

Region #1: Glen Canyon Region (National Recreation Area)

Introduction:

The Glen Canyon Region (aka National Recreation Area (NRA)) is located along the eastern border of Kane County where Lake Powell defines the county line. This NRA was created in 1972 by an act of Congress¹ which set aside approximately 1.25 million acres in parts of southern Utah and Arizona, including Lake Powell. Most of the surface acreage is in Utah (1,203,656 acres)² spread over Kane, Garfield, Wayne and San Juan counties and is managed by the National Park Service.

The Glen Canyon NRA is a major recreational destination for southern Utah. The creation of Glen Canyon Dam impounded enough water to create Lake Powell at 186 miles long with over 1,900 miles of shoreline. At its fullest, it can contain 26.2 million acre-feet of water.³ It is a vital storage reservoir of the Colorado River Storage Project (CRSP), completed by the Bureau of Reclamation in 1966. Besides becoming a major southwest tourist destination, it produces hydroelectric power for the Western Area Power Administration (aka power grid) and resulted in the construction of Highway 89 (from Kanab), the Glen Canyon Bridge, and the creation of Glen Canyon City (now Big Water).

Kane County was fortunate that road access to the dam was determined to be best served from Kanab. It was the first (major) project that employed local people, but the County Commission foresaw the economic benefits from the (future) tourist trade. They also anticipated a construction-boom, which would be a source of much needed revenue.⁴ However, ranchers had already created their own access roads to tend cattle in places like Lone Rock (within the Glen Canyon NRA).⁵ They had been raising livestock since 1890, and have continued 100+ years of cattle ranching in the Glen Canyon area (and throughout the county).⁶

When the Glen Canyon NRA was created the enabling legislation authorized grazing, mining, hunting and fishing to continue.⁷ Grazing is managed by both the National Park Service and the

¹ 16 USC Chapter 1, Subchapter LXXXVIII: Glen Canyon National Recreation Area; From Title 16 – Conservation.

² “An Analysis of a Transfer of Federal Lands to the State of Utah,” Appendix A-Glen Canyon National Recreation Area Operations, pgs 653-670, Prepared by: Bureau of Economic and Business Research, University of Utah, Utah State University Department of Applied Economics, Weber State University Department of Economics, November, 2014.

³ U.S. Bureau of Reclamation, Colorado River Storage Project, Glen Canyon Quick Facts, <<http://www.usbr.gov/uc/rm/crsp/gc/gcFats>>

⁴ Utah State, Government Services, <http://historytogo.utah.gov/utah_chapters/utah_today/glencanyondam_controversy.html>

⁵ “An Analysis of a Transfer of Federal Lands to the State of Utah,” Appendix A-Glen Canyon National Recreation Area Operations, pgs 667, Prepared by: Bureau of Economic and Business Research, University of Utah, Utah State University Department of Applied Economics, Weber State University Department of Economics, November, 2014.

⁶ U.S. National Park Service, Glen Canyon National Recreation Area, Grazing, <<http://www.nps.gov/glca/learn/nature/grazing.htm>>

⁷ 16 USC Chapter 1, Subchapter LXXXVII: Glen Canyon National Recreation Area, §460dd-2 Public Lands, §460dd-4 Hunting and Fishing, §460dd-5 Mineral and grazing leases.

Bureau of Land Management (BLM), though the BLM specifically administers the permits. According to the National Park Service there are 34 grazing allotments (approximately 882,678 acres) that are partially or entirely within the Glen Canyon NRA, and grazing is permitted on 28 of them.⁸ However, most of these allotments have cliffs, slick rock and areas that cannot be grazed, so the actual *grazable acreage* is less than the reported acres.

According to Utah Code §17-27a-304, Kane County does not have jurisdiction over property owned by the state or the United States (federal). However, in a report on *An Analysis of a Transfer of Federal Lands to the State of Utah*, “The counties in which the Glen Canyon NRA is designated pay for road maintenance, law enforcement (including search and rescue off-lake), solid waste management, and emergency medical care for visitors over large portions...while receiving only a portion of the economic benefit from visitor spending.”⁹

Kane County pays for the maintenance of Lone Rock Road (Hwy. 89 to the Lone Rock beach area), which is inside the Glen Canyon Region (NRA). It is considered a ‘Class B’ road that once was gravel, until the county paved it. Yet, the public is not allowed free access to it; they pay an entry fee at the gate into the NRA. Kane County also has an agreement with Garfield County to maintain Hole-in-the-Rock Road (from Escalante) because it is more feasible for them to provide the maintenance.¹⁰ Although Kane County does receive a percentage of PILT funds (payments in lieu of taxes) to offset the loss of property-assessed taxes that would be available if the land wasn’t designated as an NRA, these funds are not allocated for roads. However, “...they can be used to offset somewhat a wide range of costs associated with county government, including transportation and law enforcement.”¹¹

In 1998, the BLM developed a ‘Grazing Management Plan’ designed to manage threats and encourage sound grazing practices to “minimize or avoid impacts to area resources.”¹² It has resulted in the reduction of Animal Unit Months (AUMs) within the Glen Canyon area as well as limitations placed on ranchers for what they can maintain or improve on their (leased) allotments. Kane County has been contesting the BLM’s management approach to grazing in this area because of the BLM’s stance that cattle are negatively impacting the areas resources. The National Park Service admits “AUMs and numbers of livestock fluctuated by allotment as a result of economic changes and drought.”¹³ But they are managing the NRA to protect the purposes and values enabled by legislation.

Federal land managers have recognized that to be most effective, federal lands planning must include state and local governments as full coordinating partners in the public lands planning

⁸ Grazing – Glen Canyon National Recreation Area, U.S. National Park Service;
<<http://nps.gov/glca/learn/nature/grazing.htm>>

⁹ ---, pg. 665.

¹⁰ According to “An Analysis of a Transfer of Federal Lands to the State of Utah” Garfield County receives Utah Department of Transportation funding to maintain this road, including the part that lies within the Glen Canyon NRA.

¹¹ “An Analysis of a Transfer of Federal Lands to the State of Utah,” Appendix A-Glen Canyon National Recreation Area Operations, pgs 667.

¹² Grazing – Glen Canyon National Recreation Area, U.S. National Park Service;
<<http://nps.gov/glca/learn/nature/grazing.htm>>

¹³ --- pg 4.

process. Congressional policy requires that federal planners coordinate with state and local governments, and that federal plans are consistent with plans of adjacent jurisdictions within the constraints of federal law. (*See Federal Land Policy and Management Act of 1976 in Appendix D, and National Environmental Policy Act in Appendix E*). Formal and informal relationships between county, state, and federal partners, based on mutual respect and understanding, will ultimately result in more cohesive and successful efforts to achieve common interests and objectives.

1) Water Sources – Management

There are multiple agencies that have shared jurisdiction in the Glen Canyon Region (because of the waterways located there). It requires coordination between all of them to effectively implement the main laws that govern the area. Absolute sovereign authority does not exist with one agency; rather, different agencies have primary authority over specific water issues. “A complex legal and administrative framework controls how federal, tribal, state, and local governments share legal authority over water quality and quantity, as well as over broader water development and management issues.”¹⁴

Because there is an impoundment of water, and a dam, the U.S. Bureau of Reclamation (BoR) oversees the dam and the water flow. The BoR controls how much water is in the lake and how much water is discharged below the dam. The National Park Service (NPS) oversees everything within the perimeter of the NRA, including the public use of waters on Lake Powell. The NRA extends beyond Lake Powell into Garfield, San Juan, and Wayne counties of Utah. These two agencies operate within the Department of the Interior, under the Assistant Secretary for Water and Science (BoR) and Fish, Wildlife and Parks (NPS).

The state of Utah has two departments that share jurisdiction pertaining to water – the Department of Environmental Quality and the Department of Natural Resources. Under the Dept. of Environmental Quality, water is handled under the Division of Drinking Water and the Division of Water Quality. Under the Department of Natural Resources, water is handled through the Division of Water Resources and the Division of Water Rights. Each division has primary authority over specific water issues.

All of the agencies must comply (or assist in implementing) the laws that pertain to all waterways in the United States. This is run by the Environmental Protection Agency (EPA) and the Army Corps of Engineers (Corps). The EPA is an independent agency while the Corps operates under the military, Department of Defense. The Army Corps of Engineers is actually the oldest water resource agency in the U.S., who first dealt with the construction and maintenance of navigatable streams and harbors. Both agencies help implement and enforce the Clean Water Act¹⁵ (CWA) and the Safe Drinking Water Act¹⁶ (SDWA). The CWA is the cornerstone of

¹⁴ Water Encyclopedia, Science and Issues, Legislation, State and Local Water, <www.waterencyclopedia.com/La-Mi/Legislation-State-and-local-Water.html>

¹⁵ Cornerstone of surface water quality protection in the United States, originally called the Federal Water Pollution Control Act of 1948; amended in 1972.

¹⁶ The main federal law that ensures the quality of America’s drinking water. Under the SDWA, the EPA sets standards for drinking water and oversees states, localities and water suppliers who implement those standards.

surface water quality protection in the U.S. It was created in 1948 under the Federal Water Pollution Act, and amended in 1972 to become the CWA.¹⁷ The SDWA is the main federal law that ensures the quality of America's drinking water. The EPA and Corps use these two laws to set the standards for drinking water and then oversee states, localities and water suppliers who implement those standards.

Kane County understands and expects there must be a comprehensive approach to water development, management and regulation, and that it requires interagency, interstate and federal-state coordination and cooperation to effectively implement. Kane County expects to be a full coordinating partner in lands planning, especially where water is concerned.

2) Water - Surface

Kane County is in a semi-arid region of the southwest known for its high desert prairies and colorful rocky cliffs. It has very specific water sources, both surface and subsurface from which residents draw to make life sustainable. In the Glen Canyon Region, the main body of surface water is Lake Powell, created by the damming of the Colorado River at Glen Canyon Dam. This huge reservoir serves the Upper Colorado Basin states, which are: Utah, Colorado, New Mexico, Wyoming and parts of Arizona above Lee's Ferry. However, the division line between Upper Basin and Lower Basin states runs right through Kane County. The eastern half of the county (including Lake Powell) is mapped in the Upper Basin, while the western half (including large segments of the Grand Staircase Escalante National Monument) is mapped with the three Lower Basin states (Arizona, Nevada and California).

The Colorado River Compact of 1922 equitably divided and apportioned the waters of the Colorado River System between the Upper and Lower Basin states for domestic and agricultural use (as well as storage) in perpetuity. It also apportioned water for the generation of electrical power, but its share is subservient to domestic and agricultural use. The Colorado River is managed under numerous compacts, federal laws, court decisions and decrees, contracts and regulatory guidelines known as "The Law of the River."¹⁸

The Upper Basin states have been apportioned 7.5 million acre feet (maf) of Colorado River water per year. Utah was apportioned 23% of that amount¹⁹ (approximately 1.7 maf) and Kane County became entitled to 10,000 acre feet (af) per year. This percentage changes during drought years, (when Lake Mead is at 1,075 feet in elevation or lower) reducing Utah's share from 1.7 maf to 1.4 maf. (The apportionment was also recalibrated because it is believed the original allocation was extrapolated from data showing years with an abnormally high water flow.)²⁰ As

¹⁷ Water Encyclopedia, Legislation, Federal Water, <www.waterencyclopedia.com/La-Mi/Legislation-Federal-Water.html>

¹⁸ U.S. Bureau of Reclamation: Lower Colorado River Region; Law of the River. Retrieved August 4, 2015 from <www.usbr.gov/lc/region/g1000/lawofrvr.html>

¹⁹ The Upper Colorado River Basin Compact of 1948 apportioned specific percentages to each state (Article III), and made sure apportioned water that wasn't used was not relinquished or forfeited to the Lower Basin states. (Article XVI) even if and when the Lower Basin states (i.e. California) developed quicker and needed the water.

²⁰ Utah Division of Water Resources, Utah's Perspective: The Colorado River at 4-5, 2nd (edition) 2002, as referenced in "The Lake Powell Pipeline" by Robert Winsor, retrieved July 30, 2015.

of July 1, 2015, Lake Mead's elevation was 1075.08 feet.²¹ Because of the compactual allotments that have been secured since 1922 (and 1948) and interim guidelines that run through 2025²² Utah's portion of the Colorado River allotment will remain the same.

Up to this date, Kane County has not utilized its apportionment; it is currently in negotiations with the Utah Department of Water Resources, Washington County Water Conservancy District and several other agencies to build a pipeline from Lake Powell to secure its allotment. The Lake Powell Pipeline (LPP) will be a 138-mile underground conveyance system that will run from Lake Powell to the Sand Hollow Reservoir in Hurricane.²³ The plans call for a spur in the line as it passes by Kanab City limits, and will divert Kane County's portion to a storage system (yet to be built). The water will be purchased by the Kane County Water Conservancy District and paid for by sales and impact fees. The pipeline will run along a utility corridor (Highway 89) that was established by President Clinton in 1998 (Law 105-335) allowing it to go through the Grand Staircase Escalante National Monument. Construction is slated to begin in 2020 and be completed by 2023.

Both Kane and Washington Counties are the primary beneficiaries of the LPP, and it is essential the state of Utah and the two counties utilize its apportioned water allotment. Western water law has long held the rule of *prior appropriation*, where "first in time, first in right" and "continuous beneficial use" is the premise for water rights. However, in recent years, some western states have been departing from prior appropriation²⁴ and deviating more toward use-it or lose-it (to downstream users) especially where municipal use is under supplied. With a growing number of court cases setting precedent on what constitutes a priority user²⁵ it would be to Kane County's benefit to assert its need to withdraw water from the Colorado River (Lake Powell) to secure availability for its growing population. "...the doctrine of prior appropriation will continue to change because the underlying economic and social changes occurring in the West are too powerful to lock it into place."²⁶

It has been made clear in the Colorado River Basin Water Supply and Demand Study²⁷ that the Colorado River is over allocated and its demand will continue to increase through 2060. The Lower Basin states are using more than their 7.5 maf allocation (specifically, California) and their demand will continue to increase as population increases. Regardless of the historical *prior appropriation* doctrine, diminished supply could force the allocation to change. Kane County

²¹ Bureau of Reclamation: Lower Colorado Region, Lake Mead at Hoover Dam, Elevation (Feet), <www.usbr.gov/lc/region/g4000/hourly/mead-elv.html>

²² Bureau of Reclamation, Record of Decision Interim Guidelines for the operation of Lake Powell and Lake Mead, (November, 2007).

²³ Lake Powell Pipeline, authorized through the Utah legislature on May 1, 2006 through the "Lake Powell Pipeline Development Act"; Authorized the Utah Board of Water Resources to build the pipeline and proposed how it will be paid. Provisions located in Utah Code Annotated 73-28-401-405.

²⁴ Colorado Law Review, Vol. 83, Issue 3, 2012, "Alive But Irrelevant: The Prior Appropriation Doctrine in Today's Western Law," by Reed D. Benson.

²⁵ "The Future of Prior Appropriation in the New West" by Dan Tarlock, (Professor of Law); Natural Resources Journal, Vol. 41, pgs. 769-793. 2000.

²⁶ ---Sect. C. The Future of Prior Appropriation: Real or Shadow Doctrine.

²⁷ U.S. Dept. of the Interior, Bureau of Reclamation, published December 2012. <<http://www.usbr.gov/lc/region/programs/crbstudy.html>>

must protect its historical water right by securing its share of the Colorado River, because the future trend in water allocation is leaning heavily toward what serves the masses. The Bureau of Reclamation concluded in its report that "...consideration should be given to those that provide a wide-range of benefits to water users and healthy rivers for all users."²⁸

As of April, 2015, the LPP has taken a step closer to becoming a reality. The Utah Legislature passed SB 281, "The Water Infrastructure Funding Bill" which sets up the fund to begin paying for the costs of the pipeline. The state of Utah will pay for the pipeline upfront and the counties that use it will pay the state back over a 50-year period (as they draw water). The next step is to obtain all the licenses and permits from multiple agencies, which include: the Federal Energy Regulatory Commission, BLM, NPS, BoR, Army Corps of Engineers, Bureau of Indian Affairs, Federal Highway Administration and the EPA.

A) Predominant Usage

Most of the water drawn from the Colorado River is used for agriculture. In the Upper Colorado River Basin, over 50% of total land and water use is dedicated to feeding cattle and horses.²⁹ In Utah, "...more than 85% of irrigated acreage in the basin is in pasture or forage."³⁰ Utah experienced the greatest increase (25%) of all the basin states for irrigated acreage over the last decade.³¹ This indicates how intricately connected cattle ranching is to Utah's economy. In Dr. Gil Miller's economic report on the impact of grazing (*see Section Three: Economic Conditions*) the data gives further evidence that cattle ranching and grazing as an industry weighs in big on southern Utah's economy. Even though the Glen Canyon NRA supplies only 3.56% of Kane County's AUMs, the loss of those allotments would calculate in the millions to Kane and Garfield counties, and would have a trickle effect to several other industries.

B) Colorado River System Watersheds

Kane County lies across four watersheds which are all a part of the Colorado River System: (1) The Escalante River (from the Aquarius Plateau) flows directly into the upper portion of Lake Powell; (2) Last Chance Creek and Wahweap Creek flow from the Kaiparowits Plateau into the main body of Lake Powell; (3) The Paria River-Kitchen Corral Wash system (from Bryce Canyon) terminates below Glen Canyon Dam; and (4) Johnson Wash flows to Kanab Creek and into the Grand Canyon. The first three end up in the Glen Canyon NRA, but all of them are considered "waters of the United States" as defined by a final rule (Clean Water Rule³²) jointly announced by the EPA and Corps on May 27, 2015. The revision takes into account the interconnectedness of tributaries, wetlands, and other waters, and how they affect downstream waters. Less than 10% of the named tributaries and other waters are perennial in Kane County;

²⁸ Colorado River Basin Water Supply and Demand Study, U.S. Dept. of the Interior, Bureau of Reclamation, published December 2012. <<http://www.usbr.gov/lc/region/programs/crbstudy.html>>

²⁹ Report: Water to Supply Land – Irrigated Agriculture in the Colorado River Basin, by M. Cohen, J. Christian-Smith and J. Berggren, Pacific Institute, May, 2013; <www.pacinst.org/reports/co_river_ag.2013>

³⁰ ---pg. 56

³¹ Ibid.

³² Congressional Research Service, "EPA and the Army Corps' Rule to Define 'Waters of the United States'," CRS Report (R43455) by Claudia Copeland, Specialist in Resources and Environmental Policy, June 29, 2015. www.crs.gov retrieved from <www.fas.org/sgp/crs/misc/R43455.pdf>

and the availability and location of these waters has always been a key component of livestock management.

3) Water – Subsurface

The groundwater that serves the Glen Canyon Region is situated in bedrock aquifers that are layered deep beneath the surface. The aquifers are referred to as “hydro geologic units” that share a relationship with one another depending on their depth. In the Glen Canyon Region (as with most of Kane County) the Navajo Sandstone aquifer is considered the most relevant regional water source.³³ According to the U.S. Geological Survey (USGS), the Navajo Sandstone aquifer developed during the Jurassic period and is part of the Dakota-Glen Canyon aquifer system (also referred to as the Glen Canyon Group). That system contains the Navajo, Glen Canyon, Dakota, Wingate and Entrada aquifers. Those aquifers actually lay (in layers) above the Coconino Mesa Verde-De Chelly aquifer.

In the Lake Powell area, “the Entrada, Navajo and Wingate Sandstones contain the principal aquifers”³⁴ and these subsurface water sources feed into the rivers, streams, and seeps. The USGS indicate the aquifers are “recharged” via precipitation, infiltration by ephemeral streams and water stored in dune sand. They are “discharged” (relatively slow³⁵) via small seeps and springs. Because the area is so arid, potential evaporation usually exceeds precipitation.

In the Glen Canyon Region, the USGS has mapped 17 named and un-named springs. Wiregrass Spring, Dewey Seep, Fifty Mile Spring, Soda Spring and Sooner Water are the known named ones; the other 12 have been assigned I.D./location numbers. Of the registered wells in the area, only one (in the Glen Canyon Region) is regularly monitored by the USGS “Groundwater Watch” program. The USGS monitors over 20,000 wells in the nation (of the 840,000 wells and springs that exist) for national analysis of the country’s water resources. Groundwater Watch “...focuses on a smaller population of actively monitored wells and selects appropriate wells for inclusion...The networks have specific criteria for the wells that are selected and enable ready analysis of the information on a national basis.”³⁶ (Kane County has 12 monitored wells in that program.) The USGS has acknowledged that not enough wells or springs are included in this program and a more comprehensive system is needed.

The monitored well in the Glen Canyon Region is located near the Utah/Arizona border along the shores of Lake Powell at: Latitude 37°00'06", Longitude 111°30'04". It is identified as Hydrologic Unit 14070006.

4) Air Quality

Air quality in the Glen Canyon Region falls under the purview of the Glen Canyon NRA (national park system) policy. They are mandated by Congress through legislative requirements

³³ U.S. Geological Survey, Scientific Investigations Map 2988, <pubs.usgs.gov/sim/2988>

³⁴ “Groundwater Conditions in the Lake Powell Area, Utah” by Paul Blanchard, Hydrologist, U.S. Geological Survey & UT Dept. of Natural Resources, Division of Water rights, 1986.

³⁵ Less than 10 gallons per minute. Ibid.

³⁶ Groundwater Watch Overview, U.S. Geological Survey, <groundwaterwatch.usgs.gov

to protect air resources in the national parks. However, the National Park Service acknowledges “Arizona and Utah are responsible for regulating air quality in the region where the GCNRA is located.”³⁷ Both Arizona and Utah have adopted the National Ambient Air Quality Standards (NAAQS) implemented by the Environmental Protection Agency.

The National Park Service draws from two specific pieces of legislation for its policy: NPS Organic Act (1916) and Clean Air Act (1970 - with amendments in 1977 and 1990). The NPS has assigned its Air Resources Division (ARD) to carry out the applicable legislation. The ARD conducts air monitoring programs that measure for pollutants defined by the same national standards (NAAQS) as Arizona and Utah use.

There are two kinds of standards established by the NAAQS: 1) *primary*-protecting human health; and 2) *secondary*-protecting public welfare (focused on visibility and ecosystem). Monitoring data is gathered from specific parks and used to assess regional, national and global air quality.

The Glen Canyon NRA is not one of the specific areas monitored (mentioned above), but it has tested for emissions as it conducts environmental impact studies. One of the areas it uses is Wahweap (considered a high use area) and Halls Landing (a moderate use area). Staff was specifically monitoring for impact from the use of personal watercraft on Lake Powell and upstream tributaries. Two-stroke engine jet skis were “known to discharge large amounts of air pollutants”³⁸ and “In areas with high personal watercraft use, there was concern about air quality degradation.”³⁹

The results of the emissions tests showed that parts of Arizona and Utah in the NRA were *in attainment*, which means they either met or were below the standards set for allowable air pollutants. They test for six criteria pollutants that include carbon monoxide, sulfur dioxide, particles (≤ 10 micro meters or 2.5 mm), ozone, nitrogen dioxide, and lead. According to the NPS, “Because Arizona and Utah counties that the GCNRA occupies are designated as *in attainment* for all six criteria pollutants there are no state implementation plans (SIP) that apply to the project area.”⁴⁰ However, since 2012, the NPS has prohibited personal watercraft use for *carbureted two-stroke engines* on Lake Powell and certain parts of rivers upstream.⁴¹

Because the NPS has an *affirmative responsibility* to protect air quality related values (AQRV) they formed a work group with the U.S. Forest Service and U.S. Fish & Wildlife Service to “...develop a more consistent approach for the Federal Land Managers to evaluate air

³⁷ Final EIS for Personal Watercraft at Glen Canyon National Recreation Area (for Arizona and Utah), Personal Watercraft Usage, Affected Environment, Air Quality, pg. 93, 2003

³⁸ Ibid, Executive Summary, Impact Topics Required Under the Settlement Agreement, Air Quality, page IX; 2003.

³⁹ Ibid.

⁴⁰ Ibid, Environmental Consequences, Air Quality, Issues and Management Objectives Related to PWC Use, Guiding Regulations and Policies, Conformity Requirements, pg. 181, 2003.

⁴¹ Ibid, Alternative B-(NPS modified preferred method), Promulgate a Special Regulation to continue Personal Watercraft Use with Additional Management Restrictions, pg. xi, 2003.

pollution effects on resources.”⁴² The Glen Canyon Region falls under a Class II designation, but is treated pretty much the same as a Class I park or monument. There is specific focus on visibility (and haze-type visibility impairment), and the effects of nitrogen, sulfur and ozone on vegetation, soils and water. They use this information to “consider whether emissions from a new or modified source may have an adverse impact on AQRVs and...” provide “...comments to permitting authorities (States and EPA).”⁴³ They make it clear that federal land managers “...have no permitting authority under the Clean Air Act, and they have no authority under the Clean Air Act to establish air quality-related rules or standards.”⁴⁴

The sources of pollutants that are measured in the Glen Canyon Region include prescribed fire management; visitor use (emissions); agricultural emissions, greenhouse gases and climate; polluted atmosphere loads from around the world; and specifically, the Glen Canyon Dam Hydroelectric Plant, the Navajo Generating Station, and the Mohave Power Plant in Nevada.⁴⁵

In order to mitigate air pollution effects in the Glen Canyon Region, the NPS has stated in its Second Edition of *Air Quality in the National Parks*⁴⁶ “The NPS will continue its cooperative efforts with other federal land management agencies...the Environmental Protection Agency, tribes, federal, state and local governments, industry and non-governmental organizations to ensure that air quality and related resources in parks are not adversely impacted by air pollution.”

5) Energy Resources

The mineral and energy resources located in the Glen Canyon Region are small, widely scattered and vary from metallic and industrial rock to energy-producing elements. Although there isn't any active mining because it is a national recreation area, both the U.S. Geological Survey and the Utah Geological Survey keep record of mineral occurrences.

Metallic minerals such as placer gold (and accompanying substances) were discovered along the gravel bars of the Colorado River in the late 1800s. “Fine-grained gold particles occur within *black sand* associated with minerals such as magnetite, hematite, ilmenite, garnet, chromite, zircon and rutile.”⁴⁷ The bars are mostly underwater, now, but there is a possibility for placer gold to be found in older gravel bars above the level of the lake or in the Colorado River tributaries. According to US-Mining.com there are three registered claims in the Glen Canyon NRA – the Klondike Bar (two sites) bearing gold, silver and platinum; the Meskin Bar, producing gold; and the Sand Pit, for sand and gravel.⁴⁸

⁴² U.S. Forest Service, National Park Service, and U.S. Fish and Wildlife Service. 2010. Federal land managers' air quality related values work group (FLAG): phase I report—revised (2010). Natural Resource Report NPS/NRPC/NRR—2010/232. National Park Service, Denver, Colorado, pg. xii.

⁴³ Ibid.

⁴⁴ Ibid.

⁴⁵ U.S.D.A. Forest Service Proceedings, RMRS-P-5, Vol. 5, 2000.

⁴⁶ National Park Service Air Resources Division, Lakewood, Colorado; and U.S. Department of the Interior, Washington, D.C., Chapter Five: The Future of Air Quality in Our National Parks” pg. 48.

⁴⁷ R.E. Blackett, C.J. Brandt, T.C. Chidsey Jr., and C.E. Bishop, “Mineral and Energy Resources in Kane County, Utah (and their occurrence with respect to Wilderness Study Areas), Report of Investigation 221, 1992, Utah Geological Survey, Div. of Utah Dept. of Natural Resources.

⁴⁸ <<http://www.us-mining.com/Utah/kane-county>>July 8, 2015.

Industrial rock and minerals are varied in the Glen Canyon Region. According to Utah Geological Survey⁴⁹ there is evidence of gypsum and limestone⁵⁰ in the Glen Canyon Region, and areas (such as Bullfrog) that have yielded the best sand and gravel sites for construction. The UT Department of Transportation intermittently operates sand and gravel sites off Highway 89 near the UT/AZ border within the Glen Canyon Region. In addition, “From all indications, Navajo sand probably could be used for fracturing sand, foundry sand, filter sand, and abrasive sand, (sandblasting, sandpaper, metal polishing, stone sawing, etc.) as well as industrial chemical uses.”⁵¹

There is *uranium potential* in the upper northeast corner of Kane County (known as the Morrison Formation) in rather large swathes. “Low concentrations of uranium and vanadium occur in three sandstone lenses of the Morrison Formation.”⁵² Uranium is also associated with copper and silver and occurs in a variety of settings.⁵³

Oil was discovered at Bennett’s Seep in 1921,⁵⁴ but it is now submerged beneath Lake Powell. The Circle Cliffs, which originate in Garfield County, and extend into northeastern Kane County, contains “one of the largest oil-impregnated rock deposits in the United States.”⁵⁵ The Upper Valley field, which is located four miles north of the Kane County line, is the nearest commercial field.

There are areas within the Glen Canyon Region with pockets of collectible minerals such as petrified wood, sand, jasper (chalcedony), gypsum (colored), but are not mineable in the national recreation area.

6) Transportation in the Glen Canyon Region

It is Kane County’s policy that all county roads that lie within the Glen Canyon NRA remain open to travel by conventional vehicles, both street-legal and properly registered All-Terrain Vehicles, Off-Highway Vehicles and Off-Road Vehicles as long as these vehicles are registered and equipped in compliance with all State and local laws and regulations. Out-of-State vehicles traveling on Kane County roads within the NRA will be properly registered and equipped as required by the State in which it is registered.

All vehicles traveling Kane County roads within the NRA shall not be driven cross-country or off of the established driving surface of the roads. Kane County roads within the NRA are

⁴⁹ R.E. Blackett, C.J. Brandt, T.C. Chidsey Jr., & C.E. Bishop, “Mineral and Energy Resources in Kane County, Utah and their occurrence with respect to Wilderness Study Areas”, Report of Investigation-221, Utah Geological Survey, Division of Utah Department of Natural Resources, pg. 9, 19.

⁵⁰ H. Doelling & F. Davis, “The Geology of Kane County, Utah”, Utah Geological and Mineral Survey, Div. of UT Dept. of Natural Resources, Bulletin 124, 1989, pg. 140

⁵¹ Ibid, pg. 138.

⁵² R.E. Blackett, C.J. Brandt, T.C. Chidsey Jr., & C.E. Bishop, “Mineral and Energy Resources in Kane County, Utah and their occurrence with respect to Wilderness Study Areas”, Report of Investigation-221, Utah Geological Survey, Division of Utah Department of Natural Resources, pg. 20.

⁵³ Ibid.

⁵⁴ Ibid.

⁵⁵ Ibid, pg. 24.

numbered below, and are portrayed on the maps in Appendix J: K9000 (Hole-In-The-Rock Road); K9025; K9080 (Willow Gulch); K9150; and K9250 (Redwell Trailhead).

The Draft Environmental Impact Statement compiled by the National Park Service regarding the Glen Canyon National Recreation Area Off-Road Vehicle Management Plan asserts that ORV's are louder than conventional vehicles, and would adversely affect wildlife in some areas. Kane County disagrees with that assessment because many conventional vehicles have modified exhaust systems that make them louder than the factory-installed exhaust systems. Also, there is no discussion of how loud is "too loud," and by what methods the noise will be measured, and enforced.

Placing restrictions on what roads street-legal ATV's and ORV's may be driven discourages the public from recreating in the Glen Canyon Region, thus limiting the money spent in the communities nearby. Many of these small towns and cities rely on recreational spending dollars for a significant part of their economic base. While relatively smaller than the money spent in Page, Arizona, and within the Glen Canyon NRA, the negative impact can have a greater effect on the smaller communities and their businesses.

Kane County suggests that all county roads, Park Service roads and general management plan roads be open to conventional vehicle, street-legal ATV, and ORV travel, unless those roads are constructed for a particular purpose, *e.g.*, maintenance of NRA or county improvements, which may be subject to vandalism. Those roads should be properly signed and gated to prohibit access.