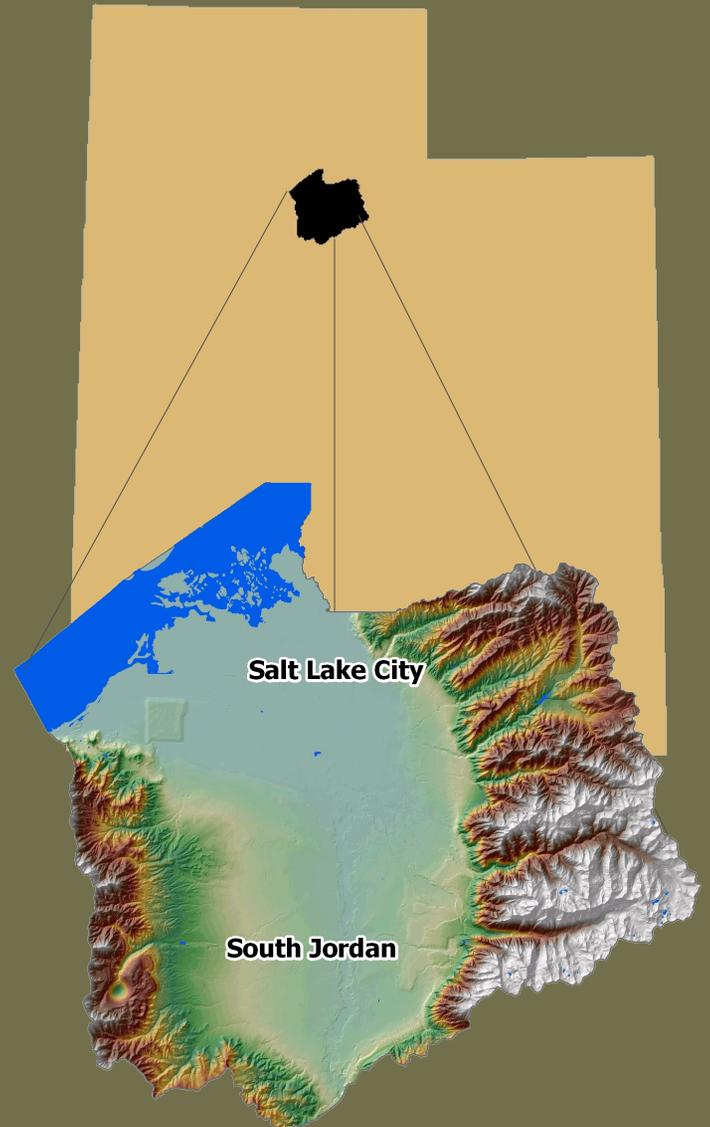


SALT LAKE COUNTY RESOURCE ASSESSMENT 2013

Conserving Natural Resources For Our Future



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Utah Department of Agriculture and Food (UDAF)
Natural Resources Conservation Service (NRCS)

In partnership with the:

Utah Conservation Commission

Utah Conservation Districts Zones 1 - 7
Utah Association of Conservation Districts
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Utah Department of Environmental Quality (DEQ)
Utah Department of Natural Resources
Utah Grazing Board
Utah School and Institutional Trust Lands Administration
Utah State University Cooperative Extension Service (USU Extension)
Utah Weed Supervisor Association

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Executive Summary



Salt Lake Conservation District:
Doug Bateman, Therese Meyer, Dee Withers,
Ken Naylor, and Gene Drake.

Why a Resource Assessment?

The Salt Lake Conservation District has developed this resource assessment with the goal that conservation efforts in the County address the most important local resource needs. This report identifies natural and social resources present in Salt Lake County and details specific areas of concern. Local, state, and regional entities can use this assessment to develop county resource management plans or to target conservation assistance needs.

We recognize that all who could have provided information may not have had the opportunity. This document is dynamic and will be updated as additional information is available.

Your comments are requested:

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Natural Resource Priorities and Concerns

The Salt Lake Conservation District has identified four natural resource priority concerns.

1. **Water Quantity and Quality**
2. **Noxious and Invasive Weeds**
3. **Loss of Agricultural Lands**
4. **Air Quality**

Priority Natural Resource Concerns

Natural and social resources are categorized as soil, water, air, plants, animals, and humans (SWAPA + H). This assessment describes the general condition of these resources within Salt Lake County. As opportunities become available to address these issues, and as circumstances change, their emphasis should be elevated accordingly.

Soil: Prime Farmland and Farmland of Statewide Importance

Water: Water Supply and Irrigation Water

Air and Climate: Overview

Plants: Crops

Animals: Livestock and Endangered and At-Risk Species

Humans: Population, Economy, and Recreation

Conservation districts provide the local leadership and education to connect private property owners with state and federal assistance to improve, protect, and sustain Utah's soil, water, and related natural resources.

Introduction

The Conservation Movement

The Dust Bowl of the 1930s led to the creation of national programs for conserving soil and water resources in the United States. On April 27, 1935, Congress declared soil erosion “*a national menace*” and established the Soil Erosion Service. Over the past 78 years, the agency has evolved into the current Natural Resources Conservation Service (NRCS). In May of 1936, farmers were allowed to set up districts to direct soil conservation practices. Today, Utah has 38 Conservation Districts (CD).

Conservation Progress

The Salt Lake Conservation District is a unit of state government created under Utah State Law in 1938 to administer and promote conservation activities in Salt Lake County. The District, in cooperation with the NRCS, U.S. Farm Services Administration, USU Extension Service, and other federal, state and local agencies, provides guidance to county land managers in identifying and solving specific conservation problems. A five member board of supervisors directs and adapts these activities to meet local needs.

As urban development has replaced county farmland, district education efforts have shifted from land judging contests and farm conservation tours to education. The CD’s educational efforts include scholarships, hosting field trips, classroom visits, sponsoring camps, etc. Education is the first step in effective conservation. The CD’s educational efforts strive to inform teachers, students, landowners, and residents about local conservation issues and empower them to take ownership and make a difference in our community.

The District encourages farmland preservation and improvement to retain a balanced quality of life for all Salt Lake County residents.

Resource Assessment Outreach

The Salt Lake Conservation District invited stakeholders, including government officials, conservation and natural resource-oriented partners, to meetings focusing on how the CD viewed the County’s natural resources and what conservation issues were most pressing. Those who could not attend were invited to provide input via email, attend a Salt Lake Conservation District meeting, or talk directly with a board member. Additionally, local resource professionals were consulted for the highest priority natural resource concerns addressed in this assessment.



Photo Courtesy of NRCS

A great “roller” moves across the land during the Dust Bowl.



Photo Courtesy of Salt Lake County

Tagge’s Famous Fruit Farm in Holladay.

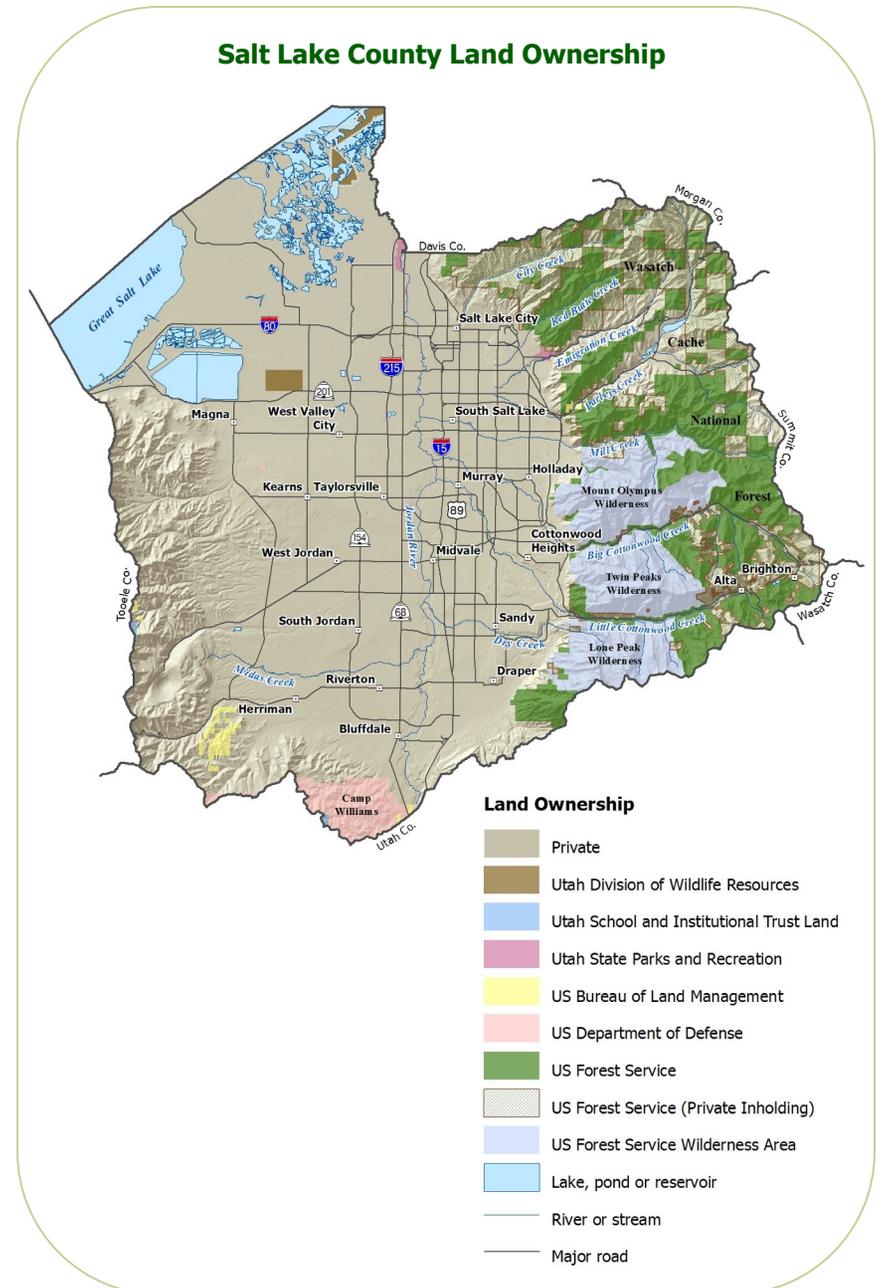
Salt Lake County Overview

Salt Lake County has a total area of 808 square miles, of which approximately 737 square miles is land and 71 square miles is water. Perhaps the most dominating physical features in Salt Lake County is the Wasatch Mountains in the east, famous for both summer and winter activities. Marking the western portion of the County are the Oquirrh Mountains. These two mountain ranges, along with the much smaller Traverse Mountains to the south of the County, delimit the Salt Lake Valley, which is also flanked on the northwest by the Great Salt Lake, for which the County is named.

According to the 2010 census, the population of Salt Lake County is 1,029,655, making it the 39th most populous county in the United States. On the north and east benches, homes sometimes climb halfway up the mountain, and new communities are also being constructed on the steeper southern and western slopes. In the wildland-urban interface, rapid residential construction continues in the west-central, southwest, and southern portions of the county. In the far west, southwest, and northwest, rural areas still exist, but rapid growth threatens the remaining natural environment within the valley.

Historically, the county's economy relied heavily on The Church of Jesus Christ of Latter-day Saints' services, mining, and logging. Since World War II, defense industries, including testing and training, have played a much more important role in the local economy, especially as logging provided less economic benefit as timber was removed.

In 1995, Salt Lake City won the bid to host the 2002 Winter Olympics, subsequently boosting tourism and helping to improve transportation throughout the county. Additionally, in recent decades, industry and manufacturing have been important influences in the local economy. Salt Lake County also hosts a major research university, the University of Utah.



Salt Lake County boasts a diversified landscape, as well as diversified agriculture.



Photo Courtesy of Kenneth Naylor



Photo Courtesy of Kenneth Naylor



Photo Courtesy of Lindsey Brooker



Photo Courtesy of Drake Family Farms



Photo Courtesy of USU Extension



Photo Courtesy of Lindsey Brooker

Natural Resource Priorities and Concerns

WATER QUANTITY AND QUALITY

For planning purposes, Salt Lake County was divided into seventeen watersheds (based on topography in the mountains and storm water drainage areas in the valley) and 27 sub-watersheds (based primarily on management practices and jurisdiction).

Headwaters Protection

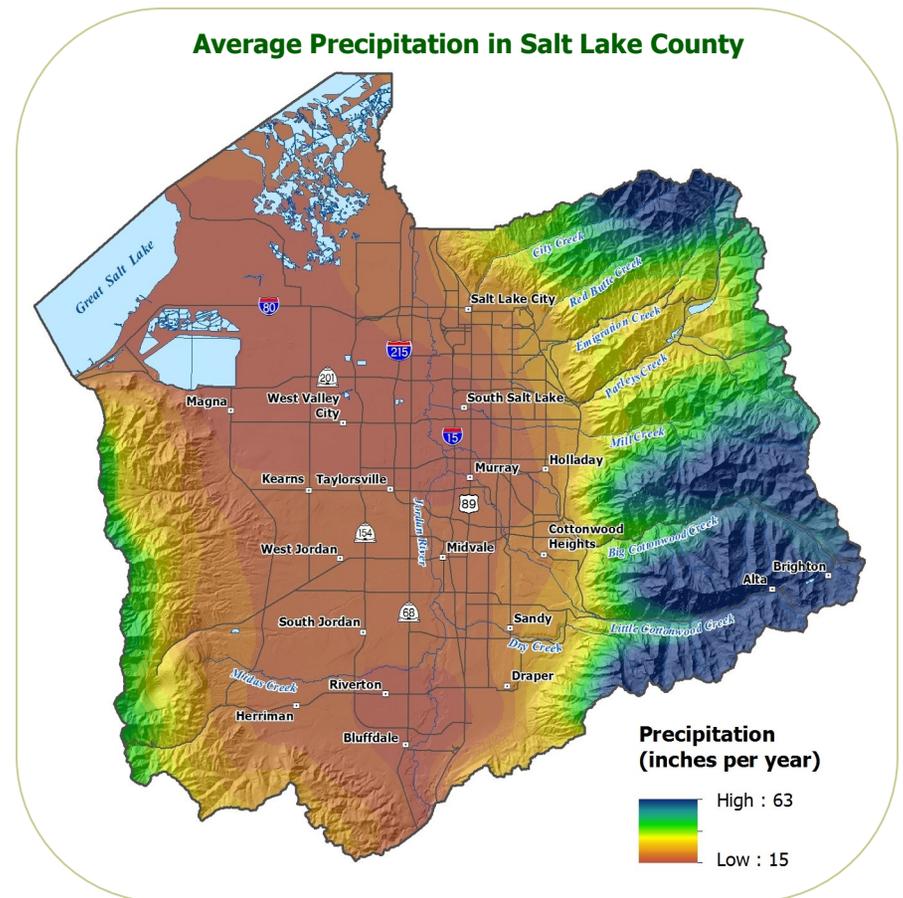
Protecting headwater resources is a critical component of preserving overall watershed health. The Salt Lake Countywide Watershed contains two major headwater areas: the Wasatch and the Oquirrh Mountains. These areas provide water supply, habitat, recreation, and aesthetic resources in Salt Lake County.

According to the Salt Lake Countywide Water Quality Stewardship Plan, some of the issues in the Wasatch Mountains include sanitation, transportation, and protection of critical watershed lands. The existing plans and regulations should continually be revisited. Meanwhile, the land in the Oquirrh Mountains is currently transitioning from mining to urban development, and therefore, watershed protection strategies are not as well developed. Water quality in the Salt Lake Countywide Watershed can be improved with appropriate forest management, as well as reducing pollutant loads sufficient to support aquatic habitat, water supply, and social functions, including recreation.

In Salt Lake County, ten major drainages originate from the Wasatch Mountains and ten originate from the Oquirrh Mountains, ranging in size from less than three miles to 44 miles in length. In Salt Lake County, the hydrology of the streams is dominated by snowmelt, with high flows occurring from April through July. These streams are often used to convey storm water discharge to either the Jordan River or the Great Salt Lake. Increased population will likely result in a loss of open space, as well as an increase in impervious surfaces. These changes can result in an increase in storm water runoff, stream bank erosion, channel widening, and habitat loss. The Salt Lake Countywide Watershed Surficial Geology Map can be found in Appendix D on page 20.

Wasatch Mountains

The Wasatch Mountain Range is approximately 160 miles in length and stretches from the Utah/Idaho border south to central Utah. In addition to supporting essential watershed functions, nearly 85% of Utah's population lives within fifteen miles of the Wasatch Mountains and 26% of the water supply in the county comes from streams that originate in the Wasatch Mountains (USFS, 2003).



Throughout the Wasatch Mountains, riparian vegetation and large woody debris reduce erosion, maintain water quality, filter sediment, aid floodplain development, improve floodwater retention and groundwater recharge, stabilize stream banks, and develop diverse channel characteristics. Various factors may affect the environment and watershed health of these headwater areas including: drought and flood conditions, development, climate change, fire, insects, disease, roads, livestock grazing (currently prohibited), diversions (in lower sections), and dams (USFS, 2003).

Commercial and residential development, along with recreational use, in the Wasatch Mountain area is increasing year round, due in part to the rapidly growing metropolitan population in Salt Lake County and increasing tourism. Balancing social and recreational desires with ecological functions is a major challenge facing the Wasatch Mountains.

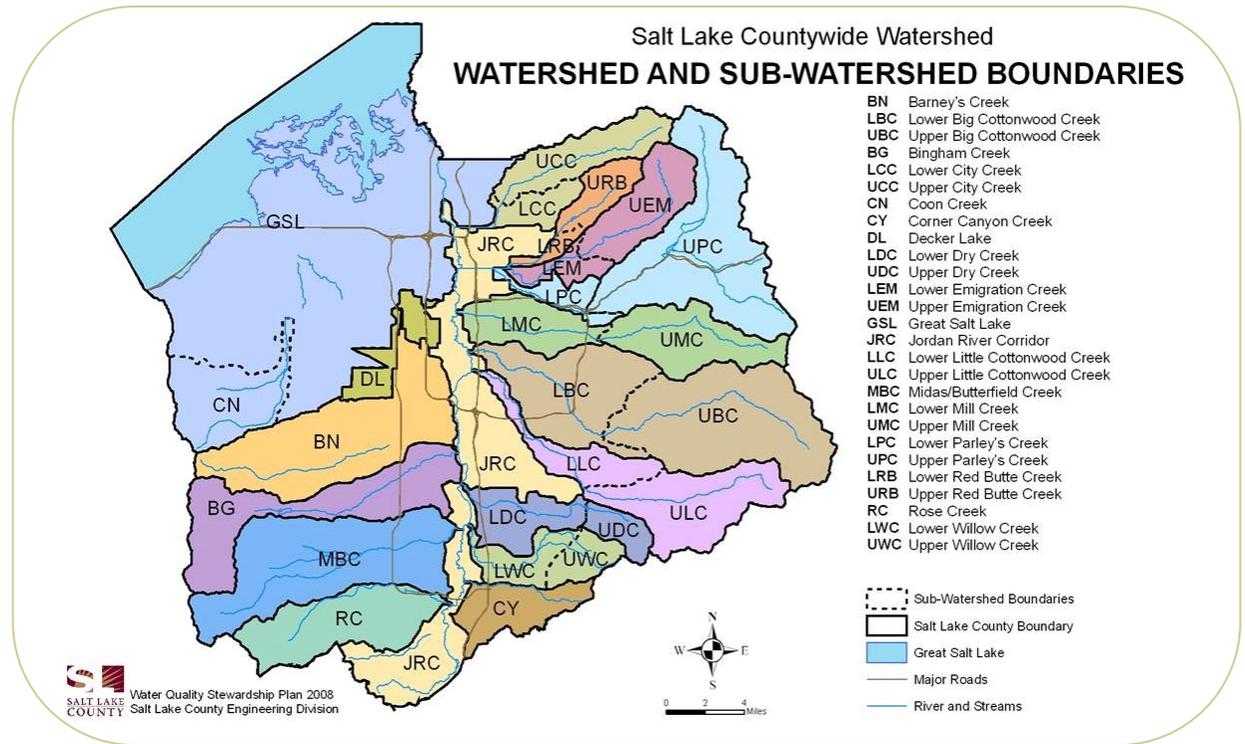
Oquirrh Mountains

The Oquirrh Mountain range is approximately 30 miles in length, stretching from Utah County to the south shore of the Great Salt Lake. The mountain range has been mined for gold, silver, lead, molybdenum, platinum, and titanium and, most famously, copper at the Bingham Canyon Mine. The Oquirrh Mountains have many canyons and dense forests, consisting largely of conifer and aspen trees. There are also thriving populations of butterflies, deer, mountain lions, elk, and squirrels.

Bingham Creek is a drainage that originates high in the Oquirrh Mountains and includes the Bingham Canyon Mine, operated by Rio Tinto's Kennecott Copper Corporation. Kennecott constructed retention ponds near the mouth of Bingham Canyon and south of Copperton in order to control water quality for storm water and other runoff, which has historically been a source of pollution.

Jordan River Watershed

The Jordan River Watershed, found in north central Utah, is a closed basin that drains a total area of approximately 805 square miles (515,200 acres). The Watershed is bounded on the east by the Wasatch Mountains, on the west by the Oquirrh Mountains and on the south by the Traverse Range. The Great Salt Lake is the eventual recipient of water in the north-flowing Jordan River. The Jordan River meanders for approximately 58 river miles flowing from the outlet of Utah Lake north to the Great Salt Lake. Seven major tributary streams (Little Cottonwood Creek, Big Cottonwood Creek, Mill Creek, Parley's Creek, Emigration Creek, Red Butte Creek and City Creek) feed into the river as it flows north to the Great Salt Lake (www.watershed.slco.org). Significant water quality issues were found in the tributaries on the west side, which is likely attributable to storm water runoff, as well as smaller farms and livestock.



Natural Resource Priorities and Concerns

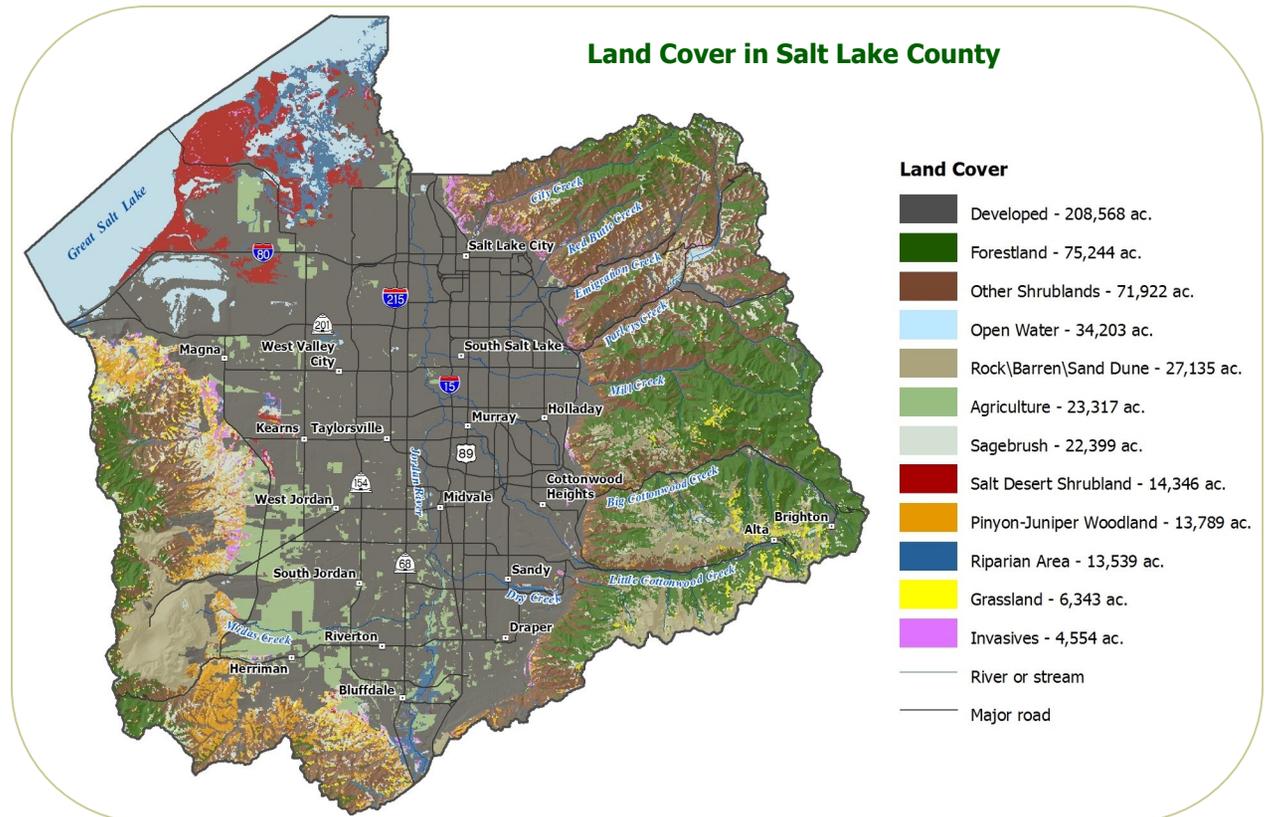
NOXIOUS AND INVASIVE WEEDS

Noxious and invasive weeds are typically non-native plants that, once established, are difficult to control and spread aggressively. They thrive outside their native origins where their natural competitors are not available to keep populations in check. These silent invaders quickly begin to out-compete native plants, often forming monocultures and forever changing our landscapes. Noxious and invasive weeds reduce crop yields, destroy native plant and animal habitats, diminish recreational opportunities, create erosion problems and fire hazards, lower land values, and poison humans and livestock.

At a state level, the Utah Noxious Weed Act defines a noxious weed as “any plant the Commissioner of Agriculture determines to be especially injurious to public health, crops, livestock, land, or other property.” The state of Utah maintains a noxious weed list that includes 27 weeds. In addition to this list, Salt Lake County has classified three additional weeds as County noxious weeds. The Act requires landowners with listed weeds on their property to control them before they spread.

Some of the biggest weed offenders in Salt Lake County include yellow starthistle, garlic mustard, and medusahead rye. Additional high priority weeds are myrtle spurge, Dalmatian toadflax, Leafy spurge, whitetop, and phragmites. Medusahead rye has recently been identified in the valley and treatment has commenced. This is among the highest priority weeds in the state, and if not controlled, it will be a major problem in the future.

Noxious and invasive weed infestations in Salt Lake County tend to be concentrated near roads, highway corridors, railroad lines, recreational trails, grazing areas, canals, fence lines, dormant and stalled construction sites, and privately owned ranchettes. These areas are not always adequately maintained and are often problematic sources of weed infestations.

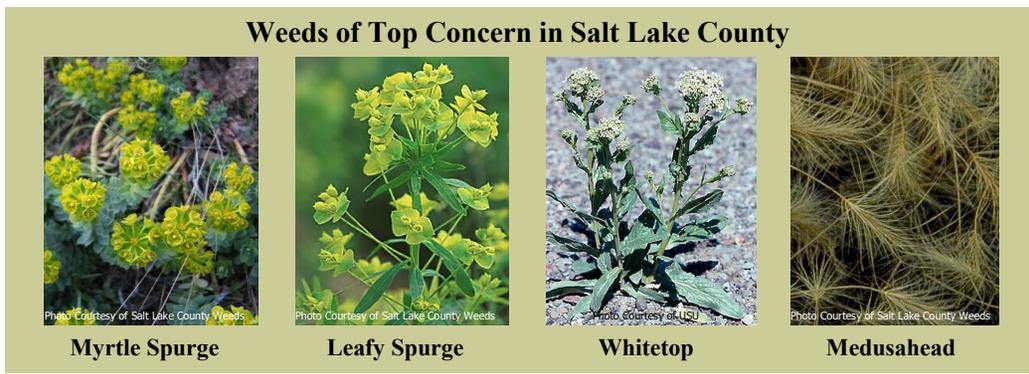


In a response to the growing concern of noxious weeds found along the Wasatch front, the Bonneville Cooperative Weed Management Area (BCWMA) was created to foster greater public awareness, develop common management objectives amongst land managers, set realistic management priorities, and facilitate effective treatment. Cooperators of the BCWMA include private landowners, county and tribal government, university, state, federal land management agencies, and interested organizations and individuals. The BCWMA's intent is to bring together land managers responsible for weed management within Salt Lake County and work together to come up with realistic and creative approaches to noxious and invasive weed education and management.

The Salt Lake County Weed Board is comprised of five unpaid, appointed citizens from the community, at least two of whom are required to be farmers and/or ranchers. Weed Board members are appointed to a four-year term and are required to meet monthly to initiate and implement the County's noxious weed control programs, goals, and objectives.

Salt Lake County is responsible for the control of noxious weed infestations on county owned and maintained properties. The county surveys and maps noxious weeds, responds to weed complaints, tracks known infestations, and provides educational opportunities. The county maps and tracks noxious and invasive weed infestations utilizing GPS and GIS technology. Much of the County's foothills have been mapped, but large areas, such as the Jordan River and private land holdings, have yet to be completed. Salt Lake County's interactive Noxious Weed Map can be found at: www.surveyor.slco.org/flexviewer_weeds/index.html.

All land managers in Salt Lake County should focus on Integrated Weed Management (IWM). IWM is based on the principal that by using the most appropriate tool from the toolbox, weed control will be more effective. Tools can include mechanical control (removal), biocontrol, cultural control, and chemical control methods. Early detection of new weeds allows for a quicker suppression. Land managers should strive to keep potential invaders out and ensure that newly detected weeds are treated before they become prolific.



State of Utah Noxious Weed List

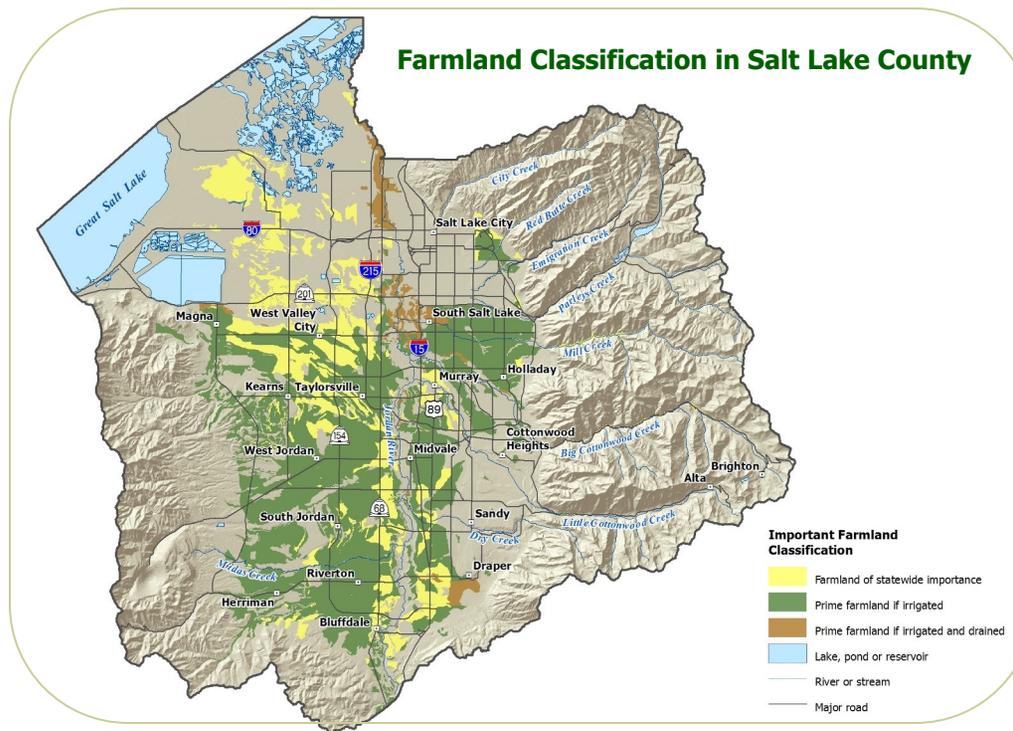
The following weeds are officially designated and published as noxious for the State of Utah, as per the authority vested in the Commissioner of Agriculture under Section 4-17-3, Utah Noxious Weed Act.

- Bermudagrass (*Cynodon dactylon*)
- Bindweed (*Convolvulus arvensis*)
- Black henbane (*Hyoscyamus niger*)
- Canada thistle (*Cirsium arvense*)
- Dalmatian toadflax (*Linaria dalmatica*)
- Diffuse knapweed (*Centaurea diffusa*)
- Dyers woad (*Isatis tinctoria*)
- Hoary cress (*Cardaria draba*)
- Houndstongue (*Cynoglossum officinale*)
- Johnsongrass (*Sorghum halepense*)
- Leafy spurge (*Euphorbia esula*)
- Medusahead (*Taeniatherum caput-medusae*)
- Musk thistle (*Carduus nutans*)
- Ox-eye daisy (*Chrysanthemum leucanthemum*)
- Perennial pepperweed (*Lepidium latifolium*)
- Perennial sorghum (*Sorghum halepense* L. & *Sorghum almum*)
- Poison hemlock (*Conium maculatum*)
- Purple loosestrife (*Lythrum salicaria* L.)
- Quackgrass (*Agropyron repens*)
- Russian knapweed (*Centaurea repens*)
- Saltcedar (*Tamarix ramosissima*)
- Scotch thistle (*Onopordum acanthium*)
- Spotted knapweed (*Centaurea maculosa*)
- Squarrose knapweed (*Centaurea squarrosa*)
- St. Johns wort (*Hypericum perforatum*)
- Sulfur cinquefoil (*Potentilla recta*)
- Yellow starthistle (*Centaurea solstitialis*)
- Yellow toadflax (*Linaria vulgaris*)

Additional noxious weeds declared by Salt Lake County:

- Garlic mustard (*Alliaria petiolata*)
- Myrtle spurge (*Euphorbia myrsinites*)
- Puncturevine (*Tribulus terrestris*)

LOSS OF AGRICULTURE LANDS



Salt Lake County was once a thriving agricultural community. It is now highly urbanized, with an ever-increasing population dominating the landscape. Urbanization is reducing the quantity of forested lands, creating hazardous conditions for fire in the wildland-urban interface. Furthermore, rapid development sometimes overlooks potential mass movement, or other geologic concerns. This growth continues to put demands on local water quantity and quality, creating another concern for Salt Lake County. Unfortunately, farm ground purchased for future development is frequently left unused. Additionally, upcoming transportation needs and necessary expansion will likely further impact the future of open spaces. Although the primary cause of the decline in agricultural lands is urban encroachment, other contributing factors include: increased land values, aging farmers, high production costs, invasive weeds, and increased government regulations. When farmers are not profitable, or are unable to run their business, they are often forced to sell their land for development.

	1920	1987	1997	2007
Farms	2,438	734	593	587
Acres in Farms	317,281	155,398	113,912	107,477
Average Size of Farm (Acres)	61.4	212	192	183

Once land is developed, the benefits it once provided, including food and fiber, economic contributions, wild land habitat, open space, and wetland habitat, are gone.

The close proximity to market outlets creates a unique benefit to both the farmers and the community. Producers are able to make a higher profit by skipping wholesale and out-of-state markets and selling directly to consumers. Local, specialized markets include grocery stores and restaurants, community supported agriculture, farmers markets, and roadside stands. Not only does the community enjoy fresh, local food but a connection with the food is also established.

One possible solution to the diminishing open spaces, the Urban Farming Initiative (enacted by Salt Lake County in 2009) works toward preserving agricultural land for future generations. The initiative states that “publicly owned lands that are currently lying fallow will be considered for lease for the purposes of growing fruits and vegetables.”

Ultimately, the preservation of agricultural lands requires stewardship of the air, water, and soil. Most agricultural producers want to continue farming, but are concerned about the future of their profession and family operations. Protecting farmland is important to the future of Salt Lake County, as well as to the beneficiaries of the county’s agricultural lands.

Aerial photos taken in 1996 and again in 2006 illustrate the intensity of urban development in Salt Lake County.



The Utah Agriculture Sustainability Task Force was created to address popular interest in agricultural land preservation and sustainability. The Task Force is offering 29 recommendations that are expected to protect and enhance Utah agriculture. The recommendations generally call for the creation of new laws and policies at the federal, state and local levels that remove obstacles for safe and modern farming and ranching. The full report can be found at: www.ag.utah.gov/divisions/conservation/documents/TaskForceSummaryNov162011.pdf.

Natural Resource Priorities and Concerns

AIR QUALITY

Poor air quality is a significant concern to the public health in Salt Lake County, especially during mid-winter months when strong areas of high pressure situate themselves over the Great Salt Lake Basin, leading to strong temperature inversions. An inversion occurs when cold air and pollutants are trapped underneath a layer of warm air, effectively placing a cap on everything in and below the basin. Inversions are common, peaking November thru March, and are exacerbated by the local topography and regional stagnant high-pressure systems. This series of events leads to air stagnation and a thick smog covering the valley, lasting days to weeks at a time. The result is often the worst air pollution levels in the United States.

The Environmental Protection Agency (EPA) designates a locale as a nonattainment area if it exceeds the health base standards for a given pollutant. The designation process plays an important role in whether the air quality in a given area is healthy. Salt Lake County is designated as a nonattainment area for particulate matter (PM10), fine particulate matter (PM2.5), sulfur dioxide (SO₂), carbon monoxide (CO), and ozone (O₃).

Ground-level ozone is formed when volatile organic compounds (VOCs), also known as hydrocarbons, and nitrogen oxides (NO_x) interact in the presence of sunlight. Sources of VOC and NO_x emissions include:

- Large industries, such as chemical manufacturers, and combustion sources, such as power plants burning fossil fuels
- Small industries, such as gasoline-dispensing facilities, auto body paint shops, and print shops
- Automobiles, trucks, and buses
- Off-road engines, such as aircraft, locomotives, construction equipment, and gasoline-powered lawn and garden equipment

Ozone concentrations typically peak between 2 p.m. and 8 p.m. from May to September. It is primarily a summer issue, but it may also have implications for winter particulate problems.

Fine particulate matter (PM2.5) is a mixture of extremely small particles and liquid droplets that measure 2.5 micrometers or less. PM2.5 forms when volatile organic compounds (VOCs) and ammonia combine with nitrogen oxides (NO and NO₂) in the atmosphere. The county's leading source of nitrogen oxides is combustion from vehicles. Other major contributors include refineries, construction, and soot.

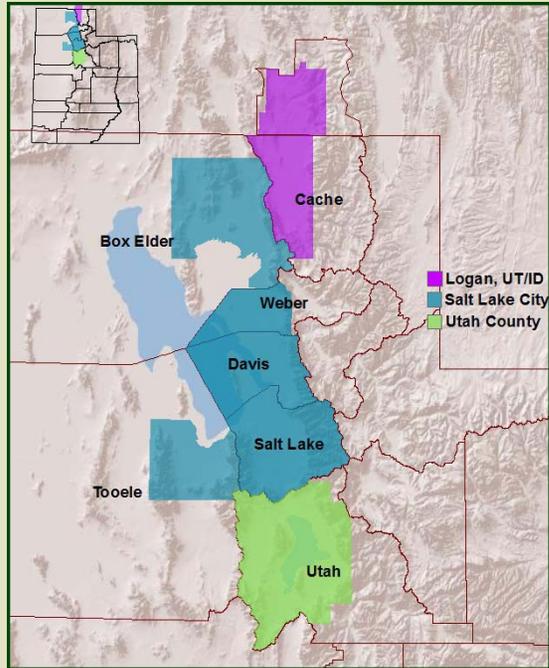
Sulfur oxides are the result of burning sulfur. The primary source of sulfur oxides is the burning of fossil fuels, particularly coal, at industrial facilities. Sulfur dioxide is used as an indicator of all sulfur oxide concentrations in the air, because it is the most easily measured. It is known to irritate the respiratory system and can combine with particles and moisture in the air, creating a greater health risk.

Carbon monoxide forms when there is insufficient oxygen present for complete combustion. The concentration of CO in the air depends primarily on local weather conditions and the number of automobiles in the area. High levels of CO can have severe health effects on humans by reducing the supply of oxygen in the bloodstream.

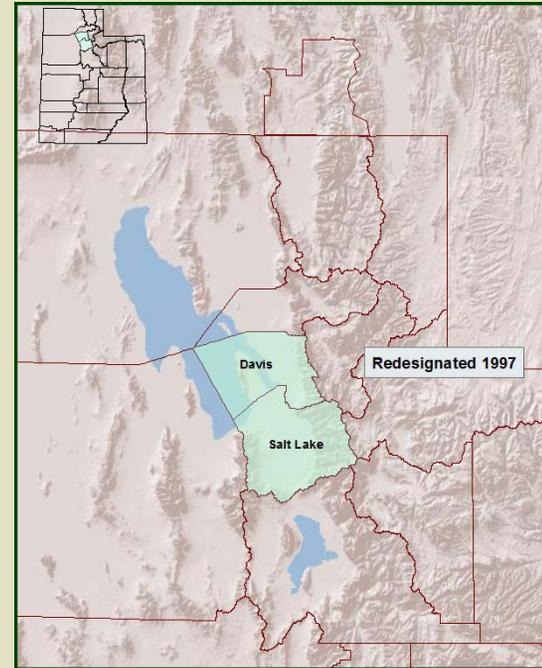
Once an area is designated as a nonattainment area for a pollutant, the state is required to write a State Implementation Plan (SIP) that details how that pollutant will be controlled. The Utah Division of Air Quality has developed a Salt Lake County working group that is collaborating on emission reduction strategies to bring the air back into attainment. Although the SIP is not completed, Utah is making efforts to reduce air pollution through programs, such as Choose Clean Air (www.cleanair.utah.gov) and residential wood burn control, where individuals can sign-up to receive e-mails informing them on days it is not recommended to drive or burn wood. There are also rebate programs, such as Utah Clean Fuels Program, which can be found at www.cleanfuels.utah.gov. Additionally, trees work to reduce pollution by trapping airborne particulates and absorbing carbon and releasing oxygen. Many communities within Salt Lake County have active urban forestry programs in an effort to continue the naturally occurring benefits of trees.

Salt Lake County is classified as a nonattainment area for particulate matter, fine particulate matter, sulfur dioxide, carbon monoxide, and ozone.

PM 2.5



Ozone



Vehicles account for 50% of Pollution in the County.



Photo: Jo Daley, KSL.com



Photo: Tom Smart, Deseret News

A cloud of haze and smog hangs over Salt Lake County, December 2010.

General Resource Summary

SOIL ▪ WATER ▪ AIR AND CLIMATE ▪ PLANTS ▪ ANIMALS ▪ HUMANS

The NRCS conducts resource inventories to help resource managers make land use decisions. The inventories evaluate the soil, water, air, plants, animals, and humans. The Salt Lake Conservation District uses these inventories to determine its priority concerns for this assessment in the previous pages and its long range planning process.

Soil

Due to the surrounding mountains, the valley's soils are extremely diverse. The soils present in the valley today were originally formed from debris and mountain runoff that settled into historic Lake Bonneville. Consisting primarily of granite, limestone, sandstone, quartz, porphyry, and feldspar, the mountains surrounding the valley provided the rocks that formed the soils of the Salt Lake Valley following the release of Lake Bonneville and subsequent drying up as the climate changed. Currently, there are 137 different soil types that have been identified in Salt Lake County. The Salt Lake County General Soils map can be found in Appendix C on page 19.

Soil Designation	Acres in Salt Lake County
Prime Farmland, if Irrigated	75,881.6
Prime Farmland, if Irrigated and Drained	5,567.7
Farmland of Statewide Importance	30,568.8
TOTAL	112,018.1

The Jordan River



Water

Historically, Salt Lake County, along with a majority of Utah, was home to Lake Bonneville, a massive lake that formed thousands of years ago. With estimated depths of approximately 1,000 feet, the current Salt Lake Valley was underwater when Lake Bonneville was present. The size of Lake Bonneville is hard to imagine when considering present day Salt Lake County. The Great Salt Lake has an average depth of 13 feet, which is only 1.3% the depth of Lake Bonneville. The Great Salt Lake, along with other bodies of water in the area, are remnants of the original Lake Bonneville.

While the Great Salt Lake is probably the most well-known body of water in the Salt Lake County area, the Jordan River is of great importance to the county, as well. Flowing from south to north, the Jordan river runs the entire length of the county and ends in the Great Salt Lake. Because of the many canyon streams and mountain runoff that feed into the Jordan River, it is rich in minerals from the surrounding mountain ranges. Since most of the water throughout the county flows into the Jordan River, it is the primary source for irrigation water in the county.

The Salt Lake County Hydrology Map can be found in Appendix B on page 18.

Air and Climate

Most of Utah experiences four distinct seasons. However, the lower elevation of the Salt Lake Valley largely insulates it from extreme weather conditions. These moderate weather conditions allow Salt Lake County to have one of the longest growing seasons in the state, averaging 5.5 months.

The Salt Lake Valley receives approximately 15 inches of precipitation annually. Precipitation is heaviest in the late fall/early winter, while summer is the driest season.

The valley receives 55 inches, or more, of snow in a year. Most of the snow falls from mid-November to March. The mountains receive up to 500 inches of light, dry snow and up to 55 inches of precipitation annually. The dry snow is ideal for skiing, which supports the four ski resorts in the county. The dry snow is attributed to the low humidity throughout the County. The heavy snow totals across the County are attributed to the lake-effect. The lake-effect occurs when precipitation is intensified by the warm waters of the Great Salt Lake, which never entirely freezes due to the lake's high salinity content. The lake-effect can stretch to any area throughout the County.

During the winter months, temperature inversions are a common problem. The inversions trap pollutants in the valley, causing unhealthy air quality conditions and low visibility. These inversions can last from several days to up to a month, in extreme cases.

Two of the most favorable weather conditions in Salt Lake County are the low humidity and plentiful sunshine, averaging 237 days of sunshine a year.

Salt Lake County air quality is discussed in detail in the Air Quality section on page 10.

Plants

The most prevalent crop produced in the county is alfalfa. The alfalfa is grown and left in the ground for seven years. Typically, the alfalfa is harvested three to four times each year. Once the seven years have passed, the alfalfa is removed and small grains are planted for two years. After the two years of growing the small grains, alfalfa is planted again and the cycle repeats itself.

In addition to growing alfalfa, Salt Lake County is also a large producer of winter wheat. In 2009, the County produced 162,000 bushels.

The biggest threats to agricultural operations in the County have been urbanization and increasing population. In recent years, a resurgence has taken place as Salt Lake County introduced the Urban Farming Initiative, which leases unused, publically-owned land for the purpose of growing fruits and vegetables. Perhaps the largest support for agriculture efforts throughout the County can be seen by the numerous farmers markets. Although farmland has decreased, Salt Lake County has been proactive at finding ways to support local producers through the Urban Farming Initiative and the support of the multiple farmers markets and fruit and vegetable stands located throughout the county.

Alfalfa

Photo: The Salt Lake Tribune



General Resource Summary

SOIL ▪ WATER ▪ AIR AND CLIMATE ▪ PLANTS ▪ ANIMALS ▪ HUMANS

Animals

Before its urbanization, Salt Lake County was home to over two dozen farming communities. In the 1920's, there were approximately 90 farms in the current Draper area, with most farms specializing in the dairy industry. While most of the County has been converted into residential housing and commercial shopping centers, there are still active farming operations within the County. While the farming of crops has reemerged largely due to the Urban Farming Initiative, many livestock operations still exist, despite the significant population growth and reduction of land for agricultural purposes. As of 2007, Salt Lake County produced 4,377 cows, with about half being sold for beef, and 841 sheep and lambs.

While the farming operations have been challenged by the urbanization, the wildlife has also been similarly impacted. However, there is still an abundance of wildlife, especially in the Wasatch and Oquirrh mountain ranges. Elk, mule deer, snowshoe hares, bald eagles, ground squirrels, and many other wildlife species are visible throughout the County's mountain terrain. While many animals thrive in the mountainous habitat, a few species of animals have not been as fortunate. There are currently three species of animals in Salt Lake County that are listed on the Utah Division of Wildlife's Threatened, Endangered, and Candidate species list, including the Least Chub, June Sucker and Yellow-billed Cuckoo. The US Fish and Wildlife Service also lists greater sage-grouse, but it is not found in Salt Lake County due to loss of sage brush habitat. The Salt Lake County Sensitive Species List from the U.S. Fish and Wildlife Service can be found in Appendix A, on page 18.

Yellow-billed Cuckoo



Photo: Wikipedia

The yellow-billed cuckoo is no longer found in its historical habitat along the Jordan River. Land managers are hopeful that current riparian habitat restoration efforts may bring this bird back to Salt Lake County.

Humans

Population: The 2010 census recorded a population of 1,029,655 people in Salt Lake County, a 14.6% increase from the 2000 census. This rise was well below the growth rate for the state overall. By 2030, the population is projected to be 1,381,519, with the population of some cities within Salt Lake County expecting to double within the same timeframe.

Economy: Salt Lake County has numerous well established companies, including the University of Utah, Delta Airlines, United Parcel Service (UPS), Smith's Food and Drug, American Express and more. These nationally known companies provide diversified employment opportunities. Some of Salt Lake County's biggest industries include bioscience, distribution, financial services, real estate, manufacturing, and high technology.

Recreation: People come from all over the world to experience the sights, scenery, and attractions in Salt Lake County. Temple Square is the most visited attraction. There are theme and water parks, aquariums, museums, and national monuments. Specific attractions in the county include the following: Natural History Museum, Utah's Hogle Zoo, Clark Planetarium, Discovery Gateway, Utah Olympic Oval and the Living Planet Aquarium. Also, world class skiing provides unparalleled recreational prospects with the "Greatest Snow on Earth." Salt Lake County is an exciting destination with limitless opportunities.

Year	Population	Housing Units	Farms
2000	898,387	310,988	712 (2002)
2010	1,029,655	368,781 (2011)	587 (2007)

Sources: www.quickfacts.census.gov and www.agcensus.usda.gov

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General Resource Summary

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Water

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1. Utah State Extension. (2005). *Salt Lake County Agriculture Profile*. Retrieved from http://extension.usu.edu/files/publications/publication/AG_Econ_county-2005-21.pdf. [Accessed 28 December 2012].
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Plants

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Map Data Sources

Land Ownership/Overview

Land ownership status and areas of responsibility for the State of Utah. The Utah School and Institutional Trust Lands Administration (SITLA) and the Bureau of Land Management revise this data regularly to reflect changes in ownership. Available for download from the Utah Automated Geographic Reference Center at: <http://gis.utah.gov/sgid-vector-download/utah-sgid-vector-gis-data-layer-download-index?fc=LandOwnership>

Watersheds

A subset of the National Hydrography Dataset (NHD). The National Hydrography Dataset (NHD) is a comprehensive set of digital spatial data that contains information about naturally occurring and constructed bodies of water, paths through which water flows, and related entities. The NHD was developed by U.S. Geological Survey (USGS) in cooperation with U.S. Environmental Protection Agency, USDA Forest Service, and other Federal, State, and local partners. Available for download from the USGS National Map website at: <http://nationalmap.gov/index.html>

Hydrography

A subset of the National Hydrography Dataset (NHD). The National Hydrography Dataset (NHD) is a comprehensive set of digital spatial data that contains information about naturally occurring and constructed bodies of water, paths through which water flows, and related entities. The NHD was developed by U.S. Geological Survey (USGS) in cooperation with U.S. Environmental Protection Agency, USDA Forest Service, and other Federal, State, and local partners. Available for download from the Utah Automated Geographic Reference Center at: <http://gis.utah.gov/sgid-vector-download/utah-sgid-vector-gis-data-layer-download-index?fc=StreamsNHDHighRes>
<http://gis.utah.gov/sgid-vector-download/utah-sgid-vector-gis-data-layer-download-index?fc=LakesNHDHighRes>

References

Important Farmland

Prime, Statewide and Uniquely Important Farmland derived from the following SSURGO soil surveys:

UT612 – Salt Lake Area, Utah

UT613 – Summit Area, Utah, Parts of Summit, Salt Lake and Wasatch Counties using Soil Data Viewer, a tool created by USDA Natural Resources Conservation Service as an extension to ArcMap that allows users to create soil-based thematic maps.

SSURGO Soil Surveys are available for download from the NRCS Soil Data Mart: <http://soildatamart.nrcs.usda.gov/>

Soils Detail Data

Detailed soil properties derived from the following SSURGO soil surveys:

UT612 – Salt Lake Area, Utah

UT613 – Summit Area, Utah, Parts of Summit, Salt Lake and Wasatch Counties using Soil Data Viewer, a tool created by USDA Natural Resources Conservation Service as an extension to ArcMap that allows users to create soil-based thematic maps.

SSURGO depicts information about the kinds and distribution of soils on the landscape. The soil map and data used in the SSURGO product were prepared by soil scientists as part of the National Cooperative Soil Survey.

SSURGO Soil Surveys are available for download from the NRCS Soil Data Mart: <http://soildatamart.nrcs.usda.gov/>

General Soils Data

General soil properties derived from the following SSURGO soil surveys:

UT612 – Salt Lake Area, Utah

UT613 – Summit Area, Utah, Parts of Summit, Salt Lake and Wasatch Counties using Soil Data Viewer, a tool created by USDA Natural Resources Conservation Service as an extension to ArcMap that allows users to create soil-based thematic maps.

SSURGO Soil Surveys are available for download from the NRCS Soil Data Mart: <http://soildatamart.nrcs.usda.gov/>

Land Cover

USGS National Gap Analysis Program. 2004. Provisional Digital Land Cover Map for the Southwestern United States. Version 1.0. Produced by RS/GIS Laboratory, College of Natural Resources, Utah State University. Published 9/15/2004. Multi-season satellite imagery from 1999 – 2001 were used in conjunction with digital elevation model derived datasets to model natural and semi-natural vegetation.

Precipitation

Produced by U.S. Department of Agriculture Natural Resources Conservation Service – National Cartography and Geospatial Center. This vector data set provides derived average annual precipitation according to a model using point precipitation and elevation data for the 30-year period of 1971 – 2000.

Assessment Units (Impaired Waters) – Produced by Utah Division of Water Quality, January 2010. This dataset represents water quality assessment units for the State of Utah, and shows the 2006 assessment category for meeting State of Utah water quality standards.

Available for download from the Utah Automated Geographic Reference Center at: <http://gis.utah.gov/sgid-vector-download/utah-sgid-vector-gis-data-layer-download-index?fc=DWQAssessmentUnits>

Roads

This data set represents street centerline data for the State of Utah as compiled by the Utah Automated Geographic Reference Center from data contributed by local, county, state, federal and tribal governments.

Available for download from the Utah Automated Geographic Reference Center at: <http://gis.utah.gov/sgid-vector-download/utah-sgid-vector-gis-data-layer-download-index?fc=Roads>

County Boundaries

This data set represents county boundaries in Utah at 1:24,000 scale. Last updated July 2012.

Available for download from the Utah Automated Geographic Reference Center at: <http://gis.utah.gov/sgid-vector-download/utah-sgid-vector-gis-data-layer-download-index?fc=Counties>

Watershed and Sub-Watershed Boundaries

Salt Lake County. (2009). *Salt Lake Countywide Water Quality Stewardship Plan (WaQSP)*.

Surficial Geology

Salt Lake County. (2009). *Salt Lake Countywide Water Quality Stewardship Plan (WaQSP)*.

Appendix A

Salt Lake County Sensitive Species List from the U.S. Fish and Wildlife Service

Common Name	Scientific Name	State Status
AMERICAN WHITE PELICAN	PELECANUS ERYTHORHYNCHOS	SPC
BALD EAGLE	HALIAEETUS LEUCOCEPHALUS	SPC
BLACK SWIFT	CYPSELOIDES NIGER	SPC
BOBOLINK	DOLICHONYX ORYZIVORUS	SPC
BONNEVILLE CUTTHROAT TROUT	ONCORHYNCHUS CLARKII UTAH	CS
BURROWING OWL	ATHENE CUNICULARIA	SPC
CALIFORNIA FLOATER	ANODONTA CALIFORNIENSIS	SPC
COLUMBIA SPOTTED FROG	RANA LUTEIVENTRIS	CS
FERRUGINOUS HAWK	BUTEO REGALIS	SPC
GRASSHOPPER SPARROW	AMMODRAMUS SAVANNARUM	SPC
JUNE SUCKER	CHASMISTES LIORUS	S-ESA
KIT FOX	VULPES MACROTIS	SPC
LEAST CHUB	IOTICHTHYS PHLEGETHONTIS	S-ESA, CS
LEWIS'S WOODPECKER	MELANERPES LEWIS	SPC
LONG-BILLED CURLEW	NUMENIUS AMERICANUS	SPC
LYRATE MOUNTAINSNAIL	OREOHELIX HAYDENI	SPC
NORTHERN GOSHAWK	ACCIPITER GENTILIS	CS
SHORT-EARED OWL	ASIO FLAMMEUS	SPC
SMOOTH GREENSNAKE	OPHEODRYS VERNALIS	SPC
SPOTTED BAT	EUDERMA MACULATUM	SPC
THREE-TOED WOODPECKER	PICOIDES TRIDACTYLUS	SPC
TOWNSEND'S BIG-EARED BAT	CORYNORHINUS TOWNSENDII	SPC
WESTERN PEARLSHELL	MARGARITIFERA FALCATA	SPC
WESTERN TOAD	BUFO BOREAS	SPC
YELLOW-BILLED CUCKOO	COCCYZUS AMERICANUS	S-ESA

Symbol Definition

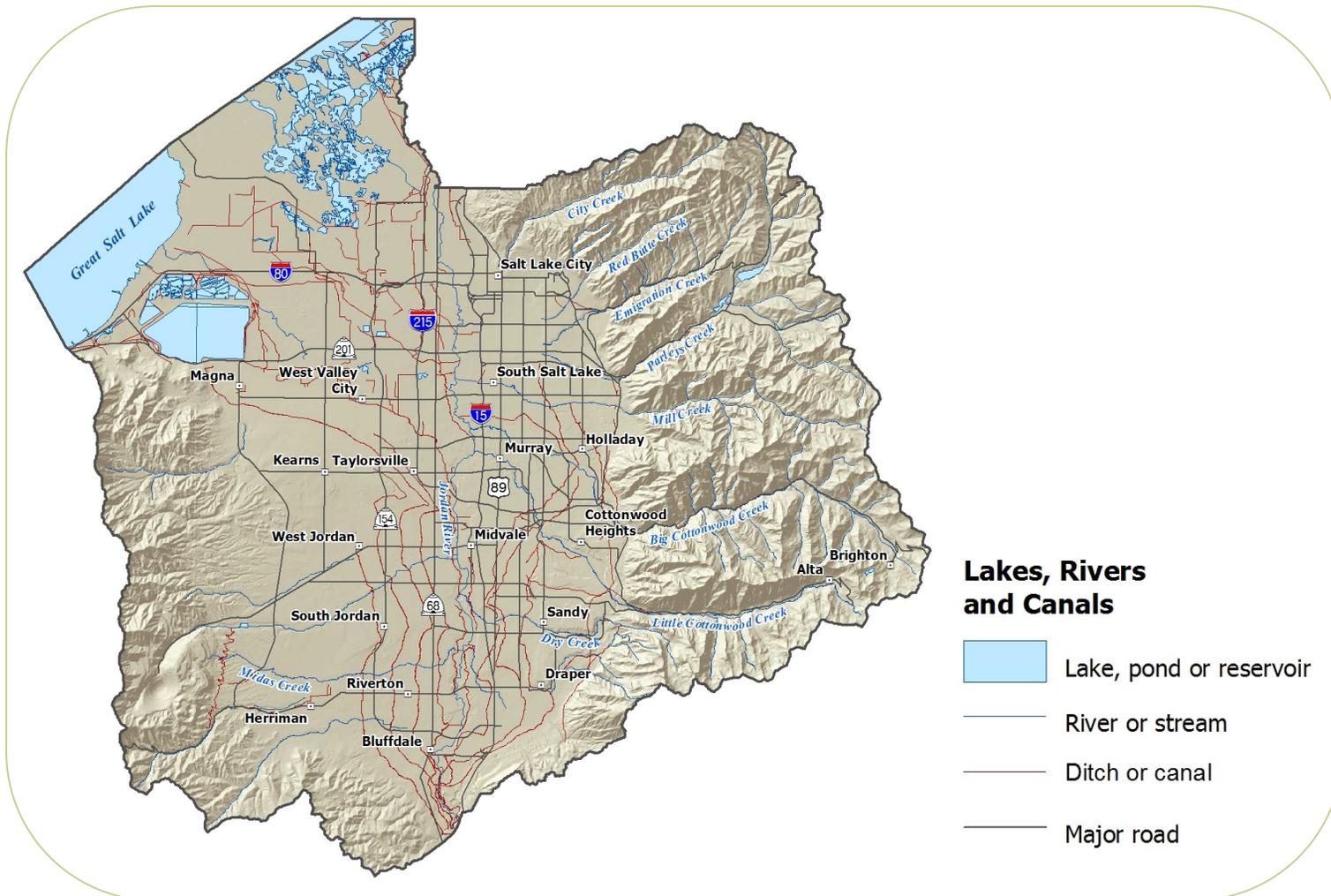
S-ESA: Federally-listed or candidate species under the Endangered Species Act

SPC: Wildlife species of concern

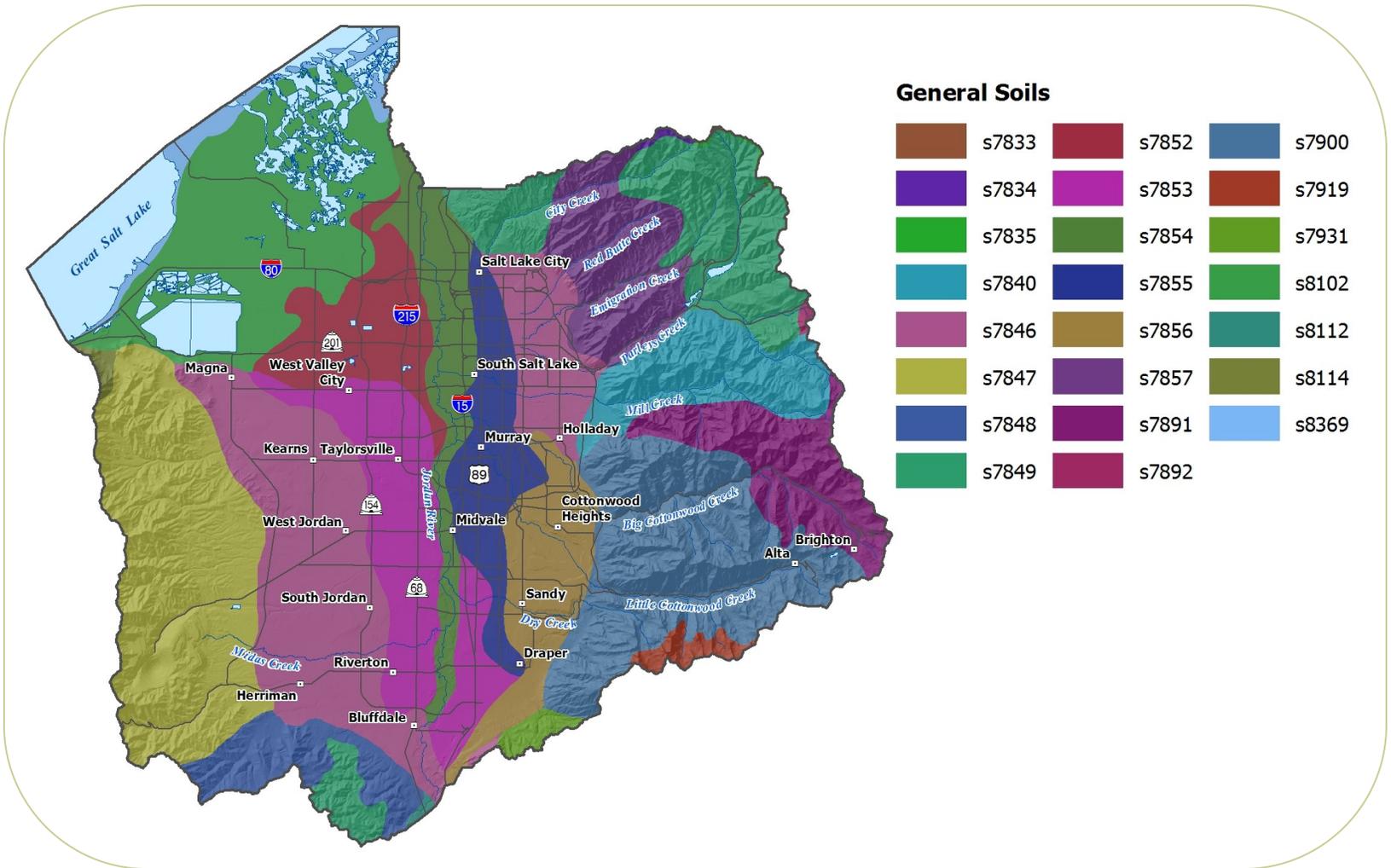
CS: Species receiving special management

Appendix B

Salt Lake County Hydrology Map



Salt Lake County General Soils Map



Appendix D

Salt Lake County Watershed Map

