

Chapter 2.7 Uinta Watershed Management Unit Water Quality Assessment

2.7.1 Introduction

The Uinta Watershed Management Unit lies in northeastern Utah and includes the U.S.G.S. hydrological units listed in Table 2.7.1. This unit includes the Green River and the tributaries streams that flow into it downstream to approximately where the Price River enters the Green River. Tributary streams include those on the north and south slopes of the Uinta Mountains. Major streams on the north slope include the West Fork Blacks Fork, East Fork Blacks Fork, Blacks Fork, West Fork Smiths Fork, East Fork Smiths Fork, Henry’s Fork and Burnt Fork Rivers. Major south slope streams include Currant Creek, Duchesne River, Rock Creek, Lake Fork Creek, Yellowstone River, Uinta River, Ashley Creek, and Brush Creek. Two other major rivers are the Strawberry and White Rivers. The Strawberry River, located in the western part of the management unit, flows east to join the Duchesne River downstream from Starvation Reservoir. The White River flows west from the Utah-Colorado border to join the Green River near the confluence of the Duchesne and Green Rivers. Smaller tributaries to the south include Nine Mile Creek and Range Creek.

| Table 2.7.1 . U.S.G.S. Hydrological Units in the Uinta Watershed Management Unit | |
|---|-------------------------------------|
| Number | Name |
| 14040106 | Upper Green-Flaming Gorge Reservoir |
| 14040107 | Blacks Fork |
| 14040108 | Muddy |
| 14050007 | Lower White |
| 14060001 | Lower Green-Diamond |
| 14060002 | Ashley-Brush |
| 14060003 | Duchesne |
| 14060004 | Strawberry |
| 14060005 | Lower Green - Desolation Canyon |
| 14060006 | Willow |

2.7.2. Water Quality Assessment Results

Data collected from January 1, 2002 through December 31, 2006, including the intensive survey from July 1, 2005 to June 30, 2006 were used to make beneficial use assessments. Figure 2.7.2 is a map of the designated beneficial uses assigned to the rivers and streams in the management unit. Benthic macroinvertebrate data were used to assess some streams (Chapter 2.15).

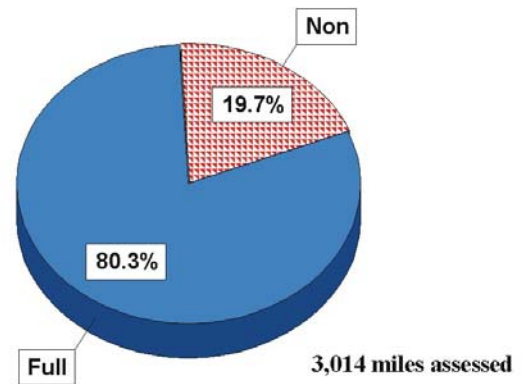
2.7.2.1 Assessment by Categories –Table 2.7.2 is a list of stream miles assigned to the

various assessment categories. The Uinta Watershed Management Unit beneficial use assessment by categories is listed in Table 2.7.2 and mapped in Figure 2.7.3.

| Category | Category Definition | Stream Miles |
|----------|--|--------------|
| 1 | All beneficial uses fully supported. | 0.0 |
| 2 | Beneficial uses assessed are fully supported. | 2,366.8 |
| 3A | No data or insufficient data to make an assessment. | 403.6 |
| 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 | 186.3 |
| 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. | 98.9 |
| 5 | Impaired by pollutant, TMDL required. | 440.3 |

2.7.2.2 Overall Beneficial Use Support --There are an estimated 3,445 perennial stream miles within the Uinta Watershed Management Unit. An assessment of the support of beneficial use was made for 3,013.6 miles. The assessment was based upon at least one beneficial use being assessed. There are 2,366.8 miles (78.5%) listed as fully supporting and 646.74 miles (21.5%) are not supporting at least one designated beneficial use (Figure 2.7.1).

Overall Beneficial Use Support



2.7.2.3 Individual Use Support--Use support by individual beneficial use designations is summarized in Table 2.7.3. The drinking water use was assessed on 1,586.4 miles of streams. Of these stream miles, about 1,488.6 miles (93.8%) are supporting this beneficial use and 97.9 miles or 6.2% are not..

Streams classified for agricultural use have 2,356.1 miles (89.8 %) that are supported and 266.7 miles (10.2%) that are not supporting agricultural usage.

Figure 2.7.1. Overall beneficial use support – Uinta.

A total of 2,957.0 stream miles were assessed for aquatic life, of which 2,553.2 (88.2%) are supporting this beneficial use. A total of 403.8 miles (11.8%) are not supporting.

| Table 2.7.3. Individual Beneficial Use Support – Uinta Watershed Management Unit | | | | |
|---|-----------------|-------------------|-------------------|----------|
| | Size | Size Fully | Size Not | |
| | Assessed | Supporting | Supporting | |
| Use | | | | |
| Aquatic Life | 3,092.2 | 2,553.2 | 403.9 | 3,092.2 |
| Fish Consumption | 0.0 | 0.0 | 0.0 | 0.00 |
| Swimming | 0.0 | 0.0 | 0.0 | 0.00 |
| Secondary Contact | 0.0 | 0.0 | 0.0 | 0.00 |
| Drinking Water | 1,586.5 | 1,488.6 | 97.9 | 1,586.47 |
| Agricultural | 2,622.8 | 2,356.1 | 266.7 | 2,622.84 |
| Use | | | | |
| Aquatic Life | | 77.6% | 22.4% | 100.0% |
| Fish Consumption | | 0.0% | 0.0% | 0.0% |
| Swimming | | 0.0% | 0.0% | 0.0% |
| Secondary Contact | | 0.0% | 0.0% | 0.0% |
| Drinking Water | | 93.8% | 6.2% | 100.0% |
| Agricultural | | 89.9% | 10.2% | 100.0% |

2.7.2.4 Total Waters Impaired by Various Causes – Stream miles impacted by specific causes are summarized in Table 2.7.4. The causes of water quality impairment are metals, total dissolved solids, thermal modifications, habitat and flow alterations. The impact of causes are illustrated in Figure 2.7.4 and the relative impact is illustrated in Figure 2.7.5.

2.7.2.5 Total Waters Impaired by Various Sources – Stream miles impacted by source categories are summarized in Table 2.7.5. The sources of impairment are agricultural activities, unknown and natural sources, habitat and hydromodification, and industrial and municipal discharges (Figure 2.7.6). The relative percent impact by each source is illustrated in Figure 2.7.7.

| Table 2.7.4. Total Waters Impaired by Various Cause Categories (Stream Miles). | |
|---|-----------------------------|
| Cause Category | Total Miles Affected |
| Cause unknown | 0.0 |
| Unknown toxicity | 0.0 |
| Pesticides | 0.0 |
| Priority organics | 0.0 |
| Nonpriority organics | 0.0 |
| Metals | 307.7 |
| Ammonia | 0.0 |
| Chlorine | 0.0 |
| Other inorganics | 0.0 |
| Nutrients | 0.0 |
| pH | 0.0 |
| Siltation/Sediments | 0.0 |
| Organic enrichment/low DO | 0.0 |
| Salinity/TDS/Chlorides | 260.8 |
| Thermal modifications | 176.1 |
| Flow alterations | 64.2 |
| Other habitat alterations | 99.0 |
| Pathogen Indicators | 0.0 |
| Radiation | 0.0 |
| Oil and grease | 0.0 |
| Taste and odor | 0.0 |
| Noxious aquatic plants | 0.0 |
| Total toxics | 0.0 |
| Turbidity | 0.0 |
| Benthic Macroinvertebrates | 54.2 |
| Other (specify) | 0.0 |

| Table 2.7.5. Total Waters Impaired by Various Sources Categories (Stream Miles). | |
|---|-----------------------------|
| Source Category | Total Miles Affected |
| Industrial Point Sources | 8.1 |
| Municipal Point Sources | 8.1 |
| Combined Sewer Overflow | 0.0 |
| Agriculture | 260.8 |
| Silviculture | 0.0 |
| Construction | 0.0 |
| Urban Runoff/Storm Sewers | 0.0 |
| Resource Extraction | 0.0 |
| Land Disposal | 0.0 |
| Hydromodification | 95.8 |
| Habitat Modification | 132.8 |
| Marinas | 0.0 |
| Atmospheric Deposition | 0.0 |
| Contaminated Sediments | 0.0 |
| Unknown Source | 334.1 |
| Natural Sources | 260.8 |
| Reservoir Releases | 0.0 |
| Recreation | 0.0 |
| Aquaculture | 0.0 |

Uinta Basin Management Unit

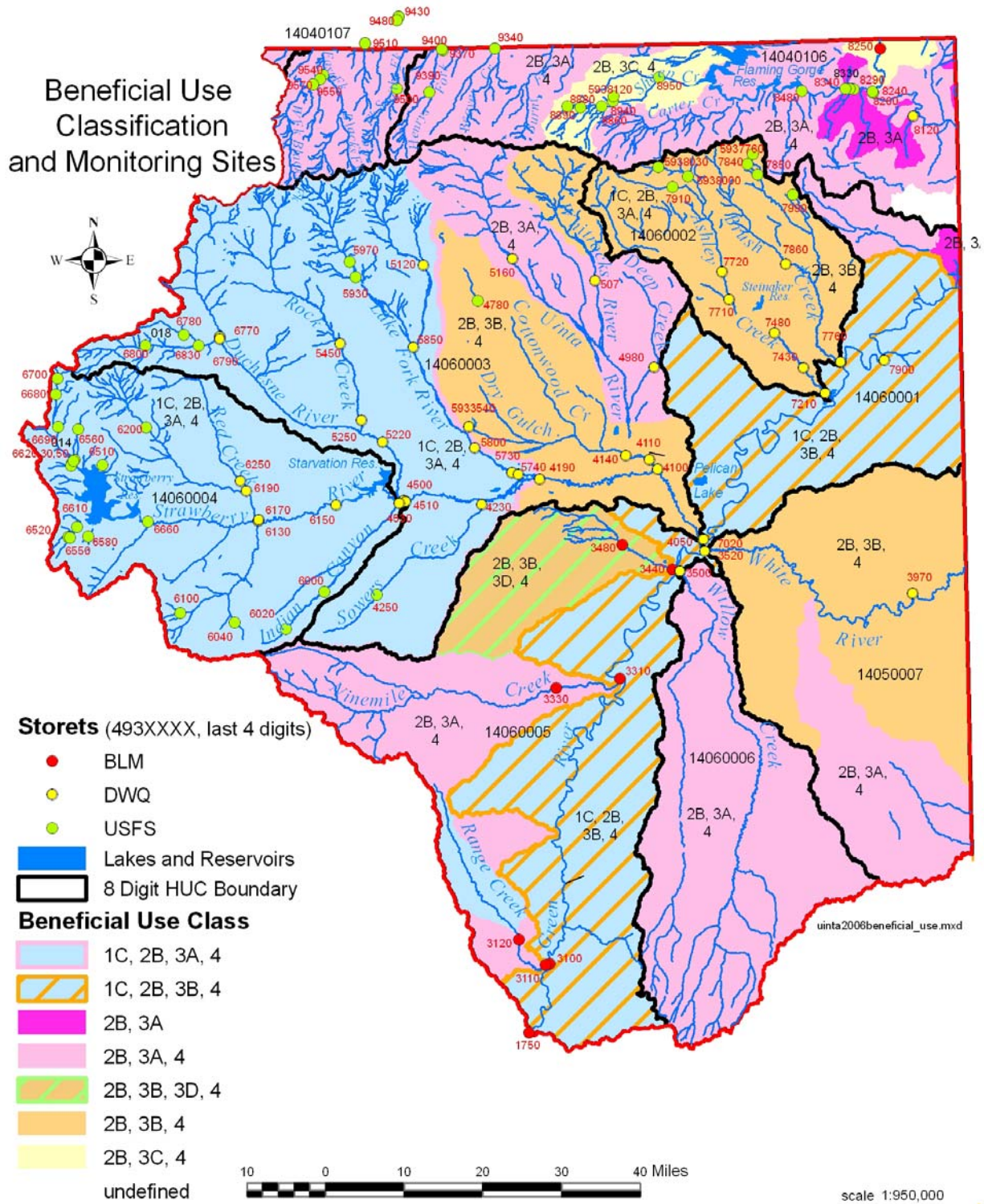


Figure 2.7.2. Beneficial use classifications – Uinta Watershed Management Unit.

Uinta Basin Management Unit

Assessment Categories
2008

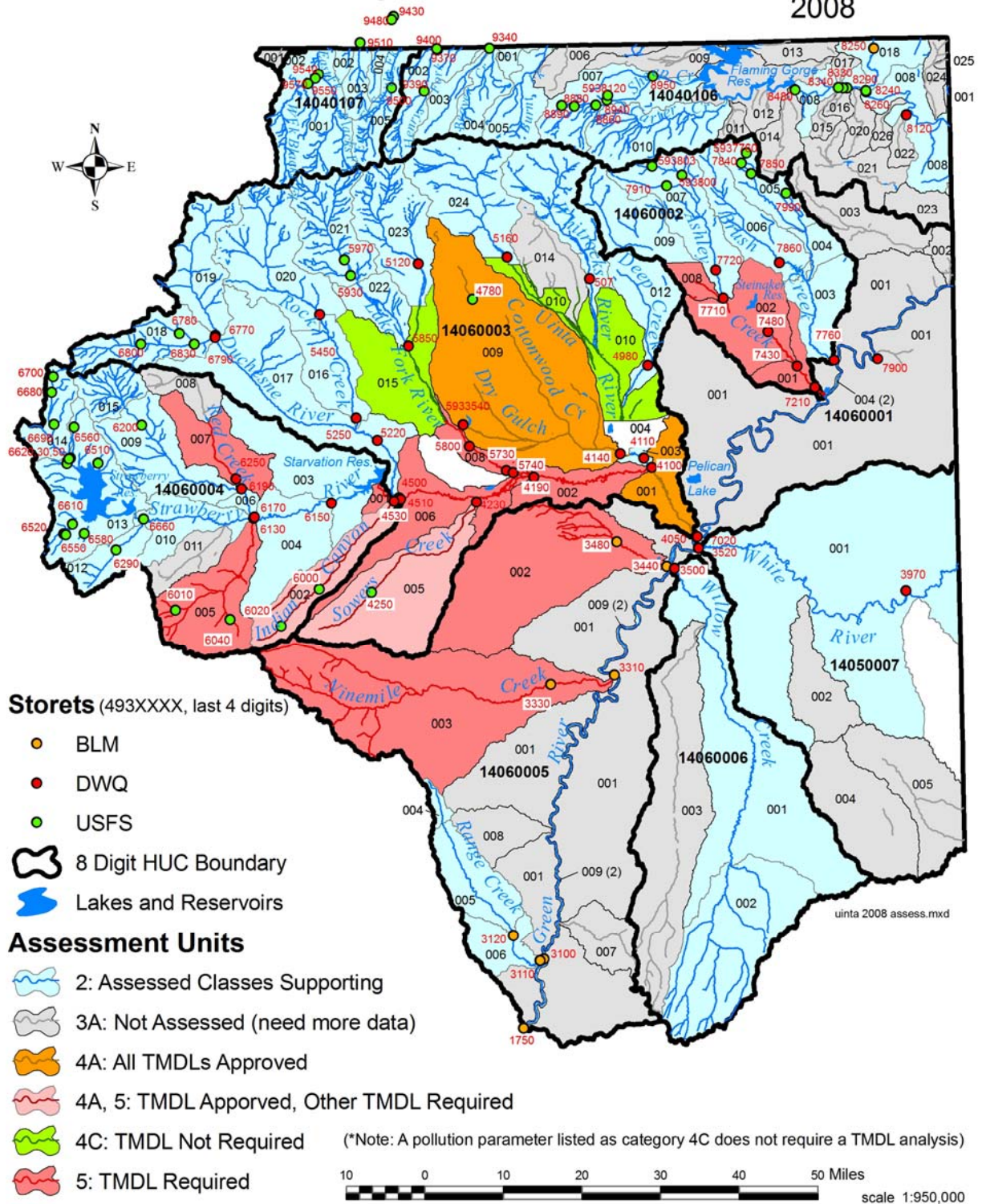


Figure 2.7.3. Beneficial use assessment by categories – Uinta Watershed Management Unit.

Percent of Stream Miles Affected By Causes

2008 Integrated Report Assessment - Uinta Watershed Management Unit

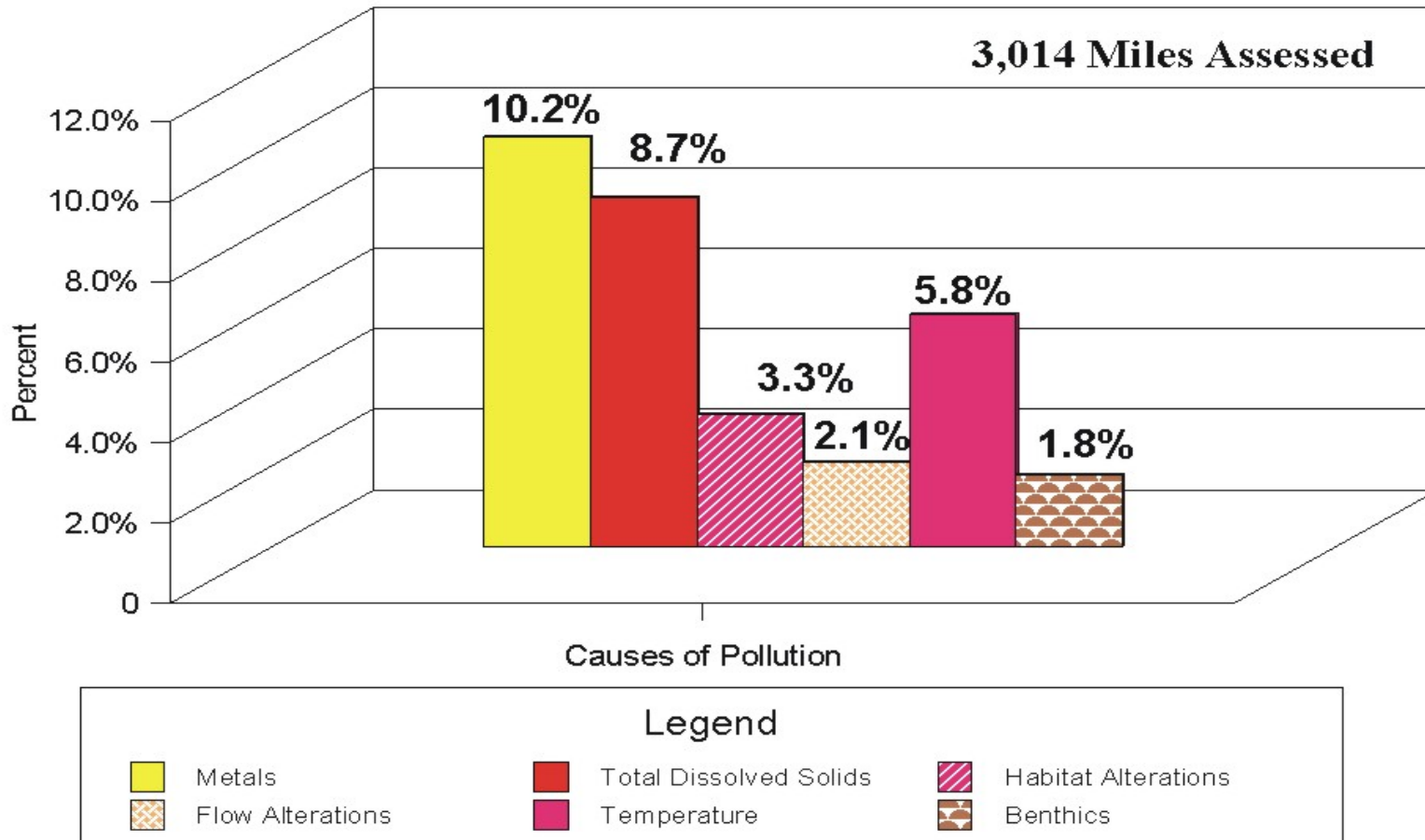


Figure 2.7.4. Percent impact by causes on stream water quality – Uinta Watershed Management Unit.

Causes of Stream Water Quality Impairments

2008 Integrated Report Assessment - Uinta Watershed Management Unit

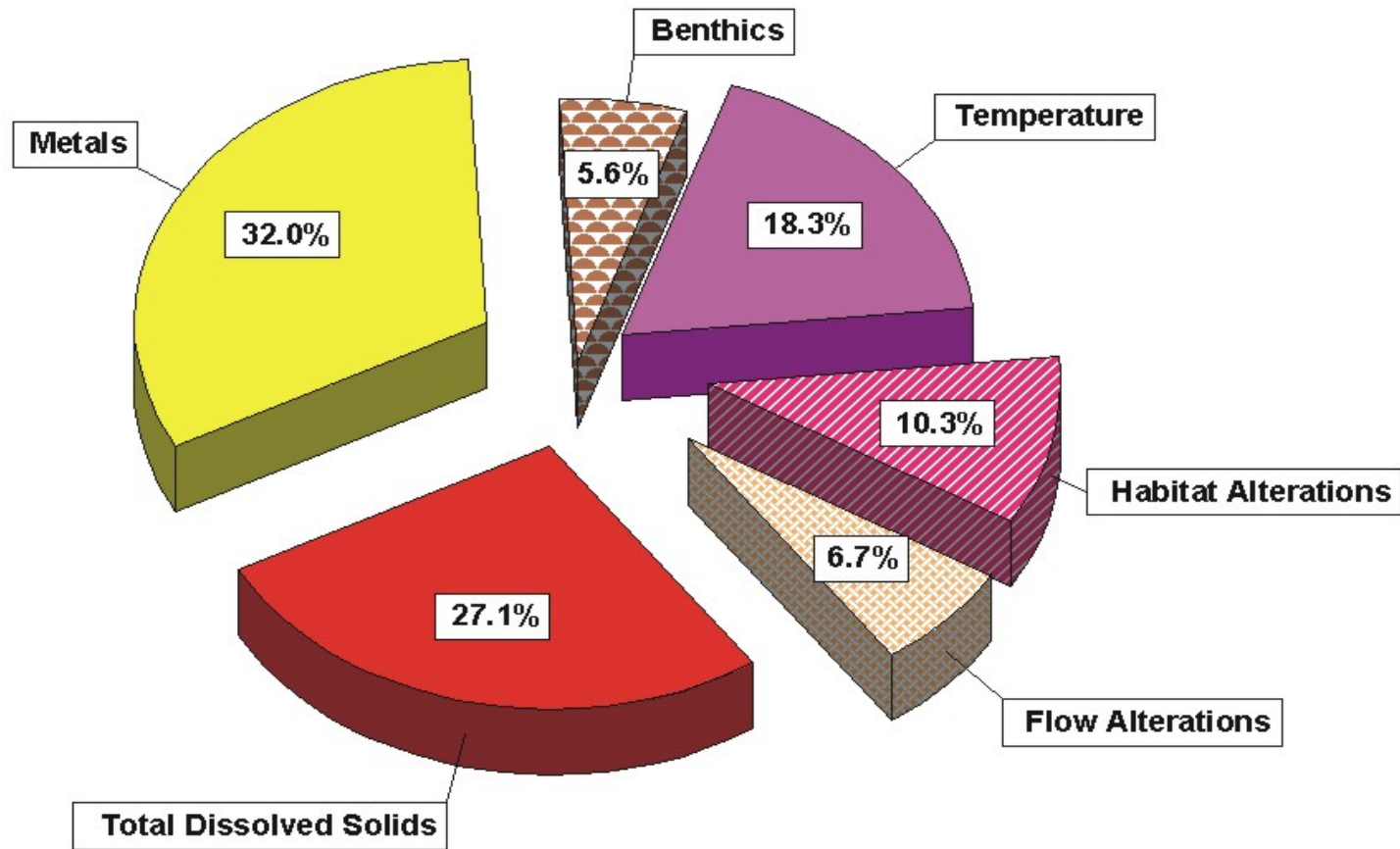


Figure 2.7.5. Relative percent contribution of causes on stream water quality. – Uinta Watershed Management Unit.

Percent of Stream Miles Affected By Sources

2008 Integrated Report Assessment - Uinta Watershed Mangement Unit

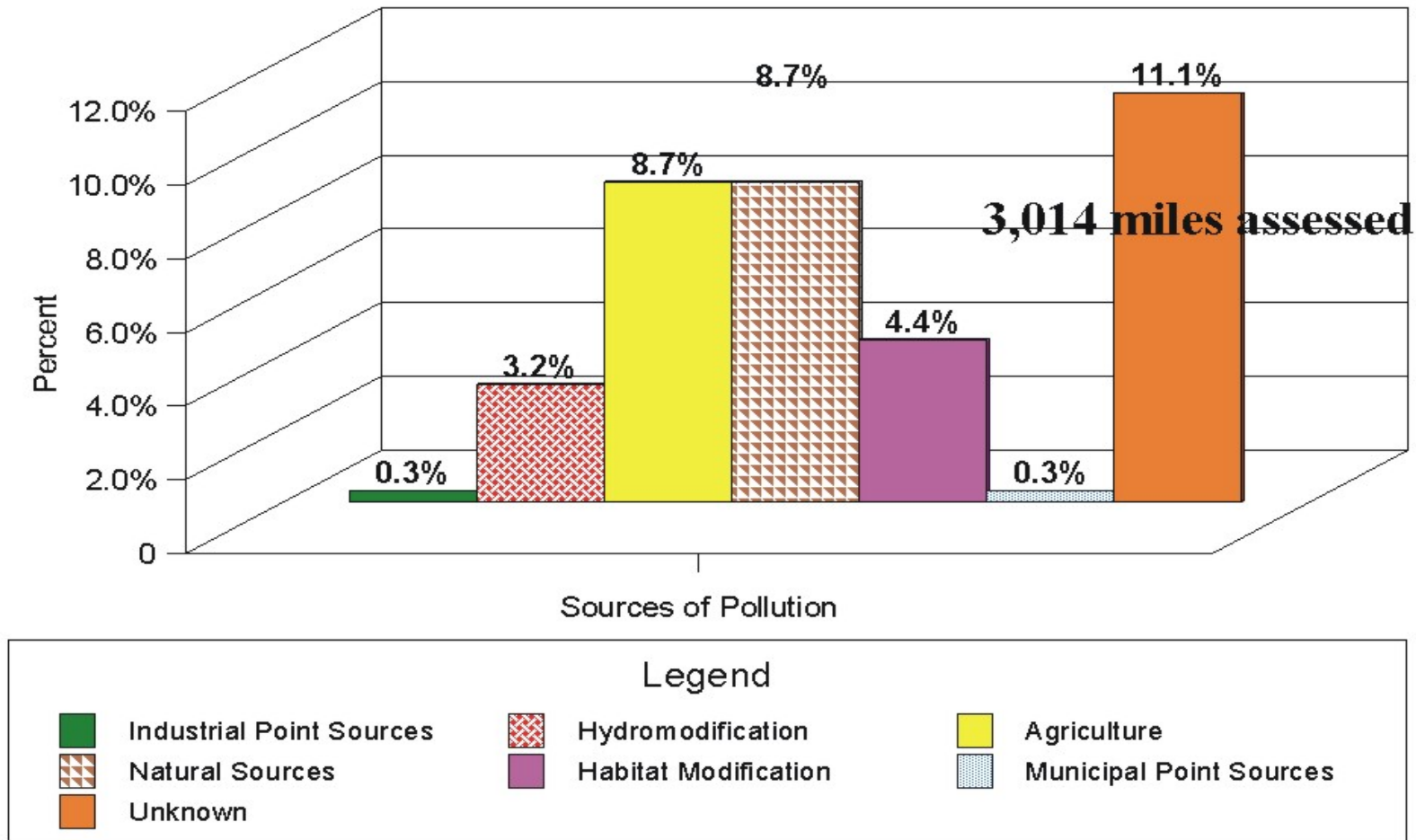


Figure 2.7.6. Percent impact by sources on stream water quality – Uinta Watershed Management Unit.

Sources of Stream Water Quality Impairment

2008 Integrated Report Assessment - Uinta Watershed Management Unit

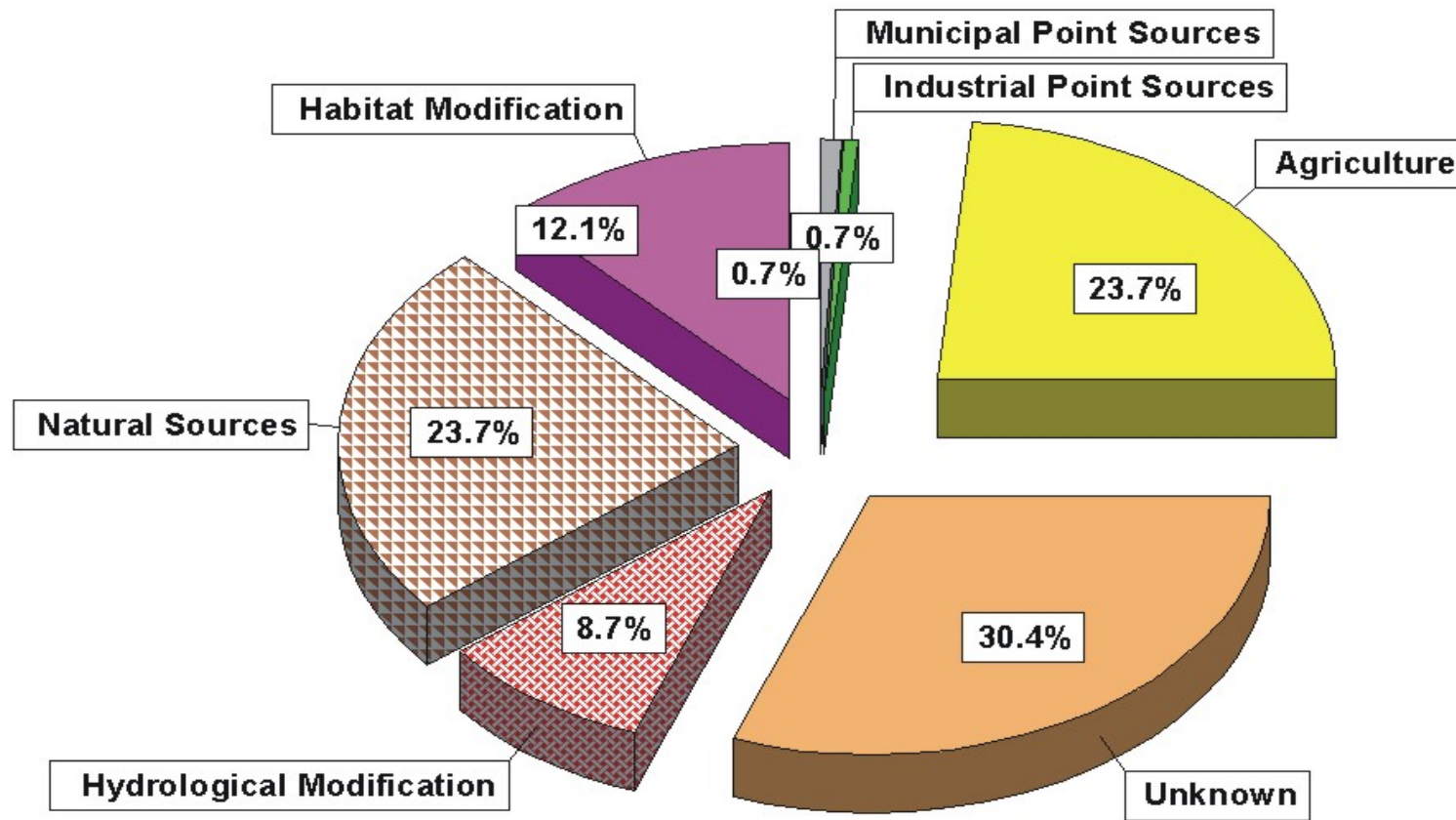


Figure 2.7.7. Relative percent contribution of sources on stream water quality – Uinta Watershed Management Unit.

Table 2.7.7. Impaired Waters Located in the Uinta Watershed Management Unit.

| Assessment Unit ID | Assessment Unit Name | Assessment Unit Description | Beneficial Use Class Impaired | Beneficial Use Support | Support Category | Pollutant Or Pollution | Stream Miles |
|--------------------|----------------------|---|-------------------------------|------------------------|------------------|---------------------------|--------------|
| UT14060003-001 | Duchesne River-1 | Duchesne River and tributaries from Green River confluence to Uinta River confluence | 4 | NS | 4A | Salinity/TDS/Chlorides | 19.49 |
| UT14060003-004 | Uinta River-2 | Uinta River and tributaries from Dry Gulch confluence upstream to U.S. Highway 40 | 4 | NS | 4A | Salinity/TDS/Chlorides | 3.15 |
| UT14060003-005 | Antelope Creek | Antelope Creek and tributaries from Duchesne River confluence to headwaters | 4 | NS | 4A | Salinity/TDS/Chlorides | 31.57 |
| UT14060003-009 | Dry Gulch Creek | Dry Gulch Creek and tributaries from Duchesne River confluence to headwaters | 4 | NS | 4A | Salinity/TDS/Chlorides | 88.1 |
| UT14060004-002 | Indian Canyon Creek | Indian Canyon Creek and tributaries from Strawberry River confluence to headwaters | 4 | NS | 4A | Salinity/TDS/Chlorides | 44.01 |
| UT14060003-004 | Uinta River-2 | Uinta River and tributaries from Dry Gulch confluence upstream to U.S. Highway 40 | 3B | NS | 4C | Other Habitat Alterations | 3.15 |
| UT14060003-010 | Uinta River-3 | Uinta River and tributaries from U.S. Highway 40 to USFS boundary, excluding all of Whiterocks River and Farm, Pole, and Deep Creeks | 3A | NS | 4C | Flow Alteration | 64.16 |
| UT14060003-010 | Uinta River-3 | Uinta River and tributaries from U.S. Highway 40 to USFS boundary, excluding all of Whiterocks River and Farm, Pole, and Deep Creeks | 3A | NS | 4C | Other Habitat Alterations | 64.16 |
| UT14060003-015 | Lake Fork-2 | Lake Fork River and tributaries from Pigeon Water Creek confluence to Yellowstone River confluence (includes Pigeon Water Creek and Yellowstone River to USFS boundary) | 3A | NS | 4C | Other Habitat Alterations | 31.68 |
| UT14060002-001 | Lower Ashley Creek | Ashley Creek and tributaries from Green River confluence to Vernal sewage lagoons | 3B | NS | 5 | Selenium | 8.1 |
| UT14060002-001 | Lower Ashley Creek | Ashley Creek and tributaries from Green River confluence to Vernal sewage lagoons | 4 | NS | 5 | Salinity/TDS/Chlorides | 8.1 |

| Assessment | Assessment | Assessment | Beneficial Use | Beneficial Use | Support | Pollutant | |
|-------------------|----------------------|---|-----------------------|-----------------------|-----------------|---|---------------|
| Unit | Unit | Unit | Class | Use | Support | Or | Stream |
| ID | Name | Description | Impaired | Support | Category | Pollution | Miles |
| UT14060002-002 | Middle Ashley Creek | Ashley Creek and tributaries from Vernal sewage lagoons to Dry Fork confluence | 3B | NS | 5 | Selenium | 12.28 |
| UT14060002-002 | Middle Ashley Creek | Ashley Creek and tributaries from Vernal sewage lagoons to Dry Fork confluence | 4 | NS | 5 | Salinity/TDS/Chlorides | 12.28 |
| UT14060002-008 | Lower Dry Fork Creek | Dry Fork and tributaries from confluence with Ashley Creek to USFS boundary | 3A | NS | 5 | Temperature | 5.77 |
| UT14060003-002 | Duchesne River-2 | Duchesne River and tributaries from Randlett to Myton | 3A | NS | 5 | Temperature | 31.59 |
| UT14060003-005 | Antelope Creek | Antelope Creek and tributaries from Duchesne River confluence to headwaters | 4 | NS | 5 | Boron | 31.57 |
| UT14060003-006 | Duchesne River-3 | Duchesne River from Myton to Strawberry River confluence | 3A | NS | 5 | Benthic Macroinvertebrate Assessment Impairment | 39.46 |
| UT14060003-008 | Lake Fork-1 | Lake Fork River and tributaries from Duchesne River confluence to Pigeon Water Creek confluence | 3A | NS | 5 | Temperature | 19.64 |
| UT14060004-001 | Strawberry River-1 | Strawberry River from confluence with Duchesne River to Starvation Dam | 4 | NS | 5 | Boron | 5.94 |
| UT14060004-002 | Indian Canyon Creek | Indian Canyon Creek and tributaries from Strawberry River confluence to headwaters | 1C | NS | 5 | Arsenic | 44.01 |
| UT14060004-002 | Indian Canyon Creek | Indian Canyon Creek and tributaries from Strawberry River confluence to headwaters | 4 | NS | 5 | Boron | 44.01 |
| UT14060004-005 | Avintaquin Creek | Avintaquin Creek and tributaries from Strawberry River confluence to headwaters | 1C | NS | 5 | Arsenic | 53.84 |
| UT14060004-007 | Middle Red Creek | Red Creek and tributaries from Current Creek confluence to Red Creek Reservoir | 3A | NS | 5 | Benthic Macroinvertebrate Assessment Impairment | 14.78 |
| UT14060005-002 | Pariette Draw Creek | Pariette Draw Creek and tributaries from Green River confluence to headwaters | 3B | NS | 5 | Selenium | 54.1 |

| Table 2.7.7. Impaired Waters Located in the Uinta Watershed Management Unit. | | | | | | | |
|--|---------------------|---|----------------|------------|----------|------------------------|--------|
| Assessment | Assessment | Assessment | Beneficial Use | Beneficial | | Pollutant | |
| Unit | Unit | Unit | Class | Use | Support | Or | Stream |
| ID | Name | Description | Impaired | Support | Category | Pollution | Miles |
| UT14060005-002 | Pariette Draw Creek | Pariette Draw Creek and tributaries from Green River confluence to headwaters | 4 | NS | 5 | Boron | 54.1 |
| UT14060005-002 | Pariette Draw Creek | Pariette Draw Creek and tributaries from Green River confluence to headwaters | 4 | NS | 5 | Salinity/TDS/Chlorides | 54.1 |
| UT14060005-002 | Pariette Draw Creek | Pariette Draw Creek and tributaries from Green River confluence to headwaters | 4 | NS | 5 | Boron | 54.1 |
| UT14060005-002 | Pariette Draw Creek | Pariette Draw Creek and tributaries from Green River confluence to headwaters | 4 | NS | 5 | Salinity/TDS/Chlorides | 54.1 |
| UT14060005-003 | Nine Mile | Ninemile Creek and tributaries from Green River confluence to headwaters | 3A | NS | 5 | Temperature | 119.1 |