>

DWQ. (2020). *Utah Lake Management Goals, Assessment Endpoints, Measures, and Targets*. Available online (accessed 5/16/22): <https://documents.deq.utah.gov/water-quality/locations/utah-lake/DWQ-2020-024762.pdf>

DWQ. (2021). *Utah Lake Water Quality Study – Numeric Nutrient Criteria Technical Framework: FINAL REPORT*. Available online (accessed 5/16/22): <https://documents.deq.utah.gov/water-quality/locations/utah-lake/DWQ-2020-023700.pdf>



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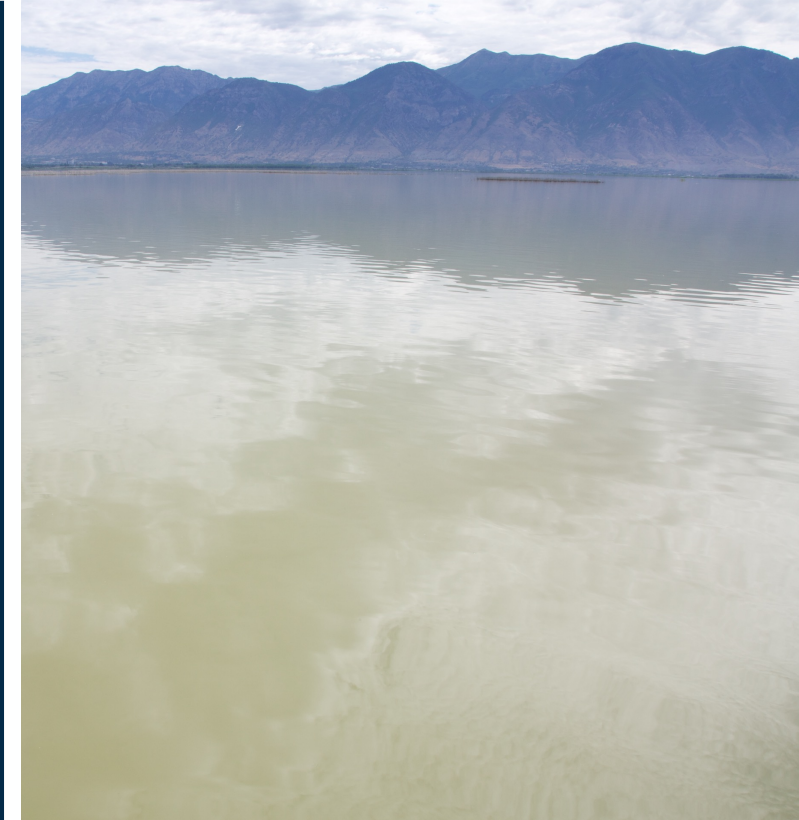
EXTENSION 
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QUESTIONS

Jordan W. Smith (jordan.smith@usu.edu)

Anna B. Miller (anna.miller@usu.edu)



Implementation Framework – Decision Points to Support RFP Development



UTAH DEPARTMENT *of*
ENVIRONMENTAL QUALITY
**WATER
QUALITY**

ULWQS Steering Committee
March 17, 2022
Scott Daly

Implementation Framework Status

Executive Summary

- Draft under review

Initiate Framework Projects/Components

- Confirm Framework with POTWs
- Initiate discussions with SC

Resource Identification

- Identify and procure technical support
- Identify financial needs and resources

Overview of Framework Decision Points

Table # - Name	Line #	SC Decision Points	Scope Assessment
1 – Phase 2 Elements	1-4	None	<ul style="list-style-type: none"> Covered under existing contract As needed support
2 – Build Partnerships	5-8	<ul style="list-style-type: none"> ID additional stakeholders/ considerations Update outreach plan & implement Determine need for technical support 	<ul style="list-style-type: none"> No existing scope
3 – Watershed Characterization	9-12	<ul style="list-style-type: none"> Confirmation of planning horizons, growth scenarios, and source prioritization. Acquire growth data. 	<ul style="list-style-type: none"> Mostly covered under existing contract Additional scope for growth and climate disturbances may be needed
4 – Management Strategies	13-20	<ul style="list-style-type: none"> Determine need for technical support Confirmation of point source planning approach SC determination of source-specific management scenarios 	<ul style="list-style-type: none"> Some existing technical scope, dependent upon # of scenarios selected
5 – Permit Implementation	21-25	<ul style="list-style-type: none"> Confirm approach for permitting (quantity, parameter, averaging period, etc.) Evaluate need for water quality trading 	<ul style="list-style-type: none"> Minimal existing scope, mostly out of scope
6 – Cost/Feasibility	26	<ul style="list-style-type: none"> Develop/confirm feasibility approach 	<ul style="list-style-type: none"> Out of scope Sufficient info to develop scope
7 – Assemble Plan	27-33	<ul style="list-style-type: none"> Finalize all implementation plan elements 	<ul style="list-style-type: none"> Out of scope Sufficient info to develop scope

Build Partnerships

Table # - Name	Line #	SC Decision Points	Scope Assessment
2 – Build Partnerships	5-8	<ul style="list-style-type: none">• ID additional stakeholders/ considerations• Update outreach plan & implement• Determine need for technical support	<ul style="list-style-type: none">• SC in-kind• No existing scope

Determine need for technical support

- In-house and in-kind (previous SC direction)?
- Contractor support?

Next steps

- SC review existing outreach plans and discuss stakeholder makeup and considerations



Watershed Characterization

Table # - Name	Line #	SC Decision Points	Scope Assessment
3 – Watershed Characterization	9-12	<ul style="list-style-type: none">Confirmation of planning horizons, growth scenarios, and source prioritization. Acquire growth data.	<ul style="list-style-type: none">Mostly covered under existing contractAdditional scope for growth and climate disturbances may be needed

Confirm planning horizons and growth scenarios

- What are the planning horizons (e.g., 2040, 2060)?
- How do we assess growth?
 - Population changes?
 - Land use changes?
 - Areas of special interest?
 - All of the above?

Climate-related impacts (wildfire and extreme weather)

- What are the questions?
- What scenarios should be run we run?
 - Dry weather (drought)?
 - Wet weather?
- How to assess impacts of wildfire?

Next steps

- Acquire growth data and land use projections



Management Strategies

Table # - Name	Line #	SC Decision Points	Scope Assessment
4 – Management Strategies	13-20	<ul style="list-style-type: none">• Determine need for technical support• Confirmation of point source planning approach• SC determination of source-specific management scenarios	<ul style="list-style-type: none">• Some existing technical scope, dependent upon # of scenarios selected

Confirm point source scenarios

- PS 4 and PS 5 thresholds undefined

Stormwater, nonpoint source, atmospheric deposition, in-lake/ecological

- What is the approach for developing scenarios (i.e., SC subgroups and in-kind, technical support contractor)?
- How many scenarios to evaluate?
 - Number of resulting scenarios should strike a balance between meeting information needs and level of effort (compounding scenarios)

Next steps

- Initiate point source scenario evaluation with POTWs
- Continue developing watershed model



Permit Implementation

Table # - Name	Line #	SC Decision Points	Scope Assessment
5 – Permit Implementation	21-25	<ul style="list-style-type: none">• Confirm approach for permitting (quantity, parameter, averaging period, etc.)• Evaluate need for water quality trading	<ul style="list-style-type: none">• Minimal existing scope, mostly out of scope

Confirm permitting approach

- Watershed based permitting vs. traditional approach?
- Parameters of concern (TP, DP, TN, TIN, etc.)?
- Load vs. concentration?
- Averaging periods?
- Others?

Determine approach to technical support

- DWQ and EPA guidance
- Subgroups
- Role of contractor support

Next steps

- DWQ acquire information from EPA





Scott Daly
Division of Water Quality
801-536-4333
sdaly@utah.gov