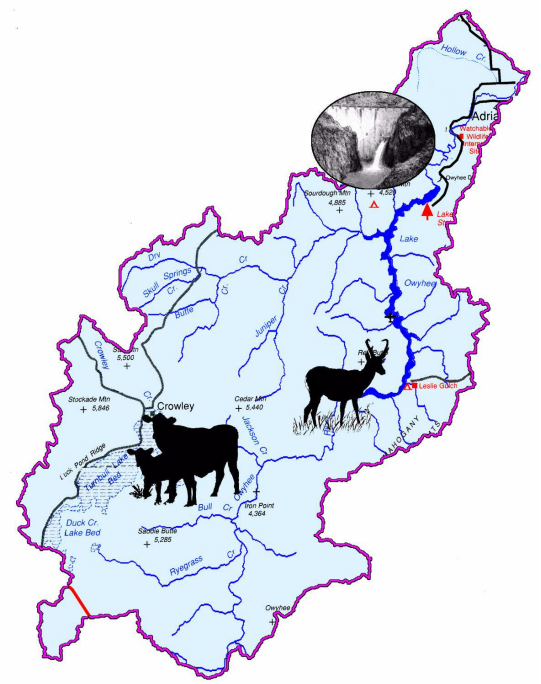



# Lower Owyhee Watershed Assessment

## XVI. Watershed Condition Evaluation



## XVI. Watershed condition evaluation

To evaluate the condition of the lower Owyhee subbasin, it is necessary to look at all of the interacting factors within the ecosystem. The subbasin has changed since the first Native Americans took up residence here at least 13,000 years ago. There have been changes in climate, changes in population densities, and changes in the effects of humans on the ecosystem.

Native American inhabitants of the region modified the environment. The pre-European land use practices affected the abundance of game and promoted the propagation of economically important plant species. With the arrival of Euro-Americans and with advances in technology, the types of modifications to the environment have changed and are continuing to change. These more recent modifications can be considered both beneficial and harmful.

Ecosystems are dynamic. The ecosystems of the Owyhee subbasin have changed from what they were before the Spanish introduced horses and European diseases to the western hemisphere. They have changed from what they were at the time of Euro-American contact, and they have changed from what they were at the turn of the last century.

Some things have remained relatively constant over the last two hundred years. The lower Owyhee subbasin is still an arid to semi-arid desert with little water and less runoff. The land is geologically very young so the soils are not developed. The combination of poor or nonexistent soils with lack of water has meant that the population of the area has remained low.

The tremendous geological and erosive forces which shaped the landscape in the more distant past have been relatively inactive in the recent past. Unchanged by bulldozers and subdivisions, the natural beauty of the landscape has not been spoiled.

## A. Evaluation of watershed condition

The lower Owyhee subbasin occupies a large, sparsely populated area. There is a paucity of data about many aspects of the region, both as it may have existed before Euro-American entry into the region and as it exists now. Many of the unknowns, or data gaps, have been enumerated in the other sections of this assessment.

There are some conclusions which can be made from the data which is available.

A landscape that was devoid of trees at the time of Euro-American contact now has trees growing along parts of the Owyhee River.

Large game, extremely scarce at the time of Euro-American contact, now roam the Owyhee uplands.

Over grazing in the late 1800s and early 1900s left broad expanses of rangeland largely denuded and unprotected from erosive events. Grazing management has led to renewed vegetative cover on these rangelands.

Hundreds of species of native plants still grow in the lower Owyhee subbasin. Native animal species can be observed in all areas.

The Owyhee Dam has changed the hydrology of the lower Owyhee subbasin. Water is now available to lands below the dam. The productivity of lands below Owyhee Dam has vastly increased with the development of irrigation systems. Agriculture has recently made positive changes with improved on-farm irrigation systems, the use of precision fertilization, the control of pests with safer chemicals, and improved crop species.

Water developments throughout the subbasin have increased the availability of water to both livestock and wildlife.

Recent water developments have removed livestock from riparian areas during times when the riparian vegetation would be sensitive to grazing pressure.

Large areas that once contained native vegetation are now primarily weeds. Scotch thistle, poison hemlock, white top, tamarisk, perennial pepperweed, and medusahead are making substantial inroads into the subbasin. Juniper is out of control in the SE corner of the Leslie Gulch area of critical environmental concern (ACEC).

The expansion of tamarisk into prime riparian areas around springs and along gulches poses one of the greatest threats to the continued availability of water originating within the lower Owyhee subbasin for wildlife.

The Owyhee River and Owyhee Reservoir are contaminated with mercury from the legacy mining operations in and around Silver City, Idaho.

Further water developments are needed to remove livestock from some riparian areas during times when the riparian vegetation would be sensitive to grazing pressure.

The Owyhee Dam has created an artificial cold water fishery below the dam which draws anglers not only from the growing population of the Boise metropolitan area, but from elsewhere in the U.S.

Owyhee Reservoir attracts not only boaters but sports fishermen. A large population of nonnative warmwater fish thrive in the reservoir.

## B. Discussion

We cannot know what the condition of the watershed would be in the absence of humans. The geology and climate affecting the area would be little different, although even the climate may be changing due to the activities of people elsewhere in the world.

### 1. Invasive species

Uncontrolled tamarisk in the lower Owyhee River corridor is releasing huge volumes of seed which are not only proliferating in the corridor but are also beginning to infest irrigation canals, irrigation ditches, and cultivated fields. The establishment of tamarisk along irrigation canals and ditches will impose great costs on producers.

Evolution occurs slowly over time. The native plant stands of the rangelands and riparian areas in the lower Owyhee subbasin evolved in the absence of invasive species and in the presence of grazing pressure[1] and periodic fires. Now there are invasive species, a low fire frequency, and in some ACECs the absence of grazing. Native plants are not adapted to compete well under the changed conditions.

Major efforts are needed to halt and reverse the spread of invasive species. To the very great detriment of the environment, the new, more effective, less dangerous herbicides with shorter half lives can not be used on federal lands in Oregon due to a court decision. The continued spread of invasive weed species will result in a degraded, non native environment without the vegetative community which was (and in many places still is) an important component of the ecosystem. The whole web of native insect and higher animal life depends on the continued vigor of native plant species.

There are a number of wilderness study areas (WSAs) in the federal land administered by the Bureau of Land Management (BLM). The BLM is required to protect the areas' wilderness values until congress decides on wilderness status. The wilderness values of many of these areas are being seriously compromised by the replacement of native species with invasive, nonnative species.

### 2. Mercury

Private individuals and local governments do not have the economic resources to contain the sources of the legacy mercury which continues to flow into the Owyhee River and Reservoir. Federal and state agencies need to be actively involved in preventing the ongoing and future contamination and eliminating this threat to the water quality.

### 3. Federal ownership of the land

The major portion of land in the lower Owyhee subbasin is federal land. With a small tax base, it is a hardship on Malheur County and other local agencies to provide services to this vast area.

The BLM has served as the steward of much of the land in the lower Owyhee subbasin. Much of the past recuperation of degraded areas of rangeland was accomplished with BLM support and oversight. However, the public land is managed by bureaucracy and bureaucracies are frequently slow in responding or unresponsive to local needs.

If the Owyhee Dam needs repairs, there needs to be a clear understanding that the Bureau of Reclamation can make any changes needed to the road along the Owyhee River below the dam in order to get equipment or materials to the dam site. The dam was completed 75 years ago and cannot be expected to last indefinitely without repairs, both minor and major. If BLM succeeds in making the lower Owyhee River a recreational wild and scenic river, options need to be retained for access for expected dam maintenance and eventual reconstruction.

### 4. Recreation

Increased populations in SW Idaho are resulting in greater use of the area for recreation. This use today tends to be concentrated in the more easily reached areas. Recreationists do not necessarily have conservation ethics and may leave behind trash, human waste, and scars upon the landscape.

Some individuals lack respect for private property and fences, especially during hunting season. New roads appear where recreationists don't respect the fragility of the landscape.

Despite the increased use of some areas, a large portion of the beautiful places within the subbasin are seldom visited.

### 5. Absentee landowners

Although this assessment did not identify which privately owned land was held by individuals who do not have a permanent residence on or near their land, throughout the region of SW Idaho and SE Oregon land is being purchased by absentee landowners for real estate speculation. Some of this land may be removed from production and result in less intensive land management with a greater potential for the spread of invasive weeds and juniper.

Speculative investments in land can raise the price of property and greatly restrict attempts by young people to maintain the traditions of family farming and ranching.

## C. Large gaps in data

Much basic information about the conditions within the lower Owyhee subbasin is lacking and there is a very poor understanding of the ecological interactions in the

subbasin. These data gaps and unknowns have been enumerated in the other sections of this assessment. A few of these are highlighted here.

### 1. Hydrology

Since the USGS maps do not distinguish between intermittent and ephemeral streams, ground surveys are necessary to make these determinations. In the lower Owyhee subbasin this information is not available for most drainages. There has been no ground verification of which streams are ephemeral, intermittent, or perennial. The three types can not be evaluated in the same fashion and have dissimilar responses to restoration efforts. Intermittent streams are those which flow for only certain times of the year, when they receive water from springs or runoff. During dry years they may cease to flow entirely or they may be reduced to a series of separate pools. Ephemeral streams only carry water during and immediately after runoff events.

### 2. Rangeland

We do not understand the impact of juniper expansion on watershed function and water resources. Likewise, we don't know the effects on watershed function and water resources of the conversion of rangeland vegetation to invasive annuals.

Studies are needed on ways to restore native perennial vegetation to rangelands. Is there an acceptable ratio of cheatgrass to native plants where the ecological processes of rangeland still function? We have little information on the response of different vegetative communities to livestock grazing, timing of the grazing, or removal of grazing. Can the removal of livestock accelerate conversion of rangeland to cheatgrass or other invasive species?

### 3. Riparian

In the lower Owyhee subbasin, the potential of riparian areas based on physical, biological, and chemical conditions is not known. The site specific physical, biological, and chemical conditions of riparian areas have not been surveyed. The management that will result in maintaining, restoring, improving, or expanding riparian areas in the lower Owyhee subbasin is poorly defined.

### 4. Fish

There have been no studies of the interactions between the species of fish in the lower Owyhee subbasin. Little is known about the distribution of each specie within the subbasin. There is extremely little information on the non-game fish populations, fluctuations in their populations, or reasons for the fluctuations.

There are many introduced fish species in the lower Owyhee subbasin. How do the nonnative fish compete for food and habitat with the native fish? What effects are the hatchery trout stocked into the subbasin having on the native redband trout populations? What would the impacts be on other salmonid species if the predatory nonnative European brown trout were flushed downstream by a major flood event?

What will be the effect of the appearance of Lahontan tui chub in the Owyhee Reservoir?

### 5. Water quality

Past studies have positively identified the Silver City area as a source of mercury. Follow up studies are needed to characterize mercury sources, concentrations, and distribution in the Silver City area.

No comprehensive survey has been done to precisely locate possible sources of mercury in the lower Owyhee subbasin nor to identify geologic locations in the lower Owyhee subbasin that have mercury concentrations which might contribute to mercury in the river system if the sites become disturbed in the future.

In the lower Owyhee subbasin, the relative contribution to stream heating from solar radiation, from the air and from the ground have not been described.

Even though water quality criteria are in place, the basic information is lacking on site response to climate, hydrology, geology, soil, slope, plant and animal communities, and other environmental features needed to develop water quality criteria for the lower Owyhee subbasin.

### 6. Wildlife

The interactions between different wildlife species, introduced wild horse populations, and cattle are poorly understood including forage preferences and usage over the year. Few studies are available pertinent to the lower Owyhee subbasin on the effects of specific ranching practices on forage for wildlife.

How many cougar are actually in the lower Owyhee subbasin? At what level does the cougar population significantly affect wildlife populations and ranching?

How are wildlife populations being influenced by the expansion of weeds? Are restrictions on weed control placed on BLM by past lawsuits having unintended negative effects on the native food supplies required by native wildlife?

## D. Conclusion

The people who made their living in the lower Owyhee subbasin through the 1930s were exceedingly poor. They utilized whatever resources they could. The stewardship of the land, both private and public, has greatly improved since the 1930s.

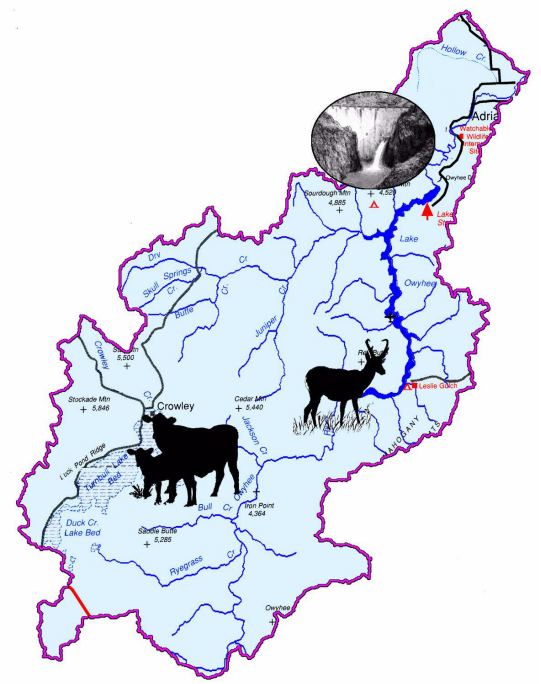
Valuable information developed in other regions can be applied to some extent to future decision processes affecting the lower Owyhee subbasin. However, because of the relative isolation and low potential productivity, much of the specific information necessary to make informed decisions about future actions has not been developed. Generalizing from other areas without the locally developed information can lead to decisions guided by misinformation resulting in possibly disastrous consequences to the ecological integrity of the lower Owyhee subbasin.

Local information needs to be developed so that future choices can be based on facts and the best scientific knowledge available. Decisions need to be guided by what is best for the ecology of the subbasin and the people that it supports, not by a political agenda. Uncontrolled increased exploitation of resources or complete abandonment of use are both ecologically untenable.

The lower Owyhee subbasin contains many areas of natural beauty. The people of the area have been able to work together to solve many problems. The coming changes in climate and the world economy can not be foreseen, but the lower Owyhee subbasin contains individuals who will continue to cooperate to solve local challenges.

## References

1. Burkhardt, J. Wayne. 1996. Herbivory in the intermountain west: an overview of evolutionary history, historic cultural impacts, and lessons from the past. Idaho Forest, Wildlife and Range Experiment Station, University of Idaho. Sta. Bul. 58.




# Lower Owyhee Watershed Assessment

## XVII. Monitoring Plan



## XVII. Monitoring plan

The lower Owyhee subbasin occupies a large, sparsely populated area. There is a paucity of data about many aspects of the region, both as it may have existed before Euro-American entry into the region and as it exists now.

There is no existing comprehensive monitoring plan for the lower Owyhee subbasin. If a comprehensive plan were to be developed, it would need to be a cooperative endeavor between the multiple agencies involved such as the Department of Fish and Wildlife, Malheur County Soil and Water Conservation District, Bureau of Reclamation, Bureau of Land Management, Owyhee Irrigation District, Natural Resource Conservation Service, Farm Services Agency, OSU Malheur County Cooperative Extension Service, Oregon Watershed Enhancement Board, Oregon Department of Agriculture, and Oregon Department of Environmental Quality with the participation of ranchers, producer associations, growers, and other members of the community. This would be a daunting task.

Instead, the Owyhee Watershed Council can act as an advocate for areas where monitoring is needed. However, the monitoring in most instances will need to be carried out by other entities.

### A. Essential conditions to begin monitoring

Usually a small scientific conclusion is the result of a colossal amount of information. Scientifically, it is inappropriate to use a few bits of information to extrapolate to a whole region.

To begin monitoring, it is necessary to know what is being monitored. It is essential to know the condition when the monitoring began. Data should be in

reproducible units. In other words, the data recorded by different observers without reference to each other would be similar.

Discovering the initial condition of an area which needs to be monitored may present a considerable challenge.

## B. Priority areas for monitoring

There is insufficient knowledge about many of the conditions that could be monitored. The geographic area occupied by the lower Owyhee subbasin is immense. Lacking funding, there needs to be some idea of the areas where monitoring would provide a real trend analysis of the most important problems or potential problems. Cooperative endeavors and funding should be directed at initial scientific studies in each of these areas. There are also needs to develop site specific information of ecological processes. This is a more complex problem than monitoring the current condition and the condition at some future time.

The major monitoring needs in the lower Owyhee subbasin are weed encroachment, water quality, riparian conditions, pasture conditions, and recreational use. Initial studies are needed to provide the base lines for future monitoring.

## C. Priority studies

Initial studies of weed encroachment should map where the major weeds exist, particularly medusahead rye and tamarisk. The locations of all invasive species need to be mapped in every area of environmental concern.

To identify riparian conditions, it is necessary to first identify those perennial and intermittent (as opposed to ephemeral) streams which might support riparian vegetation. Then a survey is needed of the existing vegetation. A similar survey needs to be made before any water developments which would remove cattle from a stream reach. This way a subsequent survey can determine how the riparian vegetation has changed.

Data needs to be collected and synthesized to develop objective water temperature standards based on the thermal potential of the lower Owyhee subbasin.

Past studies have positively identified the Silver City area as a source of mercury. Follow up studies are needed to characterize mercury sources, concentrations and distribution in the Silver City area. Delineating the distribution and concentration of mercury is essential if action to remediate at these sites is to be taken. Site characterization would establish a baseline for comparison with future monitoring efforts, both in the Silver City area and in downstream areas.

We do not know how long it would take for the mercury from Silver City that is already in the river system of the basin to dissipate if the Silver City site were cleaned.

To better understand mercury in the Owyhee River ecosystem, there need to be studies of the mixing and transport hydrodynamics of Lake Owyhee, and stratification of the reservoir during autumn, winter, and mid-summer.[9] Remobilization of mercury and phosphorus to water from lake bottom sediment has not been studied.

In addition to other parameters of water quality, water availability may be compromised if the Quagga mussel has been introduced into Wild Horse Reservoir. It is essential to accompany monitoring that is done by Idaho or Nevada.

The BLM needs to make the raw pasture data including all photo points for conditions and corresponding photos available. Similarly all range condition transects and historical transect data need to be available.

The data on recreational use is harder to quantify or make reproducible. This becomes a more subjective monitoring. Are there more off-road vehicle tracks? Is trash accumulating? Etc.

Where other agencies are monitoring items of concern to the Owyhee Watershed Council, the council should request frequent updates, with data, from these agencies.

## D. Data gaps

Within every component of this assessment data gaps and unknowns are discussed. These data gaps are also summarized or listed in Appendix J.

# Lower Owyhee Watershed Assessment

## Volume 2: Appendices

Prepared for

**The Owyhee Watershed Council**



Prepared by

**Scientific Ecological Services, Inc.**

Written by

**Candace B. Shock, Myrtle P. Shock, and Clinton C. Shock**

This assessment was funded by a grant from the
Oregon Watershed Enhancement Board

# Lower Owyhee Watershed Assessment

**A survey was conducted of the existing information about multiple interrelated aspects of the Lower Owyhee Watershed. An evaluation of the data concluded that the major current threat to the health of the Lower Owyhee Watershed is the spread of noxious, invasive species, such as tamarisk in riparian areas and medusahead rye in the rangelands.**

## Contents of the assessment:

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I. Overview
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III. Identified Issues
IV. Historical Conditions Assessment
V. Hydrology
VI. Water Use
VII. Irrigated Agriculture
VIII. Recreation
IX. Rangeland
X. Wildlife
XI. Riparian / Wetlands and Channel Habitat Type
XII. Channel Modification Assessment
XIII. Sediment Sources Assessment
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XVI. Watershed Condition Evaluation
XVII. Monitoring Plan


### Appendices: Volume 2


Appendix A. Notes on mapping
Appendix B. Description of the ecoregions in different systems of classification
Appendix C. Water rights in the lower Owyhee subbasin
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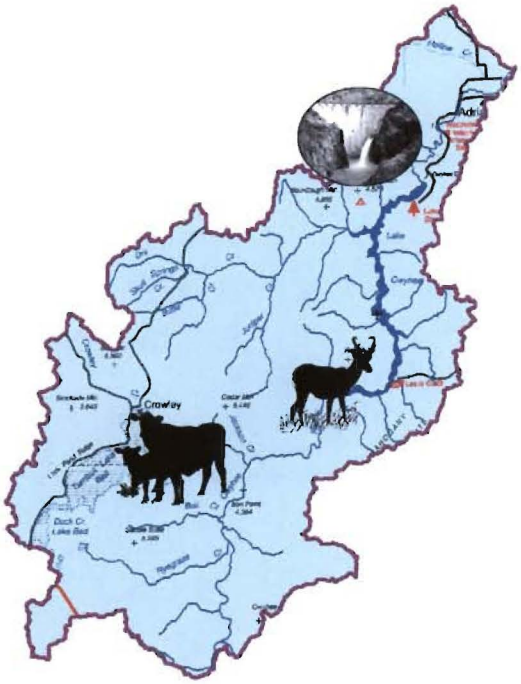
Appendix K. Interviews with residents

## Acknowledgments

Special thanks are due to Ray Perkins who helped formulate much of the Fish and Fish Habitat component. Valuable information and reviews were provided by Walt VanDyke, Bill Krueger, Gary Page, Andy Bentz, and Barry Nord. We are indebted to information available from many published sources and public presentations.

The Owyhee Watershed Council contributed by reading components and offering many helpful comments. Of special note are the suggestions received from Jerry Hoagland, Jennifer Martin, Carl Hill, Martin Andre and Donna Culley.



# Lower Owyhee Watershed Assessment

## Appendix A. Notes on mapping



## Appendix A. Notes on mapping

### 1. Description of how maps were created

The information included as maps in this assessment came from many different sources. The earth's surface is part of a sphere. Maps are flat. There are many different ways of orienting and shaping, "projecting", the spherical surface onto the flat plane. Our brains are capable of taking the landmarks which we recognize and correctly interpreting how the other features are related. However, for comparative purposes it is nice to have all data on paper in a similar projection.

Since the state of Oregon uses the "Oregon Lambert" projection, that is the projection used for the outline of the lower Owyhee subbasin on most of the maps. The other features which were available in the Oregon Lambert projection were the rivers and the highways. The rivers, highways and outline of the lower Owyhee subbasin make up the base map. This is the map that serves as the background on which other information like vegetation can be charted. There are computer programs to create maps using available "coverages", digitized information about where features are located. The programs used in this assessment were ArcGIS for Windows and GRASS for Linux. The original projections of a coverage (map of one characteristic) can be "reprojected" so they match the orientation of the base map. Some of the maps in this assessment were created entirely within ArcGIS combining this available information from different sources.

The Oregon Lambert projection of the base map of the lower Owyhee subbasin was created in GRASS and saved as an image. Adobe Photoshop 7.0 was used to combine maps from different sources. The highways, Owyhee reservoir, and to a lesser extent the rivers on the base map were used to orient other maps to the Oregon Lambert projection of the base map. Using the transform options in Adobe Photoshop,

a scan of the 1998-99 Oregon Department of Transportation highway map was combined with this base map. This second base map using highways as main features makes finding familiar features easier. For most maps edited in Adobe Photoshop, this new map which located the lower Owyhee subbasin in relation to its surroundings served as the base map.

All maps created in Grass were imported into Adobe Photoshop for final editing.

The map showing the location of perennial streams was adapted from the *Oregon Atlas & Gazetteer*. In this instance the subbasin outline was oriented to the map. The perennial streams were identified from a careful examination of the USGS topographic maps that cover the region of the lower Owyhee subbasin (Figure A.1).

The map of all of Malheur County was adapted from the 1999 Rand McNally Road Atlas and oriented to the Oregon Lambert projection base map.

The township and range map (Figure A.2) was superimposed on other maps to locate items given the township and range information.

Maps from the Southeastern Oregon Resource Management Plan were imported from the pdf file, enlarged, rotated, and fit to the Oregon Lambert projection base map.

Maps from the Dry Creek geographic management area assessment were oriented to the Oregon Lambert projection base map.

## 2. Sources of map data (not footnoted on maps)

### *a. Oregon Geospatial Enterprise Office*

Coverages from the Oregon Geospatial Enterprise Office. 2006. Oregon Geospatial Data Clearinghouse. http://gis.oregon.gov/DAS/IRMD/GEO/alphalist.shtml.

Last accessed 8/6/06.

Counties. orcnty24.zip

Highways. 2006. This data layer includes all state owned or maintained highways, connections, frontage roads, temporary traveled routes and located lines. ODOT, 1:24,000. hwynet2006.zip

Hydrologic Units - 4th Field. Hydrologic Units,1:24,000. hydro_units_4th.zip

Land, Public Ownership. 2004. ODF, 1:24000. pubown.zip.

Rivers (orrivers). EPA, 1:250,000. orrivers.zip

303d Streams - 2002. DEQ, 1:100,000. streams303d_02.zip.

Vegetation/Species. Idaho F&W GAP vegetation, 1:100,000. gap_vegetation.zip.

Last accessed 11/21/06

Township/Range (Figure A.2)

### *b. Zip codes:*

U.S. Census Bureau. 2006. Cartographic Boundary Files: Census 2000 5-Digit AIP Code Tabulation Areas (ZCTAs). Oregon - zt41_d00_shp.zip (1,683,390 bytes). Accessed 7/20/2006. http://www.census.gov/geo/www/cob/z52000.html

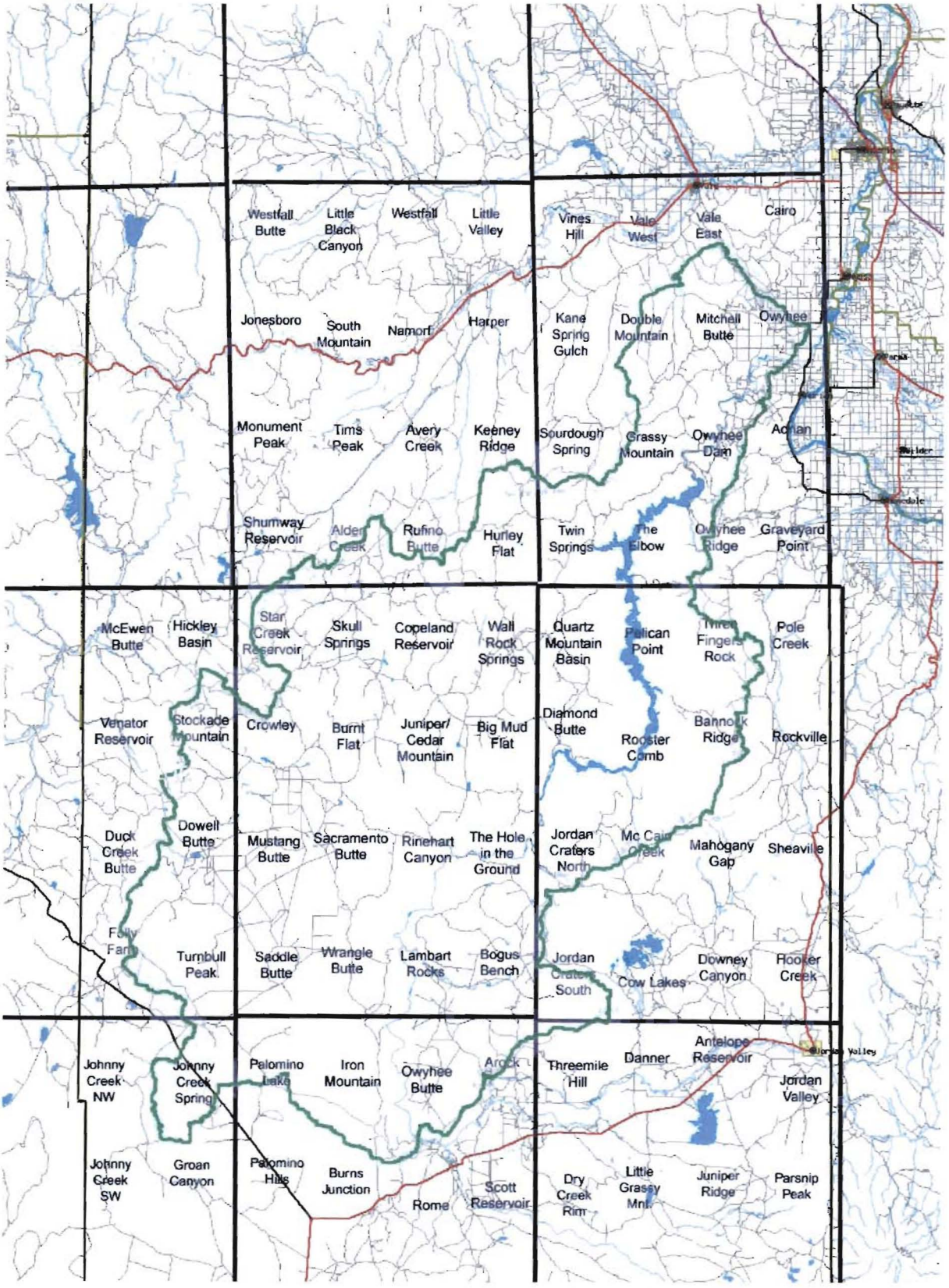



**Figure A.1. USGS quadrangle maps in the lower Owyhee subbasin.**

## 3. USGS topographic maps:

Alder Creek
Arock
Bannock Ridge
Big Mud Flat
Bogus Bench
Burnt Flat
Cedar Mountain
Copeland Reservoir
Crowley
Diamond Butte
Double Mountain
Dowell Butte
Duck Creek Butte
Folly Farm
Grassy Mountain
Hurley Flat
Iron Mountain
Johnny Creek Spring
Jordan Craters North
Jordan Craters South
Keeney Ridge
Lambert Rocks
McCain Creek
Mitchell Butte
Mustang Butte
Owyhee
Owyhee Butte
Owyhee Dam
Owyhee Ridge
Palomino Lake
Pelican Point
Quartz Mountain Basin
Rinehart Canyon
Rooster Comb
Rufino Butte
Sacramento Butte
Saddle Butte
Shumway Reservoir
Skull Spring
Star Creek Reservoir
Stockade Mountain
The Elbow
The Hole in the Ground
Three Fingers Rock
Threemile Hill
Turnbull Peak
Twin Springs
Wall Rock Springs
Wrangle Butte

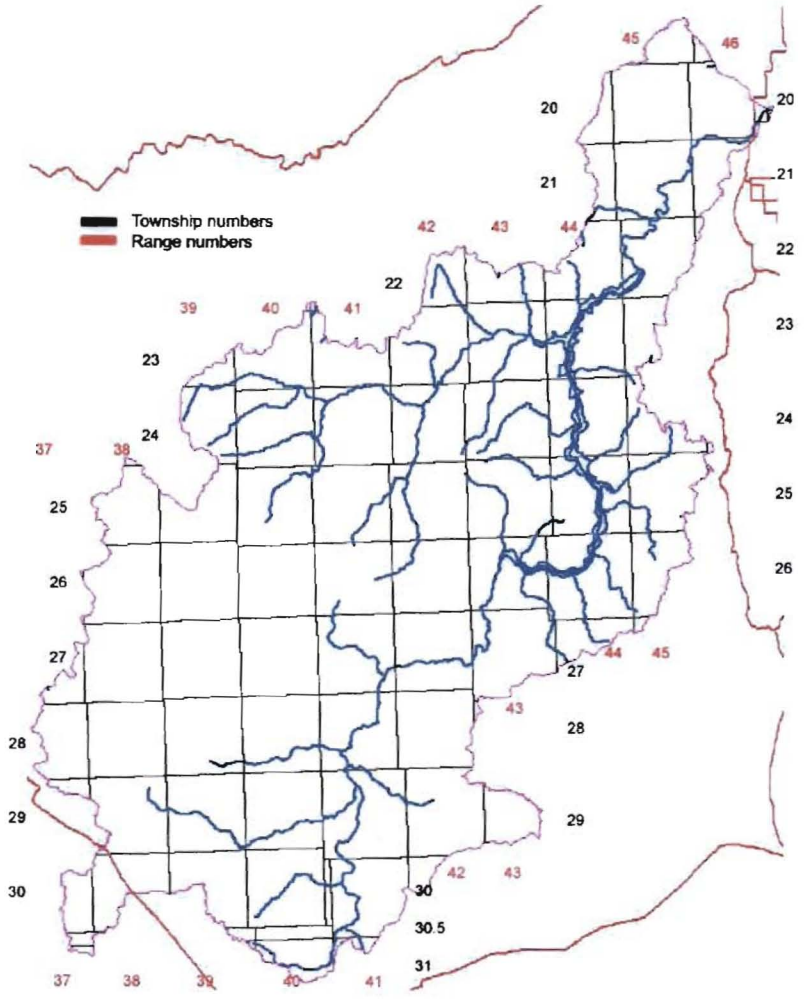



**Figure A.2. Township and range numbers in the lower Owyhee subbasin.**

# Lower Owyhee Watershed Assessment



## Appendix B. Descriptions of the ecoregions in different systems of classification

All descriptions are verbatim from the identified source. The descriptions from *The Ecological Provinces of Oregon* have material edited out, but no material added.

### A. Description of the NRCS common resource areas in the lower Owyhee subbasin

**10.1 – Central Rocky and Blue Mountain Foothills – Warm, Dry Blue and Seven Devils Mountains Foothills:** This unit lies between Oregon's Blue and Wallowa Mountains and the northwestern Snake River Plain. It is characterized by rangeland soils on hills and mountains associated with basalt and exposed tuffaceous sediment. The combined masses of the Cascade Range and the Blue and Wallowa Mountains block any maritime influence, creating a continental climate. As a result, plants are subject to a wide range in temperature, a high rate of evapotranspiration, and high early-season moisture stress. The dominant soils are those of the Brogan, Simas, Ruckles, and Ruclick series. The temperature regime is mesic, and the moisture regime is aridic. The mean annual precipitation is 9 to 12 inches. The vegetation is dominantly Wyoming big sagebrush and bluebunch wheatgrass (warm, dry climate).[3]

**10.16 – Central Rocky and Blue Mountain Foothills - Cool Moist Blue Mountain Foothills:** This unit is characterized by rangeland soils on hills and mountains associated with basalt. This unit is similar to the Lava Fields unit, but this unit receives more precipitation and has a xeric soil moisture regime. The dominant soils are those of the Ateron, Durkee, Menbo, Merlin, and Observation series. The temperature regime is frigid, and the moisture regime is xeric. The mean annual precipitation is 12 to 20 inches. The vegetation is dominantly mountain big sagebrush with Idaho fescue (cool, moist areas).[2]

**11.1 – Snake River Plains - Treasure Valley:** This unit is characterized by irrigated cropland, pastureland, and rapidly growing cities, suburbs, and industries. Many canals, reservoirs, and diversions are present. Aridic soils are dominant. Irrigation is required to grow commercial crops. Surface water quality has been significantly affected by channel alteration, dams, irrigation return flow, and urban, industrial, and agricultural pollution. Crops include wheat, barley, alfalfa, sugar beets, potatoes, and

beans. Crop diversity is greater, temperatures are warmer, and the mean frost-free season is longer on this unit than they are in other CRA units. Also, the population density is much higher than in nearby units that are dominantly rangeland.[5]

**11.7 – Snake River Plains - Dry Unwooded Alkaline Foothills:** The shrub- and grass-covered unwooded alkaline foothills unit is higher and more rugged than adjacent valley units. Alkaline lacustrine terrace deposits are in this unit, unlike in other units, and they support a unique flora. Shallow and moderately deep soils over a cemented pan are common. The potential natural vegetation is saltbush-greasewood and sagebrush steppe. Today, cheatgrass and crested wheatgrass also are common. This unit is used for livestock grazing.[3]

**23.2 - Malheur High Plateau - Cool High Desert Wetlands:** This unit is characterized by cold, wet basins that have a minimal amount of ash, if any. The unit is primarily in Harney Basin. The soils range from well drained to very poorly drained and from nonsaline and nonsodic to very strongly alkaline. Numerous ponded wetlands are present. The temperature regime is frigid, and the moisture regime is aridic with aquic soil conditions. The dominant soils are those of the Ausmus, Poujade, Widowspring, and Lawen series.[2]

**23.4 – Malheur High Plateau - High Lava Plains:** This unit is on basalt plateaus and the escarpments of fault block mountains. The temperature regime is frigid or mesic, and the moisture regime is primarily aridic. The soils are typically shallow or moderately deep to bedrock or a cemented pan and have a strongly developed argillic horizon. The vegetation is dominantly low sagebrush, Wyoming big sagebrush, Idaho fescue, Thurber needlegrass, and bluebunch wheatgrass. Playas, small intermittent lakes, and clay that has a high shrink-swell potential are common in depressions.[3]

**23.7 - Malheur High Plateau - Alluvial Fans and Pluvial Lake Terraces:** This unit is characterized by warm soils on lake terraces. Wetlands and saline-sodic soils are typically absent. The soils typically have a cemented pan within a depth of 40 inches, but they do not have bedrock within a depth of 60 inches. The temperature regime is mesic but near frigid, and the moisture regime is aridic. The dominant soils include those of the Deppy, McConnel, Spangenburg, and Norad series.[4]

**25.2 – Owyhee High Plateau - Dissected High Lava Plateau:** This unit consists of alluvial fans, rolling plains, and shear-walled canyons that are cut into extrusive rock. Sagebrush grassland is common, and scattered areas of woodland are on the rocky uplands. This unit supports cooler season grasses than do the valleys to the south, and it does not support saltbush and greasewood. Frigid and mesic Aridisols and Mollisols are in this unit. Grazing is the primary land use. Cropland is less common on this unit than it is on the Snake River Plain. High-quality water and native fish assemblages are in isolated canyons.[4]

**25.3 – Owyhee High Plateau - Owyhee Uplands and Canyons:** This unit contains deep, precipitous river canyons, barren lava fields, badlands, and tuffaceous outcroppings that are riddled by caves. The unit supports sagebrush grassland.[3]

## B. Description of the Oregon Natural Heritage subregions in the lower Owyhee subbasin[6]

**12. Snake River Plains:** Ecoregion 12 is part of the xeric intermontane west. It is considerably lower and less rugged than surrounding ecoregions. Irrigation water is plentiful in many areas. Many of the alluvial valleys bordering the Snake River are in agriculture and principally grow sugar beets, potatoes, alfalfa, small grains, and vegetables. Cattle feedlots and dairy operations are also common in the river plain. The remainder of the plains and low hills in the ecoregion have a sagebrush steppe potential natural vegetation and are used for cattle grazing.

**12a. Treasure Valley:** The Treasure Valley ecoregion flanks the Snake and Malheur rivers and is underlain by Pleistocene alluvium, loess, lacustrine, and alluvial fan deposits. Most soils have an aridic moisture regime and irrigation is required to grow commercial crops. Many canals, reservoirs, and diversions are found in this portion of the Snake River Plain (12) and supply water to extensive pastureland and cropland as well as cities and industry. Water quality in many stream reaches has been significantly affected by channel alteration, dams, irrigation diversions, irrigation return flow, and urban, industrial, and agricultural pollution. Crops include wheat, barley, alfalfa, sugar beets, potatoes, beans, and some specialty crops. Population density is much greater than in neighboring, rangeland-dominated ecoregions. Potential natural vegetation is sagebrush and bunchgrass.

**12j. Unwooded Alkaline Foothills:** The Unwooded Alkaline Foothills ecoregion is shrub- and grass-covered. It is characteristically underlain by sandy, alkaline deposits from ancient Lake Payette which are absent from surrounding ecoregions. A few basalt outcrops also occur. Ecoregion 12j contains rolling foothills, hills, benches, alluvial fans, and scattered badlands that have been etched into lacustrine deposits. The terrain is higher and more rugged than the neighboring Treasure Valley (12a). Perennial streams are rare. Ecoregion 12j is valuable as rangeland and wildlife habitat. Land use is generally distinct from the irrigated agriculture of the neighboring Treasure Valley (12a). However, scattered areas near rivers or reservoirs that have enough water to leach out salts from the soil do support alfalfa or sugar beet farming. Potential natural vegetation is saltbush-greasewood and sagebrush steppe; it is dominated by Wyoming big sagebrush, bluebunch wheatgrass, and salt tolerant shrubs, including black greasewood, four wing saltbush, and shadscale. Today, cheat grass and crested wheatgrass are also common. Plants including *Astragalus mulfordiae*, *Allium aaseae*, and *Hackelia cronquistii* grow in the sandy, alkaline, lake deposits of Ecoregion 12j and nowhere else.

**80. Northern Basin and Range:** Ecoregion 80 consists of dissected lava plains, rolling hills, alluvial fans, valleys, and scattered mountains. Mountains are less common in the west than in the east. Overall, it is higher and cooler than the Snake River Plain (12) and has more available moisture than the Central Basin and Range (13). Sagebrush steppe is extensive unlike in Ecoregion 13. Juniper-dominated woodland occurs on rugged, stony uplands. Much of Ecoregion 80 is used as rangeland. Cropland is found locally, but, in general, the Northern Basin and Range (80) is less suitable for agriculture than the Columbia Plateau (10) or the Snake River Plain (12). Ecoregion 80

occurs in southcentral and southeastern Oregon beyond the extent of Pleistocene Lake Lahontan. Most of Ecoregion 80 in Oregon is internally drained but the eastern third is externally drained.

**80a. Dissected High Lava Plateau:** The Dissected High Lava Plateau ecoregion contains alluvial fans, rolling plains, hills, and shear-walled canyons cut into basalt. The potential natural vegetation is mostly sagebrush steppe but scattered woodlands are found on rocky and gravelly uplands. Mollisols are common and support bluebunch wheatgrass, Wyoming big sagebrush, black sagebrush, and scattered junipers. Most soils have a frigid temperature regime. Characteristically, Ecoregion 80a is externally drained in contrast to the High Lava Plains (80g) and the Central Basin and Range (13). A few intermittent lakes occur but are much less common than in Ecoregion 80g. Land use is primarily rangeland and wildlife habitat but some irrigated pastureland and cropland also occur.

**80d. Pluvial Lake Basins:** Water collects and evaporates on the Pluvial Lake Basins ecoregion in south central Oregon. Its basins or playas were vast lakes during the Pleistocene glacial period. They have cooler mean annual temperatures than the basins of the Central Basin and Range (13). The dry lake beds near the Cascade Mountains have a significant ash layer present. Sagebrush dominates in finely textured, well-drained soil, and greasewood grows in more alkaline soil. Alfalfa is grown on a limited basis in irrigated areas.

**80f. Owyhee Uplands and Canyons:** The Owyhee Uplands and Canyons ecoregion is characterized by its geological and geomorphological features that include deep, precipitous river canyons, barren lava fields, badlands, and ochre-colored tuffaceous outcrops that are riddled by caves. Landforms are more complex, lithology is more varied, stream density is higher, and water availability is greater in Ecoregion 80f than in the Dissected High Lava Plateau (80a). These characteristics, combined with its remote location, make the Owyhee Uplands and Canyons (80f) particularly valuable as refuge for wildlife. Potential natural vegetation consists of Wyoming big sagebrush, low sagebrush, Sandberg bluegrass, bluebunch wheatgrass, and Idaho fescue. It is similar to the vegetation of Ecoregion 80a but differs from the shadscale and desert shrubs of the nearby Unwooded Alkaline Foothills (12j).

**80g. High Lava Plains:** The vast High Lava Plains ecoregion is shrub-covered and has no outlet to the ocean. Its gently rolling terrain is punctuated by scattered volcanic cones and buttes. Streams are mostly intermittent. Ecoregion 80g differs from the Dissected High Lava Plateau (80a) because it is internally-drained; as a result, the fish assemblage of Ecoregion 80g lacks an anadromous component. The potential natural vegetation is mapped as sagebrush steppe; bluebunch wheatgrass is generally associated with Wyoming big sagebrush except in overgrazed areas where bunchgrasses have been depleted and replaced by cheatgrass.

## C. From the Ecological Provinces of Oregon[1]

**Snake River Ecological Province:** Snake River Province of Oregon is typified by extensive dissected terraces formed in ancient lakes. These terraces are

geologically eroded to the point that they appear as plateaus, basins, low rolling hills, and prominent hills separated by sharp dendritic drainage patterns. Mountainous terrain is interspersed throughout most of the province. Cedar Mountain and Owyhee Ridge just east of Owyhee Reservoir are rugged basaltic formations.

Alluvial valleys, which are used for irrigated agriculture, run along major watercourses. The soils formed on ancient terraces in Snake River Province vary considerably by location according to the terrace materials in which they were formed. The average annual precipitation is about 9.9 inches, of which only 28% occurs during the native-plant growing season, April through June. In terms of acreage, the vegetation of Snake River Province is primarily a shrub-grassland climax type.

**High Desert Ecological Province:** High Desert Province is characterized by innumerable large and small closed basins surrounded by extensive terraces formed in ancient lakes. Interspersed in this pattern of closed basins and terraces are low basaltic ridges, hilly uplands, [and] isolated buttes.

The terrace and basin portion of the province is flat to gently sloping. This is the part of Oregon that apparently was largely inundated by ancient lakes. Soils in the terraces and basins of High Desert Province were formed from parent materials mainly through water action. Average annual precipitation for the province is about 10 inches. High Desert Province in Oregon also is uniformly cold. Throughout High Desert Province, climate varies widely from locality to locality at any given time, both seasonally and from year to year, even though in general it is a uniformly dry climate with extremes of cold and hot.

**Owyhee Ecological Province:** Owyhee Province in the southeastern corner of Oregon comprises the western foothills and associated plains of the Owyhee Mountains, which are in southwestern Idaho. The north portion of the province in Oregon consists of lava fields, a few lake basins, and some mountainous areas lying south and east of the major Owyhee River canyon breaks.

Soils of Owyhee Province are related to very extensive basaltic uplands associated with the Owyhee Mountains in southwestern Idaho. The 22-year record at Danner shows an average annual precipitation of 10.6 inches of which 53% falls in winter (November through March) and 31% in the herbaceous native-plant growing season (April through June). In Oregon, vegetation associated with the extensive basaltic uplands of Owyhee Province is shrub-grassland climax type, i.e. with 10% or more natural canopy cover of shrubs.

## D. Sources quoted in appendix B.

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4. NRCS. 2005. Middle Owyhee – 17050107: 8-Digit Hydrologic Unit Profile. Accessed 7/28/2006. ftp://ftp-fc.sc.egov.usda.gov/OR/HUC/basins/snake/17050107_11-03-05.pdf
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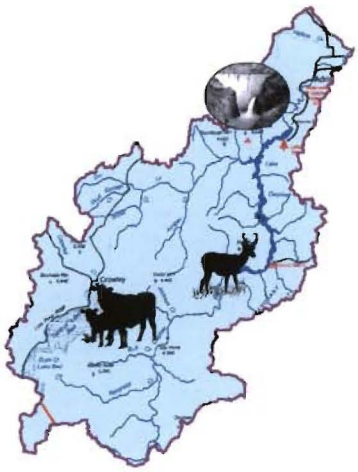

# Lower Owyhee Watershed Assessment



## Appendix C. Water rights in the lower Owyhee subbasin

| Township, Range, Section | | | Use | Source | Permittee |
|---|---|---|---|---|---|
| 31 | 40 | 12 | Livestock | Crooked Creek surface | Priv. |
| 30 | 38 | 18 | Livestock/wildlife | Ryegrass reservoir | BLM |
| 30 | 38 | 30 | Livestock/wildlife | Dam Intermittent stream in Lost Res. | BLM |
| 30 | 40.5 | 1 | Livestock | Crooked Creek surface | Priv. |
| 30 | 40.5 | 13 | Livestock | Surface Crooked Creek | Priv. |
| 30 | 40.5 | 25 | Livestock | Surface Crooked Creek | Priv. |
| 30 | 41 | 16 | Livestock | Reservoir | BLM |
| 30 | 41 | 22 | Livestock | Reservoir | BLM |
| 30 | 42 | 5 | Livestock/wildlife | Rimrock reservoir | BLM |
| 30 | 42 | 6 | Livestock | Reservoir | BLM |
| 29 | 37 | 1 | Livestock/wildlife | Turnbull Peak reservoir | BLM |
| 29 | 37 | 3 | Livestock | Pond 1 | State Lands |
| 29 | 38 | 2 | Livestock/wildlife | East Split Pit Reservoir | BLM |
| 29 | 38 | 3 | Livestock/wildlife | West Split Pit Reservoir | BLM |
| 29 | 38 | 17 | Livestock/wildlife | Turnbull Reservoir | BLM |
| 29 | 38 | 27 | Livestock/wildlife | Feather Pit Reservoir | BLM |
| 29 | 39 | 3 | Livestock | Dam | State Lands |
| 29 | 39 | 3 | Livestock | Dam | State Lands |
| 29 | 39 | 12 | Livestock | Dam | State Lands |
| 29 | 39 | 12 | Livestock | Dam | State Lands |
| 29 | 39 | 24 | Livestock/wildlife | Skeddaddle Pit Reservoir | BLM |
| 29 | 40 | 26 | Livestock | Surface Crooked Creek | Priv. |
| 29 | 40 | 36 | Livestock | Surface Crooked Creek | Priv. |

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|---|---|---|---|---|---|
| 29 | 41 | 2,3 | Irrigation | Bogus Creek | Priv. |
| 29 | 41 | 2 | Livestock | Reservoir | BLM |
| 29 | 41 | 2 | Livestock | Reservoir | BLM |
| 29 | 41 | 2 | Irrigation | Surface Bogus Creek | Priv. |
| 29 | 41 | 18 | Livestock | Surface Crooked Creek | Priv. |
| 29 | 41 | 27 | Livestock | Reservoir | BLM |
| 29 | 41 | 30 | Livestock/wildlife | Sand Springs Reservoir | BLM |
| 29 | 41 | 33 | Livestock | White Rock Reservoir | BLM |
| 29 | 41 | 36 | Livestock | Owyhee Butte #2 Reservoir | BLM |
| 29 | 42 | 3 | Livestock/wildlife | Bogus Bench Reservoir | BLM |
| 29 | 42 | 5 | Livestock | Indian Camp Reservoir | BLM |
| 29 | 42 | 6 | Livestock | Bogus Rim Reservoir | BLM |
| 29 | 42 | 20 | Livestock | Reservoir | BLM |
| 29 | 42 | 23 | Livestock/wildlife | West Crater Pit Reservoir | BLM |
| 29 | 42 | 24 | Livestock/wildlife | Junction Pit Reservoir | BLM |
| 29 | 42 | 26 | Livestock/wildlife | Trail Pit Reservoir | BLM |
| 29 | 42 | 27 | Livestock/wildlife | Little Crater Reservoir | BLM |
| 29 | 42 | 30 | Livestock | Reservoir | BLM |
| 29 | 42 | 33 | Livestock/wildlife | Rough Reservoir | BLM |
| 29 | 43 | 17 | Livestock/wildlife | Lake Reservoir | BLM |
| 29 | 43 | 18 | Livestock/wildlife | Reservoir | BLM |
| 28 | 37 | 3 | Livestock | Dam | State lands |
| 28 | 37 | 3 | Livestock/wildlife | Reservoir 1 | Priv. |
| 28 | 37 | 3 | Livestock/wildlife | Reservoir 2 | Priv. |
| 28 | 37 | 9 | Livestock/wildlife | Sheep Camp Pit Reservoir | BLM |
| 28 | 37 | 10 | Livestock/wildlife | Reservoir 3 | Priv. |
| 28 | 37 | 13 | Livestock | Pond3 | State lands |
| 28 | 37 | 22 | Livestock/wildlife | Porcupine | BLM |
| 28 | 37 | 24 | Livestock/wildlife | Duck Butte Reservoir 27 | Priv. |
| 28 | 37 | 26 | Livestock/wildlife | Duck Butte Reservoir 28 | Priv. |
| 28 | 37 | 26 | Livestock/wildlife | Duck Butte Reservoir 29 | Priv. |
| 28 | 37 | 27 | Livestock/wildlife | Sodium Reservoir | BLM |
| 28 | 37 | 28 | Livestock/wildlife | Big Gulch Reservoir | BLM |
| 28 | 37 | 28 | Livestock/wildlife | Jenkins Reservoir | BLM |
| 28 | 37 | 33 | Livestock/wildlife | Black Bull Reservoir | BLM |
| 28 | 37 | 33 | Livestock/wildlife | Downpour Waterhole Reservoir | BLM |
| 28 | 37 | 33 | Livestock/wildlife | Sandpiper Reservoir | BLM |
| 28 | 37 | 34 | Livestock | Pond 2 | State lands |
| 28 | 37 | 35 | Livestock/wildlife | Duck Butte Reservoir 31 | Priv. |
| 28 | 37 | 35 | Livestock/wildlife | Duck Butte Reservoir 32 | Priv. |
| 28 | 37 | 36 | Livestock/wildlife | Duck Butte Reservoir 30 | Priv. |
| 28 | 37 | 36 | Livestock/wildlife | Duck Butte Reservoir 33 | Priv. |

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| 28 | 37 | 36 | Livestock/wildlife | Duck Butte Reservoir 34 | Priv. |
| 28 | 38 | 4 | Irrigaton | Well | Priv. |
| 28 | 38 | 8 | Livestock/wildlife | Duck Butte Reservoir 24 | Priv. |
| 28 | 38 | 13 | Livestock/wildlife | Reservoir | Priv. |
| 28 | 38 | 14 | Livestock/wildlife | Diamond Pit Reservoir | BLM |
| 28 | 38 | 17 | Livestock/wildlife | Duck Butte Reservoir 23 | Priv. |
| 28 | 38 | 18 | Livestock/wildlife | Duck Butte Reservoir 26 | Priv. |
| 28 | 38 | 18 | Livestock/wildlife | Duck Butte Reservoir 25 | Priv. |
| 28 | 38 | 20 | Livestock/wildlife | Guenchin (??) Reservoir | BLM |
| 28 | 38 | 29 | Livestock/wildlife | Seventy-seven Pit Reservoir | BLM |
| 28 | 38 | 33 | Livestock/wildlife | Seventy Eight Reservoir | BLM |
| 28 | 39 | 7 | Livestock/wildlife | Buttercup Reservoir | BLM |
| 28 | 39 | 14 | Livestock/wildlife | Nut Shell Reservoir | BLM |
| 28 | 39 | 19 | Livestock/wildlife | Phoebe Reservoir | BLM |
| 28 | 39 | 35 | Livestock | Dam | State lands |
| 28 | 40 | 7 | Livestock | Clark 3 Pond | Priv. |
| 28 | 40 | 11 | Livestock/wildlife | Lower Clark Reservoir | BLM |
| 28 | 40 | 11 | Irrigation | Clark Reservoir | Priv. |
| 28 | 40 | 12 | Irrigation | Clark Reservoir #2 | Priv. |
| 28 | 40 | 14 | Irrigation | Surface Trib. Bull Creek | Priv. |
| 28 | 40 | 28 | Livestock | Bull Creek Pond | Priv. |
| 28 | 40 | 28 | Livestock/wildlife | Top Hat Reservoir | BLM |
| 28 | 41 | 1 | Livestock/wildlife | Lower Fort Creek Reservoir | BLM |
| 28 | 41 | 7 | Livestock/wildlife | Upper Clark Reservoir | BLM |
| 28 | 41 | 12 | Livestock | Iron Point Reservoir | BLM |
| 28 | 41 | 12 | Livestock | Reservoir | BLM |
| 28 | 41 | 13 | Livestock | Cave Reservoir | BLM |
| 28 | 41 | 17 | Livestock | Surface Hoot Owl Spring | BLM |
| 28 | 41 | 27 | Livestock | Reservoir | BLM |
| 28 | 41 | 27 | Livestock | Reservoir | BLM |
| 28 | 41 | 34 | Irrigation | Surface Bogus Creek | Priv. |
| 28 | 42 | 1 | Livestock/wildlife | Deer Park RIm Reservoir | BLM |
| 28 | 42 | 3 | Livestock/wildlife | Riley Horn Reservoir | BLM |
| 28 | 42 | 5 | Livestock/wildlife | Upper Fort Creek Reservoir | BLM |
| 28 | 42 | 6 | Livestock/wildlife | Little Reservoir | BLM |
| 28 | 42 | 7 | Livestock/wildlife | Prospect 2 Reservoir | BLM |
| 28 | 42 | 7 | Livestock | Reservoir | BLM |
| 28 | 42 | 8 | Livestock | Wensday Reservoir | BLM |
| 28 | 42 | 9 | Livestock | Reservoir | BLM |
| 28 | 42 | 11 | Livestock/wildlife | Deer Butte No. 1Reservoir | BLM |
| 28 | 42 | 16 | Livestock | Morcom Reservoir | BLM |

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| 28 | 42 | 17 | Livestock | Reservoir | BLM |
| 28 | 42 | 21 | Livestock/wildlife | Mud Creek Reservoir | BLM |
| 28 | 42 | 22 | Livestock/wildlife | Deer Butte 3 Reservoir | BLM |
| 28 | 42 | 23 | Livestock/wildlife | Deer Butte 2 Reservoir | BLM |
| 28 | 42 | 24 | Livestock/wildlife | Lodge 1 Reservoir | BLM |
| 28 | 42 | 34 | Livestock/wildlife | Short Reservoir | BLM |
| 28 | 42 | 35 | Livestock | Reservoir | BLM |
| 27 | 37 | 27 | Livestock | Pond 4 | State lands |
| 27 | 38 | 5 | Livestock/wildlife | Reservoir 9 | Priv. |
| 27 | 38 | 6 | Livestock/wildlife | Reservoir 8 | Priv. |
| 27 | 38 | 6 | Livestock/wildlife | Duck Butte Reservoir 12 | Priv. |
| 27 | 38 | 7 | Livestock/wildlife | Reservoir 7 | Priv. |
| 27 | 38 | 8 | Livestock/wildlife | Reservoir 10 | Priv. |
| 27 | 38 | 8 | Livestock/wildlife | Duck Butte Reservoir 11 | Priv. |
| 27 | 38 | 8 | Livestock/wildlife | Duck Butte Reservoir 13 | Priv. |
| 27 | 38 | 15 | Livestock/wildlife | Duck Butte Reservoir 14 | Priv. |
| 27 | 38 | 16 | Livestock | Pond 5 | State lands |
| 27 | 38 | 18 | Livestock/wildlife | Reservoir 6 | Priv. |
| 27 | 38 | 22 | Livestock/wildlife | Duck Butte Reservoir 15 | Priv. |
| 27 | 38 | 22 | Livestock/wildlife | Duck Butte Reservoir 16 | Priv. |
| 27 | 38 | 28 | Livestock | Pond 6 | State lands |
| 27 | 38 | 28 | Livestock/wildlife | Duck Butte Reservoir 18 | Priv. |
| 27 | 38 | 30 | Livestock/wildlife | Reservoir 5 | Priv. |
| 27 | 38 | 30 | Livestock/wildlife | Reservoir 4 | Priv. |
| 27 | 38 | 32 | Livestock/wildlife | Duck Butte Reservoir 20 | Priv. |
| 27 | 38 | 32 | Livestock/wildlife | Duck Butte Reservoir 21 | Priv. |
| 27 | 38 | 33 | Livestock/wildlife | Duck Butte Reservoir 22 | Priv. |
| 27 | 38 | 33 | Livestock/wildlife | Duck Butte Reservoir 19 | Priv. |
| 27 | 39 | 18 | Irrigation | Surface Rocky Canyon Creek | Priv. |
| 27 | 39 | 34 | Livestock/wildlife | Duck Bill Reservoir | BLM |
| 27 | 40 | 2 | Livestock/wildlife | Crowley Rinehart RoadReservoir | BLM |
| 27 | 40 | 2 | Livestock | Crowley Rinehart Pond | Priv. |
| 27 | 40 | 3 | Livestock | Hope Reservoir | Priv. |
| 27 | 40 | 5 | Irrigation | Surface Burnt Flat Creek | Priv. |
| 27 | 40 | 10 | Livestock | Red Well Pond | Priv. |
| 27 | 40 | 23 | Livestock/wildlife | Reservoir | BLM |
| 27 | 40 | 34 | Livestock/wildlife | Barren Basin Reservoir | BLM |
| 27 | 41 | 1 | Livestock/wildlife | Rinehart Creek Reservoir 48-0315 | BLM |
| 27 | 41 | 2 | Livestock/wildlife | Reservoir | BLM |
| 27 | 41 | 3 | Livestock/wildlife | Reservoir | BLM |
| 27 | 41 | 8 | Agriculture | Gallagher Reservoir | Priv. |

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| 27 | 41 | 8 | Livestock | Gallagher Pond | Priv. |
| 27 | 41 | 10 | Livestock/wildlife | Jackson Creek 2 48-5930 Reservoir | BLM |
| 27 | 41 | 11 | Livestock | Reservoir | BLM |
| 27 | 41 | 15 | Livestock/wildlife | Reservoir | BLM |
| 27 | 41 | 15 | Livestock | Jackson Creek 2 Pond | Priv. |
| 27 | 41 | 20 | Livestock/wildlife | Sacramento Butte Reservoir | BLM |
| 27 | 41 | 20 | Livestock/wildlife | Hanson Pond 2 | BLM |
| 27 | 41 | 22 | Livestock/wildlife | Jack Creek Reservoir | BLM |
| 27 | 41 | 22 | Livestock | Jackson Creek 1 Pond | Priv. |
| 27 | 41 | 27 | Livestock | Sand Basin 1 Pond | Priv. |
| 27 | 41 | 27 | Livestock/wildlife | Lower Miller Reservoir | BLM |
| 27 | 41 | 29 | Livestock/wildlife | Hanson Water Hole | BLM |
| 27 | 41 | 31 | Livestock | Sacramento Pond | Priv. |
| 27 | 41 | 31 | Livestock/wildlife | Big Lake Waterhole Reservoir | BLM |
| 27 | 41 | 34 | Livestock | Sand Basin 2 Pond | Priv. |
| 27 | 42 | 3 | Livestock/wildlife | Reservoir | BLM |
| 27 | 42 | 8 | Livestock/wildlife | Owyhee Rim Reservoir | BLM |
| 27 | 42 | 16 | Livestock/wildlife | Blue Head Pit Reservoir | BLM |
| 27 | 42 | 18 | Livestock/wildlife | Bens Reservoir | BLM |
| 27 | 42 | 19 | Irrigation | Surface Rinehart Springs | Priv. |
| 27 | 42 | 19 | Irrigation | Surface Crooked Creek | Priv. |
| 27 | 42 | 19 | Irrigation | Surface Crooked Creek Springs | Priv. |
| 27 | 42 | 20 | Irrigation | Surface Owyhee River | Priv. |
| 27 | 42 | 21 | Irrigation | Surface Owyhee River | Priv. |
| 27 | 42 | 26 | Livestock/wildlife | Reservoir | BLM |
| 27 | 43 | 1 | Livestock/wildlife | Blue Canyon 2 Reservoir | BLM |
| 27 | 43 | 1 | Livestock/wildlife | Glover Reservoir 2 | BLM |
| 27 | 43 | 1 | Livestock/wildlife | Glover Reservoir 2 | Priv. |
| 27 | 43 | 5 | Irrigation | Under dam | Priv. |
| 27 | 43 | 6 | Irrigation | Under dam | Priv. |
| 27 | 43 | 7 | Irrigation | Owyhee River | Priv. |
| 27 | 43 | 11 | Livestock/wildlife | Blue Canyon 1 Reservoir | BLM |
| 27 | 43 | 12 | Livestock/wildlife | Glover Reservoir 1 | BLM |
| 27 | 43 | 12 | Livestock/wildlife | Glover Reservoir 1 | Priv. |
| 27 | 43 | 13 | Livestock | Res 0374 | Priv. |
| 27 | 43 | 13 | Livestock | Wild Rose Reservoir | BLM |
| 27 | 43 | 14 | Livestock/wildlife | Blue Canyon 2 Reservoir | BLM |
| 27 | 43 | 15 | Livestock | Claude Reservoir | Priv. |
| 27 | 43 | 15 | Livestock | Claude Reservoir | BLM |
| 27 | 43 | 15 | Livestock | Res 1349 | Priv. |
| 27 | 43 | 16 | Livestock/wildlife | Blue Head Pit Reservoir | BLM |
| 27 | 43 | 16 | Livestock | Res 4198 | Priv. |
| 27 | 43 | 18 | Irrigation | Owyhee River | Priv. |
| 27 | 43 | 23 | Livestock | Res 1984 | Priv. |

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| 27 | 43 | 25 | Livestock/wildlife | Pott Pasture Reservoir | BLM |
| 27 | 43 | 28 | Livestock | Res 0432 | Priv. |
| 27 | 43 | 28 | Livestock | Reservoir | BLM |
| 27 | 43 | 31 | Livestock/wildlife | Butte Reservoir | BLM |
| 27 | 43 | 33 | Livestock/wildlife | Reservoir | BLM |
| 27 | 44 | 5 | Livestock | Surface Moonshine Spring | Priv. |
| 27 | 44 | 7 | Livestock | Res 0368 | Priv. |
| 27 | 44 | 7 | Livestock | Reservoir | BLM |
| 27 | 44 | 9 | Livestock | Res 2008 | Priv. |
| 27 | 44 | 9 | Livestock/wildlife | Spring Basin Pit 48-2008 Reservoir | BLM |
| 27 | 44 | 11 | Livestock | Res 1983 | Priv. |
| 27 | 45 | 6 | Livestock | McConnel 013 Reservoir | Priv. |
| 26 | 38 | 4 | Livestock/wildlife | Pond 3 | Priv. |
| 26 | 38 | 9 | Livestock/wildlife | Pond 4 | Priv. |
| 26 | 38 | 9 | Livestock/wildlife | Pond 5 | Priv. |
| 26 | 38 | 10 | Livestock/wildlife | Pond 6 | Priv. |
| 26 | 38 | 16 | Livestock/wildlife | Pond 7 | Priv. |
| 26 | 38 | 17 | Livestock/wildlife | Pond 8 | Priv. |
| 26 | 38 | 21 | Livestock/wildlife | Pond 9 | Priv. |
| 26 | 38 | 35 | Livestock/wildlife | Pond 10 | Priv. |
| 26 | 38 | 36 | Livestock/wildlife | 48-0 Reservoir 2 | BLM |
| 26 | 39 | 14 | Irrigation | Surface Spring 1 | Priv. |
| 26 | 39 | 14 | Irrigation | Surface Spring 2 | Priv. |
| 26 | 39 | 15 | Irrigation | Surface Spring #1 Little Crowley Creek | Priv. |
| 26 | 39 | 15 | Irrigation | Surface Spring #2 Little Crowley Creek | Priv. |
| 26 | 39 | 15 | Irrigation | Surface Crowley Creek | Priv. |
| 26 | 39 | 15 | Irrigation | Malheur Live Stock & Land Reservoir | Priv. |
| 26 | 39 | 15 | Irrigation | Surface Little Crowley Creek | Priv. |
| 26 | 39 | 15 | Irrigation | Crowley Reservoir | Priv. |
| 26 | 39 | 23 | Irrigation | Surface Spring #1 Little Crowley Creek | Priv. |
| 26 | 39 | 23 | Irrigation | Surface Spring #2 Little Crowley Creek | Priv. |
| 26 | 39 | 23 | Irrigation | Surface Crowley Creek | Priv. |
| 26 | 39 | 23 | Irrigation | Malheur Live Stock & Land Reservoir | Priv. |
| 26 | 39 | 23 | Irrigation | Surface Little Crowley Creek | Priv. |
| 26 | 39 | 26 | Irrigation | Surface Crowley Reservoir | Priv. |
| 26 | 39 | 26 | Irrigation | Surface Big Crowley Creek | Priv. |
| 26 | 39 | 26 | Irrigation | Surface Little Crowley Creek | Priv. |
| 26 | 39 | 26 | Irrigation | Surface Spring 1 | Priv. |
| 26 | 39 | 26 | Irrigation | Surface Spring 2 | Priv. |
| 26 | 39 | 30 | Livestock/wildlife | Pond 1 | Priv. |

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| 26 | 40 | 1 | Agriculture | Frying Pan 1 Reservoir | Priv. |
| 26 | 40 | 8 | Livestock | Tiffin 1 Pond | Priv. |
| 26 | 40 | 8 | Livestock/wildlife | Tiffin 1 Reservoir | BLM |
| 26 | 40 | 12 | Livestock/wildlife | Seaburn 2 Reservoir | BLM |
| 26 | 40 | 12 | Livestock/wildlife | Seaburn 1 Reservoir | BLM |
| 26 | 40 | 12 | Livestock | Corliss Pond | Priv. |
| 26 | 40 | 18 | Livestock | Dowell Reservoir | BLM |
| 26 | 40 | 21 | Livestock | Burnt Flat Pond | Priv. |
| 26 | 40 | 21 | Livestock/wildlife | Burnt Flat Reservoir | BLM |
| 26 | 40 | 23 | Livestock | Reservoir | BLM |
| 26 | 40 | 23 | Livestock | N Gallagher Pond | Priv. |
| 26 | 40 | 27 | Livestock | W Gallagher Pond | Priv. |
| 26 | 40 | 27 | Livestock/wildlife | Hammack Reservoir | BLM |
| 26 | 40 | 33 | Agriculture | Lousy Jack Pond | Priv. |
| 26 | 40 | 34 | Livestock/wildlife | Reservoir | BLM |
| 26 | 41 | 1 | Livestock/wildlife | Reservoir | BLM |
| 26 | 41 | 9 | Livestock | Seaburn Pond | Priv. |
| 26 | 41 | 9 | Livestock | Wisby Reservoir | BLM |
| 26 | 41 | 13 | Livestock/wildlife | Long Walk Reservoir | BLM |
| 26 | 41 | 18 | Livestock/wildlife | Cedar Mountain Pond | Priv. |
| 26 | 41 | 18 | Livestock/wildlife | Cedar Mountain 48 4258 Reservoir | BLM |
| 26 | 41 | 19 | Livestock/wildlife | Cedar Mountain 2 Reservoir | BLM |
| 26 | 41 | 19 | Livestock | Dry Pond | Priv. |
| 26 | 41 | 20 | Livestock | Lone Tree Pond | Priv. |
| 26 | 41 | 20 | Livestock/wildlife | Reservoir | BLM |
| 26 | 41 | 21 | Livestock/wildlife | Cook Stove Reservoir | BLM |
| 26 | 41 | 21 | Livestock | Wilsey Pond | Priv. |
| 26 | 41 | 23 | Livestock/wildlife | Horsetail Reservoir | BLM |
| 26 | 41 | 26 | Livestock/wildlife | Hard Time Reservoir | BLM |
| 26 | 41 | 27 | Livestock/wildlife | Burnt Stump Reservoir | BLM |
| 26 | 41 | 30 | Livestock | Buckskin Pond | Priv. |
| 26 | 41 | 30 | Agriculture | Frying Pan 2 Reservoir | Priv. |
| 26 | 41 | 30 | Livestock/wildlife | Reservoir | BLM |
| 26 | 42 | 3 | Livestock | Pond 5 | State lands |
| 26 | 42 | 7 | Livestock/Dom | David Kent Reservoir | Priv. |
| 26 | 42 | 29 | Livestock | Ben Odell Reservoir | Priv. |
| 26 | 42 | 33 | Livestock | Pond 1 | State lands |
| 26 | 42 | 33 | Livestock | Pond 4 | State lands |
| 26 | 42 | 34 | Livestock | Pond 2 | State lands |
| 26 | 42 | 34 | Livestock | Pond 3 | State lands |
| 26 | 44 | 19 | Livestock | Res 010 | Priv. |
| 26 | 44 | 27 | Irrigation | Surface Spring Creek | Priv. |
| 26 | 44 | 29 | Livestock | Res 0544 | Priv. |

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| 26 | 44 | 29 | Livestock | Reservoir | BLM |
| 26 | 44 | 30 | Livestock | Res 009 | Priv. |
| 26 | 44 | 34 | Irrigation | Surface Spring Creek | Priv. |
| 26 | 45 | 29 | Irrigation | Surface Leslie Gulch | Priv. |
| 25 | 38 | 2 | Livestock/wildlife | Reservoir | BLM |
| 25 | 38 | 2 | Livestock/wildlife | Failure 48-6358 Reservir | BLM |
| 25 | 38 | 10 | Livestock/wildlife | Pond 17 | Priv. |
| 25 | 38 | 10 | Livestock/wildlife | Pond 21 | Priv. |
| 25 | 38 | 10 | Livestock/wildlife | Pond 18 | Priv. |
| 25 | 38 | 15 | Livestock/wildlife | Pond 20 | Priv. |
| 25 | 38 | 16 | Livestock/wildlife | Telly Reservoir | BLM |
| 25 | 38 | 17 | Livestock/wildlife | Sha-ron Reservoir | BLM |
| 25 | 38 | 17 | Livestock/wildlife | Jess Reservoir | BLM |
| 25 | 38 | 17 | Livestock/wildlife | Reservoir | BLM |
| 25 | 38 | 17 | Livestock/wildlife | Pookey Reservoir | BLM |
| 25 | 38 | 21 | Livestock/wildlife | Birdie Reservoir | BLM |
| 25 | 38 | 21 | Livestock/wildlife | Hole in One Reservoir | BLM |
| 25 | 38 | 21 | Livestock/wildlife | Stockade Ridge Reservoir | BLM |
| 25 | 38 | 27 | Livestock/wildlife | Pond 2 | Priv. |
| 25 | 38 | 28 | Livestock/wildlife | Birdie Reservoir | BLM |
| 25 | 38 | 28 | Livestock/wildlife | Reservoir | BLM |
| 25 | 38 | 33 | Livestock/wildlife | Caddy Reservoir | BLM |
| 25 | 38 | 33 | Livestock/wildlife | Par Reservoir | BLM |
| 25 | 38 | 33 | Livestock/wildlife | 48-0 Reservoir 1 | BLM |
| 25 | 39 | 13 | Livestock | Pond 24 | Priv. |
| 25 | 39 | 14 | Livestock/wildlife | Bunyard Reservoir | Priv. |
| 25 | 39 | 14 | Livestock/wildlife | Reservoir 2 | Priv. |
| 25 | 39 | 14 | Livestock/wildlife | Small Reservoir | Priv. |
| 25 | 40 | 2 | Livestock/wildlife | Big Field Pit Reservoir | BLM |
| 25 | 40 | 2 | Livestock | Pond 20 | Priv. |
| 25 | 40 | 4 | Livestock | Reservoir | BLM |
| 25 | 40 | 7 | Livestock/wildlife | Spook Reservoir | BLM |
| 25 | 40 | 8 | Livestock/wildlife | Little Basin Reservoir | BLM |
| 25 | 40 | 8 | Livestock | Pond 23 | Priv. |
| 25 | 40 | 10 | Livestock/wildlife | Halfway Pit Reservoir | BLM |
| 25 | 40 | 12 | Livestock/wildlife | Old Fence Reservoir | BLM |
| 25 | 40 | 12 | Livestock | Old Fence Pond | Priv. |
| 25 | 40 | 12 | Livestock | Cook Stove Pond | Priv. |
| 25 | 40 | 13 | Livestock | Pond 21 | Priv. |
| 25 | 40 | 13 | Livestock/wildlife | Corral Creek Reservoir | BLM |
| 25 | 40 | 13 | Livestock | Gray Stud Reservoir | Priv. |
| 25 | 40 | 15 | Livestock | Pond 22 | Priv. |

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| 25 | 40 | 16 | Livestock/wildlife | Reservoir | BLM |
| 25 | 40 | 19 | Livestock/wildlife | Serpentine Reservoir | BLM |
| 25 | 40 | 21 | Livestock/wildlife | Doe Reservoir | BLM |
| 25 | 40 | 24 | Livestock | Doe Pond | Priv. |
| 25 | 40 | 24 | Livestock/wildlife | 48-0 Reservoir 2 | BLM |
| 25 | 40 | 25 | Irrigation | Surface Trib Butte & Dry Creeks | Priv. |
| 25 | 40 | 32 | Livestock/wildlife | Tiffin 2 Pond | Priv. |
| 25 | 40 | 32 | Livestock | Tiffin Reservoir | BLM |
| 25 | 40 | 33 | Livestock | Slaton 2 Pond | Priv. |
| 25 | 40 | 33 | Livestock/wildlife | Reservoir | BLM |
| 25 | 40 | 35 | Agriculture | Corliss 1 Reservoir | Priv. |
| 25 | 40 | 35 | Livestock/wildlife | 48-0 Reservoir 1 | BLM |
| 25 | 41 | 1 | Livestock/wildlife | Kid Flat Reservoir | BLM |
| 25 | 41 | 2 | Livestock | Reservoir | BLM |
| 25 | 41 | 4 | Livestock/wildlife | Butte Waterhole Reservoir | BLM |
| 25 | 41 | 6 | Irrigation | Butte Reservoir | Priv. |
| 25 | 41 | 7 | Irrigation | Surface Trib Butte Creek | Priv. |
| 25 | 41 | 8 | Irrigation | Surface Butte Creek | Priv. |
| 25 | 41 | 11 | Livestock/wildlife | Antelope Flat 1 Reservoir | BLM |
| 25 | 41 | 18 | Livestock | Prince Albert Pond | Priv. |
| 25 | 41 | 18 | Livestock/wildlife | 48-0 Reservoir 2 | BLM |
| 25 | 41 | 21 | Livestock/wildlife | West Butte Creek Reservoir | BLM |
| 25 | 41 | 24 | Livestock/wildlife | McNulty Reservoir | BLM |
| 25 | 41 | 27 | Livestock | Upper McNulty Reservoir | BLM |
| 25 | 41 | 29 | Livestock/wildlife | Red Head Reservoir | BLM |
| 25 | 41 | 30 | Livestock | Corliss Pond | Priv. |
| 25 | 41 | 36 | Livestock/wildlife | 48-0 Reservoir 1 | BLM |
| 25 | 42 | 3 | Livestock | Page Place Reservoir | BLM |
| 25 | 42 | 7 | Livestock | West Fork Juniper Creek Reservoir | BLM |
| 25 | 42 | 12 | Livestock/wildlife | 48-0 Reservoir 2 | BLM |
| 25 | 42 | 16 | Livestock | Schaeffer Butte Reservoir | BLM |
| 25 | 42 | 18 | Livestock/wildlife | Lower McNulty Reservoir | BLM |
| 25 | 42 | 23 | Livestock/wildlife | Schaeffer Reservoir | BLM |
| 25 | 42 | 26 | Livestock/wildlife | Davis Reservoir | BLM |
| 25 | 42 | 26 | Livestock/wildlife | Little Mud Flat Reservoir | BLM |
| 25 | 43 | 2 | Livestock/wildlife | Dead Man's Gulch Reservoir | BLM |
| 25 | 43 | 6 | Livestock/wildlife | 48-0 Reservoir | BLM |
| 25 | 43 | 6 | Livestock/wildlife | South Quartz Mountain Reservoir | BLM |
| 25 | 45 | 2 | Livestock | Res 3546 | Priv. |
| 25 | 45 | 2 | Livestock | Three Fingers Reservoir | BLM |
| 25 | 45 | 2 | Livestock | Scenic Res Pond | BLM |
| 25 | 45 | 2 | Livestock/wildlife | Scenic Reservoir | BLM |
| 25 | 45 | 5 | Livestock | Cunningham Reservoir | USA |

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| 25 | 45 | 10 | Livestock | Res 0444 | Priv. |
| 25 | 45 | 10 | Livestock | Pinnacle Reservoir | BLM |
| 25 | 45 | 10 | Livestock | Pinnacle Pond | BLM |
| 25 | 45 | 17 | Livestock | Res 4970 | Priv. |
| 25 | 45 | 17 | Livestock | Res 003 | Priv. |
| 25 | 45 | 17 | Livestock | Lower Song Gulch Reservoir | USA |
| 25 | 45 | 17 | Livestock | Atkins Pond | BLM |
| 25 | 45 | 17 | Livestock/wildlife | Action Reservoir | BLM |
| 25 | 45 | 21 | Livestock | Long Gulch Reservoir | USA |
| 25 | 45 | 21 | Livestock | Res 0442 | Priv. |
| 25 | 45 | 21 | Livestock | Long Gulch Pond | BLM |
| 25 | 45 | 22 | Livestock | Res 0542 | Priv. |
| 25 | 45 | 22 | Livestock | Bar Cross Basin Reservoir | USA |
| 25 | 45 | 22 | Livestock | Bannock Reservoir | USA |
| 25 | 45 | 22 | Livestock | Reservoir | BLM |
| 25 | 45 | 23 | Livestock/wildlife | 48-0 Reservoir 1 | BLM |
| 25 | 45 | 26 | Livestock | Res 002 | Priv. |
| 25 | 45 | 27 | Livestock | Potts Reservoir | USA |
| 25 | 45 | 29 | Livestock | Res 004 | Priv. |
| 25 | 45 | 29 | Livestock | Reservoir | BLM |
| 25 | 45 | 29 | Livestock | Shadscale Pond | Priv. |
| 25 | 45 | 30 | Livestock | Shadscale Plat Reservoir | USA |
| 25 | 45 | 31 | Livestock | Res 0298 | Priv. |
| 25 | 45 | 35 | Livestock | Upper Saddle Butte Reservoir | USA |
| 24 | 38 | 35 | Livestock/wildlife | Habibu Reservoir | BLM |
| 24 | 39 | 1 | Livestock/wildlife | Reservoir 4 | Priv. |
| 24 | 39 | 1 | Livestock/wildlife | Reservoir 5 | Priv. |
| 24 | 39 | 1 | Livestock/wildlife | Meadow Reservoir | Priv. |
| 24 | 39 | 2 | Livestock/wildlife | Reservoir | BLM |
| 24 | 39 | 10 | Livestock/wildlife | Brass Cap Reservoir | BLM |
| 24 | 39 | 12 | Livestock/wildlife | Skull Springs Reservoir | BLM |
| 24 | 39 | 12 | Livestock | Pond 27 | Priv. |
| 24 | 39 | 14 | Livestock/wildlife | Reservoir | BLM |
| 24 | 39 | 15 | Livestock/wildlife | 48-0 Reservoir 1 | BLM |
| 24 | 39 | 15 | Livestock/wildlife | 48-0 Reservoir 2 | BLM |
| 24 | 39 | 15 | Livestock/wildlife | 48-0 Reservoir 1 (different) | BLM |
| 24 | 39 | 15 | Livestock/wildlife | 48-0 Reservoir 2 (different) | BLM |
| 24 | 39 | 16 | Livestock/wildlife | 48-0 Reservoir 1 | BLM |
| 24 | 39 | 16 | Livestock/wildlife | 48-0 Reservoir 2 | BLM |
| 24 | 39 | 21 | Livestock/wildlife | 48-0 Reservoir 1 | BLM |
| 24 | 39 | 22 | Livestock/wildlife | 48-0 Reservoir 2 | BLM |
| 24 | 39 | 22 | Livestock/wildlife | Reservoir | BLM |
| 24 | 39 | 23 | Livestock/wildlife | Reservoir | BLM |
| 24 | 39 | 23 | Livestock/wildlife | 48-0 Reservoir 1 | BLM |

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| 24 | 39 | 23 | Livestock | Pond 26 | Priv. |
| 24 | 39 | 26 | Livestock/wildlife | 48-0 Reservoir 2 | BLM |
| 24 | 39 | 26 | Livestock/wildlife | 48-0 Reservoir 1 | BLM |
| 24 | 39 | 26 | Livestock/wildlife | 48-0 Reservoir 2 | BLM |
| 24 | 39 | 26 | Livestock | Pond 25 | Priv. |
| 24 | 39 | 26 | Livestock/wildlife | 48-0 Reservoir1 | BLM |
| 24 | 39 | 27 | Livestock/wildlife | 48-0 Reservoir 2 | BLM |
| 24 | 39 | 27 | Livestock | Pond 7 | Priv. |
| 24 | 39 | 27 | Livestock/wildlife | 48-0 Reservoir1 | BLM |
| 24 | 39 | 27 | Livestock/wildlife | 48-0 Reservoir 2 | BLM |
| 24 | 39 | 27 | Livestock/wildlife | 48-0 Reservoir1 | BLM |
| 24 | 40 | 8 | Livestock/wildlife | Littlefield 48-0 Reservoir 2 | BLM |
| 24 | 40 | 10 | Livestock | Pond 5 | Priv. |
| 24 | 40 | 13 | Livestock/wildlife | Mountain Dew Reservoir | BLM |
| 24 | 40 | 16 | Livestock/wildlife | Field Creek Reservoir | BLM |
| 24 | 40 | 16 | Livestock | Pond 15 | Priv. |
| 24 | 40 | 23 | Livestock/wildlife | Roadside Reservoir | BLM |
| 24 | 40 | 23 | Livestock | Pond 16 | Priv. |
| 24 | 40 | 28 | Livestock | Pond 17 | Priv. |
| 24 | 40 | 28 | Livestock | Wildcat Creek Res | BLM |
| 24 | 40 | 30 | Livestock/wildlife | 48-0 Reservoir 1 | BLM |
| 24 | 40 | 30 | Livestock | Pond | Statelands |
| 24 | 40 | 30 | Livestock | White Reservoir | Statelands |
| 24 | 40 | 35 | Livestock/wildlife | Sleepy Reservoir | BLM |
| 24 | 40 | 35 | Livestock | Pond 18 | Priv. |
| 24 | 41 | 3 | Livestock | Pond 2 | State lands |
| 24 | 41 | 9 | Livestock | Pond 4 | State lands |
| 24 | 41 | 9 | Livestock | Pond 5 | State lands |
| 24 | 41 | 11 | Livestock/wildlife | Hard Rock Reservoir | BLM |
| 24 | 41 | 13 | Livestock | South Dry Creek Reservoir | BLM |
| 24 | 41 | 14 | Livestock/wildlife | Car Reservoir | BLM |
| 24 | 41 | 15 | Livestock | Pond 1 | State lands |
| 24 | 41 | 15 | Livestock | Pond 3 | State lands |
| 24 | 41 | 21 | Livestock/wildlife | Robinson Reservoir 3865 | BLM |
| 24 | 41 | 22 | Livestock/wildlife | Esplin 3864 Reservoir | BLM |
| 24 | 41 | 25 | Livestock | Reservoir | BLM |
| 24 | 41 | 28 | Livestock/wildlife | East Copeland 48-0 305 Reservoir | BLM |
| 24 | 41 | 29 | Livestock/wildlife | Little Joe Reservoir | BLM |
| 24 | 41 | 31 | Irrigation | Surface Butte Creek | Priv. |
| 24 | 41 | 31 | Irrigation | Butte Reservoir | Priv. |
| 24 | 41 | 31 | Irrigation | From Butte Reservoir | Priv. |
| 24 | 42 | 3 | Irrigation | Surface Dry Creek | Priv. |
| 24 | 42 | 3 | Irrigation | Surface Juniper Creek | Priv. |

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| 24 | 42 | 3 | Irrigation | Surface - a spring | Priv. |
| 24 | 42 | 3 | Irrigation | Surface Wall Rock Creek | Priv. |
| 24 | 42 | 28 | Irrigation | Surface Juniper Creek (different) | Priv. |
| 24 | 42 | 18 | Livestock | Reservoir | BLM |
| 24 | 42 | 29 | Livestock/wildlife | Sometimes Reservoir | BLM |
| 24 | 42 | 32 | Livestock/wildlife | Juniper Ranch Reservoir | BLM |
| 24 | 42 | 35 | Livestock/wildlife | Page Reservoir | BLM |
| 24 | 43 | 1 | Livestock/wildlife | Dry Creek Butte Reservoir | BLM |
| 24 | 43 | 10 | Livestock/wildlife | Homestead Reservoir | BLM |
| 24 | 43 | 11 | Livestock/wildlife | Acton Can Pit 48-2128 | BLM |
| 24 | 43 | 14 | Livestock/wildlife | South Ackton Canyon Reservoir | BLM |
| 24 | 43 | 19 | Livestock/wildlife | 1272 South Wallrock Reservoir | BLM |
| 24 | 43 | 29 | Livestock/wildlife | 48-0 Reservoir 2 | BLM |
| 24 | 43 | 31 | Livestock | Reservoir | BLM |
| 24 | 45 | 5 | Livestock | Res 4637 | Priv. |
| 24 | 45 | 6 | Livestock | Surface Rookie Creek Spring | Priv. |
| 24 | 45 | 19 | Livestock | Painted Canyon Reservoir | USA |
| 24 | 45 | 19 | Livestock | Reservoir | BLM |
| 24 | 45 | 20 | Livestock | Carlton Res | USA |
| 24 | 45 | 27 | Livestock/wildlife | Potts Reservoir | USA |
| 24 | 45 | 27 | Livestock | Res 3545 | Priv. |
| 24 | 45 | 31 | Livestock | Reservoir | BLM |
| 23 | 39 | 26 | Livestock/wildlife | Reservoir 48 | BLM |
| 23 | 39 | 35 | Livestock/wildlife | Reservoir | BLM |
| 23 | 39 | 36 | Livestock | Pond 31 | Priv. |
| 23 | 40 | 11 | Livestock | Pond 57 | Priv. |
| 23 | 40 | 13 | Livestock/wildlife | Harper Road 48-0616 Reservoir | BLM |
| 23 | 40 | 14 | Livestock/wildlife | Reservoir | BLM |
| 23 | 40 | 15 | Livestock/wildlife | Powerline Reservoir | BLM |
| 23 | 40 | 22 | Livestock | Reservoir | BLM |
| 23 | 40 | 24 | Livestock | Reservoir | BLM |
| 23 | 40 | 24 | Livestock | Windy 48-0618 Reservoir | BLM |
| 23 | 40 | 24 | Livestock/wildlife | Reservoir | BLM |
| 23 | 40 | 26 | Livestock/wildlife | Black Bull Reservoir | BLM |
| 23 | 40 | 29 | Livestock | Tin Can Reservoir | BLM |
| 23 | 40 | 30 | Livestock/wildlife | Boundary Reservoir | BLM |
| 23 | 40 | 31 | Livestock | West Dry Creek Reservoir | BLM |
| 23 | 40 | 31 | Livestock | Pond 27 | Priv. |
| 23 | 40 | 31 | Livestock | Pond 30 | Priv. |
| 23 | 40 | 32 | Livestock | Pond 29 | Priv. |
| 23 | 40 | 32 | Livestock/wildlife | Upper Dry Creek Reservoir | BLM |
| 23 | 40 | 33 | Livestock | Pond 55A | Priv. |

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| 23 | 40 | 34 | Livestock | Pond 55B | Priv. |
| 23 | 40 | 35 | Livestock | Pond 56 | Priv. |
| 23 | 40 | 31 | Livestock | Pond 30 | Priv. |
| 23 | 40 | 31 | Livestock | Pond 27 | Priv. |
| 23 | 40 | 32 | Livestock | Pond 29 | Priv. |
| 23 | 40 | 35 | Irrigation | Surface Dry Creek | Priv. |
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| 23 | 41 | 6 | Livestock | Reservoir | BLM |
| 23 | 41 | 15 | Livestock | Jim Bob Reservoir | Priv. |
| 23 | 41 | 20 | Livestock | Pond 13 | State lands |
| 23 | 41 | 20 | Livestock | South State Reservoir | Priv. |
| 23 | 41 | 23 | Livestock | Pond 14 | State lands |
| 23 | 41 | 27 | Livestock | Pond 1 | Priv. |
| 23 | 41 | 27 | Livestock | Pond 6 | State lands |
| 23 | 41 | 27 | Livestock | Pond 9 | State lands |
| 23 | 41 | 28 | Livestock | Pond 2 | Priv. |
| 23 | 41 | 28 | Livestock | Pond 3 | Priv. |
| 23 | 41 | 28 | Livestock | Pond 8 | State lands |
| 23 | 41 | 30 | Livestock/wildlife | Big Bend Reservoir | BLM |
| 23 | 41 | 32 | Livestock | Pond 4 | Priv. |
| 23 | 41 | 32 | Livestock | Pond 6 | State lands |
| 23 | 41 | 32 | Livestock | Pond 7 | State lands |
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| 23 | 42 | 2 | Livestock/wildlife | Tin Stove 48-4667 Reservoir | BLM |
| 23 | 42 | 9 | Livestock/wildlife | Harley Reservoir | BLM |
| 23 | 42 | 11 | Livestock | Reservoir | BLM |
| 23 | 42 | 13 | Livestock/wildlife | South Sheep Creek Reservoir | BLM |
| 23 | 42 | 14 | Livestock | Pond | Priv. |
| 23 | 42 | 15 | Livestock/wildlife | Washboard Reservoir | BLM |
| 23 | 42 | 18 | Livestock | Reservoir | BLM |
| 23 | 42 | 20 | Livestock/wildlife | Keeney Creek Reservoir | BLM |
| 23 | 42 | 22 | Livestock/wildlife | Reservoir | BLM |
| 23 | 42 | 22 | Livestock | Reservoir | BLM |
| 23 | 42 | 29 | Livestock/wildlife | Reservoir | BLM |
| 23 | 42 | 30 | Livestock/wildlife | Dry Creek 2 Reservoir | BLM |
| 23 | 42 | 34 | Irrigation | Surface Dry Creek | Priv. |
| | | | | | |
| 23 | 43 | 3 | Livestock/wildlife | Long Draw Reservoir | BLM |
| 23 | 43 | 5 | Livestock | Surface East Spring | BLM |
| | | | | | |
| 23 | 45 | 4 | Livestock | Res 3542 | Priv. |
| 23 | 45 | 4 | Livestock/wildlife | Black Horse Reservoir | BLM |
| 23 | 45 | 5 | Domestic | Spring 3 | Priv. |
| 23 | 45 | 18 | Livestock | Res 3544 | Priv. |
| 23 | 45 | 18 | Livestock/wildlife | Indian Creek Reservoir | BLM |
| 23 | 45 | 18 | Livestock/wildlife | Birch Creek Pit 2 Reservoir | BLM |

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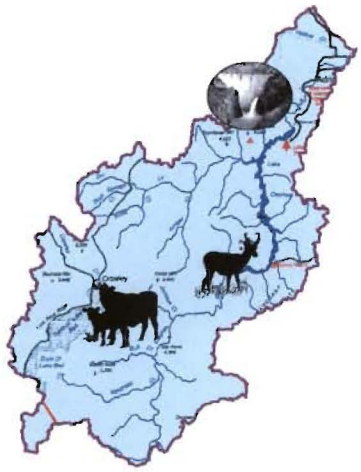
| 23 | 45 | 20 | Livestock/wildlife | Reservoir | BLM |
| 23 | 45 | 20 | Livestock | Res 3551 | Priv. |
| 23 | 45 | 21 | Livestock | Bench Reservoir | BLM |
| 23 | 45 | 28 | Livestock | Res 0149 | Priv. |
| 22 | 42 | 13 | Livestock/wildlife | Spotted Horse Reservoir | BLM |
| 22 | 42 | 15 | Livestock/wildlife | Daisy Basin 48-4663 Reservoir | BLM |
| 22 | 42 | 22 | Livestock/wildlife | 48-0 Reservoir 1 | BLM |
| 22 | 42 | 23 | Livestock/wildlife | 48-0 Reservoir2 | BLM |
| 22 | 42 | 24 | Livestock/wildlife | Reservoir | BLM |
| 22 | 42 | 24 | Livestock/wildlife | Reservoir | BLM |
| 22 | 42 | 24 | Livestock/wildlife | Freezeout Summit Reservoir | BLM |
| 22 | 42 | 26 | Livestock/wildlife | Reservoir | BLM |
| 22 | 42 | 26 | Livestock/wildlife | Reservoir | BLM |
| 22 | 42 | 27 | Livestock/wildlife | Bell Mare Reservoir | BLM |
| 22 | 42 | 34 | Livestock/wildlife | Upper Sheep Creek Reservoir | BLM |
| 22 | 42 | 34 | Livestock/wildlife | Sheep Reservoir | BLM |
| 22 | 43 | 20 | Livestock | Freezeout Lake Reservoir | BLM |
| 22 | 43 | 20 | Livestock/wildlife | Res 48 | BLM |
| 22 | 43 | 20 | Livestock/wildlife | Res 48 (different) | BLM |
| 22 | 43 | 20 | Livestock/wildlife | Reservoir | BLM |
| 22 | 43 | 31 | Livestock/wildlife | Robbin Reservoir | BLM |
| 22 | 43 | 32 | Livestock/wildlife | Drop Off Reservoir | BLM |
| 22 | 43 | 33 | Livestock/wildlife | Cold Reservoir | BLM |
| 22 | 43 | 35 | Livestock/wildlife | Twin Springs Reservoir | BLM |
| 22 | 43 | 35 | Irrigation | Surface Twin Springs | Priv. |
| 22 | 44 | 3 | Livestock/wildlife | North Grassy Mountain Reservoir | BLM |
| 22 | 45 | 20 | Irrigation | Owyhee Reservoir | BOR |
| 22 | 45 | 20 | Power gener. | From Owyhee Dam | Owyhee Proj. Irrig. Dists. |
| 22 | 45 | 21 | Power gener. | Owyhee Tunnel 1 | Owyhee Proj. Irrig. Dists. |
| 22 | 45 | 23 | Livestock | Res 0490 | Priv. |
| 22 | 45 | 23 | Livestock/wildlife | Reservoir | BLM |
| 22 | 45 | 26 | Livestock | Res 0629 | Priv. |
| 22 | 45 | 26 | Livestock | Stark Reservoir | BLM |
| 22 | 45 | 26 | Livestock/wildlife | Mahogany Long Draw Reservoir | BLM |
| 22 | 45 | 31 | Irrigation | Surface Owyhee River | Oregon State Parks |
| 22 | 45 | 32 | Public campsite | Surface a spring | Oregon State Highway Com. |
| 22 | 45 | 32 | Irrigation | Surface a spring | Oreg. Dept. Trans. Parks Div. |
| 22 | 45 | 33 | Public campsite | Surface 2 springs | Oregon State Highway Com. |
| 22 | 45 | 33 | Irrigation | Surface 2 springs | OR Dept. Trans. Parks Div. |
| 22 | 46 | 7 | Livestock/wildlife | Black Jack Butte Reservoir | BLM |

| | | | | | |
|---|---|---|---|---|---|
| 21 | 44 | 1 | Livestock/wildlife | Canyon Reservoir | BLM |
| 21 | 44 | 1 | Livestock/wildlife | Yellow Jacket Reservoir | BLM |
| 21 | 44 | 1 | Livestock/wildlife | Upper Cow Hollow Check Dam Reserv. | BLM |
| 21 | 44 | 1 | Livestock/wildlife | Double Mountain Check Dam Reserv. | BLM |
| 21 | 44 | 1 | Livestock/wildlife | Upper Cow Hollow Reservoir | BLM |
| 21 | 44 | 2 | Livestock/wildlife | Easy Reservoir | BLM |
| 21 | 44 | 11 | Livestock/wildlife | Darky Reservoir | BLM |
| | | | | | |
| 21 | 45 | 2 | Livestock | Ebbers 1 Res. | Priv. |
| 21 | 45 | 2 | Livestock | Ebbers 2 Res. | Priv. |
| 21 | 45 | 6 | Livestock/wildlife | Rock Reservoir | BLM |
| 21 | 45 | 11 | Livestock | Ebbers 3 Res. | BLM |
| 21 | 45 | 12 | Livestock | Hot springs | Priv. |
| 21 | 45 | 13 | Supple. Irrigation | Owyhee River | Priv. |
| 21 | 45 | 14 | Multi-purpose | Ebbers 4 Reservoir | Priv. |
| 21 | 45 | 22 | Domestic | Surface Snivley Hot Spring | Priv. |
| 21 | 45 | 35 | Irrig./Domestic | Pond | BOR |
| | | | | | |
| 21 | 46 | 2 | Irrigation | Surface Owyhee River | Priv. |
| 21 | 46 | 2 | Supple. Irrigation | Surface Owyhee River | Priv. |
| 21 | 46 | 2 | Supple. Irrigation | Surface Owyhee River | Priv. |
| 21 | 46 | 3 | Irrigation | Surface Owyhee River | Priv. |
| 21 | 46 | 3 | Supple. Irrigation | Surface Owyhee River | Priv. |
| 21 | 46 | 3 | Irrigation | Surface Owyhee River | OR Dept. FIsh & Wild. |
| 21 | 46 | 3 | Wildlife | Reservoir | Priv. |
| 21 | 46 | 4 | Irrigation | Surface Owyhee River | Priv. |
| 21 | 46 | 6 | Irrigation | Surface Owyhee River | Priv. |
| 21 | 46 | 7 | Supple. Irrigation | Surface Owyhee River | Priv. |
| 21 | 46 | 7 | Irrigation | Surface Owyhee River | Priv. |
| 21 | 46 | 18 | Supple. Irrigation | Surface Owyhee River | Priv. |
| 21 | 46 | 30 | Livestock/wildlife | Four Points Reservoir | BLM |
| | | | | | |
| 20 | 44 | 13 | Livestock/wildlife | Zippo Reservoir 1995 | BLM |
| 20 | 44 | 23 | Livestock | Two Forks Check Dam Reservoir | BLM |
| 20 | 44 | 24 | Livestock/wildlife | Lower Cow Reservoir | BLM |
| 20 | 44 | 24 | Livestock/wildlife | Reservoir 48-0 2 | BLM |
| 20 | 44 | 25 | Livestock/wildlife | Fossil Reservoir | BLM |
| 20 | 44 | 35 | Livestock/wildlife | Upper Cow 48-1502 Reservoir | BLM |
| | | | | | |
| 20 | 45 | 13 | Irrigation | Well 4 | Priv. |
| 20 | 45 | 13 | Supple. irrigation | Well 4 | Priv. |
| 20 | 45 | 15 | Livestock/wildlife | Sauret 48-6173 | BLM |
| 20 | 45 | 17 | Livestock | Surface Schweizer Spring | BLM |
| 20 | 45 | 18 | Livestock/wildlife | Chalk Reservoir | BLM |
| 20 | 45 | 18 | Livestock/wildlife | Leaky Reservoir | BLM |

| | | | | | |
|---|---|---|---|---|---|
| 20 | 45 | 24 | Supple. irrigation | Well 3 | Priv. |
| 20 | 45 | 24 | Irrigation | Well 3 | Priv. |
| 20 | 45 | 25 | Supple. irrigation | Well | Priv. |
| 20 | 45 | 27 | Livestock | Fletcher Gulch Reservoir | BLM |
| 20 | 45 | 28 | Livestock | Fletcher Reservoir | BLM |
| 20 | 45 | 29 | Livestock | Mud Reservoir | BLM |
| 20 | 45 | 29 | Livestock/wildlife | Mud Springs Reservoir | BLM |
| 20 | 45 | 32 | Livestock/wildlife | 1497 North Reservoir | BLM |
| 20 | 45 | 33 | Livestock | Rock Creek Reservoir | BLM |
| | | | | | |
| 20 | 46 | 19 | Supple irrigation | Well 1 | Priv. |
| 20 | 46 | 19 | Supple. irrigation | Well 2 | Priv. |
| 20 | 46 | 20 | Supple. irrigation | Well 5 | Priv. |
| 20 | 46 | 20 | Irrigation | Well 5 | Priv. |
| 20 | 46 | 20 | Wildlife | Reservoir | Priv. |
| 20 | 46 | 33 | Supple. irrigation | Surface Cow Hollow Wasteway | Irrig. Dist. |
| 20 | 46 | 24 | Irrigation | Surface Gravel Pit Drain Water | Priv. |
| 20 | 46 | 25 | Irrigation | Surface Owyhee River | Priv. |
| 20 | 46 | 25 | Irrigation | Surface Owyhee River | Priv. |
| 20 | 46 | 25 | Irrigation | Surface Owyhee River | Priv. |
| 20 | 46 | 25 | Irrigation | Surface Drain Canal | Priv. |
| 20 | 46 | 25 | Irrigation | Surface Owyhee River | Priv. |
| 20 | 46 | 25 | Irrigation | Surface Owyhee River | Priv. |
| 20 | 46 | 28 | Supple. irrigation | Mandazona Well 1 | Priv. |
| 20 | 46 | 29 | Supple. irrigation | Well 1 | Priv. |
| 20 | 46 | 30 | Supple. irrigation | Well 2 | Priv. |
| 20 | 46 | 30 | Supple. irrigation | Well | Priv. |
| 20 | 46 | 32 | Irrigation | Surface natural slough | Priv. |
| 20 | 46 | 35 | Irrigation | Surface Owyhee River | Priv. |
| 20 | 46 | 36 | Supple. irrigation | Well 1 | Priv. |
| 20 | 46 | 36 | Supple. irrigation | Well 2 | Priv. |
| 20 | 46 | 36 | Irrigation | Surface Owyhee River | Priv. |
| 20 | 46 | 36 | Irrigation | Surface Owyhee River | Priv. |
| 20 | 46 | 36 | Irrigation | Surface Owyhee River | Priv. |
| | | | | | |
| 19 | 45 | 26 | Livestock/wildlife | East Cow Hollow Reservoir | BLM |



# Lower Owyhee Watershed Assessment



## Appendix D. Oregon's water quality standards

For the 2004/2006 Integrated Report, the Oregon Department of Environmental Quality (ODEQ) evaluated water quality data. The assessment criteria for parameters listed for the lower Owyhee subbasin in Oregon's 2004/2006 integrated report are summarized briefly below. A complete discussion can be found in the ODEQ's "Assessment Methodology for Oregon's 2004/2006 Integrated Report on Water Quality Status" which can be accessed on the internet at http://www.deq.state.or.us/WQ/assessment/docs/methodology0406.pdf.

**Bacteria - *E. coli (Escherichia coli)*** A 30-day log mean of 126 *E. coli* organisms per 100 ml or more than 10% of the samples exceed 406 *E. coli* organisms per 100 ml, with a minimum of at least two exceedances.

**Chlorophyll a** (A) Natural lakes that thermally stratify: 0.01 mg/1; (B) Natural lakes that do not thermally stratify, reservoirs, rivers and estuaries: 0.015 mg/1;

**Dissolved Oxygen** criteria apply during the applicable spawning through fry emergence periods set forth in the tables and figures: (a) The dissolved oxygen may not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l; (b) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels must not be less than 95 percent of saturation;

For water bodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen may not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen may not be less than 90 percent of saturation.

**pH** (1) Unless otherwise specified in OAR 340-041-0101 through 340-041-0350, pH values (Hydrogen ion concentrations) may not fall outside the following ranges: (b) Estuarine and fresh waters: 6.5-8.5. For Owyhee Basin 7.0 to 9.0. (2) Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria are not in

violation of the standard, if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria. Owyhee Basin 7.0 to 9.0.

**Sedimentation** The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry may not be allowed.

**Temperature** Unless superseded by the natural conditions criteria described in section (8) of this rule: (b) The seven-day-average maximum temperature of a stream identified as having core cold water habitat use may not exceed 16.0 degrees Celsius (60.8 degrees Fahrenheit). The seven-day-average maximum temperature of a stream identified as having salmon and trout rearing and migration use may not exceed 18.0 degrees Celsius (64.4 degrees Fahrenheit). The seven-day-average maximum temperature of a stream identified as having Lahontan cutthroat trout or redband trout use may not exceed 20.0 degrees Celsius (68.0 degrees Fahrenheit).

**Ammonia Criteria - Freshwater** Ammonia criteria for freshwater depend on pH, temperature, and the presence of salmonids or other fish with ammonia-sensitive early life stages. Freshwater Acute Criterion: CMC = 0.52 / FT / FPH / 2. With salmonids present, FT = 1 when 20 < Temperature (T) < 30 or $FT = 10^{0.03(20-T)}$ when 0 <T<= 20 and FPH = 1 when 8< pH<9 or $FPH = (1 + 10^{7.4pH})/1.25$ when 6.5< pH< 8. With salmonids absent, FT = 0.71 when 25<T<30 or $FT = 10^{0.03(20-T)}$ when 0 <T<= 25 and FPH = 1 when 8< pH<9 or $FPH = (1 + 10^{7.4pH})/1.25$ when 6.5< pH< 8. There is a similarly complex formula as a chronic criterion.

**Alkalinity Criterion** The freshwater criterion for alkalinity is "20 mg/L or more as $CaCO_3$ freshwater aquatic life [sic] except where natural concentrations are less." Alkalinity should not be below this value.

**Phosphate Phosphorus Benchmark** EPA recommends that total phosphates as phosphorus (P) should not exceed 50 ug/L in streams to control excessive aquatic growths. Water bodies with total phosphates as phosphorus (P) greater than 50 ug/L are a Category 3B Potential Concern for conditions that may result in not meeting water quality standards.

**Turbidity** No more than a ten percent cumulative increase in natural stream turbidities may be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity.

**Toxic Substances** Levels of toxic substances in waters of the state may not exceed the applicable criteria listed in Tables 20. Oregon standards for toxic substances were revised in 2004 but have not yet been approved by EPA for Clean Water Act purposes.

For the 2004/2006 Integrated Report, Oregon applied pre-revision numeric criteria from Table 20.

**Table 20 Toxic Substances.**

| Compound | Fresh water acute criteria µg/L | Fresh water chronic criteria µg/L | Fish consumption units/L |
|---|---|---|---|
| Aldrin | 3 | | 0.079 ng |
| Arsenic | | 2.2 ng/L | 17.5 ng |
| Arsenic (pent) | 850 | 48 | |
| Arsenic (tri) | 360 | 190 | |
| Chloride | 860 mg/L | 230 mg/L | |
| DDT | 1.1 | 0.001 | 0.024 ng |
| Dieldrin | 2.5 | 0.0019 | 0.076 ng |
| Endrin | 0.18 | 0.0023 | |
| Mercury | 2.4 | 0.012 | 0.076 ng |

# Lower Owyhee Watershed Assessment



## Appendix E.

**A non exhaustive list of plants identified in the lower Owyhee subbasin with species names, common names, and source of information.**

A. Species found in the Owyhee Breaks[3]
B. Species found in SE sector of the subbasin and adjacent area[1]
C. Species in the the lower Owyhee subbasin with photos in Mid-Snake River Watershed Vegetation Database[5]
D. Species present in Leslie Gulch[2]
E. Species noted in other sources

| Scientific name | Common name[1,2,3,4, 5, 6] | Study | | | |
|---|---|---|---|---|---|
| | **Grasses** | | | | |
| *Achnatherum hymenoides* | indian ricegrass | | | | D |
| *Achnatherum occidentale* | western needlegrass | | | | D |
| *Agrostis exarata* | spike bentgrass | | | | D |
| *Agropyron desertorum* | standard crested wheatgrass | A | | | |
| *Agropyron smithii* | bluestem wheatgrass | A | B | | |
| *Agropyron spicatum* | bluebunch wheatgrass | A | B | | |
| *Agropyron triticeum or Eremopyrum triticeum* | annual wheatgrass | A | | | |
| *Aristida longiseta* | red threeawn | A | | | |
| *Bromus brizaeformis* | rattle grass | A | | | D |
| *Bromus japonicus* | Japanese brome | A | | | |
| *Bromus tectorum* | cheatgrass, downey brome | A | B | C | D |
| *Elymus caput-medusae* | medusahead rye | A | | C | |
| *Elymus cinereus* or *Leymus cinereus* | great basin wildrye, giant wildrye, basin wildrye | A | B | C | D |
| *Deschampsia danthonoides* | annual hairgrass | | | | D |
| *Deschampsia elongata* | slender hairgrass | | | | D |
| *Elymus glaucus* | blue wildrye | | | | D |
| *Elymus trachycaulus* | slender wheatgrass | | | | D |
| *Festuca bromoides* | barren fescue | A | | | |
| *Festuca idahoensis* | Idaho fescue | A | B | | D |
| *Festuca pacifica* | small fescue | | B | | |
| *Hordeum brachyantherum* | meadow barley | | | | D |

| | | | | | |
|---|---|---|---|---|---|
| *Hordeum geniculatum* | Mediterranean barley | A | | | |
| *Hordeum jubaturm* | squirrel-tail | A | | | D |
| *Hordeum leporinum* | charming barley | A | | | |
| *Koeleria cristata* | Prairie Koeler's grass | | B | | |
| *Melica spectabilis* | purple oniongrass | | | | D |
| *Oryzopsis hymenoides* | indian ricegrass | A | | | |
| *Poa bulbosa* | bulbous bluegrass | A | | C | |
| *Poa pratensis* | Kentucky bluegrass | A | | | |
| *Poa sandbergii* or *Poa secunda* | Sandberg's bluegrass, curly blue grass | A | B | | D |
| *Polypogon monspeliensis* | rabbitfoot polypogon | A | | | |
| *Pseudoroegneria spicata* | bluebunch wheatgrass | | | | D |
| *Sitanion hystrix* | bottlebrush squirreltail | A | B | | |
| *Sitanion jubatum* | big squirreltail | A | | | |
| *Sporobolus cryptandrus* | sand dropseed | | | | D |
| *Stipa comata* | needle-and-thread | A | | | |
| *Stipa thruberiana* | Thurber's needlegrass | A | B | | |
| *Vulpia octoflora* | sixweeks fescue | | | | D |
| | **Grasslikes** | | | | |
| *Carex* spp. | sedges | A | B | | |
| *Carex microptera* | smallwing sedge | | | | D |
| *Eleocharis palustris* | creeping spike-rush | A | | | D |
| *Juncus balticus* | baltic rush | A | | | |
| *Juncus bufonius* | toad rush | | | | D |
| *Juncus ensifolius* | swordleaf rush | | | | D |
| | **Forbs** | | | | |
| *Acer glabrum* | Rocky Mountain maple | | | | D |
| *Achillea millefolium* | white yarrow | A | B | C | D |
| *Aconitum columbianum* | Columbian monkshood | | | | D |
| *Agastache urticifolia* | horse mint | | | C | D |
| *Agoseris glauca* | pale agoseris, short beaked agoseris | | B | | D |
| *Agoseris heterophylla* | annual agoseris | | B | | |
| *Allium acuminatum* | taper-tip onion | | B | C | |
| *Allium parvum* | dwarf onion | A | | | |
| *Amaranthus albus* | prostrate pigweed | | | | D |
| *Amaranthus californicus* | California amaranth | | | | D |
| *Amsinckia lycopsoides* | tarweed fiddleneck | | | | D |
| *Amsinckia retrorsa* | rigid fiddleneck | A | | | |
| *Amsinckia tessellata* | bristly fiddleneck | | | | D |
| *Antennaria dimorpha* | low pussytoes, cushion pussytoes | | B | | D |
| *Antennaria luzuloides* | woodrush pussy-toes | A | | | D |
| Aquilegia formosa | western columbine | | | | D |
| *Arabis holboellii* | Holboell's rockcress | A | B | | D |
| *Arenaria nuttalli* | Nuttall's sandwort | A | | | |
| *Artemisia dracunculus* | dragon sagewort | | | | D |
| *Artemisia ludoviciana* | prairie sage, silver wormwood | A | | | D |
| *Aster frondosus* | alkali aster | | | | D |
| *Aster scopulorum* | lava aster | | B | | |
| *Astragalus atratus* | mourning milk-vetch | A | | | |
| *Astragalus cusickii* | barren milkvetch | | | | D |
| *Astragalus eremiticus* | hermit milk-vetch | A | | | |

| | | | | | |
|---|---|---|---|---|---|
| *Astragalus filipes* | threadstalk milk-vetch | A | B | C | |
| *Astragalus lentiginosus* | freckled milk-vetch | A | B | | D |
| *Astragalus miser* | weedy milk-vetch | | B | | |
| *Astragalus purshii* | wooly-pod milk-vetch | A | B | | D |
| *Astragalus sterilis* | Barren milkvetch | | | | D |
| *Balsamorhiza hookeri* | Hooker's balsamroot | A | B | C | |
| *Balsamorhiza sagittata* | arrowleaf balsamroot | A | B | C | D |
| *Barbarea orthoceras* | American yellowrocket | | | | D |
| *Blepharipappus scaber* | blepharipappus | A | | | D |
| *Brickellia microphylla* | littleleaf brickelbush | | | C | D |
| *Calochortus macrocarpus* | sagebrush mariposa | A | B | | |
| *Camelina microcarpa* | littlepod falseflax | A | | | D |
| *Capsella buras-pastoris* | shepherd's-purse | A | | C | |
| *Cardaria chalapensis* | chalapa hoarycress | A | | | |
| *Cardaria draba* | heart podded hoarycress | | | | D |
| *Castilleja chromosa* or *Castilleja angustifolia* | desert paintbrush, violet desert paintbrush | A | | | D |
| *Castilleja applegatei* | wavy Indian paintbrush | | | | D |
| *Castilleja linariifolia* | Wyoming Indian paintbrush | | | | D |
| *Castilleja pallescens* | pale Indian paintbrush | | | | D |
| *Castilleja tenuis* | hairy Indian paintbrush | | | | D |
| *Chaenactis douglasii* | hoary chaenactis | A | | C | D |
| *Chenopodium leptophyllum* | narrowleaf goosefoot | | | | D |
| *Chorispora tenella* | chorispora | A | | | D |
| *Cicuta douglasii* | water hemlock | | | C | |
| *Cirsium subniveum* | intermountain thistle | | | | D |
| *Cirsium utahense* | Utah thistle | A | | | |
| *Clarkia pulchella* | pink fairies, ragged robin | A | | C | D |
| *Claytonia perfoliata* | miner's lettuce | | | | D |
| *Clematus columbiana* | blue clematis | | | C | |
| *Clematus lingusticifolia* | western clematis | A | | C | D |
| *Collinsia* spp. | | | B | | |
| *Collinsia parviflora* | small flowered blue-eyed Mary | A | B | | D |
| *Collomia grandiflora* | grand collomia | | | C | D |
| *Collomia lineraris* | narrow leaf collomia | A | | | |
| *Comandra umbellata* | bastard toad-flax | A | | | |
| *Conium maculatum* | poison hemlock | | | C | |
| *Cryptantha intermedia* | common cryptantha | | | | D |
| *Cryptantha rostellata* | beaked cryptantha | A | | | |
| *Crepis acuminata* | long-leaved hawksbeard | A | B | C | D |
| *Crepis atrabarba* | hawksbeard | A | | | |
| *Crepis intermedia* | gray hawksbeard | A | | | |
| *Crepis modocensis* | low hawksbeard | A | | C | |
| *Cryptantha* sp. | cryptantha | | | C | |
| *Cryptantha torreyana* | Torrey's cryptantha, Torrey's cat's eye | | B | | |
| *Cystopteris fragilis* | brittle bladderfern | | | | D |
| *Dalea ornata* | Blue Mountain prairie clover, western prairie clover | | | C | |
| *Delphinium bicolor* | blue larkspur | | | C | |
| *Delphinium nuttallianum* | larkspur | A | | | D |
| *Descurainia pinnata* | western or shortpod tansymustard | | B | | D |
| *Descurainia sophia* | flixweed | A | | | |
| *Dimeresia howellii* | dimersia | | | | D |

| | | | | | |
|---|---|---|---|---|---|
| *Dipsacus fullonum* | common teasel | | | | |
| *Dipsacus sylvestris* | gypsy's combs | A | | | |
| *Dodecatheon conjugens* | slimpod shooting star | A | | | |
| *Draba verna* | spring whitlow grass | | | | D |
| *Epilobium brachycarpum* | tall annual willowherb | | | | D |
| *Epilobium paniculatum* | annual willow-weed | A | | | |
| *Equisetum hyemale* | scouringrush | | | C | D |
| *Erigeron bloomeri* | scabland fleabane | A | B | | |
| *Erigeron corymbosus* | foothill daisy | | | | D |
| *Erigeron linearis* | desert yellow daisy, lineleaf fleabane | | B | | |
| *Erigeron pumilus* | shaggy fleabane | A | B | | D |
| *Eriogonum douglasii* | Douglas' buckwheat | | B | | |
| *Eriogonum microthecum* | slenderbush buckwheat | A | | | D |
| *Eriogonum novonudum* | false naked buckwheat | | | | D |
| *Eriogonum nudum* | barestem buckwheat | A | B | | |
| *Eriogonum ovalifolium* | oval-leaved eriogonum | A | | | |
| *Eriogonum sphaerocephalum* | round-headed eriogonum | A | | | |
| *Eriogonum strictum* | Blue Mountain buckwheat | | | | D |
| *Eriogonum umbellatum* | sulfur flower | | B | | D |
| *Eriogonum vimineum* | wickerstem buckwheat | | | | D |
| *Eriophyllum lanatum* | woolly sunflower | A | | C | D |
| *Erodium cicutarium* | filaree | A | | C | |
| *Erysimum capitatum* | rough wallflower | | | | D |
| *Erysimus repandum* | spreading wallflower | A | | | |
| *Frasera albicaulis* | whitestem frasera | | | | |
| *Fritillaria pudica* | yellow bell | A | | | |
| *Gayophytum* Juss. spp. | | | B | | |
| *Gayophytum ramosissimum* | pinyon groundsmoke | | B | | |
| *Galium aparine* | goose-grass | A | | | D |
| *Galium multiflorum* | shrubby bedstraw | | | | D |
| *Geranium viscosissimum* | sticky geranium | | | | D |
| *Geum triflorum* | old man's whiskers | | | | D |
| *Gilia aggregata* or *Ipomopsis aggregata* | scarlet gilia, skyrocket gilia | A | | | D |
| *Gilia sinuata* | rosy gilia | | | | D |
| *Glycyrrhiza lepidota* | wild licorice | | | C | |
| *Haplopappus resinosus* | snarled goldenweed | A | | | |
| *Haplopappus stenophyllus* or *Stenotus stenophyllus* | narrowleaf goldenweed | | B | | |
| *Helianthus annuus* | common sunflower | A | | | |
| *Helianthella uniflora* | little-sunflower | A | | C | |
| *Heuchera cylindrica* | roundleaf alumroot | | | | D |
| *Hieracium albertinum* | western hawkweed | A | | | |
| *Hieracium scouleri* | woolly weed | | | | D |
| *Holosteum umbellatum* | jagged chickweed | A | | | D |
| *Hydrophyllum capitatum* | ballhead waterleaf | | | | D |
| *Iva axillaris* | poverty sumpweed | | | C | |
| *Ivesia rhypara* | grimy mousetail | | | | D |
| *Lacutuca* (Tourn.) L. spp. | | | B | | |
| *Lacutuca serriola* | prickly lettuce | A | | C | |
| *Lagophylla ramosissima* | slender hareleaf | A | B | | D |
| *Lappula redowshi* | western stickseed | A | | | D |
| *Lathyrus lanszwertii* | peavine | A | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| *Lathyrus pauciflorus* | few-flowered peavine | | | C | D | |
| *Lepidium davisii* | Davis's pepperweed | | | | | E |
| *Lepidium latifolium* | | | | C | | |
| *Lepidium perfoliatum* | clasping pepperweed, clasping peppergrass | A | B | C | | |
| *Leptodactylon pungens* | granite prickly phlox | | | | D | |
| *Leucocrinum montanum* | sandlily | A | | C | | |
| *Lewisia rediviva* | bitterrooot | A | | C | D | |
| *Linanthus pharnaceoides* | flax-flower, desert-trumpets, thread-stem linanthus | | B | | | |
| *Linum lewisii* | wild blue flax, prairie flax | A | | C | D | |
| *Lithophragma bulbifera* | bulbiferous fringecup | A | | | | |
| *Lithophragmaparviflorum* | small flowered fringecup | | | | D | |
| *Lithospermum ruderale* | Columbian puccoon, western gromwell, western stoneseed | | B | | D | |
| *Lomatium* spp. | | | B | | | |
| *Lomatium dissectum* | fern-leafed loma.tium, fern-leafed desert parsley | A | | | D | |
| *Lomatium grayi* | Gray's lomatium, Gray's desert parsley | | | C | | |
| *Lomatium leptocarpum* | gumbo-lomatium | | B | | | |
| *Lomatium macrocarpum* | large-fruit desert-parsley, bigseed lomatium | | B | | | |
| *Lomatium salmoniflorum* | Salmon river lomatium | A | | | | |
| *Lomatium triternatum* | nine-leaf lomatium | A | B | C | D | |
| *Lupinus* spp. | | | B | | | |
| *Lupinus arbustus* | spur lupine | | | | D | |
| *Lupinus argenteus* | tailcup lupine | | | | D | |
| *Lupinus caudatus* | tailup lupine | A | | | | |
| *Lupinus laxiflorus* | lupine | A | | | | |
| *Lupinus lepidus* | dwarf lupine | | | | D | |
| *Lupinus polyphyllus* | bigleaf lupine | | | | D | |
| *Lupinus sericeus* | silky lupine | | B | | | |
| *Lychnis alba* | white campion | A | | | | |
| *Lygodesmia spinosa* | spiny skeletonweed | A | | | | |
| *Machaeranthera canescens* | hoary aster | | | | D | |
| *Madia exigua* | little tarweed, threadstem madia, little tarplant | | B | | | |
| *Mentha canadensis* | wild mint | | | | D | |
| *Mentzelia albicaulis* | whitestem blazingstar | | | | D | |
| *Mentzelia packardiae* | Packard's blazingstar | | | | D | |
| *Marrubium valugare* | horehound | A | | | | |
| *Mertensia ciliata* | broad leaved bluebells | | | | D | |
| *Mertensia oblongifolia* or *Mertensia pulchella* | sagebrush bluebells | | B | | | |
| *Microseris troximoides* | false-agoseris | A | B | | | |
| *Microsteris gracilis* | pink microsteria | A | | | | |
| *Mimulus cusickii* | Cusick's monkeyflower | | | | D | |
| *Mimulus nanus* | dwarf monkeyflower | | B | | D | |
| *Minuartia nuttallii* | recurved sandwort | | | | D | |
| *Mollugo verticillata* | carpetweed | | | | D | |
| *Monardella odoratissima* | mountain monardella | A | | C | D | |
| *Montia perfoliata* | miner's lettuce | A | | C | | |

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|---|---|---|---|---|---|
| *Myosotis micrantha* or *Myosotis stricta* | blue scorpion grass | | | | D |
| *Nicotiana attenuata* | coyote tobacco | | | | D |
| *Nothocalais troximoides* | false agoseris | | | | D |
| *Oenothera caespitosa* | rock-rose, desert evening primrose | A | | C | D |
| *Oenothera tanacetifolia* | tansy-leaf evening-primrose | A | | | |
| *Onopordum acanthium* | Scotch thistle | A | | | D |
| *Orobanche* sp. | broomrape | | | C | |
| *Orobanche fasciculata* | clustered broomrape | A | | | |
| *Osmorhiza occidentalis* | western sweetroot | | | | D |
| *Paeonia brownii* | western peony | | | | D |
| *Penstemon acuminatus* | sand penstemon, sandhill penstemon, sharp-leafed penstemon | | | C | |
| *Penstemon aridus* | stiffleaf penstemon, beard tongue | | B | | |
| *Penstemon cusickii* | Cusick's beardtongue | | B | | |
| *Penstemon deustus* | hotrock beardtongue | | | | D |
| *Penstemon fasciculata* | hot-rock penstemon | A | | | |
| *Penstemon seorsus* | short-lobed penstemon | A | | C | |
| *Penstemon speciosus* | showy penstemon, royal penstemon | A | B | C | D |
| *Phacelia* spp. | | | B | | |
| *Phacelia hastata* | whiteleaf or silverleaf phacelia | A | | C | D |
| *Phacelia linearis* | threadleaf phacelia | A | | C | D |
| *Phacelia lutea* | Mackenzie's phacelia | | | | D |
| *Phlox diffusa* | spreading phlox | | B | | |
| *Phlox gracilis* | slender phlox | | | | D |
| *Phlox hoodii* | Hood's phlox | A | | | D |
| *Phlox longifolia* | long-leafed phlox | A | B | C | |
| *Phoenicaulis cheiranthoides* | daggerpod | A | B | | |
| *Physaria didymocarpa* | common twinpod | | | | D |
| *Plagiobothrys scouleri* | Scouler's popcornflower | | | | D |
| *Plectritis macrocena* | longhorn plectritis | | | | D |
| *Polygonum aviculare* | doorweed, prostrate knotweed | A | | | |
| *Polygonum douglasii* | Douglas knotweed | | | | D |
| *Polygonum ramosissimum* | bushy knotweed | A | | | |
| *Polystichum scopulinum* | rock swordfern | | | | D |
| *Potentilla biennis* | biennial cinquefoil | | | | D |
| *Potentilla glandulosa* | sticky cinquefoil | | | | D |
| *Potentilla gracilis* | slender cinquefoil | | | | D |
| *Ranunculus glaberrimus* | sagebrush buttercup | A | | C | D |
| *Ranunculus sceleratus* | blister buttercup | | | | D |
| *Ranunculus testiculatus* | burr buttercup, hornseed buttercup | A | | C | D |
| *Rorippa nasturium aquaticum* | watercress | A | | | |
| *Rumex acetosella* | sheep sorrel | | | C | |
| *Rumex crispus* | curly dock | A | | | |
| *Salsola kali* | Russian thistle | A | | C | |
| *Saponaria officinalis* | bouncingbet, soapwort | | | C | |
| *Scrophularia lanceolata* | lanceleaf figwort | | | | D |
| *Scutellaria antirrhinoides* | snapdragon skullcap | A | | | |
| *Senecio canus* | woolly groundsel | | | | D |
| *Senecio ertterae* | Ertter's groundsel | | | | D |
| *Senecio eremophilus* | dryland ragwort | A | | | |
| *Senecio integerrimus* | western groundsel | A | | | |
| *Senecio serra* | butterweed groundsel | | | | D |

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|---|---|---|---|---|---|
| *Silene douglasii* | seabluff catchfly | | | | D |
| *Silene scaposa* | Blue Mountain catchfly | | | | D |
| *Sisymbrium altissimum* | Jim Hill mustard, tumble mustard | A | | C | |
| *Solidago missouriensis* | goldenrod | A | | | D |
| *Sphaeralcea munroana* | orange globemallow, Munto's globemallow | A | | C | D |
| *Stellaria calycantha* | northern starwort | | | | D |
| *Stellaria longipes* | longstalk starwort | | | | D |
| *Stephanomeria tenuifolia* | narrowleaf stephanomeria | | | | D |
| *Taraxaum officinale* | common dandelion | A | | C | |
| *Tetradymia canescens* | gray horsebrush | | | | D |
| *Thlaspi arvense* | field pennycress, fanweed | | B | | |
| *Thelypodium laciniatum* | thickleaved thelypody | A | | C | D |
| *Townsendia florifer* | showy townsendia | | | | D |
| *Tragopogon dubius* | yellow salsify, western salsify | A | | C | |
| *Trifolium cyathiferum* | cup clover | | | | D |
| *Trifolium latifolium* | twinclover | A | | | |
| *Trifolium macrocephalum* | big-head clover | A | B | C | |
| *Trifolium owyheense* | Owyhee clover | | | C | D |
| *Urtica dioica* | stinging nettele | | | | D |
| *Verbasum blattaria* | moth mullein | | | C | |
| *Verbascum thapus* | mullein, flannel mullein | A | | C | D |
| *Veronica americana* | American speedwell | | | | D |
| *Veronica peregrina* | purslane speedwell | | | | D |
| *Veronica snagallis-aquaticua* | water speedwell | A | | | |
| *Vicia cracca* | birdvetch | A | | | |
| *Viola bakeri* | yellow prairie violet | | | | D |
| *Viola baeckwithii* | Beckwith's violet | | | C | D |
| *Wyethis amplexicaulis* | northern mule's-ears | A | | | |
| *Xanthium strumarium* | cocklebur | A | | C | |
| *Zigadenus paniculatus* | panicled death-camas, foothill deathcamas | A | B | | |
| | **Shrubs** | | | | |
| *Amelanchier alnifolia* | western service berry | A | | C | |
| *Artemisia arbuscula* | low sagebrush | A | B | | D |
| *Artemisia cana* | silver sage | A | | | |
| *Artemisia rigida* | stiff sagebrush | A | | | |
| *Artemisia packardiae* | Packard's wormwood | | | | D |
| *Artemisia spinescens* or *Picrothamnus desertorum* | bud sagebrush | | | | D |
| *Artemisia tridentata* ssp. *tridentata* | basin big sagebrush | A | B | C | |
| *Artemisia tridentata* ssp. *wyomingensis* | Wyoming big sagebrush | A | | | |
| *Atriplex canescens* | fourwing saltbush | A | | | |
| *Atriplex confertifolia* | sheepfat, shadscale saltbush | A | | | D |
| *Atriplex spinosa* or*Grayia spinosa* | spiny hopsage | A | | | D |
| *Cercocarpus ledifolius* | curl-leaf mountain mahogany | A | | C | D |
| *Chrysothamnus nauseosus* | gray rabbit-brush | A | B | C | |
| *Chrysothamnus vicidiflorus* | green rabbit-brush | A | B | C | |
| *Cornus seicea* | redosier dogwood | | | | D |
| *Ericameria nana* | dwarf heath goldenrod | | | | D |
| *Ericameria nauseosa* | rubber rabbitbrush | | | | D |

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|---|---|---|---|---|---|
| *Ericameria viscidiflora* or *Chrysothamnus viscidiflorus* | yellow rabbitbrush | | | | D |
| *Glossopetalon nevadense* | spiny green-bush | A | | | |
| *Glossopetalon spinescens* | spiny greasebush | | | C | D |
| *Gutierrizia sarothrae* | broom snakeweed | A | | C | D |
| *Holodiscus dumosus* | glandular oceanspray, rock spirea | A | | | D |
| *Kraschenninnikovia lanata* | winterfat, white sage | | | C | |
| *Leptodactylon pungens* | granite prickly-phlox, prickly phlox | | B | | |
| *Philadelphus lewisii* | Syringa | | | C | |
| *Prunus virginiana* | common chokecherry | A | | C | D |
| *Purshia tridentata* | bitterbrush, antelope bitterbrush | A | B | C | D |
| *Ribes aureum* | golden currant | A | | C | D |
| *Ribes cereum* | wax currant, squaw currant | A | | C | D |
| *Rosa woodsii* | Woods' rose, pearhip rose | A | | C | D |
| *Salix* sp. | willow | A | | | |
| *Salix exigua* | coyote willow | | | C | |
| *Salix rigida* | MacKenzieana, willow | | | C | |
| *Salvia dorrii* | purple sage, gray ball sage | A | | C | D |
| *Sambucus cerulea* or *Sambucus mexicana* or *sambucus nigra* | blue elderberry | A | | C | D |
| *Sarcobatus vermiculatus* | greasewood | A | | C | D |
| *Symphoricarpos oreophilus* | mountain snowberry | | | | D |
| *Tetradymia canescens* | gray horse-brush | A | B | | |
| *Tetradymia glabrata* | little leaf horse-brush | A | | | |
| | **Trees** | | | | |
| *Betula occidentalis* | water birch | | | C | D |
| *Celtis reticulata* | netleaf hackberry | | | C | D |
| *Juniperus occidentalis* | western juniper | A | | C | D |
| *Pinus ponderosa* | ponderosa pine | | | | D |
| *Populus deltoides* | eastern cottonwood | | | C | |
| *Populus tremuloides* | quaking aspen | | | | D |
| *Populus trichocarpa* | black cottonwood | | | | D |
| *Salix amygdaloides* | peach-leaf willow | | | C | |
| *Salix lasiolepis* | arroyo willow | | | | D |
| *Salix lucida* | Pacific willow | | | | D |
| *Tamarix parviflora* | salt cedar, tamarisk | | | C | |

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