2024 Integrated Report on Water Quality

Prepared by Utah Department of Environmental Quality
Division of Water Quality

Table of Contents

Abbreviations

Abbreviation	Definition
<	less than
>	greater than
≤	less than or equal to
≥	greater than or equal to
AGRC	Automated Geographic Reference Center
ATTAINS	The Assessment, Total Maximum Daily Load, Tracking and Implementation System. This EPA-maintained database is an online system for accessing information about the conditions of the Nation's surface waters.
AU	assessment unit
Ca	calcium
CFR	Code of Federal Regulations
Chl-a	chlorophyll *a*
CWA	Clean Water Act
DEQ	Utah Department of Environmental Quality
DO	dissolved oxygen
DWQ	Utah Division of Water Quality
E	expected
E. coli	Escherichia coli
EPA	U.S. Environmental Protection Agency

ER	ecosystem respiration
g	grams
GIS	geographic information systems
GPP	gross primary productivity
GSL	Great Salt Lake
GRAMA	Government Records Access and Management Act
HAB(s)	harmful algal bloom(s)
HH	human health``````````````````````````````````````
HUC	hydrologic unit
IR	Integrated Report
kg	kilogram
L	liter
Mg	magnesium
mg	milligram
mg/kg	milligram per kilogram
mg/L	milligram per liter
mL	milliliter
MLID	monitoring location identifier
MPN	most probable number
NHD	National Hydrologic Dataset
O	observed
O/E	observed/expected

Pc	probability of capturing
ppm	parts per million
QA	quality assurance
QA/QC	quality assurance/quality control
QC	quality control
QAPP	quality assurance project plan
RIVPACS	River Invertebrate Prediction and Classification System
SAP(s)	sample analysis plan(s)
SD	standard deviation
SDD	Secchi disk depth
SOP(s)	standard operating procedure(s)
T	temperature
TDS	total dissolved solids
TMDL	total maximum daily load
TN	total nitrogen
TP	total phosphorus
TSI	trophic state index
UAC	Utah Administrative Code
UDOH	Utah Department of Health
USGS	U.S. Geological Survey
WMU	watershed management unit
WQP	(EPA's) Water Quality Portal

WQS	water quality standard
µg/L	microgram per liter

Figures

Tables

Executive Summary

Purpose

Section 305(b) of the Clean Water Act (CWA) requires states to submit a biennial report to the Environmental Protection Agency (EPA) on the quality of their waters. The 2024 Integrated Report (IR) prepared by the Utah Division of Water Quality (DWQ) to meet this federal requirement is a comprehensive analysis of the condition of the state's rivers, streams, canals, lakes, reservoirs, and ponds.

Section 303(d) of the CWA requires states to submit a list of waterbodies that do not meet the state's water quality standards as part of the IR. This list guides the state's development of water quality improvement plans (Total Maximum Daily Load plans or TMDLs) for impaired waterbodies to bring them into compliance with their beneficial uses and water quality standards.

The IR supports DWQ's commitment to protecting and improving the water quality of Utah's rivers, streams, canals, lakes, reservoirs, and ponds by providing critical information and thorough analyses of water quality conditions, waterbody impairments, statewide trends, and emerging issues. DWQ uses these data to identify areas with impairments and prioritize projects, TMDLs, and best management practices (BMPs) to improve and enhance water quality in affected areas.

Scope

The 2024 IR reports on 918 assessment units (AUs), over fifteen thousand perennial miles of rivers, streams, and canals, and nearly 1.5 million lake, reservoir, and pond acres. The water quality assessment data covers the period between October 1, 2016 and September 30, 2022 and includes updates from previous reports. The data used in the report were collected by DWQ, nine agencies, and numerous public and private stakeholder groups and individuals.

Methods

The State of Utah sets water quality standards that support designated beneficial uses for Utah's rivers, streams, canals, lakes, reservoirs, and ponds. These designations protect water quality for different uses, including drinking water, recreation, aquatic life, and agriculture. Waterbodies are protected for several combinations of beneficial uses, such as recreation and aquatic life.

Data Collection

The IR uses water quality data collected by DWQ and a number of public and private entities to determine whether assessed waterbodies in the state meet water quality standards and support their designated beneficial uses. Data submitted or obtained by DWQ during the IR data compilation process are integrated into DWQ's assessments and subject to DWQ's data management and quality assurance and quality control (QA/QC) processes. Datasets may include laboratory results for water chemistry sampling for conventional (e.g., temperature) and toxic (e.g., metals) parameters, monitoring data specific to lakes, reservoirs, ponds, or flowing surface waters, potential

causes of impairments, and macroinvertebrate surveys.

DWQ combines data from individual monitoring sites into a larger spatial scale or Assessment Unit (AU). The Division collects all readily available and credible water quality data for each AU and prepares the data for assessment. Data are assessed according to specific conventional and toxic parameters against beneficial use criteria established in state regulations. DWQ uses these data to categorize the state's assessment units to determine designated beneficial use attainment. The state uses five EPA-approved categories in its assessment determinations:

- Category 1: All beneficial uses attained.
- Category 2: Some beneficial uses attained but there are insufficient data to determine if all beneficial uses are supported.
- Category 3: Insufficient or no data to make a determination.
- Category 4: Impaired for one or more beneficial uses. Does not require the development of a TMDL because one has already been completed (4A), uses are expected to be attained within a reasonable timeframe (4B), or the impairment is not caused by a pollutant (4C).
- Category 5: Impaired for one or more beneficial uses by a pollutant. Requires the development of a TMDL.

Waters determined to be impaired are placed on the state's 303(d) list and prioritized for TMDL development. The TMDLs calculate the pollution reduction levels needed to support designated beneficial uses and meet water quality standards. Once a TMDL is completed and approved by EPA, the assessment unit covered under the TMDL is transferred from Category 5 (impaired) to Category 4A (approved TMDL in place).

Delistings

DWQ reviews the data submitted during the IR process to determine whether assessment units identified as impaired in previous IRs are now meeting their designated beneficial uses. If DWQ finds during its assessment that waterbodies previously listed as impaired are now meeting water quality standards, it provides a list of the sites proposed for removal from the 303(d) list (Category 5) in the report. DWQ can delist a previously impaired parameter, waterbody, or segment within a waterbody that is currently meeting water quality standards if it can demonstrate good cause to stakeholders and EPA. Good cause includes one or more of the following:

- The impairment was resolved through the implementation of nonpoint source projects and/or revised effluent limits.
- Revised water quality standards and/or beneficial uses put the waterbody into attainment of those standards and/or uses.
- A new listing method consistent with state water quality standards and classifications and federal listing requirements changed the previous listing.
- New data led to a reassessment that demonstrated that applicable standards and uses are being met.
- Flaws in the original analysis led to an incorrect listing.
- Improved modeling applications demonstrated that applicable standards and uses are being met.

AU Resegmentation

When site-specific assessments within a single AU conflict, DWQ may determine that it is appropriate to resegment (i.e. “split”) an existing AU polygon into two or more new AUs rather than aggregate those conflicting assessments into a single AU scale category. AUs where water quality criterion exceedances are clearly isolated

to a relatively small, hydrologically distinct portion of the larger AU may be re-segmented to more accurately reflect that variation in water quality. This results in a higher resolution and overall more accurate assessment. DWQ does not consider it appropriate to re-segment an AU when exceedances are observed in multiple locations throughout an AU, or where impaired sites are not hydrologically distinct from unimpaired portions of the AU.

Public Comment Process

DWQ engages its stakeholders early in the process as part of its ongoing commitment to work with the public to safeguard human health and protect and enhance Utah‘s waters. Communities and others affected by the decisions under CWA 305(b) and 303(d) are asked to participate in the IR process during three public involvement opportunities before the Division submits the IR to EPA.

1. Public Comment on Assessment Methods

   DWQ held a public comment period on the 303(d) Assessment Methods from October 24, 2022, to December 8, 2022, to solicit public input on the assessment methods for the 2024 IR. DWQ received comments from seven different individuals and groups for a combined total of approximately 28 unique comments. DWQ’s Response to Comments, as well as the comments submitted, are included in this document. .

2. Publicly Submitted Data Notification

   DWQ issues a formal public notification during each IR cycle through website postings and listservs requesting data and information that can be used for the assessment. Whenever possible, DWQ tries to obtain all data and information with sufficient time to compile the information during odd-numbered years. This provides the Division with adequate time to obtain clarification where necessary and ensures that outside sources of information are used to the greatest extent possible for IR assessments. The 2024 IR Call for Data ran for 30 days from March 28,2023 to April 28, 2023.

3. Public Comment on 305(b) and 303(d) Decisions

   DWQ provides another formal public notification at the end of the IR report writing process, requesting comments on the placement of AUs in the five categories. DWQ responds to the comments in a summary and can revise the IR based on the public’s feedback. Public comments and DWQ’s response are included in this document and submitted to EPA along with the 305(b) report and 303(d) listing decisions.

Findings

DWQ compiled all existing and readily available data and conducted designated beneficial use assessments to determine which waters in the state are supporting or not supporting these uses. The figures, charts, and graphs below offer a view of the state‘s perennial waterbody miles and acreage, areas and water quality parameters assessed, and waterbodies proposed for delisting.

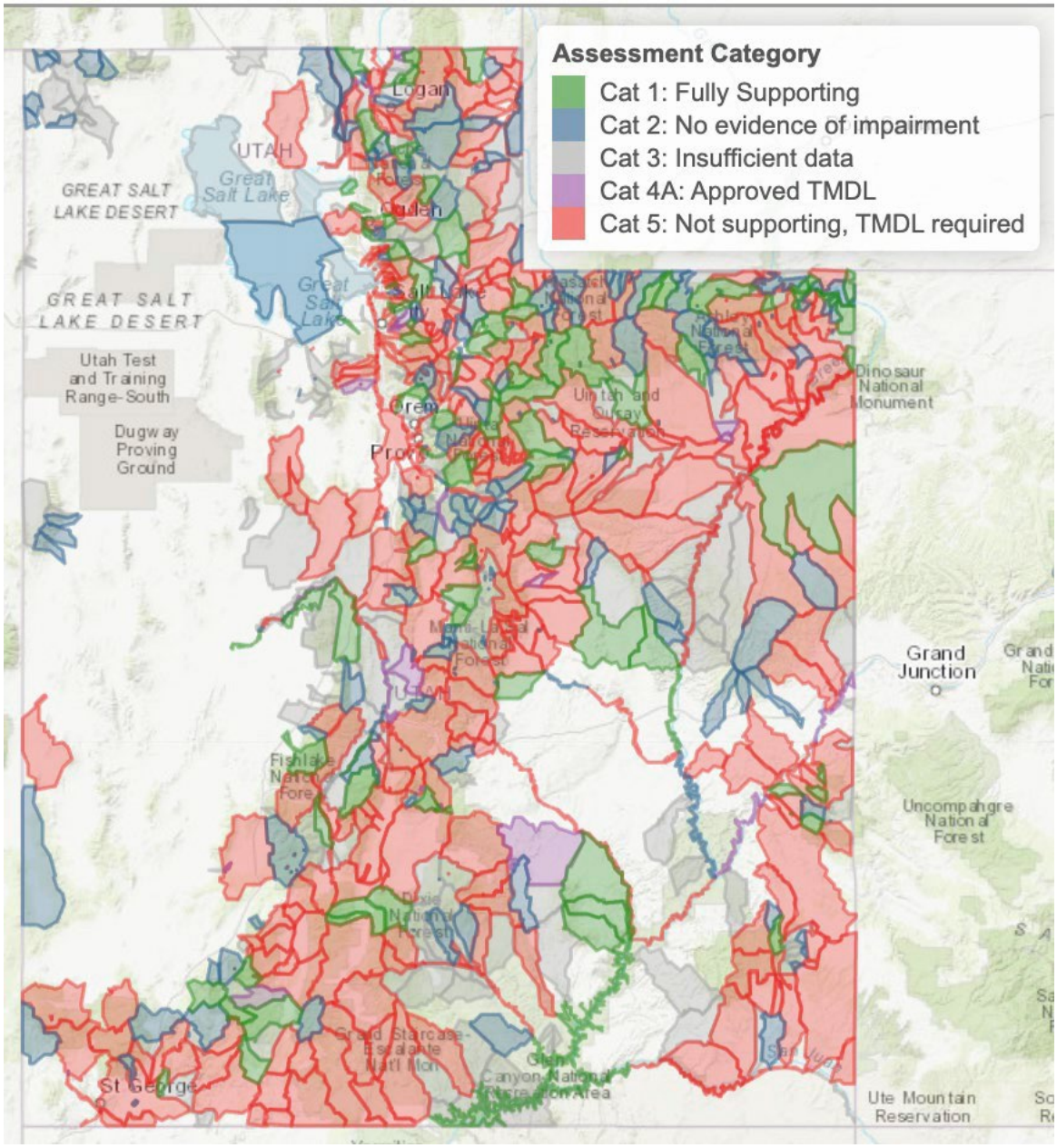

Figure 1. Utah's defined assessment units and assessment categories.

Assessment Totals

- Total AUs reported on: 918
- Total AUs fully supporting (Category 1): 101
- Total AUs with no evidence of impairment (Category 2): 184
- Total AUs with insufficient data (Category 3): 216
- Total AUs with a TMDL in place (Category 4A): 28
- Total AUs requiring a TMDL (Category 5): 389
- Number of data records assessed: 548,569 discrete samples, 2.4 million high frequency dissolved oxygen measurements

River, Stream and Canal Assessments

Assessments

- Total AUs reported on: 775
- Total perennial miles reported on: 15,820
- Total monitoring locations assessed and reported on during the period of record: 1,731

In 2024, 29% of assessment units (AUs) and 31% of perennial stream miles were supporting their designated beneficial uses or had no evidence of impairments (Figure 2, Figure 3). Conversely, the 210 AUs (27% of AUs) with insufficient data to make an assessment generally represent fewer than average perennial stream miles. River, stream, and canal AUs are most commonly impaired for dissolved oxygen, pH, and temperature, which make up 42% of 303(d) listings (Figure 4). A majority of these impairments indicate that the waterbody is not meeting its aquatic life beneficial use(s) (Figure 5).

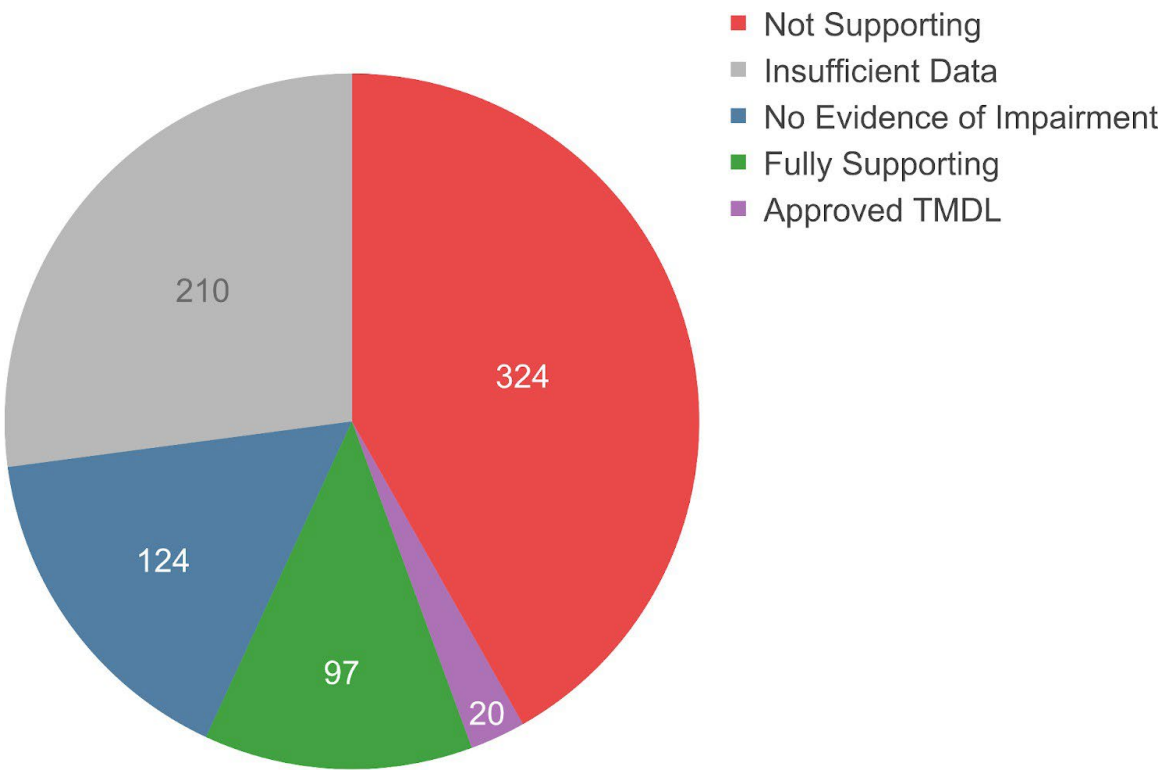

Figure 2. Proportion and number of river, stream, and canal AU's in each assessment category.

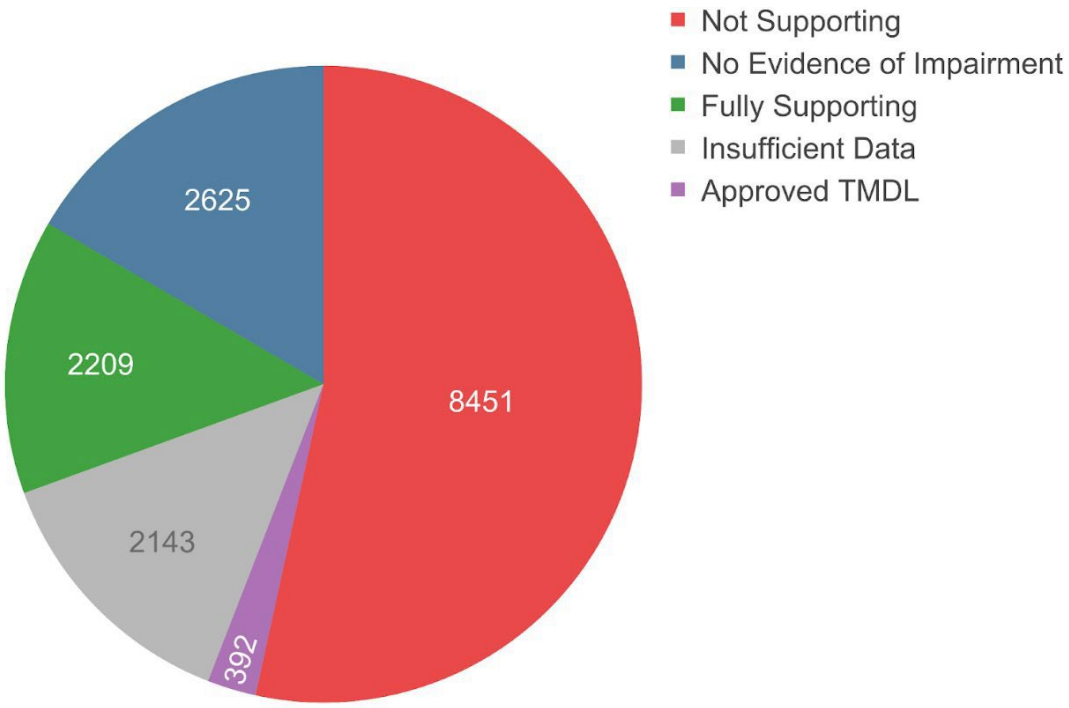

Figure 3. Proportion and number of perennial river, stream, and canal miles in each assessment category.

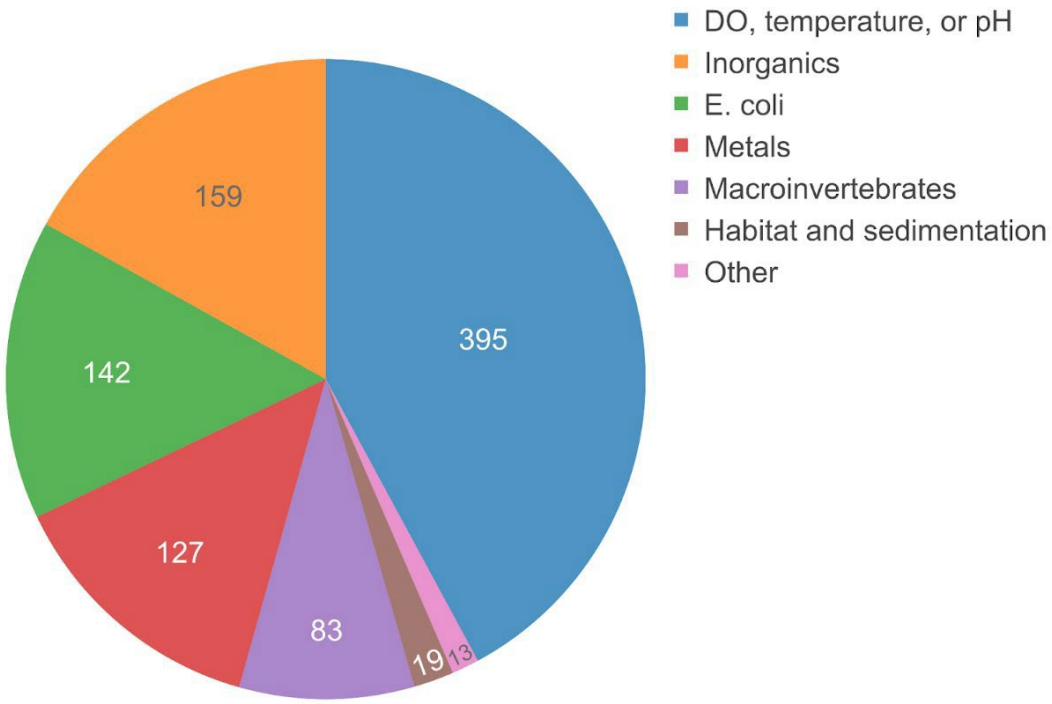

Figure 4. Proportion and number of river, stream, and canal AU impairments by parameter category. AU-parameters may be counted multiple times if impaired for multiple uses.

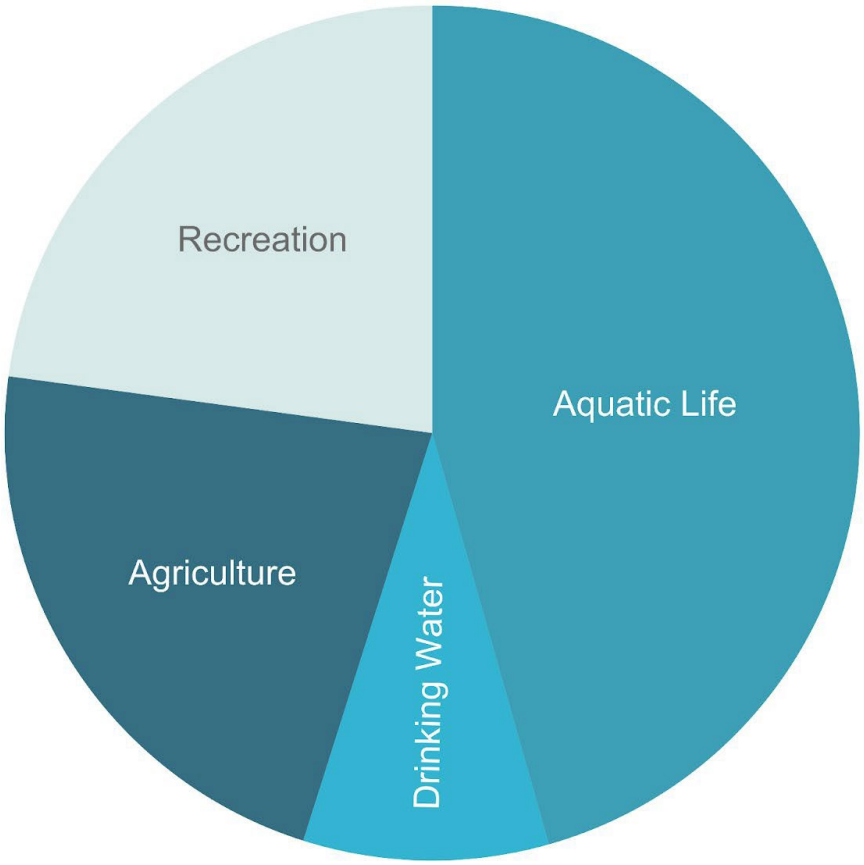

Figure 5. Pie chart of river and stream impairments by use type. Note, some AU impairments are represented twice because parameters may be impaired for multiple uses.

Lake, Reservoir, and Pond Assessments

Assessments

- Total AUs reported on: 143
- Total lake acres reported on: 1.47 million (includes Great Salt Lake at 1.1 million acres)

In lake, reservoir, and pond assessments, large discrepancies in the acreage represented by AUs led to striking differences in the percentage of AUs and acres in each assessment category. While 45% of AUs are not supporting one or more beneficial uses, that accounts for only 10% of total lake acres assessed (Figure 6, Figure 7). This is due to the overwhelming representation of the Great Salt Lake in acreage calculations. Additionally, 45% of AUs and 53% of total lake acres assessed are either fully supporting all designated uses or show no evidence of impairment. Similar to rivers and streams, a majority of impairments are linked to dissolved oxygen, pH, or temperature (Figure 8). The vast majority of impairments indicate that the waterbody is not meeting its aquatic life beneficial use(s) (Figure 9).

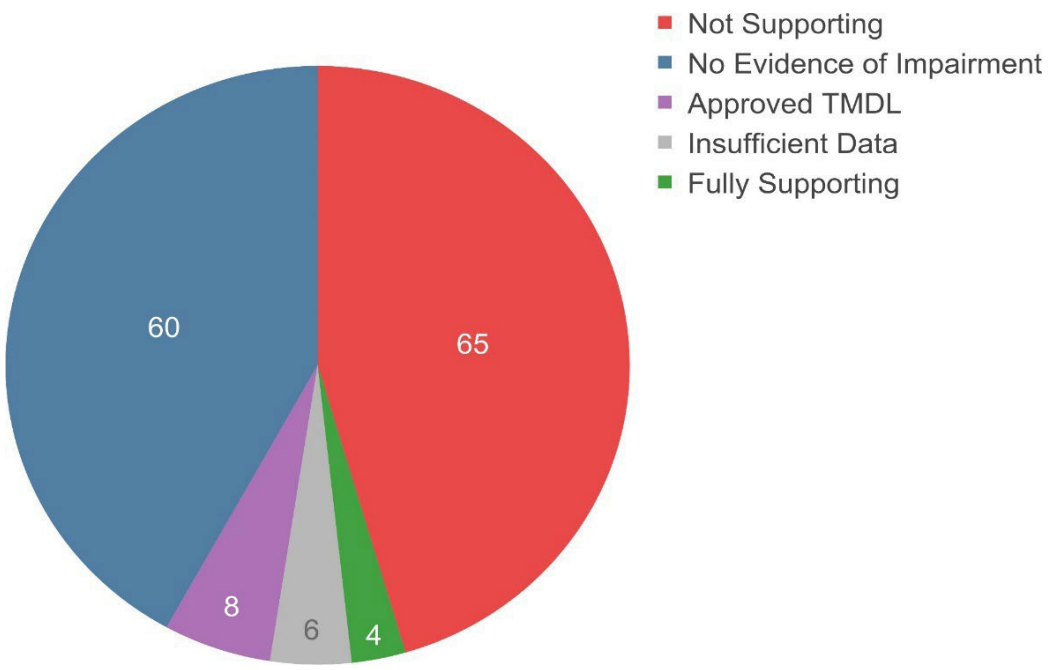

Figure 6. Proportion and number of lake, reservoir, and pond AU's in each assessment category.

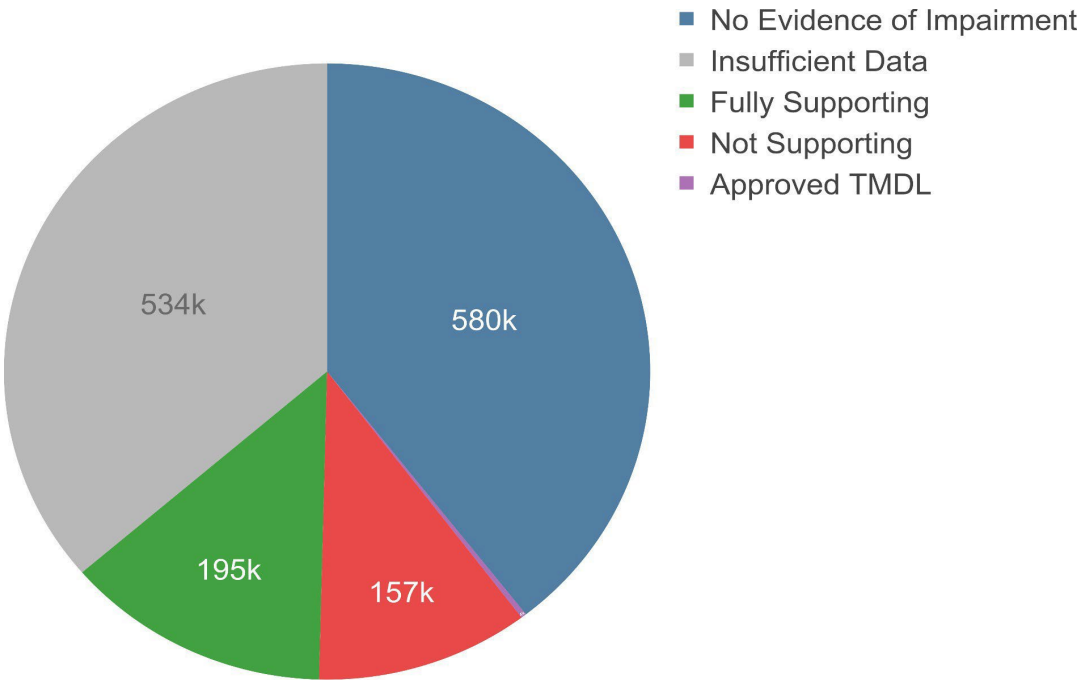

Figure 7. Proportion and number of lake, reservoir, and pond acres in each assessment category.

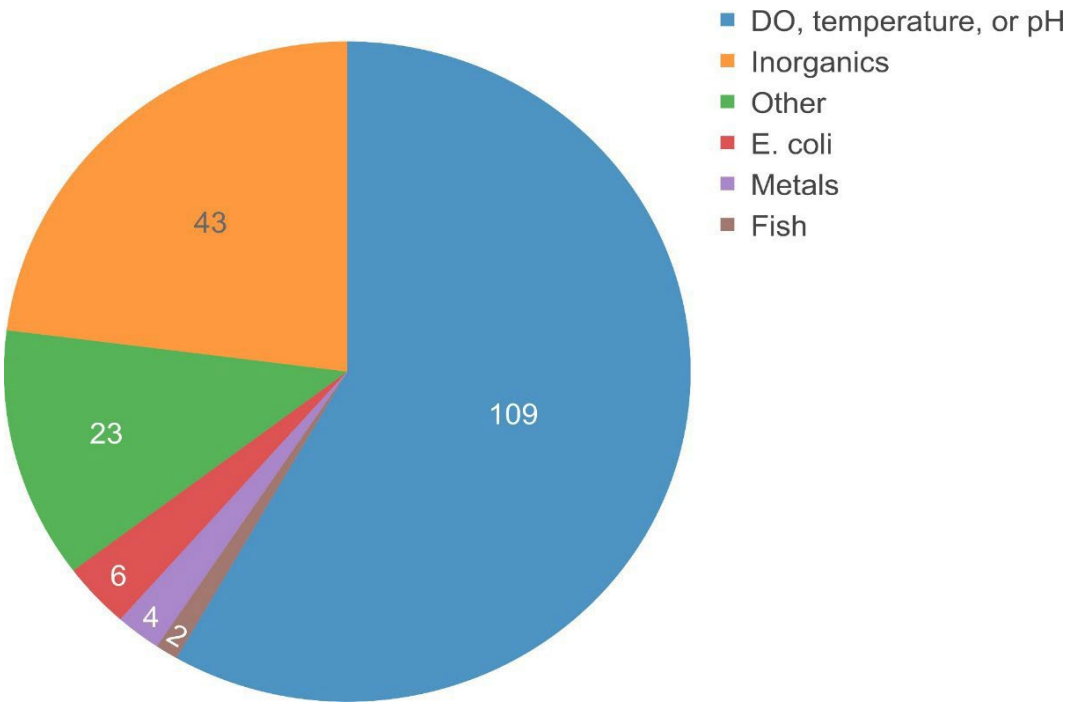

Figure 8. Proportion and number of lake, reservoir, and pond AU impairments by parameter category. AU-parameters may be counted multiple times if impaired for multiple uses.

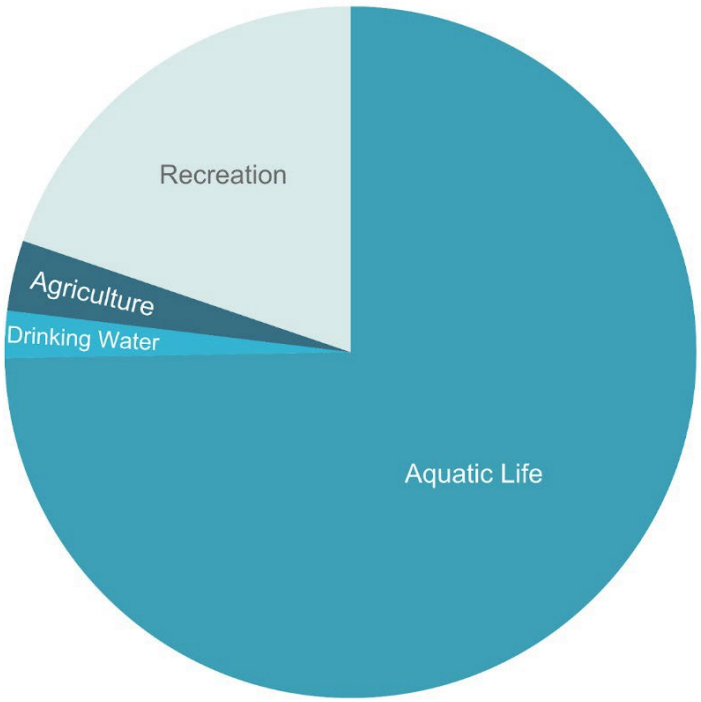

Figure 9. Pie chart of lake, reservoir, and pond impairments by use type. Note, some AU impairments are represented twice because parameters may be impaired for multiple uses.

Delistings

43 river and stream AUs were delisted for one or more parameters. Five lake and reservoir AUs were delisted for one or more parameters.

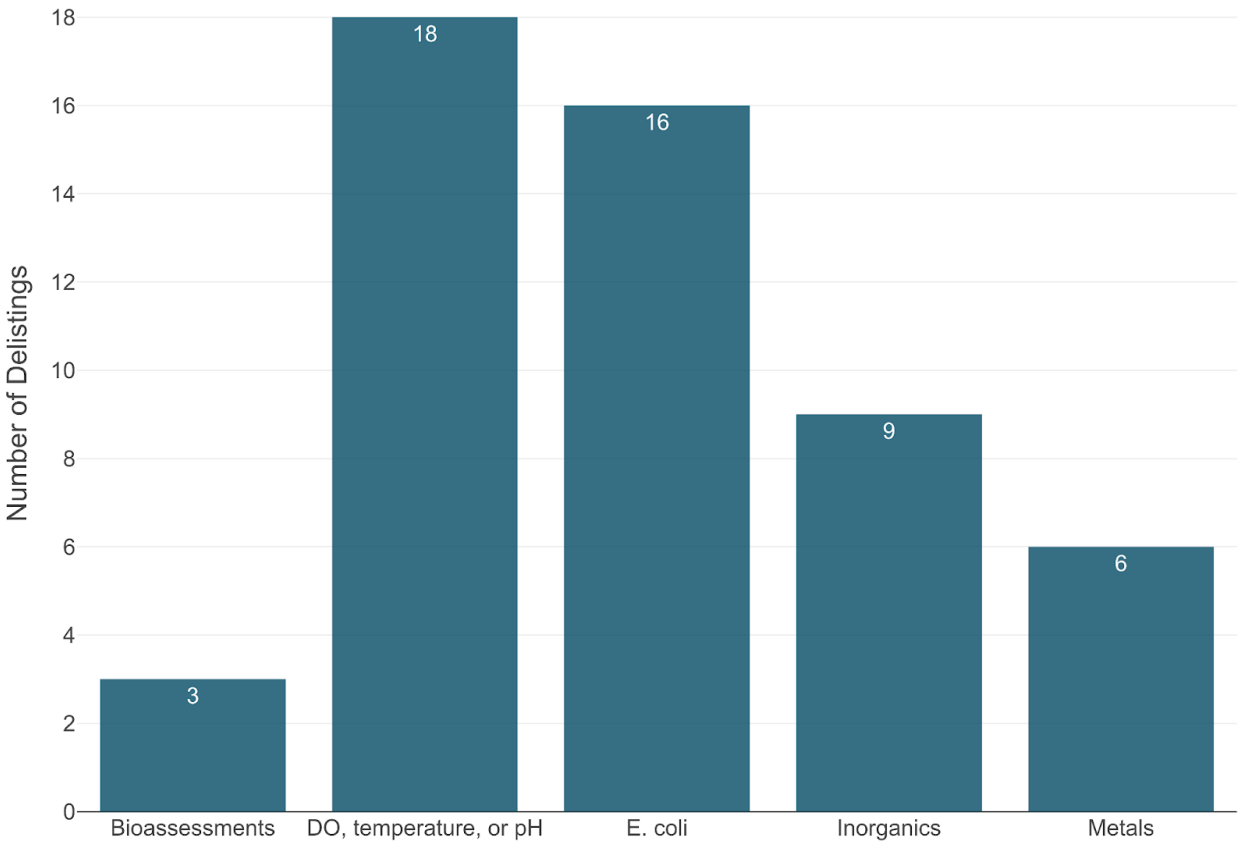

Figure 10. Number of delistings by parameter type across all assessed waterbodies. Some AUs have multiple parameters that were delisted.

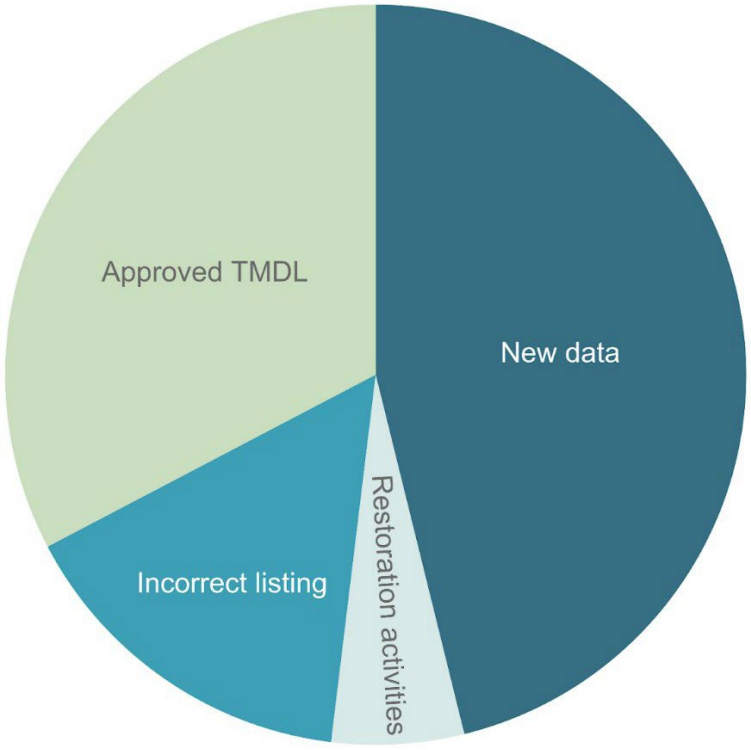

Figure 11. Pie chart of delisting reasons across all assessed waterbodies.

Recommendations

Priority Waters

The CWA requires the development of total maximum daily load (TMDL) plans for all impaired waterbodies on the 303(d) List but recognizes the limitations in data, time, and staff resources to accomplish this task. Taking these limitations into account, the CWA requires states to prioritize where they will dedicate resources toward TMDL development. From 2013-2023, DWQ prioritized water quality impairments that posed the greatest risk to human health as described in Utah's 303(d) Vision. These priorities focused on the protection and restoration of waters designated for culinary and recreational uses by focusing on pathogen impairments. This resulted in approved *E. coli* TMDLs for the North Fork Virgin River, Fremont River, Spring Creek in Heber, and the Jordan River watershed (14 subwatersheds).

In September 2022, EPA released the next iteration of the CWA Section 303(d) Vision that expects states to submit updated water quality priorities and goals to EPA by April 2024. Vision 2.0 includes the original programmatic goals with opportunities for protection and restoration of waters through planning and prioritization, restoration, protection, data and analysis, and partnerships. When program goal setting, states must also consider environmental justice, climate change, tribal water quality, program development and capacity building.

Utah's approach to water quality restoration planning for the next ten years will be determined through the use of EPA's Recovery Potential Screening (RPS) tool and a widely-distributed public survey on the uses and threats to Utah's waters. The Utah Prioritization 2.0 Approach will be submitted to EPA in April, 2024 and the prioritized list for water quality restoration plans (e.g.,TMDLs, Nine Element Watershed Plans, and Advance Restoration Plans) will be submitted to EPA in September, 2024.

Chapter 1 303(d) Assessment Methods

Introduction

The Clean Water Act and the Integrated Report

The rules and regulations of the federal Clean Water Act (CWA) require the Utah Division of Water Quality (DWQ) to report the condition or health of all Utah surface waters to the U.S. Congress every other year. The Integrated Report (IR) contains two key reporting elements defined by the CWA:

Statewide reporting under CWA Section 305(b): Section 305(b) reporting summarizes the overall condition of Utah's surface waters as well as key water quality concerns. These concerns can include pollutants, habitat alteration, and sources of water quality problems.

Water quality assessments under CWA Section 303(d): Section 303(d) requires states to identify waters that are not supporting beneficial uses according to state water quality standards (Utah Administrative Code [UAC] R317-2-7.1). Utah's Section 303(d) list (hereafter the 303(d) list) also prioritizes the total maximum daily loads (TMDL) required for each listed waterbody and the cause of nonattainment. This list includes waters impaired as a result of nonpoint sources, point source discharges, natural sources, or a combination of sources.

In addition to Utah's 303(d) list, DWQ also identifies

- Waterbodies meeting water quality standards
- Waterbodies with water quality problems that DWQ cannot confirm due to insufficient sample size, uncertainty regarding the nature of the data or other factors
- Waterbodies either currently addressed by DWQ through a TMDL or other pollution-control mechanism

Full descriptions of these and other U.S. Environmental Protection Agency (EPA)-identified waterbody assessment classifications are described and summarized in Table 1 .

Assessment Categories for Surface Waters

DWQ uses five categories defined by EPA to assess surface waters of the state (EPA, 2005). These categories are described in Table 1.

Table 1. U.S. Environmental Protection Agency categorization of assessed surface waterbodies for Integrated Report purposes.

EPA Assessment Category	Assessment Category Description
1	**Supporting.** All beneficial uses assigned to a waterbody are evaluated against one or more numeric criteria and each use is found to meet applicable water quality standards.
2	**No Evidence of Impairment.** Some, but not all, beneficial uses assigned to a waterbody are evaluated against one or more numeric criteria, and each assessed use is found to meet applicable water quality standards.
3	**Insufficient Data and/or Information.** There are insufficient data and information to conclude support or nonsupport of a use. The category may be applied when: (1) the dataset is smaller in size and has water quality criteria exceedances OR no water quality criteria exceedances; (2) a secondary review applied to a waterbody found it was not meeting water quality standards; (3) water quality criteria and/or beneficial use support assessment methods are not yet developed (or are undergoing development or revisions) so use attainment has not been determined; (4) waterbodies were assessed against water quality parameters and characteristics that require further investigations as defined in UAC R317-2; (5) assessment units (AUs) have improper use designations, lack use designations, or contain other inconsistencies in the dataset. In cases where no recent data are available, historic-listing determinations will be maintained.
4A	**TMDL-Approved**. Waterbodies impaired by a pollutant with a TMDL(s) developed and approved by EPA. Where more than one pollutant is associated with the impairment, the waterbody and the parameters that have an approved TMDL are listed in this category. If a waterbody has other pollutants that need a TMDL, the waterbody is listed in Category 5 with an Approved TMDL.
4B	**Pollution Control**. Waterbodies that are not supporting designated uses where other pollution-control requirements, such as best management practices required by local, state, or federal authority, are stringent enough to bring the waters listed in this category back into attainment in the near future with the approved pollution-control requirements in place, consistent with 40 Code of Federal Regulations (CFR) 130.7(b) (I) (ii) and (iii). All waterbodies placed in this category must have a pollution control requirement plan developed and approved by EPA. Similar to Category 4A, if the waterbody has other pollutants that need a TMDL, or there is already a TMDL in place for another pollutant, the waterbody may also be listed in Categories 5 and 4A. Therefore, an AU with a pollution control in place may be listed in Categories 4B, 4A, and 5.
4C	**Non-Pollutant Impairment**. Waterbodies not supporting designated uses are placed in this category if the impairment is not caused by a pollutant but rather by pollution (for example, hydrologic modification or habitat degradation). Similar to Categories 4A and 4B, if the waterbody has other pollutants that need a TMDL, or there is an approved TMDL or pollution-control mechanism in place, the waterbody may also be listed in Categories 4A, 4B, and 5. Therefore, an AU with a pollution control in place may be listed in Categories 4C, 4B, 4A, and 5.
5	**Not Supporting**. The concentration of a pollutant or several pollutants exceeds numeric water quality criteria, or beneficial uses are not-supporting based on violation of the narrative water quality standards. Waterbodies identified as “threatened” may also be placed in this category. In a “threatened” waterbody, one or more of its uses are likely to become impaired by the next IR cycle and water quality may be exhibiting a deteriorating trend if pollution control actions are not taken. Both impaired and threatened waterbodies constitute Utah’s formal Section 303(d) list and are prioritized for future TMDL development.
5-Alt	**TMDL Alternatives**. The 303(d) program vision promotes the identification of alternative approaches to TMDL development for impaired waters where these approaches would result in a more rapid attainment of water quality standards. Note: This category is referenced in DWQ’s “303(d) Vision Document.”

Utah's Numeric Criteria and Beneficial Uses

DWQ assesses the impacts of measured pollutant concentrations on environmental and human health to determine the appropriate assessment categories for a waterbody (see Table 1). Utah has developed and adopted water quality numeric criteria (chemical concentrations that should not be exceeded) to protect the water quality of surface waters and the uses these waterbodies support (UAC R317-2-14). As noted in UAC R317-2-14, the water quality criteria for a pollutant can vary depending on the beneficial use assigned to a waterbody.

Utah adopted beneficial use classifications that identify the use and value of a waterbody for source water for domestic water systems, aquatic wildlife, recreation, agriculture, and Great Salt Lake (see UAC R317-2-6). DWQ currently designates five beneficial use classes of surface waters within the state:

- Class 1. Protected for use as a raw water source for domestic water systems
- Class 2. Protected for recreational use and aesthetics
- Class 3. Protected for use by aquatic wildlife
- Class 4. Protected for agricultural uses including irrigation of crops and stock watering
- Class 5. The Great Salt Lake (GSL)

Subclassifications for several of these categories are further defined in Table 2.

Table 2. Subclassifications of Utah's beneficial uses.

Beneficial Use Subclassification	Use Definition
1C*	Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water
2A	Protected for frequent primary contact recreation where there is a high likelihood of ingestion of water or a high degree of bodily contact with the water. Examples include, but are not limited to, swimming, rafting, kayaking, diving, and water skiing.
2B	Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.
3A*	Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.
3B*	Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.
3C*	Protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain.
3D*	Protected for waterfowl, shore birds and other water-oriented wildlife not included in Classes 3A, 3B, or 3C, including the necessary aquatic organisms in their food chain.
3E*	Severely habitat-limited waters. Narrative standards will be applied to protect these waters for aquatic wildlife.
4	Protected for agricultural uses including irrigation of crops and stock watering.
5A	**Gilbert Bay** Geographical Boundary: All open waters at or below approximately 4,208-foot elevation south of the Union Pacific Causeway, excluding all of the Farmington Bay south of the Antelope Island Causeway and salt evaporation ponds. Beneficial Uses: Protected for frequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain.

Beneficial Use Subclassification	Use Definition
5B	**Gunnison Bay** Geographical Boundary: All open waters at or below approximately 4,208-foot elevation north of the Union Pacific Causeway and west of the Promontory Mountains, excluding salt evaporation ponds. Beneficial Uses: Protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain.
5C	**Bear River Bay** Geographical Boundary: All open waters at or below approximately 4,208-foot elevation north of the Union Pacific Causeway and east of the Promontory Mountains, excluding salt evaporation ponds. Beneficial Uses: Protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain
5D	**Farmington Bay** Geographical Boundary: All open waters at or below approximately 4,208-foot elevation east of Antelope Island and south of the Antelope Island Causeway, excluding salt evaporation ponds. Beneficial Uses: Protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain.
5E	**Transitional Waters along the Shoreline of the Great Salt Lake** Geographical Boundary: All waters below approximately 4,208-foot elevation to the current lake elevation of the open water of the Great Salt Lake receiving their source water from naturally occurring springs and streams, impounded wetlands, or facilities requiring a UPDES permit. The geographical areas of these transitional waters change corresponding to the fluctuation of open water elevation. Beneficial Uses: Protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain.
***Footnote: There are human health (HH) criteria associated with these beneficial uses (see UAC R317-2-14). For uses with a HH criteria, (see Table 2.14.6 in UAC R317-2-14), the following use notation will be used in 303(d) data and assessment reports: HH1C, HH3A, HH3B, HH3C, and HH3D.**	

Every beneficial use with numeric criteria and credible and readily available data is assessed and reported for 303(d) assessment purposes. DWQ does not just assess and report on the most environmentally protective criterion and/or use for a parameter and waterbody. Where waterbodies are unclassified and do not have assigned beneficial uses in DWQ data records, DWQ may assign default beneficial uses as articulated in UAC R317-2-13.9,13.10,13.11,13.12, and 13.13. Alternately, these undefined waterbodies may be classified as an EPA Assessment Category 3 or not reported in the IR if an Assessment Unit has not been established.

For more information on how DWQ develops, adopts, and updates the numeric criteria and beneficial uses in UAC R317-2, please refer to DWQ's Standards website.

Assessed Parameters

Water quality assessments may not report on all parameters listed in UAC R317-2-14. Assessments reflect parameters with adopted numeric criteria that also have readily available and credible datasets from the period of record. Monitoring and data availability for pollutants listed in UAC R317-2-14 may be constrained by:

- Laboratory resources that limit the ability to assess all parameters in UAC R317-2-14
- Significant monitoring and/or analytical costs associated with processing a sample or measuring a pollutant
- Logistical constraints due to monitoring location and holding times for certain parameters

Assessment Process and Time Frames

Developing the Methods

This document describes the most up-to-date assessment methods that will be applied to Utah's current IR cycle. Although most of the methods described have been applied in past assessment cycles, other methods are new or modified from previous reporting cycles. Some of the assessment method revisions are intended to clarify ongoing DWQ practices. Other more substantive revisions may be based on comments that were raised during the previous IR's 303(d) assessment methods and draft IR public comment periods.

DWQ updates and revises the 303(d) methods when concerns are raised or when program developments are released by DWQ. Additional modifications or clarifications to the assessment methods may also be made based on feedback provided by EPA during and after a reporting cycle or from the EPA's cycle-specific 303(d) guidance memorandum.

All changes made to the 303(d) assessment methods are typically reviewed and updated on even-numbered years in anticipation of developing the Draft IR and 303(d) list in the following odd-numbered year. This process allows DWQ to consider comments and suggestions on assessment methods before a formal analysis is conducted. This reduces the need to rework analyses from changes in methods.

Public Review of the Methods Process and Schedule

The development and acceptance of the Assessment Methods includes a public review process and occurs on the following schedule:

a. DWQ releases the proposed Assessment Methods for a 30-day public comment period. The notice for public comments on the Assessment Methods are advertised on DWQ's News and Announcements webpage, DWQ's Public Notices webpage, and Utah's Integrated Report program webpages.
b. DWQ compiles and responds to the comments received within the 30-day public comment period. DWQ's responses to comments are posted on the Utah's Integrated Report program webpages.
c. If substantial revisions to the Assessment Methods are adopted by DWQ based on comments received in the public comment period, DWQ has the discretion to hold a second public comment period of 30 days or less. Should DWQ proceed with a second public comment period, notifications will be advertised, at a minimum, on DWQ's News and Announcements and/or Public Notices webpages, and the Utah's Integrated Report program webpages.
d. Following the conclusion of the public comment period(s), DWQ posts responses to comments on the Utah's Integrated Report program webpages. Any changes or additions that were made in response to public comments will be documented and issued with the draft IR and 303(d) list. During the draft IR public comment period, comments on the Assessment Methods are considered out of scope unless otherwise indicated.

Concerns and comments not received through the above processes may not be considered for current and future 303(d) methods, updates and modifications.

Call for Readily Available Data and Schedule

DWQ issues a request for all readily available data (i.e., the IR Call for Data) after November 1 of even-numbered years.

Existing and Readily Available Data Defined

DWQ assembles and evaluates all existing and readily available data to determine whether a waterbody is supporting or not supporting the assigned beneficial uses and numeric criteria in UAC R317-2 as mandated in 40 CFR 130.7(b)(5). For the purposes of the IR, existing and readily available data may include:

- Data and information referenced in 40 CFR 130.7(b)(5)(i),(iii), and (iv)
- Data collected by DWQ or DWQ cooperators for assessment purposes
- Data collected for other DWQ programs, such as waste load allocations, TMDL development, watershed planning, and use attainability analyses
- Data collected for narrative assessments (see Narrative Assessment: Biological Assessments and Narrative Standards for All Waters)
- Data obtained through EPA's Water Quality Portal (WQP)
- Data and information obtained through the IR's public Call for Data
- Data and information submitted to EPA's Water Quality Exchange System or DWQ's Call for Data to support a credible data submission (e.g., Table 5-8)
- Data included in the Data Types Matrix in Table 10

Data and information (as described above) that are not brought forward during the IR's Call for Data or presented to DWQ in accordance with the schedule as outlined in this document and on Utah's Integrated Report program webpages will not be treated as readily available for the purpose of assessment decisions during the current assessment cycle.

Data that are submitted to DWQ or obtained by DWQ during the IR data compilation process are integrated into DWQ's assessments as described in Table 3 and subject to DWQ's data management and quality assurance/quality control (QA/QC) processes. Should any data and information not be included in the assessment process, DWQ will clearly document which dataset (or datasets) were not included and why (as described and required in 40 CFR 130.7(b)(6)(iii)

Table 3. DWQ's data-availability matrix.

Data Availability	Description	Processing required	Uses for Assessments
Readily available	Data are incorporated into EPA's WQP database and can interface directly with DWQ's IR data processing and assessment tools. Data is submitted by stakeholders or data submitters through DWQ's data submission templates or electronic submission processes which are provided on the Call for Data webpage.[1,2]	None	Fully incorporate into DWQ's assessment tools
	Additional "other" sources of data included in the Data Types Matrix in Table 10 that described the waterbodies in 40 CFR 130.7(b)(5)(i), (iii), and (iv) and are submitted through DWQ's electronic submission process as described on the Call for Data webpage.	None	Fully incorporate into DWQ's Conflicting Assessments of Water Quality Standards and Secondary Review processes
Readily available (additional processing may be required by DWQ)	Quantitative data and information may be stored in and routinely uploaded to a queryable, regularly maintained database that is available on the web or electronically submitted to DWQ during the public call for data. Database format is consistent and allows repeatable queries with predictable results (e.g., parameter names, location descriptions, and parameter units are consistent), making development of automated interface tools practicable.	Full incorporation into IR assessment tools requires DWQ development of interface tools for aggregating, translating, and harmonizing data to appropriate formats. In particular, sampling locations and dates, parameter names, fractions, units, analysis methods, and detection limits require translation and interpretation prior to assessment.	Fully incorporate into IR assessment tools if interface tools have been developed.[2] If interface tools are still in the development phase, (1) screen data for exceedances for the waterbodies described in 40 CFR 130.7(b)(5)(i), (iii), and (iv), or (2) manually assess data for specific sites, dates, and parameters at the request of stakeholders or data submitters for waterbodies described in 40 CFR 130.7(b)(5)(i), (iii), and (iv). Results are fully incorporated into DWQ's Conflicting Assessments of Water Quality Standards and Secondary Review.

[1] DWQ data submission templates and processes are designed to allow for data and information that may not fit the data structure of EPA's Water Quality Exchange System. They may also be used to support a credible data review (Tables 5-8) or perform narrative or high frequency data assessments.

[2] DWQ requests data submitters inform the Division which data system contains their data so DWQ can work with submitters prior to the IR's Call for Data to develop interface tools.

Developing the Components of the Draft Integrated Report and 303(d) List

DWQ reviews all data and assigns a credible data "grade" following its response to public comments on the draft 303(d) Assessment Methods and compilation of all existing and readily available data. All non-rejected, credible data are then assessed. The final 303(d) Assessment Methods, 305(b) Summary, and 303(d) List of Impaired Waters are the minimum reporting elements included in the Integrated Report. These reporting elements are available for public review and comment.

Final 303(d) Assessment Methods

The final version of the publicly-vetted 303(d) Assessment Methods, including any changes or additions made in response to the Assessment Method public comment period(s) is posted on the Utah's Integrated Report program webpages.

305(b) Summary

This summary, at a minimum, will address the following elements for previous and new or updated assessments:

- A unique identifier assigned to the Assessment Unit
- The name and location description of the Assessment Unit
- An indicator of whether the Assessment Unit is currently active, or if the Assessment Unit identifier was retired and being kept for historical tracking purposes and is part of an Assessment Unit history of another Assessment Unit
- The waterbody type for the Assessment Unit
- The size and the unit of measure for the assessed waterbody type
- The EPA-defined assessment category for each defined and evaluated Assessment Unit

303(d) Assessment Results

At a minimum, the following information will be provided for previous and new or updated assessments:

- The minimum elements discussed above in the 305(b) Summary
- The cycle the Assessment Unit was last assessed, which can include any conclusions related to this Assessment Unit and delisting decisions (if appropriate)
- The beneficial use(s) designated to the Assessment Unit and the EPA-defined assessment categories associated with the beneficial use after assessment
- The name of the parameter assessed, the beneficial use associated with the assessed parameter, and the EPA-defined assessment category status for the parameter and beneficial use
- A flag indicating whether or not the cause of the attainment status is a pollutant
- The IR cycle the Assessment Unit was first listed for a cause
- The reason(s) for identifying the delisting of a waterbody

305(b) Summary and 303(d) Assessment Metadata

DWQ will provide (at a minimum) the following supporting information and documentation as referenced in CFR 130.7 (b)(6) to support its decision to list or not list waters:

- A description of, and access to, the data records and information used in the IR's current period of record

- A rationale for, and access to, any data and information that was obtained or submitted to DWQ during the call for data but did not meet DWQ's readily available or credible data requirements and was not used for 305(b) and 303(d) assessments
- A rationale for, and access to, any rejected data records and information

For archiving purposes and to assist with the review of the IR and 303(d) List, DWQ will also provide the following as time and resources allow:

- The assessment method type and the assessment method context as defined in ATTAINS
- Geolocation information on the waterbodies assessed
- The date and version of UAC R317-2 used in the assessment cycle
- The list of approved TMDLs used in the assessment cycle
- An executive summary of the Final IR results

Note: In odd-numbered years, DWQ will "freeze" and establish file versions of several working files to maintain consistency and data integrity. These files include geographic information system (GIS) point files of monitoring locations, layers of AUs, beneficial uses, and water quality standards.

Public Review of the 303(d) List

There will be a formal public review process for the IR and 303(d) list using the following steps:

a. Any person who has a pollution-control mechanism plan for a waterbody and would like to submit that plan for consideration and EPA approval as a Category 4B must submit that information to DWQ by July 1 of even-numbered years (Appendix 4). If approved by DWQ, this information will then be submitted to EPA for review and final approval. It should be noted, however, that it takes a long time for successful Category 4B determinations to receive EPA approval and they may not be received in time to be included in the current IR cycle.
b. Waters and pollutants that are considered for a potential Category 4A (approved TMDLs) must be approved by DWQ's Water Quality Board per UAC R317-1-7 and by EPA per 40 CFR 130.7 by July 1 of odd-numbered years. TMDLs that are approved by DWQ and EPA after that date will be considered in future IRs.
c. DWQ will release the proposed IR and 303(d) list for a 30-day public comment period after July 1 of odd-numbered years and no later than February 1 of even-numbered years. At a minimum, the notice for public comments on the IR will be advertised on DWQ's News and Announcements and/or Public Notices webpages, and the Utah's Integrated Report program webpages.
d. Stakeholders who wish to submit data for listing or delisting considerations are encouraged to submit that data and information during the Utah's IR program's Call for Data. However, DWQ may consider data that are submitted during the public comment period of the draft IR and 303(d) list when the commenter can show that submitted data could result in a change to a specific waterbody assessment decision. Data that are submitted during the public comment period for the draft IR must be submitted in the format articulated in this document and on the IR Call for Data website and be of Grade A or B quality to be used in an assessment decision (see Tables 5-9). Information submitted during the public comment period will undergo a secondary review (see Secondary Review and Appendix 2).
e. DWQ will compile and respond to comments that were received within the 30-day public comment period after the close of the public comment period.
f. DWQ may offer a second public comment period of 30 days or fewer if substantial revisions to the IR and 303(d) list are adopted on the basis of comments received during the first public comment period. Should DWQ proceed with a second public comment period, notifications will be advertised, at a minimum, on DWQ's News and Announcements and/or Public Notices webpages, and the Utah's Integrated Report program webpages.
g. DWQ will submit a response to the public comments that were received during the 30-day public comment period and a final version of the IR and 303(d) list to EPA for final approval no later than April 1 of even-numbered years. DWQ will post a status update on the Utah's Integrated Report

program's webpages to let stakeholders know that a final IR was submitted to EPA for final approval. Any concerns or rebuttals from stakeholders regarding the IR will not be considered for the recently submitted IR after the submission of the IR to EPA for final approval. If stakeholders continue to have concerns with the IR and 303(d) list, they should submit their comments during the next IR cycle.

h. EPA has 30 days to approve or disapprove the 303(d) list after receiving DWQ's formal submission letter, IR chapters, 303(d) list, categorization of non-303(d) waterbodies, public comments received and DWQ's response to them, delisting tables and justifications, list of approved TMDLs/pollution-control mechanisms, and GIS files of all assessment results. If EPA disapproves a state 303(d) list, EPA has 30 days to develop a new list for the state, although historically EPA has rarely established an entire list for a state. EPA may also partially disapprove a list because some waters have been omitted, and EPA may add these waters to the state's list. If EPA's final approval of the IR takes longer than the timeframe identified above, DWQ will post updates on Utah's Integrated Report programs webpages.

i. Any concerns and comments not received by DWQ through the above processes will not be addressed in the IR.

Finalizing the Integrated Report and 303(d) List

DWQ will release the following information on the Utah's Integrated Report program webpages following approval by EPA:

- A final version of 303(d) Assessment Methods, including the public comments received and DWQ's response to comments
- Final IR chapters and 303(d) lists, including public comments received, DWQ's response to comments, all assessment information considered and evaluated in the finalization of the IR and 303(d) list, and a GIS file of the final assessments and 303(d) list

EPA maintains a database of state IR results and TMDL status. Additional information not available on Utah's Integrated Report program's webpages may be obtained through a Government Records Access and Management Act request. These requests can be submitted at any time.

Scope of the Assessment

Waters of the State

As defined in UAC R317-1-1, DWQ characterizes waters of the state as follows:

… all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this state or any portion thereof, except that bodies of water confined to and retained within the limits of private property, and which do not develop into or constitute a nuisance, or a public health hazard, or a menace to fish and wildlife, shall not be considered to be "waters of the state" under this definition (Section 19-5-102).

For 303(d) assessment purposes, DWQ reports on the following waterbodies:

- Rivers and streams
- Canals as identified in site-specific standards or named in the list of waters with designated use classifications in UAC R317-2
- Lakes, reservoirs, and ponds

All other waters are currently reported through other programs within DWQ. For more information on these waterbodies and their reports, please visit DWQ's website.

Waterbody Types

Utah assesses surface waters of the state at the monitoring-site level and then summarizes the site-level assessments at a larger spatial scale (the Assessment Unit (AU) scale). DWQ uses the descriptions in Table 4 to determine appropriate assessment sites and categorize monitoring locations.

Table 4. Assessed waterbody types used for categorizing monitoring locations.

Assessed Waterbody Type	Description
Rivers and streams*	Perennial and intermittent surface waters are included in this type. Springs and seeps are also included in this waterbody type, provided they are flowing and connect, contribute, or are influencing water quality in a downstream river or stream.
Canals (general, irrigation, transport, or drainage)*	A human-made water conveyance with flowing water. Note: Canals are only assessed when identified in the site-specific numeric criteria in UAC R317-2-14 or are named in the list of waters with designated use classifications in UAC R317-2-13.
Lakes, reservoirs, and ponds*	An inland body of standing fresh or saline water that is generally too deep to permit submerged aquatic vegetation to take root across the entire body. This type may include expanded parts of a river or natural lake, a reservoir behind a dam, or a natural or excavated depression containing a waterbody without surface water inlet and/or outlet.
***Footnote: Sites associated with these waterbody types that have readily available and credible data are also subject to secondary reviews as described in the Secondary Review section and Appendix 2.**	

Assessment Units

Assessment Unit Delineation and Identification

Surface waters identified for 303(d) assessments are delineated into discrete units called assessment units (AUs). AUs identify waters of the state assessed for support of their designated beneficial uses. Lakes, reservoirs, and ponds are delineated as individual AUs, and their size is reported in acres. Flowing surface waters of the state and canals are delineated by specific rivers or one or more surface water reaches in subwatersheds, and their size is reported in perennial stream miles.

Additional Guidelines for Delineating Assessment Units

DWQ follows the guidelines listed below when delineating AUs for flowing surface waters of the state. The first two guidelines are fixed rules.

- The entire AU is within a single 8-digit USGS HUC.
- With few exceptions, each AU comprises reaches with identical designated beneficial use classifications. For example, a waterbody that has beneficial uses of Class 1C, 2B, and 3A in one portion and Class 2B and 3B in another portion would have at least two distinct AUs because of the difference in beneficial use classifications.
- Large flowing surface waters of the state, such as the Green River, Colorado River, and portions of other large rivers (e.g., the Bear River and Weber River) are delineated into "linear" or "ribbon" AUs containing no

tributaries. Where a major tributary enters these rivers, or hydrological features such as dams exist, the river is further delineated into two or more AUs.

- Tributaries and headwaters were delineated primarily using the 5th- and 6th-level HUC boundaries to define the AUs.
- Additional AUs were defined by combining or splitting 5th- or 6th-level watersheds using hydrological and ecological changes such as geology, vegetation, or land use.
- Small tributaries to larger flowing surface waters that could not be incorporated into a watershed unit are combined into separate, unique AUs.
- AU boundaries generally follow hydrologic units, but may also be delineated to reflect beneficial use designation changes, major tributaries or other observed hydrologic or chemical changes, administrative boundaries such as at some U.S. Forest Service boundaries, or notable road crossings as stated in water quality standards at UAC R317-2-13.

Individual AUs for flowing surface waters of the state are assigned a unique identification code for indexing. Each AU identifier begins with the prefix “UT,” before the associated 8-digit HUC, followed by a 3-digit DWQ sequential number, and finally a two-digit sequential number indicating whether the AU is the result of resegmentation of a parent AU. Similarly, lake, reservoir, and pond AUs are identified by adding the prefix “UT-L-” to the 8-digit HUC, followed by a 3-digit sequential number, and finally a two-digit sequential number indicating whether the AU is the result of resegmentation of a parent AU.

Figure 12 provides an example of how DWQ uses these guidelines to delineate and identify AUs within a major watershed. The Weber River is delineated as a linear AU from its confluence with Chalk Creek upstream to the Wanship Dam and designated as UT16020101-017_00. South Fork Chalk Creek (UT16020101-011_00) in the Chalk Creek watershed is delineated by combining two 12-digit HUCs comprising the South Fork Chalk Creek sub-basin. The first AU (UT16020101-010_00) in the Chalk Creek watershed above Echo Reservoir is delineated using the confluence of the South Fork as the upstream endpoint. This necessitated splitting the 12-digit HUC into two AUs, one for Chalk Creek below the confluence with South Fork (UT16020101-010_00) and another AU for Chalk Creek above the South Fork confluence and below the Huff Creek confluence to form UT16020101-012_00. UT16020101-019_00 AU is an example of small tributary streams that could not be combined into a hydrological based AU. These are very small tributaries, and the Weber River is not reflective of their stream order or the habitat that they flow through. Echo Reservoir (UT-L-16020101-001_00) and Rockport Reservoir (UT-L-16020101-002_00) are examples of lake or reservoir AUs.

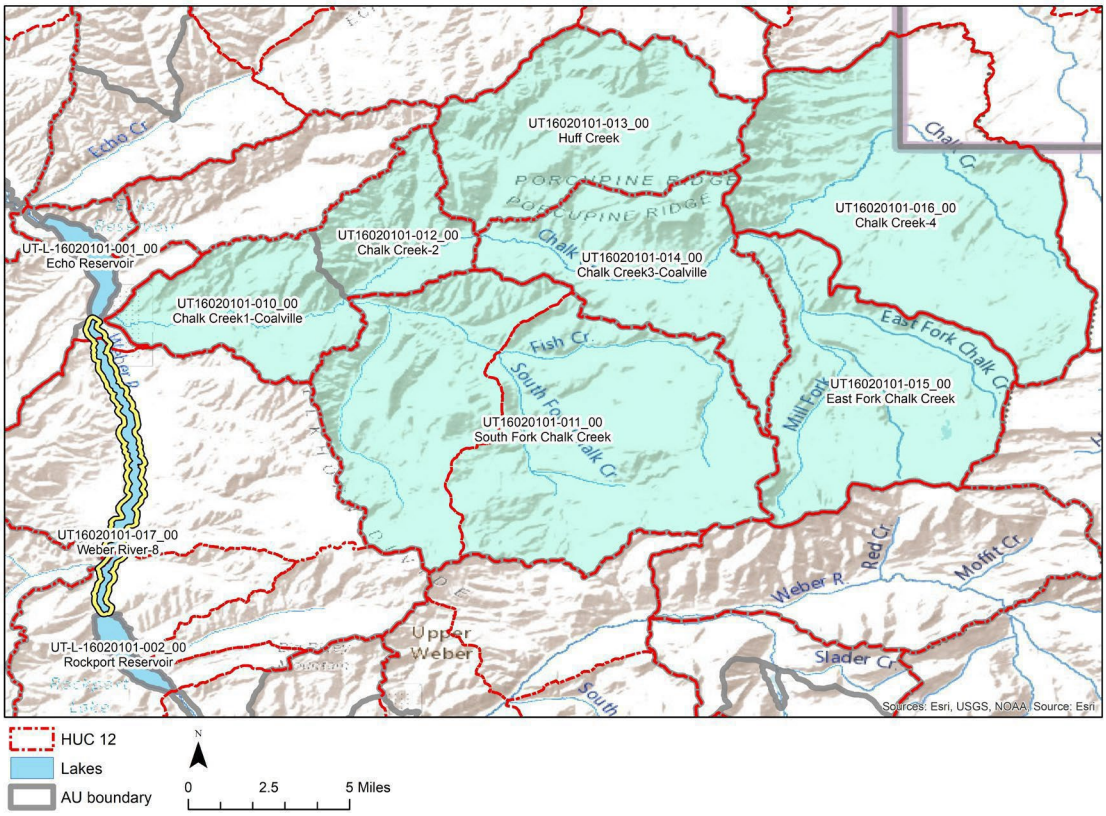

Figure 12. Utah Division of Water Quality assessment unit delineations.

AU Stream Mileage Estimation for Flowing Surface Waters and Canals

Flowing surface water assessments are summarized by perennial stream mileage in each assessment category. Stream mileage within each AU is estimated using a streams GIS layer generated by the Utah Geographic Reference Center (UGRC). This layer was derived from the high resolution (1:24,000 scale) National Hydrologic Dataset (NHD). Stream mileage within an AU is estimated as the sum of the lengths of all perennial streams and canals identified in the site-specific numeric criteria in UAC R317-2-14 or named in the list of waters with designated use classifications in UAC R317-2-13.The NHD-based layer is only used to estimate stream mileage within an AU and is not used to define individual monitoring locations as perennial or intermittent or remove monitoring locations from the assessment process..

Waters Within and Shared with Other States

Though readily available data may exist from locations near Utah's state boundaries, DWQ only assesses monitoring sites that are within the jurisdictional boundaries of the state for 303(d) purposes. Assessment units or sites on lands under tribal jurisdiction are not assessed in the IR. Assessed surface waters of the state (as defined in Table 4) that flow into Utah but originate outside of Utah's borders will be assessed using DWQ monitoring locations within state boundaries. Lakes, reservoirs, and ponds that overlap with other state jurisdictions (e.g., Lake Powell, Bear Lake, and Flaming Gorge) will be assessed using the monitoring locations that fall within Utah state jurisdictional boundaries.

DWQ will work with neighboring states, as resources allow, on any impairments that fall close to jurisdictional boundaries by notifying the neighboring state of the impairments or exceedances and available data relevant to the impairment.

Data Quality

Credible Data Defined

All readily available data and information that are submitted to the Utah's Integrated Report program or obtained during the IR's data compilation process must be of high quality to be considered for 303(d) assessments.

Utah's IR program defines credible data as a complete and validated data submission consisting of

- Water quality samples and field measurements (data) that are collected using appropriate quality assurance (QA) and quality control (QC) procedures, including proper documentation
- Environmental data that are representative of water quality conditions at the time of sampling
- Documented field sample collection, processing, and laboratory analyses that are documented and follow established protocols, procedures, and methods. Further information on proper adherence to these requirements is available upon request.

Utah's IR program relies on documentation from project planners, sample collectors, and laboratories to help ensure that data are of known quality and defensible. External entities are not obligated to collect data under the specifications of any of DWQ's or EPA's currently established quality assurance protocols to be considered credible, but all sources of data must meet the definition of credible data. DWQ will evaluate the credibility of data using the criteria and documentation described in the following sections.

Please note that the definition of credible data outlined in this document is specific to Utah's IR program and does not restrict other programs (e.g., water quality standards development, TMDLs, etc.) within DWQ from using data for other Division reporting analyses and actions. Data used for a Watershed Plan, for example, may not necessarily meet the credible data requirements for Utah's IR program but may meet the needs of a Watershed Plan.

Components for Credible Data

Quality Assurance Program Plan Guidance and Example

Utah's IR program requires that all assessment-related decisions that use data are supported by a Quality Assurance Project Plan (QAPP). QAPPs *"integrate all technical and quality aspects of a project, including planning, implementation, and assessment." The purpose of a QAPP is to document planning results for environmental data operations and to provide a project-specific "blueprint" for obtaining the type and quality of environmental data needed for a specific decision or use. The QA Project Plan documents how quality assurance (QA) and quality control (QC) are applied to an environmental data operation to assure that the results obtained are of the type and quality needed and expected"* (EPA, 2002).

External entities may be required to provide the QAPP they relied upon for the data collection associated with a particular submission. External entities may choose to follow one of the example QAPPs below or develop a QAPP specific to their entity or sampling program(s).

Example QAPPs

- Environmental Protection Agency's Quality Assurance Quality Program Guidance & Requirements. EPA's requirements and guidance documents for ensuring that all environmental data are of a known quality and defensible. Utah's IR program encourages DWQ staff, cooperators, and all other parties interested in submitting high quality data to the IR program to review QA/R-5 and QA/G-5.
- DWQ Quality Assurance Program Planning (QAPP). DWQ's document outlining the minimum Quality Assurance and Quality Control (QA/QC) requirements for environmental data generated by DWQ and used by most of its cooperators.

Sampling Analysis Plan Guidelines and Examples

Sampling Analysis Plans (SAPs) are the second type of documentation that Utah's IR program requires when compiling information for assessments and other programmatic decisions. SAPs *"are intended to assist organizations in documenting the procedural and analytical requirements for one-time, or time-limited, projects involving the collection of water, soil, sediment, or other samples taken to characterize areas of potential environmental contamination. It combines the basic elements of a Quality Assurance Project Plan (QAPP) and a Field Sampling Plan"* (EPA, 2014).

External entities may be required to share the SAP relied upon for data collection associated with a particular submission. External entities may choose to follow one of the example SAPs below or develop a SAP specific to their sampling program(s).

Example SAPs

- EPA's Sampling Analysis Plan Guidance & Requirements.
- DWQ's recommended Sampling Analysis Plan Requirements. These requirements are currently used by DWQ and its cooperators This document contains information on what DWQ looks for in a SAP (see Appendix 1)

Standard Operating Procedures Guidelines and Examples

Standard Operating Procedures (SOPs) are documented procedures that describe the routine operations of a monitoring program in full detail. Utah's IR program requires SOPs as part of data submission packages to ensure consistency and comparability across sampling techniques from disparate data sources.

External entities may be required to share the SOPs relied upon for data collection associated with a particular submission. External entities may choose to follow the example SOPs below or develop SOPs specific to their sampling program(s).

Example SOPs

- EPA's Guidance for Preparing Standard Operating Procedures (G-6). EPA's guidance for developing and providing the necessary documentation when generating an SOP. DWQ recommends referring to EPA's guidance if not using DWQ's SOP.

- DWQ Standard Operating Procedure. DWQ generates SOPs for any procedure that becomes routine, even when published methods are utilized. The use of SOPs ensures data comparability, defensibility, and accuracy, and reduces bias. DWQ SOPs available on the website include macroinvertebrate collection, calibration, maintenance, and use of multiparameter water quality sondes, chlorophyll-a sampling, harmful algal bloom collection and identification, water chemistry and E. coli sample collection, among

Sampling Observations and Laboratory Comments

Utah's IR program requires documentation of field conditions that may affect data quality or laboratory comments on QA/QC issues encountered during analysis. Appendix 1 includes an example of sampling observations DWQ recommends documenting in the field for grab sample collections, and the credible data matrices included in Table 5 - Table 9 describe additional sampling and laboratory observations and comments required by Utah's IR program.

Monitoring Location Information

DWQ must review all monitoring location information associated with datasets to assess waterbodies against the numeric criteria assigned in UAC R317-2-14. This process involves validating the location's geospatial information in GIS, assigning beneficial uses to DWQ-validated locations, and merging monitoring locations and their associated data where locations are representative of the same waterbody or segment. Information that must be included with a monitoring location measurement:

- Monitoring Location ID (organization's unique identifier for the sample site)
- Waterbody type description
- Monitoring location, latitude/longitude measurements and associated metadata as defined on Utah's IR program's Call for Data webpages.

A monitoring location and its associated data will not be included in the assessment if DWQ's geospatial review of the monitoring location information finds insufficient or inaccurate information (e.g., it cannot be mapped or is improperly recorded by the sampler in the field).

Credible Data Matrices

DWQ will consider the scientific rigor of the sampling information and measurements associated with sites where beneficial uses can be assigned to a DWQ-validated monitoring location. DWQ uses a data-type–specific, credible-data matrix to assess the validity of the sampling and analytical protocols associated with a sample measurement, As noted in the credible-data matrices, each credible-data matrix considers the field and laboratory QA/QC protocols, sampling and laboratory methods, analytical detection or instrumentation limits, and field observations associated with a sample measurement. DWQ assigns a grade level (A–C) to the associated sample measurement(s) based on the level of information provided and the strength of the metadata associated with the sample measurement.

DWQ considers measurements that receive an A or B grade to be of high quality and will consider and use them to assign an EPA-derived assessment category to a waterbody (i.e., the IR's 305(b) and 303(d) assessments). Measurements that receive a C grade are considered to be of insufficient quality for assessment and 303(d) listing purposes. Details on the required data quality criteria for inclusion in the IR and use by Utah's IR program are included in Table 5.

Table 5. Data validation criteria for water quality field grab sample parameters.

Data Quality Grade	Quality Assurance	Essential Metadata[1]	Calibration Documentation	Field Documentation	Flow Data	Calibration: Water Temperature Methods*	Calibration: pH Methods*	Calibration: Dissolved Oxygen, Percent Saturation for Calibrated Meter*	Calibration: Dissolved Oxygen, Concentration Methods for Calibrated Meter*
A	QAPP, SAP(s), and SOP(s) or equivalents are available for DWQ review if requested	Essential metadata is included with the data submission.	Available for DWQ review if requested for all field parameters	Available for DWQ review if requested	Submitted or available for DWQ review if requested	Checked against NIST A ≤ ± 0.1 ºC	Calibrated pH Probe A ≤ ± 0.2	0-200 %Sat: A ≤ ± 6%	0-8 mg/L: A ≤ ± 0.1mg/L > 8mg/L: A ≤ ± 0.2 mg/L
B	QAPP, SAP(s), and SOP(s) or equivalents are available for DWQ review if requested	Essential metadata is provided to DWQ upon request.	Available for DWQ review if requested, for field parameters	Unavailable	Not submitted or unavailable	A ≤ ± 0.1 ºC	Calibrated pH Probe A ≤ ± 0.2	0-200 %Sat: A ≤ ± 10%	0-20 mg/L: A ≤ ± 0.2 mg/L
C	QAPP, SAP, or SOP is unavailable Not Submitted	Essential metadata is missing from the data submission and is unavailable.	Unavailable	Unavailable	Not submitted or unavailable	A ≥ ± 0.5 ºC OR not a calibrated meter, missing, or rejected data	Not a calibrated meter, missing, or rejected data	Not a calibrated meter, missing, or rejected data	Not a calibrated meter, missing, or rejected data

[1] **Essential metadata elements are sample location (latitude/longitude), waterbody type, sample date and time, parameter name, result value and unit.**
***Footnote: A = accuracy, values based on technical specifications of commonly used YSI, Hydrolab, and In-Situ smarTROLL sondes.**

Table 6. Data validation criteria for water quality high frequency dissolved oxygen data.

Data Quality Grade	Quality Assurance Quality Assurance Project Plan (QAPP)	Essential Metadata[1]	Calibration Documentation	Data QA/QC Information or Report	Field Documentation	Flow Data	Calibration: Dissolved Oxygen*, Percent Saturation for Calibrated Meter	Calibration: Dissolved Oxygen*, Concentration Methods for Calibrated Meter
A	QAPP, SAP(s), and SOP(s) or equivalents are available for DWQ review if requested	Essential metadata is included with the data submission.	Mandatory-calibration record(s) (e.g., field records of calibration and/or fouling)	Documentation describing the QA/QC process on the raw data	All pertinent deployment data (i.e., information necessary for interpreting data)	Submitted or available for DWQ review if requested	0-200%: A ≤ ± 6%	0-8 mg/L: A ≤ ± 0.1 mg/L > 8mg/L: A ≤ ± 0.2 mg/L
B	QAPP, SAP(s), and SOP(s) or equivalents are available for DWQ review if requested	Essential metadata is provided to DWQ upon request.	Mandatory-calibration record(s) (e.g., field records of calibration and/or fouling)	Documentation describing the QA/QC process on the raw data	All pertinent deployment data (i.e., information necessary for interpreting data)	Not submitted or unavailable	0-200%: A ≤ ± 10%	0-20 mg/L: A ≤ ± 0.2 mg/L
C	QAPP, SAP, or SOP is unavailable	Essential metadata is missing from the data submission and is unavailable.	Unavailable	Unavailable	Unavailable	Not submitted or unavailable	Missing, or rejected data	

[1] **Essential metadata elements are sample location (latitude/longitude), waterbody type, sample date and time, parameter name, result value and unit.**
***Footnote: A = accuracy, values based on technical specifications of commonly used YSI, Hydrolab, and In-Situ smarTROLL sondes.**

Please note**: Raw and QA/QC data records *must be* submitted to qualify for consideration in 303(d) assessments.**

Table 7. Data validation criteria for water quality chemistry grab sample parameters.

Data Quality Grade	Quality Assurance Project Plan (QAPP)	Essential Metadata[1]	Laboratory Method	Detection Limits	Lab Certification	QC Data	Laboratory Comments	Field Documentation	Metals*	Organics*	Inorganics*
A	QAPP, SAP(s), and SOP(s) or equivalents are available for DWQ review if requested	Essential metadata is included with the data submission.	Standard Methods	Below applicable water quality standard	Utah Bureau of Laboratory Improvement certification, NELAC, or equivalent	Available for DWQ review if requested	Laboratory Comments Associated with Sample	Available for DWQ review if requested	Chronic: Aluminum submitted with Ca and Mg OR Lab Hardness and field pH; Cadmium, Chromium (III), Copper, Lead, Nickel, Silver, and Zinc submitted with Ca and Mg OR Lab Hardness	Pentachlorophenol submitted with field pH	Total Ammonia as N submitted with field pH or field Temperature
B	QAPP, SAP(s), and SOP(s) or equivalents are available for DWQ review if requested	Essential metadata is provided to DWQ upon request.	Standard Methods	Below applicable water quality standard	Documentation of laboratory procedures	Available for DWQ review if requested	Laboratory Comments Associated with Sample	Unavailable	Chronic: As above, but Aluminum submitted without Hardness or field pH will be assessed at 750 ug/l; As above, but samples submitted without Ca, Mg, or Lab Hardness **	Pentachlorophenol submitted without field pH	Total Ammonia as N submitted with field pH or field Temperature
C	QAPP, SAP, or SOP is unavailable	Essential metadata is missing from the data submission and is unavailable.	Missing or Non-Standard Methods	Above applicable water quality standards	No certification or laboratory documentation	Unavailable	No Laboratory Comments	Unavailable	Chronic: As above, but Aluminum without Hardness or field pH will not be assessed;	Pentachlorophenol submitted without field pH	Total Ammonia as N submitted with field pH or field Temperature

[1] Essential metadata elements are sample location (latitude/longitude), waterbody type, sample date and time, parameter name and fraction, parameter units, analytical method, result value or non-detect limitation, and laboratory name.
***Footnote: Please also refer to UAC R317-2 to confirm that all the necessary data is submitted to DWQ so correction factors and equations may be fully calculated for 303(d) assessment purposes.**
****Footnote: Please refer to the 303(d) Assessment Methods for corrections to assessment due to missing values of hardness or pH.**

Table 8. Data validation criteria for macroinvertebrate data.

Data Quality Grade	Quality Assurance Project Plan (QAPP)	Essential Metadata[1]	Field Documentation	Qualified taxonomy lab
A	EPA-approved Lab QAPP available for DWQ review if requested; SAP and SOP or equivalents available for DWQ review if requested	Essential metadata is provided to DWQ upon request.	Available for DWQ review if requested	Required
B	Lab QAPP or equivalent is available for DWQ review if requested; SAP and SOP or equivalents available for DWQ review if requested	Essential metadata is provided to DWQ upon request.	Unavailable	Required
C	QAPP, SAP, or SOP is unavailable	Essential metadata is missing from the data submission and is unavailable.	Unavailable	Unavailable

[1] **Essential metadata elements are sample location (latitude/longitude), waterbody type, sample date and time, parameter name and fraction, analytical method, result value and unit, and laboratory name.**

Table 9. Data validation criteria for *Escherichia coli (E. coli)* data.

Data Quality Grade	Quality Assurance	Essential Metadata[1]	EPA Approved Method	Lab Documentation	QA/QC
A	QAPP, SAP(s), and SOP(s) or equivalents are available for DWQ review if requested	Essential metadata is provided to DWQ upon request.	IDEXX Colilert	Bench Sheet Present and Complete	Information on holding time, incubation*, and expiration dates provided.
B	QAPP, SAP(s), and SOP(s) or equivalents are available for DWQ review if requested	Essential metadata is provided to DWQ upon request.	IDEXX Colilert or EasyGel	Bench Sheet Present, incomplete, or not available	Not provided
C	QAPP, SAP, or SOP is unavailable	Essential metadata is missing from the data submission and is unavailable.	IDEXX Colilert or EasyGel	Unavailable	Not provided

[1] Essential metadata elements are sample location (latitude/longitude), waterbody type, sample date and time, parameter name and fraction, analytical method, result value and unit, and laboratory name.
***Footnote: "incubation" refers to data and information that is recorded on DWQ's *E. coli* bench sheets and relates to time and temperature (i.e., time samples were placed in and taken out of the incubator and the temperature of the incubator when samples were placed in and taken out of it). For an example of how DWQ records this information, please refer to Appendix 1 of DWQ's Standard Operating Procedure for Collection, Handling, and Quantification of *Escherichia coli (E. coli)* Samples.**

Data Submission Process

Type of Data to Submit

As referenced in 40 CFR 130.7(b)(5), Utah's IR program considers all existing and readily available data as defined in Table 3. Both quantitative and qualitative data may be used to evaluate whether physical, chemical, and biological characteristics of a waterbody are sufficient to support that waterbody's designated uses. However, based on the type of data submitted to or obtained by DWQ during Utah's IR program's Call for Data, some of these data may not be appropriate for assessments. DWQ considers several quantitative and qualitative types of data described in Table 10 for water quality assessments and analyses as recommended in EPA's July 29, 2005, guidance (EPA, 2005).

Table 10. Summary of data types considered by Utah's IR program.

Utah's IR program Data Uses	Quantitative Data	Qualitative Data	Other
305(b) and 303(d) Assessments (Grade A and B Data in credible data matrices)	(1) Assessment parameters contained in Utah Water Quality Standards (UAC R317-2) and Safe Drinking Water Act Standards, (2) segment-specific ambient monitoring of analytical, physical, and/or biological conditions, (3)simple dilution calculations, and (4) human health/consumption closures, restrictions, and/or advisories	(1) Observed effects (e.g., fish kills), (2) complaints and comments from the public, and (3) human health/consumption closures, restrictions, and/or advisories	Landscape analysis (when applicable)
Monitoring Planning and Training (Grade C and D Data in credible data matrices)	See above	See above	(1) Landscape analysis (when applicable), (2) technical reports, (3) white papers, (4) articles from referred journals, and (5) other scientific publications

Period of Record

DWQ uses water years to define the period of record and uses the same definition of water years as the U.S. Geologic Survey. USGS defines the water year as the 12-month period between October 1 and September 30 of the following year. For the 2024 IR, the period of record is October 1, 2016, to September 30, 2022, (water years 2017-2022).

Data and information from the IR's period of record are considered to be most reflective of the current conditions of a waterbody. DWQ will analyze and assign EPA-derived assessment categories to the assessed waterbodies from this record period, provided the data meet the interpretive, sampling, and analytical considerations and protocols outlined in this document (see Table 1).

Older Data and Information

DWQ will not consider data and other information older than the period of record in the current IR and 303(d) list unless the data are used to support a secondary review of an impairment determination. Instead, DWQ

will encourage the data submitter to collect newer information and submit those data and information in future calls for data. The IR's period of record does not preclude DWQ from using older or longer-term datasets for programs other than assessments (e.g., water quality standards development, TMDLs, etc.).

Newer Data and Information

Quantitative and qualitative data types that are considered in 303(d) assessments but are collected or represent conditions after the closing date specified in the above period of record will not be considered in the current reporting cycle. DWQ does not include these newer datasets because of the time required to compile data, perform data quality checks, format data from different sources, assess, review assessments, and generate the IR and 303(d) for public comment by April 1 of even-numbered years.

Data Submission Tools

Data should be submitted in a form that is compatible with the Utah's IR program's existing data-management and QA capabilities. Please refer to Table 3 for more information on how to submit data for consideration in the IR.

Data Preparation for Conventional and Toxic Assessments for All Waters

DWQ compiles all high quality data within the period of record following the readily available and credible data reviews, and then standardizes, validates, and prepares the data for assessments. To assist reviews and increase transparency to reviewers, DWQ uses a series of comments and flags rather than altering raw data and accompanying metadata. Though High Frequency Dissolved Oxygen (DO) and *E. coli* assessments are considered conventional assessments (see Table 11), these parameters have data preparation protocols that are unique to those datasets. Please refer to the High Frequency and *E. coli* assessment sections of this document for more details.

Results below Detection Limits

Environmental chemistry laboratories often report sample results as below their detection limit for a given analytical method. These limits are variously reported as minimum detection limit, minimum reporting limit, and/or minimum quantitation limit. The reported result value or a value of 0.5 times the lowest reported detection limit for sample results below detection is applied for purposes of the assessment. DWQ screens and flags laboratory result values that are empty and have detection limits higher than the water quality criteria in UAC R317-2-14; these flagged data records are not considered in the assessment.

Duplicate and Replicate Results

Datasets often contain duplicate and replicate sample results due to QA/QC procedures, reporting errors, or sampling design. In these cases, a single daily value is determined by accepting the highest result for parameters with not-to-exceed criteria in UAC R317-2-14, or the lowest reported value for parameters with minimum criteria in UAC R317-2-14. All data are retained in the assessment dataset and flagged as rejected because of replicate or duplicate values.

Initial Assessment: Monitoring Location Site Level

DWQ determines attainment or nonattainment of numeric standards by assessing credible data at the monitoring location site level against the numeric criteria in UAC R317-2-14. DWQ developed this protocol because individual assessments offer a more direct measure of the support or non-support of water quality standards in UAC R317-2.

Multiple parameter assessments at an individual monitoring location and results from multiple monitoring locations within the same AU are summarized and combined using the procedures outlined in the Determination of Impairment: All Assessment Units section of this report.

Assessments Specific to Rivers, Streams, and Canals

Conventional Parameter Assessments

DWQ currently assesses five parameters within UAC R317-2-14 as conventional parameters and assesses them against the beneficial-use specific criteria established in UAC R317-2. Several waterbodies with conventional numeric criteria have site-specific standards articulated in self-explanatory footnotes within DWQ's surface water standards (UAC R317-2-14). Site-specific standards that require further clarification for 303(d) assessment purposes are noted and explained in Table 11. Sites that do not meet water quality standards as described below are not supporting of beneficial uses for 303(d) assessment purposes.

Table 11. Conventional parameters and associated designated uses as identified for assessment purposes.

Parameters	Designated Use	Notes
DO*	Aquatic life	DO measurements are assessed against the minimum, 7-day average, and 30-day average criteria in UAC R317-2-14. Grab samples are assessed following the processes in Figure 13 for rivers and streams and the "Assessments Specific to Lakes, Reservoirs, and Ponds" sections of the methods. High frequency DO datasets are assessed following the processes in Figures 3-5. Note: DWQ will assess against early life stage (ELS) criteria where ELS presence has been confirmed in a specific waterbody. Site specific standards are used for assessment where they have been developed.
Maximum temperature*	Aquatic life	Some site-specific standards are used for assessment purposes.
pH*	Domestic, Recreation, Aquatic life	Criteria are identical across uses.

Parameters	Designated Use	Notes
Total dissolved solids (TDS)**	Agriculture	Many site-specific standards are used for assessment purposes. Clarification on how three site-specific standards are used for 303(d) purposes are provided below: (1) For South Fork Spring Creek from the confluence with Pelican Pond Slough Stream to U.S. Route 89, two seasonal assessments are not performed. Instead, each sample is compared to the monthly corrected criteria in the footnote in UAC R317-2. (2) Ivie Creek and its tributaries from the confluence with Muddy Creek to the confluence with Quitchupah Creek. If TDS exceeds the site-specific standard, the site is not meeting site-specific criteria. If TDS is not exceeding, total sulfate is assessed. (3) Quitchupah Creek from the confluence with Ivie Creek to Utah State Route 10: If TDS exceeds the site-specific standard, it is not meeting site-specific criteria. If TDS is not exceeding, total sulfate is assessed. (4) Blue Creek and tributaries, Box Elder County, from Bear River Bay, Great Salt Lake to Blue Creek Reservoir. The only site to be assessed within this area is 4960740. (All other sites within this area description will not be assessed for TDS).
Sulfate**	Agriculture	Site-specific standard associated with sulfate for the following areas: (1) Ivie Creek and its tributaries from the confluence with Muddy Creek to the confluence with Quitchupah Creek: When TDS is not exceeding site-specific criteria and total sulfate exceeds site-specific criteria, the area does not meet water quality standards. (2) Quitchupah Creek from the confluence with Ivie Creek to Utah State Route 10: When TDS is not exceeding site-specific criteria and total sulfate exceeds site-specific criteria, the area does not meet water quality standards.
***Footnote: Indicate that assessments are performed from field measurement only. ****Footnote: Indicate that assessments are performed from lab measurements only.**		

Grab Sample Assessments

A minimum of 10 samples for conventional parameters are required to determine if a site is meeting or not meeting water quality standards (Figure 13). Where locations have sufficient sample sizes of 10 or more, an exceedance percentage is calculated for each applicable beneficial use by dividing the number of samples exceeding the numeric criterion by the total number of samples. If the calculated percentage is less than or equal to 10%, the site is supporting its beneficial use. If the calculated percentage is greater than 10%, the site is not supporting its beneficial use. This assessment is repeated for each beneficial use and numeric criterion. In the case of waterbodies with site-specific standards for TDS and sulfate, both criteria must be met or the waterbody will be listed as not supporting its agricultural use.

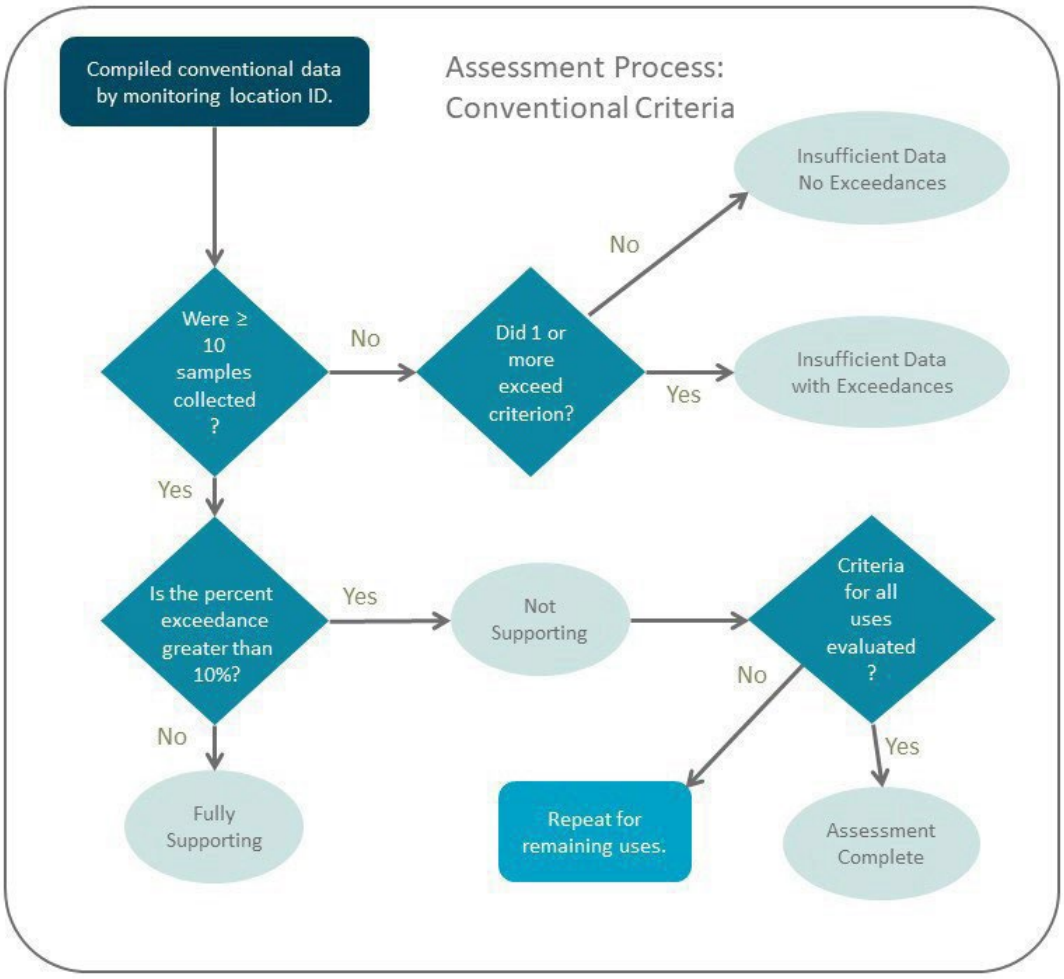

Figure 13. Overview of the assessment process for conventional parameters using grab sample data.

High Frequency Assessments for Dissolved Oxygen

Data Preparation

High frequency data are often screened and corrected to account for sensor drift, calibration shift, strange anomalous points, and battery issues before data analysis and interpretation begins. These data screens are particularly important for dissolved oxygen (DO) sensors because they are subject to bio-fouling, especially in nutrient-rich water where they have the higher potential to become covered in algal growth. When bio-fouling occurs, it results in erroneous logger measurements or sensor drift. DWQ will use corrected high frequency data as documented by the data submitter for assessments. DWQ will contact the data submitter for clarification and additional information if it determines additional corrections may be required.

Data sufficiency

High frequency data must capture complete days to ensure daily minima are captured and daily averages can be accurately calculated. DWQ defines a complete day as a calendar day (i.e., 12:00 a.m. – 11:59 p.m.) in which at least one measurement is made in each hour. Incomplete days will not be included in the high frequency DO assessment.

Assessment Process

A daily minimum and daily average are calculated for each complete day in a dataset. Moving 7- and 30-day averages are then calculated from the daily averages for each 7- or 30-day period within the dataset. These values are then compared to the applicable daily minimum, 7-day average, and 30-day average criteria to determine use impairment or support.

A site does not meet the daily DO minimum criterion if the percentage of total daily minima that fall below the applicable standard is greater than 10% within the period of record (Figure 14).

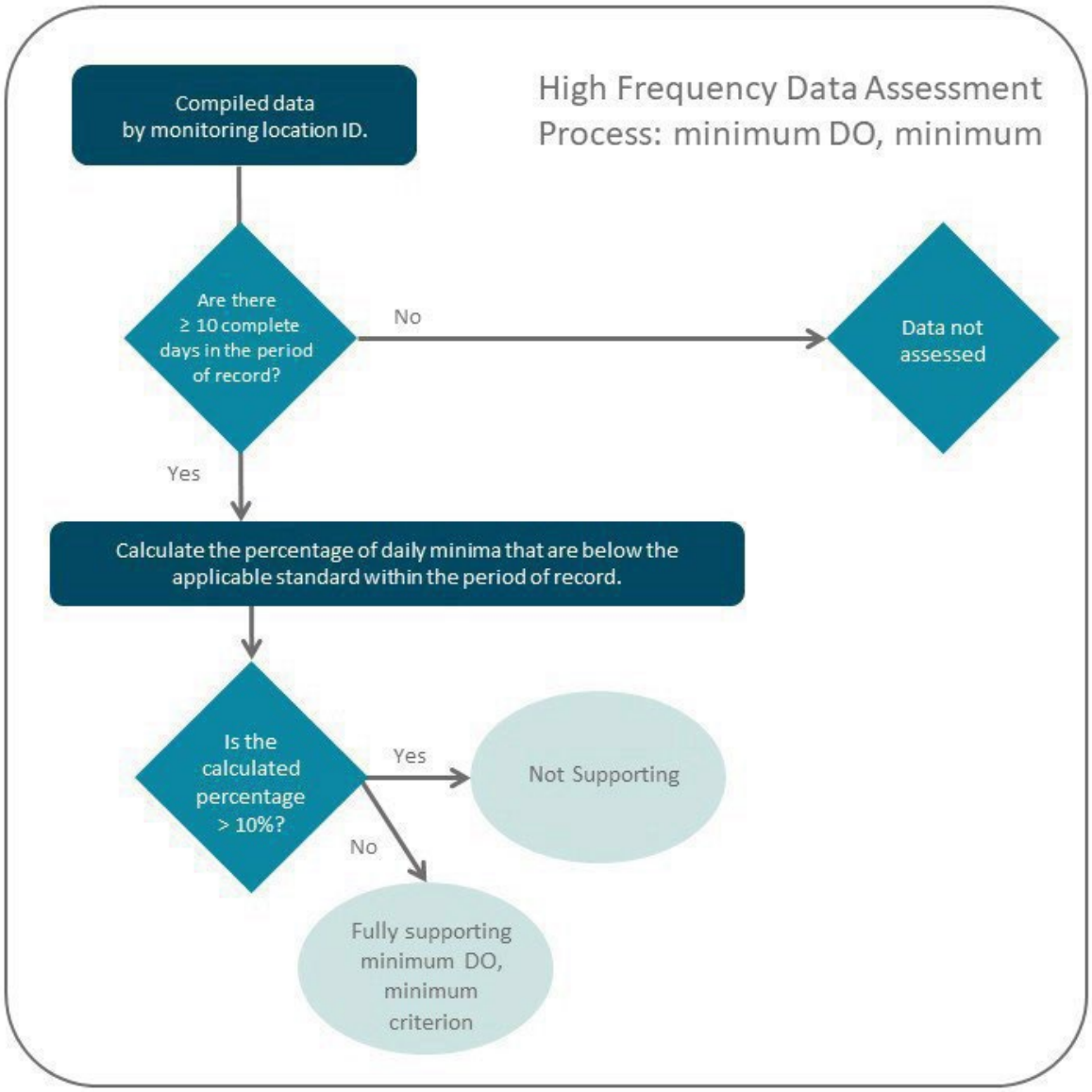

Figure 14. Overview of the assessment process for the minimum dissolved oxygen, minimum, using high frequency data.

A site does not meet the 7-day average criterion if the percentage of 7-day averages that fall below the applicable standard is greater than 10% within the period of record (Figure 15).

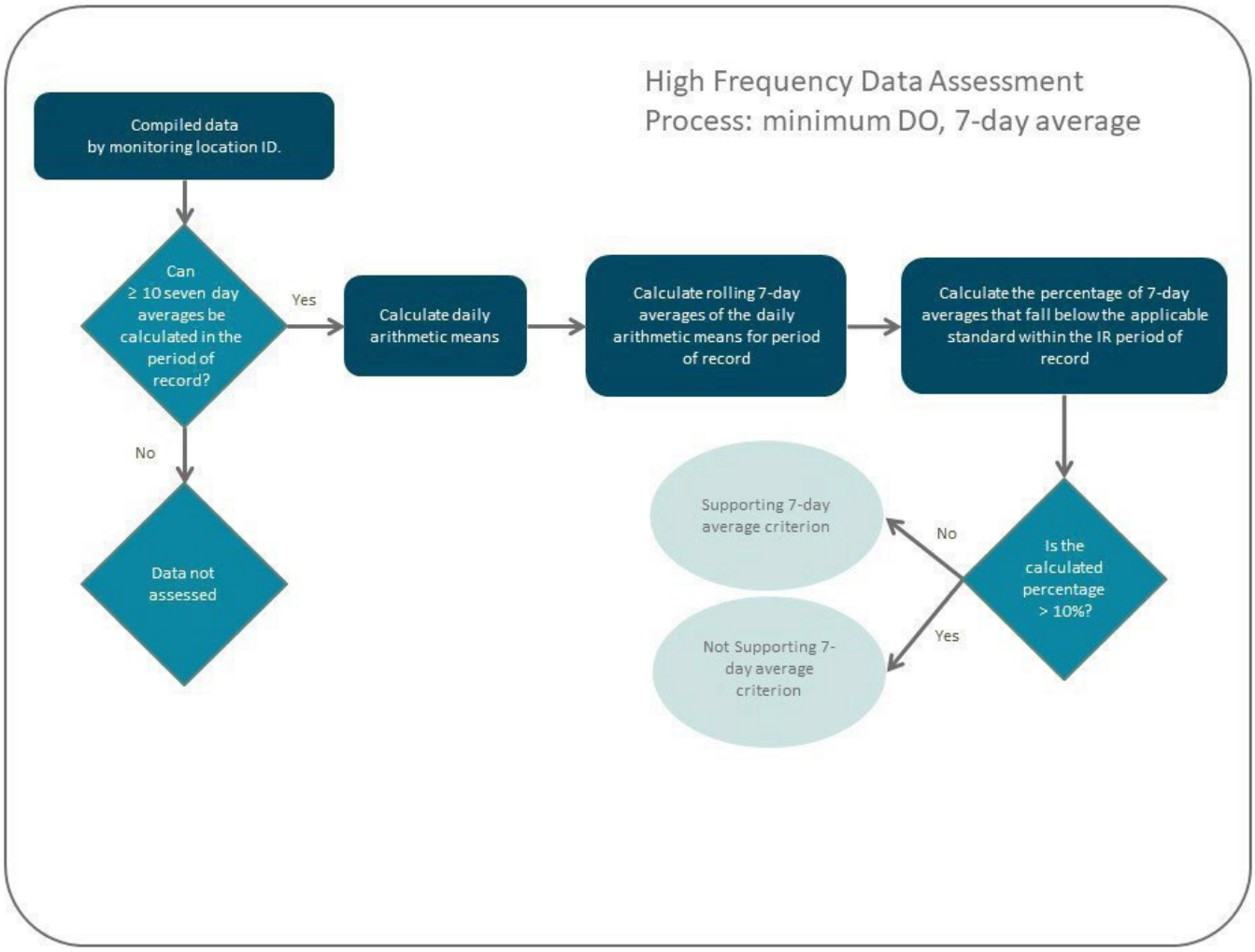

Figure 15. Overview of the assessment process for the minimum dissolved oxygen, 7-day averages using high frequency data.

A site does not meet the 30-day average criterion if the percentage of 30-day averages that fall below the applicable standard is greater than 10% within the period of record (Figure 16).

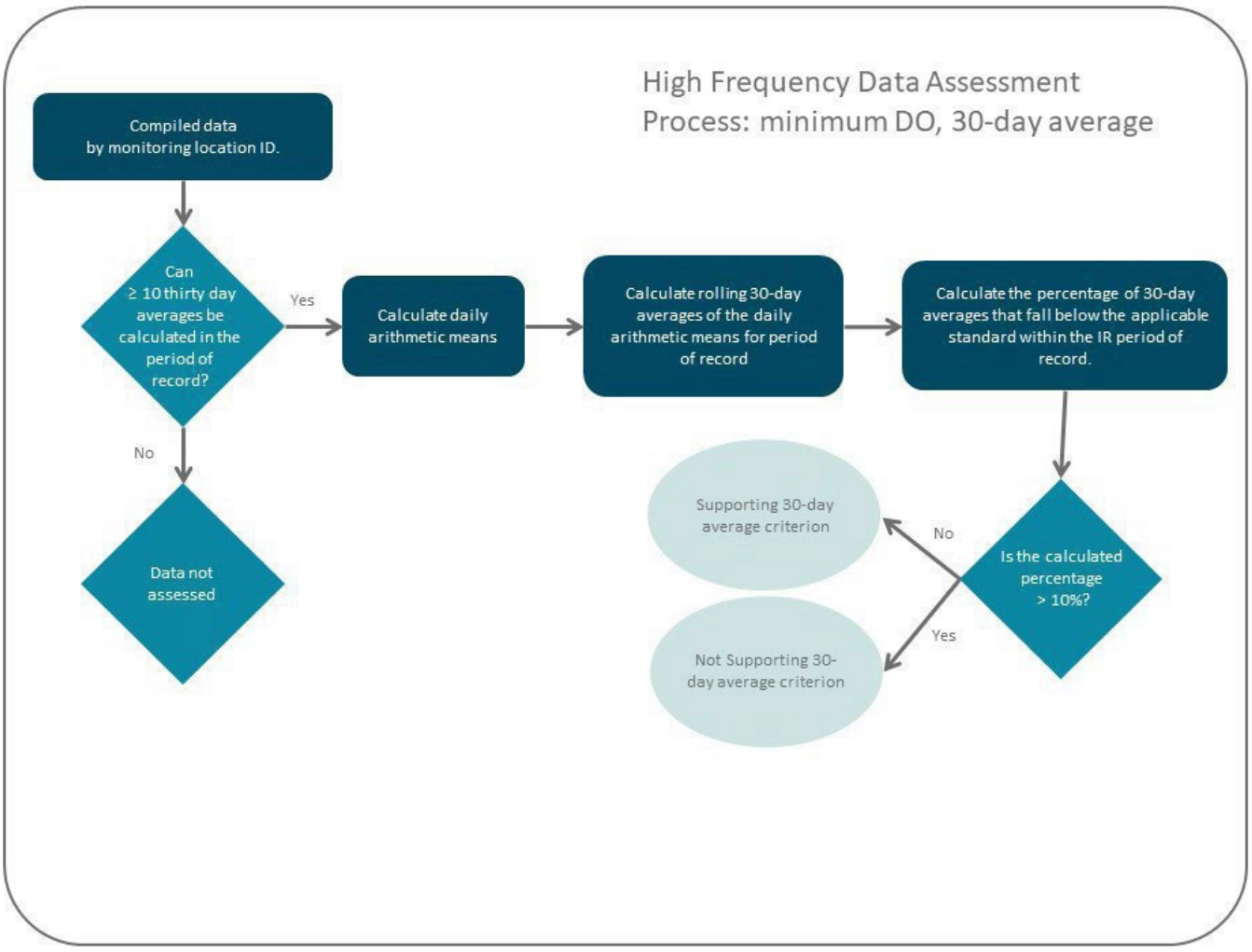

Figure 16. Overview of the assessment process for the minimum dissolved oxygen, 30-day averages, using high frequency data.

A site is considered not supporting if it is not meeting either of the daily minimum, 7-day average, or 30-day average criteria. A site is considered fully supporting if 10% or fewer violations are observed for all three criteria. This process (Figure 14 – Figure 16) is repeated until each beneficial use has been assessed.

Analyzing Multiple DO Datasets at a Site

DWQ assesses grab and high frequency data independently during the initial assessment of DO at a site and reviews these assessments in the context of one another during the secondary review for determining impairment. These processes are discussed in greater detail in Determinations of Impairment: All Assessment Units

Nutrient Assessments Specific to Headwater Streams

Utah's Numeric Nutrient Criteria (NNC) require consideration of both ambient nutrient concentrations and ecological response data for headwater streams, which are defined as streams where antidegradation category 1 or 2 protections have been established (UAC R317-2-3). Generally, this includes streams above United States Forest Service (USFS) boundaries—about 50% of all perennial streams statewide.

Support of Aquatic Life Uses

The NNC applicable to aquatic life include two thresholds for total nitrogen (TN) and total phosphorus (TP) based on the arithmetic average of a minimum of four samples obtained during the growing season (UAC R317-2-14.8). The growing season is defined by the NNC as the period of algal growth through senescence. For assessment purposes, DWQ assumes that the growing season includes the months of June through November, although this may be lengthened where additional information demonstrates that a longer period of growth is warranted.

The arithmetic average of TN or TP, derived from four or more growing season samples, is used to place headwater streams into one of three enrichment tiers (Table 12). Lower criteria thresholds of 0.4 mg/L TN and 0.035 mg/L TP differentiate between low and moderate enrichment streams. Higher thresholds of 0.80 mg/L TN and 0.080 mg/L TP differentiate between moderate and high enrichment streams. The higher of TN or TP enrichment tiers is used to determine whether or not nutrient enrichment has degraded aquatic life uses at a site.

Moderate enrichment streams, with average nutrient concentrations between the upper and lower thresholds, require additional measures of ecological condition to determine whether or not a headwater stream is attaining the NNC water quality standards (Table 12). Nutrients can degrade aquatic life uses via mechanisms related to increased growth of plants/algae (autotrophs) and/or microbes/fungi (heterotrophs). In the case of plant/algae growth, two ecological responses are not-to-be-exceeded at any headwater stream: (1) a daily gross primary production (GPP) rate higher than 6 g O_2/m^2/day or (2) an aerial percent filamentous algae cover exceeding 1/3 of the stream bed. Adverse heterotrophic responses are addressed using ecosystem respiration (ER), which measures the net metabolic activities of all stream biota and is used to understand linkages among microbes/fungi, nutrients, and aquatic life uses. NNC establishes a not-to-be-exceeded rate for ER of 5 g O_2/m^2/day. Any site where TN or TP falls between the NNC thresholds is categorized as not supporting its aquatic life uses if any of the three responses exceeds the adverse effect thresholds, even if a complete set of responses is not available (Table 13). However, a moderately enriched stream site must have all three response parameters collected and occurring below their adverse effect thresholds to obtain a full support assessment for the site. If any response parameters are unavailable despite other response parameter(s) meeting criteria, the site will be assessed as insufficient data (3A) and the division will prioritize the data collection necessary to make a site assessment.

Any site where the growing season average of both TP and TN falls below the lower NNC thresholds (lowest enrichment tier) is considered to be supporting aquatic life uses with respect to nutrient enrichment (Table 13) provided that all three ecological responses have been measured and fall below the threshold that demarcates degraded conditions. If any response parameters are above their degraded condition threshold, the site will be assessed as impaired (Category 5)

At the other end of the enrichment gradient, any site where the average TN or TP concentration exceeds the upper NNC threshold (high enrichment tier) is categorized as threatened unless degradation is confirmed by an ecological response, in which case it is considered impaired (not supporting aquatic life uses). Threatened

AUs are designated as category 5 due to highly enriched conditions, but the Division commits to more thoroughly evaluate the AU for adverse nutrient-related responses.

Table 12. Numeric Nutrient Criteria and Associated Ecological Responses (Bioconfirmation Criteria) to Protect Aquatic Life Uses in Antidegradation Category 1 and 2 (UAC R317-2-12) Headwater Perennial Streams.

Nutrient Enrichment Level	Summertime Average Nutrients		Ecological Response	Assessment Notes
Low	TN < 0.40[a,b]	TP < 0.035[a,b]		Fully supporting biological uses if the average of ≥ 4 summertime samples is below the specified nutrient concentration of either TN and TP unless ecological responses specified for moderate enrichment streams are exceeded. Sites with fewer samples will not be assessed for nutrients.
Moderate	TN 0.40–0.80[a]	TP 0.035–0.080[a]	Plant/Algal Growth[c]< 1/3 or more filamentous algae cover[d,e] OR GPP[c] of < 6 g O_2/m^2/day OR Plant and Microbial Growth ER[c] < 5 g O_2/m^2/day	Headwater streams within this range of nutrient concentrations will be considered impaired (not supporting for nutrients) if any response exceeds defined thresholds. Streams without response data will be listed as having insufficient data and prioritized for additional monitoring if either TN or TP falls within the specified range.
High	TN > 0.80[a,b]	TP > 0.080[a,b]		Streams over these thresholds will initially be placed on Utah's Section 303(d) list as threatened. Threatened streams will be further evaluated using additional data such as nutrient responses, biological assessments, or nutrient-related water quality criteria (e.g., pH and DO) both locally and in downstream waters.

Notes: Criteria would be applicable unless more restrictive total maximum daily load (TMDL) targets have been established to ensure the attainment and maintenance of downstream waters. DO = dissolved oxygen, ER = ecosystem respiration, GPP = gross primary production, TN = total nitrogen in mg/L, and TP = total phosphorus in mg/L.

[a] Seasonal average of ≥ 4 samples collected during the summertime growing season (June 1–September 30) will not be exceeded. Sites will be assessed using the higher of TN and TP threshold classifications.

[b] Response data, when available, will be used to assess aquatic life use support or as evidence for additional site-specific investigations to confirm impairment or derive and promulgate a site-specific exception to these criteria.

[c] Daily whole stream metabolism obtained using open-channel methods. Daily values are not to be exceeded on any collection event.

[d] Filamentous algae cover means patches of filamentous algae > 1 cm in length or mats > 1 mm thick. Daily values are not to be exceeded at any time during the growing season (June 1–September 30).

[e] Quantitative estimates are based on reach-scale averages with at least three measures from different habitat units (i.e., riffle, run) made with quantitative visual estimation methods.

[f] Excluded waters identified in UAC R317-2-13.2 (c).

Table 13. Decision Matrix That Will Be Used to Assess Support of Headwater Aquatic Life Uses for Nutrient-related Water Quality Problems

Nutrient Data (TN or TP)	Ecological Responses: No Data	Ecological Responses: < All Criteria	Ecological Responses: > Any Criterion
No Data or 4 Samples	Not Assessed[a]	Not Assessed[a]	Impaired (5)[b]
< Low Threshold	Not Assessed[a]	Fully Supporting (1 or 2)[d,f]	Impaired (5)[b,e]
Between Lower and Upper Threshold	Insufficient Data (3A)[c]	Fully Supporting (1 or 2)[d,g]	Impaired (5)
Above Upper Threshold	Threatened (5)[f,]	Threatened (5)[e,f]	Impaired (5)

Note: Associated *Integrated Report* categories are in parentheses.

[a]There are insufficient nutrient-related data to assess whether or not aquatic life uses are supported; however, aquatic life uses may be assessed with other water quality parameters.

[b]Sites where an ecological response threshold has been exceeded, but the lower TN and TP thresholds have not will be listed as impaired on the basis of a biological assessment; cause will be listed as unknown pending follow-up investigations.

[c]Sites where TN or TP fall below the upper threshold, but above the lower threshold, and lack measures for at least one response variable will not be assessed with respect to nutrients. These sites will be prioritized for follow-up monitoring.

[d]The integrated report distinguishes between sites where at least one parameter has been evaluated for all uses (Category 1) and sites where some uses are supported, and other uses are either not supported or not assessed (Category 2).

[e]Sites where nutrient and ecological response data are in conflict may be candidates for site-specific criteria.

[f]Sites below the both lower TN and TP thresholds with at least one response below the lower threshold will be considered to be fully supporting aquatic life uses unless another nutrient-related criterion (e.g., pH, DO) suggests otherwise. Sites without at least one measured response are not assessed.

[g]Sites between the lower and upper threshold require all three response parameters to be considered fully supporting with respect to nutrient enrichment.

Support of Recreational Uses

Excessive nutrients can also degrade recreational uses. To protect these uses in headwater streams the NNC establish a not-to-be-exceeded benthic algae concentration of 125 mg/chlorophyll-a (chl-a)/m^2, or the equivalent 49 g ash free dry mass (AFDM)/m^2 (UAC R317-2-14.7). A site where any reach-scale biomass value exceeds either threshold will be categorized as not supporting recreational uses (Figure 17).

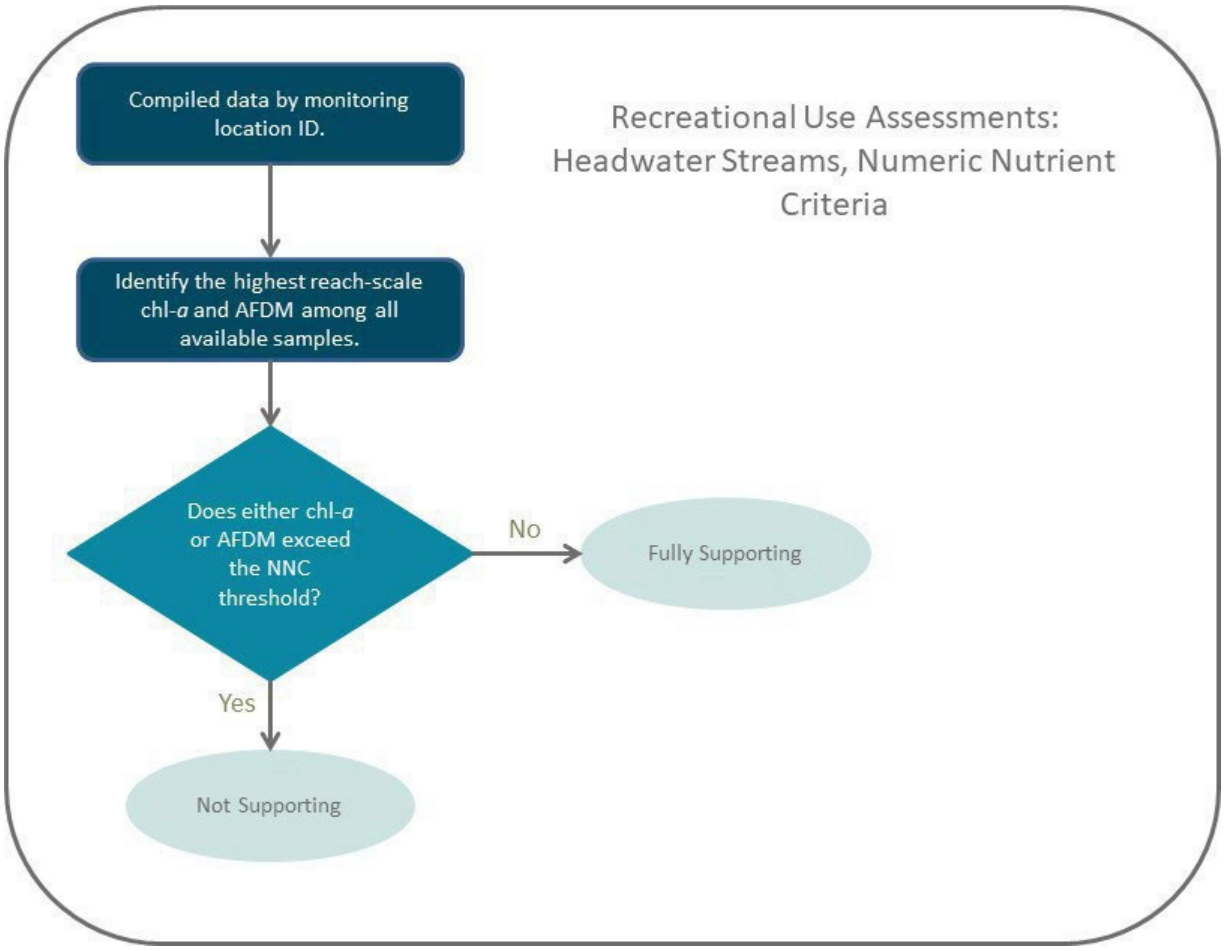

Figure 17. Overview of the assessment process to determine support of recreational life uses based on nutrient enrichment in headwater streams.

Narrative Standards: Biological Assessments

Utah's beneficial uses for aquatic life require the protection of fish (cold water or warm water species) and the organisms on which they depend (UAC R317-2-6.3). DWQ uses an empirically based model that directly assesses support of aquatic life uses by quantifying the integrity of macroinvertebrate assemblages. The biological integrity of sites is evaluated as a numerical index (Hawkins, 2006; Hawkins et al. 2010) calculated using a comparison of the biological composition observed at a focal site against a subset of ecologically similar reference sites (Hughes et al.,1986; Suplee et al.,2005).

River Invertebrate Prediction and Classification System Models

DWQ uses the River Invertebrate Prediction and Classification System (RIVPACS) model approach to quantify biological integrity (Wright, 1995). RIVPACS is a classification of freshwater sites based on macroinvertebrate fauna used to predict invertebrate taxa expected to occur under reference conditions. DWQ's RIVPACS model was verified and reconstructed by the USU BugLab. RIVPACS models compare the list of taxa that are observed (O) at a site to the list of taxa expected (E) with the least-human-caused disturbance for a similar site to quantify biological condition. Predictions of E are obtained empirically from reference sites that together are assumed to encompass the range of ecological variability observed among streams in the region where the model was developed. In practice, these data are expressed as the ratio O/E, the index of biological integrity (Figure 18). More information on Utah's RIVPACS model can be found on the DWQ website.

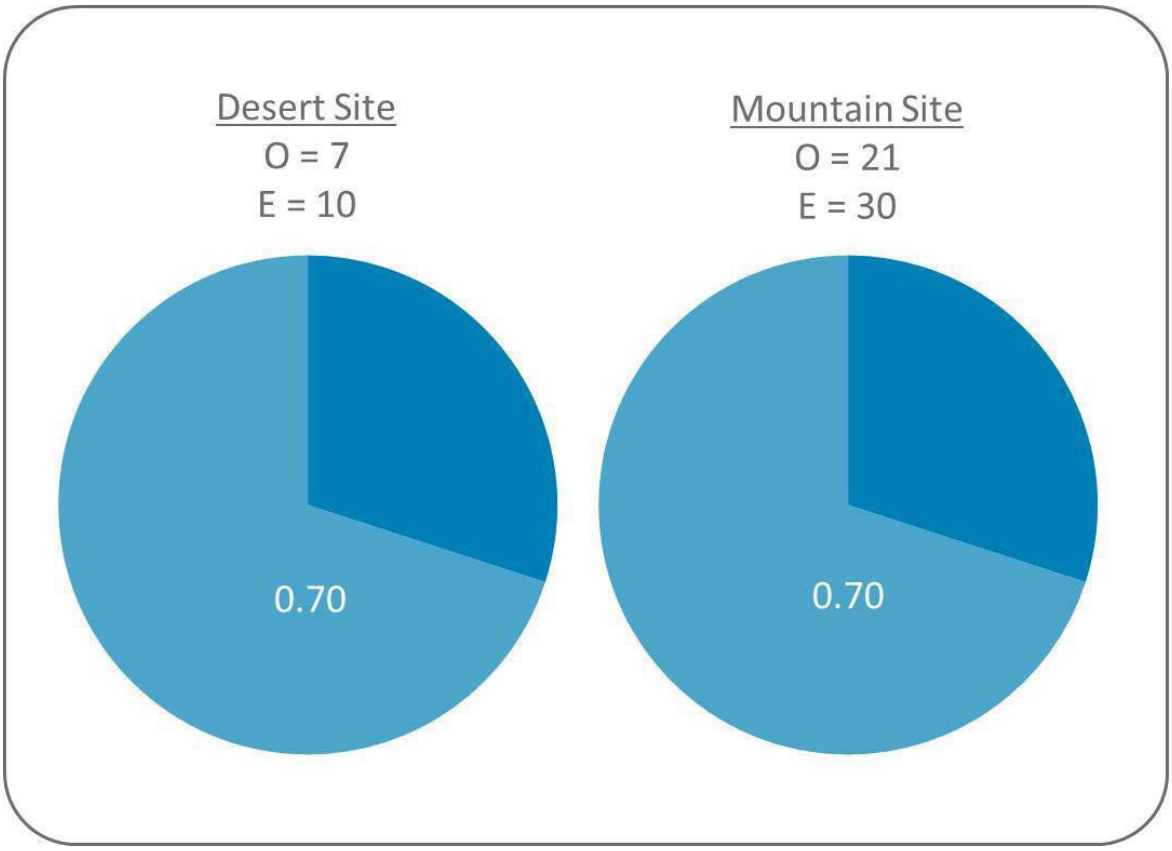

Figure 18. A hypothetical example of O/E as a standardization of biological assessments.

Assessing Biological Use Support

DWQ does not have numeric biological criteria. However, DWQ has narrative biological criteria (UAC R317-2-7.3) that specify how quantitative model outputs are used to guide assessments. A systematic procedure to make the narrative assessments as rigorous as possible was devised to use the RIVPACS model O/E values to determine aquatic life beneficial use support (Figure 19). The goal of this assessment process is to characterize each AU as fully supporting or not supporting aquatic life beneficial uses.

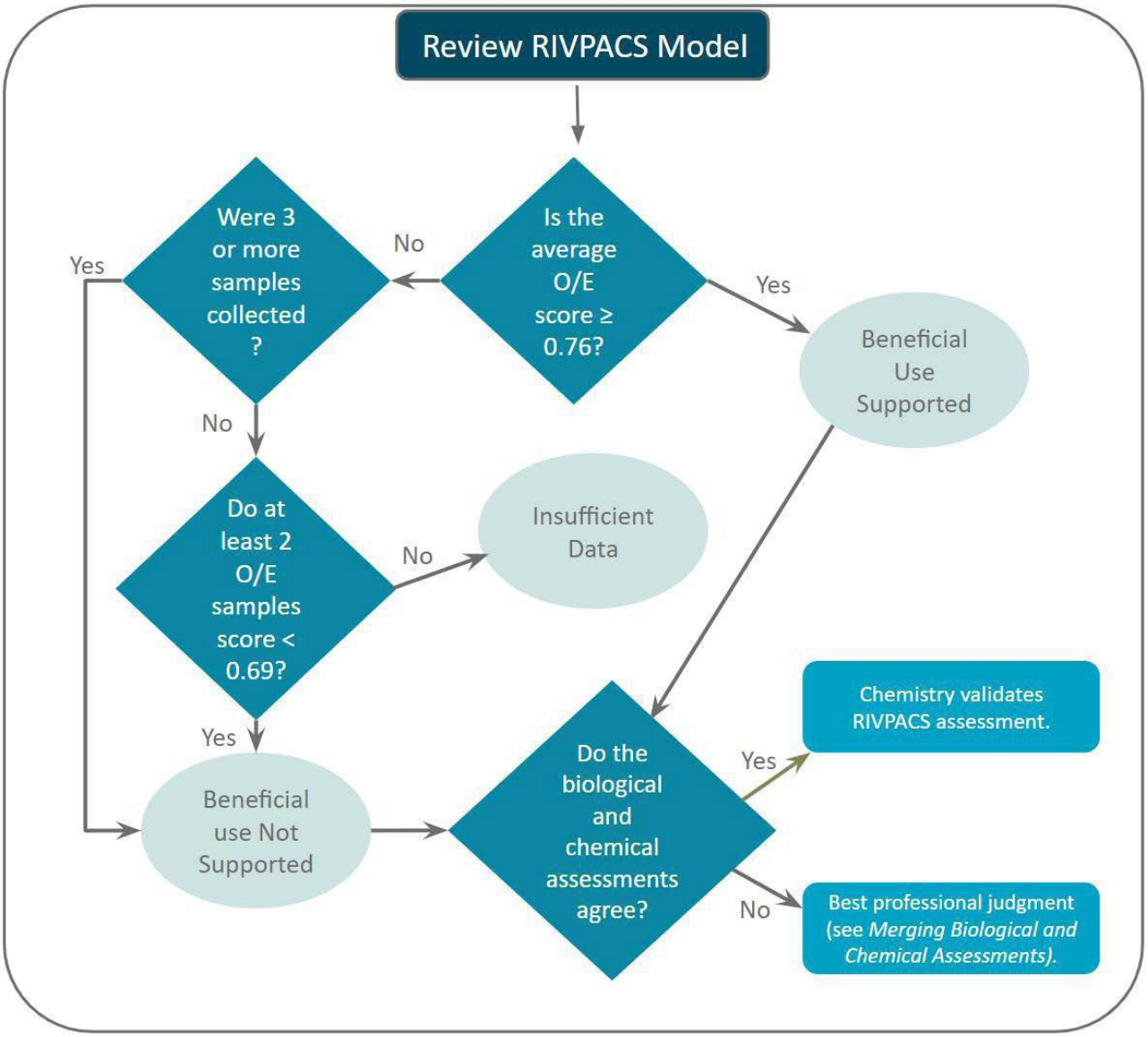

Figure 19. Decision tree for making biological assessment decisions.

Although many AUs contain a single biological monitoring location, some AUs contain multiple sites. In such instances, DWQ staff examines available data to determine if multiple sites in an AU score similarly. When comparisons suggest that sites in one AU are ecologically similar, O/E scores from all sites in an AU are averaged for assessment purposes, provided that conclusions of biological condition are similar. If O/E scores differ appreciably among multiple sites in an AU, DWQ will investigate possible explanations for such discrepancies (see the Assessment Unit Re-segmentation discussion for more information on that process). Additionally, if only one site is sampled in an AU, it is examined to determine whether it is an appropriate

representation of the AU.

To translate the O/E values into assessment categories, it is necessary to devise thresholds, or O/E scores that indicate whether or not a site is meeting biological beneficial uses (Table 14). The 10th and 5th percentiles of reference sites were used for these assessments. The data used for the current assessment calculate the threshold based on 5th percentile at 0.69, whereas the 10th percentile is 0.76. These thresholds will provide the bounds according to sample strength. The data are averaged across six years since the most recent year of available data. Multiple years are preferred for assessments because O/E scores can vary from year to year and assessments are based on average conditions. Assessments based on the average condition of three or more samples reduce the probability of making an error of biological beneficial-use support as a result of an unusual sampling event (e.g., following a flash flood, or a sample that was preserved improperly).

Table 14. Beneficial use support determination for O/E values obtained from different sample sizes.

Sample Size	O/E Threshold	Use Determination	Comments
≥ 1 sample collected over 6 years	Mean O/E score ≥ 0.76	Fully Supporting	Threshold based on 10th percentile of reference sites
≥ 3 samples collected over 6 years	Mean O/E score < 0.76	Not Supporting	Threshold based on 10th percentile of reference sites
< 3 samples	Mean O/E score ≥ 0.69–≤ 0.76	Insufficient Data	Lower threshold based on 5th percentile of reference sites
< 3 samples	2 O/E scores < 0.69	Not Supporting	Threshold based on 5th percentile of reference sites
< 3 samples	1 O/E score < 0.69	Insufficient Data	Threshold based on 5th percentile of reference sites

AUs not meeting biological thresholds will be assessed as not supporting. Assessments of more than three samples with average O/E scores of greater than or equal to 0.76 have a low probability of being misclassified as nonsupport. Alternatively, assessments with fewer than three samples with an average O/E score of less than 0.69 have a 5% probability of being misclassified as nonsupport. To ensure that one sample was not incorrectly misapplied, at least two samples with a score of 0.69 or less will be required to consider an AU not meeting the aquatic life use. Assessments with fewer than three samples that have a mean O/E score of greater than or equal to 0.69 and less than 0.76 will be placed in Category 3 (insufficient data and information with exceedances), which indicates that there are insufficient data to make an assessment. All sites listed as Category 3 with exceedances will be given a high priority for future biological monitoring.

Assessments Specific to Lakes, Reservoirs, and Ponds

Assessment Overview

Lakes, reservoirs, and ponds are classified by basin in UAC R317-2-13.12, with the accompanying tables listing their designated beneficial uses. Waterbodies not specifically listed are assigned beneficial uses by default to the classification(s) of the tributary stream(s). Numeric water quality criteria for both toxic and conventional parameters are assigned for each designated use in UAC R317-2-14, Deeper lakes naturally stratify thermally, which affects how conventional water quality parameters are assessed (UAC R317-2-14),so each waterbody is evaluated for thermal stratification and assessed appropriately.

Utah lake and reservoir assessments are divided into two tiers:

Tier I

The Tier I assessment is the preliminary determination of beneficial use support for recreational use (Class 2), aquatic life (Class 3), and agricultural (Class 4), classes based on conventional parameters such as DO, temperature, and pH, toxic parameters, and *E. coli*. When Tier I data are not available, DWQ may rely on Tier II data to make an initial assessment. The waterbody will be classified as mixed or stratified based on the depth profile information when considering aquatic life use support within this tier. If it is a stratified waterbody, the evaluation of conventional parameters will follow the protocol designed to evaluate the sufficiency of aquatic life habitat. If the waterbody is mixed, it will follow the assessment protocol that evaluates the entire depth profile.

Tier II

The Tier II assessment looks further into specific weight of evidence criteria (trophic state index [TSI], fish kills, and algal composition) through secondary reviews. The Tier I preliminary support status may be modified through evaluation of the TSI, water quality related fish kills, and the composition and abundance of cyanobacteria, also known as harmful algal blooms. The Tier II evaluation could adjust the preliminary support-status ranking if at least two of the three criteria indicate a different support status.

Tier I Assessment

Drinking Water Use Support

Drinking water use support is assessed through evaluations of pH, toxics, *E. coli*, and harmful algal blooms (HABs). Please review the Toxics Parameter Assessments for All Waters, *Escherichia Coli* Assessment for All Waters, and Harmful Algal Blooms (HAB) assessment sections for further information regarding drinking water use assessments for toxics, *E. coli,* and HABs. The evaluation process of pH is the same as the requirements for aquatic life uses described below.

Recreational Use Support

Recreational use support is assessed through evaluation of pH, *E. coli*, and HABs. The pH evaluation is the same as the requirements for aquatic life uses described below. Please review the *Escherichia Coli* Assessment for All Waters and HAB assessment sections for further information regarding recreational use assessments for *E. coli* and HABs.

Aquatic Life Use Support

Lake monitoring routinely involves collecting pH, temperature, and DO measurements at approximately one-meter intervals throughout the water column from the surface to the lake bottom. (Note: the measurement interval may be modified in the field depending on waterbody depth). These water column measurements are compared against Utah water quality standards to assess beneficial use support (Figure 20). A separate process is used to determine whether sufficient habitat is available for aquatic life for waterbodies that are thermally stratified (Figure 21).

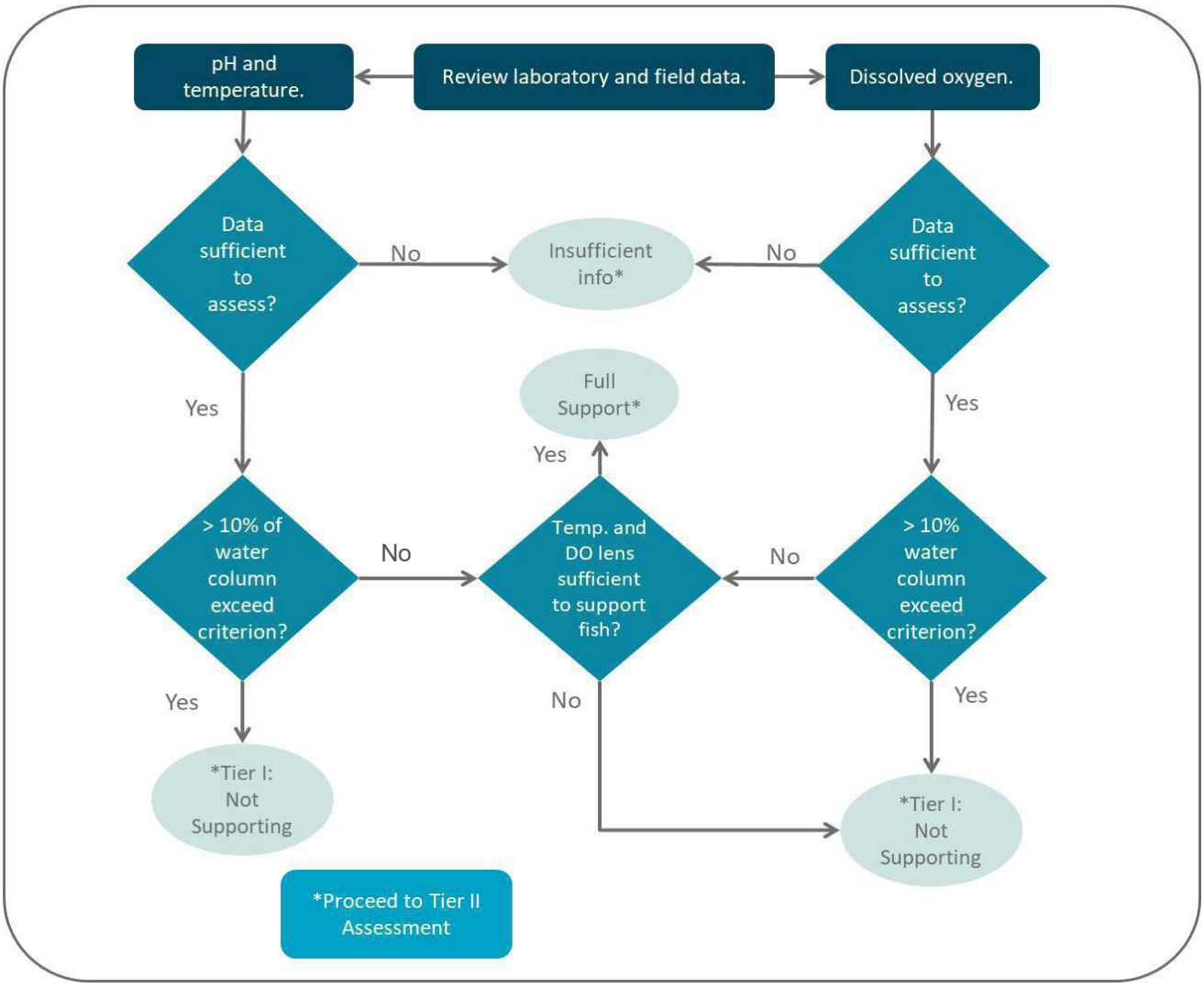

Figure 20. Process using conventional (nontoxic) parameters to assess lakes that are mixed.

pH, All Lakes and Reservoirs

Beneficial Use Supported

The beneficial use is supported if the number of violations are less than or equal to 10% of the measurements (see Figure 21, Panel A).

Beneficial Use Not Supported

The beneficial use is not supported if greater than 10% of the measurements (minimum of two discrete

measures outside thresholds) violate the pH criterion (Figure 21, Panel B).

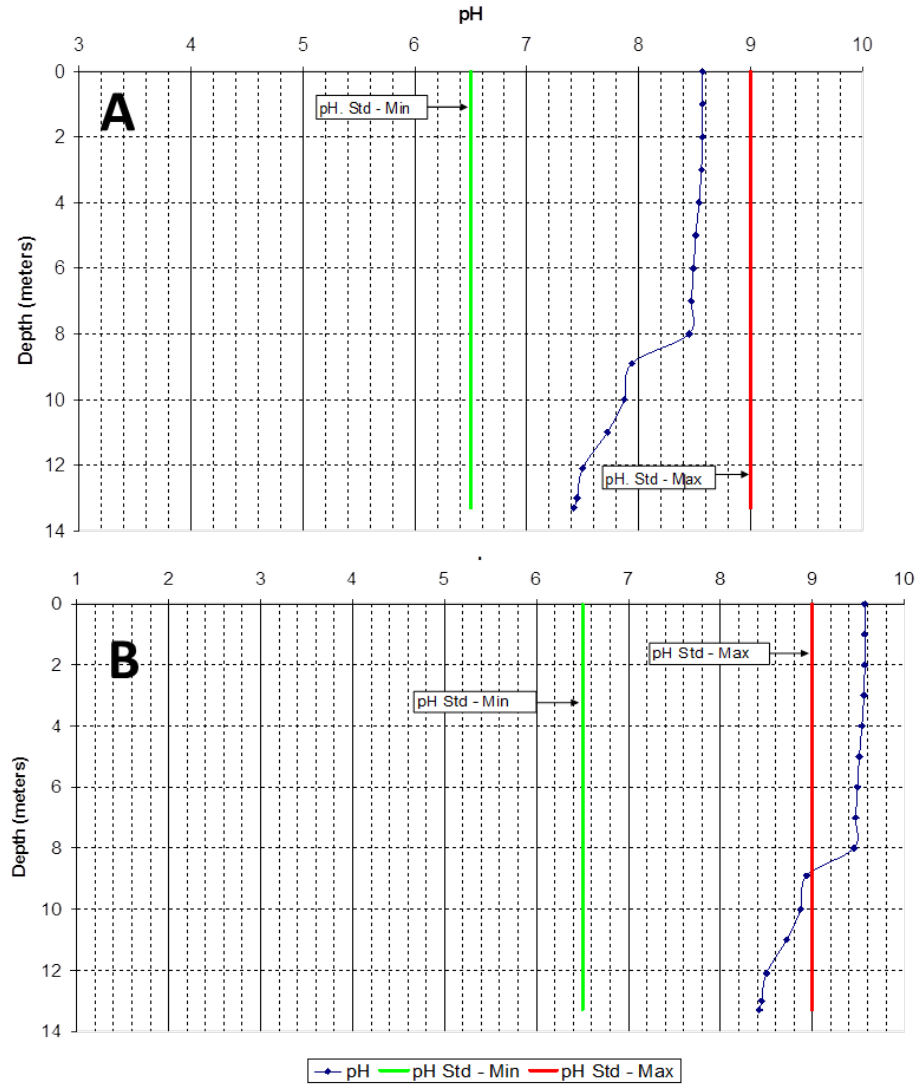

Figure 21. Plots of pH measurements (blue dots) against lake depth for a waterbody meeting (Panel A) and violating (Panel B) the pH water quality standards.

Temperature and Dissolved Oxygen: Mixed Lakes and Reservoirs

Temperature

The criteria used to assess the beneficial use support are based on profile data. If the temperature criterion is exceeded in more than 10% of the measurements, with a minimum of two discrete measures exceeding criteria from any individual sampling event, the site is considered to be not supporting of aquatic life uses.

Beneficial Use Fully Supported

The beneficial use is supported if the number of violations is less than or equal to 10% of the measurements (see Figure 22, Panel A).

The beneficial use is not supported if more than 10% of the measurements violate the temperature standard (see Figure 22, Panel B).

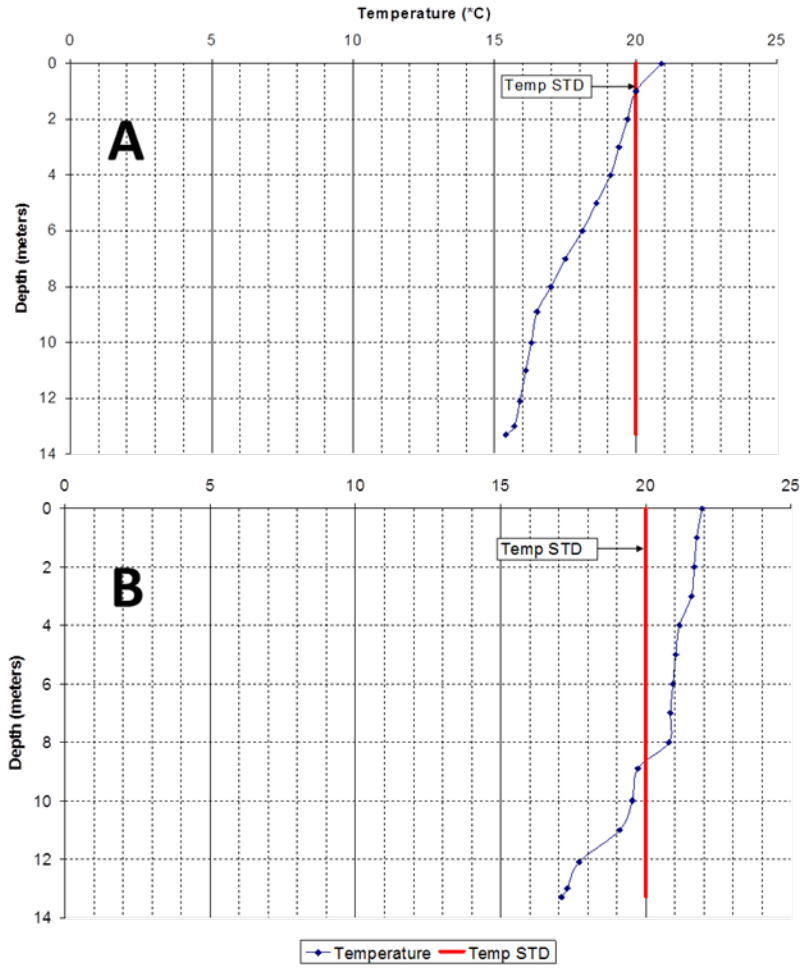

Figure 22. Plots of temperature measurements (blue dots) against lake depth for two sites to provide an example of assessment procedures. Note: The red line illustrates a temperature criterion of 20 degrees Celsius: Class 3A beneficial use.

Dissolved Oxygen

The DO assessment uses data gathered from profiles. The DO assessment uses the minimum criteria of 4.0 mg/L for Class 3A waters and 3.0 mg/L for Class 3B and 3C waters (UAC R317-2-14, Table 2.14.2). State standards account for anoxic or low DO conditions that may exist in the bottoms of deep waterbodies (UAC R317-2-14). For that reason, DO assessments for stratified lakes and reservoirs follow the stratified lakes and reservoirs assessment methods below.

Beneficial Use Supported

The beneficial use is supported if at least 90% of the oxygen measurements are greater than the standard.

Beneficial Use Not Supported

The beneficial use is not supported if greater than 10% of the oxygen measurements are below the DO standard during any single sampling event.

Temperature and Dissolved Oxygen: Stratified Lakes and Reservoirs

When sample locations demonstrate stratification, a separate assessment technique for temperature and DO is used to ensure that sufficient habitat for aquatic life exists. Habitat is considered sufficient if at least three continuous meters of the water column are meeting the criteria for both temperature and DO. The rationale for a conclusion of beneficial use support based on the existence of adequate habitat follows the decision

diagram (Figure 23). Figure 24 provides an example of supporting and not supporting beneficial uses based on the DO and temperature data above the thermocline.

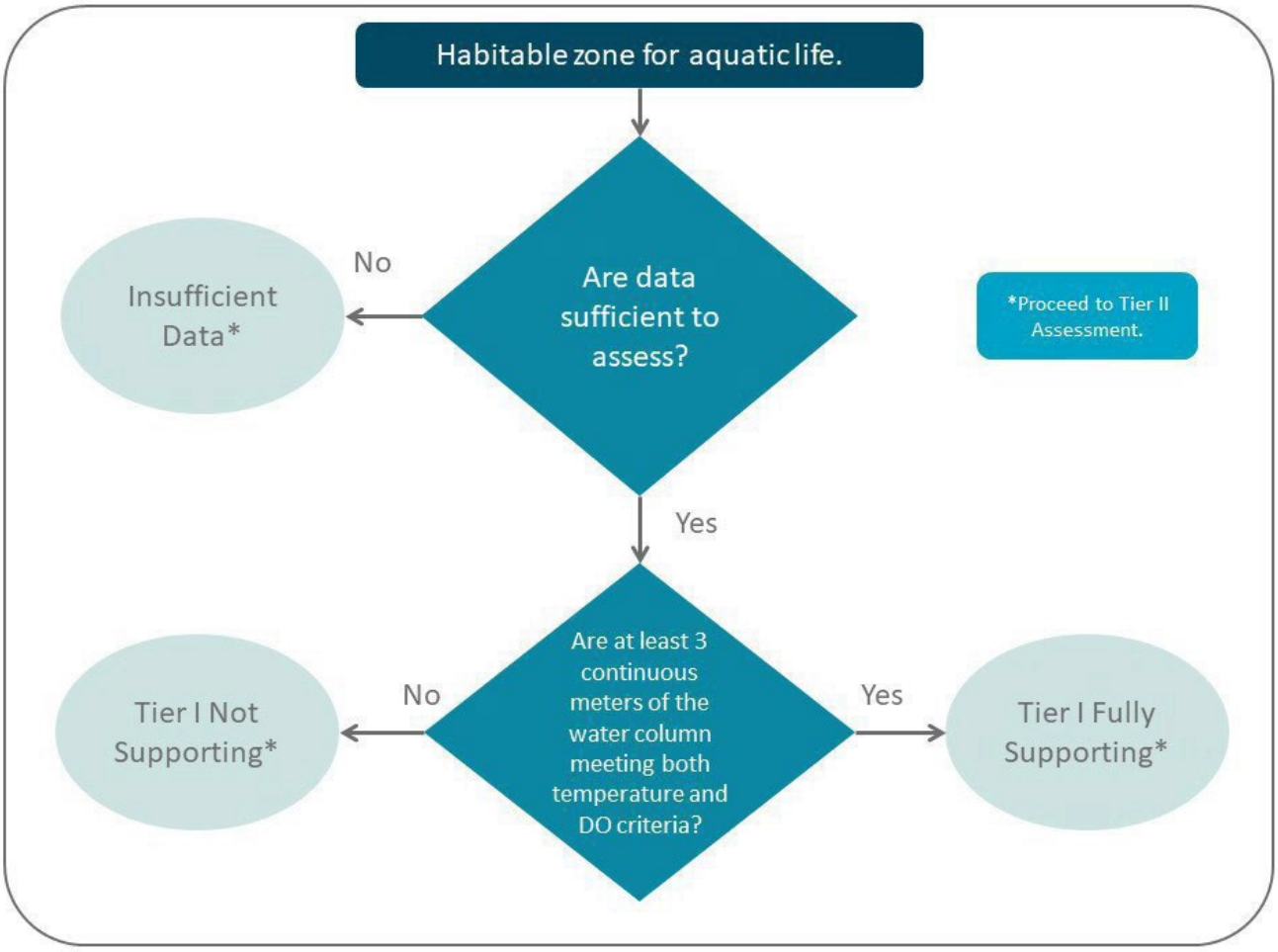

Figure 23. Beneficial use support based on the existence of adequate habitat.

Beneficial Use Supported

The beneficial use is supported if there is sufficient habitat, defined as three continuous meters of the water column meeting the criteria for both temperature and DO.

Beneficial Use Not Supported

The beneficial use is not supported if there is insufficient habitat for aquatic life based on the DO and temperature profile.

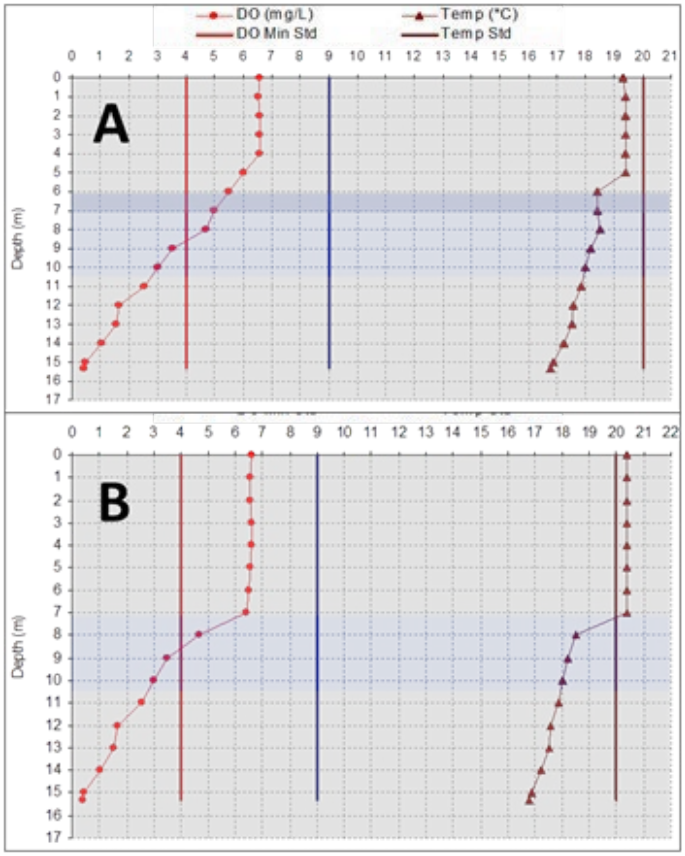

Figure 24. Concept of the habitable zone where both DO and temperature are suitable for aquatic life. The site depicted on the top (Panel A) would be considered supporting because the lens where both temperature and DO provide sufficient habitat is greater than three continuous meters (>=3 m). Conversely, the site on the bottom (Panel B) is not supporting aquatic life uses because although there are regions in the water column where dissolved oxygen and temperature criteria are met separately, the region of overlap in the water column for both temperature and dissolved oxygen criteria (approximately 8 meters depth) is less than three meters.

Total Dissolved Solids: Agricultural Use Support

The following rules are used to determine whether a lake is supporting its agricultural beneficial use (Figure 25):

Beneficial Use Supported

The beneficial use is supported if the standard is exceeded in 10% or fewer of TDS samples.

Beneficial Use Not Supported

The beneficial use is not supported if the TDS standard is exceeded in more than 10% of TDS samples.

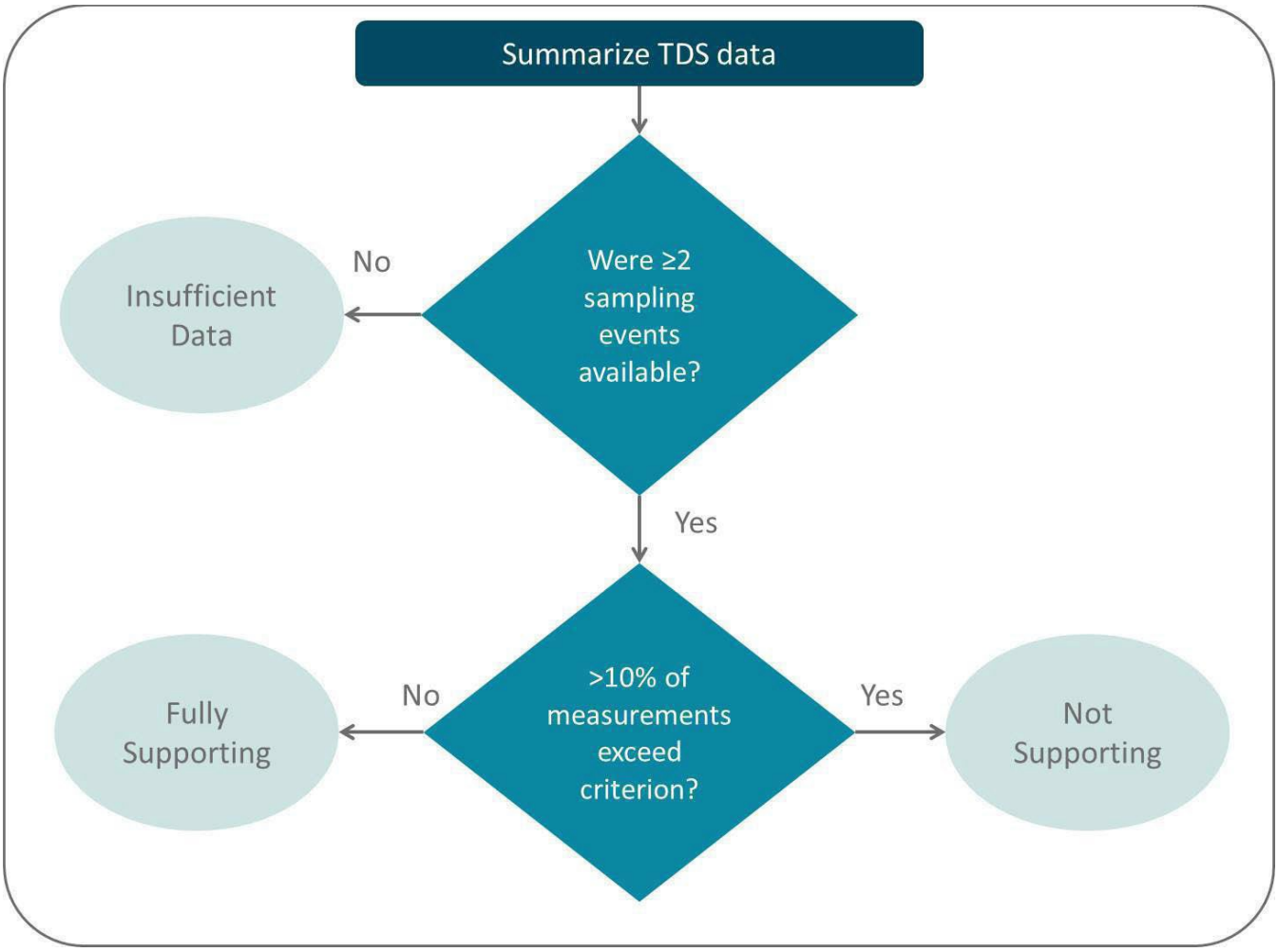

Figure 25. Assessment process to determine support of the agricultural beneficial use with TDS data.

Tier II Assessment

Weight of Evidence Criteria

The weight of evidence criteria allows DWQ to use key lines of evidence for assessing a waterbody's beneficial use support, including evaluations of Utah's narrative standard.

The weight of evidence evaluation consists of three components:

- Increasing trophic state index (TSI) trend over the long term (approximately 10 years) or a TSI-Chl-a greater than 50 (see Carlson's Trophic State Index section below for more information)
- The observation of water quality based fish kills (see the Narrative Standards for All Waters for more information) or winter DO measures not meeting the criterion when measured
- Evaluation of phytoplankton community

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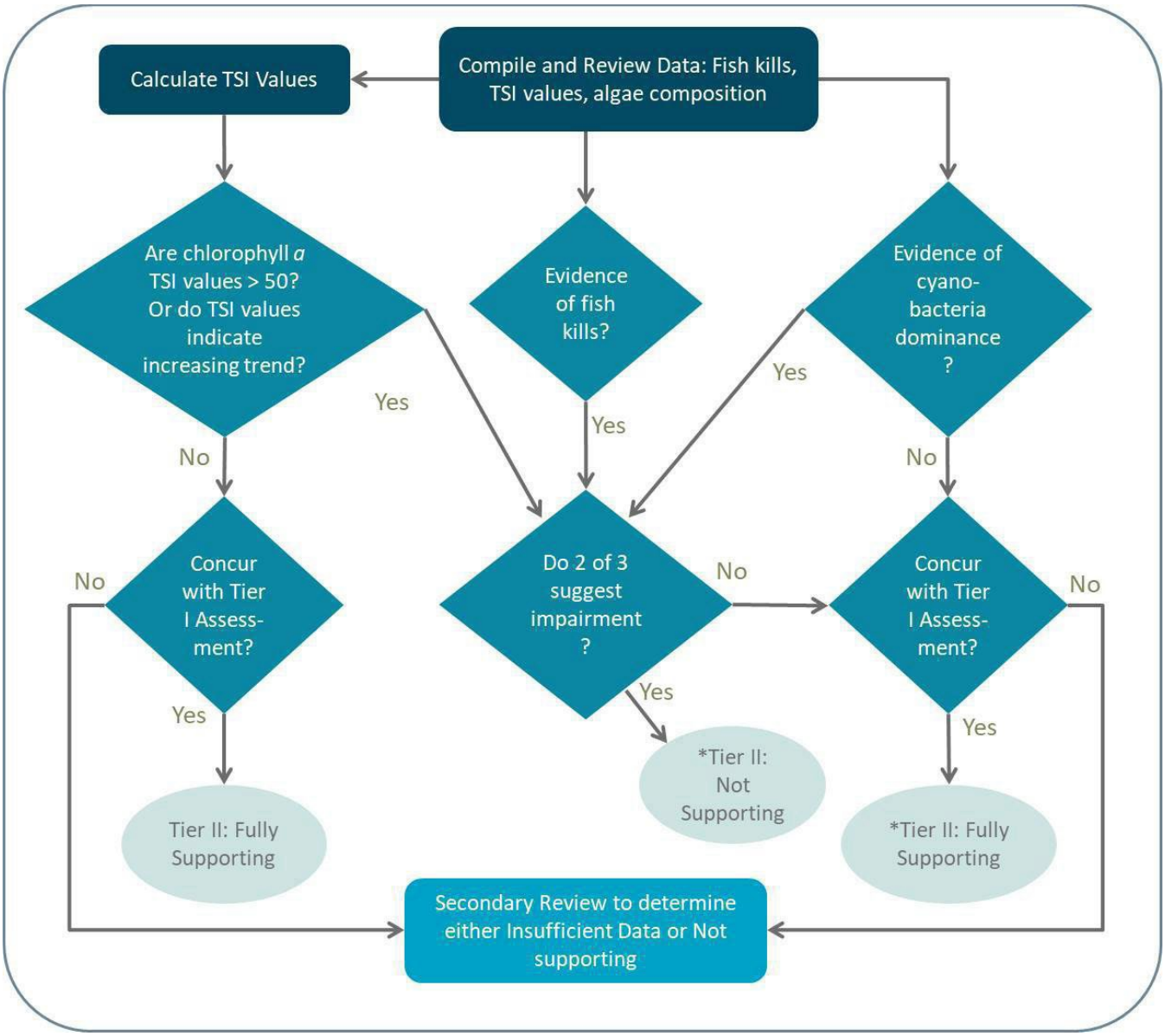

Figure 26. Tier II assessment process for lakes, reservoirs, and ponds.

Carlson's Trophic State Index

The Carlson's TSI is calculated using Secchi disk transparency, total phosphorus, and chlorophyll a. TSI value ranges from 0 to about 100, with increasing values indicating a more eutrophic condition. TSIs are calculated independently for each indicator (i.e., Secchi disk, chlorophyll a, and total phosphorus) and are not averaged. Chlorophyll a (TSI-Chl-a) is generally considered the most reliable indicator of trophic status, followed by Secchi disk (TSI-SDD), and total phosphorus (TSI-TP) (Carlson, 1977).

Carlson's TSI estimate for chlorophyll a is calculated using the following equation:

- Trophic status based on Chlorophyll a (TSI-Chl-a): TSI-Chl-a = 9.81 ln (Chl-a) + 30.60, where Chl-a = chlorophyll a concentrations in µg/L.

Phytoplankton Community

DWQ routinely collects phytoplankton to evaluate the composition and relative abundance of algae and cyanobacteria. These data are used to identify waterbodies potentially undergoing cultural eutrophication that may negatively impact beneficial uses. Phytoplankton data are used in the Tier II assessment process because they may reflect nutrient availability and nutrient ratios. The observation that a waterbody has a diverse assemblage of diatoms or green algae relative to cyanobacteria or other potentially harmful taxa is used as a line of evidence that the waterbody is supporting its designated uses. In contrast, a phytoplankton assemblage dominated by cyanobacteria may be indicative of eutrophication, an increased potential for harmful algal blooms, and a loss of aquatic biodiversity.

Great Salt Lake

The Great Salt Lake (GSL) is assigned its own beneficial use class (Class 5) and is further divided into five subclasses (5A–5E) that represent the four main bays (Gilbert, Gunnison, Bear River, and Farmington) and transitional waters (UAC R317-2-6). The only numeric water quality criterion currently applicable to GSL is a selenium bird- egg tissue criterion for Gilbert Bay (Class 5A). The beneficial uses of GSL are protected and assessed by Utah's narrative water quality standard (UAC R317-2-7.2) in addition to this criterion. The Great Salt Lake Water Quality Strategy outlines the process for monitoring and criteria development for GSL.

Gilbert Bay Bird-Egg Tissue Assessment

Bird eggs are collected during the nesting season from representative locations within the Gilbert Bay AU or adjacent transitional wetlands (UAC R317-2-6.5). Selenium concentrations from eggs collected each year are assessed against the criterion in UAC R317-2-14. Gilbert Bay's beneficial use will be identified as impaired if the geometric mean of selenium concentrations from five or more eggs collected in any year exceeds the 12.5 mg/kg criterion. If the geometric mean of selenium concentrations from five or more eggs collected in any year exceeds 9.8 mg/kg dry weight, DWQ will identify Gilbert Bay's beneficial use as threatened and initiate preliminary TMDL studies to evaluate selenium loading sources. If Gilbert Bay is identified as impaired for selenium, five consecutive nesting seasons meeting selenium criteria will be considered sufficient for delisting the impairment.

The Gilbert Bay selenium criterion also includes thresholds below 9.8 mg/kg that trigger management actions (Table 15). DWQ evaluates egg concentrations against these thresholds to inform management decisions, but these thresholds are not used for use attainment determinations in the IR.

Eggs are also collected as part of discharge monitoring programs for certain dischargers to GSL. Eggs collected as a part of these programs are specifically intended to characterize discharge outfall conditions and are therefore not relevant to assessing more general GSL conditions. Eggs collected under these programs are only used for evaluating discharge permits and are not used in 303(d) assessment of the GSL AUs.

Table 15. Selenium trigger levels and DWQ responses (UAC R317-2-14.2(14)).

Se concentration (mg/kg dry weight)	DWQ Response
< 5.0	Routine monitoring with sufficient intensity to determine if selenium concentrations within the Great Salt Lake ecosystem are increasing
5.0	Increased monitoring to address data gaps, loadings, and areas of uncertainty identified from Great Salt Lake selenium studies
6.4	Initiation of a Level II Antidegradation Review (ADR) by the State for all discharge permit renewals or new discharge permits to Great Salt Lake. The Level II ADR may include an analysis of loading reductions.

Se concentration (mg/kg dry weight)	DWQ Response
9.8	Aquatic life use declared as threatened. Initiate preliminary TMDL studies to evaluate selenium loading sources.
12.5	Aquatic life use declared as impaired. Formalize and implement TMDL.

Toxic Parameter Assessments for All Waters

DWQ identifies toxics as all parameters within UAC R317-2-14 that are not defined as conventional parameters (see Table 11 and the Lakes, Reservoirs, and Ponds Assessment section).

Data are compared against one or more toxic criteria, depending on the beneficial use, to ensure protection of designated beneficial uses. One daily measurement at each monitoring location is compared to the chronic and/or acute criteria for 303(d) assessment purposes. DWQ targets dissolved metals sample collection in lakes at one meter above the bottom of the deepest site of the waterbody, as this location is the most likely to identify dissolved metal exceedances in a lake. Dissolved metals are also assessed through this method when additional metals data are available for other lake locations or depths. The acute and chronic averaging periods defined in UAC R317-2-14 are not currently applied for 303(d) assessment analysis because monitoring and sampling frequencies are different and more widely spaced than the acute and chronic periods typically defined in this rule.

Equation-Based Toxic Parameters

A number of toxic criteria are specified as equations rather than specific values (see footnotes in UAC R317-2-14). The equations include variables of other chemical constituents or water properties that either reduce or magnify the extent to which a toxic is harmful to aquatic life. In order to properly apply the correction factor equations, DWQ uses measured data for the variables in the equation to calculate the appropriate numeric criteria for the sample. In order to calculate the correct criterion for a pollutant-result value, the monitoring location site and date of sample must match for the pollutant of concern and the additional parameter(s) that are needed to complete the equation. In the case where there are missing supplemental data values to apply the equation, the following rules will be applied.

- **Hardness-dependent toxics:** For hardness-dependent criteria where a calcium (Ca) or magnesium (Mg) value is missing and the hardness cannot be calculated, a hardness value reported from the laboratory will be used. Data without a hardness value are removed from assessments.
-
- **Aluminum, chronic only:** If either a field pH or calculated or laboratory hardness is missing, the aluminum acute default value of 750 microgram per liter (µg/L) provided in Table 2.14.2 of UAC R317-2 will be applied. Otherwise, the following pH and hardness combination and numeric criteria are applied:

    a. pH ≥ 7.0 and (calculated or laboratory reported) hardness ≥ 50 parts per million (ppm): 750 µg/L
    b. pH < 7.0 and (calculated or laboratory reported) hardness ≥ 50 ppm: 87 µg/L
    c. pH ≥ 7.0 and (calculated or laboratory reported) hardness < 50 ppm: 87 µg/L
    d. pH < 7.0 and (calculated or laboratory reported) hardness < 50 ppm: 87 µg/L

- **Ammonia, chronic:** DWQ assumes fish early life stages are present at all monitoring locations. The following equation is used: ((0.0577/(1+10^(7.688-pH))) + (2.487/(1+ 10^(pH-7.688)))) * MIN (2.85, 1.45*10^(0.028*(25-T))).Where (1.45*10^(0.028*(25-T))) is ≤ 2.85, (1.45*10^(0.028*(25-T))) is applied and if (1.45*100.028*(25-T)) is > 2.85, 2.85 is applied. However, if a field pH or temperature reading is unavailable, a correction factor cannot be made and the result value for ammonia will be removed from the

assessment.

- **Ammonia, acute**: If a field pH is missing, a correction factor cannot be made, and the result value for ammonia will be removed from the assessment.

Assessment Process

Once chronic and acute criteria are calculated, toxicant sampling results, where applicable, are compared to the criteria to determine if the monitoring location is supporting beneficial uses or is impaired due to exceedances of the standard. Sites with sufficient data (four or more samples) with two or more exceedances of the acute and/or chronic criteria will result in non-support of the beneficial use. Four or more samples will be required with one or zero samples exceeding acute or chronic criteria for sites to meet beneficial uses. In cases where there are fewer than four samples, and one or zero samples are exceeding the acute or chronic criteria, sites will be placed in Category 3, insufficient data (Figure 27).

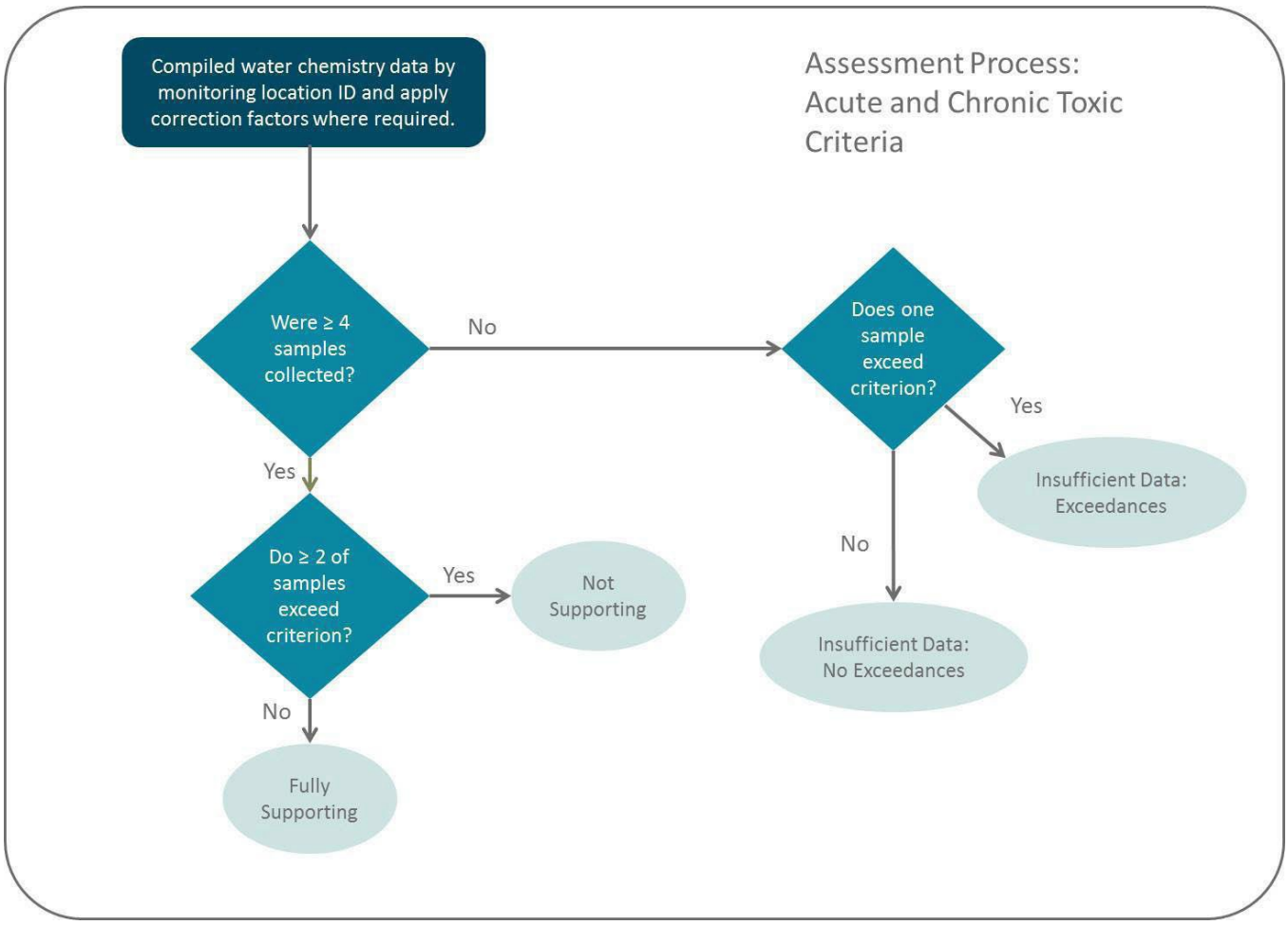

Figure 27. Overview of the assessment process for toxic parameters.

Escherichia coli Assessment for All Waters

Data Preparation

Following a credible data review and additional QA/QC checks as outlined in DWQ's Quality Assurance Program Plan for Environmental Data Operations (DWQ, 2014), DWQ compiles all credible data within the period of record of concern and makes several adjustments based on the reported limits and sampling frequencies necessary to conduct the assessment. Similar to the other QA/QC and assessment procedures outlined in this document, the raw data and accompanying metadata values in *Escherichia coli (E. coli)* datasets are not altered. Instead, DWQ uses a series of database comments and flags.

Recreation Season

To ensure protection of recreation uses, *E. coli* assessments will be conducted on data collected during the recreation season from May 1 through October 31. The recreation season may be adjusted to be either longer or shorter based on site-specific conditions. Any site-specific adjustments made to the recreation season will be documented.

Escherichia coli Collection Events and Replicate Samples

Datasets at a single monitoring location may contain replicate samples or multiple samples collected in the same day due to sampling design. Single daily values or collection events are required for *E. coli* assessments. DWQ defines a collection event as one of the following:

- The daily most probable number (MPN) result value
- A geometric mean of replicates where multiple samples are collected on the same day
- The daily MPN as a quantified value reported as being obtained from a dilution

In cases where replicate samples were taken and there is 1) a quantified MPN value reported from a dilution and 2) the MPN value reported is greater-than-detect, the quantified MPN value will be used as the collection event for assessment purposes. In this scenario, MPNs reported as greater-than-detect are not used to calculate the geometric mean for the collection event.

Data Substitution for Calculating the Geometric Mean

Assessments use the geometric mean of representative samples to determine if *E. coli* standards are met. *E. coli* data that are reported as less- than-detect (< 1) or 0 will be treated as a value of 1 to allow for the calculation of a geometric mean. Similarly, *E. coli* data that are reported as greater-than-detect (> 2,419.6) will be treated as 2,420 to allow for the calculation of the geometric mean.

Use Designation

DWQ assesses use support for each monitoring location once the data are compiled. All waters of the state are classified for contact recreation (Class 2), and some waters are classified as drinking water sources (Class 1C). These uses have specific associated *E. coli* standards that are used to determine use support. The numeric criteria within UAC R317-2-14 are applied to Class 2 and Class 1C uses based on the beneficial use assignments to a waterbody or segment within a waterbody.

Assessment Process

Annual Recreation Season Assessment

DWQ begins the assessment process by gathering information on health advisories and/or closures issued during the recreation season. If a waterbody had two or more *E. coli*–related beach closures and/or health advisories in a recreation season, or if a health advisory and/or closure was issued for recreational access to a waterbody for two or more weeks, the waterbody is considered impaired and no further assessment is conducted (Figure 17). If there were fewer than two closures or advisories, or if the closure lasted less than two weeks, the assessment process continues using *E. coli* concentrations.

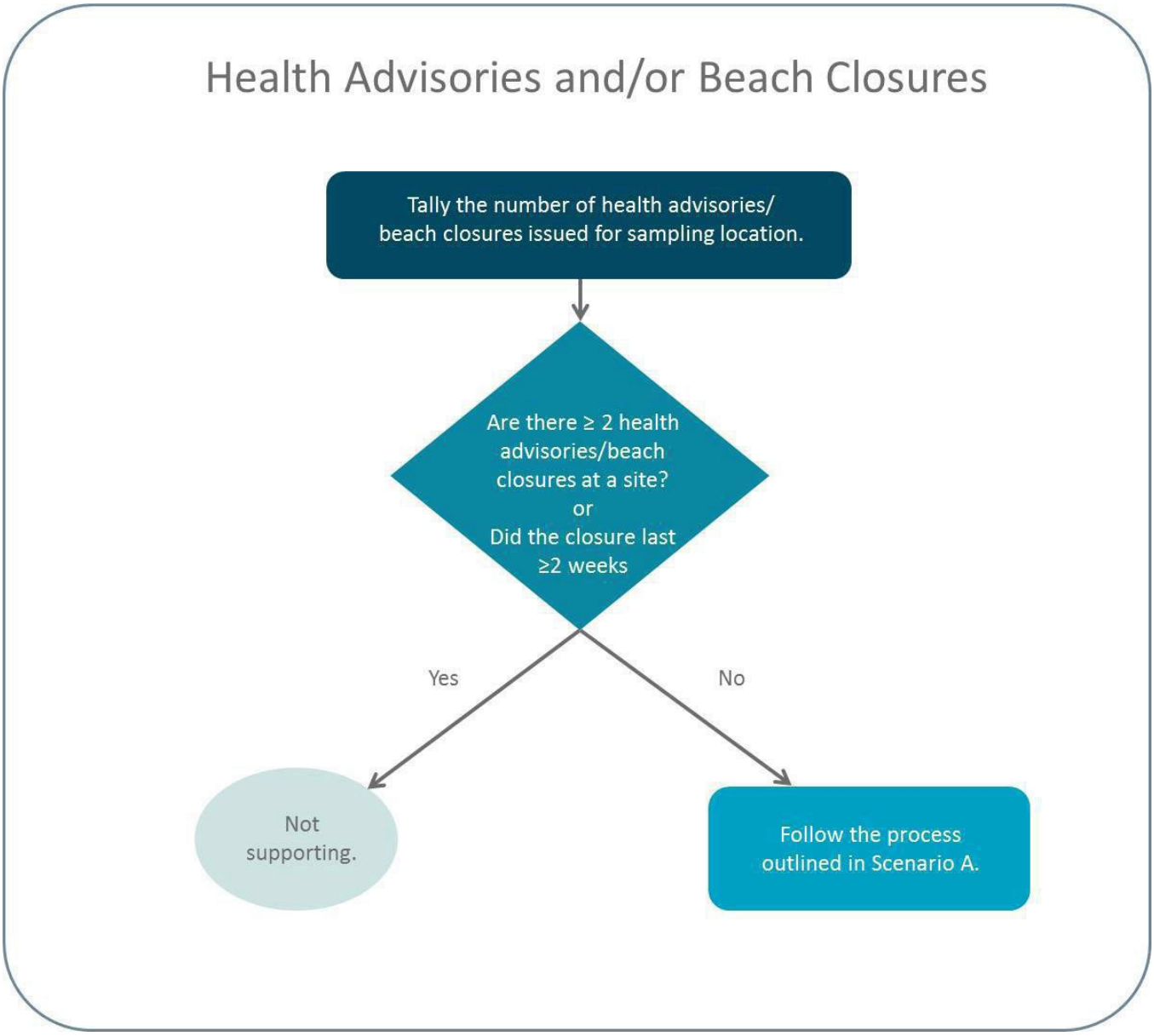

Figure 28. Considering E. coli-related beach closures and/or health advisories.

To ensure protection of recreation and drinking water uses of assessed waterbodies of the state, DWQ considers three scenarios based on sampling frequency and the number of collection events at a monitoring location:

- Scenario A**:** A seasonal assessment against the maximum criterion (Figure 18)
- Scenario B: A 30-day geometric mean assessment (Figure 19)
- Scenario C: A seasonal geometric mean assessment (Figure 20)

Scenario A

If there are greater than or equal to five collection events spaced 48 hours or more apart within a recreation season, then all collection events within the recreation season are used to make an assessment (see Figure 18).

- DWQ does not make impairment decisions based on one exceedance. If the monitoring location has less than 10 collection events within a recreation season, then one collection event may exceed the numeric criterion and the site will still be considered in Scenarios B and C. If two or more collection events exceed the numeric criterion, then the monitoring location is not supporting the beneficial use, and the next beneficial use is assessed.
- If there are 10 or more collection events within a recreation season, a percent exceedance is calculated by dividing the number of collection events that exceed the maximum criterion by the total number of collection events. If the calculated percentage is 10% or less, the monitoring location is then assessed using Scenarios B and C. If the calculated percentage is greater than 10%, the monitoring location is not supporting its beneficial use, and the next beneficial use is assessed.
- If there are less than five collection events spaced 48 hours or more apart within a recreation season, then the monitoring location is placed in the insufficient data category.
- If one or more collection events exceed the maximum criterion, then the monitoring location is placed in the insufficient data with exceedances category.
- If no collection events exceed the maximum criterion, then the monitoring location is placed in the insufficient data, no exceedances category.

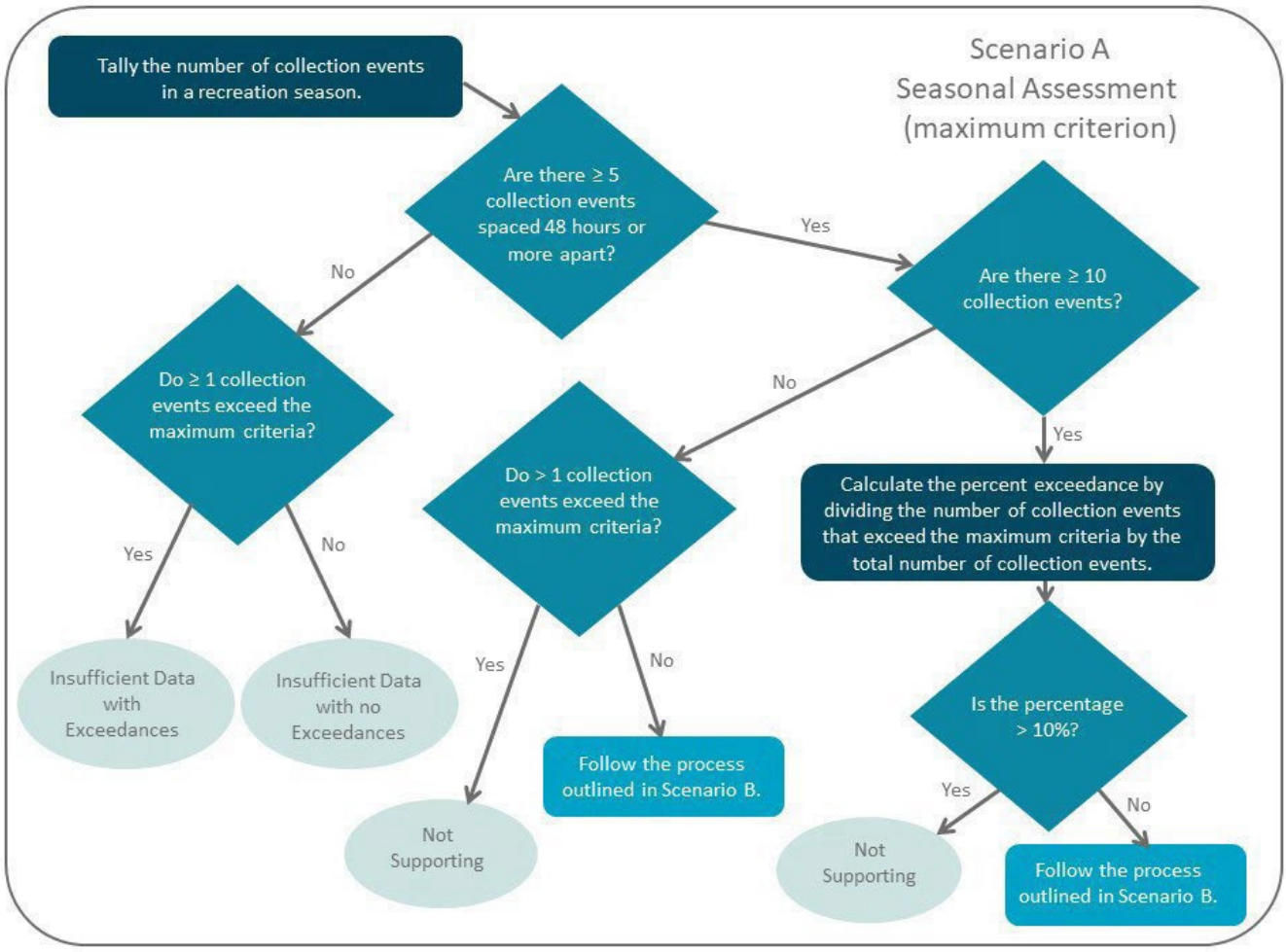

Figure 29. Scenario A: A seasonal assessment using the maximum criterion at a monitoring location.

Scenario B

If the site's calculated percent exceedance of the maximum criterion is less than or equal to 10% or no more than 1 sample exceeding the maximum criterion in the case of a dataset with 5 to 9 samples, the site is then assessed using the 30-day geometric mean criterion (see Figure 19). There must be a minimum of five collection events in 30 days with at least 48 hours between collection events in order to assess against the 30-day geometric mean criterion directly. This ensures that collection events are adequately spaced and are representative of ambient conditions.

Step 1: Determine if there are ≥5 collection events within a 30-day period.

- Count the number of collection events collected between each sample date (day 1) and the sample date plus 29 days (day 30).

Step 2: Determine if the collection events are representative (must have ≥5 collection events within a 30-day period).

- Count the number of collection events collected between each sample day (day 0) and the sample date plus 2 days (day 3).
- If there are two collection events within this period, only one sample will be considered representative.

Step 3: Calculate the 30-day geometric mean.

- If there are ≥5 representative samples in a 30-day period, then all collection events will be used to calculate the 30-day geometric mean.
- If ≥1 30-day geometric mean exceeds the 30-day criteria, the site is not supporting beneficial uses. If there are not representative data for Scenario B, or if the 30-day geometric mean did not exceed the 30-day criteria, the site is assessed using Scenario C.

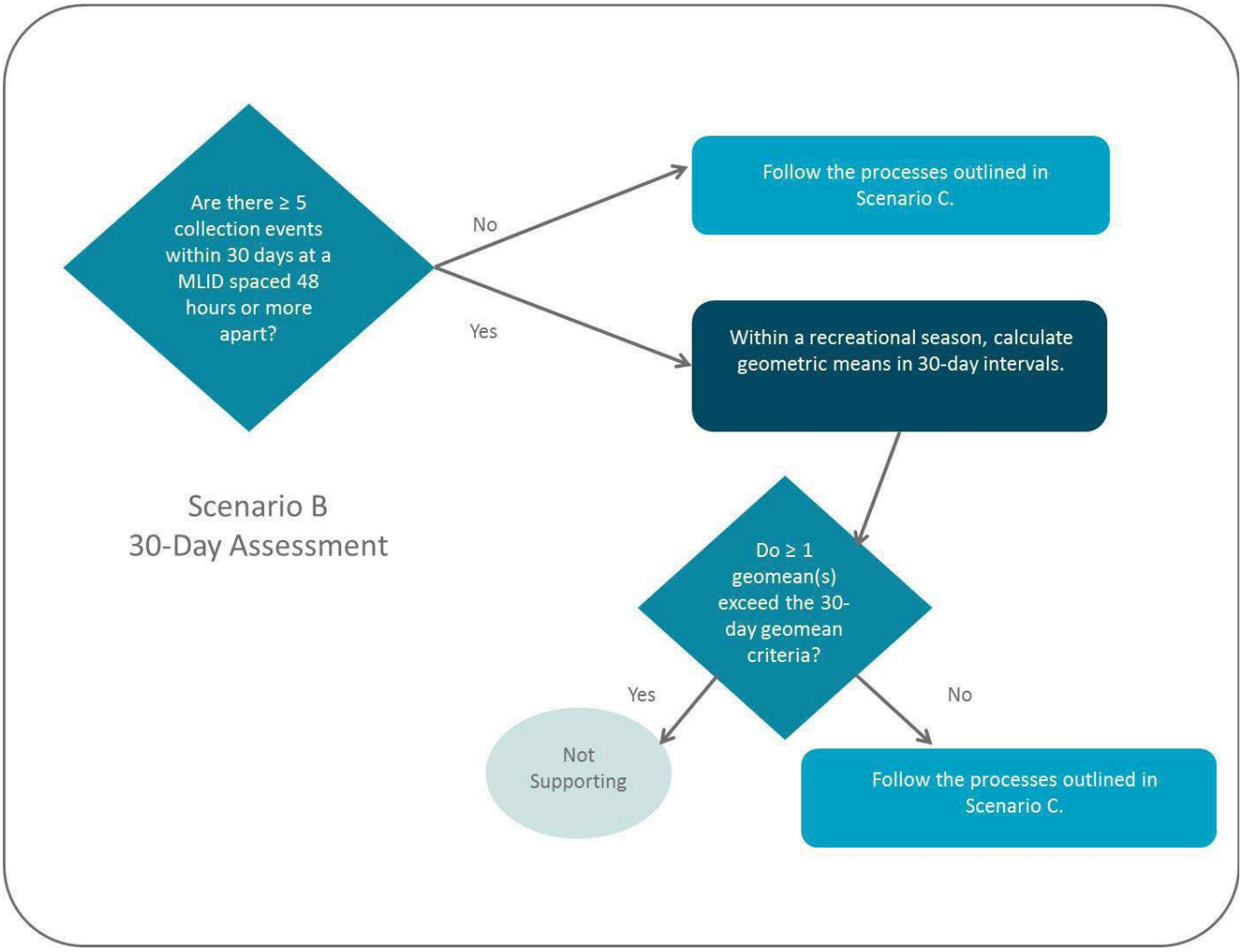

Figure 30. Scenario B: An assessment using the 30-day geometric mean for monitoring locations with five or more collection events within 30 days.

Scenario C

If adequate (at least five samples) and/or representative data spaced by at least 48 hours are not available to assess against the 30-day geometric mean, DWQ will assess *E. coli* data for the recreation season, provided there are at least five collection events during the defined recreational season. Exceedances of the geometric mean criterion will result in the site being classified either as impaired (minimum of 10 collection events in a recreation season) or as insufficient data (sample size is more than five but fewer than 10) (see Figure 20).

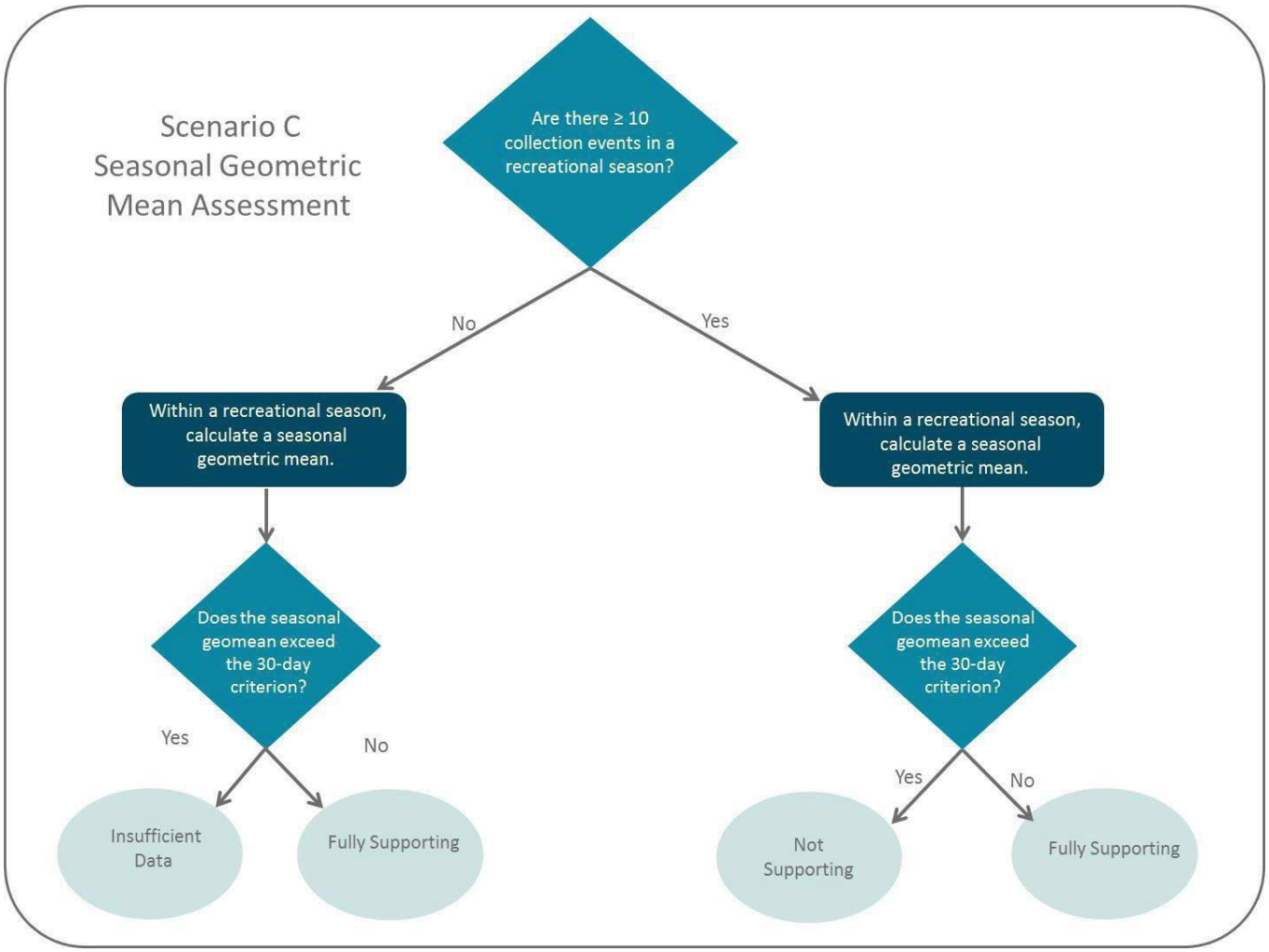

Figure 31. Scenario C: A seasonal geometric mean assessment.

Summarizing Assessment Results

When determining beneficial use support of a monitoring location with assessment results across multiple years, the following rules are applied, in the following order:

Not Supporting (Category 5)

- A waterbody has two or more posted health advisories or beach closures during any recreation season.
- Any monitoring location with five to nine collection events and two or more collection events that exceed the maximum criterion.
- Any monitoring location where the calculated percent exceedance of the maximum criterion within a recreation season for *E. coli* concentrations is greater than 10% for 10 or more collection events.
- Any monitoring location where the 30-day geometric mean exceeds the 30-day geometric mean criterion (minimum five collection events with at least 48 hours between collection events).
- Any monitoring location where the recreational season geometric mean exceeds the 30-day geometric

mean criterion (minimum of 10 collection events).

Insufficient Data

- Sites with nine or fewer samples that could not be fully assessed in Scenarios A, B, or C will be listed as insufficient data, provided impairment is not suggested by a posted health advisories or beach closures.

Combinations of Category 3 (with no exceedances), 2, and/or 1

- If there is no evidence of impairment at a site by any of the assessment approaches over the period of record, the assessment analysis from the most recent year outweighs the results from previous years. DWQ's process for merging assessment results from multiple locations within an AU is discussed in more detail in Determinations of Impairment: All Assessment Units.

Supporting (Category 1 or 2)

- No evidence of impairment by any assessment approach for all recreation seasons over period of record. A fully supporting determination can be made with a minimum of five collection events during the recreational season.

Combining *E. coli* with Other Parameter Assessment Results

Until the determination of impairment and the review of additional supporting information are completed by reviewers, parameter assessments at an individual monitoring location and results from multiple monitoring locations within the same AU are not summarized and combined (see Determination of Impairment for more details).

Pollution Indicator Assessments for All Waters

Several parameters and beneficial uses in UAC R317-2 are identified as pollution indicators and have footnotes indicating that further investigations should be conducted when levels are exceeded. To capture this footnote in the assessment process, DWQ reviews preliminary pollution indicator assessments during the Secondary Review process to determine whether pollution indicators demonstrate clear and convincing evidence of supporting or not supporting the beneficial uses assigned to the waterbody in UAC R317-2. Secondary reviews incorporate pollution indicator data into assessment-category determinations and rely on multiple lines of evidence, including pollution indicator thresholds, the presence or absence of other indicator-associated water quality issues, potential pollutant sources, and other site- or watershed-specific knowledge, to determine whether listing or delisting on a pollution indicator parameter is appropriate or whether to prioritize waterbodies for additional monitoring.

Narrative Standards for All Waters

Utah's water quality standards contain narrative criteria that protect beneficial uses in addition to the numeric criteria used to perform water quality assessments. The narrative criteria state:

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 to taste; or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms; or result in concentration or combinations of substance which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effect, as determined by bioassay or other tests

performed in accordance with standard procedures; or determined by biological assessments in (UAC) Subsection R317-2-7.3.

DWQ will apply the narrative criteria to protect human health and aquatic life where evidence exists that human-caused actions have produced any of these undesirable outcomes in a waterbody. Narrative standards may be used to make an impairment determination for drinking-water closures, fish kills, harmful algal blooms (HABs), beach closures for swimming, and health advisories for the consumption of fish. Assessment of *E. coli* data and associated beach closures to protect human health provide an additional weight of evidence for defining the impairment of recreational uses and is addressed in more detail earlier in this document in the *Escherichia Coli* Assessment for All Waters section.

DWQ will assess a site as impaired for 1C uses if the Utah Division of Drinking Water or a local municipality issues an advisory or closure for a surface drinking water source, unless data show that the problem has been resolved.

Fish Kills

DWQ requests information on reported fish kills from the Utah Division of Wildlife Resources and other stakeholders. These data are used with water quality data to make final assessment decisions. For example, sites that would generally not be assessed due to small sample sizes may be listed as impaired if fish kills have also been observed in the waterbody.

Harmful Algal Blooms (HAB)

In fresh waters, HABs are typically composed of cyanobacteria; a phylum of photosynthetic bacteria sometimes called blue-green algae. Recreational exposure to HABs can result in negative human health and aquatic life impacts (EPA 2019). DWQ's HAB assessment methods apply to non-benthic HABs occurring in waterbodies with frequent primary contact recreational uses, including those currently designated with 2A uses and those where existing frequent primary contact recreational uses have been documented. Potential impacts of HABs on aquatic life uses are currently addressed through eutrophication-related aspects of general lakes, reservoirs, ponds, flowing surface waters or the State, and canal assessment methods (e.g. dissolved oxygen, pH, and lake Tier II assessments).

DWQ's HAB assessment methods use two independent indicators to determine beneficial use support: cyanotoxin concentrations and waterbody access or use limitations. DWQ collects samples during HAB events for use in recreational use assessments using DWQ's HAB Standard Operating Procedures (SOP, DWQ 2022). DWQ's assessment methods rely on EPA's recommended criteria for microcystin and cylindrospermopsin (EPA 2019). Thresholds for additional cyanotoxins may continue to be added to the assessment methods as they become available.

Table 16. Cyanotoxin thresholds for recreational use assessments based on EPA (2019) guidance.

Microcystins magnitude (ug/L)	Cylindrospermopsin magnitude (ug/L)	Duration	Frequency
8	15	1 in 10-day assessment period across a recreational season	Not more than 3 excursions* in a recreational season in more than one year over the period of record
* An excursion is defined as a 10-day assessment period with any toxin concentration higher than the recommended criteria magnitude. When more than three excursions occur within a recreational season and that pattern reoccurs in more than one year over the IR period of record, it is an indication the water quality has been or is becoming degraded and is not supporting its recreational use.			

Beneficial Use Supported

The beneficial use is fully supported if, over the period of record: Cyanotoxin concentrations have not been identified above recreational use thresholds (Table 16), AND a Warning Advisory, Danger Advisory, or closure has not been issued for recreational access to a waterbody.

Beneficial Use Not Supported

The beneficial use is not supported if, in representative samples for recreational uses, in two or more years in the period of record: Cyanotoxin concentrations above recreational guidelines (Table 16) have been reported in more than three 10-day assessment periods in a recreational season, OR a Warning Advisory, Danger Advisory, or closure has been issued for recreational access to a waterbody for two or more 2-week periods in a recreational season.

Insufficient Data and Information with Exceedances (IR Category 3)

The waterbody will be placed in the insufficient data category if: It does not meet either of the Beneficial Use Not Supported criteria (above), but cyanotoxin concentrations exceeded recreational use thresholds (Table 16) in three or fewer 10-day assessment periods in a recreation season, OR a Warning Advisory, Danger Advisory, or closure has been issued for recreational use for less than two 2-week periods. These waterbodies will be prioritized for further sampling and evaluation.

Fish Tissue Assessments and Consumption Health Advisories

DWQ has collected fish tissue samples for mercury analysis in waterbodies throughout the state since 2000. Consumption advisories have been issued based on the EPA-published ambient water quality criterion for

methylmercury for the protection of people who eat fish and shellfish. This criterion is 0.3 milligram (mg) methylmercury per kilogram (kg) fish tissue wet weight. If all fish (small and large) of the same species at a monitoring location have a mean mercury concentration of > 0.3 mg/kg, additional statistical tests are used to determine if a consumption advisory is necessary. If the mean is < 0.3 mg/kg, no advisory is issued. In several instances, size class advisories have been issued when it is apparent that only the larger size class exceeds the safe consumption criterion.

Using a t-test, the p-value is considered for locations with a mean mercury concentration of > 0.3 mg/kg. In hypothesis testing, a p-value is the statistical probability (over repeated measures) that the mean value (or more extreme value) is observed given that the null hypothesis is true. In the case of health advisories, DWQ uses a t-test to evaluate the difference between a mean mercury concentration > 0.3 mg/kg and the expected mercury value of 0.3 mg/kg. In this statistical test, a smaller p-value indicates a lower probability the statistical comparison supports the null hypothesis that mercury concentrations are at an acceptable level. DWQ uses a p-value of 0.05 as a threshold for consumption health advisories. If a species has a mean of > 0.3 mg/kg and a p-value < 0.05, a consumption advisory is issued. If a species has a mean of > 0.3 mg/kg but a p-value of > 0.05, an advisory is not issued. The consumption advisories are based on long-term consumption; therefore, the mean is the most appropriate and commonly used parameter to estimate exposure.

In an effort to control for false negatives, DWQ calculates 95% confidence limits of the mean mercury concentration. If the upper confidence limit is above 0.3 mg/kg, that site is targeted for additional sampling.

When an advisory is warranted, DWQ sends the data to the Utah Department of Health toxicologist, who uses the mean mercury concentration to calculate the actual consumption recommendations. Those calculations are based on the following:

- Average adult weight: 70 kg (154 pounds). Average adult meal size: 227 grams (8 ounces)/meal
- Average child weight: 16 kg (35 pounds). Average child meal size: 113 grams (4 ounces)/meal

Consumption amounts are calculated for three target populations: pregnant women and children < 6 years old; women of child-bearing age and children between 6–16 years old; and adult women past child-bearing age and men >16 years old.

Mercury Assessment Process

The current approach for mercury assessments for aquatic life is different than the consumption advisory process. The assessment is based on the U.S. Food and Drug Administration (FDA) recommended value of 1.0 mg/kg. The FDA set the consumption concentration at 1.0 mg/kg, which correlates to the water column mercury concentration of 0.012 µg/L identified in previous studies by EPA (EPA, 1985). Utah's water quality standard for mercury is 0.012 µg/L as a four-day average. Therefore, the corresponding fish tissue concentration of 1.0 mg/kg is used for assessment.

Beneficial Use Supported (Category 1)

- No fish consumption advisories for mercury are in place.
- Mean fish tissue mercury concentration for all individuals of the same species at a location is less than 0.3 mg/kg and p-value is < 0.5.

Insufficient Data with Exceedances (Category 3)

- Fish consumption advisories for mercury are in place, but the mean fish tissue mercury concentration for all individuals of the same species at a location is less than or equal to 1.0 mg/kg.

Beneficial Use Not Supported (Category 5)

- Fish consumption advisory for mercury is in place.
- Mean fish tissue mercury concentration is greater than 1.0 mg/kg.

For additional information and the most up-to-date list of consumption advisories, please visit fishadvisories.utah.gov.

Determinations of Impairment: All Assessment Units

Each use and parameter within a waterbody is assigned a provisional EPA-derived assessment category after the initial assessment of credible data against the numeric criteria in UAC R317-2. To verify the use and parameter-specific assessment results and consolidate the often multiple parameter assessments into one result per waterbody, DWQ must consider the quantity of data and the extent to which such data demonstrate clear and convincing evidence of supporting or not supporting the beneficial uses assigned to the waterbody DWQ considers the following information to determine whether a waterbody is supporting or not supporting its beneficial uses:

- Individual assessment of water quality standards at a single site
- Independent applicability
- Multiple lines of evidence and several levels of secondary reviews

Individual Assessment of Water Quality Standards

DWQ first considers the individual use and parameter-specific assessment results from the monitoring-location level data to determine whether a waterbody is supporting or not supporting the beneficial uses assigned in UAC R317-2, Each use and parameter assessed for the waterbody is assigned a provisional EPA-derived assessment category. Unless noted in the waterbody-specific data assessment protocols, the assessment policies outlined in this document provide a direct and quantifiable method and documentation of data supporting or not supporting DWQ's water quality standards versus data and information that are developed using surrogate parameters or indicators. Because individual assessments at a single monitoring location site offer a more direct measure of supporting or not supporting water quality standards in UAC R317-2, DWQ places a greater weight on individual assessment decisions that follow the data assessment protocols in this document.

DWQ looks across the multiple parameter-specific assessment results that exist for a location and consolidates the results into a preliminary assessment at the individual site level after review of the individual water quality standard assessments for a beneficial use. DWQ then assigns one EPA-derived assessment decision category as defined in Table 1 to each monitoring location.

Conflicting Assessments of Water Quality Standards

DWQ applies the policy of independent applicability to address the possibility of conflicting results among different types of data (e.g., biological versus conventionals, toxics versus *E.coli*) at the site and AU level and goes through a series of considerations to determine if discrepancies are due to

- Differences in data quality
- Environmental factors such as the application of the water-effects ratio, development of site-specific criteria, revision to numeric criteria in UAC R317-2, or completion of a use attainability analysis

Sites with conflicting assessment results may be listed as Category 3 (insufficient data and information). This allows DWQ to examine conflicting lines of evidence when concerns about the quality of independent datasets cannot be resolved through evaluation and documentation of the QA/QC issues that led to acceptance of one dataset and the resulting assessment result. Specific assumptions regarding model applicability applied during the biological assessment process are discussed in the Biological Assessment section. Similarly, if the application of water-effects ratio, justifiable site-specific criteria change, or change in beneficial uses based on a use attainability analysis cannot rectify the difference in the assessment results, then a Category 3 may be warranted. All evaluations of conflicting assessment decisions will be made in consultation with EPA on a case-by-case basis.

Aggregation of Site-Specific Assessments to Assessment Unit Categories

For reporting purposes, DWQ aggregates all site-specific water quality assessments within an AU to a single assessment category for that AU as described in Table 1. A flowchart describing this process is presented in Figure 21 (see Appendix 3 for additional detail).

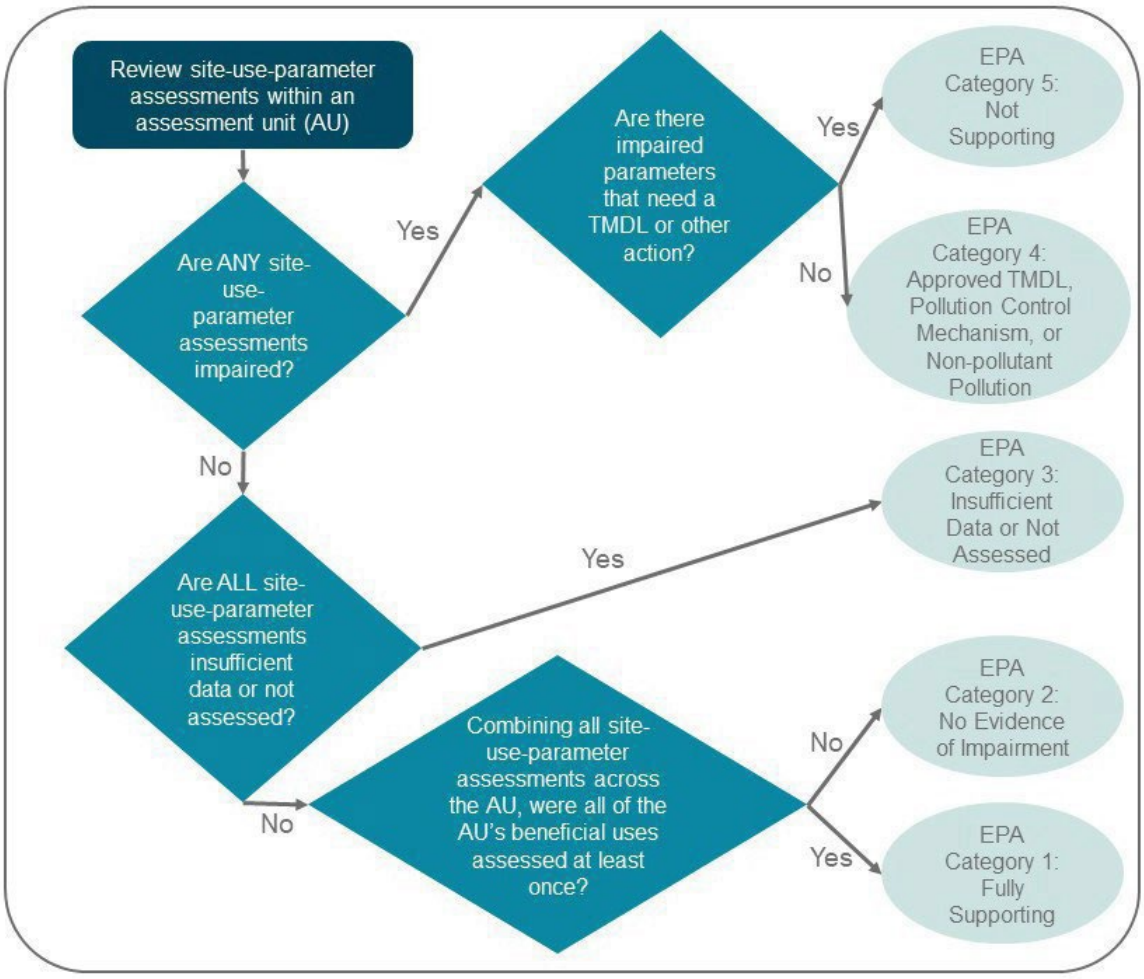

Figure 32. Process of assigning EPA categories to AUs based on results of monitoring location assessments.

Secondary Review

DWQ conducts a secondary review of listing determinations after consolidation of all individual assessment results and assignment of preliminary assessment category(s) for an AU, The secondary review process allows DWQ to apply site/waterbody-specific knowledge and additional data quality controls to evaluate the extent to which data used in the preliminary assessment demonstrate clear and convincing evidence of supporting or not supporting the beneficial uses assigned to the waterbody in UAC R317-2-6. DWQ recognizes that input from reviewers during public comment periods, in addition to the internal secondary review process, may provide key information on the data used in listing decisions. To ensure consistency in its use among different professionals, the secondary review process will be applied in a select number of scenarios using a standard set of evaluation guidelines (Appendix 2).

If documentation from the secondary review provides sufficient evidence to modify the basis and result of the preliminary assessment, the preliminary assessment decision based on the data assessment procedures outlined in this document will be overwritten. For example, preliminary listings for Category 5, Category 1, or Category 2 waters could be re-assigned as Category 3, insufficient data and information, based on one or more factors outlined in Appendix 2. DWQ will document the original category assignment and a justification for the secondary review to ensure tracking and transparency.

Assessment Unit Re-segmentation

DWQ may decide it is appropriate to re-segment (i.e. "split") an existing AU polygon into two or more new AUs rather than aggregate those conflicting assessments into a single AU scale category when site-specific assessments within a single AU conflict. AUs where water quality criterion exceedances are clearly isolated to a relatively small, hydrologically distinct portion of the larger AU may be re-segmented to more accurately reflect that variation in water quality. For example, a large AU with an impairment isolated to a single tributary may be re-segmented into two AUs: one for the impaired tributary and another for the rest of the existing AU. Assessment categories for both AUs are then determined following standard aggregation (Figure 21 and the delisting procedures discussed in the Delistings section). This results in a higher resolution and overall more accurate assessment. DWQ does not consider it appropriate to re-segment an AU when exceedances are observed in multiple locations throughout an AU or where impaired sites are not hydrologically distinct from unimpaired portions of the AU.

If after aggregating all of the assessments into one assessment category for an AU, DWQ determines that the supporting or not supporting assessment result decision is not representative of the entire AU, DWQ will investigate further to determine whether the supporting or not supporting decision is widespread or limited to individual portions of the waterbody, such as specific tributaries or reaches. Results from the analysis will be categorized as follows:

Entire AU not supporting (Category 5): DWQ will recommend that the AU not be re-segmented and the entire AU be listed as not supporting. When data from multiple sites or tributaries within an AU indicate multiple (or a combination of) sites that do not support beneficial uses (Category 5) and insufficient data with exceedances (Category 3)

Not supporting tributaries listed as not supporting (Category 5): DWQ may recommend the AU be re-segmented into two AUs and that only the tributaries with data indicating impairment are listed as not supporting if data from one or more other tributaries indicate a combination of any of the following:

- Insufficient Data with Exceedances (Category 3)
- No Evidence of Impairments (Category 2)
- Supporting (Category 1)
- Needs Further Investigations (Category 3)
- Insufficient Data with No Exceedances (Category 3)
- Not Assessed (Category 3)

The rest of the AU will be assigned a category following procedures as outlined in Figure 21.

Identifying Causes of Impairments

DWQ will determine if the impairment or impairments are driven by pollutants, pollution, unknown, or natural causes once an AU is assigned an EPA assessment category that is representative of conditions in the AU (see Table 1). DWQ will identify causes of impairment by a pollutant with specific numeric water quality criteria identified in UAC R317-2-14. Pollution is a generalized term for causes of water quality impairment that can include multiple pollutants and other factors such as the absence or lack of water, lack of riparian vegetation, and other modifications that affect a waterbody's ability to support aquatic habitat and other designated uses. With the exception of naturally occurring causes, only one cause will be applied to a not-

supporting waterbody and parameter. Procedures on how DWQ identifies the cause of impairments are described in the section below.

Pollutants

DWQ uses CWA's definition as a guide to define pollutant-driven impairments (Category 5) as those resulting from the following:

… dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under Atomic Energy Act of 1954, as amended), heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water. (UAC R317-2)

DWQ also includes certain radiological constituents that are regulated under the state's Water Quality Control Act.

For the purpose of the 303(d) list, causes for impairments due to toxic parameters will be identified as the parameter for which there is an impairment. In the case of conventional parameters such as DO, temperature, pH, and biological scores, the cause will be assigned as the parameter that was assessed until a TMDL or pollution prevention plan identifies an alternative cause of the impairment.

DWQ will list the waterbody and the not-supporting parameter(s) as impaired for that pollutant (cadmium, iron, etc.) when an impairment for a waterbody or segment within a waterbody is identified as pollutant-driven. Waterbodies that are not supporting their beneficial uses due to pollutant impairments require future development of a TMDL or application of a TMDL alternative.

Where DWQ can identify that an impairment was not driven by a pollutant, it may consider whether the not-supporting assessment was driven solely by pollution versus a pollutant or by an unknown cause. DWQ will use CWA's definition of pollution as a guide when determining if an impairment resulted from "the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water." Waterbodies with not-supporting parameters that are driven solely by pollution problems do not require the future development of a TMDL and are candidates for a non-pollutant impairment (4C) assessment category. Details on DWQ's process for using EPA's 4C assessment category are described in section Category 4C.

Unknown Sources

For the purpose of the IR, sources of pollution contributing to an impairment will be reported in the 303(d) list to EPA as "unknown" until a TMDL or special study identifies the sources and any additional causes of impairment.

Natural Conditions

DWQ will retain the not-supporting assessment decision in cases where it or a stakeholder can demonstrate that the natural conditions of the waterbody or segment within a waterbody are the key factors for an impairment(s). However, DWQ's response to such exceedances differs unless a site-specific standard has been promulgated. Site-specific standards require documentation that demonstrates the extent to which the violations were due to natural conditions. Proposed changes to standards will be developed once this documentation is assembled Please review DWQ's Standards website for more information on the review and approval process for developing standards and numeric criteria for exceedances caused by naturally occurring conditions.

Revising the 303(d) List and Other Categorical Assessments

Upon validating the strength and extent of the impairments within a waterbody or segment within a waterbody, DWQ includes newly proposed and previously listed not supporting (Category 5) waterbodies on the updated 303(d) list unless the waterbody or waterbody segment(s) is currently included in the IR's TMDL-approved (Category 4A), pollution control (Category 4B), non-pollutant impairment (Category 4C), or delisting lists. Details on how and when DWQ will not apply or carry an impaired listing (not supporting, Category 5) forward on DWQ's 303(d) list are described below.

Category 4A

DWQ may choose to not list or remove an impaired waterbody or segment within a waterbody on the state's 303(d) list by calculating the maximum amount of a pollutant that a waterbody can receive while still meeting the state's water quality standards. This calculation and analysis work must be formalized in a TMDL and go through a thorough internal and external review process. This TMDL must be provided to the public for review and comment, submitted to the Water Quality Board for approval, reviewed by the Legislative Natural Resources, Agriculture, and Environment Interim Committee if implementation costs exceed $10 million or the full State Legislature for approval if implementation costs exceed $100 million, and ultimately to EPA for their approval. Information on DWQ's process for developing and implementing a TMDL can be found on DWQ's Watershed Management Program website and EPA's TMDL 303(d) website. Where DWQ has documentation of a TMDL approved by the Water Quality Board and EPA for an impaired parameter within a not-supporting waterbody or segment within a waterbody, DWQ will override a current or previous not-supporting Category 5 listing decision at the AU level as follows:

Whole AU Category 4A, TMDL-approved if:

The only impairments within the waterbody or segment within the waterbody are included in the approved TMDL.

There are additional impairments within the waterbody or segments within the waterbody that are addressed in a Category 4B demonstration plan (described in section Category 4B and Appendix 4) and are not included in the approved TMDL. If the parameters included in the approved Category 4B demonstration plan are still not supporting or are insufficient data with exceedances in the current assessment cycle, DWQ will indicate that those parameters have an approved Category 4B demonstration plan in place.

There are additional impairments within the waterbody or segments within the waterbody that are pollution-driven (Category 4C) and not included in the approved TMDL. DWQ will indicate that those parameters are pollution versus pollutant driven if the pollution-driven parameters are still not supporting or are insufficient data with exceedances in the current assessment cycle.

Whole AU Category 5, Not Supporting if:

There are any additional pollutant impairments within the waterbody or segments within the waterbody that are not included in the approved TMDL. DWQ will indicate that those parameters have an approved TMDL in place if the parameters included in the approved TMDL are still not supporting or are insufficient data with exceedances in the current assessment cycle.

Category 4B

DWQ may choose to not list or remove an impaired waterbody or segment within a waterbody on the state's 303(d) list by developing a plan that ensures, upon implementation, that the waterbody will meet state water quality standards within a reasonable time period and through state- and EPA-approved pollution-control mechanisms. Similar to a TMDL, a Category 4B demonstration plan must go through a robust internal and external review process. Once DWQ or a stakeholder develops a plan for consideration, DWQ will present the plan to the Water Quality Board and submit the board-approved plan to EPA for final approval. More information on the Category 4B demonstration plan process can be found in Appendix 4 and in EPA's Category 4b – A Regulatory Alternative to TMDLs document.

Where DWQ has documentation of an EPA-approved Category 4B demonstration plan for an impaired parameter within a not-supporting waterbody or segment within a waterbody, DWQ will override a current (or previous) not-supporting Category 5 listing decision at the AU level as follows:

Whole AU Category 4A, TMDL-approved if:

There are any additional impairments within the waterbody or segments within the waterbody that are addressed in an approved TMDL (Category 4A) and are not included in the approved Category 4B demonstration plan. DWQ will indicate that those parameters have an approved Category 4B demonstration plan in place if the parameters included in the approved Category 4B demonstration plan are still not supporting or are insufficient data with exceedances in the current assessment cycle.

Whole AU Category 4B, Pollution Control if:

The only impairments within the waterbody or segment within the waterbody are included in the approved Category 4B demonstration plan.

There are additional impairments within the waterbody or segments within the waterbody that are pollution driven (Category 4C) and are not included in the approved Category 4B demonstration plan. DWQ will indicate that those parameters are pollution rather than pollutant driven if the pollution-driven parameter impairments are still not supporting or are insufficient data with exceedances in the current assessment cycle.

Whole AU Category 5, Not Supporting if:

There are any additional pollutant impairments within the waterbody or segments within the waterbody that are not included in the approved Category 4B demonstration plan. DWQ will indicate that those parameters have an approved Category 4B demonstration plan in place if the parameters included in the approved Category 4B demonstration plan are still not supporting or are insufficient data with exceedances in the current assessment cycle.

Category 4C

DWQ may choose to not list or remove an impaired waterbody or segment within a waterbody on the state's 303(d) List when DWQ can demonstrate that the parameter-specific impairment (or impairments) is driven by pollution and not by a pollutant or pollutant that causes pollution; for example, an impairment driven by hydrologic modification or habitat degradation. Unlike a TMDL or Category 4B demonstration plan, the analysis determines if the cause of impairment is driven by pollution and does not require formal approval from the Water Quality Board or EPA. The determination is reviewed internally by DWQ and by stakeholders during the public comment period of the draft IR and 303(d) list.

For the draft IR and 303(d) list, DWQ will temporarily assume "approval" of any pollution-driven analysis work and supersede a current or previous not supporting Category 5 listing decision at the AU level as follows:

Whole AU Category 4A, TMDL-approved if:

All impairments within the waterbody or segments within the waterbody are addressed in an approved TMDL (Category 4A). DWQ will indicate that those parameters are pollution- rather than pollutant-driven for pollution-driven impairments that are still not supporting or are insufficient data with exceedances in the current assessment cycle.

Whole AU Category 4B, Pollution Control if:

All impairments within the waterbody or segments within the waterbody are addressed in an approved Category 4B demonstration plan. DWQ will indicate that those parameters are pollution driven for pollution-driven impairments that are still not supporting or are insufficient data with exceedances in the current assessment cycle.

Whole AU Category 4C, Non-Pollutant Impairment if:

The only impairments within the waterbody or segment within the waterbody are included in the approved Category 4C demonstration plan.

Whole AU Category 5, Not Supporting if:

There are any additional pollutant impairments within the waterbody or segments within the waterbody. DWQ will indicate that those parameters are pollution-driven for pollution-driven impairments that are still not supporting or are insufficient data with exceedances in the current assessment cycle.

DWQ will provide stakeholders with draft IR and 303(d) list documentation during the public comment period to demonstrate why the impaired parameter within the waterbody or segment within the waterbody is pollution- and not pollutant-driven and will not require the future development of a TMDL.

Delistings

The fourth and final alternative DWQ has at its disposal is to demonstrate good cause to stakeholders and EPA that a previously impaired parameter and waterbody or segment within a waterbody is now meeting water quality standards in UAC R317-2. Good cause occurs when DWQ can demonstrate one or more of the following categories and scenarios:

Meeting water quality criteria due to restoration activities

The waterbody has improved due to implementation of nonpoint source projects and/or revised effluent limits and post-implementation data indicate that the impairment has been resolved. This assessment may be based on additional data beyond that which is typically used in assessments, including before–and-after project implementation monitoring. In some cases, demonstration of improvement may be based on a different time period for data collection that corresponds with known watershed improvements.

Applicable water quality standard attained due to change in water quality standard

Adoption of revised water quality standards and/or uses so the waterbody now meets the revised standards and/or uses.

Applicable water quality standard attained due to change in 303(d) assessment methods

Development of a new listing method consistent with the state water quality standards and classifications and federal listing requirements. This includes all information contained in this document and posted on DWQ's Call for Data webpages.

Meeting water quality criteria with new data

Assessment and interpretation of older data that was not originally included in the previous assessment and/or more recent or more accurate data that demonstrate that the applicable classified uses and numeric and narrative standards are being met.

Listed water not in state's jurisdiction

Inappropriate listing of a water that is located within Indian country as defined in 18 United States Code 1151.

Original basis for listing was incorrect

Flaws in the original analysis of data and information that led to the waterbody-pollutant combination being incorrectly listed. Such flaws may include the following: (1) calculation errors in the data assessment methods outlined in the 303(d) assessment methods from that assessment cycle; (2) errors produced when reviewing credible and representative data information; (3) mapping errors generated during the validation of monitoring location information and assigning AU designations; (4) discrepancies between the beneficial use assignments in UAC R317-2 and the IR geo-location information files for internal and external data; (5), incorrect identification and assessment of a waterbody type; and (6) application of the wrong numeric criteria to a beneficial use.

New modeling

Results of more sophisticated water quality modeling that demonstrate that the applicable classified uses and numeric and narrative standards are being met.

Effluent limitations

Demonstration pursuant to 40 CFR 130.7(b)(1)(ii) that there are effluent limitations required by state or local authorities that are more stringent than technology-based effluent limitations required by the CWA and that these more stringent effluent limitations will result in support of classified uses and numeric and narrative standards for the pollutant causing the impairment.

Other

There is other relevant information that supports the decision not to include the segment on the Section 303(d) list.

In order to justify a delisting of an AU for a given parameter based on new data, the dataset must be of sufficient quantity and quality to make an assessment. There are two mechanisms for justifying a delisting based on assessment results:

- Delisting an AU for all parameters
- Delisting individual parameters for an AU

DWQ will compare the previous IR cycle's final assessment categories and 303(d) list to the current IR's assessment categories and 303(d) list to demonstrate good cause. Where differences in categorical assignments exist, DWQ will only further investigate the following scenarios for good cause:

- The AU/waterbody or segment within the waterbody was previously not supporting (Category 5) and is now supporting (Category 1) or shows no evidence of impairment (Category 2).
- The AU/waterbody or segment within the waterbody was previously not supporting but had an approved TMDL (Category 4A) and is now supporting (Category 1) or shows no evidence of impairment (Category 2).

- The AU/waterbody or segment within the waterbody was previously not supporting but had an approved Category 4B demonstration plan and is now supporting (Category 1) or shows no evidence of impairment (Category 2).
- The AU/waterbody or segment within the waterbody was previously not supporting but had pollution-driven impairment (Category 4C) and is now supporting (Category 1) or shows no evidence of impairment (Category 2).

Note: The next set of scenarios describes the methods that apply to delisting individual parameters rather than entire AUs.

- A parameter within an AU/waterbody (or segment within the waterbody) was previously not supporting (Category 5) and is now supporting (Category 1) or shows no evidence of impairment (Category 2).
- A parameter within an AU/waterbody (or segment within the waterbody) was previously not supporting but had an approved TMDL (Category 4A) and is now supporting (Category 1) or shows no evidence of impairment (Category 2).
- A parameter within an AU/waterbody (or segment within the waterbody) was previously not supporting but had an approved Category 4B demonstration plan and is now supporting (Category 1) or shows no evidence of impairment (Category 2).
- A parameter within an AU/waterbody (or segment within the waterbody) was previously not supporting but had pollution-driven impairment (Category 4C) and is now supporting (Category 1) or shows no evidence of impairment (Category 2).

Where assessment category assignments at the AU- and parameter-level warrant a further investigation for good cause, DWQ will reevaluate the data using the following:

- The period of record from when the AU and/or parameter was first listed
- The period of record in the current assessment cycle
- The data that were collected between when the AU and/or parameter were first listed and the period of record considered in the current assessment cycle

DWQ will review the data from all assessed sample locations (as defined in Table 4) in the three above scenarios as part of the demonstration-of-good-cause process to confirm whether there were exceedances at the sample sites. DWQ must demonstrate that the exceedances no longer exist, no longer are of concern, or that water quality has improved. DWQ will provide documentation and a justification as to why the site was not re-sampled and/or whether water quality conditions have improved if a sample site had exceedances and newer data do not exist. If documentation cannot be provided, the AU and parameter will not be delisted, and the previous categorical assignment will carry forward.

Delisting Categorical Pollutant Causes

When TMDLs or special studies identify parameters contributing to a cause of impairment that is not the original cause for listing on the 303(d) list, there may be good cause justification for delisting the categorical cause if the original impaired parameter is no longer impaired and a linkage of the additional causes can be documented in a TMDL or other study. For instance, in some circumstances DWQ has identified phosphorus as a contributing cause of impairment to an existing DO listing and subsequently made a categorical listing for phosphorus as a cause on subsequent 303(d) lists. Since DWQ does not have assessment methods for phosphorus, a delisting based on the process outlined here is not feasible. Therefore, if the assessment results for the original DO listing can justify a delisting, any additional parameters associated with that cause may also be delisted with proper documentation of a direct linkage.

Appendix 5 elaborates on the process DWQ will follow when evaluating good cause at the AU-level and also describes, in more detail, the process DWQ will go through when evaluating good cause at the parameter level. DWQ applies several delisting codes for EPA review and approval (also included in Appendix 5).

If a waterbody or parameter is shown to have good cause for not being listed or removed as an impaired waterbody or segment within a waterbody on the state's 303(d) list, DWQ will state the good cause and provide a detailed description of the good cause. Details of the good-cause evaluation process, such as the data-analysis work, will not be posted online during the draft public comment period or after the final approval and publication of the final IR and 303(d) list. DWQ will, however, summarize the data analysis work in the description of the good cause. The analyses will be available to the public upon request through Utah's Government Records Access and Management Act (GRAMA) process.

Previous Categorical Listings

303(d) Listings

DWQ must continue to list all previous impairments absent proper documentation to support changing a previous not-supporting (Category 5) listing decision to a TMDL-approved (Category 4A), pollution control (Category 4B), non-pollutant impairment (Category 4C), or delisting (demonstration of good cause). At a minimum, this includes carrying forward all waterbodies or segments within a waterbody that were previously not supporting (Category 5), indicating the cause of impairment, listing the beneficial use or uses failing to meet water quality standards, providing the priority of developing a TMDL, and indicating the assessment cycle the waterbody or segment within the waterbody was first listed.

Non-303(d) Categorical Listings

Where DWQ has the proper documentation to support changing a previous not-supporting (Category 5) listing decision to a TMDL-approved (Category 4A), pollution control (Category 4B), non-pollutant impairment (Category 4C), or delisting (demonstration of good cause), it will do so as outlined by the policies and procedure described throughout this document.

DWQ will also carry forward all previous categorizations of waterbodies or segments within a waterbody if the waterbody does not have any credible or representative data from the period of record of the current assessment cycle. This includes carrying the following forward:

- Previous TMDL-approved (Category 4A), pollution control (Category 4B), and non-pollutant impairment (Category 4C) categorizations that do not demonstrate good cause.
- Previous categorizations that have insufficient data with exceedances (Category 3), require further investigations (Category 3), have insufficient data with no exceedances (Category 3), are not assessed (Category 3), show no evidence of impairment (Category 2), or are supporting (Category 1).
- Historical Category 3 waters that had insufficient data with exceedances will remain in that category unless there is new data for assessment.

Waterbodies or segments within a waterbody that are supporting or show no evidence of impairment (Categories 1 and 2, respectively) may carry forward for six consecutive assessment (or two rotating basin) cycles. On the seventh consecutive assessment cycle, DWQ will no longer carry forward a supporting or no evidence of impairment categorization for waterbodies or segment within a waterbody that do not have any new data collected in the last 12 years. Data older than the period of record may not be reflective of current conditions and will not be used for assessment purposes unless there is information or a rationale with supporting documentation that shows the data are reflective of current conditions.

If there is evidence that the data are reflective of current conditions, the previous supporting (Category 1) or no evidence of impairment (Category 2) categorization will carry forward for one more assessment cycle (the current one) and be re-evaluated in the next cycle. DWQ will not carry forward the supporting or no evidence of impairment categorization for a seventh consecutive assessment cycle if there is no (or not enough) supporting evidence that the data are reflective of current conditions. DWQ will instead change the categorization to insufficient data with no exceedances (Category 3).

303(d) Vision and TMDL Priority Development

DWQ must ensure that TMDLs will be developed following the final release of the current IR and 303(d) list for waterbodies or segments within a waterbody that are impaired by a pollutant. Recognizing that all TMDLs cannot be completed at once and that certain risks may be greater than others, CWA Section 303(d) allows states to prioritize impaired waterbodies or segments within a waterbody on the Section 303(d) list for the future development of TMDLs.

On December 5, 2013, EPA announced a collaborative framework for implementing the CWA Section 303(d) program to help guide states on how to best prioritize TMDL development and demonstrate progress on addressing the water quality concerns highlighted and reported on in the IR and 303(d) list (See A Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program). This EPA document provided a framework that states could use to optimize their resources when developing TMDLs and other water quality improvement programs such as the anti-degradation program, nonpoint source implementation program, and the 401 water quality certification program. As a result, DWQ prioritized TMDL development for impairments/pollutants that pose the greatest risk to human and ecological health as described in the Division of Water Quality's (DWQ) 303(d) vision document. These priorities translate into the protection and restoration of waters designated for culinary, recreational, and aquatic life uses. Considerations for TMDL prioritization in Utah included partner agencies and stakeholder involvement and the potential for restoration. Other factors considered in setting TMDL priorities include programmatic needs such as permitting and addressing watershed-wide water quality issues.

For the IR and 303(d) reporting-specific elements, DWQ:

- Assigns TMDL priorities to impaired waterbodies and segments within waterbodies on DWQ's 303(d) list
- Tracks the status and development of TMDLs

Revision Requests between Cycles

DWQ will, barring unforeseen circumstances, only propose to revise the IR and 303(d) list during the regularly scheduled reviews, which are currently biennially and on even-numbered years. Interested persons may petition DWQ at any time to request a revision to the IR and 303(d) list, whether it is an addition or deletion to the final 303(d) list. DWQ will take the potential revision under strong consideration and begin a dialogue with the interested part or parties and EPA.

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UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

Chapter 2 Assessments Specific to Lakes, Reservoirs

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information						Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Bear River	UT-L-16010201-003_00	Bear Lake	35414.4736 Acres	1	Fully Supporting						
Bear River	UT-L-16010101-002_00	Birch Creek	61.6487 Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Bear River	UT-L-16010202-002_00	Cutler Reservoir	1356.0776 Acres	4A	Approved TMDL	Eutrophication	Not meeting criteria	TMDL Approved (38237)	Aquatic Wildlife (Warm Water)	2004	Low
						Minimum Dissolved Oxygen	Meeting criteria	TMDL Approved (38237)	Aquatic Wildlife (Warm Water)		
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (38237)	Aquatic Wildlife (Warm Water)	2004	Low
Bear River	UT-L-16010203-005_00	Hyrum Reservoir	445.6222 Acres	4A	Approved TMDL	Minimum Dissolved Oxygen	Meeting criteria	TMDL Approved (4011)	Aquatic Wildlife (Cold Water)		
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (4011)	Aquatic Wildlife (Cold Water)	1998	Low
Bear River	UT-L-16010101-007_00	Little Creek Reservoir	67.2094 Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Bear River	UT-L-16010204-033_00	Mantua Reservoir	513.7655 Acres	5	Not Supporting but has Approved TMDL for some parameters	Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
						Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (762)	Aquatic Wildlife (Cold Water)	1998	Low
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (762)	Aquatic Wildlife (Cold Water)	1998	Low
						pH	Meeting criteria	TMDL Approved (762)	Aquatic Wildlife (Cold Water)		
Bear River	UT-L-16010202-013_00	Newton Reservoir	171.7632 Acres	5	Not Supporting but has Approved TMDL for some parameters	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2006	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (11148)	Aquatic Wildlife (Cold Water)	1998	Low
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (11148)	Aquatic Wildlife (Cold Water)	1998	Low
Bear River	UT-L-16010203-009_00	Porcupine Reservoir	180.1847 Acres	2	No Evidence of Impairment						
Bear River	UT-L-16010203-012_00	Tony Grove Lake	25.074 Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2006	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1996	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2004	Low
Bear River	UT-L-16010101-030_00	Whitney Reservoir	129.2577 Acres	2	No Evidence of Impairment						
Bear River	UT-L-16010101-001_00	Woodruff Reservoir	92.0853 Acres	2	No Evidence of Impairment						
Cedar-Beaver	UT-L-16030007-024_00	Anderson Meadow Reservoir	7.8252 Acres	2	No Evidence of Impairment						
Cedar-Beaver	UT-L-16030007-020_00	Kents Lake	38.8616 Acres	5	Not Supporting but has Approved TMDL for some parameters	Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (601)	Aquatic Wildlife (Cold Water)	1998	Low
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (601)	Aquatic Wildlife (Cold Water)	1998	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Cedar-Beaver	UT-L-16030007-027_00	LaBaron Lake	21.5979 Acres	4A	Approved TMDL	Minimum Dissolved Oxygen	Meeting criteria	TMDL Approved (610)	Aquatic Wildlife (Cold Water)		
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (610)	Aquatic Wildlife (Cold Water)	2014	Low
Cedar-Beaver	UT-L-16030007-011_00	Minersville Reservoir	1070.7159 Acres	4A	Approved TMDL	Max. Temperature	Not meeting criteria	TMDL Approved (808)	Aquatic Wildlife (Cold Water)	1994	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (808)	Aquatic Wildlife (Cold Water)	1998	Low
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (808)	Aquatic Wildlife (Cold Water)	1998	Low
						pH	Not meeting criteria	TMDL Approved (808)	Aquatic Wildlife (Cold Water)	2014	Low
Cedar-Beaver	UT-L-16030006-008_00	Newcastle Reservoir	158.8034 Acres	5	Not Supporting but has Approved TMDL for some parameters	Fish Tissue (Mercury)	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2010	Low
						Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2012	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (35080)	Aquatic Wildlife (Cold Water)	1996	Low
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (35080)	Aquatic Wildlife (Cold Water)	1996	Low
						pH	Not meeting criteria	TMDL Approved (35080)	Aquatic Wildlife (Cold Water)	2022	Low
Cedar-Beaver	UT-L-16030007-028_00	Puffer Lake	57.9945 Acres	4A	Approved TMDL	Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (964)	Aquatic Wildlife (Cold Water)	1998	Low
						pH	Not meeting criteria	TMDL Approved (964)	Aquatic Wildlife (Cold Water)	2014	Low
Cedar-Beaver	UT-L-16030006-019_00	Red Creek Reservoir (Iron Co)	59.0436 Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
						Total Phosphorus as P	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2006	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Cedar-Beaver	UT-L-16030007-025_00	Three Creeks Reservoir	55.1133 Acres	5	Not Supporting	pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2006	Low
Cedar-Beaver	UT-L-16030006-002_00	Upper Enterprise Reservoir	352.8474 Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2012	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Cedar-Beaver	UT-L-16030006-017_00	Yankee Meadow Reservoir	56.0645 Acres	5	Not Supporting	pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Great Salt Lake	UT-L-16020310-003_00	Bear River Bay	71681.258 Acres	3	Insufficient Data						
Great Salt Lake	UT-L-16020310-004_00	Farmington Bay	77243.1862 Acres	3	Insufficient Data						
Great Salt Lake	UT-L-16020310-001_00	Gilbert Bay	559423.9853 Acres	2	No Evidence of Impairment						
Great Salt Lake	UT-L-16020310-002_00	Gunnison Bay	384588.1784 Acres	3	Insufficient Data						
Jordan River	UT-L-16020204-001_00	Blackridge Reservoir	4.14 Acres	5	Not Supporting	Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2024	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size	Unit	AU Category	Category Description	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Jordan River	UT-L-16020204-024_00	Lake Mary	19.2294	Acres	3	Insufficient Data						
Jordan River	UT-L-16020204-026_00	Little Dell Reservoir	221.033	Acres	2	No Evidence of Impairment						
Jordan River	UT-L-16020201-006_00	Silver Lake Flat Reservoir	32.6613	Acres	5	Not Supporting	Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Jordan River	UT-L-16020201-005_00	Tibble Fork Reservoir	11.1842	Acres	2	No Evidence of Impairment						
Lower Colorado River	UT-L-15010008-008_00	Baker Dam Reservoir	44.1358	Acres	5	Not Supporting but has Approved TMDL for some parameters	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1992	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (12105)	Aquatic Wildlife (Cold Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (12105)	Aquatic Wildlife (Cold Water)	2002	Low
Lower Colorado River	UT-L-15010008-001_00	Gunlock Reservoir	221.0822	Acres	4A	Approved TMDL	Minimum Dissolved Oxygen	Meeting criteria	TMDL Approved (12106)	Aquatic Wildlife (Warm Water)		
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (12106)	Aquatic Wildlife (Warm Water)	1998	Low
Lower Colorado River	UT-L-15010008-018_00	Kolob Reservoir	237.9389	Acres	2	No Evidence of Impairment						
Lower Colorado River	UT-L-15010008-024_00	Quail Creek Reservoir	587.9211	Acres	2	No Evidence of Impairment						
Lower Colorado River	UT-L-15010008-025_00	Sand Hollow Reservoir	1260.2944	Acres	2	No Evidence of Impairment						
Lower Sevier River	UT-L-16030003-005_00	Barney Lake	20.5625	Acres	3	Insufficient Data						
Lower Sevier River	UT-L-16030005-026_00	D.M.A.D. Reservoir	773.2353	Acres	2	No Evidence of Impairment						
Lower Sevier River	UT-L-16030005-021_00	Gunnison Bend Reservoir	497.3861	Acres	2	No Evidence of Impairment						
Lower Sevier River	UT-L-16030004-002_00	Gunnison Reservoir	1258.0893	Acres	2	No Evidence of Impairment						
Lower Sevier River	UT-L-16030003-006_00	Manning Meadow Reservoir	84.796	Acres	5	Not Supporting	Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2024	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1994	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Lower Sevier River	UT-L-16030004-001_00	Ninemile Reservoir	184.8805	Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1996	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
Lower Sevier River	UT-L-16030004-005_00	Palisade Lake	79.5801	Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1992	Low
Lower Sevier River	UT-L-16030003-012_00	Redmond Lake	239.942	Acres	2	No Evidence of Impairment						
Lower Sevier River	UT-L-16030003-016_00	Rex Reservoir	34.9322	Acres	2	No Evidence of Impairment						
Lower Sevier River	UT-L-16030003-007_00	Sevier Bridge Reservoir (Yuba L	8978.0253	Acres	5	Not Supporting	Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Frequent Primary Contact)	2024	Low
Southeast Colorado River	UT-L-14080201-002_00	Blanding City Reservoir	91.5405	Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2012	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Southeast Colorado River	UT-L-14030004-001_00	Dark Canyon Lake	5.0805	Acres	2	No Evidence of Impairment						
Southeast Colorado River	UT-L-14030005-004_00	Kens Lake	77.5063	Acres	1	Fully Supporting						
Southeast Colorado River	UT-L-14080203-009_00	Lloyds Reservoir	90.4705	Acres	2	No Evidence of Impairment						
Southeast Colorado River	UT-L-14080203-002_00	Monticello Lake	5.4928	Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2006	Low
Southeast Colorado River	UT-L-14080201-007_00	Recapture Reservoir	220.9871	Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Uinta Basin	UT-L-14060010-003_00	Ashley Twin Lakes	31.7244	Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14040106-031_00	Beaver Meadow Reservoir	105.6636	Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14060003-230_00	Big Sand Wash Reservoir	394.4866	Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14040107-004_00	Bridger Lake	19.258	Acres	5	Not Supporting	Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1996	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Uinta Basin	UT-L-14060010-002_00	Brough Reservoir	135.8688	Acres	5	Not Supporting but has Approved TMDL for some parameters	Fish Tissue (Mercury)	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (35100)	Aquatic Wildlife (Cold Water)	1998	Low
Uinta Basin	UT-L-14040106-019_00	Browne Lake	48.0854	Acres	5	Not Supporting	Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Uinta Basin	UT-L-14060003-293_00	Butterfly Lake	4.7102	Acres	5	Not Supporting	Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Uinta Basin	UT-L-14040106-034_00	Calder Reservoir	94.158	Acres	5	Not Supporting but has Approved TMDL for some parameters	Eutrophication	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2010	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (33613)	Aquatic Wildlife (Cold Water)	1998	Low
							Total Ammonia as N	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (33613)	Aquatic Wildlife (Cold Water)	1998	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information						Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Uinta Basin	UT-L-14040107-006_00	China Lake	27.0588 Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2000	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1996	Low
Uinta Basin	UT-L-14040106-026_00	Crouse Reservoir	110.8572 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14060004-007_00	Currant Creek Reservoir	274.4405 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14060010-007_00	East Park Reservoir	178.5591 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14040106-021_00	Flaming Gorge Reservoir	12525.0402 Acres	5	Not Supporting	pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Uinta Basin	UT-L-14040106-001_00	Hoop Lake	171.3864 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14060003-012_00	Hoover Lake	18.5509 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14060004-004_00	Lake Canyon Lake	29.233 Acres	5	Not Supporting	Arsenic	Not meeting criteria	TMDL Needed	Domestic Source	2016	Low
						Boron	Not meeting criteria	TMDL Needed	Agricultural	2016	Low
						Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2016	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Uinta Basin	UT-L-14040106-032_00	Long Park Reservoir	300.6353 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14040107-005_00	Lyman Lake	35.3525 Acres	5	Not Supporting	Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1996	Low
Uinta Basin	UT-L-14040107-003_00	Marsh Lake	41.8961 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14060003-011_00	Marshall Lake	18.7856 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14040106-033_00	Matt Warner Reservoir	364.0639 Acres	5	Not Supporting but has Approved TMDL for some parameters	Eutrophication	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
						Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
						Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1996	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (33618)	Aquatic Wildlife (Cold Water)	1998	Low
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (33618)	Aquatic Wildlife (Cold Water)	1998	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Uinta Basin	UT-L-14040107-001_00	Meeks Cabin Reservoir	16.7653 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14060003-006_00	Mirror Lake	53.4692 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14060003-112_00	Moon Lake	786.099 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14060010-005_00	Oaks Park Reservoir	338.1639 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14060003-297_00	Paradise Park Reservoir	147.0235 Acres	5	Not Supporting	pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Uinta Basin	UT-L-14060010-001_00	Pelican Lake	1114.3902 Acres	5	Not Supporting	Total Phosphorus as P	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2012	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2004	Low
Uinta Basin	UT-L-14060003-003_00	Pyramid Lake	14.8204 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14060004-003_00	Red Creek Reservoir	146.9148 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14060010-008_00	Red Fleet Reservoir	477.8822 Acres	5	Not Supporting but has Approved TMDL for some parameters	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2010	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (35079)	Aquatic Wildlife (Cold Water)	1998	Low
Uinta Basin	UT-L-14060003-002_00	Scout Lake	19.2003 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14040106-016_00	Sheep Creek Lake	81.1028 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14040106-002_00	Spirit Lake	41.9975 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14060004-006_00	Starvation Reservoir	3350.6952 Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Uinta Basin	UT-L-14040107-007_00	Stateline Reservoir	273.712 Acres	2	No Evidence of Impairment						
Uinta Basin	UT-L-14060010-006_00	Steinaker Reservoir	745.1845 Acres	5	Not Supporting but has Approved TMDL for some parameters	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (35078)	Aquatic Wildlife (Cold Water)	1998	Low
Uinta Basin	UT-L-14060010-009_00	Stewart Lake	158.3395 Acres	5	Not Supporting	Selenium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2016	Low
Uinta Basin	UT-L-14060004-001_00	Strawberry Reservoir	15614.1906 Acres	5	Not Supporting but has Approved TMDL for some parameters	Minimum Dissolved Oxygen	Meeting criteria	TMDL Approved (33705)	Aquatic Wildlife (Cold Water)		
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (33705)	Aquatic Wildlife (Cold Water)	1998	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Uinta Basin	UT-L-14060003-296_00	Upper Stillwater Reservoir	300.7637 Acres	2	No Evidence of Impairment						
Upper Provo River	UT-L-16020203-001_00	Deer Creek Reservoir	2561.6164 Acres	5	Not Supporting but has Approved TMDL for some parameters	Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Frequent Primary Contact)	2024	Low
						Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2006	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (4046)	Aquatic Wildlife (Cold Water)	1998	Low
Upper Provo River	UT-L-16020203-003_00	Jordanelle Reservoir	2989.1415 Acres	2	No Evidence of Impairment						
Upper Provo River	UT-L-16020203-004_00	Mill Hollow Reservoir	18.3214 Acres	5	Not Supporting	Total Phosphorus as P	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1992	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1992	Low
Upper Provo River	UT-L-16020203-002_00	Trial Lake	62.2532 Acres	5	Not Supporting	pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Upper Provo River	UT-L-16020203-006_00	Wall Lake	72.0049 Acres	3	Insufficient Data						

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information						Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Upper Provo River	UT-L-16020203-005_00	Washington Lake	106.6871 Acres	2	No Evidence of Impairment						
Upper Sevier River	UT-L-16030002-011_00	Koosharem Reservoir	340.9478 Acres	5	Not Supporting but has Approved TMDL for some parameters	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (30891)	Aquatic Wildlife (Cold Water)	1998	Low
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (30891)	Aquatic Wildlife (Cold Water)	1998	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Upper Sevier River	UT-L-16030002-005_00	Lower Box Creek Reservoir	22.1966 Acres	5	Not Supporting but has Approved TMDL for some parameters	Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (31020)	Aquatic Wildlife (Cold Water)	2004	Low
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (31020)	Aquatic Wildlife (Cold Water)	1998	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2010	Low
Upper Sevier River	UT-L-16030001-001_00	Navajo Lake	631.0339 Acres	5	Not Supporting	pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Upper Sevier River	UT-L-16030002-004_00	Otter Creek Reservoir	2494.7063 Acres	5	Not Supporting but has Approved TMDL for some parameters	Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2024	Low
						Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1994	Low
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (30890)	Aquatic Wildlife (Cold Water)	1998	Low
Upper Sevier River	UT-L-16030001-006_00	Panguitch Lake	1182.3071 Acres	5	Not Supporting but has Approved TMDL for some parameters	Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2024	Low
						Minimum Dissolved Oxygen	Meeting criteria	TMDL Approved (11149)	Aquatic Wildlife (Cold Water)		
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (11149)	Aquatic Wildlife (Cold Water)	2000	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Upper Sevier River	UT-L-16030002-007_00	Pine Lake	85.3778 Acres	5	Not Supporting	pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Upper Sevier River	UT-L-16030001-011_00	Piute Reservoir	2152.3203 Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
						Total Phosphorus as P	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2006	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Upper Sevier River	UT-L-16030002-002_00	Tropic Reservoir	181.8206 Acres	5	Not Supporting	pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Utah Lake-Lower Provo River	UT-L-16020202-002_00	Big East Lake	26.4077 Acres	5	Not Supporting	Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2024	Low
						Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2012	Low
						Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1996	Low
						Total Phosphorus as P	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2012	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Utah Lake-Lower Provo River	UT-L-16020201-001_00	Mona Reservoir	1561.7919 Acres	2	No Evidence of Impairment						
Utah Lake-Lower Provo River	UT-L-16020201-004_02	Provo Bay portion of Utah Lake	3611.5418 Acres	5	Not Supporting	Eutrophication	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2020	Low
						Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Frequent Primary Contact)	2020	Low
						PCBs In Fish Tissue	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2010	Low
						Total Ammonia as N	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2024	Low
						Total Phosphorus as P	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	1994	Low
						pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2016	Low
Utah Lake-Lower Provo River	UT-L-16020202-001_00	Salem Lake	18.7252 Acres	5	Not Supporting	E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Frequent Primary Contact)	2016	Low
Utah Lake-Lower Provo River	UT-L-16020201-004_01	Utah Lake other than Provo Bay	87984.1764 Acres	5	Not Supporting	E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Frequent Primary Contact)	2022	Low
						Eutrophication	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2020	Low
						Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Frequent Primary Contact)	2016	Low
						PCBs In Fish Tissue	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2010	Low
						Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2006	Low
						Total Phosphorus as P	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	1994	Low
Weber River	UT-L-16020102-021_00	Causey Reservoir	126.8421 Acres	2	No Evidence of Impairment						
Weber River	UT-L-16020102-020_00	East Canyon Reservoir	639.7202 Acres	5	Not Supporting but has Approved TMDL for some parameters	E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Frequent Primary Contact)	2024	Low
						Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Frequent Primary Contact)	2024	Low
						Minimum Dissolved Oxygen	Meeting criteria	TMDL Approved (400, 39157)	Aquatic Wildlife (Cold Water)		
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (39157, 400)	Aquatic Wildlife (Cold Water)	1988	Low
						pH	Meeting criteria	TMDL Approved (39157)	Aquatic Wildlife (Cold Water)		
Weber River	UT-L-16020101-001_00	Echo Reservoir	1337.213 Acres	5	Not Supporting but has Approved TMDL for some parameters	Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Frequent Primary Contact)	2024	Low
						Minimum Dissolved Oxygen	Meeting criteria	TMDL Approved (59860)	Aquatic Wildlife (Cold Water)		
						Total Phosphorus as P	Not meeting criteria	TMDL Approved (59860)	Aquatic Wildlife (Cold Water)	1994	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information						Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size	Unit	AU Category	Category Description	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Weber River	UT-L-16020101-003_00	Lost Creek Reservoir	369.5969	Acres	2	No Evidence of Impairment						
Weber River	UT-L-16020102-014_00	Pineview Reservoir	3009.9355	Acres	5	Not Supporting but has Approved TMDL for some parameters	E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Frequent Primary Contact)	2024	Low
							Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Frequent Primary Contact)	2024	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	1994	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (4055)	Aquatic Wildlife (Cold Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (4055)	Aquatic Wildlife (Cold Water)	1998	Low
							pH	Not meeting criteria	TMDL Approved (4055)	Aquatic Wildlife (Cold Water)	2022	Low
Weber River	UT-L-16020101-002_00	Rockport Reservoir	1059.7846	Acres	5	Not Supporting but has Approved TMDL for some parameters	E. coli	Not meeting criteria	TMDL Needed	Domestic Source, Recreation and Aesthetics (Frequent Primary Contact)	2022	Low
							Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Frequent Primary Contact)	2024	Low
							Minimum Dissolved Oxygen	Meeting criteria	TMDL Approved (59861)	Aquatic Wildlife (Cold Water)		
Weber River	UT-L-16020101-005_00	Smith and Morehouse Reservoi	207.0555	Acres	2	No Evidence of Impairment						
Weber River	UT-L-16020102-004_00	Willard Bay Reservoir	10109.368	Acres	1	Fully Supporting						
West Desert	UT-L-16020304-005_00	Grantsville Reservoir	95.2823	Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
West Desert	UT-L-16020304-002_00	Rush Lake	242.4937	Acres	2	No Evidence of Impairment						
West Desert	UT-L-16020304-004_00	Settlement Canyon Reservoir	25.9513	Acres	2	No Evidence of Impairment						
West Desert	UT-L-16020304-003_00	Stansbury Lake	91.3185	Acres	5	Not Supporting	Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2016	Low
Western Colorado River	UT-L-14060009-024_00	Cleveland Reservoir	146.5912	Acres	2	No Evidence of Impairment						
Western Colorado River	UT-L-14070003-018_00	Cook Lake	10.3812	Acres	2	No Evidence of Impairment						
Western Colorado River	UT-L-14070003-027_00	Donkey Reservoir	23.7681	Acres	5	Not Supporting	pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Western Colorado River	UT-L-14060009-004_00	Duck Fork Reservoir	42.2838	Acres	2	No Evidence of Impairment						
Western Colorado River	UT-L-14060009-025_00	Electric Lake	450.7146	Acres	2	No Evidence of Impairment						
Western Colorado River	UT-L-14060007-001_00	Fairview Lakes	103.8574	Acres	2	No Evidence of Impairment						
Western Colorado River	UT-L-14060009-001_00	Ferron Reservoir	54.0587	Acres	2	No Evidence of Impairment						
Western Colorado River	UT-L-14070003-006_00	Fish Lake	2586.4949	Acres	2	No Evidence of Impairment						
Western Colorado River	UT-L-14070003-019_00	Forsyth Reservoir	165.0508	Acres	4A	Approved TMDL	Minimum Dissolved Oxygen	Meeting criteria	TMDL Approved (4060)	Aquatic Wildlife (Cold Water)		
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (4060)	Aquatic Wildlife (Cold Water)	1998	Low
Western Colorado River	UT-L-14060009-034_00	Huntington Lake North	235.0793	Acres	2	No Evidence of Impairment						
Western Colorado River	UT-L-14060009-018_00	Huntington Reservoir	163.0396	Acres	2	No Evidence of Impairment						
Western Colorado River	UT-L-14060009-017_00	Joes Valley Reservoir	1052.2234	Acres	2	No Evidence of Impairment						
Western Colorado River	UT-L-14070003-010_00	Johnson Valley Reservoir	671.6737	Acres	4A	Approved TMDL	Total Phosphorus as P	Not meeting criteria	TMDL Approved (4059)	Aquatic Wildlife (Cold Water)	1998	Low
Western Colorado River	UT-L-14070006-001_00	Lake Powell	149885.2379	Acres	1	Fully Supporting						
Western Colorado River	UT-L-14070003-044_00	Lower Bowns Reservoir	107.9439	Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2012	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2010	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2012	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2006	Low
Western Colorado River	UT-L-14060007-004_00	Lower Gooseberry Reservoir	64.1617	Acres	5	Not Supporting	Total Phosphorus as P	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2010	Low
Western Colorado River	UT-L-14070003-015_00	Mill Meadow Reservoir	160.4492	Acres	5	Not Supporting but has Approved TMDL for some parameters	Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2024	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (4061)	Aquatic Wildlife (Cold Water)	1998	Low
Western Colorado River	UT-L-14060009-023_00	Miller Flat Reservoir	160.5126	Acres	2	No Evidence of Impairment						
Western Colorado River	UT-L-14060009-026_00	Millsite Reservoir	367.1425	Acres	2	No Evidence of Impairment						
Western Colorado River	UT-L-14070005-008_00	Posey Lake	12.0249	Acres	2	No Evidence of Impairment						
Western Colorado River	UT-L-14060007-005_00	Scofield Reservoir	2670.447	Acres	5	Not Supporting but has Approved TMDL for some parameters	Eutrophication	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	High
							Harmful algal blooms	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (1060)	Aquatic Wildlife (Cold Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (1060)	Aquatic Wildlife (Cold Water)	1998	Low
							pH	Not meeting criteria	TMDL Approved (1060)	Aquatic Wildlife (Cold Water)	2024	Low
Western Colorado River	UT-L-14070005-011_00	Wide Hollow Reservoir	155.635	Acres	5	Not Supporting	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2010	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: Lakes and Reservoir Delistings

Watershed Management Unit	Assessment Unit ID	Assessment Unit Name	Water Quality Parameter	Delisting Reason	Delisting Comment
Bear River	UT-L-16010203-005_00	Hyrum Reservoir	Dissolved Oxygen	Meeting water quality criteria with new data.	Long term improvement in lens width. 8 profiles at 3 sites since 2016 show support for DO and temperature.
Bear River	UT-L-16010203-005_00	Hyrum Reservoir	Temperature	Meeting water quality criteria with new data.	Long term improvement in lens width. 8 profiles at 3 sites since 2016 show support for DO and temperature.
Cedar-Beaver	UT-L-16020203-003_00	Jordanelle Reservoir	pH	Meeting water quality criteria with new data.	No pH exceedances since 2016 based on over 20 profiles including the critical time period.
Cedar-Beaver	UT-L-16030007-011_00	Minersville Reservoir	Temperature	TMDL Approved by EPA (4A)	TMDL Action ID : 808
Weber River	UT-L-16020102-020_00	East Canyon Reservoir	pH	Meeting water quality criteria with new data.	Sufficient new data shows that pH exceedances observed in 2016 were isolated and anomolous. No other pH exceedances observed.
Weber River	UT-L-16020101-002_00	Rockport Reservoir	pH	Meeting water quality criteria with new data.	No pH sample exceedances since 2015. Sufficient new data have been collected to delist.

*Footnote: Scofield Reservoir was placed in Category 1: Fully Supporting for pH in the 2022 IR but is now impaired for pH with an existing Total Maximum Daily Load (TMDL) in place.
It is not included in this delisting table since this waterbody was previously counted as a delisting when the TMDL was initially established.

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

Chapter 3 Assessments Specific to Rivers, Streams and Canals

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Bear River	UT16010201-001_00	Bear Lake West	1.1509 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Bear River	UT16010101-027_00	Bear River East	2.8232 Miles	2	No Evidence of Impairment							
Bear River	UT16010204-002_00	Bear River Lower-East	26.1854 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2024	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2012	Low
Bear River	UT16010204-004_00	Bear River Lower-West	10.4099 Miles	3	Insufficient Data							
Bear River	UT16010102-001_00	Bear River North	0.1264 Miles	3	Insufficient Data							
Bear River	UT16010101-001_00	Bear River West	6.7627 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Bear River	UT16010204-003_00	Bear River-1	19.0803 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2010	Low
Bear River	UT16010204-008_01	Bear River-2-1	42.6711 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2008	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2024	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2024	Low
Bear River	UT16010204-008_02	Bear River-2-2	13.2544 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2008	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2020	Low
Bear River	UT16010202-004_00	Bear River-3	41.4464 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Sediment	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (38238)	Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	1998	Low
Bear River	UT16010101-006_00	Bear River-4	52.5509 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (30887)	Aquatic Wildlife (Cold Water)	2000	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (30887)	Aquatic Wildlife (Cold Water)	2000	Low
Bear River	UT16010101-009_00	Bear River-5	12.1575 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Bear River	UT16010101-021_00	Bear River-6	20.1605 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Bear River	UT16010101-007_00	Big Creek	31.0079 Miles	5	Not Supporting	Assessed HNNC	E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2024	Low
Bear River	UT16010101-010_00	Birch Creek - Bear	19.6444 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Bear River	UT16010203-020_00	Blacksmith Fork-1	11.6242 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2016	Low
Bear River	UT16010203-018_00	Blacksmith Fork-2	56.6002 Miles	2	No Evidence of Impairment							
Bear River	UT16010204-001_00	Box Elder Creek-1	0 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2024	Low
Bear River	UT16010204-005_00	Box Elder Creek-2	7.4696 Miles	2	No Evidence of Impairment							
Bear River	UT16010202-007_00	Cherry Creek - Bear	5.0468 Miles	3	Insufficient Data							
Bear River	UT16010202-006_00	City Creek	8.8866 Miles	3	Insufficient Data							
Bear River	UT16010202-013_00	Clarkston Creek	23.9341 Miles	1	Fully Supporting							
Bear River	UT16010202-015_00	Clay Slough	2.96 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2012	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2012	Low
							pH	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Agricultural, Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2012	Low
Bear River	UT16010202-010_00	Cub River	16.4756 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Sediment	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (38238)	Aquatic Wildlife (Warm Water)	1998	Low
Bear River	UT16010203-001_00	Cutler West	2.8478 Miles	3	Insufficient Data							
Bear River	UT16010203-015_00	Davenport Creek	37.2246 Miles	2	No Evidence of Impairment							
Bear River	UT16010101-017_00	Dry Creek	1.4261 Miles	3	Insufficient Data							
Bear River	UT16010101-026_00	East Fork Bear River	53.8896 Miles	2	No Evidence of Impairment							
Bear River	UT16010203-014_00	East Fork Little Bear-1	7.7177 Miles	1	Fully Supporting							
Bear River	UT16010203-017_00	East Fork Little Bear-2	31.0267 Miles	3	Insufficient Data							
Bear River	UT16010101-024_00	Hayden Fork	17.6679 Miles	2	No Evidence of Impairment							

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Bear River	UT16010202-008_00	High Creek Lower	3.3931 Miles	4A	Approved TMDL		Total Phosphorus as P	Not meeting criteria	TMDL Approved (38238)	Aquatic Wildlife (Cold Water)	1998	Low
Bear River	UT16010202-012_00	High Creek Upper	9.4974 Miles	1	Fully Supporting							
Bear River	UT16010202-003_00	Hopkins Slough	9.8767 Miles	3	Insufficient Data							
Bear River	UT16010201-002_00	Laketown	12.2818 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2024	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
Bear River	UT16010203-019_00	Left Hand Fork Blacksmith Fork	25.5 Miles	2	No Evidence of Impairment							
Bear River	UT16010203-012_00	Little Bear River Tributaries	0.9601 Miles	2	No Evidence of Impairment							
Bear River	UT16010203-009_00	Little Bear River-1	27.7899 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
Bear River	UT16010203-011_00	Little Bear River-2	8.8563 Miles	1	Fully Supporting							
Bear River	UT16010203-007_00	Little Bear-3	15.2185 Miles	1	Fully Supporting							
Bear River	UT16010203-010_00	Little Bear-4	2.2248 Miles	3	Insufficient Data							
Bear River	UT16010101-003_00	Little Creek - Bear	8.0022 Miles	2	No Evidence of Impairment							
Bear River	UT16010203-005_00	Logan River-1	40.0069 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (38238)	Aquatic Wildlife (Cold Water)	1998	Low
Bear River	UT16010203-006_00	Logan River-2	71.7763 Miles	5	Not Supporting		pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural, Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2020	Low
Bear River	UT16010204-006_00	Malad River-1	61.27 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2020	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Thallium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2024	Low
							pH	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Aquatic Wildlife (Non-game Fish and Other)	2024	Low
Bear River	UT16010204-010_01	Malad River-2-1	8.5528 Miles	2	No Evidence of Impairment							
Bear River	UT16010204-010_02	Malad River-2-2	3.7293 Miles	2	No Evidence of Impairment							
Bear River	UT16010204-011_01	Mantua Reservoir Tributaries-1	0.9638 Miles	2	No Evidence of Impairment	Assessed HNNC						
Bear River	UT16010204-011_02	Mantua Reservoir Tributaries-2	1.1199 Miles	5	Not Supporting	Assessed HNNC	E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							pH	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Agricultural, Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2024	Low
Bear River	UT16010204-007_01	Middle Bear East-1	4.4531 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
Bear River	UT16010204-007_02	Middle Bear East-2	5.9859 Miles	2	No Evidence of Impairment							
Bear River	UT16010101-022_00	Mill Creek	58.7378 Miles	2	No Evidence of Impairment							
Bear River	UT16010202-002_00	Newton Creek	2.554 Miles	5	Not Supporting but has Approved TMDL for some parameters		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (11147)	Aquatic Wildlife (Cold Water)	1996	Low
Bear River	UT16010201-004_00	North Eden	17.5663 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
Bear River	UT16010101-008_00	North Woodruff	2.3531 Miles	3	Insufficient Data							
Bear River	UT16010101-005_00	Otter Creek	25.9216 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2024	Low
Bear River	UT16010203-016_00	Porcupine Creek	1.5309 Miles	2	No Evidence of Impairment							
Bear River	UT16010101-004_00	Sage Creek	11.2041 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2010	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2024	Low
Bear River	UT16010101-016_00	Saleratus Creek	29.1405 Miles	5	Not Supporting but has Approved TMDL for some parameters		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2012	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (30885)	Aquatic Wildlife (Cold Water)	1998	Low
Bear River	UT16010204-013_00	Salt Creek-Bothwell	4.7521 Miles	3	Insufficient Data							
Bear River	UT16010101-002_00	Six Mile Creek - Bear	19.6426 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2016	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Bear River	UT16010201-003_00	South Eden	5.9202 Miles	2	No Evidence of Impairment							
Bear River	UT16010203-013_00	South Fork Little Bear	21.5849 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Bear River	UT16010202-009_00	Spring Creek Lewiston	2.2928 Miles	4A	Approved TMDL		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (38238)	Aquatic Wildlife (Warm Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (4012, 38238)	Aquatic Wildlife (Warm Water)	1998	Low
Bear River	UT16010203-008_00	Spring Creek-Hyrum	10.853 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Approved (4012)	Recreation and Aesthetics (Infrequent Primary Contact)	2002	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2006	Low
							Total Ammonia as N	Not meeting criteria	TMDL Approved (4012)	Aquatic Wildlife (Cold Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	1998	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2020	Low
Bear River	UT16010101-025_00	Stillwater Fork	34.9426 Miles	5	Not Supporting		pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2020	Low
Bear River	UT16010202-005_00	Summit Creek Lower	7.9705 Miles	1	Fully Supporting							
Bear River	UT16010202-011_00	Summit Creek Upper	9.9878 Miles	1	Fully Supporting							
Bear River	UT16010101-018_00	Sutton Creek	35.523 Miles	3	Insufficient Data							
Bear River	UT16010203-002_00	Swift Slough	10.8954 Miles	2	No Evidence of Impairment							
Bear River	UT16010202-014_00	The Slough	3.2139 Miles	2	No Evidence of Impairment							
Bear River	UT16010101-012_00	Unnamed Creek	0 Miles	3	Insufficient Data							
Bear River	UT16010101-023_00	West Fork Bear River	72.0755 Miles	2	No Evidence of Impairment							
Bear River	UT16010101-011_00	Woodruff Creek-1	8.2049 Miles	2	No Evidence of Impairment							
Bear River	UT16010101-015_00	Woodruff Creek-2	5.7717 Miles	2	No Evidence of Impairment							
Bear River	UT16010101-014_00	Woodruff Creek-3	0 Miles	3	Insufficient Data							
Bear River	UT16010101-013_00	Woodruff Creek-4	42.1112 Miles	3	Insufficient Data							
Bear River	UT16010202-001_00	Worm Creek	0.0049 Miles	2	No Evidence of Impairment							
Bear River	UT16010101-028_00	Yellow Creek	16.8393 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
Bear River	UT16010101-019_01	Yellow Creek Tributaries-1	23.3213 Miles	2	No Evidence of Impairment							
Bear River	UT16010101-019_02	Yellow Creek Tributaries-2	0 Miles	2	No Evidence of Impairment							
Cedar-Beaver	UT16030007-001_00	Beaver River-1	8.0371 Miles	3	Insufficient Data							
Cedar-Beaver	UT16030007-002_00	Beaver River-2	65.1982 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2016	Low
							Max. Temperature	Not meeting criteria	TMDL Approved (96)	Aquatic Wildlife (Cold Water)	1998	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (96)	Aquatic Wildlife (Cold Water)	2014	Low
Cedar-Beaver	UT16030007-003_00	Beaver River-3	180.9877 Miles	2	No Evidence of Impairment							
Cedar-Beaver	UT16030006-001_00	Coal Creek - C/B	45.1605 Miles	1	Fully Supporting							
Cedar-Beaver	UT16030006-009_00	Cottonwood Canyon-Parowan V	6.0095 Miles	2	No Evidence of Impairment							
Cedar-Beaver	UT16030006-005_00	Little Creek (Iron Co.)	16.1947 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2022	Low
Cedar-Beaver	UT16030006-004_00	Parowan Creek	32.917 Miles	2	No Evidence of Impairment							
Cedar-Beaver	UT16030007-004_00	Pine Creek-Tushar	6.3468 Miles	3	Insufficient Data							
Cedar-Beaver	UT16030006-002_00	Pinto Creek	31.9184 Miles	5	Not Supporting	Assessed HNNC	E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2016	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Cedar-Beaver	UT16030006-007_00	Red Creek (Iron Co.)	7.0902 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
Cedar-Beaver	UT16030006-008_00	Red Creek Lower (Iron Co.)	0.544 Miles	3	Insufficient Data							
Cedar-Beaver	UT16030006-006_00	Shoal Creek	6.1579 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2022	Low
Cedar-Beaver	UT16030006-003_00	Summit Creek-Iron	15.2027 Miles	2	No Evidence of Impairment							
Jordan River	UT16020201-002_01	American Fork River-2	29.1801 Miles	2	No Evidence of Impairment							
Jordan River	UT16020204-028_00	Barneys Canyon Creek	2.3925 Miles	3	Insufficient Data							
Jordan River	UT16020204-030_00	Bells Canyon	4.4335 Miles	3	Insufficient Data							
Jordan River	UT16020204-019_00	Big Cottonwood Creek-1	10.0393 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
							E. coli	Not meeting criteria	TMDL Approved (R8-UT-2023-01)	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2006	Low
Jordan River	UT16020204-020_00	Big Cottonwood Creek-2	44.4571 Miles	5	Not Supporting		Cadmium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2022	Low
Jordan River	UT16020204-006_02	Big Willow Creek	0.0006 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2008	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2006	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2024	Low
Jordan River	UT16020204-023_00	Bingham Creek	4.369 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2024	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Jordan River	UT16020204-024_02	Butterfield Creek	4.6699 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2024	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Jordan River	UT16020204-009_00	City Creek-1	4.1992 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2024	Low
Jordan River	UT16020204-010_00	City Creek-2	6.2989 Miles	1	Fully Supporting							
Jordan River	UT16020204-027_00	Coon Creek	4.1047 Miles	3	Insufficient Data							
Jordan River	UT16020204-006_03	Dry Creek	0.0126 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2008	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2006	Low
Jordan River	UT16020201-015_00	Dry Creek-Alpine	11.3135 Miles	5	Not Supporting		pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2014	Low
Jordan River	UT16020204-012_00	Emigration Creek	3.6719 Miles	4A	Approved TMDL		E. coli	Not meeting criteria	TMDL Approved (42669)	Recreation and Aesthetics (Infrequent Primary Contact)	2008	Low
Jordan River	UT16020204-033_00	Emigration Creek Lower	1.0808 Miles	4A	Approved TMDL		E. coli	Not meeting criteria	TMDL Approved (R8-UT-2023-01)	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
Jordan River	UT16020204-001_01	Jordan River-1	9.1094 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2008	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (54300)	Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2002	Low
Jordan River	UT16020204-002_00	Jordan River-2	4.428 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2008	Low
							E. coli	Not meeting criteria	TMDL Approved (R8-UT-2023-01)	Recreation and Aesthetics (Infrequent Primary Contact)	2006	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (54321)	Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2002	Low
Jordan River	UT16020204-003_00	Jordan River-3	4.392 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2008	Low
							E. coli	Not meeting criteria	TMDL Approved (R8-UT-2023-01)	Recreation and Aesthetics (Infrequent Primary Contact)	2006	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (54322)	Aquatic Wildlife (Warm Water)	2008	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2024	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2008	Low
Jordan River	UT16020204-004_00	Jordan River-4	5.6731 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2010	Low
							E. coli	Not meeting criteria	TMDL Approved (R8-UT-2023-01)	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2008	Low
Jordan River	UT16020204-005_00	Jordan River-5	4.6338 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Approved (R8-UT-2023-01)	Recreation and Aesthetics (Infrequent Primary Contact)	2006	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2006	Low
Jordan River	UT16020204-006_01	Jordan River-6	12.6409 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2008	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2024	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2006	Low
Jordan River	UT16020204-007_00	Jordan River-7	3.8478 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2008	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2020	Low
Jordan River	UT16020201-008_00	Jordan River-8	9.8994 Miles	5	Not Supporting		Arsenic	Not meeting criteria	TMDL Needed	Domestic Source	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2006	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Jordan River	UT16020204-036_00	Lee Creek	5.1666 Miles	1	Fully Supporting							
Jordan River	UT16020204-021_00	Little Cottonwood Creek-1	9.669 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2008	Low
							Cadmium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							E. coli	Not meeting criteria	TMDL Approved (R8-UT-2023-01)	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2006	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2006	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2024	Low
Jordan River	UT16020204-022_00	Little Cottonwood Creek-2	30.0211 Miles	5	Not Supporting but has Approved TMDL for some parameters		Cadmium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Zinc	Not meeting criteria	TMDL Approved (4014)	Aquatic Wildlife (Cold Water)	1998	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2014	Low
Jordan River	UT16020204-031_00	Little Willow Creek	2.7942 Miles	3	Insufficient Data							
Jordan River	UT16020201-002_02	Mary Ellen Gulch	3.6415 Miles	5	Not Supporting		Cadmium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Zinc	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Jordan River	UT16020204-024_01	Midas Creek	1.4885 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Approved (R8-UT-2023-01)	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
							Selenium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Jordan River	UT16020204-026_00	Mill Creek1-SLCity	1.0993 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2014	Low
							E. coli	Not meeting criteria	TMDL Approved (R8-UT-2023-01)	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
Jordan River	UT16020204-017_00	Mill Creek2-SLCity	7.5068 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2010	Low
							E. coli	Not meeting criteria	TMDL Approved (R8-UT-2023-01)	Recreation and Aesthetics (Infrequent Primary Contact)	2002	Low
Jordan River	UT16020204-018_00	Mill Creek3-SLCity	19.0594 Miles	1	Fully Supporting							
Jordan River	UT16020204-014_00	Mountain Dell Creek-1	0.8461 Miles	1	Fully Supporting							
Jordan River	UT16020204-015_00	Mountain Dell Creek-2	7.7648 Miles	2	No Evidence of Impairment							
Jordan River	UT16020204-016_00	North Canyon	0 Miles	1	Fully Supporting	Assessed HNNC						
							Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2008	Low
							Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2014	Low
							Minimum Dissolved Oxygen	Meeting criteria	TMDL Approved (54300)	Aquatic Wildlife (Waterfowl, Shorebirds, and Other)		
Jordan River	UT16020204-025_00	Parleys Canyon Creek-1	13.5741 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							E. coli	Not meeting criteria	TMDL Approved (R8-UT-2023-01)	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2010	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Jordan River	UT16020204-013_00	Parleys Canyon Creek-2	15.7211 Miles	5	Not Supporting but has Approved TMDL for some parameters		Cadmium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							E. coli	Not meeting criteria	TMDL Approved (R8-UT-2023-01)	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2022	Low
Jordan River	UT16020204-035_00	Red Butte Creek Lower	2.3245 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							E. coli	Not meeting criteria	TMDL Approved (R8-UT-2023-01)	Recreation and Aesthetics (Infrequent Primary Contact)	2022	Low
Jordan River	UT16020204-011_00	Red Butte Creek Upper	5.6285 Miles	3	Insufficient Data							
Jordan River	UT16020204-029_00	Rose Creek	7.0181 Miles	4A	Approved TMDL		E. coli	Not meeting criteria	TMDL Approved (R8-UT-2023-01)	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
Jordan River	UT16020204-032_00	Surplus Canal	11.5084 Miles	3	Insufficient Data							
Lower Colorado River	UT15010008-007_00	Ash Creek-1	27.185 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Lower Colorado River	UT15010008-008_00	Ash Creek-2	8.0848 Miles	3	Insufficient Data							
Lower Colorado River	UT15010008-009_00	Ash Creek-3	44.5043 Miles	2	No Evidence of Impairment							

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Lower Colorado River	UT15010010-002_00	Beaver Dam Wash	24.4495 Miles	2	No Evidence of Impairment							
Lower Colorado River	UT15010003-001_00	Cottonwood Canyon	5.9654 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2014	Low
Lower Colorado River	UT15010008-017_00	Deep Creek	66.1076 Miles	2	No Evidence of Impairment							
Lower Colorado River	UT15010008-018_00	East Fork Virgin-1	38.5233 Miles	5	Not Supporting	Assessed HNNC	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2024	Low
Lower Colorado River	UT15010008-019_00	East Fork Virgin-2	25.7728 Miles	1	Fully Supporting							
Lower Colorado River	UT15010008-020_00	East Fork Virgin-3	35.891 Miles	3	Insufficient Data							
Lower Colorado River	UT15010009-001_00	Fort Pearce Wash	0 Miles	5	Not Supporting		Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2012	Low
Lower Colorado River	UT15010003-004_00	Johnson Wash-1	22.1778 Miles	5	Not Supporting		Boron	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2008	Low
Lower Colorado River	UT15010003-005_00	Johnson Wash-2	27.1966 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
							Zinc	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2022	Low
Lower Colorado River	UT15010003-002_01	Kanab Creek-1-1	6.6696 Miles	5	Not Supporting		Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2008	Low
Lower Colorado River	UT15010003-002_02	Kanab Creek-1-2	11.4265 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2024	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2008	Low
Lower Colorado River	UT15010003-003_00	Kanab Creek-2	6.1751 Miles	5	Not Supporting		Boron	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
							Selenium	Not meeting criteria	TMDL Needed	Agricultural, Aquatic Wildlife (Non-game Fish and Other)	2016	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Lower Colorado River	UT15010003-006_00	Kanab Creek-3	1.2394 Miles	3	Insufficient Data							
Lower Colorado River	UT15010008-016_00	Kolob Creek	15.6481 Miles	3	Insufficient Data							
Lower Colorado River	UT15010008-010_00	La Verkin Creek	48.0063 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2016	Low
Lower Colorado River	UT15010008-006_00	Leeds Creek	10.3541 Miles	2	No Evidence of Impairment							
Lower Colorado River	UT15010008-014_00	North Creek-Virgin	25.4163 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2016	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2024	Low
Lower Colorado River	UT15010008-015_00	North Fork Virgin River-1	47.2362 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Meeting criteria	TMDL Approved (R8-UT-2018-01)	Domestic Source	2024	Low
							E. coli	Not meeting criteria	TMDL Approved (R8-UT-2018-01)	Recreation and Aesthetics (Frequent Primary Contact)	2024	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2010	Low
Lower Colorado River	UT15010008-013_00	North Fork Virgin River-2	37.7151 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Approved (R8-UT-2018-01)	Domestic Source, Recreation and Aesthetics (Frequent Primary Contact)	2010	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Lower Colorado River	UT15010008-005_00	Quail Creek	1.0331 Miles	3	Insufficient Data							
Lower Colorado River	UT15010008-001_00	Santa Clara-1	23.8208 Miles	5	Not Supporting but has Approved TMDL for some parameters		Boron	Not meeting criteria	TMDL Needed	Agricultural	2008	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2008	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (12104)	Agricultural	1998	Low
Lower Colorado River	UT15010008-002_00	Santa Clara-2	27.0488 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Lower Colorado River	UT15010008-003_00	Santa Clara-3	38.123 Miles	5	Not Supporting		Nutrient/Eutrophication Biological Indicators	Threatened	Alternative restoration plan	Aquatic Wildlife (Cold Water)	2022	Low
Lower Colorado River	UT15010009-002_00	Short Creek	5.3471 Miles	3	Insufficient Data							
Lower Colorado River	UT15010010-001_00	Virgin River-1	11.9234 Miles	5	Not Supporting		Boron	Not meeting criteria	TMDL Needed	Agricultural	2008	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2006	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Lower Colorado River	UT15010008-004_00	Virgin River-2	34.5952 Miles	5	Not Supporting		Boron	Not meeting criteria	TMDL Needed	Agricultural	2008	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2022	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Lower Colorado River	UT15010008-011_00	Virgin River-3	4.2655 Miles	1	Fully Supporting							
Lower Colorado River	UT15010008-012_00	Virgin River-4	20.4604 Miles	3	Insufficient Data							
Lower Sevier River	UT16030003-007_00	Beaver Creek-1 Sevier	17.2291 Miles	1	Fully Supporting							
Lower Sevier River	UT16030003-020_00	Beaver Creek2-Piute	54.7461 Miles	3	Insufficient Data							
Lower Sevier River	UT16030005-018_00	Chalk Creek-1	0 Miles	3	Insufficient Data							
Lower Sevier River	UT16030005-019_00	Chalk Creek2-Fillmore	35.0998 Miles	5	Not Supporting		pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2022	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Lower Sevier River	UT16030005-002_00	Cherry Creek	26.4175 Miles	3	Insufficient Data							
Lower Sevier River	UT16030005-020_00	Chicken Creek-1	13.3893 Miles	2	No Evidence of Impairment							
Lower Sevier River	UT16030005-022_00	Chicken Creek-2	25.0643 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	1998	Low
Lower Sevier River	UT16030005-011_00	Chicken Creek-3	13.4278 Miles	3	Insufficient Data							
Lower Sevier River	UT16030003-018_00	Clear Creek-I70	119.959 Miles	5	Not Supporting	Assessed HNNC	Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2022	Low
Lower Sevier River	UT16030005-021_00	Corn Creek	61.7244 Miles	1	Fully Supporting							
Lower Sevier River	UT16030004-013_00	Cottonwood Creek-SP	10.4397 Miles	1	Fully Supporting							
Lower Sevier River	UT16030004-007_02	Ephraim Creek	4.766 Miles	2	No Evidence of Impairment							
Lower Sevier River	UT16030005-006_00	Fishlake National Forest-I15	12.3189 Miles	3	Insufficient Data							
Lower Sevier River	UT16030005-005_00	Fool Creek-1	0 Miles	3	Insufficient Data							
Lower Sevier River	UT16030005-014_00	Goose Creek-2	0.2838 Miles	3	Insufficient Data							
Lower Sevier River	UT16030005-012_00	Ivie Creek	16.57 Miles	2	No Evidence of Impairment							
Lower Sevier River	UT16030003-005_00	Lost Creek-1	5.899 Miles	5	Not Supporting		Boron	Not meeting criteria	TMDL Needed	Agricultural	2016	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2022	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2012	Low
Lower Sevier River	UT16030003-008_00	Lost Creek2-Salina	8.5224 Miles	3	Insufficient Data							
Lower Sevier River	UT16030003-010_00	Lost Creek3-Salina	33.3325 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Lower Sevier River	UT16030003-021_00	Manning Creek	19.5708 Miles	5	Not Supporting	Assessed HNNC	Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2022	Low
Lower Sevier River	UT16030005-023_00	Meadow Creek	6.2717 Miles	2	No Evidence of Impairment							
Lower Sevier River	UT16030003-013_00	Monroe Creek	78.6053 Miles	1	Fully Supporting							
Lower Sevier River	UT16030004-012_00	Oak Creek Upper	7.129 Miles	1	Fully Supporting							
Lower Sevier River	UT16030004-006_00	Oak Creek-1	15.9905 Miles	3	Insufficient Data							
Lower Sevier River	UT16030005-004_00	Oak Creek-1	0 Miles	3	Insufficient Data							
Lower Sevier River	UT16030004-010_00	Oak Creek-2	23.424 Miles	1	Fully Supporting							
Lower Sevier River	UT16030003-027_00	Peterson Creek	8.0669 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2022	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2016	Low
Lower Sevier River	UT16030005-015_00	Pioneer Creek-1	0.4127 Miles	3	Insufficient Data							
Lower Sevier River	UT16030005-016_00	Pioneer Creek-2	3.8421 Miles	3	Insufficient Data							
Lower Sevier River	UT16030004-008_00	Pleasant Creek	58.0124 Miles	1	Fully Supporting							
Lower Sevier River	UT16030005-024_00	Round Valley Creek	0 Miles	3	Insufficient Data							
Lower Sevier River	UT16030003-003_00	Salina Creek-1	4.591 Miles	4A	Approved TMDL		Total Dissolved Solids	Not meeting criteria	TMDL Approved (11125)	Agricultural	1998	Low
Lower Sevier River	UT16030003-006_00	Salina Creek-2	158.4279 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2022	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2020	Low
Lower Sevier River	UT16030004-001_00	San Pitch-1	19.028 Miles	4A	Approved TMDL		Total Dissolved Solids	Not meeting criteria	TMDL Approved (11150)	Agricultural	2014	Low
Lower Sevier River	UT16030004-005_01	San Pitch-3-1	68.52 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2016	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other), Aquatic Wildlife (Non-game Fish and Other)	2020	Low
							Total Ammonia as N	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other), Aquatic Wildlife (Non-game Fish and Other)	2016	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (11151)	Agricultural	1998	Low
							pH	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Agricultural, Aquatic Wildlife (Waterfowl, Shorebirds, and Other), Aquatic Wildlife (Non-game Fish and Other)	2024	Low
Lower Sevier River	UT16030004-005_02	San Pitch-3-2	0 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2016	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
							Total Ammonia as N	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other), Aquatic Wildlife (Non-game Fish and Other)	2016	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (11151)	Agricultural	1998	Low
Lower Sevier River	UT16030004-011_00	San Pitch-4	14.127 Miles	5	Not Supporting		Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Lower Sevier River	UT16030004-009_00	San Pitch-5	71.1046 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2016	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							pH	Not meeting criteria	TMDL Approved (11151)	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2022	Low
Lower Sevier River	UT16030003-016_00	Sevier River-10	1.4536 Miles	3	Insufficient Data							
Lower Sevier River	UT16030003-009_00	Sevier River-11	0.0025 Miles	3	Insufficient Data							
Lower Sevier River	UT16030003-011_00	Sevier River-12	13.6463 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2022	Low
Lower Sevier River	UT16030003-025_00	Sevier River-13	1.7238 Miles	3	Insufficient Data							
Lower Sevier River	UT16030003-014_00	Sevier River-14	12.4067 Miles	2	No Evidence of Impairment							
Lower Sevier River	UT16030003-024_00	Sevier River-15	14.9481 Miles	2	No Evidence of Impairment							
Lower Sevier River	UT16030003-004_01	Sevier River-16-1	3.4147 Miles	3	Insufficient Data							
Lower Sevier River	UT16030003-004_02	Sevier River-16-2	0.2054 Miles	3	Insufficient Data							
Lower Sevier River	UT16030003-004_03	Sevier River-16-3	0 Miles	3	Insufficient Data							
Lower Sevier River	UT16030003-012_00	Sevier River-17	28.8381 Miles	4A	Approved TMDL		Sediment	Not meeting criteria	TMDL Approved (11122)	Aquatic Wildlife (Warm Water)	2000	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (11150, 11122)	Agricultural	2000	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (11122)	Aquatic Wildlife (Warm Water)	2000	Low
Lower Sevier River	UT16030003-023_00	Sevier River-18	29.9004 Miles	3	Insufficient Data							
Lower Sevier River	UT16030003-001_00	Sevier River-19	0.1488 Miles	3	Insufficient Data							
Lower Sevier River	UT16030005-025_00	Sevier River-20	36.1418 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2008	Low
Lower Sevier River	UT16030005-007_00	Sevier River-21	21.1433 Miles	3	Insufficient Data							
Lower Sevier River	UT16030005-026_00	Sevier River-22	38.9628 Miles	4A	Approved TMDL		Sediment	Not meeting criteria	TMDL Approved (11124)	Aquatic Wildlife (Warm Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (11124)	Aquatic Wildlife (Warm Water)	1998	Low
Lower Sevier River	UT16030005-017_00	Sevier River-23	0 Miles	3	Insufficient Data							
Lower Sevier River	UT16030005-027_00	Sevier River-24	17.1572 Miles	5	Not Supporting but has Approved TMDL for some parameters		Sediment	Not meeting criteria	TMDL Approved (11124)	Aquatic Wildlife (Warm Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (11124)	Aquatic Wildlife (Warm Water)	1998	Low
							pH	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Agricultural, Aquatic Wildlife (Warm Water)	2022	Low
Lower Sevier River	UT16030005-028_00	Sevier River-25	19.8296 Miles	1	Fully Supporting							
Lower Sevier River	UT16030005-029_00	Sevier River-26	0.0464 Miles	3	Insufficient Data							
Lower Sevier River	UT16030005-008_00	Sevier River-27	0.5796 Miles	1	Fully Supporting							
Lower Sevier River	UT16030003-022_00	Sevier River-5	9.3337 Miles	3	Insufficient Data							
Lower Sevier River	UT16030003-017_00	Sevier River-6	31.0645 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2006	Low
Lower Sevier River	UT16030003-026_00	Sevier River-7	0 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2014	Low
Lower Sevier River	UT16030003-015_00	Sevier River-8	29.4191 Miles	1	Fully Supporting							
Lower Sevier River	UT16030003-019_00	Sevier River-9	11.5315 Miles	3	Insufficient Data							
Lower Sevier River	UT16030004-003_00	Six Mile Creek - Sevier	40.205 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2012	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2022	Low
Lower Sevier River	UT16030004-004_00	South Creek	33.4952 Miles	2	No Evidence of Impairment							
Lower Sevier River	UT16030005-003_00	Tanner Creek	15.0538 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Severely Habitat-Limited)	2024	Low
Lower Sevier River	UT16030004-002_00	Twelve Mile Creek	71.5521 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2022	Low
Lower Sevier River	UT16030004-007_01	Upper Willow Creek	15.2663 Miles	2	No Evidence of Impairment							
Lower Sevier River	UT16030003-002_00	Willow Creek - Axtell	15.7854 Miles	2	No Evidence of Impairment							
Southeast Colorado River	UT14030001-004_00	Bitter Creek	3.7914 Miles	3	Insufficient Data							
Southeast Colorado River	UT14080201-001_00	Butler Wash	3.7959 Miles	3	Insufficient Data							
Southeast Colorado River	UT14030005-009_00	Castle Creek-1	12.9127 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2008	Low
							E. coli	Not meeting criteria	TMDL Needed	Domestic Source, Recreation and Aesthetics (Frequent Primary Contact)	2020	High

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Southeast Colorado River	UT14030005-012_00	Castle Creek-2	6.7466 Miles	1	Fully Supporting							
Southeast Colorado River	UT14070001-003_00	Colorado River-2	15.2913 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2024	Low
Southeast Colorado River	UT14030005-003_00	Colorado River-3	62.25 Miles	4A	Approved TMDL		Selenium	Not meeting criteria	TMDL Approved (60105)	Aquatic Wildlife (Warm Water)	2006	Low
Southeast Colorado River	UT14030005-004_00	Colorado River-4	35.9364 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Frequent Primary Contact)	2020	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2024	Low
							Selenium	Not meeting criteria	TMDL Approved (60104)	Aquatic Wildlife (Warm Water)	2006	Low
Southeast Colorado River	UT14030001-005_00	Colorado River-5	33.291 Miles	4A	Approved TMDL		Selenium	Not meeting criteria	TMDL Approved (60103)	Aquatic Wildlife (Warm Water)	2004	Low
Southeast Colorado River	UT14010005-001_00	Colorado River-6	3.8387 Miles	4A	Approved TMDL		Selenium	Not meeting criteria	TMDL Approved (60100)	Aquatic Wildlife (Warm Water)	2004	Low
Southeast Colorado River	UT14080201-011_00	Comb Wash	7.209 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2020	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Southeast Colorado River	UT14030001-001_00	Cottonwood Wash	22.69 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2020	Low
Southeast Colorado River	UT14080201-002_00	Cottonwood Wash-1	0 Miles	2	No Evidence of Impairment							
Southeast Colorado River	UT14080201-006_00	Cottonwood Wash-2	5.695 Miles	5	Not Supporting but has Approved TMDL for some parameters		Arsenic	Not meeting criteria	TMDL Needed	Domestic Source	2022	Low
							Gross Alpha	Not meeting criteria	TMDL Approved (4013)	Domestic Source	1998	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2022	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2012	Low
							Radium	Not meeting criteria	TMDL Needed	Domestic Source	1998	Low
Southeast Colorado River	UT14080201-007_00	Cottonwood Wash-3	8.9346 Miles	5	Not Supporting but has Approved TMDL for some parameters		Gross Alpha	Not meeting criteria	TMDL Approved (4013)	Domestic Source, Agricultural	2010	Low
							Radium	Not meeting criteria	TMDL Needed	Domestic Source, Agricultural	2010	Low
Southeast Colorado River	UT14030005-017_00	Courthouse Wash	0 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2020	Low
Southeast Colorado River	UT14030005-018_00	Courthouse Wash	1.0922 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2024	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2022	Low
Southeast Colorado River	UT14030004-001_00	Dolores River	61.5556 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2020	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2024	Low
Southeast Colorado River	UT14080205-002_00	Grand Gulch	0 Miles	3	Insufficient Data							
Southeast Colorado River	UT14030005-008_00	Grandstaff Canyon	8.6431 Miles	1	Fully Supporting							
Southeast Colorado River	UT14030004-002_00	Granite Creek - CRSE	10.7667 Miles	3	Insufficient Data							
Southeast Colorado River	UT14030005-014_00	Indian Creek-1	8.5706 Miles	2	No Evidence of Impairment							
Southeast Colorado River	UT14030005-002_00	Indian Creek-2	17.593 Miles	1	Fully Supporting							
Southeast Colorado River	UT14080201-004_00	Johnson Creek	4.1683 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2010	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Southeast Colorado River	UT14030005-001_00	Kane Spring Wash	22.1913 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Southeast Colorado River	UT14030002-001_01	La Sal Creek-1	23.913 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2022	Low
Southeast Colorado River	UT14030002-001_02	La Sal Creek-2	0 Miles	3	Insufficient Data							
Southeast Colorado River	UT14070006-007_01	Lake Powell Tributaries-4-1	1.3519 Miles	3	Insufficient Data							
Southeast Colorado River	UT14070006-007_02	Lake Powell Tributaries-4-2	0 Miles	3	Insufficient Data							
Southeast Colorado River	UT14030001-002_00	Little Dolores River	7.2017 Miles	3	Insufficient Data							
Southeast Colorado River	UT14080202-001_00	McElmo Creek	18.7555 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2024	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2024	Low
Southeast Colorado River	UT14030005-006_01	Mill Creek-2-Moab	11.1566 Miles	2	No Evidence of Impairment							
					Not Supporting but has Approved TMDL					Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Recreation and Aesthetics (Frequent		

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
							Max. Temperature	Not meeting criteria	TMDL Approved (4047)	Aquatic Wildlife (Cold Water)	1998	Low
Southeast Colorado River	UT14080203-005_01	Montezuma Creek-1-1	0 Miles	2	No Evidence of Impairment							
Southeast Colorado River	UT14080203-003_00	Montezuma Creek-2	5.5805 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Aquatic Wildlife (Warm Water)	2024	Low
Southeast Colorado River	UT14080203-007_00	Montezuma Creek-3	10.0636 Miles	5	Not Supporting		Selenium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Southeast Colorado River	UT14030001-006_00	Nash Wash	6.4257 Miles	2	No Evidence of Impairment							
Southeast Colorado River	UT14030005-015_00	North Cottonwood Creek	28.6389 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2014	Low
Southeast Colorado River	UT14080203-008_00	North Creek	4.4905 Miles	3	Insufficient Data							
Southeast Colorado River	UT14030005-010_00	Onion Creek Lower	8.7309 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2024	Low
							Max. Temperature	Meeting criteria	TMDL Approved (4008)	Aquatic Wildlife (Warm Water)		
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (4008)	Agricultural	2016	Low
Southeast Colorado River	UT14030005-013_00	Onion Creek Upper	2.7741 Miles	1	Fully Supporting							
Southeast Colorado River	UT14030005-011_00	Pack Creek	8.8522 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Recreation and Aesthetics (Frequent Primary Contact)	2016	High
							Max. Temperature	Not meeting criteria	TMDL Approved (4047)	Aquatic Wildlife (Cold Water)	2006	Low
							Selenium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2010	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2006	Low
Southeast Colorado River	UT14030005-006_02	Pack Creek-2	15.6096 Miles	1	Fully Supporting							
Southeast Colorado River	UT14030005-019_00	Professor Creek	0 Miles	5	Not Supporting		Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2012	Low
Southeast Colorado River	UT14080201-005_00	Recapture Creek-1	1.5745 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2020	Low
Southeast Colorado River	UT14080201-003_00	Recapture Creek-2	3.6674 Miles	3	Insufficient Data							
Southeast Colorado River	UT14030004-003_00	Roc Creek	23.674 Miles	3	Insufficient Data							
Southeast Colorado River	UT14030005-016_00	Salt Creek-Canyonlands	0 Miles	3	Insufficient Data							
Southeast Colorado River	UT14030005-007_00	Salt Wash	22.091 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2024	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2016	Low
Southeast Colorado River	UT14080205-001_00	San Juan River-1	62.519 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2024	Low
							Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2024	Low
							Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2022	Low
							E. coli	Not meeting criteria	TMDL Needed	Domestic Source, Recreation and Aesthetics (Frequent Primary Contact)	2020	Low
							Iron	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2022	Low
							Lead	Not meeting criteria	TMDL Needed	Domestic Source, Aquatic Wildlife (Warm Water)	2022	Low
							Thallium	Not meeting criteria	TMDL Needed	Domestic Source, Aquatic Wildlife (Warm Water)	2022	Low
Southeast Colorado River	UT14080205-003_00	San Juan River-1 Tributaries	8.3583 Miles	5	Not Supporting		Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2012	Low
Southeast Colorado River	UT14080201-009_00	San Juan River-2	28.5492 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2020	Low
							Cadmium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2016	Low
							E. coli	Not meeting criteria	TMDL Needed	Domestic Source, Recreation and Aesthetics (Frequent Primary Contact)	2020	Low
							Iron	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2016	Low
							Lead	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2016	Low
							Thallium	Not meeting criteria	TMDL Needed	Domestic Source	2022	Low
Southeast Colorado River	UT14080201-010_00	San Juan River-3	30.1189 Miles	3	Insufficient Data							
Southeast Colorado River	UT14080203-004_00	South Creek	0 Miles	3	Insufficient Data							
Southeast Colorado River	UT14080203-006_00	Spring Creek	5.901 Miles	3	Insufficient Data							
Southeast Colorado River	UT14010005-002_00	Unknown tribs	0 Miles	3	Insufficient Data							
Southeast Colorado River	UT14080203-001_00	Verdure Creek-1	5.3422 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Aquatic Wildlife (Warm Water)	2024	Low
Southeast Colorado River	UT14080203-002_00	Verdure Creek-2	11.0223 Miles	3	Insufficient Data							
Southeast Colorado River	UT14030001-003_00	Westwater Creek	18.4242 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2012	Low
Southeast Colorado River	UT14080201-008_00	Westwater Creek	5.759 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2012	Low
							Selenium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2012	Low
Southeast Colorado River	UT14030001-003_00	Westwater Creek	18.4242 Miles	5	Not Supporting		Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2012	Low
Southeast Colorado River	UT14070001-004_00	White Canyon	0 Miles	3	Insufficient Data							
Uinta Basin	UT14060003-005_00	Antelope Creek	34.1419 Miles	5	Not Supporting	Assessed HNNC	Arsenic	Not meeting criteria	TMDL Needed	Domestic Source	2014	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
							Selenium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	1998	Low
Uinta Basin	UT14040107-002_00	Archie Creek	4.6632 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060010-001_00	Ashley Creek Lower	7.7575 Miles	5	Not Supporting		Selenium	Not meeting criteria	TMDL Needed	Agricultural, Aquatic Wildlife (Warm Water)	1992	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	1992	Low
Uinta Basin	UT14060010-007_00	Ashley Creek Upper	70.6405 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2022	Low
Uinta Basin	UT14060004-005_00	Avintaquin Creek	51.7976 Miles	5	Not Supporting		Arsenic	Not meeting criteria	TMDL Needed	Domestic Source	2008	Low
Uinta Basin	UT14060008-006_00	Barrier Creek	1.0481 Miles	3	Insufficient Data							
Uinta Basin	UT14040106-027_00	Beaver Creek	1.5016 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060010-006_00	Big Brush Creek	38.2655 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Uinta Basin	UT14040106-006_00	Birch Creek-tribs	14.7615 Miles	3	Insufficient Data							
Uinta Basin	UT14040106-009_00	Birch Spring Draw	23.8129 Miles	5	Not Supporting		Cadmium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2024	Low
							Selenium	Not meeting criteria	TMDL Needed	Agricultural, Aquatic Wildlife (Non-game Fish and Other)	2012	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2012	Low
Uinta Basin	UT14050007-002_00	Bitter Creek Lower	0.0031 Miles	5	Not Supporting		Boron	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Selenium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Uinta Basin	UT14050007-005_00	Bitter Creek Upper	27.499 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Uinta Basin	UT14040107-001_00	Blacks Fork	180.3211 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Zinc	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Uinta Basin	UT14060010-003_00	Brush Creek	25.6927 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
							Selenium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2004	Low
Uinta Basin	UT14040106-005_00	Burnt Fork Creek	44.0213 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14040106-014_00	Cart Creek	17.6985 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Uinta Basin	UT14040106-010_00	Carter Creek	111.718 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Uinta Basin	UT14060004-009_00	Currant Creek Lower	71.0184 Miles	1	Fully Supporting							
Uinta Basin	UT14060004-015_00	Currant Creek Upper	74.1233 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Uinta Basin	UT14040106-001_00	Dahlgreen Creek	0 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14040106-016_00	Davenport Creek	5.7955 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Uinta Basin	UT14060003-012_00	Deep Creek - Uinta	27.7695 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Uinta Basin	UT14060010-013_00	Diamond Gulch	32.6378 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Uinta Basin	UT14060010-008_00	Dry Fork Creek Lower	6.7098 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060010-009_00	Dry Fork Creek Upper	48.3068 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060003-009_00	Dry Gulch Creek	99.2209 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (4058)	Agricultural	1998	Low
Uinta Basin	UT14060003-001_00	Duchesne River-1	17.2286 Miles	5	Not Supporting but has Approved TMDL for some parameters		Boron	Not meeting criteria	TMDL Needed	Agricultural	2024	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (33615)	Agricultural	1998	Low
Uinta Basin	UT14060003-002_00	Duchesne River-2	30.9387 Miles	5	Not Supporting but has Approved TMDL for some parameters		Boron	Not meeting criteria	TMDL Needed	Agricultural	2016	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (33616)	Agricultural	2016	Low
Uinta Basin	UT14060003-006_00	Duchesne River-3	43.4169 Miles	3	Insufficient Data							
Uinta Basin	UT14060003-017_00	Duchesne River-4	78.3173 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Uinta Basin	UT14040106-011_00	Eagle Creek	9.964 Miles	1	Fully Supporting							
Uinta Basin	UT14040107-005_00	East Fork Smiths Fork	61.5433 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Uinta Basin	UT14050007-003_00	Evacuation Creek	0.4229 Miles	5	Not Supporting		Boron	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2014	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2024	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2008	Low
Uinta Basin	UT14040106-012_01	Flaming Gorge Tributaries-1	0 Miles	3	Insufficient Data							
Uinta Basin	UT14040106-012_02	Flaming Gorge Tributaries-2	10.6846 Miles	3	Insufficient Data							
Uinta Basin	UT14040106-012_03	Flaming Gorge Tributaries-3	0 Miles	3	Insufficient Data							
Uinta Basin	UT14040106-012_04	Flaming Gorge Tributaries-4	3.0235 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060005-007_00	Florence Creek	33.6037 Miles	3	Insufficient Data							
Uinta Basin	UT14060008-004_00	Floy Creek	27.1727 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14040107-004_00	Gilbert Creek	7.6279 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14040106-015_00	Gorge Creek	8.3941 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14040106-017_00	Goslin Creek	4.8517 Miles	1	Fully Supporting	Assessed HNNC						
Uinta Basin	UT14040106-019_00	Green River-1	29.581 Miles	1	Fully Supporting							
Uinta Basin	UT14040106-008_01	Green River-1 Tribs-1	14.9019 Miles	1	Fully Supporting							
Uinta Basin	UT14040106-008_02	Green River-1 Tribs-2	7.2136 Miles	1	Fully Supporting							
Uinta Basin	UT14040106-008_03	Green River-1 Tribs-3	4.9851 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14040106-008_04	Green River-1 Tribs-4	0 Miles	1	Fully Supporting							
Uinta Basin	UT14060010-010_00	Green River-2	99.7176 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Frequent Primary Contact)	2022	Low
							Selenium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2014	Low
							pH	Not meeting criteria	TMDL Needed	Domestic Source, Agricultural, Aquatic Wildlife (Warm Water), Recreation and Aesthetics (Frequent Primary Contact)	2022	Low
Uinta Basin	UT14060010-011_01	Green River-2 Tribs-1	1.2077 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Domestic Source, Recreation and Aesthetics (Frequent Primary Contact)	2014	Low
Uinta Basin	UT14060010-011_02	Green River-2 Tribs-2	0.5079 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Recreation and Aesthetics (Frequent Primary Contact)	2014	Low
Uinta Basin	UT14060010-011_03	Green River-2 Tribs-3	4.7451 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Domestic Source, Recreation and Aesthetics (Frequent Primary Contact)	2014	Low
Uinta Basin	UT14060010-011_04	Green River-2 Tribs-4	7.547 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Domestic Source, Recreation and Aesthetics (Frequent Primary Contact)	2014	Low
Uinta Basin	UT14060005-009_00	Green River-3	111.6699 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2024	Low
							pH	Not meeting criteria	TMDL Needed	Domestic Source, Agricultural, Aquatic Wildlife (Warm Water), Recreation and Aesthetics (Frequent Primary Contact)	2020	Low
Uinta Basin	UT14060005-001_01	Green River-3 Tribs-1	2.6141 Miles	3	Insufficient Data							
Uinta Basin	UT14060005-001_02	Green River-3 Tribs-2	0 Miles	3	Insufficient Data							
Uinta Basin	UT14060005-001_03	Green River-3 Tribs-3	0.0642 Miles	3	Insufficient Data							
Uinta Basin	UT14060005-001_04	Green River-3 Tribs-4	35.4969 Miles	3	Insufficient Data							
Uinta Basin	UT14060005-001_05	Green River-3 Tribs-5	23.36 Miles	3	Insufficient Data							
Uinta Basin	UT14060005-001_06	Green River-3 Tribs-6	25.1388 Miles	3	Insufficient Data							
Uinta Basin	UT14060005-001_07	Green River-3 Tribs-7	0 Miles	3	Insufficient Data							
Uinta Basin	UT14060005-001_08	Green River-3 Tribs-8	53.3859 Miles	3	Insufficient Data							
Uinta Basin	UT14060008-001_00	Green River-4	42.4362 Miles	1	Fully Supporting							
Uinta Basin	UT14060008-002_00	Green River-5	98.736 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060008-003_00	Green River-5 Tributaries	7.8675 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14040106-002_00	Henrys Fork River	60.0201 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060006-003_00	Hill Creek	105.2962 Miles	3	Insufficient Data							
Uinta Basin	UT14060008-005_00	Horse Canyon-Canyonlands	0 Miles	3	Insufficient Data							
Uinta Basin	UT14060004-002_00	Indian Canyon Creek	48.2144 Miles	5	Not Supporting		Arsenic	Not meeting criteria	TMDL Needed	Domestic Source	2008	Low
							Boron	Not meeting criteria	TMDL Needed	Agricultural	2008	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	1998	Low
Uinta Basin	UT14040106-020_00	Jackson Creek	11.3855 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Uinta Basin	UT14060010-012_00	Jones Hole Creek	5.9917 Miles	1	Fully Supporting							
Uinta Basin	UT14060003-008_00	Lake Fork-1	33.2424 Miles	5	Not Supporting but has Approved TMDL for some parameters		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Aquatic Wildlife (Severely Habitat-Limited)	2020	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2000	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (33617)	Agricultural	2004	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Uinta Basin	UT14060003-022_00	Lake Fork-3	29.861 Miles	3	Insufficient Data							
Uinta Basin	UT14060010-004_00	Little Brush Creek Lower	8.45 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060010-005_00	Little Brush Creek Upper	36.1528 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2014	Low
Uinta Basin	UT14060010-002_00	Middle Ashley Creek	18.2397 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2014	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Selenium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2008	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2008	Low
Uinta Basin	UT14040106-004_00	Middle Fork Beaver Creek	33.0457 Miles	1	Fully Supporting							
Uinta Basin	UT14060003-021_00	Moon Lake Tributaries	149.5125 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Uinta Basin	UT14060005-003_00	Ninemile	156.6532 Miles	5	Not Supporting but has Approved TMDL for some parameters		Max. Temperature	Not meeting criteria	TMDL Approved (68462)	Aquatic Wildlife (Cold Water)	1998	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Uinta Basin	UT14060003-019_00	North Fork Duchesne	64.6235 Miles	1	Fully Supporting							
Uinta Basin	UT14040106-025_00	O-Wi-Yu-Kuts Creek	2.1628 Miles	3	Insufficient Data							
Uinta Basin	UT14060005-002_00	Pariette Draw Creek	59.0722 Miles	5	Not Supporting but has Approved TMDL for some parameters		Boron	Not meeting criteria	TMDL Approved (39159)	Agricultural	1998	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2024	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2020	Low
							Selenium	Not meeting criteria	TMDL Approved (39159)	Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	1998	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (39159)	Agricultural	1998	Low
Uinta Basin	UT14060003-014_00	Pole Creek	35.8404 Miles	1	Fully Supporting							
Uinta Basin	UT14040106-021_00	Pot Creek	25.0887 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Iron	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Uinta Basin	UT14040106-023_00	Pot Creek Lower	0.3873 Miles	3	Insufficient Data							
Uinta Basin	UT14060005-006_00	Range Creek Lower	9.334 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060005-005_00	Range Creek Middle	26.3995 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060005-004_00	Range Creek Upper	6.432 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Uinta Basin	UT14040106-018_00	Red Creek	15.6874 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2020	Low
Uinta Basin	UT14060004-006_00	Red Creek Lower	6.2552 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060004-007_00	Red Creek Middle	20.1444 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Uinta Basin	UT14060004-008_00	Red Creek Upper	20.6914 Miles	3	Insufficient Data							
Uinta Basin	UT14060005-008_00	Rock Creek	28.0627 Miles	3	Insufficient Data							
Uinta Basin	UT14060003-016_00	Rock Creek Lower	29.9255 Miles	3	Insufficient Data							
Uinta Basin	UT14060003-020_00	Rock Creek Upper	104.3785 Miles	1	Fully Supporting							
Uinta Basin	UT14040106-022_00	Sears Creek	7.8659 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14040106-007_00	Sheep Creek	122.1393 Miles	1	Fully Supporting							
Uinta Basin	UT14040106-013_00	Spring Creek	5.0547 Miles	3	Insufficient Data							
Uinta Basin	UT14060004-003_01	Starvation Tributaries-1	0 Miles	2	No Evidence of Impairment							
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2020	Low
Uinta Basin	UT14060004-004_00	Stawberry River-2	22.4101 Miles	5	Not Supporting		Arsenic	Not meeting criteria	TMDL Needed	Domestic Source	2020	Low
Uinta Basin	UT14060004-014_00	Strawberry River Upper	62.6923 Miles	1	Fully Supporting							
Uinta Basin	UT14060004-001_00	Strawberry River-1	6.5454 Miles	1	Fully Supporting							
Uinta Basin	UT14060004-010_00	Strawberry River-3	23.1991 Miles	1	Fully Supporting							
Uinta Basin	UT14060004-013_00	Strawberry-4	119.9936 Miles	5	Not Supporting	Assessed HNNC	Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2014	Low
Uinta Basin	UT14050007-004_00	Sweetwater Creek	4.2481 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060008-007_00	Ten Mile Canyon - Grand	3.5277 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2014	Low
Uinta Basin	UT14060004-011_00	Timber Canyon Creek	17.1158 Miles	5	Not Supporting		Arsenic	Not meeting criteria	TMDL Needed	Domestic Source	2014	Low
Uinta Basin	UT14040106-026_00	Tolivers Creek	6.6145 Miles	2	No Evidence of Impairment	Assessed HNNC						
Uinta Basin	UT14060003-003_00	Uinta River-1	6.0267 Miles	4A	Approved TMDL		Total Dissolved Solids	Not meeting criteria	TMDL Approved (4056)	Agricultural	2016	Low
									TMDL Approved			

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Uinta Basin	UT14060003-010_00	Uinta River-3	76.6743 Miles	3	Insufficient Data							
Uinta Basin	UT14060003-024_00	Uinta River-4	95.7202 Miles	5	Not Supporting		Zinc	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Uinta Basin	UT14040106-003_00	West Fork Beaver Creek	24.1867 Miles	1	Fully Supporting							
Uinta Basin	UT14060003-018_00	West Fork Duchesne	89.8083 Miles	1	Fully Supporting							
Uinta Basin	UT14040107-003_00	West Fork Smiths Fork	22.7109 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14040108-001_00	West Muddy Creek	7.2265 Miles	3	Insufficient Data							
Uinta Basin	UT14050007-001_00	White River	70.8223 Miles	1	Fully Supporting							
Uinta Basin	UT14060003-011_00	Whiterocks River Lower	30.7164 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060003-013_00	Whiterocks River Upper	92.3441 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060006-001_00	Willow Creek	74.5645 Miles	5	Not Supporting		Boron	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2020	Low
Uinta Basin	UT14040106-024_00	Willow Creek - Daggett	16.5196 Miles	1	Fully Supporting							
Uinta Basin	UT14060004-012_00	Willow Creek - Wasatch	15.8579 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060006-002_00	Willow Creek Upper	161.5165 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060003-023_00	Yellowstone Upper	126.1772 Miles	2	No Evidence of Impairment							
Uinta Basin	UT14060003-007_00	Zimmerman Wash	0.7777 Miles	5	Not Supporting		Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2020	Low
Upper Provo River	UT16020203-022_00	Bridal Veil Falls	0 Miles	3	Insufficient Data							
Upper Provo River	UT16020203-011_00	Daniels Creek-1	10.696 Miles	2	No Evidence of Impairment							
Upper Provo River	UT16020203-012_00	Daniels Creek-2	11.6439 Miles	2	No Evidence of Impairment							
Upper Provo River	UT16020203-026_00	Heber Valley	46.869 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2020	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2022	Low
Upper Provo River	UT16020203-019_00	Lake Creek-2	22.9166 Miles	1	Fully Supporting							
Upper Provo River	UT16020203-017_00	Little South Fork Provo	30.3416 Miles	2	No Evidence of Impairment							
Upper Provo River	UT16020203-020_00	Lost Creek and tributaries from	0 Miles	3	Insufficient Data							
Upper Provo River	UT16020203-009_00	Main Creek-1	7.3672 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2010	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2024	Low
Upper Provo River	UT16020203-010_00	Main Creek-2	34.3526 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2016	Low
Upper Provo River	UT16020203-016_00	McHenry Creek	0.8853 Miles	1	Fully Supporting							
Upper Provo River	UT16020203-008_00	North Fork Provo River	8.0173 Miles	2	No Evidence of Impairment							
Upper Provo River	UT16020203-025_00	Provo Canyon	0 Miles	3	Insufficient Data							
Upper Provo River	UT16020203-013_00	Provo Deer Creek	20.467 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
Upper Provo River	UT16020203-023_00	Provo Lower Tributaries	0 Miles	3	Insufficient Data							
Upper Provo River	UT16020203-002_00	Provo River-2	3.9862 Miles	5	Not Supporting	Assessed HNNC	Nutrient/Eutrophication Biological Indicators	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Upper Provo River	UT16020203-003_00	Provo River-3	6.2681 Miles	5	Not Supporting	Assessed HNNC	Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Upper Provo River	UT16020203-004_00	Provo River-4	14.3 Miles	1	Fully Supporting							
Upper Provo River	UT16020203-005_00	Provo River-5	13.0952 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Upper Provo River	UT16020203-006_01	Provo River-6-1	26.3639 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Upper Provo River	UT16020203-006_02	Provo River-6-2	39.669 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Zinc	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Upper Provo River	UT16020203-006_03	Provo River-6-3	40.9468 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2020	Low
Upper Provo River	UT16020203-028_01	Provo Tributaries-Heber-1	4.5564 Miles	3	Insufficient Data							
Upper Provo River	UT16020203-028_02	Provo Tributaries-Heber-2	10.8871 Miles	3	Insufficient Data							
Upper Provo River	UT16020203-024_00	Rock Canyon	3.4167 Miles	3	Insufficient Data							
Upper Provo River	UT16020203-014_00	Snake Creek-1	4.904 Miles	5	Not Supporting		Arsenic	Not meeting criteria	TMDL Needed	Domestic Source	2006	High
							Chromium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Upper Provo River	UT16020203-015_00	Snake Creek-2	17.2894 Miles	5	Not Supporting		Arsenic	Not meeting criteria	TMDL Needed	Domestic Source	2024	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2020	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Upper Provo River	UT16020203-007_00	South Fork Provo River	10.6754 Miles	1	Fully Supporting							
Upper Provo River	UT16020203-027_00	Spring Creek-Heber	11.7 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Approved (R8-UT-2022-01)	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2016	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2024	Low
Upper Provo River	UT16020203-021_00	Upper Falls Drainage	0.4365 Miles	3	Insufficient Data							
Upper Sevier River	UT16030002-008_00	Antimony Creek	28.0557 Miles	1	Fully Supporting							
Upper Sevier River	UT16030001-011_00	Asay Creek	47.3643 Miles	1	Fully Supporting							
Upper Sevier River	UT16030001-004_00	Bear Creek	8.1627 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Agricultural	2014	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2022	Low
Upper Sevier River	UT16030002-007_00	Deer Creek	18.7186 Miles	1	Fully Supporting	Assessed HNNC						
Upper Sevier River	UT16030001-010_00	Duck Creek	4.3667 Miles	1	Fully Supporting							
Upper Sevier River	UT16030002-005_00	East Fork Sevier River-4	27.2991 Miles	5	Not Supporting but has Approved TMDL for some parameters	Assessed HNNC	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2006	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (30892)	Aquatic Wildlife (Cold Water)	2000	Low
Upper Sevier River	UT16030002-010_00	East Fork Sevier-1	41.7576 Miles	2	No Evidence of Impairment							
Upper Sevier River	UT16030002-009_00	East Fork Sevier-2	137.2718 Miles	5	Not Supporting	Assessed HNNC	Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Upper Sevier River	UT16030002-006_00	East Fork Sevier-3	24.494 Miles	1	Fully Supporting	Assessed HNNC						
Upper Sevier River	UT16030001-009_00	Mammoth Creek Lower	25.9563 Miles	4A	Approved TMDL		Total Phosphorus as P	Not meeting criteria	TMDL Approved (11129)	Aquatic Wildlife (Cold Water)	2004	Low
Upper Sevier River	UT16030001-015_00	Mammoth Creek Upper	28.2764 Miles	3	Insufficient Data							
Upper Sevier River	UT16030002-002_00	Otter Creek-1	96.3682 Miles	5	Not Supporting	Assessed HNNC	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
							Nutrient/Eutrophication Biological Indicators	Not meeting criteria	Alternative restoration plan	Aquatic Wildlife (Cold Water)	2022	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2022	Low
Upper Sevier River	UT16030002-004_00	Otter Creek-2	23.1199 Miles	4A	Approved TMDL	Assessed HNNC	Habitat Alterations	Not meeting criteria	Non-Pollutant Impairment (4C)	Aquatic Wildlife (Cold Water)	1998	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (900)	Aquatic Wildlife (Cold Water)	2012	Low
							Sediment	Not meeting criteria	TMDL Approved (900)	Aquatic Wildlife (Cold Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (900)	Aquatic Wildlife (Cold Water)	1998	Low
Upper Sevier River	UT16030002-003_00	Otter Creek-3	29.762 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2022	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							Sediment	Not meeting criteria	TMDL Approved (900)	Aquatic Wildlife (Cold Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (900)	Aquatic Wildlife (Cold Water)	1998	Low
Upper Sevier River	UT16030002-001_00	Otter Creek-4	23.6238 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2016	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
Upper Sevier River	UT16030001-008_00	Panguitch Creek-1	25.2676 Miles	1	Fully Supporting	Assessed HNNC						
Upper Sevier River	UT16030001-006_00	Panguitch Creek-2	39.1803 Miles	5	Not Supporting	Assessed HNNC	E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
Upper Sevier River	UT16030001-013_00	Piute	3.5391 Miles	3	Insufficient Data							
Upper Sevier River	UT16030001-001_00	Piute West	11.6187 Miles	3	Insufficient Data							
Upper Sevier River	UT16030001-012_00	Sevier River-1	34.6148 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2024	Low
Upper Sevier River	UT16030001-007_00	Sevier River-2	52.6837 Miles	5	Not Supporting but has Approved TMDL for some parameters		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Sediment	Not meeting criteria	TMDL Approved (11127)	Aquatic Wildlife (Cold Water)	2002	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (11127)	Aquatic Wildlife (Cold Water)	2002	Low
Upper Sevier River	UT16030001-005_00	Sevier River-3	22.089 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2022	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							Sediment	Not meeting criteria	TMDL Approved (11126)	Aquatic Wildlife (Cold Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (11126, 30892)	Aquatic Wildlife (Cold Water)	1998	Low
Upper Sevier River	UT16030001-002_00	Sevier River-4	17.8962 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Upper Sevier River	UT16030001-014_00	Threemile Creek	25.0738 Miles	5	Not Supporting	Assessed HNNC	Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
							Nutrient/Eutrophication Biological Indicators	Threatened	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2022	Low
Utah Lake-Lower Provo River	UT16020201-016_00	American Fork	0.051 Miles	1	Fully Supporting							
Utah Lake-Lower Provo River	UT16020201-001_00	American Fork River-1	7.1475 Miles	1	Fully Supporting	Assessed HNNC						
Utah Lake-Lower Provo River	UT16020202-027_00	Beer Creek	16.3872 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2014	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2024	Low
Utah Lake-Lower Provo River	UT16020202-030_00	Benjamin Slough	6.2399 Miles	5	Not Supporting		Total Ammonia as N	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2016	Low
Utah Lake-Lower Provo River	UT16020202-024_00	Bennie Creek	4.8109 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020202-019_00	Clear Creek-Tucker	13.6413 Miles	2	No Evidence of Impairment							
Utah Lake-Lower Provo River	UT16020202-011_00	Cottonwood Creek	11.3528 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2022	Low
Utah Lake-Lower Provo River	UT16020201-003_00	Currant Creek	4.1518 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2002	Low
Utah Lake-Lower Provo River	UT16020201-017_00	Currant Creek-Goshen	19.3623 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2022	Low
Utah Lake-Lower Provo River	UT16020201-014_00	Currant Creek-Juab Valley	21.2898 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Utah Lake-Lower Provo River	UT16020202-017_00	Dairy Fork	5.9198 Miles	2	No Evidence of Impairment							
Utah Lake-Lower Provo River	UT16020202-006_00	Diamond Fork-1	26.5796 Miles	1	Fully Supporting							
Utah Lake-Lower Provo River	UT16020202-007_00	Diamond Fork-2	4.3218 Miles	1	Fully Supporting							
Utah Lake-Lower Provo River	UT16020202-008_00	Diamond Fork-3	27.191 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2022	Low
Utah Lake-Lower Provo River	UT16020202-035_00	Dry Creek-1	3.1531 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2024	Low
Utah Lake-Lower Provo River	UT16020202-036_00	Dry Creek-2	8.7169 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020202-003_00	Hobble Creek-1	10.4786 Miles	1	Fully Supporting							
Utah Lake-Lower Provo River	UT16020202-004_00	Hobble Creek-2	25.3622 Miles	2	No Evidence of Impairment							
Utah Lake-Lower Provo River	UT16020202-005_00	Hobble Creek-3	30.7097 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2022	Low
Utah Lake-Lower Provo River	UT16020201-006_00	Hop Creek	16.2532 Miles	1	Fully Supporting							
Utah Lake-Lower Provo River	UT16020202-021_00	Indian Creek	3.0656 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020201-013_00	Ironton Canal Lower	0.0741 Miles	2	No Evidence of Impairment							
Utah Lake-Lower Provo River	UT16020202-016_00	Lake Fork	29.5854 Miles	2	No Evidence of Impairment							
Utah Lake-Lower Provo River	UT16020201-011_00	Lindon Hollow	0.8053 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020202-018_00	Mill Fork	10.5275 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020201-012_00	Mill Race Creek-1	0.4672 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2016	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
Utah Lake-Lower Provo River	UT16020202-031_00	Moark	0 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020202-025_00	Nebo Creek	40.2234 Miles	2	No Evidence of Impairment							
Utah Lake-Lower Provo River	UT16020202-028_00	Peteetneet Creek	22.0136 Miles	2	No Evidence of Impairment							
Utah Lake-Lower Provo River	UT16020201-010_00	Powell Slough	0 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2014	Low
Utah Lake-Lower Provo River	UT16020203-001_00	Provo River-1	11.1055 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Utah Lake-Lower Provo River	UT16020201-004_00	Salt Creek-1	2.2702 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020201-005_00	Salt Creek-2	22.5573 Miles	5	Not Supporting		pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2014	Low
Utah Lake-Lower Provo River	UT16020202-014_00	Sheep Creek	5.5469 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020202-009_00	Sixth Water Creek	20.358 Miles	5	Not Supporting		Selenium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2022	Low
Utah Lake-Lower Provo River	UT16020202-012_00	Soldier Creek-1	20.9908 Miles	5	Not Supporting but has Approved TMDL for some parameters		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
							Sediment	Not meeting criteria	TMDL Approved (31023)	Aquatic Wildlife (Cold Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (31023)	Aquatic Wildlife (Cold Water)	1998	Low
Utah Lake-Lower Provo River	UT16020202-013_00	Soldier Creek-2	6.8771 Miles	2	No Evidence of Impairment							
Utah Lake-Lower Provo River	UT16020202-033_00	Soldier Creek-3	0 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020202-034_00	Soldier Creek-4	2.21 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020202-039_00	Soldier Creek-5	0 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020202-001_00	Spanish Fork River-1	16.6257 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
Utah Lake-Lower Provo River	UT16020202-002_00	Spanish Fork River-2	6.6316 Miles	2	No Evidence of Impairment							
Utah Lake-Lower Provo River	UT16020201-009_00	Spring Creek-Lehi	4.8734 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2022	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Utah Lake-Lower Provo River	UT16020202-026_00	Spring Creek-Payson	13.2808 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020202-042_00	Spring Creek-Springville	3.011 Miles	5	Not Supporting		Total Ammonia as N	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2024	Low
							Total Ammonia as N	Meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2024	Low
Utah Lake-Lower Provo River	UT16020202-020_00	Starvation Creek	19.01 Miles	2	No Evidence of Impairment							
Utah Lake-Lower Provo River	UT16020201-007_00	Summit Creek-Santaquin	7.9563 Miles	2	No Evidence of Impairment							
Utah Lake-Lower Provo River	UT16020202-010_00	Third Water Creek	24.6655 Miles	5	Not Supporting	Assessed HNNC	E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2022	Low
Utah Lake-Lower Provo River	UT16020202-022_00	Thistle Creek-1	21.1928 Miles	4A	Approved TMDL		Sediment	Not meeting criteria	TMDL Approved (33611)	Aquatic Wildlife (Cold Water)	2008	Low
Utah Lake-Lower Provo River	UT16020202-023_00	Thistle Creek-2	20.6014 Miles	2	No Evidence of Impairment							
Utah Lake-Lower Provo River	UT16020202-037_00	Thistle Creek-3	10.4524 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020202-038_00	Thistle Creek-4	1.2373 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020202-032_00	Thistle Creek-5	0 Miles	3	Insufficient Data							
Utah Lake-Lower Provo River	UT16020202-015_00	Tie Fork	14.883 Miles	2	No Evidence of Impairment							
Weber River	UT16020102-053_00	Baer Creek-1	1.1627 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2022	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
Weber River	UT16020102-051_00	Baer Creek-2	2.263 Miles	3	Insufficient Data							
Weber River	UT16020102-036_00	Baer Creek-3	2.7972 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Weber River	UT16020102-043_00	Barnard Creek	1.8987 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2016	Low
Weber River	UT16020102-047_00	Barton Creek	3.5526 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2024	Low
Weber River	UT16020101-029_00	Beaver Creek-1	15.9482 Miles	1	Fully Supporting							
Weber River	UT16020102-011_00	Beaver Creek-Weber	19.9971 Miles	1	Fully Supporting							
Weber River	UT16020101-030_00	Beaver Creek2-Kamas	22.5394 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Weber River	UT16020102-014_00	Burch Creek-1	3.1746 Miles	1	Fully Supporting							
Weber River	UT16020102-004_00	Burch Creek-2	4.1167 Miles	2	No Evidence of Impairment	Assessed HNNC						
Weber River	UT16020101-008_00	Carruth Creek	7.8937 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2020	Low
Weber River	UT16020102-044_02	Centerville Canyon	5.396 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Weber River	UT16020101-012_00	Chalk Creek-2	5.5525 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2020	Low
Weber River	UT16020101-016_00	Chalk Creek-4	54.8084 Miles	5	Not Supporting but has Approved TMDL for some parameters		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
							Sediment	Not meeting criteria	TMDL Approved (239)	Aquatic Wildlife (Cold Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (239)	Aquatic Wildlife (Cold Water)	1998	Low
Weber River	UT16020101-010_00	Chalk Creek1-Coalville	8.1527 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2024	Low
Weber River	UT16020101-014_00	Chalk Creek3-Coalville	17.2319 Miles	4A	Approved TMDL		Habitat Alterations	Not meeting criteria	Non-Pollutant Impairment (4C)	Aquatic Wildlife (Cold Water)	1998	Low
							Sediment	Not meeting criteria	TMDL Approved (239)	Aquatic Wildlife (Cold Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (239)	Aquatic Wildlife (Cold Water)	1998	Low
Weber River	UT16020102-056_00	Corbett Creek	1.8032 Miles	3	Insufficient Data							

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Weber River	UT16020102-018_00	Cottonwood Creek	6.4808 Miles	3	Insufficient Data							
Weber River	UT16020102-041_00	Davis Creek	2.3016 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Weber River	UT16020102-024_00	East Canyon Creek-1	25.4755 Miles	1	Fully Supporting							
Weber River	UT16020102-026_01	East Canyon Creek-2-1	33.4 Miles	5	Not Supporting but has Approved TMDL for some parameters		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Approved (399)	Aquatic Wildlife (Cold Water)	2024	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (399)	Aquatic Wildlife (Cold Water)	1992	Low
Weber River	UT16020102-026_04	East Canyon Creek-2-2	3.1 Miles	2	No Evidence of Impairment							
Weber River	UT16020102-025_00	East Canyon Creek-3	5.238 Miles	3	Insufficient Data							
Weber River	UT16020101-015_00	East Fork Chalk Creek	35.1865 Miles	1	Fully Supporting							
Weber River	UT16020101-007_00	Echo Creek	44.4476 Miles	5	Not Supporting but has Approved TMDL for some parameters		Sediment	Not meeting criteria	TMDL Approved (30893)	Aquatic Wildlife (Cold Water)	1998	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Weber River	UT16020102-039_00	Farmington Creek-1	0.1618 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2020	Low
							Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2014	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2022	Low
							pH	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Agricultural, Aquatic Wildlife (Warm Water)	2020	Low
Weber River	UT16020102-038_00	Farmington Creek-2	20.0776 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
							Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2024	Low
Weber River	UT16020101-022_00	Fort Creek	11.1333 Miles	1	Fully Supporting							
Weber River	UT16020102-003_00	Four Mile Creek	2.7301 Miles	1	Fully Supporting							
Weber River	UT16020101-002_00	Francis Creek	8.1377 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2024	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Weber River	UT16020101-009_00	Grass Creek	10.1982 Miles	3	Insufficient Data							
Weber River	UT16020102-023_00	Hardscrabble Creek	27.7838 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2012	Low
Weber River	UT16020102-035_00	Holmes Creek-1	9.9671 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2014	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
							pH	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Agricultural, Aquatic Wildlife (Warm Water)	2022	Low
Weber River	UT16020102-034_00	Holmes Creek-2	5.9197 Miles	2	No Evidence of Impairment							
Weber River	UT16020101-013_00	Huff Creek	20.544 Miles	5	Not Supporting but has Approved TMDL for some parameters	Assessed HNNC	Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Sediment	Not meeting criteria	TMDL Approved (239)	Aquatic Wildlife (Cold Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (239)	Aquatic Wildlife (Cold Water)	1998	Low
Weber River	UT16020102-031_00	Kays Creek	7.6878 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2016	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2014	Low
							pH	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Agricultural, Aquatic Wildlife (Warm Water)	2022	Low
Weber River	UT16020102-027_00	Kimball Creek	13.6853 Miles	5	Not Supporting		Arsenic	Not meeting criteria	TMDL Needed	Domestic Source	2014	Low
Weber River	UT16020101-001_00	Lost Creek1-Croydon	26.103 Miles	1	Fully Supporting							
Weber River	UT16020101-003_00	Lost Creek2-Croydon	57.0259 Miles	3	Insufficient Data							
Weber River	UT16020101-005_00	Main Canyon	12.7432 Miles	2	No Evidence of Impairment							
Weber River	UT16020102-032_02	Middle Fork Kays Creek	0 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Weber River	UT16020102-009_00	Middle Fork Ogden River	30.5678 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Weber River	UT16020102-050_00	Mill Creek1-Davis	0.2076 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2014	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
							pH	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Agricultural, Aquatic Wildlife (Warm Water)	2024	Low
Weber River	UT16020102-049_00	Mill Creek2-Davis	6.6382 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Weber River	UT16020102-026_02	Murnin Creek	7.4458 Miles	5	Not Supporting but has Approved TMDL for some parameters		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (399)	Aquatic Wildlife (Cold Water)	1992	Low
Weber River	UT16020102-030_00	North Fork Kays Creek	2.1809 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Weber River	UT16020102-006_00	North Fork Ogden River	49.9854 Miles	5	Not Supporting	Assessed HNNC	Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Weber River	UT16020102-005_00	Ogden River-1	10.001 Miles	1	Fully Supporting	Assessed HNNC						
Weber River	UT16020102-044_01	Parrish Creek	3.8507 Miles	1	Fully Supporting							
Weber River	UT16020102-042_00	Ricks Creek	3.3986 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Weber River	UT16020102-052_00	Rudd Creek	1.0617 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2022	Low
Weber River	UT16020101-031_00	Sawmill Creek	2.7526 Miles	1	Fully Supporting							
Weber River	UT16020102-037_00	Shepard Creek	0 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Weber River	UT16020101-020_01	Silver Creek-1	13.1527 Miles	5	Not Supporting but has Approved TMDL for some parameters		Arsenic	Not meeting criteria	TMDL Needed	Domestic Source	2006	Low
							Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
							Cadmium	Not meeting criteria	TMDL Approved (11152)	Aquatic Wildlife (Cold Water), Domestic Source, Agricultural	1998	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2020	Low
							Nitrate/Nitrite (Nitrite + Nitrate As N)	Not meeting criteria	TMDL Needed	Domestic Source	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2010	Low
							Zinc	Not meeting criteria	TMDL Approved (11152)	Aquatic Wildlife (Cold Water)	1998	Low
Weber River	UT16020101-020_02	Silver Creek-2	26.2357 Miles	5	Not Supporting but has Approved TMDL for some parameters		Arsenic	Not meeting criteria	TMDL Needed	Domestic Source	2006	Low
							Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
							Cadmium	Not meeting criteria	TMDL Approved (11152)	Aquatic Wildlife (Cold Water), Domestic Source, Agricultural	1998	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2020	Low
							Lead	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Domestic Source	2024	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Nitrate/Nitrite (Nitrite + Nitrate As N)	Not meeting criteria	TMDL Needed	Domestic Source	2014	Low
							Zinc	Not meeting criteria	TMDL Approved (11152)	Aquatic Wildlife (Cold Water)	1998	Low
Weber River	UT16020101-026_00	Smith Morehouse River-1	8.9839 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Weber River	UT16020101-027_00	Smith Morehouse River-2	13.935 Miles	3	Insufficient Data							
Weber River	UT16020102-033_00	Snow Creek	0 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2022	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low
							pH	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Agricultural, Aquatic Wildlife (Non-game Fish and Other)	2022	Low
Weber River	UT16020101-011_00	South Fork Chalk Creek	53.6402 Miles	5	Not Supporting but has Approved TMDL for some parameters		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Sediment	Not meeting criteria	TMDL Approved (239)	Aquatic Wildlife (Cold Water)	1998	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (239)	Aquatic Wildlife (Cold Water)	1998	Low
Weber River	UT16020102-032_01	South Fork Kays Creek	2.0556 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2024	Low
Weber River	UT16020102-012_00	South Fork Ogden River	38.1374 Miles	2	No Evidence of Impairment	Assessed HNNC						
Weber River	UT16020102-010_00	South Fork Ogden River-1	14.7474 Miles	5	Not Supporting	Assessed HNNC	Nutrient/Eutrophication Biological Indicators	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Weber River	UT16020102-015_00	Spring Creek	2.4228 Miles	2	No Evidence of Impairment							

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Weber River	UT16020204-034_00	State Canal	4.4925 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2014	Low
							Total Ammonia as N	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2016	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2016	Low
Weber River	UT16020102-040_00	Steed Creek	1.8932 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2022	Low
Weber River	UT16020102-046_00	Stone Creek-1	0.0749 Miles	5	Not Supporting		Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2016	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2016	Low
Weber River	UT16020102-045_00	Stone Creek-2	5.0879 Miles	2	No Evidence of Impairment							
Weber River	UT16020102-013_00	Strong Canyons Creek	1.3883 Miles	2	No Evidence of Impairment							
Weber River	UT16020102-026_03	Toll Canyon	0.0783 Miles	5	Not Supporting but has Approved TMDL for some parameters		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (399)	Aquatic Wildlife (Cold Water)	1992	Low
Weber River	UT16020102-057_00	Unknown	2.3684 Miles	3	Insufficient Data							
Weber River	UT16020102-017_01	Weber Lower Tributaries-1-1	3.1145 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Weber River	UT16020102-017_02	Weber Lower Tributaries-1-2	38.8982 Miles	3	Insufficient Data							
Weber River	UT16020102-016_00	Weber Lower Tributaries-2	0 Miles	3	Insufficient Data							
Weber River	UT16020102-021_00	Weber Lower Tributaries-3	24.6195 Miles	1	Fully Supporting							
Weber River	UT16020102-019_00	Weber Lower Tributaries-4	3.5916 Miles	3	Insufficient Data							
Weber River	UT16020102-055_00	Weber Lower Tributaries-5	26.9542 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2020	Low
Weber River	UT16020102-054_00	Weber Lower Tributaries-6	1.0767 Miles	3	Insufficient Data							
Weber River	UT16020102-028_00	Weber Lower Tributaries-7	0.0894 Miles	3	Insufficient Data							
Weber River	UT16020102-029_00	Weber Lower Tributaries-8	0 Miles	3	Insufficient Data							
Weber River	UT16020102-001_00	Weber River-1	108.6744 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other), Aquatic Wildlife (Non-game Fish and Other)	2008	Low
Weber River	UT16020101-024_00	Weber River-10	50.4722 Miles	1	Fully Supporting	Assessed HNNC						
Weber River	UT16020101-025_00	Weber River-11	39.1194 Miles	1	Fully Supporting							
Weber River	UT16020101-028_00	Weber River-12	27.724 Miles	5	Not Supporting		Aluminum	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Copper	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Lead	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Weber River	UT16020102-007_00	Weber River-2	0.4702 Miles	2	No Evidence of Impairment							
Weber River	UT16020102-002_00	Weber River-3	19.3948 Miles	1	Fully Supporting	Assessed HNNC						
Weber River	UT16020102-020_00	Weber River-4	10.1183 Miles	1	Fully Supporting							
Weber River	UT16020102-048_00	Weber River-5	1.5063 Miles	1	Fully Supporting							
Weber River	UT16020102-022_00	Weber River-6	12.5694 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
Weber River	UT16020101-004_00	Weber River-7	11.5509 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low
Weber River	UT16020101-017_00	Weber River-8	11.3009 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Weber River	UT16020101-023_00	Weber River-9	25.5435 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
Weber River	UT16020101-006_00	Weber Upper Tributaries-1	1.5358 Miles	3	Insufficient Data							
Weber River	UT16020101-018_00	Weber Upper Tributaries-2	6.058 Miles	3	Insufficient Data							
Weber River	UT16020101-019_00	Weber Upper Tributaries-3	23.1845 Miles	2	No Evidence of Impairment							
Weber River	UT16020101-021_00	Weber Upper Tributaries-4	10.082 Miles	2	No Evidence of Impairment							
Weber River	UT16020102-008_00	Wheeler Creek	13.9262 Miles	1	Fully Supporting							
West Desert	UT16020306-004_00	Basin Creek	7.1306 Miles	3	Insufficient Data							
West Desert	UT16020308-002_00	Bettridge Creek	2.3792 Miles	3	Insufficient Data							
West Desert	UT16020308-008_00	Birch Creek	9.539 Miles	3	Insufficient Data							
West Desert	UT17040211-003_00	Birch Creek - WD/C	5.4029 Miles	2	No Evidence of Impairment							
West Desert	UT16020309-002_00	Blue Creek	7.0478 Miles	5	Not Supporting		Boron	Not meeting criteria	TMDL Needed	Agricultural	2020	Low
							E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact)	2020	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
							Selenium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2012	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2012	Low
							pH	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Agricultural, Aquatic Wildlife (Waterfowl, Shorebirds, and Other)	2012	Low
West Desert	UT17040210-006_00	Clear Creek-Sawtooth NF	19.2527 Miles	3	Insufficient Data							
West Desert	UT16020304-009_00	Clover Creek	3.5157 Miles	3	Insufficient Data							
West Desert	UT16020308-009_00	Cottonwood Creek	5.0499 Miles	3	Insufficient Data							
West Desert	UT16020309-001_00	Deep Creek	8.7959 Miles	3	Insufficient Data							
West Desert	UT16020306-005_00	Deep Creek - 1 WD/C	53.1106 Miles	3	Insufficient Data							
West Desert	UT16020308-001_00	Donner Creek	1.3173 Miles	3	Insufficient Data							
West Desert	UT16020304-002_00	Faust Creek	13.5997 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
West Desert	UT17040211-001_01	Goose Creek-1	8.1726 Miles	3	Insufficient Data							
West Desert	UT17040211-001_02	Goose Creek-2	0 Miles	3	Insufficient Data							
West Desert	UT16020306-002_00	Granite Creek	13.7695 Miles	2	No Evidence of Impairment							
West Desert	UT16020308-007_00	Grouse Creek	38.8971 Miles	3	Insufficient Data							
West Desert	UT16020301-002_00	Hamlin Valley Wash	3.29 Miles	2	No Evidence of Impairment							
West Desert	UT17040210-005_00	Holt Creek	0.3556 Miles	3	Insufficient Data							
West Desert	UT17040210-004_00	Johnson Creek - WD/C	23.2776 Miles	2	No Evidence of Impairment							
West Desert	UT16030005-001_00	Judd Creek	3.8156 Miles	3	Insufficient Data							
West Desert	UT17040210-002_00	Junction Creek	9.7436 Miles	3	Insufficient Data							
West Desert	UT16020301-001_00	Lake Creek-Millard Co	19.5446 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Aquatic Wildlife (Warm Water)	2020	Low
West Desert	UT16020304-007_00	Middle Canyon	4.6231 Miles	3	Insufficient Data							
West Desert	UT16020308-010_00	Muddy Creek	2.7383 Miles	3	Insufficient Data							
West Desert	UT16020304-003_00	North Willow Creek	4.1792 Miles	3	Insufficient Data							
West Desert	UT16020304-004_00	Ophir Creek	3.829 Miles	3	Insufficient Data							
West Desert	UT16020308-004_00	Pine Creek	15.6838 Miles	3	Insufficient Data							
West Desert	UT17040211-002_00	Pole Creek	18.9158 Miles	2	No Evidence of Impairment							
West Desert	UT17040210-001_00	Raft River	24.3129 Miles	2	No Evidence of Impairment							
West Desert	UT16020308-003_00	Red Butte Creek	12.3414 Miles	2	No Evidence of Impairment							
West Desert	UT16020304-006_00	Settlement Canyon Creek	1.1415 Miles	3	Insufficient Data							
West Desert	UT16020304-005_00	Soldier Creek	6.6452 Miles	3	Insufficient Data							
West Desert	UT17040210-003_00	South Junction Creek	52.532 Miles	3	Insufficient Data							
West Desert	UT16020304-008_00	South Willow Creek	3.5179 Miles	3	Insufficient Data							
West Desert	UT16020308-006_00	Straight Fork Creek	4.545 Miles	2	No Evidence of Impairment							
West Desert	UT16020306-003_00	Thomas Creek	11.7418 Miles	2	No Evidence of Impairment							
West Desert	UT16020306-001_00	Trout Creek	14.4446 Miles	2	No Evidence of Impairment							
West Desert	UT16020304-001_00	Vernon Creek	13.511 Miles	5	Not Supporting		pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Agricultural	2014	Low
West Desert	UT16020308-005_00	Warm Creek	3.1592 Miles	2	No Evidence of Impairment							
Western Colorado River	UT14070005-015_00	Alvey Wash Lower	9.854 Miles	3	Insufficient Data							
Western Colorado River	UT14070005-014_00	Alvey Wash Upper	0 Miles	3	Insufficient Data							
Western Colorado River	UT14060009-004_02	Bear Canyon-1	1.1664 Miles	5	Not Supporting but has Approved TMDL for some parameters		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (11137)	Agricultural	2014	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2014	Low
Western Colorado River	UT14060009-003_04	Bear Canyon-2	0.9922 Miles	5	Not Supporting but has Approved TMDL for some parameters		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (11137)	Agricultural	2016	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2014	Low
Western Colorado River	UT14070005-002_00	Birch Creek	30.2677 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Western Colorado River	UT14070005-018_00	Boulder Creek	58.5764 Miles	3	Insufficient Data							
Western Colorado River	UT14070007-003_00	Buckskin Gulch	2.5339 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2024	Low
Western Colorado River	UT14070001-002_00	Bullfrog Creek	0 Miles	3	Insufficient Data							
Western Colorado River	UT14070005-007_00	Calf Creek	8.1389 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2008	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Western Colorado River	UT14060007-008_00	Coal Creek	31.3575 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2014	Low
Western Colorado River	UT14070007-004_00	Cottonwood Creek	6.3728 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2014	Low
Western Colorado River	UT14060009-011_00	Cottonwood Creek Lower	26.0797 Miles	5	Not Supporting but has Approved TMDL for some parameters		Total Dissolved Solids	Not meeting criteria	TMDL Approved (11139)	Agricultural	2014	Low
							pH	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Agricultural, Aquatic Wildlife (Non-game Fish and Other)	2014	Low
Western Colorado River	UT14060009-007_00	Cottonwood Creek Upper	21.6863 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2014	Low
Western Colorado River	UT14070005-017_00	Coyote Gulch	13.2928 Miles	2	No Evidence of Impairment							
Western Colorado River	UT14070006-005_00	Croton	2.3143 Miles	3	Insufficient Data							
Western Colorado River	UT14070005-008_00	Deer Creek (Garfield Co.)	64.8922 Miles	2	No Evidence of Impairment							
Western Colorado River	UT14060007-011_00	Desert Seep Wash	30.7292 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water), Aquatic Wildlife (Waterfowl, Shorebirds, and Other), Aquatic Wildlife (Non-game Fish and Other)	2020	Low
Western Colorado River	UT14070004-001_00	Dirty Devil River	69.4027 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2024	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2016	Low
Western Colorado River	UT14070004-002_00	Dirty Devil west side tributaries	11.143 Miles	1	Fully Supporting							
Western Colorado River	UT14070003-007_00	Donkey Creek	36.4087 Miles	3	Insufficient Data							
Western Colorado River	UT14060009-001_00	Electric Lake Tributaries	17.3395 Miles	3	Insufficient Data	Assessed HNNC						
Western Colorado River	UT14070005-011_00	Escalante River Lower	67.4727 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2022	Low
Western Colorado River	UT14070005-012_00	Escalante River Upper	28.3464 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2008	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2016	Low
Western Colorado River	UT14070005-013_01	Escalante Tributaries-1	0 Miles	3	Insufficient Data							
Western Colorado River	UT14070005-013_05	Escalante Tributaries-5	0.1227 Miles	3	Insufficient Data							
Western Colorado River	UT14070005-013_06	Escalante Tributaries-6	0 Miles	3	Insufficient Data							
Western Colorado River	UT14060009-012_00	Ferron Creek Lower	26.4587 Miles	1	Fully Supporting							
Western Colorado River	UT14060009-009_00	Ferron Creek Upper	104.6191 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source	2022	Low
Western Colorado River	UT14070003-015_00	Fish Lake Tributaries	5.685 Miles	3	Insufficient Data							
Western Colorado River	UT14070003-004_00	Fremont River-1	8.5618 Miles	1	Fully Supporting	Assessed HNNC						
Western Colorado River	UT14070003-005_00	Fremont River-2	40.726 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Approved (R8-UT-2021-01)	Domestic Source, Recreation and Aesthetics (Frequent Primary Contact)	2020	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Total Phosphorus as P	Not meeting criteria	TMDL Approved (4062)	Aquatic Wildlife (Cold Water)	1998	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Domestic Source, Agricultural, Recreation and Aesthetics (Frequent Primary Contact)	2014	Low
Western Colorado River	UT14070003-008_00	Fremont River-3	81.2161 Miles	5	Not Supporting but has Approved TMDL for some parameters		E. coli	Not meeting criteria	TMDL Approved (R8-UT-2021-01)	Domestic Source, Recreation and Aesthetics (Frequent Primary Contact)	2014	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Western Colorado River	UT14070003-014_00	Fremont River-4	82.9336 Miles	4A	Approved TMDL		Total Dissolved Solids	Not meeting criteria	TMDL Approved (4063)	Agricultural	1998	Low
Western Colorado River	UT14060007-006_00	Gordon Creek	57.5919 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2020	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (11130)	Agricultural	2014	Low
Western Colorado River	UT14060007-012_00	Grassy Trail Creek Lower	2.8252 Miles	3	Insufficient Data							
Western Colorado River	UT14060007-013_00	Grassy Trail Creek Upper	11.9671 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Western Colorado River	UT14070001-001_00	Halls Creek	0 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2020	Low
Western Colorado River	UT14070003-013_00	Henry Mountains	32.1 Miles	3	Insufficient Data							
Western Colorado River	UT14060009-010_00	Huntington Creek-1	33.3951 Miles	5	Not Supporting		Selenium	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2006	Low
Western Colorado River	UT14060009-004_01	Huntington Creek-2	25.7285 Miles	5	Not Supporting but has Approved TMDL for some parameters		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (11137)	Agricultural	2024	Low

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2014	Low
Western Colorado River	UT14060009-003_01	Huntington Creek-3-1	56.5271 Miles	5	Not Supporting but has Approved TMDL for some parameters		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (11137)	Agricultural	2016	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2014	Low
Western Colorado River	UT14060009-003_02	Huntington Creek-3-2	3.3754 Miles	5	Not Supporting but has Approved TMDL for some parameters		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (11137)	Agricultural	2016	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2014	Low
Western Colorado River	UT14070002-008_00	Ivie Creek Lower	16.1327 Miles	5	Not Supporting but has Approved TMDL for some parameters		Boron	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2016	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (11145)	Agricultural	2014	Low
Western Colorado River	UT14070002-004_01	Ivie Creek Upper-1	0 Miles	3	Insufficient Data							
Western Colorado River	UT14070002-004_02	Ivie Creek Upper-2	28.133 Miles	2	No Evidence of Impairment							
Western Colorado River	UT14060009-006_00	Joes Valley	44.6271 Miles	3	Insufficient Data							
Western Colorado River	UT14070003-001_00	Johnson Valley	18.3829 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Domestic Source, Recreation and Aesthetics (Frequent Primary Contact)	2020	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2022	Low
Western Colorado River	UT14060009-002_00	LF Huntington Creek	41.2198 Miles	3	Insufficient Data							
Western Colorado River	UT14070001-005_00	Lake Canyon	0 Miles	3	Insufficient Data							
Western Colorado River	UT14070006-004_00	Last Chance Creek	16.0783 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2008	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2022	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Western Colorado River	UT14070002-005_00	Last Chance Creek	6.5705 Miles	3	Insufficient Data							
Western Colorado River	UT14070005-019_00	Lower Escalante River Tributari	0 Miles	3	Insufficient Data							
Western Colorado River	UT14060009-005_00	Lowery Water	51.5505 Miles	3	Insufficient Data							
Western Colorado River	UT14070005-005_00	Mamie Creek	0 Miles	3	Insufficient Data							
Western Colorado River	UT14060007-010_00	Miller Creek	27.5097 Miles	5	Not Supporting		Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2020	Low
Western Colorado River	UT14070002-009_00	Muddy Creek Lower	82.1907 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2020	Low
Western Colorado River	UT14070002-006_00	Muddy Creek Middle	20.0674 Miles	3	Insufficient Data							
Western Colorado River	UT14070002-001_00	Muddy Creek Upper	80.6942 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Western Colorado River	UT14070001-006_00	Navajo Long Creek	0 Miles	3	Insufficient Data							
Western Colorado River	UT14070005-003_00	North Creek-Escalante	49.7959 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Western Colorado River	UT14070001-093_00	North Wash	9.2852 Miles	1	Fully Supporting							
Western Colorado River	UT14070003-011_00	Oak Creek	30.3239 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Western Colorado River	UT14070007-001_00	Paria River-1	28.865 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2020	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2008	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2000	Low
Western Colorado River	UT14070007-002_00	Paria River-2	34.6487 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Western Colorado River	UT14070007-005_00	Paria River-3	11.0465 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2008	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Western Colorado River	UT14070005-004_00	Pine Creek	32.9767 Miles	3	Insufficient Data							

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: 305(b) and 303(d)

Assessment unit information							Associated parameter information					
Watershed Management Unit	Assessment Unit (AU) ID	AU Name	Water Size Unit	AU Category	Category Description	HNNC	Water Quality Parameter	Parameter Status	303(d) Status	Use(s)	Cycle First Listed	303(d) Priority
Western Colorado River	UT14070003-006_00	Pine Creek (Wayne Co)	20.5561 Miles	3	Insufficient Data							
Western Colorado River	UT14060007-017_00	Pinnacle Wash	0.0197 Miles	4A	Approved TMDL		Total Dissolved Solids	Not meeting criteria	TMDL Approved (11132)	Agricultural	2016	Low
Western Colorado River	UT14070003-009_00	Pleasant Creek-1	57.9356 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
Western Colorado River	UT14070003-010_00	Pleasant Creek-2	10.2733 Miles	3	Insufficient Data							
Western Colorado River	UT14060007-003_00	Price River-1	82.2848 Miles	5	Not Supporting		Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Western Colorado River	UT14060007-005_00	Price River-2	9.4669 Miles	1	Fully Supporting							
Western Colorado River	UT14060007-007_00	Price River-3	18.0364 Miles	5	Not Supporting but has Approved TMDL for some parameters		Boron	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
							Selenium	Not meeting criteria	TMDL Needed	Agricultural, Aquatic Wildlife (Non-game Fish and Other)	2014	Low
							Total Ammonia as N	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (11135)	Agricultural	2014	Low
Western Colorado River	UT14060007-014_00	Price River-4	70.491 Miles	1	Fully Supporting							
Western Colorado River	UT14060007-015_00	Price River-5	36.8942 Miles	1	Fully Supporting		Total Dissolved Solids	Meeting criteria	TMDL Approved (11131)	Agricultural		
Western Colorado River	UT14070002-007_00	Quitchupah Creek Lower	14.5384 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2010	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (11144)	Agricultural	2014	Low
Western Colorado River	UT14070002-002_00	Quitchupah Creek Upper	30.4468 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2010	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
Western Colorado River	UT14060009-003_03	Rilda Canyon	0.0459 Miles	5	Not Supporting but has Approved TMDL for some parameters		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2014	Low
							Total Dissolved Solids	Not meeting criteria	TMDL Approved (11137)	Agricultural	2016	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2014	Low
Western Colorado River	UT14070002-003_00	Saleratus Creek - Emery	14.531 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2020	Low
Western Colorado River	UT14060009-014_00	San Rafael Lower	88.1364 Miles	5	Not Supporting but has Approved TMDL for some parameters		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2010	Low
							Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Non-game Fish and Other)	2022	Low
							Total Dissolved Solids	Meeting criteria	TMDL Approved (11141)	Agricultural		
Western Colorado River	UT14060009-013_00	San Rafael Upper	24.4186 Miles	2	No Evidence of Impairment							
Western Colorado River	UT14070005-006_00	Sand Creek	46.0878 Miles	2	No Evidence of Impairment							
Western Colorado River	UT14070003-012_00	Sandy Creek	30.5942 Miles	2	No Evidence of Impairment							
Western Colorado River	UT14060007-002_00	Scofield Tributaries	98.5341 Miles	5	Not Supporting		Max. Temperature	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2024	Low
							Minimum Dissolved Oxygen	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2016	Low
							pH	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water), Recreation and Aesthetics (Infrequent Primary Contact), Domestic Source, Agricultural	2024	Low
Western Colorado River	UT14060007-009_00	Soldier Creek	23.3361 Miles	2	No Evidence of Impairment							
Western Colorado River	UT14070005-010_00	The Gulch	44.4627 Miles	5	Not Supporting		Benthic Macroinvertebrates Bioassessments	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Warm Water)	2020	Low
Western Colorado River	UT14070001-094_00	Trachyte Creek	4.7074 Miles	1	Fully Supporting							
Western Colorado River	UT14070003-002_00	UM Creek	28.3369 Miles	5	Not Supporting		E. coli	Not meeting criteria	TMDL Needed	Domestic Source, Recreation and Aesthetics (Frequent Primary Contact)	2020	Low
							Nutrient/Eutrophication Biological Indicators	Not meeting criteria	Alternative restoration plan	Aquatic Wildlife (Cold Water)	2022	Low
							Zinc	Not meeting criteria	TMDL Needed	Aquatic Wildlife (Cold Water)	2012	Low
Western Colorado River	UT14070003-003_00	UM Creek Lower	1.9521 Miles	1	Fully Supporting	Assessed HNNC						
Western Colorado River	UT14070005-001_00	Upper Valley Creek	0.1737 Miles	3	Insufficient Data							
Western Colorado River	UT14070006-001_00	Wahweap Creek	0.1127 Miles	5	Not Supporting		Total Dissolved Solids	Not meeting criteria	TMDL Needed	Agricultural	2014	Low
Western Colorado River	UT14070006-002_00	Warm Creek	0 Miles	3	Insufficient Data							
Western Colorado River	UT14060007-001_00	White River-Colton	41.732 Miles	5	Not Supporting		Nutrient/Eutrophication Biological Indicators	Threatened	Alternative restoration plan	Aquatic Wildlife (Cold Water)	2022	Low
Western Colorado River	UT14060007-004_00	Willow Creek - Carbon	48.2975 Miles	3	Insufficient Data							
Western Colorado River	UT14070005-016_00	Wolverine Creek	0.0009 Miles	3	Insufficient Data							

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: Rivers, Streams and Canals Delistings

Watershed Management Unit	Assessment Unit ID	Assessment Unit Name	Water Quality Parameter	Delisting Reason	Delisting Comment
Bear River	UT16010204-006_00	Malad River-1	Total Ammonia as N	Meeting water quality criteria with new data.	Both impaired Sites(4902000 and 4902040) had 2/12 sample exceedances when first listed in the 2020IR. This cycle has 11 new samples with 0 sample exceedances.
Bear River	UT16010204-008_02	Bear River-2-2	Minimum Dissolved Oxygen	Meeting water quality criteria with new data.	Site 4901100 led to first listing in 2014IR. New data from 2020-2021 with 0/11 sample exceedances.
Jordan River	UT16020204-035_00	Red Butte Creek Lower	Minimum Dissolved Oxygen	Original listing incorrect.	Original listing applied the Early Life Stage DO Criteria incorrectly. Per IR Assessment Methods, ELS presence criteria is only applied to sites with confirmed ELS presence. For the 2022 IR, Site RB_02.16 had 6/14 sample exceedances, Site 4992084 had 6/52 sample exceedances, Site RB_04.21 had 7/60 samples exceedances and Site RB_02.64 had 6/13 sample exceedances.
Jordan River	UT16020204-001_02	North Canyon Creek	Minimum Dissolved Oxygen	Original listing incorrect.	Site 4990987 was originally listed when it was part of Jordan River-1 AU (UT16020204-001_01). Site 4990987 has been FS since 2020IR and has new data from 2020-2021.
Jordan River	UT16020204-003_00	Jordan River-3	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2023-01
Jordan River	UT16020204-021_00	Little Cottonwood Creek-1	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2023-01
Jordan River	UT16020204-017_00	Mill Creek2-SLCity	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2023-01
Jordan River	UT16020204-004_00	Jordan River-4	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2023-01
Jordan River	UT16020204-026_00	Mill Creek1-SLCity	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2023-01
Jordan River	UT16020204-002_00	Jordan River-2	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2023-01
Jordan River	UT16020204-005_00	Jordan River-5	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2023-01
Jordan River	UT16020204-019_00	Big Cottonwood Creek-1	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2023-01
Jordan River	UT16020204-013_00	Parleys Canyon Creek-2	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2023-01
Jordan River	UT16020204-033_00	Emigration Creek Lower	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2023-01
Jordan River	UT16020204-025_00	Parleys Canyon Creek-1	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2023-01
Jordan River	UT16020204-035_00	Red Butte Creek Lower	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2023-01
Jordan River	UT16020204-024_01	Midas Creek	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2023-01
Jordan River	UT16020204-029_00	Rose Creek	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2023-01
Jordan River	UT16020204-024_02	Butterfield Creek	Selenium	Original listing incorrect.	Site 4994420 led to first listing in 2014. The AU was split during 2018/2020IR. Site 4994420 is in UT16020204-024_01 AU. All other sites in the AU are FS or IDNE. Delist was due to a spatial site error.
Jordan River	UT16020204-023_00	Bingham Creek	Selenium	Meeting water quality criteria with new data.	Site 4994190 led to first listing in 2014. 0/5 samples exceeding criteria this cycle. Data was not assessed in 2022IR. Not even the method 200.8 samples are exceeding and that method has a higher positive bias. New data were part of a missing block of data from UPHL that was pushed to WQX after the 2022IR Call for Data.
Lower Colorado River	UT15010003-005_00	Johnson Wash-2	Benthic Macroinvertebrates Bioassessments	Meeting water quality criteria with new data.	New data with O/E =.93
Lower Sevier River	UT16030004-003_00	Six Mile Creek - Sevier	Minimum Dissolved Oxygen	Original listing incorrect.	Site 5943260 that triggered the listing in the 2012IR is now in UT16030004-001_00 AU. Delist due to spatial site error.
Southeast Colorado River	UT14030005-005_00	Mill Creek1-Moab	Minimum Dissolved Oxygen	Meeting water quality criteria due to restoration activities.	Site 4956390 led to first listing in 2014IR. With 15 new samples there are 0/28 sample exceedances. All other sites in the AU are FS. Multiple NPS restoration and water quality improvement projects were implemented between 2019-2021.
Southeast Colorado River	UT14080201-011_00	Comb Wash	Selenium	Meeting water quality criteria with new data.	Sites 4952400 and 4956290 were both impaired from 2012IR through the 2020IR. Site 4952400 has 0/41 sample exceedances. Site 4956290 has 0/47 sample exceedances. Data meets both chronic & acute criteria. Almost half of data is new this cycle.
Southeast Colorado River	UT14030005-018_00	Courthouse Wash	Temperature	Meeting water quality criteria with new data.	1/31 samples exceeding criteria. 2 of the impaired samples from last cycle fell out of the POR. None of the 10 new samples this cycle exceed criteria.
Southeast Colorado River	UT14030005-019_00	Professor Creek	Temperature	Meeting water quality criteria with new data.	All data collected since 2012 have been FS or IDNE. Site 4958240 is FS and is 1.6 miles down stream. It has been FS since last cycle, but has no new samples since 2019. 0/12 samples exceeding.
Southeast Colorado River	UT14030005-010_00	Onion Creek Lower	Temperature	Original listing incorrect.	Site 4958280 triggered listing in 2013 with 2 samples exceeding. 12 new samples with 0/12 sample exceedances 12 samples from 2018-19 were below criteria. Site 4958285 was also listed in 1998; however, the site is 1.6 miles upstream of Site 4958280 and has been IDNE for the past four cycles. 4958280 is downstream and FS.
Southeast Colorado River	UT14030005-010_00	Onion Creek Lower	Total Dissolved Solids	TMDL Approved by EPA (4A)	TMDL Action ID : 4008
Uinta Basin	UT14060004-002_00	Indian Canyon Creek	Selenium	Meeting water quality criteria with new data.	Site 4934530 triggered impairment in 2014. 0/27 sample exceedances. Data were not accepted nor rejected for the 2022IR cycle.
Uinta Basin	UT14060008-002_00	Green River-5	Temperature	Meeting water quality criteria with new data.	The impaired site 4930150 from the 2022IR had 3/20 sample exceedances. 15 new samples for current POR with 3/34 sample exceedances.
Uinta Basin	UT14040107-005_00	East Fork Smiths Fork	Zinc	Meeting water quality criteria with new data.	Site 4939490 led to first listing in 2014. Based on 2016-2017 data for this site, 0/10 sample exceedances. The data were part of a missing block of data from UPHL and were pushed to WQX after the 2022IR Call for data.

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

2024 Integrated Report: Rivers, Streams and Canals Delistings

Watershed Management Unit	Assessment Unit ID	Assessment Unit Name	Water Quality Parameter	Delisting Reason	Delisting Comment
Upper Provo River	UT16020203-016_00	McHenry Creek	Cadmium	Meeting water quality criteria with new data.	Site 4997675 triggered the impairment in the 2016IR. 18 new samples allowed for the assessment of the chronic criteria with 1/24 sample exceedances.
Upper Provo River	UT16020203-027_00	Spring Creek-Heber	E. coli	TMDL Approved by EPA (4A)	TMDL Action ID : R8-UT-2022-01
Upper Provo River	UT16020203-004_00	Provo River-4	pH	Original listing incorrect.	Impaired site now in a different AU. The Spring Creek-Heber AU was redrawn to include all of Rock Creek. Site UTAHDWQ_WQX-4997314 that was in UT16020203-004_00 PR-4 is now in UT16020203-027_00. Delist due to spatial site error.
Upper Sevier River	UT16030002-002_00	Otter Creek-1	Benthic Macroinvertebrates Bioassessments	Meeting water quality criteria with new data.	New sample O/E>.8 which is above the .76 threshold.
Upper Sevier River	UT16030001-007_00	Sevier River-2	Benthic Macroinvertebrates Bioassessments	Meeting water quality criteria due to restoration activities.	New samples from 2020 put the O/E= 0.87. Delin Roundy Stream Bank Restoration project near sampled Site 4949642.
Weber River	UT16020101-011_00	South Fork Chalk Creek	E. coli	Meeting water quality criteria due to restoration activities.	All assessed data from Site 4926360 is new data from the past 2 years with 0/5 exceedances. All impaired samples are out of POR. Rangeland grazing improvement awarded in AU in 2018.
Weber River	UT16020101-020_02	Silver Creek-2	Nitrate as N	Meeting water quality criteria with new data.	Site 4926740 was first listed in the 2014IR. Data from 2015-2016 had 4/12 sample exceedances for the 1C use and 10/12 sample exceedences for the 2B and 3A use. New samples from 2021-2022 show 0/11 sample exceedances. Silver Creek WRF was upgraded, including nitrogen removal.
Weber River	UT16020101-020_01	Silver Creek-1	Nitrate as N	Original listing incorrect.	Original Nitrate impairment was due to Site 4926740 in UT16020101-020 AU. The AU was split and Site 4926740 now resides in UT16020101-020_02 AU. Delist due to spatial site error.
Weber River	UT16020102-036_00	Baer Creek-3	pH	Meeting water quality criteria with new data.	3/21 samples exceeded in the 2022IR. There are 10 new samples with 3/31 samples exceeding but below 10% exceedance threshold.
Weber River	UT16020102-026_01	East Canyon Creek-2-1	Total Dissolved Solids	Original listing incorrect.	Site 4925370 tripped the TDS listing but AU has since been split and the triggering site occurs in other AU. All other sites in this AU are fully supporting for TDS.
Weber River	UT16020102-031_00	Kays Creek	Total Dissolved Solids	Meeting water quality criteria with new data.	Impaired Site 4990110 had 3/22 sample exceedances during the 2022IR POR. For this cyle, there were 11 new samples with only 2/21 sample exceedances.
Weber River	UT16020101-020_02	Silver Creek-2	Total Dissolved Solids	Meeting water quality criteria with new data.	Sites 4926740,4926800,4926850,4926950 were first listed in the 2010IR. All 4 sites have new data from 2021-2022 and are now FS. There are 14-16 samples at each site with 0 exceedances at each site.
Western Colorado River	UT14070006-001_00	Wahweap Creek	Temperature	Meeting water quality criteria with new data.	Site 5994530 led to the impairment in the 2014IR. Now, 3/40 sample exceedances.
Western Colorado River	UT14060009-014_00	San Rafael Lower	Total Dissolved Solids	Meeting water quality criteria with new data.	Sites USGS-09328500 and 4930270 both led to the impairment in the 2016IR but are now meeting criteria with new data. Site 4930270 has 1/13 sample exceedances. Site USGS-09328500 has 2/70 sample exceedances.
Western Colorado River	UT14060007-015_00	Price River-5	Total Dissolved Solids	Meeting water quality criteria with new data.	Site USGS-9314500 first listed in 2016. Site is at the same location and was merged/assessed with Site UTAHDWQ_WQX-4931650 with 3/68 sample exceedances.

*Footnote: North Fork Virgin River-1 (E. coli) and Huntington Creek-2 (Total Dissolved Solids) were placed in Category 1:Fully supporting in the 2022 Integrated Report but are now impaired for parameters that have existing Total Maximum Daily Loads (TMDLs). These waterbodies were not included in the current delisting counts or in th During the Draft IR Public Comment process, DWQ identified 5 Selenium delistings that used an analytical method that may be underestimating selenium concentrations. DWQ has kept those on the 303(d) list until the extent of the issue is identified and receives the correct concentration values.

Appendix 1

Data Quality Guideline Examples

DWQ Sampling Analysis Plan Requirements

Revision 2 January 1, 2017

Utah Division of Water Quality

Checklist of Essential Elements for Sampling and Analysis Plans (SAPs)

Monitoring Project/Program:_____

Preparer(s):_____

Reviewer(s):_____

Date Submitted for Review:_____

Date of Review:_____

Parent QAPP or Equivalent Document:_____

Instructions for Preparers:

As required by DWQ's Quality Assurance Program Plan for Monitoring Programs (DWQ QAPP), any monitoring activity conducted or overseen by DWQ must have a SAP, excluding one-time response actions (such as a spill) or compliance sampling. The SAP must be reviewed and revised for each field season/monitoring year. SAPs are approved and kept on file by the Monitoring Section QA Staff and must be distributed to everyone involved with a monitoring project. Provided below is a template and checklist to create a SAP. The SAP should contain or reference all the elements in this checklist but need not have the same format. Rather than extensive text, include as much information as possible in the form of tables, which are easier to refer to in the field. The SAP should be a usable, stand-alone document that can be taken into the field by Monitors.

Definitions and Acronyms:

DPM - Designated Project Manager. As defined by DEQ's Quality Management Plan (QMP), the DPM is the staff member responsible for a specific project and has immediate managerial or technical control of that project. The DPM is responsible for specifying the quality of the data required for each project and initiating corrective actions when quality control is not being met. The DPM may also be a program manager. The DPM is responsible for designing monitoring strategies, setting project-specific data quality objectives (DQOs), and developing project-specific SAPs. DPMs are responsible for making sure all personnel involved with the project are briefed and/or trained on the procedures to be used. Roles of DPMs are further discussed throughout the DWQ QAPP.

IR-Integrated Report

SMP – Strategic Monitoring Plan

Introduction and Background Information (This can be brief if it references some previous

documentation or the IR or SMP, etc.)

- Site history
- Regulatory framework
- Summary of previous investigations
- Location/characteristics of any known pollution sources at the site or in the area
- Site location map showing area at a broad scale

Objectives and Design of the Investigation (This should be very specific to the project and should be a result of discussions between DPM, data users, stakeholders, science panel, etc.)

- Specific objectives of this study (describe how they support broader program goals/objectives or regulatory framework)
- Provide the study design (i.e. spatial/temporal limits, sample characteristics, the smallest population, area, volume, or time frame for which decisions will be made).
- Discuss representative sampling conditions and instructions for field personnel if they encounter non-representative sampling conditions
- Describe parameters of concern (narrative – must conform to list(s) in sections 4 and 6)
- Number, location, and frequency of samples and quality control samples
- Sampling Site Locations
- Rationale for site selection
- Site map(s) showing sampling locations and "control" sites and any other pertinent features such as land use, etc. within the sampling area

Special Precautions and Safety Plan

- Detailed itemization of any specific safety concerns
- Reference to an applicable safety plan
- Any additional safety training required for project
- Documentation that field personnel comply with your Invasive Species Plan and SOPs to prevent spread of invasive species

Field Sampling Methods and Documentation

- Any special training needed beyond those discussed in DWQ QAPP and where training documentation will be kept
- Include a table listing each field instrument to be used (equipment, describe operation or indicate where operation manual is kept for field event, include calibration procedures, if any)
- Include a table listing each sampling method to be used (sampling equipment if needed, cite method in SAP, attach applicable SOPs)
- For any sampling equipment used, describe operation of any sampling equipment used or location of operation manual for field event, include decontamination procedures, if any, attach applicable SOPs
- If not found in SOPs, include equipment lists and sampling trip organizing checklists if not found in SOPs
- List corrective actions for problems that may occur in the field
- Discuss what field documentation is required and how field records shall be generated and stored

Laboratory Sample Handling Procedures

- Describe sample containers, preservatives, holding times
- Describe field documentation (COC) and sample labeling procedures
- Describe shipping plan for sample transport to laboratory

Analytical Methods and Laboratory Documentation

- Chemical – list parameter, cite preparation method and analytical method, list required sensitivity or detection limits
- Biological – cite method or desired taxonomic level and organism target count, etc.
- Required reporting procedures (e.g. hardcopy, electronic deliverables) and turn-around times
- Be sure DWQ has obtained QA documentation for each laboratory used (check with Monitoring Section QA Staff), reference this information and any new/research analytical methods being used (obtain these protocols if available from lab)
- List the required data package contents from the analyzing laboratories [or reference a service contract or Memorandum of Understanding (MOU)]

Project Quality Control Requirements

- Table of QC limits for field instruments (operation range, accuracy, and precision)
- Table listing each Data Quality Indicator (precision, accuracy, bias, etc.), how it will be measured, and the performance criteria against which it will be evaluated (use the table in the DWQ QAPP and adapt it to this project if needed): (1) analytical (internal to lab) QC limits for chemical analyses (acceptable precision, accuracy, and negative control – lab method blank, (2) field sample QC limits for chemical analyses [Acceptable precision (field duplicates) and negative control (field or trip blanks)], and (3) QC limits for biological analysis [Acceptable precision (% diff in enumeration, 5 taxonomic difference)]
- QC limits, schedule, and descriptions of planned field/lab audits/assessments
- Data quality assurance review procedures: (1) describe system of data qualification, (2) describe measure of completeness relative to planned design, and (3) corrective actions for non-conformance

Data Analysis, Record Keeping, and Reporting Requirements

- Data interpretation approach (include means to temper decision-making if limited completeness of design occurs)
- Describe project record keeping procedures and archive (hardcopies, electronic data)
- Describe how and when DPM wishes to be notified of available laboratory/field results
- Describe expected content and format of final project report and who will receive original/copies.

Schedule and Budget

- Table or figure showing project schedule with key project milestones
- List funding sources for project and include anticipated equipment, consumables, personnel purchases/costs
- Sample costs/lab resources per fee schedule

Project Team and Responsibilities

- Identify project team responsibilities and personnel
- Identify sampling personnel
- Identify subcontractors (e.g. chemical and biological labs)

References (include references to DWQ-prepared documents)

Appendices and Attachments (include SOPs, Chain of Custody forms, Field Forms, Sample Labels, etc.)

Example Field Observation Form for Grab Samples

Version 2.0

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY

Monitoring Location ID: _____

Monitoring Location Name: _____

Monitoring Location Description: _____

_____

_____

_____

Sample Date: _____

Sample Time: _____

Check the water color desciption that best fits the sampling location:

□ Brown/Gray (turbid) □ Black □ Clear □ Stained (tea-look) □ Green □ Other (describe) _____

Indicate the level of coverage of *Didymosphenia geminata* (didymo) in reach

□ Absent (0%) □ Sparse (<10%) □ Moderate (10-75%) □ Heavy (>75%)

<-- Example of didymo.
Photo fromhttp://www.wvdnr.gov/fishing/didymo.shtm

Indicate the level of coverage of Filmentous algae in reach

□ Absent (0%) □ Sparse (<10%) □ Moderate (10-75%) □ Heavy (>75%)

<-- Example of filamentous algae
Photo from http://www.dep.wv.gov/WWE/Programs/
/wqs/Pages/FilamentousAlgaeinWestVirginia.aspx

(Lake sampling) Is there blue green algae? □ Y □ N

<-- Example of blue green algae
Photo courtesy of Utah County Health Dept

Is there an Algal Mat? ☐ Y ☐ N Fish kill?: ☐ Y ☐ N Number of Fish Observed: _____ Type of Fish: _____

Does the underside of the rock look black AND have a straong sulfur/ rotten eggs smell? ☐ Y ☐ N Sheen present?: ☐ Y ☐ N Odor at the site?: ☐ Y ☐ N

Anthropogenic disturbances present at site that may affect sample results? ☐ Y ☐ N

If yes to any above, explain here: _____

Were any photos take from the site visit? ☐ Y ☐ N

Circle all weather codes that apply

1 Windy
2 Dust
3 Rain in the last 24/48 hrs
4 Rain (presently
5 Runoff (indicate if you are sampling/ trying to capture runoff)

Circle all flow codes that apply

1 Standing Water (no flow BUT measurement/ sample taken
2 Measurement/ sample taken from backwater
3 Swift and deep
4 Shallow/trickle
5 Ice Present: evidence of flow beneath surface
6 Ice Present: unsure if flowing beneath surface

Circle all field condition codes that apply

1 Fire (evidence of)
2 Landslide/ Mudslide (evidence of)
3 Flooding (evidence of)
4 Presently Flooding/ Water Rising
5 Livestock (present)
6 Livestock (not present but evidence of)
7 Beaver Dam (sample taken upstream)
8 Beaver Dam (sample taken downstream)
9 Dam (sample taken downstream of resevoir tailrace)

FIELD COMMENTS: _____

Other comments/concerns/issues: _____

Appendix 2

Application of Secondary Review Process

The table below contains a set of data considerations and concerns that may prompt a change to an assessment unit category during the secondary review process.

Table 17. Application of secondary review process

Data Concern	Secondary Review Process	Data Application
Temporal variation within a dataset	Insufficient sampling frequency within an assessment period of record	Individual data records
Bias in sampling design	(1) Event monitoring (review flow, weather, and spill/response/incident data; narrative criteria; field observations and photographs; satellite imagery; other data types collected in same (and around the) period of concern, etc.), (2) sample time of day (literature review to determine if parameter is impacted by the time of day sample is collected), (3) sampling a specific season (unless approved by DWQ in a SAP or is data-type specific (e.g., *E. coli* sampling during the recreation season)], (4) and locational bias	Individual data records
Data quality	(1) Quality Assurance Program Plan For Environmental Data Operations, (2) field calibration documentation, (3) laboratory methods, (4) standard operating procedures, (5) demonstration of capability (if applicable to data type), and (6) discussion with sample collector	Individual data records, and/or, parameter(s) in period of record, and/or monitoring location
Wrongly monitored	(1) Measured point source (vs. main water body), review imagery of area, flow, etc., (2) waterbody type DWQ does not assess, (3) grab sample vs. composite, (4) flow conditions (too low or not flowing), and (5) field observation that impacts quality of data	Individual data records and/or monitoring location
Outlier	(1) Need more than a statistical test. Should be based on scientific or QA basis, (2) QA/QC field sampling blanks, duplicates/replicate, (3) laboratory Analytical Batch QC, (4) value is nonsensical (e.g., cannot be measured with field/laboratory method), and (5) refer to data quality (above)	Individual data records

Magnitude of exceedance	(1) Significant figures and (2) narrative criteria review	Individual data records
QA/QC concerns	(1) Holding time, (2) laboratory comment, (3) dilutions, spikes, and (4) other laboratory QC performance checks	Individual data records

Data Concern	Secondary Review Process	Data Application
Assessment unit grouping/spatial variation	(1) Multiple locations not grouped correctly (either should or should not have been grouped), (2) AUs where water quality criterion exceedances are clearly isolated to a relatively small, hydrologically distinct portion of the larger AU and may need to be re-segmented to more accurately reflect that variation in water quality (please refer to 303(d) Assessment Methods section on "Assessment Unit Re-segmentation" for more information on the process), and (3) a surface water (e.g., a spring or seep) was sampled in the AU and was assessed but additional information indicates that the surface water may not have been flowing or did not connect, contribute, or influence downstream water quality	Monitoring location
Credible data	(1) Data type applied incorrectly and (2) data type not considered. (Data type must meet credible and representative data requirements in 303(d) Assessment Methods, and if included in the assessment analysis would result in a change in the categorization of the waterbody and parameter	Individual data records and/or parameter(s) in period of record, monitoring location
Other	(1) Parameters wrongly grouped (by CAS, fraction, or methods), (2) data type is laboratory measurement (when the data assessment requires a field measurement), (3) IR QA/QC flagged data, and (4) errors in standards	Individual data records. Entire parameter assessments
Conflicting DO assessments between grab and high frequency data	Scenario: Two types of data available at the site(s) (i.e., grab or high frequency data) do not have the same preliminary assessment result. Reviews to consider: (1) sampling period captured, (2) duration of conditions below criterion, (3) frequency of recurrent low DO events, (4) magnitude of exceedance, (5) spatial extent of low DO, and (6) diel flux of DO	Individual data records. Entire parameter assessments

Representativeness and Environmental Factors*	Examples of extreme events include the following: (1) accidental spills of toxic chemicals, (2) scouring storm flows that lead to diminished aquatic-life beneficial uses, and (3) extreme drought conditions. Given the scope of these assessments, it is not always possible to identify where such circumstances may be influencing a specific sample, but DWQ will consider any evidence presented that a sample is not representative of ambient conditions. Examples of such a review may include reviewing flow, weather, spill data, narrative criteria, field observations and photographs, satellite imagery, other data types collected in the same (and around the) period of concern, etc.	Individual data records

Data Concern	Secondary Review Process	Data Application
Pollution Indicators	Secondary reviewers will incorporate indicator data into assessment category determinations, relying on multiple lines of evidence, including pollution indicator thresholds, the presence or absence of other indicator-associated water quality issues, potential pollutant sources, and other site or watershed-specific knowledge to determine whether listing or delisting on a pollution indicator parameter is appropriate or whether to prioritize waterbodies for additional monitoring.	(1) Pollution indicator evaluations will be posted with the report(s (e.g. exceedance counts & frequencies), so DWQ programs and stakeholders can consider the results when planning for future monitoring, studies, evaluations, etc, (2) pollution Indicator evaluations may be included in a narrative assessment/standard not supporting or supporting assessment decision, (3) pollution indicators may be reported by the IR as a cause of pollution impairment, and (4) pollution indicators may be reported by the IR as the source of an impairment

*Footnote: Where these conditions are present in a dataset, DWQ will run the analysis without the extreme events/data record and will apply and document an appropriate assessment result for the waterbody using the methods outlined below.
Category 1: Supporting: If analyses with and without the extreme events are supporting (Category 1.
Category 2: No evidence of impairment: If analyses with the extreme events are supporting (Category 1), but the analyses without the extreme events show no evidence of impairment (Category 2)
Category 2: No evidence of impairment: If analyses with and without the extreme events do not indicate evidence of impairment (Category 2)
Category 2: No evidence of impairment: If analyses with the extreme events are evidence of impairment (Category 3 with exceedances), but the analyses without the extreme events show no evidence of impairment (Category 2)
Category 2: No evidence of impairment: If analyses with the extreme events are not supporting (Category 5), but the analyses without the extreme events show no evidence of impairment (Category 2)
Category 3: Insufficient Data, Exceedances: If analyses with and without the extreme events show evidence of impairment (Category 3)
Category 3: Insufficient Data, Exceedances: If analyses with the extreme events are not supporting (Category 5), but the analyses without the extreme events are supporting (Category 1)
Category 5: Not supporting: If analyses with the extreme events are evidence of impairment (Category 3), but the analyses without the extreme events are not supporting (Category 5)
Category 5: Not supporting: If analyses with the extreme events are not supporting (Category 5), but the analyses without the extreme events show evidence of impairment (Category 3)
Category 5: Not supporting: If analyses with and without the extreme events are not supporting (Category 5)

Appendix 3

Summarizing Assessments From Site to Assessment Unit Level

This appendix uses a theoretical assessment unit (see Figure 28 below) to demonstrate how DWQ composes the overall assessment unit category using site-level parameter assessments of beneficial use support. The assessment unit (AU) below has four monitoring locations and two beneficial uses.

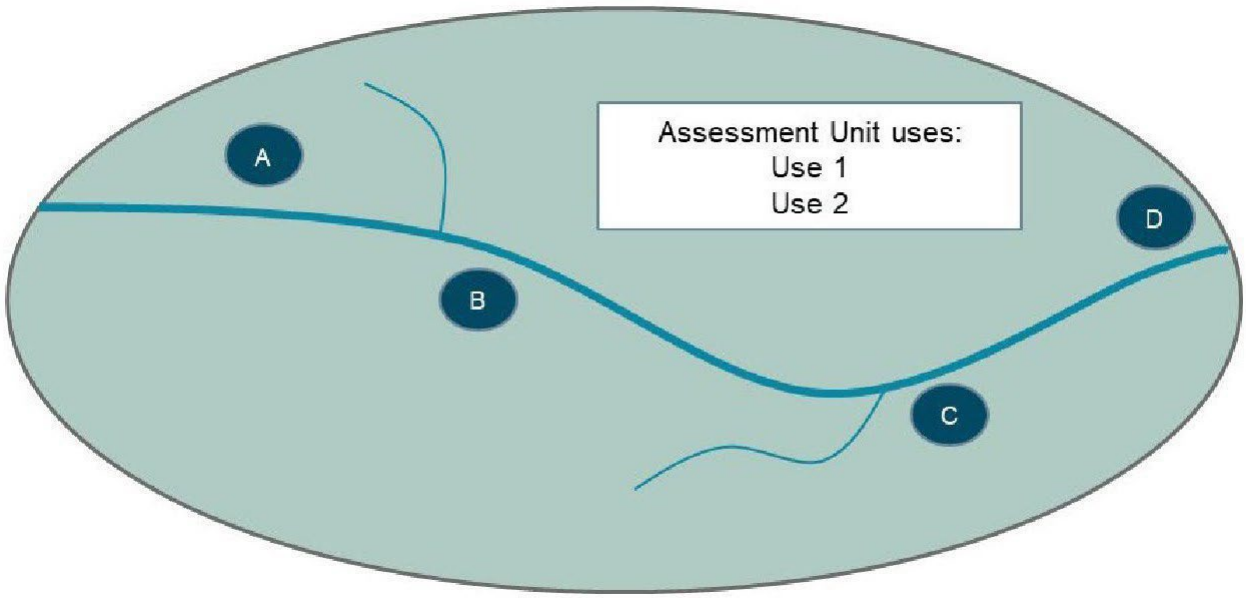

Figure 33. Process of composing overall AU category using site-level parameter assessments of beneficial use support.

In this example, the AU has been sampled for two water quality parameters: temperature and pH. Each heading below corresponds to a table demonstrating the scenario described. In each table, NS means not supporting (or not meeting criteria; impaired), FS means fully supporting (or meeting criteria), and ID means insufficient data.

Not Supporting (EPA Category 5)

The AU is categorized as not supporting if ANY site within the AU is not supporting for one or more parameters that are not covered under a TMDL or other pollution control mechanism. In the example scenario below, Site A is not supporting beneficial use 1 based on temperature criteria, but the AU has a TMDL for temperature. Sites B and D are not supporting beneficial use 2 based on pH criteria, and there is no TMDL in place to address pH. Site C is fully supporting beneficial use 1 based on temperature criteria. Because the AU has sites that are not supporting for a parameter that does not have an existing TMDL in place (rows highlighted in orange), the AU has the overall EPA Category 5. Note that this example is intended to show how Category 5 supersedes a TMDL Category 4A in an assessment unit, but any assessment unit with site- use-parameter combinations that are not supporting one or more beneficial uses and have no TMDL associated with any parameters would also fall under Category 5.

Category 5: Not Supporting				
Site	**Use**	**Parameter**	**Category**	**TMDL?**
A	1	Temperature	NS	Yes
B	2	pH	NS	No
C	1	Temperature	FS	Yes
D	2	pH	NS	No

Assessment Unit Decision: Category 5 (Not supporting) for beneficial use 2 based on pH assessment and Category 4A for beneficial use 1 based on temperature assessment. Temperature is associated with an existing TMDL.

TMDL Approved (EPA Category 4A)

The assessment unit falls in the TMDL approved category if it is not supporting for one or more parameters at one or more sites for which the assessment unit has an approved TMDL. In the example scenario below, Site A is not supporting beneficial use 1 for temperature, but there is a TMDL associated with temperature in that assessment unit (row highlighted in green). Note that site C is fully supporting beneficial use 1 based on temperature criteria, but it is still covered by the AU's temperature TMDL. Because all other beneficial uses and parameters are fully supporting at sites within the AU, the overall AU category is EPA Category 4A.

Category 4A: Approved TMDL				
Site	**Use**	**Parameter**	**Category**	**TMDL?**
A	1	Temperature	NS	Yes
B	2	pH	FS	No
C	1	Temperature	FS	Yes
D	2	pH	FS	No

Assessment Unit Decision: Category 4A (Approved TMDL) for beneficial use 1 based on temperature assessment.

Insufficient Data (EPA Category 3)

The assessment unit falls into the insufficient data category if an assessment has not been performed on ANY parameters at ANY of the sites in the assessment unit. In the example scenario below, all sites had data associated with either pH or temperature, but not enough data were collected (based on 303(d) assessment methods) at any site over the period of record to fully assess the site-use-parameter combination (all rows highlighted in blue denoting the site-use-parameter-level insufficient data assessment category). In this case, the overall AU category is EPA Category 3. DWQ also keeps track of any water quality samples that exceeded numeric criteria. These site-use-parameter combinations are usually prioritized for further sampling and a full assessment.

Category 3: Insufficient Data				
Site	**Use**	**Parameter**	**Category**	**TMDL?**
A	1	Temperature	ID	No
B	2	pH	ID	No
C	1	Temperature	ID	No
D	2	pH	ID	No

Assessment Unit Decision: Category 3 (Insufficient Data) based on both beneficial uses and parameter assessments at all four sites.

No Evidence of Impairment (EPA Category 2)

The assessment unit falls into the no evidence of impairment category if at least one use at one or more sites has been assessed and is fully supporting, but one or more uses have not been assessed at ALL sites within the AU. In the example scenario below, sites A, B, and C were sampled for temperature, which is used to assess support for beneficial use 1. Sites A, B, and D were sampled for pH, which is used to assess support for beneficial use 2. At sites A and B, enough pH data were collected to perform assessments of beneficial use support for use 2. Only one full assessment of beneficial use support at one site is required to represent a full assessment of beneficial use support for the AU. However, no site had enough data to fully assess temperature and thus beneficial use support for use 1 (rows highlighted in olive green). Because the AU beneficial use category for use 1 is insufficient data and the beneficial use category for use 2 is fully supporting, the overall assessment unit category is EPA Category 2, no evidence of impairment. Note that in this case, impairment and not supporting are synonymous terms.

Category 2: No Evidence of Impairment				
Site	**Use**	**Parameter**	**Category**	**TMDL?**
A	1	Temperature	ID	No
A	2	pH	FS	No
B	1	Temperature	ID	No
B	2	pH	FS	No
C	1	Temperature	ID	No
D	2	pH	ID	No

Assessment Unit Decision: Category 2 (No Evidence of Impairment) due to full support of beneficial use 1 based on the pH assessments and insufficient data to assess beneficial use 2 across all sites.

Fully Supporting (EPA Category 1)

The assessment unit is fully supporting if all uses have been assessed at AT LEAST one site (Table 5). Note that in this scenario, a site does not need to be fully assessed for all uses, but the AU must contain sites for which each use was fully assessed. In the example scenario below, use 1 was fully assessed using temperature data at Site A, and use 2 was fully assessed with pH data at Site B. Although some site-use- parameter level datasets had insufficient data to be fully assessed, both beneficial uses were fully assessed at one or more sites within the AU (rows highlighted in light blue), and can be used together to represent a full assessment of the AU's beneficial uses.

Category 1: Fully Supporting				
Site	**Use**	**Parameter**	**Category**	**TMDL?**
A	1	Temperature	FS	No
A	2	pH	FS	No
B	1	Temperature	ID	No
B	2	pH	FS	No
C	1	Temperature	ID	No

Assessment Unit Decision: Category 1 (Fully Supporting) for beneficial uses 1 and 2 based on fully supporting pH and temperature assessments at sites within the assessment unit.

Appendix 4

4B Submission Policies and Procedures: Process for Determining Category 4B Classification

An approved Category 4B demonstration plan is an alternative to listing an impaired segment on the state's 303(d) list. A Category 4B demonstration plan, when implemented, must ensure that all applicable water quality standards are met through agreed-upon pollution-control mechanisms within a reasonable time period. These pollution-control mechanisms can include approved compliance schedules for capital improvements or plans enforceable under other environmental statutes (such as Comprehensive Environmental Response, Compensation, and Liability Act) and their associated regulations. A Category 4B demonstration can be used for segments impaired by point sources and/or nonpoint sources. Both DWQ and EPA must accept a Category 4B demonstration plan for the affected segment to be placed in Category 4B. In the event that the Category 4B demonstration plan is not accepted, the segment at issue will be included on the 303(d) list, Category 5.

Generally speaking, the following factors will be considered necessary for Category 4B demonstration plan acceptance: 1) appropriate voluntary, regulatory, or legal authority to implement the proposed control mechanisms through permits, grants, compliance orders for Utah Pollutant Discharge Elimination System permits, etc.; 2) existing commitments by the proponent(s) to implement the controls; 3) adequate funding; and 4) other relevant factors appropriate to the segment.

The following evidence must be provided as a rationale for a Category 4B demonstration plan:

A statement of the problem causing the impairment

1. A description of
    a. The pollution controls to be used
    b. How these pollution controls will achieve attainment with all applicable water quality standards
    c. Requirements under which those pollution controls will be implemented
2. An estimate of the time needed to meet all applicable water quality standards.
3. A schedule for implementation of the necessary pollution controls.
4. A schedule for tracking progress, including a description of milestones.
5. A commitment from the demonstration plan proponent to revise the implementation strategy and pollution controls if progress toward meeting all applicable water quality standards is not shown.

Timing for proposal submittal and acceptance by DWQ and EPA

- Category 4B demonstration plans should be submitted to DWQ by July 1 of even numbered years, in order for DWQ to submit the plan to EPA by September 1 of even numbered years. Parties are encouraged to work with DWQ before this date as states are the entity required to submit these plans to EPA.

- Acceptance from EPA must be obtained by October 31 of even numbered years; otherwise, DWQ will continue to propose that the segment in question is included on the current cycle's 303(d) list.
- If EPA and DWQ accept the Category 4B plan, DWQ will notify the Water Quality Board and the public through proposed statement of basis and purpose language in its proposal that a Category 4B demonstration plan is accepted and is appropriate for this segment.

EPA has several documents that contain additional information on Category 4B demonstration requirements, including: "2006 Integrated Report Guidance"; and "Information Concerning 2008 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions".

Appendix 5

Delisting Guidelines

DWQ must follow a consistent, well-documented delisting process to be approved by the EPA each cycle. The guidelines below outline the questions and scenarios DWQ considers when analyzing whether sufficient evidence exists to delist a waterbody for one or more pollutants.

Does the AU/AU-parameter combination warrant further investigation? (See 303(d) Assessment Methods for more details).

- Generally, this means that the AU was previously listed for one or more parameters that were not meeting criteria, but in the current assessment, parameter data are meeting criteria and fully supporting at the site- level.

What was the original cause of impairment for the AU?

What beneficial use was assessed? Is it the correct beneficial use? What IR assessment cycle was the AU and parameter first listed?

- What datasets were used for that listing (e.g., the agency/sample collector)?
- What was the period of record? (If unknown, use the longer period of record).
- What MLIDs are in the AU?

For impairments listed in a previous assessment cycle, compile data from all MLIDs in the AU, regardless of waterbody type. Which MLID(s) have/had exceedances in the pollutant of interest?

- For MLIDs with impairments/exceedances that were not assessed in the current IR cycle, determine why the site was not resampled. If the AU is a delisting candidate, provide documentation as to why resampling was not done and why the site should meet water quality standards. Please refer to the good cause descriptions in the 303(d) methods. If the delisting reason does not demonstrate good cause, the documentation will need to be EPA-approved.
- For MLIDs with historical or current impairments/exceedances assessed in the current IR cycle, DWQ will typically not delist an AU where the current parameter assessment for the MLID(s) is not fully supporting. However, DWQ will consider delisting when a secondary review applied to the parameter, MLID, or AU places it in the fully supporting category (or no evidence of impairment at the AU-level). The secondary review justification will need to be EPA-approved and checked for good cause.
- Determine if the current parameter assessment is fully supporting (no secondary review applied to this parameter) and check for good cause. Consider: What is the oldest date in that period of record for that MLID/Parameter combo in the current assessment cycle?

- Note: Confirm that if no new data are collected, the new assessment analysis is not fully supporting because the exceedances are out of the period of record for assessment analysis. This is not a delisting.

EPA Delisting Codes

Table 18. Description of EPA Delisting Codes

Delisting Reason Code	Comment
WQS_NO_LONGER_THREATENED	Applicable WQS attained; threatened water no longer threatened
WQS_NEW_ASMT_METHOD	Applicable WQS attained, according to new assessment method
DELISTING_4C	Not caused by a pollutant (4c)
DELISTING_WQS_NOT_APPLICABLE	WQS no longer applicable
DELISTING_4B	Other pollution control requirements (4b)
DELISTING_4A	TMDL Approved or established by EPA (4a)
WQS_NEW_DATA	Applicable WQS attained; based on new data
WQS_LISTING_INCORRECT	Applicable WQS attained; original basis for listing was incorrect
REFINEMENT	Clarification of listing cause
WQS_RESTORATION_ACTIVITIES	Applicable WQS attained, due to restoration activities
WQS_RECOVERY_UNSPECIFIED	Applicable WQS attained; reason for recovery unspecified
DELISTING_NOT_IN_JURISDICTION	Listed water not in state's jurisdiction
WQS_STANDARDS_CHANGED	Applicable WQS attained, due to change in WQS
NOT_SPECIFIED	Not specified
DELISTING_NOT_WATER_OF_STATE	Water determined to not be a water of the state
DELISTING_ORIG_INCORRECT	Data and/or information lacking to determine WQ status; original basis for listing was incorrect

Appendix 6
Response to Comments: 303(d) Assessment Methods

The following are public comments received for the 2024 303(d) Assessment Methodology and the Utah Division of Water Quality's (DWQ) response. Please click the links below to jump to your section of interest.

Daniel Lay

Comment 1A: Identifying Causes of Impairments

Absence or lack of water in perennial systems due to drought, over-allocation of water rights, debris flows/wildfire should be considered a class 4C non-pollutant impairment.

DWQ Response to comment 1A:

As described in the assessment methods (page 12, Table 1 and page 74, Category 4C), DWQ may place a waterbody or parameter-specific impairment in category 4C when DWQ can demonstrate that a beneficial use impairment is driven by pollution and not by a pollutant or pollutant that causes pollution; including use impairments driven by hydrologic modification. DWQ recognizes the potential negative impacts hydrologic modification may have on beneficial use attainment and is currently actively engaged in an internal workgroup focused on improving our ability to identify, quantify, and evaluate the impacts of hydrologic modifications on beneficial use attainment in Utah. No method changes are required for DWQ to place impairments driven by hydrologic modification in category 4C. Stakeholders with information or evidence demonstrating that a beneficial use impairment is related to hydrologic modification may submit that information for review during the 2024 Integrated Report public comment period.

Rob Dubuc, Friends of Great Salt Lake

Comment 2A: Assessments Specific to Lakes and Reservoirs

Specific to Great Salt Lake: The Division should develop a method for assessing GSL salinity.

DWQ Response to comment 2A:

DWQ is conducting an evaluation of the current status and trends of water levels, salinity, habitat availability, and aquatic biota in Gilbert Bay to develop appropriate assessment methods. Without defined numeric criteria, it is challenging to develop and implement clearly defined and repeatable assessment methods for assessing whether Great Salt Lake's Bays' including Gilbert Bay are meeting their beneficial uses. Therefore, new assessment methods for Great Salt Lake, including for salinity, have not been incorporated into the 2024 Integrated Report.

Grant Wilson, Earth Law Center

Comment 3A: Revising the 303(d) List and Other Categorical Assessments

ELC has advocated for complete and accurate 303(d) lists and 305(b) reports for ten years, including in Utah. As you know, we were pleased that there were several flow-impaired waters listed under Category 4C in Utah's 2022 Integrated Report. We also sincerely appreciate the ongoing dialogue and DWQ's openness to form a workgroup to evaluate potential methodologies to assess non-pollutant pollution impairments. We understand this will not be completed before the 2024 303(d) assessment method public comment period this fall.

While these are all positive developments, we still urge you to include a simple statement allowing for Category 4C listings under a "weight of the evidence" approach in the 2024 Integrated report. Drawing inspiration from the "weight of evidence" approach used for Category 5 waters in California, the methodology could look something like this:

When readily available information strongly indicates the non-attainment of water quality standards due to hydrological modification (i.e., 4C waters), a water segment shall be evaluated to determine whether the weight of evidence demonstrates that a water quality standard is not attained and, therefore, a listing is appropriate under Category 4C.

When making a listing decision based on the situation-specific weight of evidence, the DWQ must justify its recommendation by:
- Providing any data or information including current conditions supporting the decision;
- Describing in fact sheets how the data or information affords a substantial basis in fact from which the decision can be reasonably inferred;
- Demonstrating that the weight of evidence of the data and information indicate that the water quality standard is not attained; and
- Demonstrating that the approach used is scientifically defensible and reproducible.

Additionally, or in the alternative, the DWQ could commit to piloting a "weight of the evidence" approach for Category 4C listings beginning with those rivers that flow into the Great Salt Lake. As you know, the Great Salt Lake is undergoing an imminent ecological crisis in large part due to low inflows from the Jordan, Weber, and Bear rivers. Listing these rivers for Category 4C hydromodification, assuming such a listing is justified under a "weight of the evidence" approach, would send a strong message that the DWQ is using all available policy tools to help address one of the greatest, existential challenges facing Utah.

DWQ Response to comment 3A:

As described in the assessment methods (page 12, Table 1 and page 74, Category 4C), DWQ may place a waterbody or parameter-specific impairment in category 4C when DWQ can demonstrate that a beneficial use impairment is driven by pollution and not by a pollutant or pollutant that causes pollution; including use impairments driven by hydrologic modification. As the commenter notes, DWQ is currently actively engaged in an internal workgroup focused on improving our ability to identify, quantify, and evaluate the impacts of hydrologic modifications on beneficial use attainment in Utah. The commenter's suggestions have been provided to that workgroup.

No methods changes are required for DWQ to place impairments driven by hydrologic modification in category 4C in the manner recommended by the commenter, and the data and information used to make assessment decisions, including potential 4C determinations are published as part of the Integrated Report and available for public comment. Stakeholders with information or evidence demonstrating that a beneficial use impairment is related to hydrologic modification may submit that information for review during the 2024 Integrated Report public comment period.

Comment 3B: Revising the 303(d) List and Other Categorical Assessments

Finally, I would like to make you aware that there is a movement to recognize the Rights of the Great Salt Lake. This builds from other rights-based movements for waterways across the world--the Atrato River in Colombia, the Whanganui River in New Zealand, various waterways and watersheds in Colorado (recognized by non-binding resolution in the communities of Nederland, Grand Lake, and Ridgway), and the rights of Mar Menor in Spain. The DWQ may wish to consider how the rights of the Great Salt Lake, including mechanisms to give it a voice in governance, could benefit your efforts to protect and restore waterways.

DWQ Response to comment 3B:

Thank you for bringing these efforts to our attention. DWQ is deeply committed to protecting the Great Salt Lake ecosystem and all of Utah's waterways. We look forward to seeing how these efforts progress.

Shera Reems, EPA Region 8

Comment 4A: Assessments Specific to Rivers, Streams, and Canals, Table 11

How does DWQ communicate to the public the water bodies where early life stage presence has been confirmed?

DWQ Response to comment 4A:

DWQ develops tables that identify species present and associated seasons of early life stages for Utah Pollution Discharge Elimination System (UPDES) permits that desire that specificity when wasteloads are developed. These tables are developed on a case by case basis, and like any information that falls under our GRAMA guidance, can be provided to the public upon request.

Comment 4B: Assessments Specific to Rivers, Streams, and Canals, Table 11

The last paragraph under notes for TDS should be deleted. It appears that this information should only be in the notes field for Sulfate.

DWQ Response to comment 4B:

DWQ appreciates you bringing this to our attention. The paragraph referenced in Table 11 in the TDS notes has been removed from the document.

Comment 4C: High Frequency Assessments for Dissolved Oxygen (DO)

In response to EPA's informal question about the rationale for applying the 10% allowable exceedance frequency to the 7-day average and 30-day average DO criteria to high frequency DO data, UDWQ staff reminded EPA about the following language in R317-2-7: "For water quality assessment purposes, up to 10 percent of the representative samples may exceed the minimum or maximum criteria for dissolved oxygen, pH, E. coli, total dissolved solids, and temperature, including situations where such criteria have been adopted on a site-specific basis."

UDWQ emphasized that the 10% exceedance frequency (aka 10% rule) language is parameter specific. In reviewing the state's assessment method for E. coli (pages 60 to 65), UDWQ only applies the 10% rule to the maximum E. coli criterion. To calculate the 30-day geometric mean, Scenario B of the assessment method suggests a minimum sample size of 5 grab samples. The methodology documents that a waterbody would be considered impaired if more than one geometric mean was exceeded. This method does not appear to require sufficient data to calculate whether 10% of the 30-day geometric means were exceeded. In contrast, for a more comprehensive dataset like high frequency DO, the state applies the 10% rule to the 7-day average and 30-day average and requires sufficient data to evaluate whether those averages are exceeded 10% of the time. Please explain this inconsistent application of the 10% rule cited in Section R317-2-7.

EPA encourages UDWQ to consider revising the high frequency DO assessment method to align with the approach used to calculate the geometric mean for E. coli. Specifically, EPA recommends the state: a) define a less stringent minimum dataset for the calculation of the 7-day and 30-day average DO criterion (e.g., 3 to 5 days to calculate the 7-day average and 10 days to calculate the 30-day average), and b) place waterbodies on the 303(d) list with more than one exceedance of the 7-day or 30-day average.

When assessing for DO, UDWQ should also consider the narrative criteria requirement for water quality conditions not to "…produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life…" (R317-7.2). The 10% rule should not be implemented in a manner that obscures potentially harmful or lethal conditions to aquatic communities.

DWQ Response to comment 4C:

The difference in assessment methods between E. Coli and dissolved oxygen is derived from differences in water quality standards between the two parameters. The general 10% exceedance frequency language at R317-2-7.1 b. includes both dissolved oxygen and E. Coli. However, following EPA guidance, Utah's E. Coli criteria includes an additional footnote (R317-2 Table 2.14.1, footnote 7) that specifically applies a 10% exceedance frequency for assessment to the two maximum criteria and excludes the 30-day geomean criteria: "For water quality assessment purposes, up to 10% of representative samples may exceed the 668 per 100 ml criterion (for 1C and 2B waters) and 409 per 100 ml (for 2A waters)." Only the general 10% exceedance frequency language is applied to dissolved oxygen criteria, and national guidance regarding appropriate exceedance frequencies for dissolved oxygen assessment is not currently available. Therefore, DWQ has not changed the exceedance frequency used for high frequency dissolved oxygen methods as recommended by the commenter.

As described in the assessment methods, all waterbodies are subject to applicable narrative standard based water quality assessments such as biological assessments, observations of fish kills, and trophic state evaluations.

Comment 4D: Nutrient Assessments Specific to Headwater Streams (Pages 40 to 41)

During the 2022 Integrated Report cycle, EPA recommended DWQ consider including a column in the table, "Draft Integrated Report: 305(b) and 303(d)" that identifies headwater assessment units for which the numeric nutrient criteria apply. This information would also be helpful in the water quality data files that DWQ shares with the public.

DWQ Response to comment 4D:

All headwater watersheds are georeferenced. As suggested, DWQ will include this column in the referenced table.

Comment 4E: Assessments Specific to Lakes, Reservoirs, and Ponds, Aquatic Life Use Support, Figure 9 (Page 49)

In the second row of this Figure, should there be a “No” after the diamond “>10% of water column exceed criterion?”

DWQ Response to comment 4E:

Thank you for your comment. DWQ has updated the diagram in Figure 9 so that it is properly labeled.

Comment 4F: Temperature and Dissolved Oxygen: Stratified Lakes and Reservoirs, Figure 12 (Page 52)

Based on the information in the Figure, it appears that both a Tier I Not Supporting and Tier I Fully Supporting proceed to a Tier II Assessment. Is this correct?

DWQ Response to comment 4F:

The commenter is correct. The Tier II assessment process is independently applied to all lakes regardless of the results of the Tier I assessment methods.

Comment 4G: Great Salt Lake (Pages 56 to 57)

Previously, UDWQ indicated that the Great Salt Lake Water Quality Strategy components on Aquatic Life Numeric Criteria for Priority Pollutants and Strategic Monitoring and Research were in the process of being updated. Does UDWQ have an updated timeline for the completion of these components?

DWQ Response to comment 4G:

Updating the Great Salt Lake Water Quality Strategy and its core components is ongoing with a targeted completion date in mid-2024.

Comment 4H: Harmful Algal Blooms (Pages 66 to 67)

EPA appreciates DWQ’s work in assessing for Harmful Algal Blooms (HABs) and on updating the assessment method to rely on EPA’s recommended criteria for microcystin and cylindrospermopsin. Please clarify the following:

Does UDWQ intend to apply these methods to benthic blooms similar to those observed in Zion National Park?

DWQ Response to comment 4H:

Thank you for asking for clarification. This assessment method will not be applied to any benthic harmful algal blooms affecting recreational beneficial use at this time. DWQ will be evaluating how to best incorporate appropriate assessment methodology for benthic blooms in the future.

Comment 4I: Harmful Algal Blooms (Pages 66 to 67)

Would UDWQ list waters as impaired for HABs if the waterbody exceeds UDWQ’s anatoxin-a warning

threshold?

DWQ Response to comment 4I:

Until more information is available on the toxicity of anatoxin-a, DWQ chooses to withhold setting a specific cyanotoxin threshold for anatoxin-a in directly determining beneficial use support. DWQ looks forward to EPA recommending similar thresholds for other common cyanotoxins (including anatoxin-a) in the future.

Anatoxin-a concentrations are, however, considered indirectly in beneficial use assessment. The second independent indicator of beneficial use support is waterbody recreational access or use limitations. Recreational advisories which may also list a waterbody as impaired, are generally issued by a health department when concentrations of anatoxin-a are greater than 15 ug/L.

Ellen Bailey, DWQ

Comment 5A: Harmful Algal Blooms

There is a typo referring to table 16 in the HAB assessment. In the text it refers to table 15.

DWQ Response to comment 5A:

Thank you for pointing out these typos. DWQ has updated all the table references in the Harmful Algal Bloom section to the correct table.

Ashley A. Peck, Wasatch Front Water Quality Council

Comment 6A: Harmful Algal Blooms

The Council has significant concerns with this approach because the HAB Guidance allows for the use of cyanobacteria cell density – on its own – to inform public health advisory decisions. This means that an impairment decision could also be based solely on two health advisories having been issued for the water body based on localized cell density sampling that is not representative of the water body as a whole – and notwithstanding whether cyanotoxin concentrations were above recreational guidelines. As EPA has recognized, cell density is not a reliable advisory trigger and is more stringent than the federal approach, in violation of Utah Code Section 19-5-105. Moreover, use of cell density-triggered health advisories as the basis for impairment decisions would impart a wholly subjective standard that likewise violates Utah Code Section 19-5-105.

Under the HAB Guidance, cyanobacterial cell density greater than 100,000 cells/mL on its own could result in a “Warning Advisory” for the waterbody in question. However, relying on cell density is contrary to EPA guidance, which focuses exclusively on concentrations of microcystin and cylindrospermopsin to guide recreational health advisories. Indeed, EPA expressly declined to recommend issuing public health advisories based on cell counts, concluding that “available data are insufficient to develop quantitative recreational values” and that additional research is needed given the inconsistency in epidemiological studies. In other
words, allowing cell counts to trigger warning advisories makes the HAB Guidance more stringent than its federal counterpart. This runs afoul of Utah Code Section 19-5-105, under which state standards developed in administering a program under the federal Clean Water Act can be no more stringent than federal standards addressing the same circumstances unless the Water Quality Board makes a written finding, after public comment and hearing, that the corresponding federal standard is not adequate to protect public health and the environment. Here, the Board has made no such finding.

Because the inclusion of cell counts makes the HAB Guidance more stringent than its federal counterpart, DWQ should not tie impairment

decisions to health advisories issued under the Guidance based on cell count. Instead, the HAB section of the Draft Assessment Methods should focus on whether microcystin and cylindrospermopsin concentrations have exceeded applicable thresholds. This will allow the final Assessment Methods to avoid being more stringent than, and conflicting with, federal standards. To achieve this, the Council requests that DWQ remove mention of warning advisories, danger advisories, and closures for recreational use from the HAB section of the Draft Assessment Methods or at minimum make both health
advisories and cyanobacteria concentration together a trigger for impairment.

Beneficial Use Supported
The beneficial use is fully supported if, over the period of record:
Cyanotoxin concentrations have not been identified above recreational use thresholds (Table 15), AND a Warning Advisory, Danger Advisory~~, or closure has not been issued for recreational access to a waterbody.~~

Beneficial Use Not Supported
The beneficial use is not supported if, in representative samples for recreational uses, in two or more years in the period of record:
Cyanotoxin concentrations above recreational guidelines (Table 15) have been reported in more than three 10-day assessment periods in a recreational season, ~~OR a Warning Advisory, Danger Advisory, or closure has been issued for recreational access to a waterbody for two or more 2-week periods in a recreational season.~~

Insufficient Data and Information with Exceedances (IR Category 3) The waterbody will be placed in the insufficient data category if:
It does not meet either of the Beneficial Use Not Supported criteria (above), but cyanotoxin concentrations exceeded recreational use thresholds (Table 15) in three or fewer 10-day assessment periods in a recreation season, ~~OR a Warning Advisory, Danger Advisory, or closure has been issued for recreational use for less than two 2-week periods.~~ These waterbodies will be prioritized for further sampling and evaluation.

DWQ Response to comment 6A:

Utah Code Section 19-5-105 prohibits the Water Quality Board from making rules that are more stringent than the corresponding federal regulations. The methodology for conducting beneficial use assessments isn't a rule promulgated by the Water Quality Board. Similarly, the EPA guidance referenced by the commenter is not codified in federal regulation. As such, the inclusion of consideration of health advisories in the methodology for conducting beneficial use assessments is neither more nor less stringent than the federal Clean Water Act. Rather, health advisories simply provide an additional line of evidence that is independent from cyanotoxin benchmarks.

DWQ strives to consider all readily available and relevant data in the assessment process. Formal waterbody assessments are not limited to numeric criteria as presumed by the commenter. Health advisories provide an opportunity to incorporate local risk assessment expertise into HAB assessments. Recreational use restrictions provide a direct indicator of whether recreational uses are supported in a waterbody. DWQ works collaboratively with local health departments and stakeholders through our Water Quality Health Advisory Panel to ensure that local health departments have the appropriate resources, scientific background, and technical support to make accurate decisions about health advisories. All assessment decisions are subject to a secondary review and public comments. Final assessment decisions consider the weight of evidence of quantitative data, the quality and robustness of available data, waterbody specific information and expertise, and public comment. Assessment decisions based on health advisory information can be modified in secondary review or following public comment if DWQ finds that the underlying data were inaccurate or if the weight of

evidence of other indicators or other waterbody specific information demonstrated that to be appropriate. However, these decisions must be made on a case-by-case basis, carefully considering available information for a specific waterbody. No changes were made in response to this comment.

David Richards, OreoHelix Ecological

Comment 7A: Biological Assessments, Figure 7

[p. 2] Figure 7 on page 45 has been in the UDWQ IR methods for almost a decade. Its caption states that it is a hypothetical example of O/E, but it is delineated into Desert and Mountain ecoregions. This does not support the description of how the RIVPACS O/E model is used by UDWQ that states that the model is based on fifteen predictor variables which produce many more mostly watershed based expected reference taxa sites throughout the state than just two regions, Desert and Mountain. Figure 7 is obviously outdated and its continued use to illustrate the wonders of the RIVPACS O/E model as a sole metric for assessing biocriteria reaffirms my conclusion that UDWQ has put little effort into improving its understanding, assessment, and
management of Utah's rivers and streams using benthic macroinvertebrates. As a result, water quality of Utah's cherished rivers and streams continues to be jeopardized.

…[p. 6] Because this figure continues to be included in IR reports a naïve reader would conclude that UDWQ delineates all of Utah's rivers and streams into only two regions, Desert and Mountain. Again, as I illustrated in Table 2 and discussed E for all mountain streams or all Desert streams would be a constant in this case E = 10 for desert streams, E = 30 for mountain streams. Multiply the denominator in O/E by its constant and all that is left is O, observed number of taxa i.e., Taxa Richness.

DWQ Response to comment 7A:

As stated directly in the caption, Figure 7 is a hypothetical example. The intent is to illustrate that O/E has the same meaning, even though Utah streams vary naturally in local richness. O/E compares the taxa predicted to occur at a stream in the absence of human disturbance against those taxa that were observed at the location. The figure simply indicates that O/E can generate similar scores among streams that naturally differ in biological condition.

E is not a constant and contains site-specific information. The provided table and associated discussion reflects a misunderstanding of how O/E, particularly E, is calculated. RIVPACS model predictions are both site-specific and taxa-specific. Of course one can always multiply a fraction by its numerator to obtain its denominator, but doing so in this case eliminates many of the advantages of using O/E as opposed to using species richness. The calculations used to generate E are what allows these models to parse out natural changes in composition (including richness) from those associated with human-caused stressors.

Briefly, E is calculated by first mathematically identifying groups of reference sites with similar taxonomic composition. For an assessed site, the geospatial predictor variables are used to quantify the probability that an assessed site would fall within <u>each</u> taxonomic group (P_g). The frequency with which each taxon occurs among reference sites within each group is then combined with the assessed site's P_g across all groups to predict the probability of capturing (P_c) each individual taxon observed among all reference sites. E is the sum of those taxa with a 50% or greater chance of being observed at an assessed site based on that site's specific geospatial watershed attributes. Moreover, O is not all taxa observed, but those observed taxa there were expected to be present in the absence of human disturbance (those predicted to occur), which is important because human-stress creates conditions that are advantageous for taxa that never would have otherwise occurred at a site. Richness is unable to make such distinctions.

Details of these calculations are provided in the companion document cited in the methods or the

hundreds of peer reviewed scientific papers that have been published on RIVPACS models, many of which have been provided to the commentator in previous Integrated Report cycles.

Comment 7B: Biological Assessments, reliance on O/E as sole indicator of biological integrity

[p. 2] The continued reliance and use of O/E metric by UDWQ as the sole measure of water quality 'biological integrity' is extremely troubling and reflects a poor understanding of biological integrity and the use of bioassessment methods as practiced throughout the world, including other neighboring states and counties, even Salt Lake County. No other water quality agency that I am familiar with relies on one metric, particularly with one such metric that has so many flaws as O/E. In fact, after the millions of taxpayer dollars spent on its development, it is no more informative than the Taxa Richness (number of taxa) metric that is easily calculated and used as the single most important bioassessment metric throughout the U.S…O/E is just one of many metrics.

[p. 6] …I don't agree that using a single taxon richness-based metric, RIVPACS O/E would constitute a robust index of biological integrity. It is only one metric that does not address anything other than richness and apparently does not do an adequate job of that (Richards 2016). There is also no reason to make a 'robust IBI' easily interpretable. Ecological interactions between dozens of organisms and their responses to human caused impairment are anything but easily interpretable. RIVPACS O/E models themselves are not easily interpretable. The data and algorithms used in these models are extremely difficult to obtain and often not available, thus not transparent. Other metrics used by other agencies, such as taxa richness, functional
feeding group, etc. are very transparent and easily calculable.

[p. 7]…Although O/E may have an intuitive biological meaning as stated by UDWQ, there are so many assumptions, generalizations, and errors associated with derivation of results that its accuracy in assessing loss of taxa and impairment is highly questionable. There are several other diversity metrics in use throughout the world that are much simpler to derive, provide insights into the causes of impairment, and are much easier to interpret than RIVPACS O/E (Table 1 for example and see Literature Cited). These metrics can easily substitute for O/E or at least supplement it.
For example, richness and evenness are better indicators than O/E for several reasons,
1) they are not confounded with other models (e.g., PRISM, a costly and proprietary model that is not transparent except for those who can afford to pay for its use),
2) they are independently verifiable, and
3) they allow assessment of change at local-scale due to point source impacts.

…[from results of study, p. 31]: There were strong effects of evenness and richness metrics on O/E scores, which apparently often affect biological assessments. Taxa richness obviously effects O/E scores because the O/E model is mostly based on this metric. Evenness directly effects taxa richness in a subsample and consequently directly and indirectly effects O/E scores. These effects need to be accounted for by water quality agencies before assigning an assessment score.

DWQ Response to comment 7B:

DWQ and independent experts reviewed this white paper and provided comments back to the commenter, including citations to numerous peer reviewed scientific papers that refute the claims.

As discussed in previous IR cycles (see pp 70-72 in *2016 Integrated Report Response to Public Comments* and pp 200-211 in *Combined 2018 and 2020 Integrated Report*), many of the opinions expressed in these comments (sometimes verbatim) are incorrect or incomplete. There are numerous peer reviewed scientific papers that have evaluated numerous aspects of O/E models, including: the relationship of O/E to richness and evenness, model complexity, their accuracy in identifying biological impairments, sensitivity to human-caused stressors, and many other topics. Many

investigations have shown that O/E models are more accurate and often more sensitive to human caused stress than other biological indicators. As a result, RIVPACS continue to be used by numerous states and other countries around the world. This includes USEPA who uses these models in their national assessment programs. Other scientifically supported biological assessment tools exist, but this does not mean that O/E models are not a scientifically defensible method for identifying biologically degraded streams.

Comment 7C: Biological Assessments, definition of biological integrity

[p. 5] There is an urgent need to understand Clean Water Act biological integrity. Let me present one of the most widely used definitions of biological integrity, as defined by one of the leading experts, James Karr and colleagues.

"Biological integrity refers to the capacity to support and maintain a balanced, integrated, adaptive biological system having the full range of elements (genes, species, assemblages) and processes (mutation, demography, biotic interactions, nutrient and energy dynamics, and metapopulation processes) expected in the natural habitat" … (Angermeier and Karr 1994, Karr and Dudley 1981, Karr et al. 1986).

"Integrity implies an unimpaired condition or the quality or state of being complete or undivided; it implies correspondence with some original condition. Health, on the other hand, implies a flourishing condition, well-being, vitality, or prosperity". "An ecosystem is healthy when it performs all its vital functions normally and properly; a healthy ecosystem is resilient, able to recover from many stresses; a healthy ecosystem requires minimal outside care" (Karr 1996).

I have heard UDWQ staff try to define biological integrity at several meetings, and they consistently offer the "Readers Digest" condensed version of the above definitions in what I can only interpret as an excuse not to fully engage in the complexities of biological integrity and subsequently not fully protecting Utah's water quality.

DWQ Response to comment 7C:

DWQ scientists understand Clean Water Act biological integrity and are familiar with these papers, but the information is appreciated. DWQ lacks sufficient information to respond to the comment regarding presentations at public meetings, but DWQ does sometimes simply present complex topics when presenting to the general public.

Comment 7D: Biological Assessments, O/E Reference Sites

[p. 5] UDWQ also claims that O/E is based on similar reference sites derived from fifteen predictor variables. If this is the case, then the expected number of taxa used in the metric becomes irrelevant…Derivation of expected number of taxa, E is problematic and filled with uncertainty that makes its use highly questionable.

DWQ Response to comment 7D:

Comments related to reference sites and model building were also addressed in previous IR cycles (see pp 70-72 in 2016 Integrated Report Response to Public Comments and pp 200-211 in Combined 2018 and 2020 Integrated Report) along with peer reviewed scientific literature citations in the methods and responses that provides the background on RIVPACS models. In short, the models aren't built with similar reference sites, but with a diversity of sites within the mountain and xeric west to capture natural variability.

Comment 7E: Biological Assessments, loss of predicted taxa

[p. 7] As I have emphasized to UDWQ on numerous occasions, RIVPACS O/E models do not quantify loss of predicted taxa. In the case of UDWQ assessments, O/E quantifies only those taxa that were identified from a single (N = 1) composite sample collected from several types of habitats (including riffles and runs) that can exhibit much variability between the macroinvertebrate assemblages. Samples were also identified in the laboratory using a subsample (typically 600 organisms, with large and rare counts). O/E simply quantifies what was observed in a sample, nothing more. Taxa not identified may have or may not have been lost from the waterbody they just weren't counted because other taxa dominated the sample. UDWQ can only conclude that they simply weren't observed, not lost.

[p. 33]…Many RIVPAC O/E users continue to insist that a reduction in O/E scores reflects the extent to which taxa have become locally extinct due to human activities (UDWQ Integrate Report 2016). This is clearly not the case. The analyses included in this report highlight the fact that subsampling and evenness have significant effects on the number of taxa observed, especially the more uneven a sample and subsample. Taxa weren't lost; they just weren't found. They may not have even decreased in abundance. It is possible that other taxa could have disproportionally increased in abundance for whatever reason and that the 'lost' taxa simply weren't counted. To continue to assume that native taxa have become locally extinct because O/E scores have decreased reflects a gross misinterpretation of RIVPACS O/E models.

DWQ Response to comment 7E:

Many of these comments were also addressed in previous IR cycles (see pp 70-72 in 2016 Integrated Report Response to Public Comments and pp 200-211 in Combined 2018 and 2020 Integrated Report). It is true that O/E does not directly measure the loss of taxa, but it does provide a quantitative site-specific estimate of the relative extent to which species loss has occurred among streams. As previously mentioned, the effect of sample error has been extensively evaluated in peer reviewed primary literature. Sampling error was calculated during model creation and these errors were used to create impairment thresholds. This O/E model has successfully identified biologically degraded streams, which is its primary function in the IR. It has also successfully been able to document improved biological conditions following stream restoration.

Comment 7F: Biological Assessments, probability of capture >50%

[p. 7] Again, as I have discussed on numerous occasions, probability of captures (Pc's) >50% preclude those very macroinvertebrate taxa that constitute biological integrity in a water body (see definitions of biological integrity provided earlier in this response letter). As an example, waters in the Bonneville Basin and in some other parts of UT have unique mollusk assemblages found nowhere else in the world. Most of Utah's mollusks, including native mussels, clams, and non pulmonate snails do not occur in UT waters at Pc rates > 50%. By relying on RIVPACS O/E > 50% Pc, UDWQ failed to protect the unique mollusk assemblages in UT and apparently was unaware of their declines during the time period when continued molluscan viability may have been protected/ensured. This is a tragic and unjustifiable loss of Utah's unique natural heritage. Reliance on a single metric with > 50% Pc to assess biological integrity also likely is not protecting other rare and uncommon macroinvertebrates (< 50% Pc) that are again by definition, biological integrity.

Calculating 'E' using a probability of capture (Pc) of >50% is extremely problematic and results in a poor assessment of biological integrity. Taxa with Pcs < 50% are likely the most sensitive taxa and the very taxa that respond to impairment more that those with Pc > 50%. The statement that "Using a Pc limit set at greater than 50% typically results in models that are more sensitive and precise, which

results in a better ability to detect biological stress" is based on two relatively limited studies that evaluated precision using their own methods, i.e., circular reasoning and these were hardly typical. UDWQ is setting a precedent by using Pc > 50% based on results that are not solidly supported in the literature and not established scientific fact but based on a vague ill-defined term in the two studies, 'sensitivity'.

It appears that UDWQ is more interested in the continued reliance on a single metric (O/E) that had good statistical properties (e.g., more sensitive, and precise) than incorporating other metrics or using a < 50% Pc that may prevent loss of rare, uncommon, and unique taxa and provide greater insights into the types of impairments that Utah waterbodies experience. O/E models may be able to detect large levels of biological stress, but not biological integrity.

…[p. 32] RIVPACS O/E models include a 'probability of capture' (Pc) component. Pc is the probability that a taxon occurs at a reference site and is used in the development of the "E" expected taxa list. To reduce 'noise' in results and to ease interpretation, many users, including UDWQ, use a PC > 50%. That is, the probability of a taxon occurring at a site is estimated to be greater than 50%. The decision to use a Pc > 50% has very strong negative implications for assessing the biological integrity of a river or stream in UT. Many ecologists agree that uncommon and rare taxa should be included in ecological assessments and by including these taxa detection of impacts is improved (Turak and Koop 2003; Nijboer and Schmidt-Kloiber 2004). It is also widely recognized that rare taxa are the first to become extinct due to human disturbance (Leitao 2016).
Uncommon and rare taxa have also been shown to disproportionally contribute to ecosystem function and integrity (Leitao 2016). For example, native bivalves are extremely important for maintaining water quality via their filter feeding activity and of much concern for developing NH3 criteria. However, bivalves do not occur in >50% of Utah's reference sites and unionids are likely on the brink of extinction in UT (Richards 2016b). A PC > 50% may easily overlook many, many, taxa that are unique to Utah's rivers and streams including threatened and endangered species, important ecosystems providers, or simply an unknown number of taxa that occur in < 50% of reference streams. These taxa are the true measure of biological integrity and without which will result in a homogenous, biodiversity - limited condition lacking integrity. These taxa are also the most likely to be most sensitive to impacts because their niche breadth is much narrower that taxa that have Pcs > 50%. There is a well-known saying in ecology; 'rare is common, and common is rare' (Pimm et al. 2014). Modifications to RIVPACS O/E models have allowed researchers and managers in England to monitor rare species and to flag Red Data Book threatened species (http://www.ceh.ac.uk/services/rivpacs-reference-database), however they use much lower Pcs. Utah should consider the same.

DWQ Response to comment 7F:

All of these comments were made, in many cases verbatim, in previous IR cycles (see pp 70-72 in *2016 Integrated Report Response to Public Comments* and pp 200-211 in *Combined 2018 and 2020 Integrated Report*) and DWQ created detailed responses to them. We also sent the comments and responses to other experts in biological assessments to ensure that our responses were valid. They were and remain so. The commenter is encouraged to reread those responses and the peer reviewed scientific literature cited in the responses.

DWQ evaluated a P_c of 0 and 0.5 when Utah's models were initially created. The P_c >0.5 model was more accurate and sensitive. More sensitive models, by definition, are better at identifying biologically impaired sites, which is important because that is the purpose of using the model in the IR. As we previously noted, this is hardly a precedent. There have been a number of studies supporting this.

O/E is not biological integrity but an important aspect of it. Protecting, maintaining and restoring biological integrity is the central goal of the Clean Water Act, but that does not mean that DWQ needs to measure all of the many complex and important aspects of it.

Doing so on a statewide basis is simply not possible. Instead, Utah and all states use indicators of biological integrity to evaluate water quality objectives. All numeric criteria work like this and so does the O/E model. As the commenter correctly notes, completely measuring all aspects of biological integrity is simply too complicated to accurately measure, particularly on a statewide basis.

Comment 7G: Biological Assessments, RIVPACS O/E precision and predictive ability

[p. 8] The new O/E model in the draft is claimed to be a less precise predictive model than the previous used by UDWQ. A loss of precision in the updated model should be critically reevaluated. Was this updated model selected because in saves time and money?

As far as I can tell, O/E does not address intermittent stream benthic invertebrate assemblages. It is well known by all lotic ecologists that intermittent streams behave differently than perennial streams and that the benthic invertebrate assemblages differ dramatically. I have assisted the State of Idaho and the State of Arizona in their development of bioassessments for intermittent streams. It behooves UDWQ to realize that intermittent streams are abundant in Utah and are increasing due to global climate change and that intermittent streams need to have a different bioassessment paradigm and suite of assessment metrics than perennial streams/rivers.

DWQ Response to comment 7G:

These comments were made, in many cases verbatim, in previous IR cycles (see pp 70-72 in *2016 Integrated Report Response to Public Comments* and pp 200-211 in *Combined 2018 and 2020 Integrated Report*) and DWQ created detailed responses to them. As our previous response indicated, the new model was selected because it was more applicable to a more physically and geographically heterogeneous group of streams. In particular, DWQ was interested in incorporating larger rivers. Also, climate change can potentially cause systematic changes in macroinvertebrate composition, even among reference sites, so it is important to update the models periodically to account for these changes.

DWQ has not created assessment methods for intermittent streams and agrees that such methods would be useful. Hopefully resources will be available to expand to intermittent streams in the future.

Comment 7H: Biological Assessments, Figure 8

[p. 9] There is no obvious starting point on the tree. It has two diamonds on the same top level that suggest starting points. However, following the first diamond “Were 3 or more samples collected?” if the answer was yes, leads to a nonsense conclusion, “Beneficial use Not Supported”. UDWQ constantly relies on diagrams to illustrate its methods and rational for decision making and this diagram has been used by UDWQ for several iterations of IRs and IR Methods.

DWQ Response to comment 7H:

DWQ thanks you for your comment. Figure 8 has been adjusted to clarify the starting point of the diagram.

Comment 7I: Biological Assessments, incorporation of 1st and 8th+ order streams

and rivers

[p. 9] All aquatic ecologists know that there is a big difference in macroinvertebrate assemblages in typical 1rst order vs. 2nd to 5th streams and between 8th plus rivers and 2nd to 5th order stream (please review the River Continuum Concept by Vannote et al.).

DWQ Response to comment 7I:

This comment and others relating to stream size was made in previous IR cycles (see pp 70-72 in *2016 Integrated Report Response to Public Comments* and pp 200-211 in *Combined 2018 and 2020 Integrated Report*) and DWQ completed detailed responses to them. As the commenter suggests, all aquatic ecologists know of ecological changes that occur along a river continuum, those at DWQ included. This is one of the main advantages of O/E models over other biological assessment methods such as IBIs. O/E scores scale along a continuum of ecological conditions using a variety of site-specific geospatial stream characteristics, whereas IBIs assume that streams in large, predetermined bins should have similar characteristics. The commenter is encouraged to reread previous responses to comments related to stream heterogeneity in previous IR cycles for additional details.

Comment 7J: Biological Assessments, taxonomic resolution

[p. 9] A coarser taxonomic resolution results in a major loss of valuable information provided by individual taxa when 'rolled up' to higher taxonomic level. It also means that some unique or ecologically valuable taxa may be unaccounted for and lost from the AU without knowledge by UDWQ. For example: combining all species of caddisflies in the genus Rhyacophila at least 5 species or more could be lost without UDWQs knowledge. Or by combining all species of the mayfly genus Baetis, several of the more sensitive species may have been lost. UDWQ is well aware that taxonomic (phylogenetic) similarity has very little predictive power for sensitivity to different types of impairment (Richards 2016, UDWQ 2017).

DWQ Response to comment 7J:

These comments were made, verbatim, in previous IR cycles (see pp 70-72 in 2016 Integrated Report Response to Public Comments and pp 200- 211 in Combined 2018 and 2020 Integrated Report) and DWQ created detailed responses to them. The commenter is encouraged to reread

previous responses for additional details. In short, DWQ requests that all taxa be identified to the lowest possible taxonomic resolution, but this is not always possible. The taxonomic resolution reflects these practical constraints. Despite taxonomic resolution constraints, this model has been able to accurately identify biologically degraded streams throughout Utah, which is its primary function for IR purposes. DNA barcoding and similar techniques are helping address this issue and hopefully DWQ will be able to incorporate these data in future biological assessment tools. Using traditional taxonomy, using a nationally accredited lab and requesting that all individuals be identified to the lowest possible level of taxonomic resolution seems reasonable.

Comment 7K: Biological Assessments, seasonality effects

[p. 10] Seasonality also affects macroinvertebrate assemblages. Summer season has fewer taxa in larval stages that are needed for taxonomic identification and O/E derivation. Comparing summer collected vs. late autumn to early spring samples increases variability and thus precision and accuracy

O/E results (e.g., summer samples likely will have fewer taxa and lower O).

DWQ Response to comment 7K:

DWQ is aware that the composition and abundance of macroinvertebrate assemblages varies seasonally. If the general pattern in this comment was true everywhere, this problem would be easier to address. Utah is a geographically diverse place and the periods of maximum abundance and diversity can vary considerably from region-to-region and year-to-year. This temporal variation undoubtedly contributes to declines in model precision and accuracy. DWQ has tried to account for this variation in the modeling process. Interestingly, all versions prior to the current model included 'Day-of-Year' as a predictor variable, but this variable was not a significant source of variation in compositional differences among reference sites for the current model. The use of PRISM predictor variables likely helps account for some of the systematic difference in temporal variation patterns (see also DWQ response to comment 7L). It is also possible that temporal variation is minimized by other model construction decisions (Pc > 0.5, higher level OTUs). If true, this would explain why these models are more accurate and more sensitive in identifying biologically degraded streams.

Comment 7L: Biological Assessments, reliance on PRISM data

[p. 10] As discussed in earlier comment letters; PRISM models are proprietary black box and as such are not independently verifiable and thus are scientifically invalid. The scientific method requires the possibility of independent validations. PRISM models are not reproducible or transparent, which as we all agree, is what we are striving for.

PRISM models rely on historic data (e.g., most of the climate data metrics in Table 12). As an example, "Watershed maximum of mean 1961-1990 annual number of wet days' was 28-year old past data. Conditions likely have changed substantially in 28 years. Clearly the past has absolutely nothing to do with the macroinvertebrates collected next year. Similarly, the average of multiple years has nothing to do with invertebrate assemblages that are mostly multivoltine or univoltine. Their lives are shaped only by the conditions in the years during which they lived… not over multiyear averages. Variables in Table 12 had nothing to do with environmental conditions during the time when the sampled invertebrates lived. This introduces an unmeasurable and significant error to every Pc calculated and prevents the use of field data,
which would be site specific. It may have been useful in developing regional models… but it has no place in continued assessment/monitoring and should never be used as such. Only field measurements should be used when possible.

PRISM data errors are also spatially derived mostly from misuse of regional models to monitor local scale changes. These models will complicate every O/E assessment conducted anywhere that there are natural gradients, introducing error in every local assessment. PRISM data often are not precise, and values can change substantially between small changes in elevation within a watershed and sometimes within a few hundred meters. In addition, PRISM values are model predicted values and subject to error.

DWQ Response to comment 7L:

These comments were made, verbatim, in previous IR cycles (see pp 70-72 in *2016 Integrated Report Response to Public Comments* and pp 200-211 in *Combined 2018 and 2020 Integrated Report*) and DWQ created detailed responses. The commenter is encouraged to reread previous responses for additional details, because as noted in previous responses many of these assertions are incorrect or reflect a misunderstanding of how O/E models are constructed.

PRISM data are not proprietary and are freely available. They have been independently

tested and validated. They are used by a very large community of scientists across a wide range of disciplines and are continually updated and corrected. O/E models perform best when the predictor variables describe longer-term, generalized conditions. The predictors are site-specific, but ultimately we are trying to distinguish between different types (i.e, low elevations vs high elevation, mesic vs. xeric, high- vs low-gradient). Prism data provide excellent reach scale information that strongly correlates with the spatial heterogeneity of stream conditions.

For any given stream, the past is the best predictor of what should be there; long-term data show that community composition is stable. In fact, if bioassessment programs had historical data for all streams, predictive models would be unnecessary. Climate change is causing systematic changes in the composition of macroinvertebrate assemblages, which is one reason DWQ periodically updates the models with new reference site data. DWQ is initiating a new round of reference site collections in 2023.

Comment 7M: Biological Assessments, Implications of evenness on O/E Scores and UDWQ Bioassessments

[from study, p. 32] UDWQ uses a mean O/E score of > 0.76 as 'fully supporting' and in general, a score of < 0.69 as 'not supporting' (UDWQ Integrated Report 2016). If the SEM standardized loadings (coefficients) for the total effects of evenness on O/E scores in Table 9 are reasonable, then that would suggest that a 0.07 decrease in O/E score from 0.76 (fully supporting) to 0.69 (not supporting) would only require a decrease in evenness of about 0.044 (0.037 to 0.053). As discussed in footnote 2, page …, taxa abundances in macroinvertebrate samples are rarely if ever even, and this relatively small change in evenness could easily trigger an assessment from 'fully supporting' to 'not supporting'.

DWQ Response to comment 7M:

Thresholds are derived based on an understanding of model error (which is based on actual field measures) and the specific values represent an attempt to balance type I (false positive) and type II (false negative) errors. This is a common dilemma for any regulatory agency in general and perhaps more so with those using biological data. DWQ has stated in the chapter the cost-benefit of ensuring that type I and II errors are appropriately balanced and are not arbitrarily set. DWQ has been using O/E models for over a decade and they have proven to provide robust assessments of biological use support. Follow-up investigations at impaired sites have almost always revealed one or more human stressors and the index has also been responsive to improving conditions following stream restoration.

UTAH DEPARTMENT of ENVIRONMENTAL QUALITY
WATER QUALITY

Response to Comments: Draft Report

The following are public comments received during the 2024 Draft Integrated Report Public Comment period. Public comments that were submitted in PDF format as letters were distilled for individual Division of Water Quality (DWQ) responses. Please refer to the hard copy comment letters on the Integrated Report Webpage for the complete comment.

Rob Dubuc - Friends of Great Salt Lake

Public Comment 1: Gilbert Bay Assessment

Thank you for the opportunity to submit comments regarding the draft 2024 Integrated Report (2024 IR). FRIENDS of Great Salt Lake (FRIENDS) appreciates the work that the Utah Division of Water Quality (Division or DWQ) has done and continues to do to better understand and protect the water quality of the state, including Great Salt Lake. Although we acknowledge the tremendous amount of work that has gone into the Integrated Report, FRIENDS disagrees with the Division's decision to designate Gilbert Bay as a Category 2 waterbody. 2024 IR, at 94. While Gilbert Bay was also listed as Category 2 in the 2022 IR, in the two-year period in between the two IRs there was clear evidence that the beneficial uses of Gilbert Bay were either threatened or impaired due to high salinity levels. FRIENDS understands and agrees that there is no easy solution to the problem of high salinity beyond getting more water to the Lake, that the Lake is an outlier when it comes to implementing many of the Clean Water Act provisions, and that undertaking a TMDL for the Lake would be inappropriate. However, the 2024 Integrated Report should reflect the reality of what has occurred with the Lake over the last two years and should acknowledge that the Lake's ecosystem came perilously close to collapse due to high salinity levels. To do otherwise presents a skewed historical record of Lake conditions. Based on that historical record, the Division should have categorized Gilbert Bay as a Category 5 "threatened" waterbody in the State's 2024 303(d) list. At a minimum, however, having admitted that the Division does not have "clearly defined and repeatable assessment methods for assessing whether Great Salt Lake's Bays' (sic) including Gilbert Bay are meeting their beneficial uses," it was clear error for the Division to classify Gilbert Bay as Category 2, while classifying the other bays as Category 3. 2024 IR, at 145.

DWQ Response to Comment 1:

While DWQ recognizes the concerns of FRIENDS as to assigning the appropriate assessment category to Gilbert Bay, DWQ maintains this is the appropriate assessment category based on established methods (See Table 1. in the 2024 303(d) Assessment Methods). Category 2 waters are those in which "some but not all beneficial uses assigned to a waterbody are evaluated against one or more numeric criteria, and each assessed use is found to meet applicable water quality standards." In the case of Gilbert Bay, there is only one criterion developed to assess aquatic life support, selenium in shorebird egg tissue. Since there are no other criteria for aquatic life or other uses currently developed, this is the only applicable criterion to base an assessment, which in this case is supporting the use of aquatic life. Thus, the assigned category 2 is accurately assigned. While we understand that there are other potential contaminants or stressors that are potentially threatening aquatic life support in Gilbert Bay, until defined criteria and/or assessment methods are developed, we are unable to make that assessment in the 2024 IR. As we provided in our response to prior comments by FRIENDS made during the 2024 Assessment Methods, DWQ is conducting an evaluation of the current status and trends of water levels, salinity, habitat availability, and aquatic biota in Gilbert Bay and will develop appropriate assessment methods for salinity as part of the 2026 Integrated Report.

Mark Allen

Public Comment 2: Metals in Upper American Fork Canyon

The dataset on water quality is missing the EPA data in Upper American Fork Canyon and sends the message there are no hazards. This is false. Lead, Arsenic, Cadmium have a history of contamination in the water and sediment microloading that's accumulating at Tibble Fork area where tens of thousands recreate. This sediment can become airborne and end up inhaled as dust. We need eyes on this - rather

than pretend the canyon doesn't have legacy problems.
The best data from the EPA dual assessments is missing from the mapping, why so? It gives a false sense of water purity imho. I'd suggest research some of the data points below, contact the EPA and include that in your analysis of hazards. Reclassify water in AF so it's not transitory. Do heavy metal testing at any spigot for public drinking.
Please add in the EPA data as this study is biased out of the chute and should be comprehensive

DWQ response to Comment 2:

DWQ appreciates the detailed concerns regarding potential hazards and historical metal contamination issues in Upper American Fork Canyon. DWQ thoroughly reviewed the documents provided. The data that the commenter is referencing is from EPAs Water Quality Portal and is DWQ's data that was uploaded to EPA's database. From the reports the commenter submitted, the only samples that had metal concentrations above thresholds were from sediment samples. It is important to clarify that for metals, DWQ's water quality standards and assessment procedures assess only dissolved metal concentrations in water not metals in sediment. Based on the assessments of the American Fork Canyon Assessment Units, DWQ has not identified any new impairments related to dissolved metals in water within the period of record from October 1, 2016 to September 30, 2022.

Chad Burrell - Snyderville Basin Water Reclamation District

Public Comment 3A: Assessment Data Access

All data files used to support the integrated assessment should be provided as part of the public comment review process. Such files were made available during previous Integrated Report cycles including in 2022. It is difficult for the public, including the District, to provide meaningful comment on new listings without the ability to review the data and analyses supporting assessment decisions. The District requests that DWQ make all data files associated with the 2024 Draft Integrated Report publicly available and extend the public comment period by 60 days to provide sufficient time for a meaningful review.

DWQ Response to Comment 3A:

Although not a state or federal requirement, DWQ was remiss in providing the data files as part of the Draft 2024 Integrated Report Public Comment Period. As a result of this comment, DWQ has made the data and analysis supporting assessment decisions, available to the commenter and the public on the Integrated Report website. The data include detailed accounts of specific criteria used in assessments for each monitoring site that were assessed.
Based on the overall concerns expressed in Snyderville Basin Water Reclamation's public comment letter regarding the Dissolved Oxygen Categorization of East Canyon Creek 2-1 Assessment Unit, the East Canyon Creek-2-1 Assessment Unit will not be Placed in Category 5: Not Supporting and instead, be placed in Category 4A: TMDL Approved. DWQ greatly appreciates public comments that improve the results and thank Snyderville Basin Water Reclamation for pointing out that a TMDL is in place that addresses Dissolved Oxygen for the East Canyon Creek-2 Assessment Unit. Since this addresses Snyderville Basin Water Reclamation's concerns, an extension of the public comment period is not needed.

Public Comment 3B: Category 4C Impairments

The District requests that DWQ assign an assessment Category of 4C (non-pollutant impairment) to East Canyon Creek – 2-1 AU for the new temperature and dissolved oxygen listings rather than Category 5. DWQ provides the following definition of Category 4C Non-Pollutant Impairment: Waterbodies not supporting designated uses are placed in this category if the impairment is not caused by a pollutant but

rather by pollution (for example, hydrologic modification or habitat degradation). Similar to Categories 4A and 4B, if the waterbody has other pollutants that need a TMDL, or there is an approved TMDL or pollution-control mechanism in place, the waterbody may also be listed in Categories 4A, 4B, and 5. Therefore, an AU with a pollution control in place may be listed in Categories 4C, 4B, 4A, and 5.
A TMDL for this assessment unit was completed and approved by the Utah Water Quality Board on September 14, 2010 (see Utah Administrative Code R317-1-7-7.6). The TMDL identified factors other than pollutants as the cause for dissolved oxygen and temperature exceedances in East Canyon Creek. Specifically, the TMDL identifies hydrologic modification (low flow), habitat degradation, lack of shade, and stream geomorphology as the causes of the exceedances. EPA's letter in response to the submitted TMDL dated September 14, 2010 indicates agreement that factors other than pollutants are the cause of the dissolved oxygen impairment in East Canyon Creek – 2. Specifically, the letter states the following: "UDEQ presented the results of recent studies of the creek which demonstrate that phosphorus is not the controlling nutrient for productivity and oxygen cycling in the creek; rather, primary productivity and oxygen demand are linked to sediment loads, increased water temperature and excess solar radiation. Through detailed physical habitat analyses and modeling, UDEQ demonstrated that reductions in primary productivity (through increased riparian shading and reduced stream width) and increased flow during the critical season were expected to achieve the DO targets for the creek." Further, a watershed implementation plan was developed for East Canyon Creek-2 (see Chapter 8 of the East Canyon Creek and Reservoir TMDL) designed to address the non-pollutant factors causing the impairment. Implementation efforts associated with this plan began shortly after the TMDL was approved by the Water Quality Board in 2010 and continue to be actively implemented by partners in the East Canyon Creek watershed.

DWQ Response to Comment 3B:

Instead of Category 5 (Not supporting), DWQ will assign the East Canyon Creek-2-1 Assessment Unit as Category 4A (Approved TMDL in place) based on the EPA approved 2000 East Canyon Creek TMDL for Dissolved Oxygen (EPA Action ID: 399, 09/01/2000) but not the 2010 East Canyon Reservoir and East Canyon Creek TMDL that was not acted upon by EPA. DWQ is not using Category 4C (non pollutant impairment) until assessment methods for this category have been established. DWQ is currently engaged in developing appropriate assessment methodology for Category 4C to identify, quantify, and evaluate the impacts of hydrologic modifications on beneficial use attainment in Utah. DWQ is co-leading a Functional Flow Analysis with Utah State University researchers and the Division of Wildlife Resources as part of the Great Salt Lake Basin Integrated Plan effort. The results of the functional flow analysis will help quantify elements of the hydrograph that are most important to attain water quality standards for flow-related parameters and maintain support of aquatic life uses. This work will also generate functional flow metrics that describe unaltered flow conditions, which will allow DWQ to quantify the extent of hydrological modification that has occurred for ecologically important functional flow metrics. Initially these data will be available for all streams within the Great Salt Lake basin, but the work will ultimately be expanded statewide. As functional flows are completed for the region, assessment methodologies for Category 4C will be crafted for future Integrated Reports to allow for a Category 4C determination for hydrologic modification. The commenter's suggestions have been provided to that workgroup.

Public Comment 3C:East Canyon Creek-2 AU Split

The reasoning behind the split in the East Canyon Creek – 2 Assessment Unit in the 2022 IR, to East Canyon Creek – 2-1 and East Canyon Creek – 2-2 in the 2024 IR is unclear. The rationale and supporting evidence for this split in the Assessment Unit should be provided in the Final 2024 Integrated Report.

DWQ Response to Comment 3C:

DWQ appreciates your comment requesting the reasoning behind the split of East Canyon Creek-2 Assessment Unit (AU) into East Canyon Creek-2-1 and East Canyon Creek-2-2. The AU was split because the original Total Dissolved Solids (TDS) impairment was localized to the area in what is now

East Canyon Creek-2-2, specifically a site above the confluence with Kimball Creek. The data suggested the site above the confluence with Kimball Creek that triggered the TDS impairment was not representative of the original East Canyon Creek-2 AU conditions since the rest of the sites in the AU were fully supporting TDS standards.

Public Comment 3D: Total Dissolved Gasses

In UAC R317-2-14 table 2.14.2 table note 1, it states that Total Dissolved Gasses are “not to exceed 110% of saturation”. It is unclear if DWQ assesses Dissolved Oxygen measurements against this 110% Saturation standard as listed in the UAC R 317-2-14. DWQ should assess all relevant standards for aquatic life uses. The additional assessment decisions should be made available for public comment prior to being finalized.

DWQ Response to Comment 3D:

DWQ does not use dissolved oxygen measurements to assess the total dissolved gasses saturation criterion; nor is there a numeric saturation criterion for dissolved oxygen. Total dissolved gas saturation cannot be accurately measured by dissolved oxygen measurements alone. It must be measured as the total pressure of all gasses dissolved in water. DWQ does not routinely measure total dissolved gasses. The total dissolved gasses saturation criterion would be considered for assessment in waterbodies where fish mortality due to gas bubble disease has been observed. Fish kills are assessed under DWQ’s narrative assessment process in the IR and these decisions are made available for public comment during the Integrated Report Process

Public Comment 3E: Early Life Stages Methodology

The Draft 2024 Integrated Report states the following on page 34 “DWQ will assess against early life stage (ELS) criteria where ELS presence has been confirmed in a specific waterbody”. However, no methodology for such a determination is provided. DWQ should provide a methodology for confirming the presence of ELS as defined in the EPA Federal Register Federal Register 64(245) and the UAC R 317-2. Additionally, if DWQ is applying a definition other than that referenced above, the reasoning behind the difference should be provided.

DWQ Response to Comment 3E:

The determination to apply the ELS criterion for the purposes of the IR is based on whether the ELS absent criterion was evaluated (R317-2-14) through the individual permitting process, and if sufficient fish survey data are available. DWQ applies the ELS period as defined in Federal Reg. Doc No: 99-33152, pgs. 71974-71980 and in UAC R317-2-14.

Public Comment 3F: ELS Assessment Data

It is unclear which Early Life Stage assumption is being applied when assessing dissolved oxygen standards. The Draft 2024 Integrated Report states (page 34) that “DWQ will assess against early life stage (ELS) criteria where ELS presence has been confirmed in a specific waterbody”. However, without the ability to review the data and analyses supporting new dissolved oxygen listings, it is unclear whether this assumption has been properly applied. DWQ should provide all data and analyses supporting new assessment decisions as part of an extended public review.

DWQ Response to Comment 3F:

DWQ acknowledges the concerns raised regarding the clarity of the Early Life Stages assumptions being applied when assessing dissolved oxygen standards. In response to this comment, DWQ has made all

data and analysis supporting these assessment decisions available to the public on the Integrated Report website. The data provided includes detailed accounts of specific criteria used in assessments for each monitoring site that were assessed.

Public Comment 3G: East Canyon Creek-2-1 DO Impairment

The reasoning behind the new listing of East Canyon Creek – 2-1 for Minimum Dissolved Oxygen (DO) is unclear. In reviewing the 2022 IR High Frequency DO Data for Assessment ID UT16020102-026_01, the "parameter qualifier" listed for all MLIDs in the AU is "other life stages present". In the 2022 IR, the East Canyon Creek – 2 Assessment Unit was not listed for minimum DO. Based on the 2022 High Frequency DO Data, DO values in East Canyon Creek – 2 AU range from 4.1 mg/L to 12.07 mg/L. It appears that DWQ may have changed the assumption around ELS presence in East Canyon Creek – 2 AU from not present in 2022, to present in the 2024 IR assessment. If this is true, this new assumption should be clarified and explained. Further, all data and information related to an ELS presence determination as well as data supporting the dissolved oxygen assessment decision should be provided for public review as part of an extended public comment process.

DWQ Response to Comment 3G:

DWQ has identified that applying the early life stages present criterion within East Canyon Creek-2-1 AU is appropriate (see DWQ's response to Comment 3E). In response to comments, DWQ has provided all of the assessment data to the commenter and available to the public on the Integrated Report Website.

Public Comment 3H: Early Life Stages

Based on the DWQ Response to EPAs comment 4A in Appendix 6, it is still unclear how DWQ communicates to the public which Utah water bodies have demonstrated confirmed presence of early life stages. The DWQ comment response only mentions UPDES permits. The DWQ comment response suggests that ELS presence is only evaluated for waterbodies that have UPDES discharges into them. DWQ should provide clarity around the method for communicating ELS presence to the public in waterbodies across the state, and a basis for limiting the method to wasteload analyses in certain permits.

DWQ Response to Comment 3H:

DWQ doesn't generally express ELS presence/absence determinations to the public but communicates it as part of the UPDES permitting process in the Statement of Basis which is publicly available on our website. DWQ has conducted this evaluation across several other waterbodies including Beaver Creek and segments of the Weber River. The determination to apply the ELS criterion for the purposes of the IR is based on whether the ELS absent criterion was evaluated (R317-2-14) and if sufficient fish survey data are available.

Public Comment 3I: Elevation and Temperature in DO Assessments

It is unclear whether and how elevation and temperature are used in assessing dissolved oxygen standards in the Draft 2024 Integrated Report. In cases where a dissolved oxygen criterion exceeds 100% saturation because of elevation and temperature, an alternative standard equivalent to 90% saturation should be calculated and assessed. These methods are outlined in the 1986 EPA Dissolved Oxygen criteria document. These methods should be consistent with the application of standards in other Clean Water Act programs including the TMDL and UPDES programs. DWQ should clarify how elevation and temperature are incorporated in assessment analyses in the Final 2024 Integrated Report.

DWQ Response to Comment 3I:

The dissolved oxygen assessment methods do not incorporate elevation or temperature because Utah's dissolved oxygen standards do not include options to adjust criteria for these factors. The commenter's recommendations regarding the application of dissolved oxygen criteria in DWQ's TMDL and UPDES programs have been provided to those programs' managers. In addition, we will send this request to DWQ's WQ standards coordinator to consider as part of a future Triennial Review.

Sarah Wheeler - Environmental Protection Agency (EPA) Region 8

Public Comment 4A: Total AU Counts

The total number of assessment units (AUs) reported, AUs requiring TMDL, lake AUs and lake AUs in category 5 are off by one AU when comparing the AUs reported in ATTAINs to the written IR.

DWQ Response to Comment 4A:

DWQ is aware of this discrepancy, DWQ has reviewed the issue and concluded that it is due to one AU not showing up in ATTAINS. DWQ worked with EPA and ATTAINS staff to resolve the issue.

Public Comment 4B: River, Stream and Canal AU Counts

The total number of river, stream and canal AUs with insufficient data is off by 10 in ATTAINs compared to the written report.

DWQ Response to Comment 4B:

DWQ thanks you for pointing out this typo. DWQ has corrected the typo in the paragraph to be consistent with the chart and ATTAINS count.

Public Comment 4C: Discrepancy from ATTAINS Report Counts

The number of river, stream and canal AUs by parameter category is different in the written IR compared to the ATTAINs numbers.

DWQ Response to Comment 4C:

DWQ thanks you for your comment concerning the difference between the counts of river, stream, and canal AUs by parameter category reported in the 2024 IR document compared to the ATTAINs counts. DWQ has identified the source of the discrepancy and has determined that the ATTAINS report is aggregating assessments at the AU-Parameter level. Conversely, DWQs approach in the report is based on the AU-Parameter-Use level. This means some AU-Parameters may be counted multiple times if multiple uses are impaired. In light of this, DWQ commits to incorporating a detailed explanation within the captions of relevant charts to clarify this distinction.

Public Comment 4D: Total Number of AUs

The total number of AUs delisted is off by 3 AUs in ATTAINs compared to the written report.

DWQ Response to Comment 4D:

DWQ is aware of this difference and found that it is due to three AUs (Scofield Reservoir - pH, North Fork Virgin River-1 - E. Coli, Huntington Creek-2 - TDS) that were Category 1 (Full Support) last cycle but were listed as Category 5 (Not supporting) this cycle. These AU-Parameters had existing TMDLs so they were categorized as Category 1 last cycle and Category 4A (Approved TMDL) this one. The ATTAINS delistings report includes any AU-Parameters categorized as 4A. However, since these AU-Parameters were previously counted as delistings when the TMDLs were first established, DWQ did not include these 3 AU-Parameters in the delistings tables or counts. To continue improving transparency, DWQ will note this decision in the footnotes of the delisting tables.

Public Comment 4E: Cycle Last Assessed

Only one assessment unit indicates it was assessed in 2024 under 'cycle last assessed'. A majority include the year '2022'. Is this accurate or were more assessments updated in 2024?

DWQ Response to Comment 4E:

DWQ appreciates this comment identifying the error in ATTAINS regarding the cycle last assessed. DWQ has investigated the matter and identified the source of the issue. DWQ has worked to rectify the issue and corrected "cycle last assessed" values for each affected AU in ATTAINS.

Public Comment 4F: Grade C Data

Utah's IR notes that data/measurements that receive a C grade are insufficient quality for assessment and 303(d) listing purposes. Please indicate what data/information were excluded based on a C grade.

DWQ Response to Comment 4F:

DWQ acknowledges the request for clarification regarding data or measurements excluded due to receiving a C grade. DWQ has documented all instances of data exclusion in the relevant data files accessible on the Integrated Report website. Within these files, stakeholders can refer to a specific column labeled "reason," which describes the rationale behind each decision to reject certain data.

Public Comment 4G: Public Notice Wording

The IR states that the public notice period is to be no later than February 1st of even years. The public notice for the 2024 Draft Integrated Report began February 15th. Can this language be modified to include more flexibility if February 1st isn't feasible?

DWQ Response to Comment 4G:

DWQ values EPA's attention to the specified timing of the public notice period for the Integrated Report (IR) as outlined in our documentation. We acknowledge the discrepancy noted between our stated guideline for initiating the public notice period by February 1st of even years and the actual commencement on February 15th for the 2024 Draft IR. This comment is out of scope for the Draft 2024 Integrated Report Public Comment Period. However, DWQ will consider revising this language when updating the 2026 Integrated Report Assessment Methods.

Public Comment 4H: Delisting Sample Sizes

EPA recommends that all delisting comments include sample sizes so that it's clear that sufficient data exists to make the delisting conclusion.

DWQ Response to Comment 4H:

DWQ values EPA's recommendation regarding the inclusion of sample sizes to ensure clarity and confidence in our delisting conclusions. In response, we have reviewed our delisting decisions and have updated them to include sample counts wherever applicable.

Public Comment 4I: Summary of Changes to IR

In future IRs, to facilitate EPA's review of the IR and better convey what changes have occurred since the last IR cycle changes (i.e., newly listed waters; new parameter listings; delistings, changes to assessment methods; new sections), EPA recommends DWQ either modify the Executive Summary to provide these highlights or add a new section to address IR changes/updates.

DWQ Response to Comment 4I:

DWQ appreciates the opportunity to improve the Integrated Report process. To address changes in methodologies since the last IR cycle, DWQ actively uses the Draft IR Methods Public Comment period to document and highlight method updates. We understand EPA's interest in having a clear overview of changes such as newly listed waters, parameter listings, and delistings. However, we are also mindful of the report's length and the potential for additional sections to increase complexity, making the document more cumbersome for stakeholders to navigate. DWQ suggests leveraging the ATTAINS Cycle Comparison report as an efficient alternative. This resource, available on ATTAINS, features an interactive interface designed to facilitate easy comparison of changes between IR cycles. It allows users to efficiently search and review updates without sifting through the extensive documentation of the full IR.

Public Comment 4J: Page Number Issue

Page numbering skips from 22 back to page 13. TMDL Comments

DWQ Response to Comment 4J:

DWQ appreciates EPA for pointing out this issue. DWQ has corrected the page numbers issue.

Public Comment 4K: Priority Update – Vision 2.0

In associated parameter information, each AU parameter is assigned a priority. Have these been updated or is DWQ waiting until Vision 2.0 waterbody/pollutant combination priorities are set in September 2024 to change the priority?
o Example, page 103 –Big Cottonwood Creek-1, 303(d) priority remains high for E. coli even though TMDL was approved (4A) – Same with Emigration Creek Lower, etc.

DWQ Response to Comment 4K:

Thank you for your comment. For those AU parameters that EPA referenced, DWQ updated them to low priority since TMDLs have already been established. However a comprehensive update of all TMDL priorities is still pending. DWQ will update TMDL priorities in September 2024 as part of Utah's Prioritization 2.0 and will incorporate that into the 2026 Integrated Report.

Public Comment 4L: Changing Wording

Replace the word 'requires' with 'expects' when referencing vision priorities (pg. 21 – second paragraph, first sentence). This is not a requirement, just an expectation.

DWQ Response to Comment 4L:

DWQ values EPA's attention to the section referencing vision priorities. DWQ will change "requires" with "expects" in the Executive Summary in response to this comment.

Public Comment 4M: ATTAINS GIS Layer

Pending GIS review/corrections:
The GIS portion of two AU's is missing in the ATTAINS GIS report (Blackridge Reservoir and East Canyon Creek-2-2).

DWQ Response to Comment 4M:

DWQ reviewed the GIS files that were uploaded into ATTAINS and verified that both Blackridge Reservoir and East Canyon Creek-2-2 were included in the GIS uploads. Subsequent discussions with the ATTAINS support team have elucidated that updates to the GIS files within the system are processed manually. Given this information, DWQ intends to patiently await the completion of these updates. Following this, DWQ will undertake a verification process to ensure that the inclusion of Blackridge Reservoir and East Canyon Creek-2-2 in the ATTAINS GIS report has been accurately reflected, thereby addressing the concerns raised.

Public Comment 4N: Tribal Jurisdiction Disclaimer

Most of the waterbodies that are within tribal boundaries, have a disclaimer that describes the waterbody and then includes "within Utah jurisdiction, excluding tribal jurisdictions." However, there are a few AUs that EPA believes are within tribal boundaries that are lacking the disclaimer (examples – UT14060003-020_00/Rock Creek Upper and UT14060003-021_00/Moon Lake tributaries). Can this disclaimer be added?

DWQ Response to Comment 4N:

DWQ values your input on ensuring clarity regarding the jurisdictional scope of our Assessment Units. We have reviewed the AUs that overlap with tribal lands and have added the disclaimer to those AUs that did not already have the disclaimer. These changes have been uploaded to ATTAINS.

Earth Law Center

Public Comment 5A: Category 4C Impairments

Earth Law Center is a nonprofit organization that advances the rights of waterways and other ecological systems. We have advocated for complete and accurate 303(d) lists and 305(b) reports for over ten years, particularly in Western states. We urge the Utah Division of Water Quality (DWQ) to consider all readily available data and information, including flow data, and list waterways as "impaired" due to hydromodification where supported by such data and information. For the 2024 Integrated Report, such Category 4C waters should include, at minimum, the East Fork of the Virgin River, the Lower Sevier River, and the Bear River. We also request that DWQ includes two assessment units (Otter Creek2 and Chalk Creek3-Coalville) that were placed in category 4C for habitat alteration in 1998 and subsequently included in the final 2022 Integrated Report under Category 4C unless it is shown that these waterways are no longer as impaired due to habitat alteration and/or other forms of hydromodification.
Utah has the data and methodologies necessary to list certain waterways as impaired due to hydromodification, including flow alteration. As described in your Draft 2022 303(d) Assessment Methods as well as the 2022 Draft Integrated Report, Utah's Standard Operating Procedures (SOPs) includes "Stream Flow Measurement,"6 which provides standardized data that can support a flow impairment

determination. Additionally, “flow” is listed as one of the priority parameters in Appendix 1 of the 2022 Draft Integrated Report and is “routinely measured for assessment purposes” (p. 132). As you know, Earth Law Center submitted comments highlighting the imperative to list Category 4C waters when readily available information strongly indicates the non-attainment of water quality standards due to hydrological modification based on the weight of evidence.

DWQ Response to Comment 5A:

As described in the assessment methods (page 12, Table 1 and page 74, Category 4C), DWQ may place a waterbody or parameter-specific impairment in category 4C when DWQ can demonstrate that a beneficial use impairment is driven by pollution and not by a pollutant or pollutant that causes pollution; including use impairments driven by hydrologic modification.
Based in part on similar comments received for previous Integrated Reports, DWQ is currently engaged in developing appropriate assessment methodology for Category 4C to identify, quantify, and evaluate the impacts of hydrologic modifications on beneficial use attainment in Utah. DWQ is co-leading a Functional Flow Analysis with Utah State University researchers and the Division of Wildlife Resources as part of the Great Salt Lake Basin Integrated Plan effort. The results of the functional flow analysis will help DWQ quantify elements of the hydrograph that are most important to attain water quality standards for flow-related parameters and maintain support of aquatic life uses. This work will also generate functional flow metrics that describe unaltered flow conditions, which will allow DWQ to quantify the extent of hydrological modification that has occurred for ecologically important functional flow metrics. Initially these data will be available for all streams within the Great Salt Lake basin, but the work will ultimately be expanded statewide. As functional flows are completed for the region, assessment methodologies for Category 4C will be crafted for future Integrated Reports to allow for a Category 4C determination for hydrologic modification. The commenter’s suggestions have been provided to that workgroup.
As the commenter points out, “Although hydrological impairments do not trigger TMDLs, as explained by U.S. EPA, “States can employ a variety of watershed restoration tools and approaches to address the source(s) of the impairment” for Category 4C listings”. DWQ is currently identifying waterbodies for water quality restoration and protection planning over the next ten years as part of our Prioritization 2.0 effort. The commenters list of hydrologically modified waterbodies will be incorporated into the initial list of waterbodies for Prioritization 2.0.

Utah Division of Water Quality

Comment 6A: Selenium Concentrations

The Utah Public Health Laboratory notified DWQ that the analytical methods (3114C) used to test for Selenium concentrations may be underestimating Selenium concentrations. In response to this information, DWQ analyzed the nine delisting candidates for Selenium. DWQ found that five of the delistings had samples that used the method 3114C. Given that the samples using that method may be underestimated, DWQ will not delist those AUs until the lab can conclude the extent of the issue and correct the values. DWQ will be documenting and noting these changes in the delisting tables.