

Chapter 2.4. Bear River Watershed Management Unit

2.4.1 Introduction

The Bear River Basin is part of the Great Basin Hydrologic region, and is comprised of the U.S.G.S. Hydrological Units (HUCs) listed in Table 2.4.1. The Bear River is the principal stream within this drainage area. It flows north out of Utah into Wyoming, then back into Utah, returns to Wyoming, then crosses into Idaho, then flows southwest into Utah and empties into the Great Salt Lake. The Bear River is the longest river (approximately 500 miles long) in the United States whose waters do not eventually empty into an ocean. Originally the Bear River did not flow into Bear Lake, but since the early 1900's, it has been diverted into Bear Lake at Stewart Dam. Water flows from Bear Lake into the Bear River via a canal. Other streams of interest include the Logan, Blacksmith Fork, Cub River and the Little Bear Rivers.

Hydrological Unit Code	Hydrological Unit Name
16010101	Upper Bear
16010102	Central Bear
16010201	Bear Lake
16010202	Middle Bear
16010203	Little Bear - Logan
16010204	Lower Bear - Malad

2.4.2 Water Quality Assessment Results

Water chemistry and field data collected from January 1, 2002 through December 31, 2006 were used to make assessments. Benthic macroinvertebrate data were collected at several monitoring sites (Chapter 2.15) were used to assess aquatic life beneficial uses under the State's narrative standard. Water quality data were compared against standards established for each of the designated beneficial uses that can be assigned to rivers and streams within the state to determine beneficial use support. The designated beneficial use classes assigned to rivers and streams in the Bear River Watershed Management Unit are mapped in Figure 2.4.2.

2.4.1.1 Overall Beneficial Use Support --An assessment of beneficial use support was made for 1098.2 miles. Based upon at least one beneficial use being assessed, 759.5 miles (69.2%) were assessed as fully supporting and 338.7 miles (30.5%) as not supporting (Figure 2.4.1).

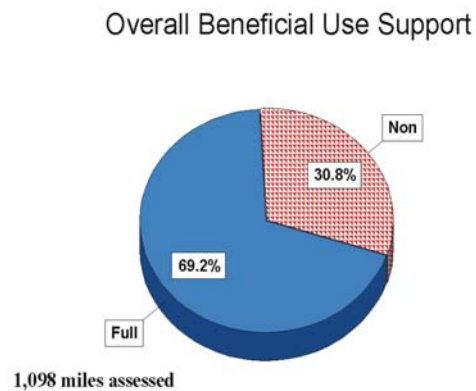


Figure 2.4.1. Overall Beneficial Use Support

Bear River Management Unit

Beneficial Use Classification and Monitoring Sites

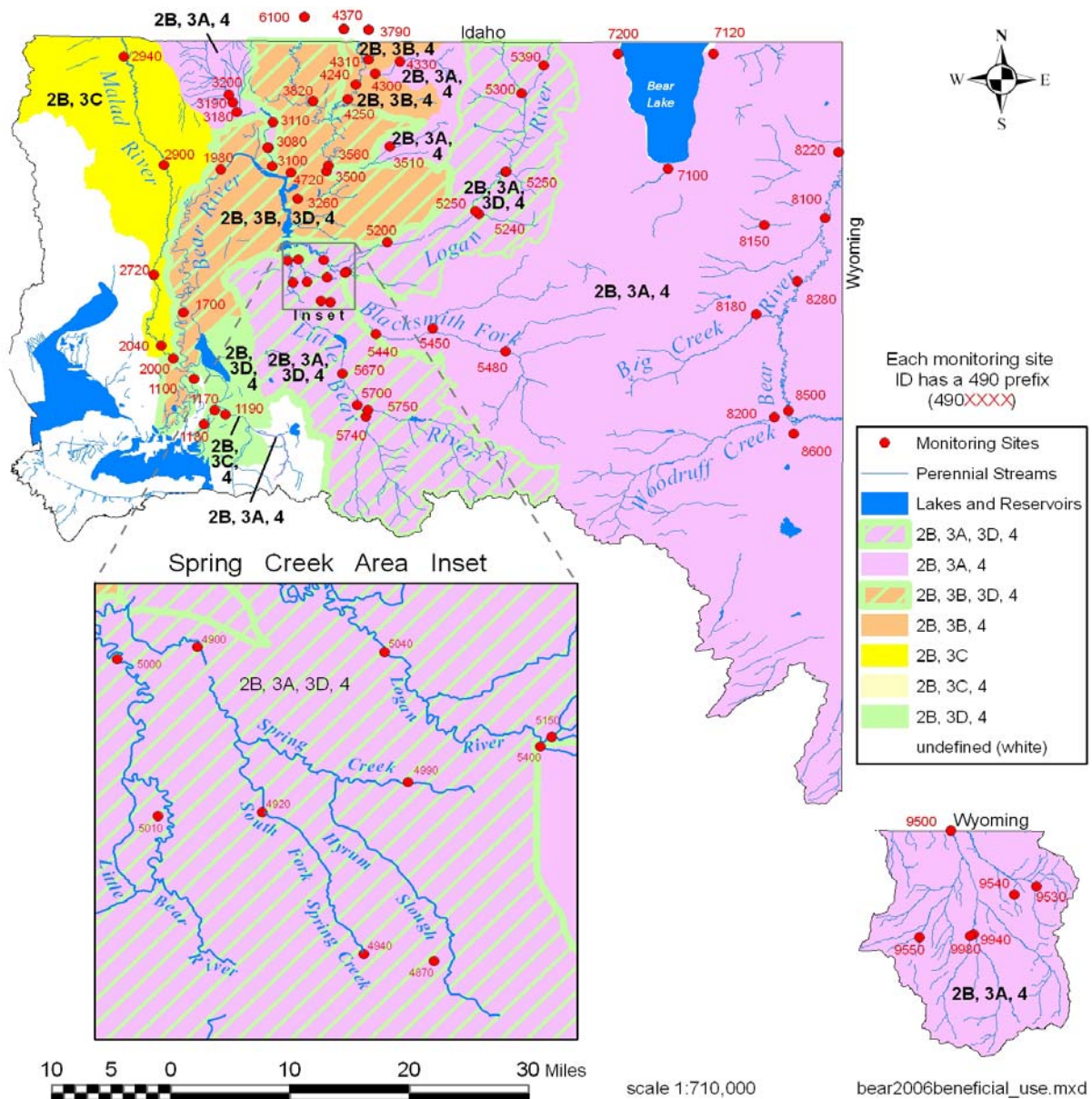


Figure 2.4. 2. River and stream beneficial use classes – Bear River Watershed Management Unit.

2.4.1.2 Assessment by Categories – Table 2.4.2 is a list of streams miles assigned to the various beneficial use categories during the assessment. Figure 2.4.3 is a map of the stream miles that were assessed during this cycle.

Category	Category Definition	Stream Miles
1	All beneficial uses fully supported.	0.0
2	Beneficial uses assessed are fully supported.	759.5
3A	No data or insufficient data to make an assessment.	164.3
3B	Lakes that are not supported for one cycle only.	
3C	Insufficient data to assess but an assessment plan is in place.	0.0
4A	Approved TMDL	196.4
4B	Pollution control requirements are expected to result in full beneficial use support in near future.	0.0
4C	Impaired by pollution, no TMDL required.	0.0
5	Impaired by pollutant, TMDL required.	205.1

2.4.1.3 Individual Beneficial Use Support – Use support by individual beneficial use designations is summarized in Table 2.4.3. For aquatic life, 1,084.7 miles were assessed. Of these, 753.7 miles (69.5%), are supporting aquatic life. There are 331.0 (30.5%) miles not supporting aquatic life. Of the 955.2 miles assessed for agricultural use, 874.4 miles (91.5%) are fully supporting and 80.8 miles (8.5%) are not supporting this beneficial use. Of the stream miles assessed for swimming and secondary contact recreation (34.2 miles), were not supporting this beneficial use. They were impaired by pH and pathogens.

	Size Assessed	Size Fully Supporting	Size Not Supporting	Totals
Use				
Aquatic Life	1,084.7	753.7	331.0	1,084.7
Fish Consumption	0.0	0.0	0.0	0.0
Swimming	34.2	0.0	34.2	34.2
Secondary Contact	34.2	0.0	34.2	34.2
Drinking Water	0.0	0.0	0.0	0.0
Agricultural	951.9	871.1	80.8	955.2
Use				
Aquatic Life		69.5%	30.5%	100.0%
Fish Consumption		0.0%	0.0%	0.0%
Swimming		0.0%	100.0%	100.0%
Secondary Contact		0.0%	100.0%	100.0%
Drinking Water		0.0%	0.0%	0.0%
Agricultural		91.5%	8.5%	100.0%

Bear River Management Unit

2008 Assessment Categories

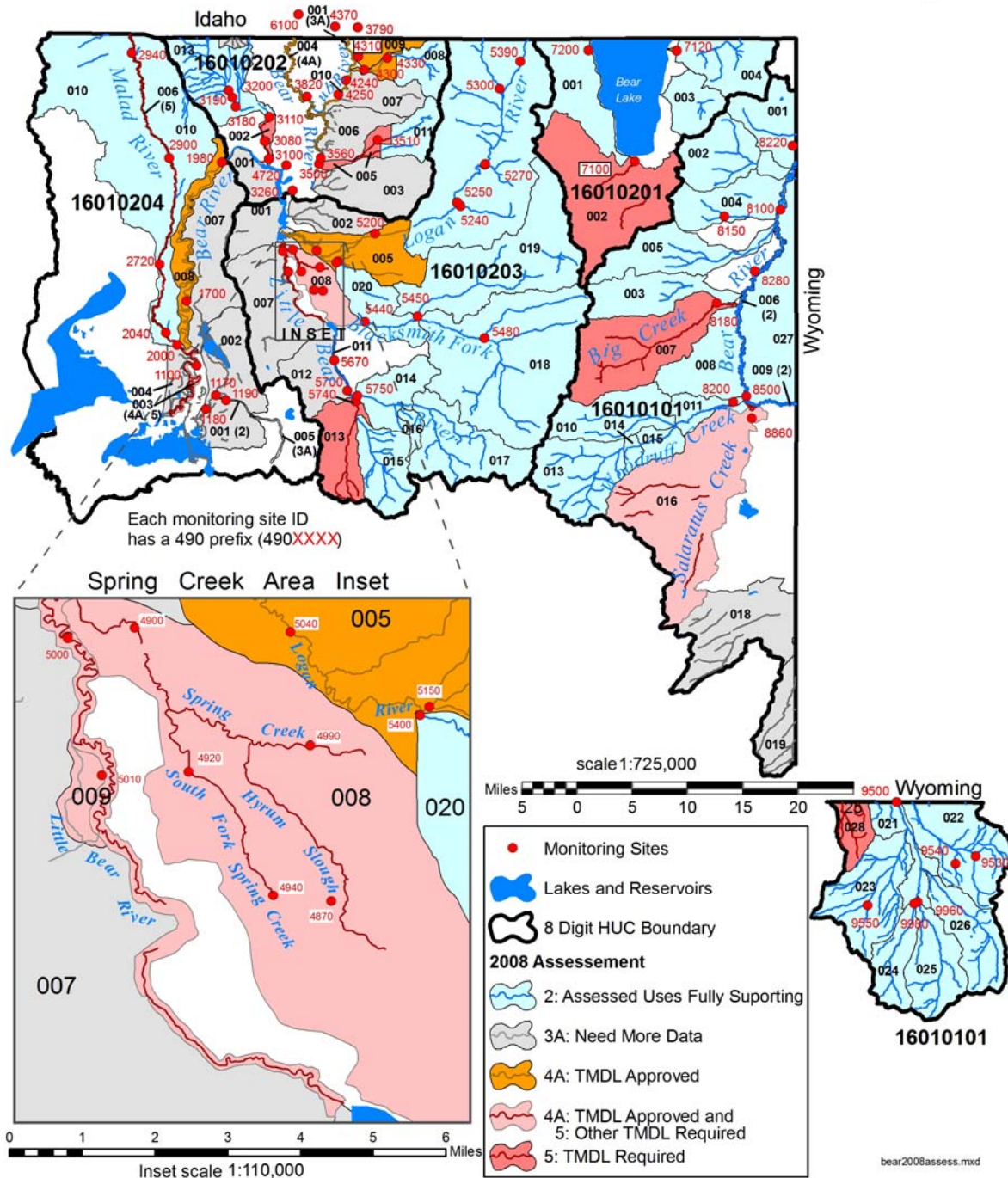


Figure 2.4.3. River and stream designated beneficial uses – Bear River Watershed Management Unit.

2.4.1.4 Total I Waters Impaired by Various Causes - Table 2.4.4 is a list of the stream

miles affected by the various causes categories identified as generally affecting water quality in the Bear River Watershed Management Unit. The major cause of water quality impairment is total phosphorus, a nutrient (Figure.2.4.4). Other factors affecting beneficial uses are temperature, total dissolved solids, and pH. Unknown causes affect 51.96 stream miles. The relative percent impact by causes is shown in Figure 2.4.5.

2.4.1.5 Total Waters Impaired by Various Sources - Table 2.4.5 is a list of the stream miles affected by various source categories. Sources of impairment include agriculture, unknown sources, industrial point sources, municipal point sources, natural sources, urban runoff, hydromodification and habitat modification. The percent of the stream miles affected by sources is illustrated in Figure 2.4.6. The relative percent impacts by sources are illustrated in Figure 2.4.7.

2.4.1.6 Impaired Assessment Units - Table 2.4.6 is a list of the impaired waters in the Bear River Watershed Management Unit.

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Table 2.4.4 Total Waters Impaired by Various Cause Categories (Stream Miles) - Bear River Watershed Management Unit	
Cause Category	Stream Miles
Cause unknown	
Unknown toxicity	
Pesticides	
Priority organics	
Nonpriority organics	
Metals	
Ammonia	7.4
Chlorine	
Other inorganics	
Nutrients	172.5
pH	26.8
Siltation/Sediments	
Organic enrichment/low DO	26.8
Salinity/TDS/Chlorides	53.9
Thermal modifications	63.3
Flow alterations	
Other habitat alterations	
Pathogen Indicators	7.4
Radiation	
Oil and grease	
Taste and odor	
Noxious aquatic plants	
Total toxics	
Turbidity	
Benthic Macroinvertebrates	76.0
Other (specify)	
Unknown	51.96

Table 2.4.5. Total Waters Impaired by Various Source Categories (Stream Miles) – Bear River Watershed Management Unit.	
Source Category	Total Miles Affected
Industrial Point Sources	116.4
Municipal Point Sources	66.4
Combined Sewer Overflow	
Agriculture	201.5
Silviculture	
Construction	
Urban Runoff/Storm Sewers	36.2
Resource Extraction	
Land Disposal	
Hydromodification	12.0
Habitat Modification	14.3
Marinas	
Atmospheric Deposition	
Contaminated Sediments	
Unknown Source	188.4
Natural Sources	46.6
Reservoir Releases	
Recreation	
Aquaculture	
Extreme Drought	

Percent of Stream Miles Affected By Causes

2008 Integrated Report Assessment - Bear River Watershed Management Unit

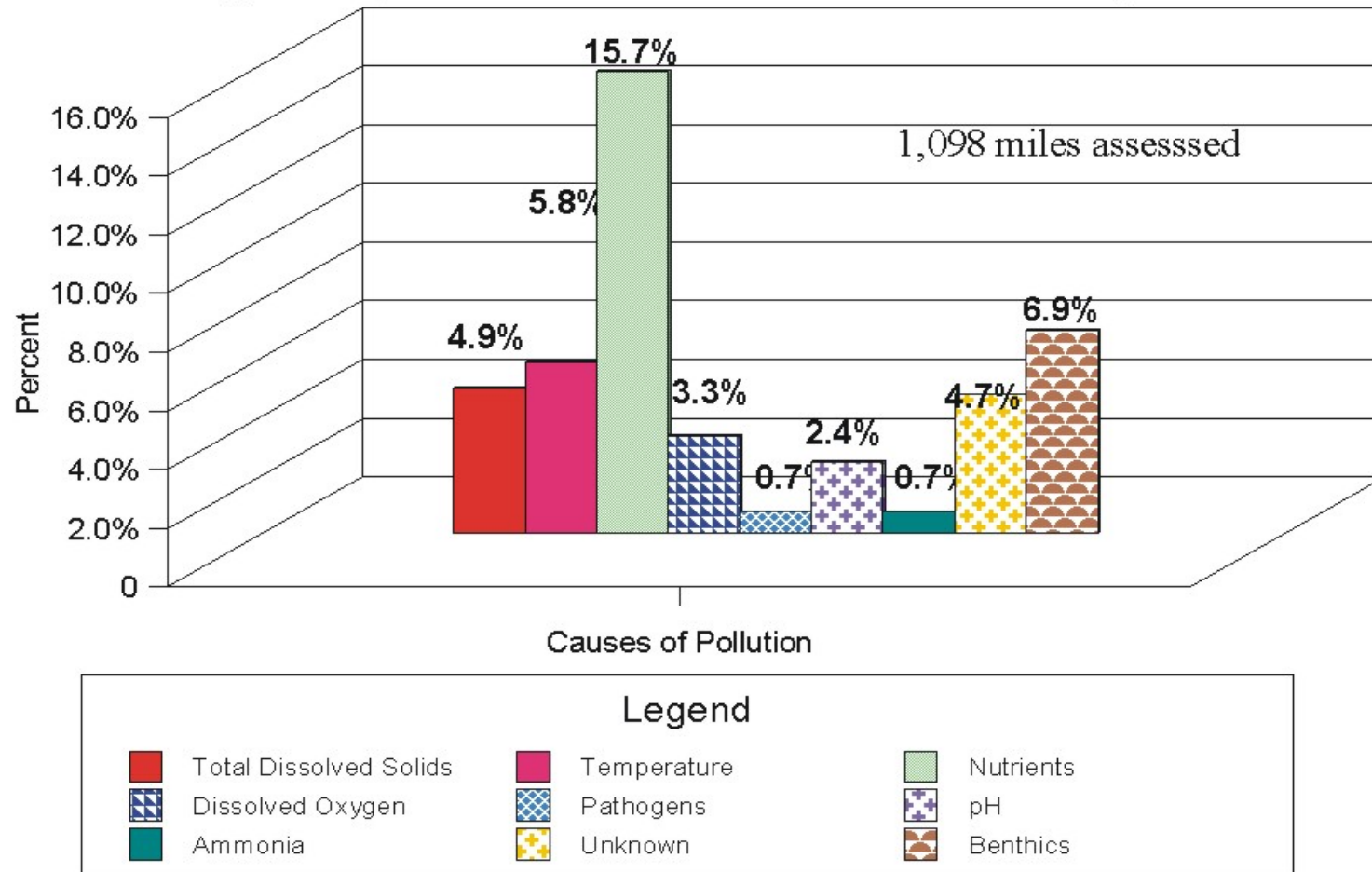


Figure 2.4.4. Percent of assessed stream miles impacted by various causes – Bear River Watershed Assessment Unit.

Causes of Stream Water Quality Impairments

2008 Integrated Report Assessment - Bear River Watershed Management Unit.

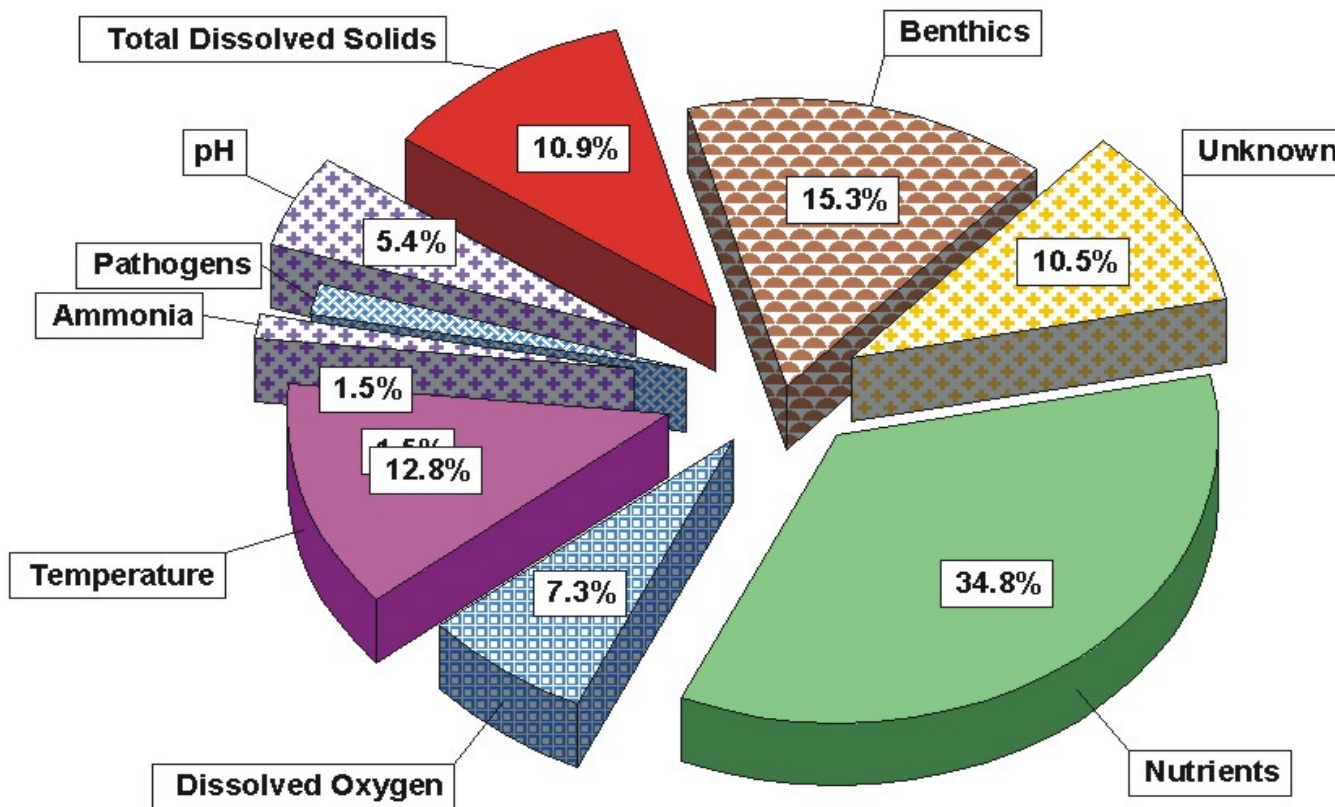


Figure 2.4.5. Relative percent impact by causes on water quality – Bear River Watershed Management Unit.

Percent of Stream Miles Affected By Sources

2008 Integrated Report Assessment - Bear River Watershed Management Unit

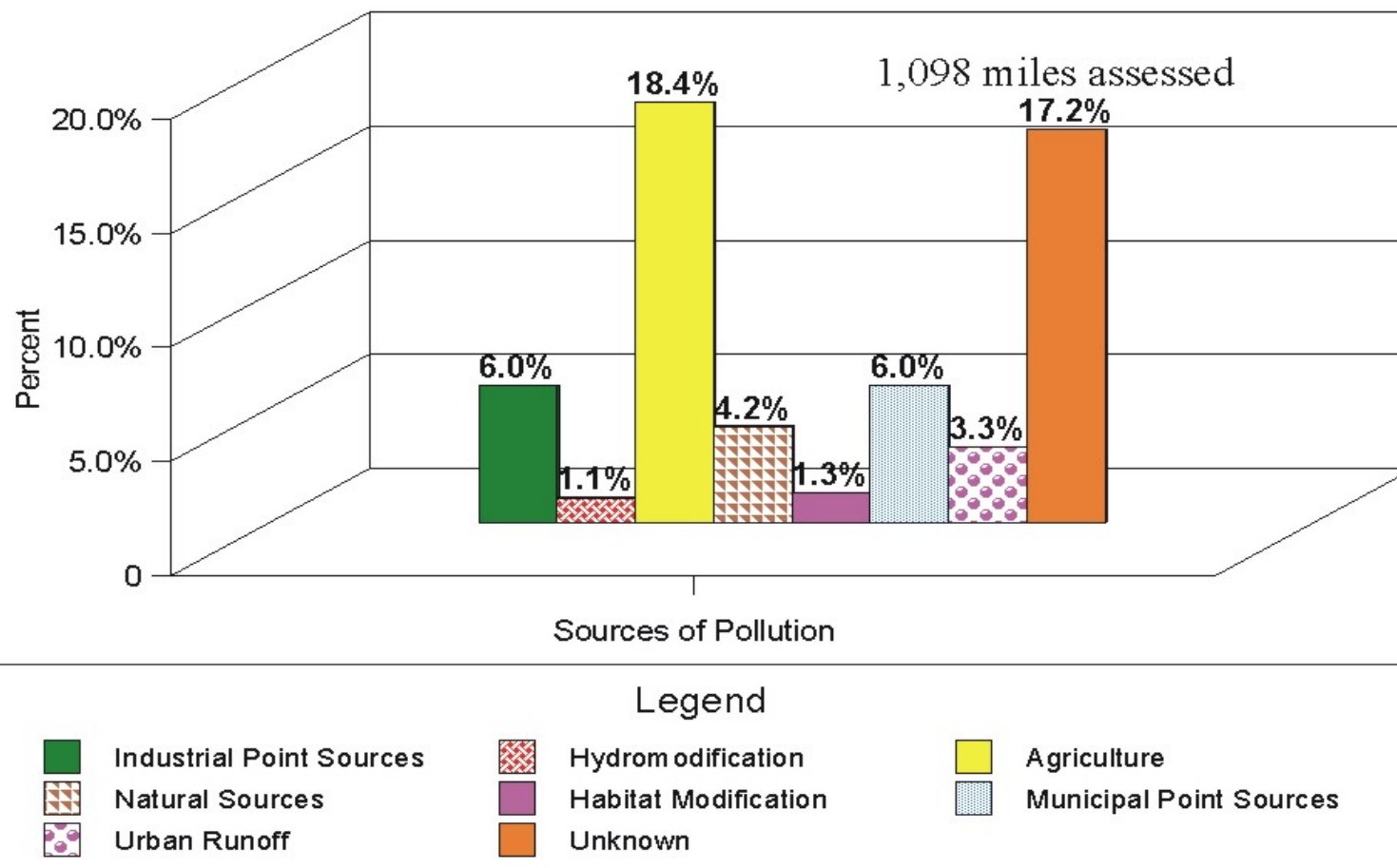


Figure 2.4.6. Percent of stream miles impacted by various sources – Bear River Watershed Management Unit.

Sources of Stream Water Quality Impairment

2008 Integrated Report Assessment - Bear River Watershed Unit

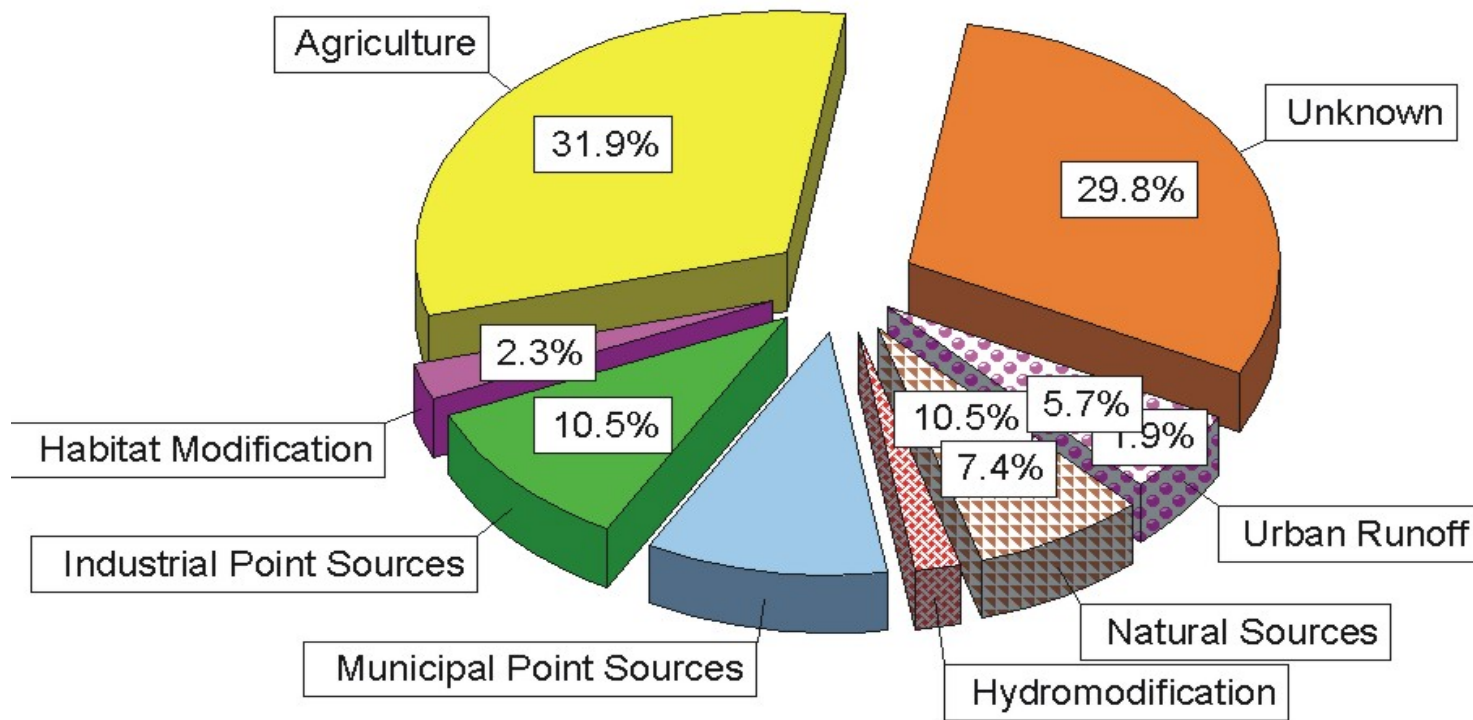


Figure 2.4.7. Relative percent impact by sources on stream water quality – Bear River Watershed Management Unit.

Table 2.4.6. Impaired Waters Located in the Bear River Watershed Management Unit.

Assessment Unit ID	Assessment Unit Name	Assessment Unit Description	Beneficial Use Impaired	Beneficial Use Support	Support Category	Pollutant Or Pollution	Stream Miles
UT16010101-016	Saleratus Creek	Saleratus Creek and tributaries from confluence with Woodruff Creek to headwaters	3A	NS	4A	Organic Enrichment/Low DO	29.05
UT16010202-002	Newton Creek	Newton Creek from confluence with Cutler Reservoir to Newton Reservoir	3A	NS	4A	Total Phosphorus	5.16
UT16010202-008	High Creek Lower	High Creek and tributaries from confluence with Cub River to USFS boundary	3A	NS	4A	Total Phosphorus	3.1
UT16010202-009	Spring Creek Lewiston	Spring Creek (Lewiston) and tributaries from confluence with Cub River to Utah-Idaho border	3B	NS	4A	Total Phosphorus	2.96
UT16010202-010	Cub River	Cub River from confluence with Bear River to Utah-Idaho state line	3B	NS	4A	Total Phosphorus	14.31
UT16010202-010	Cub River	Cub River from confluence with Bear River to Utah-Idaho state line	3B	NS	4A	Total Phosphorus	14.31
UT16010203-005	Logan River-1	Logan River and tributaries, except Blacksmith Fork drainage, from Cutler Reservoir to Third Dam	3A	NS	4A	Total Phosphorus	36.2
UT16010203-005	Logan River-1	Logan River and tributaries, except Blacksmith Fork drainage, from Cutler Reservoir to Third Dam	3A	NS	4A	Total Phosphorus	36.2
UT16010203-008	Spring Creek	Spring Creek and tributaries from confluence with Little Bear River to headwaters	3A	NS	4A	Organic Enrichment/Low DO	7.36
UT16010203-008	Spring Creek	Spring Creek and tributaries from confluence with Little Bear River to headwaters	3A	NS	4A	Organic Enrichment/Low DO	7.36
UT16010203-008	Spring Creek	Spring Creek and tributaries from confluence with Little Bear River to headwaters	3A	NS	4A	Total Phosphorus	7.36
UT16010203-008	Spring Creek	Spring Creek and tributaries from confluence with Little Bear River to headwaters	3A	NS	4A	Unionized Ammonia	7.36
UT16010204-003	Bear River-1	Bear River from Great Salt Lake to Malad River confluence	3B	NS	4A	Total Phosphorus	17.51

Table 2.4.6. Impaired Waters Located in the Bear River Watershed Management Unit.

Assessment Unit ID	Assessment Unit Name	Assessment Unit Description	Beneficial Use Class	Beneficial Use Support	Support Category	Pollutant Or Pollution	Stream Miles
UT16010204-003	Bear River-1	Bear River from Great Salt Lake to Malad River confluence	3B	NS	4A	Total Phosphorus	17.51
UT16010204-003	Bear River-1	Bear River from Great Salt Lake to Malad River confluence	3B	NS	4A	Total Phosphorus	17.51
UT16010204-008	Bear River-2	Bear River from Malad River confluence to Cutler Reservoir	3B	NS	4A	Total Phosphorus	41.5
UT16010101-007	Big Creek	Big Creek and tributaries from Bear River to headwaters	2B	NS	5	pH	26.84
UT16010101-007	Big Creek	Big Creek and tributaries from Bear River to headwaters	3A	NS	5	pH	26.84
UT16010101-007	Big Creek	Big Creek and tributaries from Bear River to headwaters	4	NS	5	pH	26.84
UT16010101-016	Saleratus Creek	Saleratus Creek and tributaries from confluence with Woodruff Creek to headwaters	4	NS	5	Salinity/TDS/Chlorides	29.05
UT16010101-016	Saleratus Creek	Saleratus Creek and tributaries from confluence with Woodruff Creek to headwaters	4	NS	5	Salinity/TDS/Chlorides	29.05
UT16010101-028	Yellow Creek	Yellow Creek and tributaries from Utah-Wyoming border to headwaters	3A	NS	5	Benthic Macroinvertebrate Assessment Impairment	16.4
UT16010201-002	Laketown	Laketown and Big Creek and other tributaries from Bear Lake to headwaters	3A	NS	5	Temperature	11.5
UT16010202-002	Newton Creek	Newton Creek from confluence with Cutler Reservoir to Newton Reservoir	3A	NS	5	Temperature	5.16
UT16010202-003	Hopkins Slough	Hopkins Slough from confluence with Bear River to headwaters	3B	NS	5	Benthic Macroinvertebrate Assessment Impairment	7.65
UT16010202-005	Summit Creek Lower	Summit Creek and tributaries from confluence with Bear River to USFS boundary	3A	NS	5	Temperature	6.8
UT16010203-008	Spring Creek	Spring Creek and tributaries from confluence with Little Bear River to headwaters	3A	NS	5	Temperature	7.36

Table 2.4.6. Impaired Waters Located in the Bear River Watershed Management Unit.

Assessment	Assessment	Assessment	Beneficial Use	Beneficial Use		Pollutant	
Unit	Unit	Unit	Class	Use	Support	Or	Stream
ID	Name	Description	Impaired	Support	Category	Pollution	Miles
UT16010203-009	Little Bear River-1	Little Bear River from Cutler Reservoir to Hyrum Reservoir	3A	NS	5	Temperature	16.52
UT16010203-013	South Fork Little Bear	South Fork Little Bear and tributaries from confluence with Little Bear River to headwaters, except Davenport Creek	3A	NS	5	Temperature	16
UT16010204-003	Bear River-1	Bear River from Great Salt Lake to Malad River confluence	4	NS	5	Salinity/TDS/Chlorides	17.51
UT16010204-006	Malad River-1	Malad River from confluence with Bear River to Utah-Idaho state line	3C	NS	5	Benthic Macroinvertebrate Assessment Impairment	51.96