

To: Skye Sieber[ssieber@blm.gov]
Cc: Cynthia Staszak[cstaszak@blm.gov]; Amber Hughes[ahughes@blm.gov]
From: Betenson, Matthew
Sent: 2017-06-02T10:23:43-04:00
Importance: Normal
Subject: Re: County RMP Reviews
Received: 2017-06-02T10:24:40-04:00
[m8_2017-Kane-County-Resource-Management-Plan-Draft.pdf](#)
[Comment Tracking Table_Kane Co RMP.doc](#)
[2016 Comment Tracking Table_Kane Co RMP_all.doc](#)

Good morning Skye,

We are currently reviewing the final Kane County Plan, which I understand has already been adopted but is there is open comment period through 6/30. We have an internal due date of 6/23 for staff comments. I've attached the current version of Kane's plan, a comment table, and our previous submissions on their draft. We'd appreciate additional review by UTSO but will need the comments returned to us by 6/23. Please send any copy any comments to Cindy, Amber, and myself.

Is there an established process for a review of County plans? Does SOL, have a required review? Do they need to review the proposed FO/DO comments? We'd appreciate their input on the Kane plan. We have time --a week--from when we expect staff comments and can send our response to SOL/UTSO if needed.

I'm curious about the Garfield review, I'm not sure when that occurred it may have been quite a while ago-- although it does seem their plan (or pieces of it) is in constant revision we haven't to my knowledge been asked to review or comment on it.

Have a great weekend!

----- Forwarded message -----

From: Cynthia Staszak <cstaszak@blm.gov>
Date: Thu, Jun 1, 2017 at 4:08 PM
Subject: Fwd: County RMP Reviews
To: Matthew J Betenson <mbetenso@blm.gov>

Sent from my iPhone

Begin forwarded message:

From: "Sieber, Skye" <ssieber@blm.gov>
Date: June 1, 2017 at 2:32:15 PM MST
To: Gary Torres <gtorres@blm.gov>, Lance Porter <l50porte@blm.gov>, Ahmed Mohsen <amohsen@blm.gov>, Kevin Oliver <koliver@blm.gov>, Cynthia Staszak <cstaszak@blm.gov>

Cc: Abbie Jossie <ajossie@blm.gov>

Subject: County RMP Reviews

Greetings,

I'm tracking all the county RMPs that BLM has been asked to review or coordinate on - see list below. Can you please verify let me know if there are other RMPs that your offices have provided comments on?

This is for reporting purposes only; State Office does not need to review.

Thanks!

COUNTY	FO Review	SO Review	Other Coordination (describe)
Beaver	x	x	
Box Elder			
Cache			
Carbon			
Daggett			
Davis	n/a	n/a	
Duchesne			
Emery			
Garfield	x	x	
Grand			
Iron	x	x	
Juab			
Kane	x	x	
Millard			
Morgan			
Piute			

Rich			
Salt Lake			
San Juan	x	x	
Sanpete	x	x	
Sevier	x	x	
Summit			
Tooele			
Uintah			
Utah			
Wasatch			
Washington			
Wayne			
Weber	n/a	n/a	

Skye Sieber, AICP
 Planning and Environmental Coordinator
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 Bureau of Land Management, Utah State Office
 801.539.4035

*If you want to go fast, go alone.
 If you want to go far, go together.*
 -African Proverb

--

Matt Betenson
 Associate Monument Manager

Grand Staircase-Escalante National Monument
 669 South HWY 89A, Kanab, UT 84741

435-644-1205 435-644-1250 fax

Comment Tracking Table for Kane County RMP Region 2		
Page Number/Line Number	Commenter	Comment
General		There are many legal interpretations, conclusions, opinions or positions found in the document, some of which may disagree with current BLM law, regulation, policy and management. This response table is a not comprehensive, all inclusive response. With the time allowed we are only able to provide limited comments which we hope that County finds useful in their RMP development process. BLM will continue to meet and discuss land management and resource issues with Kane County.
All	Sieber	General Comment: There are two major requirements of Utah HB323. First, a county RMP is to identify Findings, Objectives, and Actions for 27 resources. The second is to center the plan on three core resources: energy, air and water. Acknowledging the fact that Section Two is just one portion of the entire county plan, it is difficult to distinguish between or determine what is a finding (current condition) vs. an objective (desired condition) vs. a policy or guideline (actions to achieve desired conditions). Furthermore, some resources are not addressed at all, most notably: cultural/ historical/ paleontological/ geological; noxious weeds; law enforcement. (Also discussion about predator control; irrigation; ditches and canals; wetlands; and agriculture are missing. If these do not exist in Region 2 Grand Staircase it would preferable to note they are not applicable or present in the area vs. not mentioning at all).
1 7	Betenson	Change "coordinate with the various agencies" BLM is only agency that manages the monument
Page 1 Lines 6 13	Staszak	The County definition of multiple use management for GSENM does not comply with Federal law, regulation, policy, or the GSENM Proclamation.
Page 1/ Line 10	Foley	Identifying mining and mineral exploitation and extraction conflicts with the Monument Proclamations and current MMP. Per page 51 of the MMP on "Energy and Mineral Activities", "The Proclamation establishing the Monument withdrew all Federal lands and interests in lands within the monument from ... mineral leasing and mining laws." As such, Kane County's policy stated here and throughout the draft document directly conflicts with the Proclamation and MMP.
2/24 30	Staszak	GSENM is subject to a variety of federal and state laws, including but not limited to Federal

Comment Tracking Table for Kane County RMP Region 2		
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		Land Policy Management Act (FLPMA), National Environmental Policy Act (NEPA), Taylor Grazing Act (TGA), National Historic Preservation Act, the Monument Management Plan and the Proclamation. The BLM is aware that there are specific State laws and County ordinances relevant to aspects of public land management that are discrete from and independent of Federal law. However, BLM is bound by Federal law. While County and Federal planning processes, under FLPMA are required to be as integrated and consistent as practical, the Federal agency is not bound by or subject to County plans, planning processes or planning stipulations.
2/27	Sieber/Foley	Change 'Monument Management Plan(s)' to singular (there is only one Monument Management Plan, approved in 1999) The Monument Proclamation should be included in this section as managing documents
2/33 34	Staszak	"stifled economic growth" is an assumption without any supporting data, as is the statement that "Federal land management practices have eroded the ability to make a living through cattle ranching."
3/1	Staszak	The County definition of multiple use management for GSENM does not comply with Federal law, regulation, policy, or the GSENM Proclamation.
3/7	Staszak	Proclamation 6920 discusses livestock grazing on the Monument by stating.....
3 L13 30	Betenson	General Comment BLM manages grazing through a use permit; aka a "grazing permit"
3/14 30	Staszak	Kane County's interpretation of the Taylor Grazing Act is inconsistent with BLM's interpretation
3,32 35	Staszak	General Comment The level of coordination and "requirements" interpreted from the CFRs cited is beyond the requirements for BLM. BLM also reference Federal Land Policy and Management Act of 1976, as amended. Land Use Planning Title II Section 202 "(9) to the extent consistent with the laws governing the administration of the public lands, coordinate the land use inventory, planning, and management activities of or for such lands with the land use planning and management programs of other Federal departments and agencies and of the States and local governments within which the lands are located... Land use plans of the Secretary under this section shall be consistent with State and local plans to the maximum extent he finds consistent with Federal law and the purposes of this Act."
3/ Line19	Ledbetter	Add a period at footnote 13.

Comment Tracking Table for Kane County RMP Region 2		
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4 6 (NEPA section)	Sieber	General comment: this section seems to be mixing requirements of FLMMA (specific to the BLM RMP process) with general NEPA requirements (applicable to all types of proposed actions and all Federal agencies)
4 6 (NEPA Section)	Sieber	General Comment: citations to NEPA alternate between 43 U.S.C. and 40 C.F.R. Suggest using only one for a consistent source of reference.
4	Sieber/Ledbetter	Remove 'and the Forest Service' (While NEPA applies to both BLM and Forest Service, Region 2 of the Kane RMP encompasses GSENM only which is not managed by the Forest Service)
4	Sieber	Remove bullet 'Preparation of an analysis of the management situation' (the AMS is a requirement of FLPMA, not NEPA)
4 6 NEPA Section	Betenson	General Comment The general NEPA background discussion seems to take away from the resource focus of this section. All federal agencies are required to implement NEPA so it may make sense to move much of this section to an appendix on inter acting/coordination with federal agencies.
4 6 NEPA Section L12 45	Betenson	General Comment The level of coordination and "requirements" interpreted from the CFRs cited is beyond the requirements for BLM. BLM also reference Federal Land Policy and Management Act of 1976, as amended. Land Use Planning Title II Section 202 "(9) to the extent consistent with the laws governing the administration of the public lands, coordinate the land use inventory, planning, and management activities of or for such lands with the land use planning and management programs of other Federal departments and agencies and of the States and local governments within which the lands are located... Land use plans of the Secretary under this section shall be consistent with State and local plans to the maximum extent he finds consistent with Federal law and the purposes of this Act."
4 /7 13	Betenson	Add Recreational resources in this discussion they are identified on p.1 line 11
4/11 13	Staszak	Identifying mining and mineral exploitation and extraction conflicts with the Monument Proclamations and current MMP. Per page 51 of the MMP on "Energy and Mineral Activities", "The Proclamation establishing the Monument withdrew all Federal lands and interests in lands within the monument from ... mineral leasing and mining laws." As such,

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		Kane County's policy stated here and throughout the draft document directly conflicts with the Proclamation and MMP.
5	Sieber/Ledbetter	<p>'Issuance of a proposed ROD followed by a period of protest' is <i>not</i> a general step of developing an EIS, as characterized in the paragraph introducing the bulleted list of steps.</p> <p>A 30 day protest period is <u>one type</u> of administrative remedy offered by the BLM. It is required for RMP amendments and revisions, per FLPMA. However, other types of BLM decisions are protest able and the length of time varies depending on the regulations that govern the activity. Furthermore, there is another segment of BLM decisions that are subject to <i>appeal</i> (under IBLA, or OHA, or both) or simply a higher level review by the State Director, BLM Director, or Secretary of Interior. Other federal agencies have different requirements and names for their administrative remedy processes.</p> <p>Similarly, the Governor's Consistency Review is a FLPMA requirement, not a general NEPA requirement. It is only used during the BLM RMP amendment or revision process, not all BLM proposed actions.</p>
5 40	Betenson	General Comment Please reference the federal law identified. BLM considers working with Cooperating Agencies part of coordination.
8 40	Betenson	General Comment BLM would like to provide information on current and historic grazing levels. Much this information can be found the AMS for the livestock grazing EIS and we also have FAQ sheet on it.
8 17		BLM must administer grazing according to Federal law, regulation, policy, directives and approved plans.
Page 9/ Line 4	Bradshaw	Grazing and functional watersheds are not identified as objects in the Monument Proclamation
10/Line 34	Ledbetter	Add: management tool <u>and</u> to control....
Page 11 and 12	Ledbetter	Are all of these allotments actually in Kane County or are some in Garfield County?
13/ Line 2	Sieber	Change: "Interim Management Policy for Lands Under Wilderness Review" to "BLM

Comment Tracking Table for Kane County RMP Region 2		
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		Manual 6330 (Management of Wilderness Study Areas)". This became effective in 2012.
14/ Line 20 and line 23	Ledbetter	Delete 'or district" on line 20 and delete "and Forest Service: on line 23
14/ Line 42	Sieber	Change "\$ 6220 of the BLM standards" to "BLM Manual 6220 (National Monuments, National Conservation Areas, and Similar Designations)"
Page 15/ Line 30	Bradshaw	Typo: "Don=t" should be changed to "Don't"
Pg. 15, Line 25 35		Only Congress can designate Wilderness
Pg 17/Line 37		The BLM is aware that there are specific State laws and County ordinances relevant to aspects of public land management that are discrete from and independent of Federal law. However, BLM is bound by Federal law.
Pg. 15 Line 24	Gale	Best practices could qualify that these activities will occur within guidelines of the 2012 BLM Manual 6330 Management of Wilderness Study Areas similar to statement on pg. 13.5 for motorized access in WSAs
Pg 19 Line 5 35		The BLM is aware that there are specific State laws and County ordinances relevant to aspects of public land management that are discrete from and independent of Federal law. However, BLM is bound by Federal law, regulation, policy, and plans.
25 to end	Sieber	The narrative in these pages alternates between third person and first person due to including excerpts from scientific and other research papers. It is challenging to discern whether pronouns such as "we" and "our" refer to Kane County or the author of the research. Suggest formatting verbatim text from published papers in italics, quotations marks, and/or indent to more clearly distinguish the original source of this content.
Page 28/Lines 1 6	Bradshaw	The map entitled "Level IV Ecoregions of Kane County" does not provide adequate detail to be referenced by the discussion on pg 28 lines 4 6. For example, Ecoregions 19f and 19g are discussed but are not shown on the map. There is also no legend to denote the meaning of the colors making the map of limited use for this section. This map should be revised to provide a sufficient level of detail.
Page 28/Line 25	Bradshaw	Incomplete sentence: "...and the Sand Deserts (20h) Ecoregions of (see map)...."
Page 28/Lines	Bradshaw	The last sentence should begin the paragraph that starts on lines 37 38.

Comment Tracking Table for Kane County RMP Region 2		
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34 35		
Page 30/Line 25	Bradshaw	The Monument is tasked with ensuring that health and distribution of biological crusts are maintained or improved because these crusts provide an important service to the ecosystem (in the Monument and all over the world as discussed) by improving overall soil health through sequestration of nutrients and organic matter and protection from erosion. The Monument is not tasked with sequestering large expanses of soil, but rather managing soil resources in such a way that they are conserved to the greatest extent possible while considering the natural processes and multiple land uses that occur.
Page 30/Lines 34 43	Bradshaw	It is unclear how this section is related to Microbiotic Crusts.
Page 32/Lines 5 6; 11 12; 18, 26	Bradshaw	Land area is described in units of hectares in this section but acres elsewhere in the document. I suggest using one or the other throughout for consistency.
Page 35/Line 5	Bradshaw	There is also the GSENM soil survey that covers parts of Kane Co. It is mapped at a scale of 1:24,000 and should be included in this section. It is available in both spatial and tabular formats. These soil survey maps are available from the USDA NRCS Web Soil Survey.
37, footnote	Julie A Suhr Pierce	Dr. Miller's degree should be shown as Ph.D in Economics or Ph.D., Doctor of Philosophy in Economics (not "and Economics").
38 43	Julie A Suhr Pierce	I recently completed a regional analysis using IMPLAN which reported a much smaller level of economic impacts for the cattle industry. I was concerned about the discrepancy between the two sets of numbers, so I met with Dr. Miller to compare our results and to discuss where the differences might have come from. Dr. Miller had recently re done his analysis, and he said that he found the same discrepancy. To the best of our knowledge, the difference is arising from changes in modeling made by Minnesota IMPLAN Group, Inc. that produced differences in the economic impacts reported for the region. It will require further analysis for us to determine which set of numbers most closely represents the economic impacts of grazing within Kane and Garfield Counties.
42/33 to 39 and 43/4 to 6	Julie A Suhr Pierce	Using the figures presented in the two different approaches to analysis in these paragraphs, total economic output from the largest tourism related industry sectors, including total

Comment Tracking Table for Kane County RMP Region 2		
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		economic output from all hotels, motels, restaurants, gas stations, and food and drink establishments, would have to increase by either 9.5% or 13.2% to replace the maximum possible regional economic output from grazing on the GSENM should grazing be completely curtailed, based on IMPLAN 2013 modeling. Because a portion of sales at these types of establishments is to local and regional residents, this is not the same as a change in tourism. But it gives another perspective on the relative economic importance of grazing on the Monument.

Kane County Resource Management Plan – DRAFT – Revised 2017



KANE COUNTY, UTAH

RESOURCE MANAGEMENT PLAN

Pursuant to Section 17-27a-401 of the Utah Code

AMENDED May, 2017

Should any part of the Kane County Resource Management Plan be determined invalid, no longer applicable or need modification, those changes shall affect only those parts of the Plan that are deleted, invalidated or modified and shall have no effect on the remainder of the Resource Management Plan.

Acknowledgments

Every effective planning process includes a multitude of individuals if it is to be successful. This effort is no different. Many individuals have had an impact upon the preparation and adoption of this Plan. However, most important are the residents of Kane County, who have responded to surveys, interviews, and attended public meetings and hearings. All who did so should be commended for their desire to be a participant in determining the future of Kane County. Some specific individuals and groups have had intensive involvement in the Kane County planning process, and are acknowledged below:

Kane County Commission

Dirk Clayson, Chairman
Jim Matson
Lamont Smith

Kane County Staff

Shannon McBride, Land Use Administrator
Mary Reynolds, Resource Management Planner
Karla Johnson, County Clerk/Auditor
Robert Van Dyke, Kane County Attorney
Linda Little, Kane County Assessor/Building Official
Ryan Maddux, Kane County Chief Deputy Assessor

Kane County Resource Development Committee

Jim Matson, *Ex officio*
Tony Wright, Chairman
Byard Kershaw
Charlie Saba
Kelly Stowell

Resource Development Steering Committee

Jim Matson, Kane County Commission
Douglas Heaton, Former Commission Member
Karla Johnson, Kane County Clerk/Auditor
Linda Little, Kane County Assessor
Harold Hamblin, Chairman
Shannon McBride, Land Use Administrator
Mary Reynolds, Resource Management Planner
Lou Pratt, Kane County GIS
Kent Burggraaf, Former Deputy County Atty.
Byard Kershaw
Todd Phillips/Jill Phillips
Margaret Byfield/Dan Byfield
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Lamar Smith, Ph.D.
Brian Bremner



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Section One: Introduction

Customs and Culture of Kane County, Utah

Kane County is a huge natural resource-oriented county. Isolated geography, a semi-arid climate, sparse vegetation, and rugged terrain kept both Native American and pioneer settlements relatively small. Experienced desert colonizers of the Mormon faith found homesteading to be very difficult, resulting in most of the land base remaining under public management. Early Mormon settlements were centered on limited irrigated croplands near reliable water sources that supported sheep and cattle ranching. From the first pioneering efforts in the mid-1800s to the present day, ranching has been important to the people who settled and now live in Kane County. The objects and values gleaned from these early Kane County pioneers are essential elements of Kane County's economy and culture.

Historical Perspective

Native Americans inhabited Kane County for thousands of years prior to European contact. Nomadic hunter-gatherers passed through the area as they traveled to the nearby plateaus to hunt. The first semi-permanent settlement of the area was undertaken by the Anasazi or Ancestral Puebloans around the birth of Christ. About the same time the Fremont culture established semi-permanent settlements in the Long Valley area. These groups left the area in approximately 1300 A.D. Most researchers believe the movement was caused by a combination of drought and raids by other Native Americans. Paiute, Navajo, and Hopi tribes used the area as hunting grounds, but permanent settlements were scarce. European explorers and settlers found mainly nomadic Southern Paiutes inhabiting the area during the late 18th and early 19th centuries.

The barrier created by the Grand Canyon and Colorado River kept early Spanish explorers from reaching Kane County for hundreds of years. The Escalante/Dominguez party was the first European group to enter the region. They explored a lot of Utah and Northern Arizona searching for a route from Santa Fe to California. In 1776, they crossed the Colorado River at the "Crossing of the Fathers". A spur of the Old Spanish Trail is said to have crossed through Kane County near the Utah/Arizona border. This trade route carried considerable traffic during the early 19th century. However, no permanent settlement was attempted.

The land designated as Kane County originally became part of the United States in 1848¹ as part of the Treaty of Guadalupe Hidalgo, which ended the Mexican-American War, but it had different boundaries. In 1850, the area was designated "Utah Territory," by an act of Congress and encompassed parts of six neighboring states. The Utah Territory was considered organized (had a territorial government) and incorporated (part of the United States proper) and its borders didn't stop evolving until Utah became a state. In fact, between 1847 and 1896 there were 90

¹ Utah State Archives and Records Service, "Original Land Titles in Utah Territory", Updated April 1, 2003, Accessed 6, June, 2015, <[archives.utah.gov/research/guides/land original title.htm](http://archives.utah.gov/research/guides/land%20original%20title.htm)>

different boundary changes that whittled Utah to its present size.² Kane County was first part of Washington County, which extended 600 miles West and East across the southern portion of the state.³ The Territorial Legislature officially approved the act that created Kane County on January 16, 1864 and at that time, the western border included parts of Nevada. There were three different county seats that are not a part of today's political boundaries: Grafton was Kane County's first county seat in 1866; Rockville became the second county seat in 1867 when the boundaries changed; and Toquerville (aka Tokerville) became the county seat in 1869.⁴

Mormon settlers actually came to Utah prior to the land becoming part of the U.S. in 1847, and established many communities without federally recognized legal title to the lands. For the first 22 years, the Territorial Assembly (members of the Mormon Church) issued its own land certificates in an effort to quickly populate the area. Each settler had land measured off to him via a lottery that cost \$1.50 to participate. If the land allotted was urban, he received 1.25 acres; if it was outside city limits, it was what the farmer could till.⁵

The national land system didn't extend into Utah until 1869 when the first Land Office was established in Salt Lake City. Utah inhabitants were extended the rights of preemption (first option to claim land), homestead (live on land for five years), and/or purchase, in order to integrate into the system. Many of the settlers made claims and divided the land amongst other settlers because they already worked allotments that were much smaller than the 160-acre minimum the federal government allowed.⁶

The first settlement in Kane County was undertaken by members of the newly-formed Church of Jesus Christ of Latter-day Saints who arrived in the Great Basin in 1847 after being driven from their homes in Illinois and Missouri. They established several small agrarian villages and extended their colonization into California, Nevada, Arizona, and Mexico.

The desert highlands south of Kanab were found to be excellent winter range for livestock. A number of Mormon ranchers established grazing operations in the early 1860s. The Long Valley area north of the desert was the first area to be settled permanently. Small settlements were established in the mid-1860s at Glendale and Alton. Mormon settlers established Kanab in 1870.

Settlers farmed the bottom lands near streams, grazing livestock on the high plateaus during the summer and desert highlands in the winter. The small towns prospered because residents established orchards, field crops, and livestock grazing operations. Unfortunately, a drought from 1879-82 caused a severe shortage in irrigation water. The drought was followed by three years of flooding which deepened the channel of Kanab Creek by almost 60 feet. This caused most of the farm land to wash away.

² Mortensen, A.R., Ed., "The Evolution of County Boundaries in Utah" by James B. Allen, *Utah Historical Society Quarterly*, Volume 23; 1955.

³ Bradley, Martha Sonntag, *History of Kane County, Utah*: Utah State Historical Society, 1999.

⁴ Ibid.

⁵ Utah State Archives and Records Service, "Original Land Titles in Utah Territory", Updated April 1, 2003, Accessed 6, June, 2015, <[archives.utah.gov/research/guides/land original title.htm](http://archives.utah.gov/research/guides/land%20original%20title.htm)>

⁶ Ibid.

But the early settlers were experienced desert colonizers and they survived the trying times. They continued to expand the agricultural base upon which their livelihood was dependent. Population levels remained fairly constant during the late 19th century. One of the most successful communal organizations in the history of the United States was established by Mormons in Orderville.

Early explorers also brought prospectors searching for minerals, and high grade uranium deposits were discovered in the mid-20th century. Most deposits played out quickly, but resulted in a comprehensive view of mineral resource potential, focused on large coal pockets near Alton and the Kaiparowits plateau. Miners and supporting businesses settled in Kane County, but worked mainly in Arizona where significant uranium deposits were located. (Arizona-1 Uranium Mine)

High plateaus covered with timber also brought timber harvesting operations which supplied building materials to local residents and timber to larger markets. The Kaibab Forest Products sawmill in Fredonia, Arizona became a major year-round employer. But concerns with wildlife habitat and other environmental issues, combined with federal restrictions and economic downturns caused major reduction in timber harvests.

The economy of the area has remained based upon livestock grazing. In the 1930s the establishment of Grand Canyon National Park and the Kaibab Game Reserve created a demand for tourist services. The first economic "boom" in the tourism industry occurred between 1930-1950 as the area became a famous location for shooting western films and television episodes. Over 100 feature length westerns have been filmed in Kane County. Although eastern Kane County had been sparsely settled, the construction of Glen Canyon Dam in the 1950s created the towns of Page, Arizona; Big Water, Utah; and Bullfrog Marina on the northeastern side.

The Colorado River forms the eastern boundary of Kane County. Efforts to harness the river by the construction of Glen Canyon Dam created Lake Powell, a huge reservoir that impounds over 24 million acre feet of water (when full). Creation of the dam brought new employment opportunities in construction and maintenance, electricity generation, recreation, and hospitality services.

Kane County Today

Right: Kane County was named after Thomas L. Kane "Friend of the Mormons."

The county seat in Kane County today is Kanab, which is also known as "Little Hollywood" because over 100 western films and television episodes have been filmed in the area. Film making continues to the present day, as evidenced by a shoot of John Carter on Mars (*Walt Disney Pictures*) completed in 2010 and a recent thriller starring Nicholas Cage in "Looking Glass," which was shot in Kanab in early 2017.



World class scenic attractions abound in and around the county. Visitors come to experience Zion National Park to the west, Bryce Canyon National Park to the north, Grand Canyon

National Park to the south, and Glen Canyon National Recreation Area to the east. In the center of this majestic landscape is the Grand Staircase-Escalante National Monument and to the northeastern corner is Lake Powell, which draws millions of visitors each year. Many outfitters, guides, hotels, motels, restaurants, gas stations and other service providers cater to the multitude of tourists who come on an annual basis to enjoy the grandeur.

Recreational use of the land in Kane County has rapidly increased as populations in Arizona, Nevada, California, and Utah have grown. Those seeking recreation (through motorcycling, trail biking, snowmobiling and other motorized and non-motorized vehicle use, horseback riding, hiking, fishing and hunting) have flocked to the open spaces the county offers. In addition, more and more people are coming to Kane County for retirement living. Although recreational and traditional uses of the land are increasing, so far, cooperative efforts have kept conflicts to a minimum.

However, economic forces and federal land management schemes in the early 21st century have combined to force dramatic changes in Kane County. Forest product producers have disappeared and Uranium mining in Arizona is being curtailed because of a 20-year withdrawal established in 2013. Only two mines are currently operating on the Arizona Strip and ranching is becoming more challenging every year. Yet, these natural resource-based activities are essential to the customs and culture that formed the quality of life in Kane County.

Kane County has maintained its customs and culture throughout its history. Mining, ranching, and farming operations are still a priority. Life for the early settlers was never easy; water was scarce and access difficult. The early residents worked hard to establish their livelihood, and today's residents work hard to maintain it. They have always been diligent in pursuing legal protection of their private property rights and today's residents continue with that diligence.

Residents of Kane County are independent and strong-willed. They must be to survive the rigorous life in this country. Private property rights and interests are important to the residents. Private ownership and the incentives provided by that ownership are a driving force behind the innovativeness which has allowed the continuation of the custom, culture and lifestyle of the county.

Climate, elevation, and the presence of adequate water have determined the present-day land ownership and use patterns of Kane County. Most of the land base (85.5 percent)⁷ is managed by federal agencies: Bureau of Land Management, National Park Service and U.S. Forest Service. This encompasses the Grand Staircase-Escalante National Monument, Zion National Park, Dixie National Forest, Glen Canyon National Recreation Area, BLM-Kanab Field Office, and Bryce Canyon National Park. The State of Utah manages Coral Pink Sand Dunes State Park and Kodachrome State Park, along with a small state wildlife preserve. The privately owned land base is located along perennial water courses and at the base of high elevation forests where precipitation allows enough vegetation growth to support raising livestock, yet not isolated by heavy snowpack.

⁷ Utah Association of Counties, "2015 Utah Counties Fact Book", <uacnet.org/members/uac research>, (Their data from SITLA statewide GIS mapping).

Approximately 4 percent⁸ of the land base is controlled by the (Utah) State Institutional and Trust Lands Administration (SITLA). These *surface and mineral* lands were granted to Utah at the time of statehood (1894) for the purpose of generating revenue for schools and other public institutions. The state received four sections in each township, which created a checkerboard scattered throughout the county. These lands are reserved for generating the maximum amount of revenue possible for the purposes of the trust. They are not a public lands base reserved for general public interests such as recreation or wildlife habitat. They must be considered part of the developable land base of the county, with more similarity to private lands than public lands.

SITLA delineates between surface and mineral ownership of its trust lands because a portion of the acreage lies beneath privately owned and leased land. SITLA's surface land amounts to 99,605 acres, but the state trust owns partial or all the mineral rights on a total of 143,527 acres in Kane County.

Air Quality

The Utah Division of Air Quality (DAQ) is responsible for regulating and monitoring air quality in Utah in compliance with the federal Clean Air Act (CAA), except where local regulations mandate more stringent standards. Measurements are normally taken in urban areas where pollution levels are expected to be higher. The closest monitoring station to Kane County is in Hurricane (Washington County). Air quality can be affected by several factors including weather, topography, biogenic and human factors.

Local governments have similar responsibilities within their jurisdiction under the CAA. The Act also directs all federal agencies to comply with state and local air quality regulations to the extent they meet or exceed national standards and is administered by the U.S. Environmental Protection Agency (EPA) in coordination with state, local and tribal governments.

Under the CAA the EPA sets the National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. It establishes two types of air quality standards – primary and secondary. Primary protects public health (including sensitive populations); and secondary standards protects public welfare against decreased visibility and damage to animals, crops, and vegetation.

The EPA has set criteria for six pollutants: carbon monoxide, nitrogen dioxide, ozone, particulate matter, sulfur dioxide and lead. Exceeding the standards at concentrations between 1.0 and 1.5 times the standard has been determined to cause health problems for sensitive populations; at 1.5 or above it will harm everyone. Areas that meet the standards are considered “in attainment”; ones that exceed the standard are considered as “non-attainment”. Kane County is in attainment for all of its ambient air quality values.

The CAA allows states and local jurisdictions to set rules for pollution sources not regulated by the Act; so in addition to the classification under NAAQS air quality can be managed to prevent significant deterioration (PSD). Utah Air Conservation Rule R307-405-4 has defined a system of

⁸ “An Analysis of Long Term Economic Growth in Southern Utah: Past and Future Conditions”; Bureau of Economic and Business Research, 2008

classifications of maximum allowable increases in concentration for Class I, II, and III areas. Class I areas allow the least increases (highly protected areas) and Class III areas allow the most, yet still fall below the NAAQS standard. The majority of Kane County is considered a Class II area (or Airshed).

In 2012, the EPA approved Utah's Smoke Management Program, which is a key element of the Regional Haze SIP that was required under the CAA. Utah is required, under the approved plan, to manage planned burning in a manner that protects air quality and ascertains air quality impacts locally and regionally.

Kane County Policy:

- Kane County will comply with all state and federal laws pertaining to air quality standards.
- Revised regulations regarding air quality are under consideration by the federal government. Compliance with these potential regulations is significantly impacted by emissions from biogenic sources, soils, wildfires, and prescribed fires on federal lands in Kane County and in the region. Federal agencies need to control emissions from sources on their own lands prior to implementing regulations that impact areas of Kane County under state and local management and prior to negatively impacting federal land projects deemed to promote socio-economic stability in the County.
- Kane County requires some form of air monitoring of fire-related emissions from prescribed or wildland fires occurring on public lands. There is currently no way to determine the impact to Kane County's air quality and we need to protect the health and welfare of our citizens.
- Every fire season Kane County faces regional haze from either prescribed or wildland fires on public lands. It causes visual impairment, obscures clarity, color, and form from the outstanding views. Federal agencies need to implement the best available control technologies (BACTs) to minimize regional air pollution.
- Visual resources are a growing tool used by special interests to undermine reasonable projects but, visibility could be impacted by naturally caused particulates (wind-blown dust, smoke from wildland fires and prescribed burns) just as easily as particulates from construction activities, vehicles traveling on access roads or off-highway vehicles. No site specific data exists to accurately analyze differences between natural/ambient air quality and man-made impacts. Kane County suggests that local, state and federal agencies analyze the separate and cumulative air quality impacts of natural and human activities to accurately determine the true causes of visual impairment given the two items above (fire-related emissions and regional haze) are major issues in the county.
- Potential adverse impacts are often mitigated through site-specific measures identified in NEPA documents prepared at the time an action is proposed. Mitigation needs to be developed as part of the State permitting process and PSD review. However, federal agencies have excluded County participation in these processes. Federal agencies should include impacted local governments as cooperating agencies in the NEPA process and shall coordinate with Garfield County in accordance with federal law.
- Tremendous future growth has been projected for southern Utah; specifically for the St. George area. As this occurs, Kane County does not want any potential adverse impacts

from air pollution. The ambient air quality of the county is not exceeding standards; visibility is typical of clear skies and atmospheric deposition levels are below Federal levels of concern. However, the lack of available data limits forecasting trends of air quality. Future changes to air quality conditions will occur according to the intensity and expansion or reduction of activities that produce air pollutants. At this time, future impacts to air quality within and affecting Kane County are uncertain; emissions from these outside sources could increase and the county may need to adopt mitigation techniques to help minimize these impacts.

Land Use

Multiple-Use of Public Lands

The economic stability of Kane County rests upon continued multiple uses of federal lands. Tax revenue is available to the county mainly through the ad valorem property tax and the county's share of sales tax receipts. The limited amount of private property greatly restricts the tax revenue of the county. That limited tax base must be protected, and the continued vitality of that tax base is dependent upon continued multiple uses of federal lands. If multiple uses are restricted, business income will suffer and sales tax will be reduced. If grazing is restricted, financial pressure will be placed on the rancher which could result in ranchers going out of business. When that happens, the tax base of the county suffers, and the business income is also reduced.

Reductions in recreational use by federal management agencies result in adverse economic impact on the businesses which serve the users. Many of the recreational users on federal lands journey into Kane County from the surrounding areas for food, lodging and other services. They make convenience purchases on a regular basis. Such purchases aid the business income throughout the county.

Multiple-Use/Sustained-Yield

Kane County supports multiple-use, sustained-yield management of federal and state lands, and will coordinate with the various management agencies to maintain appropriate balance among all users and uses. Maintaining multiple-use management practices on federal and state lands is a high priority for the county. Maintaining adequate public access to federal and state lands and accompanying natural resources is also a high priority.

The county acknowledges that the terms multiple-use and sustained-yield may be interpreted in different ways. For purposes of this plan, the county defines sustained-yield as the management of resources in a manner that will support a consistent level of use on a year-to-year basis.

The county defines multiple-use as the consumptive and non-consumptive uses historically and traditionally allowed to occur on federal and state lands within the county. These uses include, but are not limited to: livestock grazing, hunting, fishing, mining, mineral exploration and extraction, recreation, wildlife habitat management, telecommunications, water resource use, protection and development of timber/woodland products, utility corridors, county transportation, and circulation roads and corridors.

The county asserts that the above uses, as well as many others, are compatible in most management situations. True multiple-use management creates opportunities for the land to be used for many purposes simultaneously. The county is not intending to define multiple-uses for federal and state resources, but will support and participate in efforts to identify appropriate uses, and locations for those uses. Kane County Land Use Ordinance, Chapter 27, Escalante Region Multiple Use/Multiple Functions Grazing Zone has established a zone consistent with Utah State Code dealing with Functional/Multiple-Uses for local coordination processes.

Land Acquisition

Kane County supports efforts to sell, exchange, or consolidate state and federal lands within the county if doing so improves manageability of these lands, benefits county residents, supports the county economic base, or addresses the problem of checkerboard ownership. Specifically, the county will work to identify and consolidate areas and resources that promote economic growth, allow additional or improved resource development, protect watersheds, reduce access problems, and/or improve management. The county, through the county commission, will actively participate in all exchange or consolidation discussions.

If it will benefit the county economically, the commission may look favorably upon the exchange of state trust lands to other areas of the state where it might be beneficial both to the county and to the trust land administration (SITLA).

The county supports any increase in private land holdings, and cannot support any net loss of private land for any purposes. The county believes that it is appropriate to transfer certain lands to private ownership from federal ownership, through sale or exchange, if such a transaction will benefit the county's economic base. If private to public land transactions occur, the county will work with the public land managers to assure that an equivalent acreage and value of public lands are made available for transfer to private ownership.

Federal land management agencies need to continue to make suitable lands available for disposal under the Recreation and Public Purposes Act (R&PP) or Special Use Authorizations, and follow the requirements of the land use plan approved by Congress for the disposal of certain BLM lands in the county. Some additional criteria for land disposal shall include the following:

1. Federal lands shall be available for disposal when such disposal meets the public objective of community expansion or economic development, or when the disposal would serve the public interest.
2. The design and disposal of all federal land disposals, including land adjustments and exchanges, shall be carried out to the benefit of the citizens of the county in an expeditious manner.
3. There shall be no net loss of private lands in the county. Federal land management agencies shall not acquire any private land or access rights in private lands in the county without first ensuring that, at a minimum, parity in land ownership is maintained, and private property interests are protected and enhanced.

4. Federally managed lands that are difficult to manage (are found suitable for non-federal use and development or lie in isolated tracts) shall be identified for disposal.
5. The county shall be notified of, consulted with, and otherwise involved in all federal and state land adjustments in the county. County concurrence shall be required prior to such adjustments.
6. All existing utility corridors must be maintained and used to support additional capability for electric transmission and flow of oil and gas throughout the state and region. New corridors may need to be designated in areas where renewable energy projects or communications technology developments come on line. Such corridors are critical in supporting state and national security and economic objectives.

Special Land Designations

Kane County is opposed to additional land being designated as wilderness, over and above original BLM and Forest Service recommendations.

More than 1.2 million acres of Kane County (49%) has been designated as Grand Staircase-Escalante National Monument. Another 930,000 acres (35%) of Kane County is located in National Park units. When National Forest, Bureau of Land Management, and Bureau of Reclamation lands are added together, more than 87 percent of the land base in Kane County is federally controlled. Designation of more than 30 WSAs, Areas of Critical Environmental Concern, Critical Habitat, and other special designations erases multiple-use/sustained-yield management from much of the federal land base in Kane County.

Kane County will work closely with public land managers in developing plans that meet the requirements of public lands management acts and statutes, and are consistent with Kane County's General and Resource Management Plans. Though Kane County does not support special land designations, it understands there needs to be close cooperation between the county and public land managers. The county looks forward to this type of coordination.

Kane County is aware of proposals by different interest groups wanting to implement additional special land designations in order to achieve their specific land-use goals. The county is concerned that many of these proposals do not consider the economic impacts to the county, communities, and agencies that special use designations impact. In addition, the WSA designation proposals made by private interest groups have not included input from local government, communities, or residents of the county. These proposals have had no public process outside the members of the particular groups involved. The county and its residents should have an equal voice in determining the validity of such proposals.

All special designations must be made to compliment, rather than conflict with the concept of multiple-uses of public lands. These areas must also be in harmony with the customs and culture that have been identified in the county.

A high level of coordination must exist between Kane County, Bureau of Land Management, National Park Service, Forest Service and any other state and federal agency when amending or updating land management plans.

Kane County Policy:

- Kane County must oppose any change in land use that does not evaluate, mitigate, and minimize impacts to customs and culture and the economic future of the county. Federal and state agencies should always consider the social, cultural, and economic needs of the county when developing plans and making recommendations that affect its customs and culture. The county recommends federal and state agencies enhance opportunities for responsible use of public lands which benefit the customs and culture, and economic base of the county. Federal and state agencies should always notify the county of any actions or regulations which may impact its customs and culture.

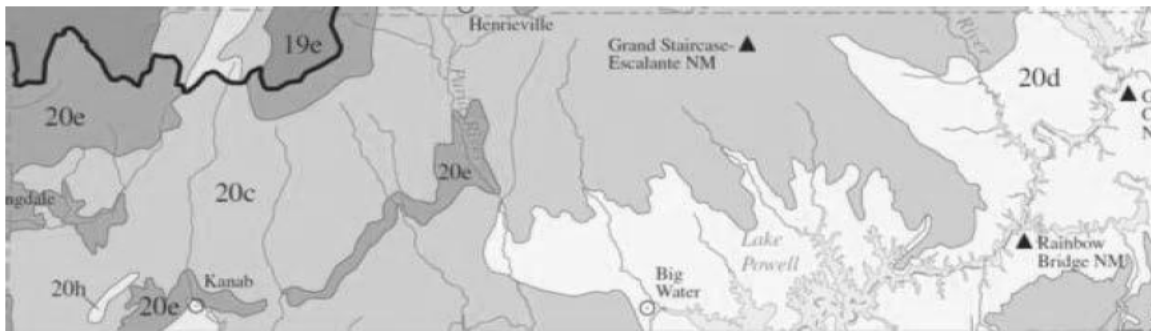
Riparian Areas

Riparian is simply defined as vegetation and habitats that are dependent upon or associated with the presence of water. Riparian areas comprise the transition zone between permanently saturated soils and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water. Excluded are such sites as ephemeral streams or washes that do not support vegetation dependent upon free and unbound water in the rooting zone of the soil. Examples of riparian areas would include lands along perennially and intermittently flowing rivers and streams and the shores of lakes and reservoirs with stable water levels. Wetlands are represented by marshes and wet meadows. Riparian areas, though they total less than 1 percent of the total lands in the county, are some of the most productive, ecologically valuable, and utilized resources.

Riparian ecosystems in the western states are some of the rarest and most significant in the Western Hemisphere. They are also some of the most affected by the activities of man. As a consequence of western expansion and growth, an estimated 95 percent of riparian habitats have been altered or greatly impacted by such activities as water diversion, channelization, livestock use, clearing, impoundments, and invasion by non-native vegetation. Riparian areas also exhibit a high degree of resiliency when changes in management occur.

A large number of plant and animal species depend on riparian areas. In the physiographic region covered by the county, up to 80 percent of vertebrates use riparian habitats at some stage in their life. Over 50 percent of the nesting bird species in this region use riparian habitats as their primary habitat for breeding purposes. This species richness is made possible by the plant diversity, availability of water, prey species, and the proximity to upland communities with their separate flora and faunal diversity.

A base flow of water is mandatory for the health and functioning of riparian areas. Factors which interfere with these processes include water diversions, ground water pumping, and changes in vegetation type and cover. Human activities can also result in degraded water quality and levels of seasonal flow. Resulting changes may be seen in the type and structure of vegetation communities, increased water temperatures, unsatisfactory physical functioning of hydrologic processes, aesthetics, and wildlife habitat.



As the density of woodlands increases there is a complementary decrease in the amount of grasses and shrubs present. This in turn decreases the rate and amount of water infiltration following precipitation since runoff rates are accelerated.

Vegetation and Soils⁹

Kane County lies along the central southern border of Utah. It is the 8th largest of Utah's 29 counties encompassing 3,990 square miles. Much of the county lies at elevations between 5,000 and 7,500 feet above sea level, but in the northwest part of the county land on the Markagunt and Paunsaugunt Plateaus lies at elevations between 7,500 and 9,400 feet, and the eastern and southeastern portions of the county along Lake Powell lie between 3,500 and 5,000 feet in elevation.

Precipitation patterns mirror the elevation with more than 40 inches of precipitation falling annually on the high elevations of the Markagunt Plateau and over 25 inches on the balance of the Markagunt Plateau and on the Paunsaugunt Plateau; precipitation tails off to between 16-25 inches as these plateaus drop into foothills and valleys. In much of the area south and east of these plateaus there are broad bands of landscapes with 12-16 inches and 10-12 inches of annual precipitation trailing off to narrower landscape bands of 8-10 inches and 5-8 inches toward to the east and southeast along Lake Powell with the lowest precipitation (6 inches) in pockets of land near Lake Powell, e.g., Bullfrog and Warm Creek Basins.

A useful way to examine landscapes is to view them in *ecoregions*. Ecoregions denote areas of general similarity in the type, quality, and quantity of environmental resources. They are designed to serve as spatial frameworks for the assessment, management, and monitoring of ecosystems and ecosystem components. In that light this summary presents the ecoregions and soils of Kane County. Ecoregions have been prepared and presented in hierarchical levels; the coarsest level is Level 1; the finest level is Level IV. Ecoregions are identified through the analysis of spatial patterns and composition of biotic and abiotic phenomena such as geology, physiography, vegetation, climate, soils, land use, wildlife and hydrology. At Level IV Ecoregions, Kane County has 7 ecoregions: three in Utah's Wasatch and Uinta Mountains Ecoregion Ecoregion 19 (which also includes the Markagunt and Paunsaugunt Plateaus) and four in the Colorado Plateaus Ecoregion Ecoregion 20 (see map).

⁹ E. Durant MacArthur, Ph.D., "Summary of Kane County, Utah Vegetation and Soils" Emeritus Scientist, Rocky Mountain Research Station, USDA Forest Service, Feb. 18, 2014.

In Kane County, Ecoregion 19 consists of dissected plateaus and intervening valleys the High Plateaus (19e), Semiarid Foothills (19f), and Mountain Valleys (19g) of (*see map*) and occupy 8 percent of the county's land base (Table 1).

The High Plateaus Ecoregion is characterized by subalpine fir, Engelmann spruce, Douglas-fir, and aspen communities as well as some high elevation meadows. Land use includes logging, grazing, and recreation. The Semiarid Foothills Ecoregion has a matrix of sagebrush, grama grass, mountain mahogany, Gambel oak, pinyon and juniper. Grazing is common and some areas have been cleared of trees and reseeded to grasses.

The Mountain Valleys Ecoregion contains terraces, flood plains, alluvial fans, and hills. Sagebrush is common but irrigated cropland and pasturelands as well as managed rangeland have been established. The four Colorado Plateaus ecoregions occupy over 90 percent of the Kane County land base. These are the Semiarid Benchlands and Canyonlands (20c), Arid Canyonlands (20d), the Escarpments (20e), and the Sand Deserts (20h) Ecoregions of (*see map*).

The Semiarid Benchlands and Canyonlands Ecoregion of Kane County occupy over 50 percent of the county's land area. Broad grass, shrub, and woodland covered benches and mesas characterize these areas. Slickrock and fin bedrock exposures are common along rims, escarpments, and on steep slopes. Low escarpments separate remnant mesa tops and narrow canyons from surrounding benches. Fine sand soils support warm season grasses, winterfat, Mormon-tea, fourwing saltbush, and sagebrush. Pinyon and juniper occur on shallow, stony soils but are expanding due to fire suppression and erosion. The principal uses of these lands are grazing and recreation in addition to wildlife habitat. The Arid Canyonlands Ecoregion is located on the inner gorge of the Colorado River and its major tributaries. This ecoregion occupies about 25 percent of the county.

In general, this region is bound by nearly vertical canyon walls that separate it from the adjacent higher benchlands of the Semi-arid Benchlands and Canyonlands Ecoregion. Exposed bedrock is common. Blackbrush, shadscale, and the drought tolerant grasses galleta and Indian rice grass are common plants. As in the case of the Semi-arid Benchlands and Canyonlands Ecoregion the principal uses of the Arid Canyonlands Ecoregion are grazing, recreation, and wildlife habitat.

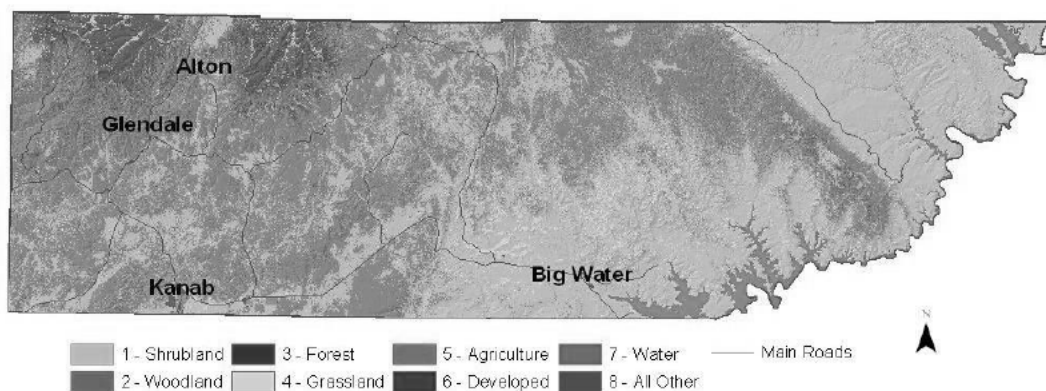
The Escarpments Ecoregion is characterized by deeply dissected, cliff-bench complexes that rise above the Semi-arid Benchlands and Canyonlands Ecoregion. Vegetation ranges from Douglas-fir forests on steep, north-facing slopes to desert and semi-desert grassland or shrubland on the lower drier sites. Pinyon/juniper woodland often dominates escarpments and benches that have shallow soils. The principal land uses here are for wildlife habitat and recreation.

The Sand Deserts Ecoregion is composed of nearly level landscapes covered with a mantle of sandy aeolian

Table 1. Level IV Ecoregion Areas of Kane County	
Ecoregion	%
High Plateaus (19 e)	5
Semiarid Foothills (19 f)	2
Mountain Valleys (19 g)	1
Semiarid Benchlands and Canyonlands (20 c)	53
Arid Canyonlands (20 d)	25
Escarpments (20 e)	13
Sand Deserts (20 h)	< 1

deposits, sand dunes, and exposed sandstone bedrock. These lands support grazing and provide some irrigated fields for hay and grain production. More detailed vegetation patterns are presented below which presents 46 land cover classes. These are finer scale, real time subdivisions of the ecoregions at the time the data was collected.

Soil type distribution follows, in general, other patterns presented for vegetation and precipitation with bands that flow from west (especially northwest) eastward across the county. The most common soil types are mollisols, entisols, aridisols, rock-outcrops, and rock outcrop-badland. Mollisols are characterized by thick, dark, relatively fertile surface soils which have been formed under grassland vegetation or in forested zones where grasses are an important component of the understory. Entisols are young soils without discernible horizons except some darkening of the surface. They occur on areas that have been impacted by water flow such as alluvial terraces and fans, valley bottoms and floodplains. Aridisols occur in areas of relatively low annual precipitation, less than 14 inches, sometimes much less. They occur on lower terraces and fan slopes and in desert valleys and are often characterized by long, dry summers.



Above: Kane County Land Cover (Source Assessment August 2005)

Soils & Climate Zones¹⁰

Soils present in the county form the base on which ecosystems develop. Understanding the condition of soils is important to the management of many resources. Resource data on soils varies in level of detail across the county, and presently, there are two levels of data available. These data-sets are as follows:

Kane County Soil Survey: This unpublished report is presently only in a file format and was conducted at a scale of 1:63,360 (1 inch per mile).

¹⁰ E. Durant MacArthur, Ph.D. Emeritus Scientist, Rocky Mountain Research Station, USDA Forest Service.

STATSGO: The State Soil Geographic Database is generalized soil survey information for the entire state of Utah. This data was collected at a scale of 1:250,000 and can be used at a county or regional level.

There are three climatic zones in the county, summarized below, in which soil information can be generalized.

Climate Zones				
Climatic Zones	Precipitation (in)	Temp. (degrees F)	Freeze Free Period (Days)	Elevation (Feet)
Desert	6 to 8	50 to 57	170 to 200	4000 to 4800
em ese t	8 to 12	47 to 55	125 to 170	4800 to 6500
Upland	12 to 16	43 to 50	100 to 125	6200 to 7500

The Desert climate zone is found in two general areas of the county:

The Sooner Bench area of the Hole in the Rock Road is typified by soils of very minimal soil development. Soils typically only have developed a horizon of calcium carbonate (lime) accumulation or no other noticeable subsoil development. Structural benches and dunes on Navajo and Entrada Sandstone, the Carmel Formation and quaternary alluvial deposits characterize this area. Important vegetation for this area includes blackbrush, Cutler Mormon-tea, broom snakeweed, Indian rice grass and galleta.

The Big Water area is typified by soils of very minimal soil development, with no noticeable subsurface horizon development. Hill slopes and badlands on Tropic Shale, Dakota Formation and lower members of the Straight Cliffs Formation characterize this area. Important vegetation for this area includes mat saltbush, shadscale, galleta, bottlebrush squirreltail and Indian pipeweed.

The Semi-desert climate zone is found in two general areas of the county:

The Western area of the Hole in the Rock Road is typified by very deep (>60 inches) soils with developed horizons of clay and calcium carbonate (lime) accumulation. Structural benches and dunes on Entrada Sandstone, the Carmel Formation and quaternary alluvial deposits characterize the area. Important vegetation for this area includes Indian rice grass, needle-and-thread grass, globemallow, fourwing saltbush, Mormon-tea and winterfat.

The Highway 89 area between Johnson Canyon and the Cockscomb is typified by very deep soils (>60 inches deep) with development of calcium carbonate (lime) and clay accumulation subsurface horizons. The Moenkopi Formation and quaternary alluvial deposits dominate as the

parent material of this area. Important vegetation for this area includes Indian rice grass, galleta, winterfat and big sagebrush.

The Semi-desert to upland transition climate zone is found in two general areas of the county:

The Death Ridge, Carcass Canyon, and Burning Hills areas is typified by shallow soils (10-20 inches deep) with minimal development of calcium carbonate (lime) horizons or no subsurface diagnostic horizons present. The Straight Cliffs Formation dominates as the parent material of this area. Typical landforms consist of structural benches with highly dissected side slope canyons and badland areas of exposed geologic materials. Important vegetation for this area includes galleta, blackbrush, Mormon-tea and Utah juniper.

The Forty Mile area Wahweap Wilderness Study Area (WSA) is typified by shallow to moderately deep soils (10-40 inches deep) over the John Henry member of the Straight Cliffs Formation. Soil development consists dominantly of a horizon of calcium carbonate (lime) accumulation or little to no subsurface soil horizon development. Typical landforms consist of structural benches with highly dissected side slope canyons. Important vegetation for this area includes Utah juniper, pinyon, galleta, Mormon-tea and Bigelow sagebrush.

The Upland climate zone is found in three general areas of the county:

The Fifty Mile Mountain area is typified by shallow to moderately deep soils (10-40 inches deep) over the John Henry member of the Straight Cliffs Formation. Soil development consists dominantly of a horizon of clay accumulation or little to no subsurface soil horizon development. Typical landforms consist of structural benches with highly dissected side slope canyons. Important vegetation for this area includes Indian rice grass, galleta, rock goldenrod, Bigelow sagebrush, green Mormon-tea, pinyon and Utah juniper.

The Kodachrome basin and Skutumpah Road area is typified by diverse soil properties that are found on the Carmel Formation and quaternary alluvial deposits. Landforms consist of dissected side slopes and alluvial fans and flats. Important vegetation for this area includes Indian rice grass, galleta, big sagebrush, bitterbrush, pinyon and Utah juniper.

The Paria-Hackberry WSA consists dominantly of Navajo Sandstone geology with varying depths (20-60 inches deep) of sand. Landforms consist of vegetated dunes and outcroppings of sandstone. Important vegetation for this area includes sand dropseed, Indian rice grass, blue grama, green Mormon-tea, pinyon and Utah juniper.

Soils and soil condition affect the degree of water infiltration. This in turn affects basin storage and availability for a range of resource uses. When management activities result in compaction of soils, runoff from precipitation is accelerated and less water is stored in the soil. The result is higher erosion rates and less available water for plants, animals, and ground water recharge.

Law Enforcement

Kane County and the State of Utah have primary jurisdiction for law enforcement throughout the county. All federal law enforcement activities will be fully coordinated through the county with the County Sheriff's Office. The elected Sheriff is the chief law enforcement officer in Kane County, holding all law enforcement responsibilities laid out in the United States Constitution and Title 17 of the Utah State Code. The elected County Sheriff has the authority to deputize police officers and/or citizens of the county as he or she deems necessary.

The county will maximize the use of a cooperative law enforcement program, to improve protection of persons and their property when visiting federal and state lands, and to utilize the opportunity to cooperate with land management agencies in carrying out their specific responsibilities related to land management.

It is the county policy to provide protection to the public and their property through coordination with other law enforcement agencies. Any law enforcement agency operating within the jurisdiction of the Kane County Sheriff shall coordinate with the Sheriff prior to undertaking law enforcement operations. Law enforcement officers shall operate under the limitations set forth by the Utah State Legislature and enabling legislation of their respective agency as set forth by the Congress of the United States.

Federal agencies shall maintain proprietary jurisdiction throughout federally managed lands within Kane County, and shall coordinate with the elected County Sheriff concerning criminal matters. Federal and state land management agencies will make available sites for strategic location of communication towers to aid in law enforcement activities.

Minerals, Mining & Energy Resources

Federal and state agencies shall analyze and consider all fiscal and economic impacts to the county, local governments, to the residents of the county and the minerals industry, from any proposed land management changes or natural-resource related plans. Planning shall consider up-to-date mineral potential reports.

As part of any planning effort on public land, a county-wide review of all potential sand and/or gravel sites should be identified in order to be able to project the ability of the county to secure these sites for use in future growth and development.

Noxious and Invasive Species

Noxious weeds are non-native plants that, once established, are highly destructive, competitive and difficult to eradicate. Some are toxic or a public health threat to humans and wildlife while others displace and compete with native and desirable economic plants and vegetation. Noxious weeds and invasive species are a danger to Kane County's eco-system and its economy. These introduced species cost the county, state and surrounding areas millions of dollars in lost agricultural production, environmental degradation and increased maintenance costs.

The control of noxious weeds in Kane County is regulated through the Department of Agriculture and Food by way of Utah's Noxious Weed Act (R68-9). The Commissioner of Agriculture and Food publishes a Noxious Weed List for the State of Utah, which designates five classes of noxious weeds in the state: (The current list was updated as of October, 2016)

Class 1A-Early Detection Rapid Response (EDRR Watch List) this is a high priority designation for a noxious weed/invasive plant and poses a serious threat to the county and state, but it is not known to have invaded the state or county, yet. There are nine plant species listed under this category.

Class 1B-(EDRR); this is also a high priority classification for weeds declared noxious and invasive that are not native to the state of Utah, and known to exist in very limited populations, posing a serious threat. There are twelve (12) species on this list. Of the 12, Kane County has identified and is treating:

- Goatsrue – *Galega officinalis*
- Elongated mustard – *Brassica elongate*
- Common St. Johnswort – *Hypericum perforatum*
- Cutleaf vipergrass – *Scorzonera laciniata*

Class 2-Control; these weeds are declared noxious and invasive to the state of Utah (not native), that pose a threat to the state, and should be considered a high priority for control. They are known to exist in varying populations throughout the state. The concentration is at a level where control or eradication may be possible. There are twelve (12) species on the list. Of the 12, Kane County has identified and is treating:

- Spotted knapweed – *Centaurea stoebe*
- Purple loosestrife – *Lythrum salicaria*
- Yellow starthistle – *Centaurea solstitialis*
- Diffuse knapweed – *Centaurea diffusa*
- Dalmation toadflax – *Linaria dalmatica*

Class 3-Containment; these weeds are declared noxious and invasive weeds not native to Utah that are widely spread. They are known to exist in various populations throughout the state. Weed control efforts may be directed at reducing or eliminating new or expanding weed populations. Known and established weed populations as determined by the weed control authority, and may be managed by any approved weed control methodology. These weeds pose a threat to the agricultural industry and to agricultural products. There are sixteen (16) weed species on this list. Of the 16, Kane County has identified and is treating:

- Russian knapweed – *Acroptilon repens*
- Houndstounge – *Cynoglossum officianle*
- Perrenial pepperweed (Tall whitetop) – *Lepidium latifolium*
- Tamarisk (Saltcedar) – *Tamarix ramosissima*
- Hoary cress – *Cardaria* spp.
- Canada thistle – *Circium arvense*
- Poison hemlock – *Conium maculatum*

- Musk thistle – *Carduus nutans*
- Perennial Sorghum spp.: Johnson Grass – (*Sorghum halepense*) and Sorghum almun (*Sorghum almun*).
- Scotch thistle (Cotton thistle) – *Onopordum acanthium*
- Field bindweed (Wild Morning-glory) – *Convolvulus* spp.
- Puncturevine (Goathead) – *Tribulus terrestris*

Class 4-Prohibited; this category of weeds has been declared noxious and invasive to the state of Utah, which pose a threat through the retail sale or propagation in the nursery or greenhouse industry. Prohibited noxious weeds are annual, biennial, or perennial plants that the (Ag) commissioner designates as having the potential or known to be detrimental to human or animal health, the environment, public roads, crops, or other property. There are five (5) species on this list. Of the five, Kane County has identified and is treating:

- Russian olive – *Elaeagnus angustifolia*

Kane County is a member of the Canyon Country Cooperative Weed Management Area (CWMA), which is a cooperative of land managers and property owners that cross jurisdictional boundaries in order to treat noxious and invasive weeds. The (geographical) membership consists of Kane County, the southern half of Garfield County, Utah Department of Transportation, Zion National Park, Bryce Canyon National Park, Dixie National Forest, Bureau of Land Management-Kanab Field Office, BLM-Grand Staircase-Escalante National Monument, and some private land owners. The Cooperative started in 2006 to spray for noxious weeds as a collective group whenever the need arose. Under the cooperative agreement, Kane County weed managers/specialists will treat areas of the Grand Staircase, Zion National Park, Bryce Canyon National Park, etc., when noxious and invasive species have been identified. By contract, the county weed specialists can cross jurisdictional boundaries at different times of the year to apply treatments with state-approved pesticides.

The Cooperative creates “spray days” where personnel and volunteers gather together to treat areas to expedite treatment. For example, although cheat grass (*Downey brome*) is not on the state’s invasive species list, Zion National Park requested an area in the park be sprayed before it took over the existing grass. Although livestock will often keep cheat grass under control, none are allowed in the park, and deer do not prefer cheat grass over other forbes. The Cooperative organized a spray day of the membership and treated the area around the lodge.¹¹ Spray days can draw upwards of 40 people at a time which makes for quicker turnaround and less disruption.

Landowners, as well as land managers, must comply with state law to treat noxious and invasive species on their property. There is a system in place for the public to identify noxious/invasive weeds and report them to the state for authentication. The state of Utah uses Eddmapps.com which is a web-based real time tracking of invasive species. Eddmapps stands for Early Detection & Distribution Mapping System that covers all 50 states and four provinces of Canada. There is specific county data on invasive species for plants, insects, diseases and wildlife. Anyone can look up a noxious weed for identification or report one if they believe one exists on their

¹¹ Gurr, Carl; Kane County Weed Department, Weed Specialist. November 2, 2016.

property. The information goes into the system to be verified; then forwarded to the county weed specialist for treatment options. The following acreage has been treated in the last few years:

Weed type	2014	2015	2016
Scotch thistle	665	578	521
Hoary cress	146	38	74
Musk thistle	29	39	24
Perennial pepperweed	17	18	9
Salt cedar	60	12	15
Russian olive	60	12	15
Russian knapweed	47	35	25
Spotted knapweed	21	7	0
Diffuse knapweed	10	6	7
Canada thistle	1	0	0
Yellow star thistle	12	22	0
Houndstounge	0	1	0

Neither the county, nor the public land managers can be successful in controlling noxious weeds without joint coordination. It is also important to the county that the public land managers control pests on the public lands in order to protect the forest land and other areas where pests become a problem. Mosquito control on federal and state lands should be permitted in order to reduce the risk of transmission of West Nile Virus and other diseases that pose a threat to the health of humans, livestock and wildlife.

Recreation/Tourism

Residents and visiting tourists greatly prize the outdoor recreational opportunities available in Kane County. These activities are a way of life, having sprung up from a traditional western lifestyle heavily dependent on the land as a natural resource to provide sustenance and enjoyment. At its core, the county is a place where its residents enjoy a rural environment and closeness to nature. These activities have been kept alive as they are passed from generation to generation. Parents, children, and grandchildren enjoy the outdoors together as a family unit. Access to public lands in the county for multiple uses is a prized privilege, even a right, inherent in residency, which is the foundation of the lifestyle that has kept families here for generations. In recent years, it has become the main attraction for new residents seeking a rural, family centered way of life.

Activities which traditionally define recreation and tourism in Kane County include, but are not limited to, big game hunting, trapping, fishing, off-highway vehicle use, mountain biking, hiking, camping, sight-seeing, boating, etc. A majority of these activities occur on public lands. Visitors to these areas directly impact the county by drawing on county-provided infrastructure such as, law enforcement, emergency medical, search and rescue, waste disposal services, and general commercial services. Many of the store owners, restaurants, hotels and motels, and other commercial interests depend on recreation and tourism for their livelihoods.

Much of the recreational activity in the county is found in its unincorporated areas, outside of the organized recreational facilities found in many of the cities and towns. These activities are accessed using public lands, and are a tremendous economic asset to the county. It is the county's position that federal and state land managers should do everything possible to enhance recreational opportunities on public lands and that such management should be compatible with principles of multiple-use, and sustained-yield. Any management decisions which restrict recreational activities or access to recreational areas shall be done in consultation with the county and shall be based on valid scientific information.

Transportation & Land Access

One of the common themes that cross all economic and cultural foundations in Kane County is access to public lands. Access rights-of-way and water rights were critical to the early pioneers in Kane County and remain critical today. The federal government controls 85.5% of the 2.6 million acres of land in the county. The State of Utah owns 8.1% of the land, leaving only 6.4% in private ownership. Crossing federal land is necessary for many private land owners to access their property and to exercise water rights, as well as to use adjudicated grazing preference rights. Viable and effective use of private land is totally dependent upon how federal and state lands are managed.

To manage land within the Grand Staircase-Escalante National Monument (aka Escalante Region Multiple Use/Multiple Functions Grazing Zone), Kane County promotes responsible management, enhancement, and development of existing and future livestock grazing resources. Accountable planning, which includes rangeland treatments, would provide protection for the resources that established the customs, culture, and values of Kane County. This encompasses the responsible development of the abundant deposits of energy and mineral resources, such as oil, natural gas, oil shale, oil sands, coal, gold, uranium, and copper, which are compatible with grazing activities in the region.

Revised Statute 2477 Assertions

In 1866, Congress enacted a law to authorize the construction of roads and trails across federal land. That law, Section 8 of the Mining Act of 1866, (Revised Statute 2477) provided that, "The right-of-way for the construction of highways over public land, not reserved for public uses, is hereby granted." It provided access and protected those routes across federal lands for pioneers and ranchers who settled the West for over 110 years.

Kane County pioneers, settlers and ranchers developed rights-of-way from the construction of roads and trails, which they relied upon for water, hunting, farming, minerals and homesteads to earn their livelihood. This original grant of rights-of-way did not require any formal recording; the rights-of-way were established by their construction, use, and subsequent acceptance by the State of Utah or a political subdivision thereof, many of which continue to be used today.

R.S. 2477 was subsequently repealed by the Federal Land Policy and Management Act in 1976. However, a large number of R.S. 2477 roads had been constructed, used, and accepted by Kane

County and the State of Utah prior to the 1976 repeal. Kane County has to perfect its ownership of such roads by showing continuous public use of each claimed right-of-way for a period of at least ten years. Kane County and the State of Utah has to prove its title to the R.S. 2477 roads in federal court under a “Quiet Title Act”, which allows private parties and states to “adjudicate a disputed title to real property, in which the United States claims an interest.” Utah (and therefore, Kane County) can settle its claims to R.S. 2477 roads under this authority.

The set of assertions regarding RS 2477 rights-of way in Kane County were filed in April, 1998 with the appropriate federal authorities.¹² In April 2008, Kane County initiated an action under the federal Quiet Title Act (28 U.S.C. § 2409a) on the Bald Knolls and Mill Creek Roads; it later amended its complaint to cover a total of 15 roads or road segments.¹³ In February of 2010, the State of Utah filed a motion to intervene as co-plaintiff and was granted the motion. The case was heard in Federal District Court in August 2011, and Kane County was granted the rights to 12 of the 15 roads it requested. Since then, Kane County has initiated action on over 700 roads and road segments for R.S. 2477 rights-of-way through federal lands. Kane County has used these R.S. 2477 roads for decades, prior to the designation of the Glen Canyon National Recreation Area, the Grand Staircase-Escalante National Monument, State Parks, other national parks or resource areas.

Water Quality & Hydrology

Water is the life blood of Kane County. Water quality and availability has historically determined the level, type, and location of existing growth. This pattern would continue into the future except for the fact that new distribution systems have made water more available throughout the county. The county encourages and supports the efficient management and use of its water resources. The county also supports the development, adoption, and implementation of water collection, storage, and distribution, as well as the development of conservation plans by municipalities, the water conservancy district, and private water companies. The county also encourages continued cooperation among all water managers and users as water management decisions are made.

Kane County will be involved with state and federal managers in the development of all plans for monitoring of air and water quality. Findings must be coordinated with the county. The county supports management practices that protect vital watersheds. The county also supports management policies and practices which allow for the future expansion and development of water distribution and storage facilities. The future of the county is completely dependent on available water. The county not only needs a county-wide distribution system to assist any area in time of need, but a redundant supply to avoid simply running out of water at some future date. Any plan or practice whose aim or goal is to thwart the county’s ability to access and develop water resources is strongly opposed.

¹² Kane County General Plan, June 22, 1998, Transportation and Circulation Key Issues, pg. 29. Consists of 7.5 topographic maps.

¹³ The other roads included: Skutumpah Road, Sand Dune Road, Hancock Road, Swallow Park/Park Wash Road, North Swag Road, Nipple Lake Road, segments of Tenney Creek Road, and Oak Canyon.

Water Rights

Adequate water supplies are essential to farming and ranching activities in Kane County. Restrictions on use of irrigation water by federal management agencies through the guise of protecting wilderness, native species, and wild and scenic rivers will severely impact the economy of the county. Failure to manage uplands in a manner that maintains productive watersheds will likewise decrease irrigation water supplies and also adversely impact the economy of the county. Protecting “yield in water” is especially important to the arid land in and around Kane County’s boundaries.

Early ranchers established water rights through the doctrine of prior appropriation. The earliest adjudicated rights in Kane County date to 1864. Today, holders of water rights continue to struggle to preserve water rights against federal land management encroachment. In order to develop any water right that is located on federal land, the holder must turn the right over to the United States in order to make full use of it, thereby losing ownership.

Ditches & Canals

Kane County supports the development, adoption, and implementation of water collection, storage, and distribution, and the development of conservation plans by municipalities, the water conservancy district, and private water companies. Any and all canals, ditches and water structures need to be protected by an adequate buffer of at least one-half mile on either side of the center of the canal, ditch or structure and management prescriptions associated with special designation areas shall not conflict with such protection areas.

Administrative motor vehicle access shall be established for repair and maintenance of all water impoundment facilities in Kane County, regardless of special designation by federal agencies. Any negative impacts to water collection, storage, or distribution (conveyance systems) will be removed in a timely manner so as not to harm the systems (i.e. encroaching or dense Tamarisk, Salt cedar, etc., increased fire hazard, and/or clogging of irrigation ditches).

There have been several situations in Utah where ditches or canals have failed. These failures have caused property and infrastructure damage, as well as injury and loss of life. In 2014, the Utah Legislature addressed this problem by creating Section 73-5-7 of the Utah Code giving the State Engineer authority to inspect ditches and canals; he can order repairs as necessary to protect public safety. The State Engineer also has the responsibility to inventory and maintain a database of all human-made water conveyance systems that carry five cubic feet per second or more of water. Part of that responsibility is to ensure that each ditch or canal operator has prepared the management plan required under Section 73-10-33 of the Utah Code. This plan requires operators of water conveyance facilities to map their locations, identify any areas of potential slope instability, show proof of adequate liability insurance coverage in the event of a breach, adopt a maintenance and improvement plan, adopt an emergency response plan, identify sources of financing for maintenance and improvements and determine the effects of potential storm water flows into the ditch or canal.

Kane County Policy:

- Kane County supports the efforts of water districts to operate their conveyance systems via ditch, canals, distribution systems etc. to provide water to their customers and shareholders.
- Kane County supports the efforts of the State Engineer under USC 73-5-7 to ensure such water conveyances are operated and maintained in a safe manner.
- Kane County supports all water districts and operators to map their systems and provide such mapping to the county for use in making land use decisions.
- Kane County supports all municipalities establishing a cooperative relationship with irrigation companies to maintain open communication and assist one another resolving public safety concerns.
- Kane County strongly supports public safety by limiting access to dangerous structures, and protecting vulnerable properties from flooding and slope failure.
- Kane County promotes awareness of the State's Canal Safety Program and Canal Inventory, including available funding to assist in developing a safety management plan.

Floodplains/River Terraces

The Federal Emergency Management Agency (FEMA) defines a floodplain or an area prone to flooding as “any land susceptible to being inundated by water from any source” (44 CFR 59.1). Through its mapping programs, FEMA identifies flood hazards and risks associated with the 100-year flood, which is a flood that has a one percent chance of occurring in any given year. This helps communities identify and prepare against flood events.

Floodplains provide unique habitat for a wide variety of plants and wildlife; the areas are usually more diverse biologically because of the combination of ecosystems involved. Flooding events can have benefits for enriching soil with nutrients as sediment and debris settle out; it can provide groundwater recharge, help with soil erosion and protect natural and built infrastructure by providing floodwater storage. Floodplains have also been good locations for agriculture, aquaculture and forest production because of the flat topography and water supply.

There are two primary floodplain types in Utah – fluvial (or riverine) and lake flooding. Riverine floodplains occur along the paths of rivers and streams. This occurs when excessive rain falls over a period of time causing a river to exceed its capacity. It can also be caused by heavy snow melt. Two kinds of fluvial/riverine flooding are overbank flooding, when water rises over the edges of a river or stream, regardless of the size; and flash flooding, when a high velocity torrent occurs in a river channel with little or no notice. These are the most dangerous to Kane County because of the sudden nature of their appearance, the force of the water and the hurtling debris that is swept with the flow. Lake flooding occurs when there is no outlet (a closed basin system) and the lake is subject to large fluctuations in surface elevation.

Flooding is the leading cause for disaster declaration by the President of the United States; in Utah flooding will be caused by rapid snowmelt in late spring and early summer, along with heavy rainfall in the summer (and during the monsoon season – mid to late August). Flooding

will also be caused by damaged watersheds due to wildfires, which is a growing concern for several southern counties, including Kane.

In 2015, southern Utah experienced heavy rains and flash flooding in nearby Hildale, Utah (Washington County) and next door Colorado City, Arizona (Mohave County) which is less than ten miles from the Kane County border. The flash flood caused 16 fatalities, damaged roads, bridges, road crossings, and washed out a municipal water pipeline. This same event caused flash flooding in Zion National Park where seven climbers perished in Keyhole Canyon.

FEMA has identified Kane County as a “Zone A” flood plain; no specific elevation has been identified. Kane County, Kanab City, and the incorporated towns of Glendale and Orderville participate in the FEMA flood insurance program. Kane County has recently (within the last year) had flood damage from heavy precipitation/flash flooding events in the Johnson Canyon/Wash area which damaged several properties and sections of the roadway which has been repaired with the help of federal monies. Kanab City has had several flooding events in the last year during heavy precipitation events causing several homes and businesses to flood. The floodplain map of the city indicates a water path that runs from the cliffs (north of town) across the old residential area, leading across Highway 89 to the Kanab Creek Ranchos where it makes its way to Kanab Creek to drain.

It is important that the role of watershed management be recognized and incorporated into floodplain management and restoration. The Kane County floodplain needs to be restored to its properly functioning condition, especially on undeveloped federal lands. Management and restoration projects need to be implemented to restore sinuosity, vegetation and floodplain function that mimic the natural hydrologic system; and long term hydrologic function must be prioritized over short-term ground disturbance.

Coordinated strategic planning must be implemented to outline a plan to restore uplands, floodplains and vegetation, and to improve rangeland health. Structural and non-structural improvements must be made to degraded water courses; these improvements need to target Phase II and III¹⁴ pinyon/juniper woodlands replacing them with desirable vegetative communities helping reduce runoff and the amount of bare ground. Ultimately, the analysis and approval processes for floodplain restoration needs to be simplified and authorized as categorical exclusions under National Environmental Policy Act (NEPA). Involvement by the Corps of Engineers or other federal agencies must be either eliminated or reduced to a minimum required under law to expedite restoration.

It is Kane County’s goal to increase watershed health and water yield, flood control capacity, soil health and productivity, and create less erosion by wind and water. This will improve landscape health, increase wildlife habitat (and species diversity) and increase social economic sustainability by reducing damage outside the floodplain. Kane County will diligently participate in all it can do to instigate sound floodplain management measures to protect the health, safety and welfare of its citizens. The county will continue to coordinate with its federal and state partners in all landscape management decisions that affect the topography, vegetation, water

¹⁴ Phase II pinyon/juniper represents a canopy cover of greater than 33% and less than 67%; Phase III represents canopy cover of 67% or greater.

sources, forest systems, etc. which would help mitigate or prevent any flooding event, especially where wildland fire is concerned.

Active management and restoration projects on federal lands need to be implemented to restore sinuosity, vegetation and floodplain function that mimic the natural hydrologic system. Check dams and restoration projects must also be implemented to arrest down-cutting, and to restore natural stream grade. Kane County strongly suggests that land managers restore to properly functioning condition at least 1-percent (or ten miles of non-functioning floodplain) per year.

Wildlife Management

In most of Kane County, privately owned land is adjacent to federal and state lands. Therefore, management decisions for federal and state lands directly impact the use and economic value of private land. Restrictions on, and reductions of grazing on federal lands, will require the ranchers to greatly increase grazing on private lands, reduce herd sizes, find alternative grazing land, or seek relief through a combination of these measures in order to remain economically viable. If ranchers are forced to graze herds solely on private land, the primary source of winter forage will be lost. Furthermore, forage costs will dramatically increase. There is no alternative land available in Kane County for grazing, so even if alternative forage is found outside the county, transportation costs will be extremely high. Reductions in herd size, higher feed costs, and increased transportation costs will result in a critically adverse outcome. Economists that have studied the local grazing impact hold that for every dollar loss to the rancher, there will be a four-fold loss to business income in the surrounding areas of the county.

Kane County supports efficient and responsible (full) development within the Grand Staircase-Escalante National Monument (aka Escalante Region Multiple Use/Multiple Functions Grazing Zone), areas within the Kanab Field Office, Glen Canyon National Recreation Area and Dixie National Forest, of all permitted, existing and future grazing resources, and other uses compatible with grazing activities. Residents and visitors of Kane County have enjoyed and receive significant benefits to their health, welfare and economic stability and sustainability, through the custom, culture and heritage of livestock grazing.

Threatened, Endangered & Sensitive Species

Many species are protected under the Endangered Species Act (ESA) and are being managed for recovery or sustainability by federal land management agencies and the State of Utah. Some are subject to various levels of recovery and conservation management plans prepared by the Forest Service, Park Service, and BLM units within Kane County. ESA recovery plans are typically prepared by the Fish & Wildlife Service, though plans prepared by a state or other entity may be adopted as *functional equivalents*. When Kane County does not have a county-specific conservation plan in place, it will first adopt the state's Utah Wildlife Action Plan as the best available surrogate until it completes its own county plan. Kane County supports the recovery efforts of special status species within the county. Kane County will support and implement current and future special-status species recovery and conservation plans, strategies, and agreements in coordination and consultation with the Utah Division of Wildlife Resources, and other state and federal entities.

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Section Two: Regional Resources

For the sake of accounting for the county's natural resources, Kane County has been divided into six *Regions*; the landscape is so diverse, there are large sections of federally managed lands (85.5%), and there are very few incorporated towns and (one) city. The regions closely align to the county's zoning map(s) and each one has unique characteristics that make it stand out on its own. Going from east to west the Regional Resources fall into the following categories:

1. Glen Canyon (NRA) Region
2. Grand Staircase Region
3. Municipalities & Unincorporated Region
4. National Forest Region
5. Zion National Park Region
6. Western Kane County Region (aka southwestern corner)

Kodachrome State Park is on the north end of the Grand Staircase Escalante National Monument, so it has been included in Region 2. In the event a small section of the county is not specifically addressed it will be added to the Region it is closest to. (Region Map on page 397)

Region #1: Glen Canyon (NRA) Region

Introduction:

The Glen Canyon (NRA) Region (aka National Recreation Area) 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. It is centered on a man-made reservoir (Lake Powell) and referred to as a "unit"³ instead of a park. (The distinction being a National Park is more like an outdoor museum where hunting, mining and consumptive activities are not allowed, whereas a NRA usually emphasizes water-based recreation.)

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.⁴ It is a vital storage reservoir of the Colorado River Storage Project (CRSP), completed by

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 National Park Service, Designation of National Park System Units, National Park and National Recreation Area, <<http://www.nps.gov/goga/planyourvisit/designations.htm>>

⁴ U.S. Bureau of Reclamation, Colorado River Storage Project, Glen Canyon Quick Facts, <<http://www.usbr.gov/uc/rm/crsp/gc/gcFacts>>

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.⁵ However, ranchers had already created their own access roads to tend cattle in places like Lone Rock (within the Glen Canyon NRA).⁶ They had been raising livestock since 1890, and have continued 100+ years of cattle ranching in the Glen Canyon area (and throughout the county).⁷

When the Glen Canyon NRA was created the enabling legislation authorized grazing, mining, hunting, trapping and fishing to continue.⁸ Grazing is managed by the National Park Service but 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.⁹ 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.”¹⁰

Kane County pays for the maintenance of Lone Rock Road (Hwy. 89 to the Lone Rock beach area), which is inside the Glen Canyon (NRA) Region. 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 National Recreation Area. 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.¹¹ Although Kane County does receive a percentage of PILT

⁵ Utah State, Government Services, <http://historytogo.utah.gov/utah_chapters/utah_today/glencanyondam_controversy.html>

⁶ “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.

⁷ U.S. National Park Service, Glen Canyon National Recreation Area, Grazing, <<http://www.nps.gov/glca/learn/nature/grazing.htm>>

⁸ 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.

⁹ Grazing – Glen Canyon National Recreation Area, U.S. National Park Service; <<http://nps.gov/glca/learn/nature/grazing.htm>>

¹⁰ “An Analysis of a Transfer of Federal Lands to the State of Utah,” Appendix A Glen Canyon National Recreation Area Operations, pg. 665.

¹¹ 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. pg 666.

funds (payments in lieu of taxes)¹² 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."¹³ (It is important to note that PILT funds are distributed yearly and are not a guarantee. The appropriations committee can discontinue this funding at any time.)

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 National Environmental Policy Act in Appendix E*). In NEPA, under §4.5 (H) consultation and coordination is clearly defined. 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.

Air Quality

Air quality in the Glen Canyon Region is a part of the Glen Canyon NRA (national park system) policy. They are mandated by Congress through legislative requirements 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."¹⁴ 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 air quality 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 Crossing (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

¹² It is important to note that PILT funds are not a guaranteed source of funding for the counties. Every year the amount is reassessed; and if there is a new administration (presidential year) it is subject to budget cuts.

¹³ "An Analysis of a Transfer of Federal Lands to the State of Utah," Appendix A Glen Canyon National Recreation Area Operations, pg 667.

¹⁴ 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

pollutants”¹⁵ and “In areas with high personal watercraft use, there was concern about air quality degradation.”¹⁶

The results of 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 (PM₁₀ and PM_{2.5}), 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.”¹⁷ However, since 2012, the NPS has prohibited personal watercraft use for *carbureted two-stroke engines* on Lake Powell and certain parts of rivers upstream.¹⁸

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 pollution effects on resources.”¹⁹ 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).”²⁰ 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.”²¹

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, and the Navajo Generating Station. Before the Mohave Generating Station in Nevada was closed (December 2005) it, too, contributed to background ozone pollution in the Glen Canyon Region.²²

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*²³ “The NPS will continue its cooperative efforts with other federal land management agencies...the Environmental Protection Agency,

¹⁵ Ibid, Executive Summary, Impact Topics Required Under the Settlement Agreement, Air Quality, page IX; 2003.

¹⁶ Ibid. pg. IX.

¹⁷ Ibid, Environmental Consequences, Air Quality, Issues and Management Objectives Related to PWC Use, Guiding Regulations and Policies, Conformity Requirements, pg. 181, 2003.

¹⁸ Ibid, Alternative B (NPS modified preferred method), Promulgate a Special Regulation to continue Personal Watercraft Use with Additional Management Restrictions, pg. xi, 2003.

¹⁹ 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.

²⁰ Ibid.

²¹ Ibid.

²² “Protecting Wilderness Air Quality in the United States”, K.A. Tonnessen, U.S.D.A. Forest Service Proceedings, RMRS P 5, Vol. 5, 2000, pg. 90.

²³ “The Future of Air Quality in Our National Parks” Chapter 5, National Park Service Air Resources Division, Lakewood, Colorado; and U.S. Department of the Interior, Washington, D.C., pg. 48. Downloaded Sept. 18, 2015, <www.nature.nps.gov/air/pubs>

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.”

Recent Air Quality Analysis

GCNRA hired a company²⁴ to conduct air pollution emissions and air quality analysis to support proposed changes to the park’s Off-road Vehicle Management Plan (Plan), which allows additional off-road vehicles on paved and unpaved roads in the recreation area. They monitored five (5) roads – three of them in Kane County: Warm Creek Road, Hole-in-the-Rock Road and Lone Rock Road (to Lone Rock Beach ORV area). They placed traffic counters at different locations for a year at a time; and they measured for particulate matter (PM₁₀ and PM_{2.5}), carbon monoxide (CO), hydrocarbon (HC) and nitrogen oxides (NO_x). Paved road fugitive dust emissions factored in for Lone Rock Road since it is the only road that is (partially) paved.

Results showed relatively minor impacts on air quality; the “analysis indicates that the proposed additional vehicle activity (conventional and OHV) in the park would not result in any emissions levels that would be harmful to public health or the environment.”²⁵ Most off-road driving in Glen Canyon involves driving and parking rather than sight-seeing so air quality is not as impacted. Even as windy as the southwest can be, road dust plays a minor role in visibility impairment. Monitoring and mitigation will continue; data shows that Glen Canyon visitation has increased over the last year by 30-40%.²⁶ If increased use manifests as changes to air quality, the park service will initiate closures or use limitations.

Kane County Policy:

- Kane County insists that if any changes occur to the air quality in the recreation area that requires limiting use or closures the Glen Canyon NRA will coordinate with the county; together the agencies will initiate mitigation measures to reduce or eliminate the impact causing the increase.
- Kane County insists that the National Park Service (e.g. Glen Canyon NRA) coordinate with the county for any management plan that is created for the NRA unit, including all intermediate processes - planning through implementation.

Land Use:

Glen Canyon NRA is primarily a park unit that provides for outdoor recreational use but also has authorized land use for grazing, mining, hunting, trapping and fishing. Approximately 13% of the NRA is inundated by Lake Powell; the remaining 87% is upland deserts with deep canyons, dry washes, and steep cliffs. The lake is considered at “full pool” at 3,700 feet.²⁷ Elevations vary from 3,600 feet at low lake levels to over 7,500 feet above sea level.

²⁴ Air Resource Specialists, Inc., “Technical Support Document Glen Canyon National Recreation Area Air Quality Analysis for Park Planning”; December, 2014

²⁵ Glen Canyon National Recreation Area Off road Vehicle Management Plan/Final Environmental Impact Statement; National Park Service, U.S. Dept. of the Interior; January 2017.

²⁶ Verbal report from Pam Rice, Assistant Superintendent of External Affairs, Glen Canyon National Recreation Area, National Park Service, on April 11, 2017 during Kane County Resource Development meeting..

²⁷ “Full pool” was established by the Army Corps of Engineers for jurisdiction over permitting purposes.

Glen Canyon NRA is managed through four zones:

- Recreation and Resource Utilization Zone (557,890 acres; 45% of GCNRA) – This includes the surface area of Lake Powell and approximately half the shoreline.
- Development Zone (19,270 acres; less than 2%) – For facilities maintenance this includes permanent structures that support recreational use. The Development Zone contains the complexes at Glen Canyon Dam, Wahweap Marina and the Visitor Center; it also includes developments at Halls Crossing, Bullfrog, Antelope Point, Dangling Rope, Hite, Llewellyn Gulch, and Hans Flat. Hole-in-the-Rock Road is also in this zone.
- Cultural Zone (25 acres; less than 1%) – Managed for the preservation of cultural, historic, and archeological resources. This area is located primarily along Wilson Mesa and the Escalante River.
- Natural Zone (668,670 acres; 54%) – Relatively undisturbed areas that are isolated and remote; it contains the most outstanding scenic resources in GCNRA. Most of the Natural Zone is proposed as wilderness area. As lake levels have declined, the Natural Zone increases in acreage.

Agricultural Use

According to the “Soil Survey of Glen Canyon Recreation Area”²⁸ there is no *prime farmland* in the NRA. Prime Farmland is defined by the U.S. Dept. of Agriculture as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is available for these uses. It could be cultivated land, pastureland, forestland or other land, but not urban, built-up land or water areas.²⁹

There are nine general soil types that occur in the Glen Canyon NRA that support a variety of vegetation. The nine soil types are not listed here, but the Survey divides the general types by precipitation zone:

1. Soils within the 6-10 inch precipitation zone – 58% of the area
2. Soils within the 10-14 inch precipitation zone – 29% of the area
3. Soils within the 14-18 inch precipitation zone – less than 1% of the area

The soil types are broken down even further, with slope percentages added, but that level of detail is not covered here. The important thing is what will grow in each of the zones. “Plants have a significant influence on soil properties. Plants intercept precipitation, reduce soil erosion, and trap sediments.”³⁰ Decaying plants produce organic matter, roots increase porosity of the soil for better drainage, and they help cycle nutrients. Topography, climate and time also affect soil

²⁸ United States Department of Agriculture, Natural Resources Conservation Service. 2010. Soil survey of Glen Canyon National Recreation Area, Arizona and Utah.

²⁹ Ibid. pgs. 202 4, Use and Management of the Soil.

³⁰ United States Department of Agriculture, Natural Resources Conservation Service. 2010. Soil survey of Glen Canyon National Recreation Area, Arizona and Utah. Pg. 252, Classification of soils Living Organisms.

formation, however, “Wind and water ...have been and continue to be the dominant shaping forces in this region...”³¹

Enabling legislation does not allow for development in the NRA unless it is for support facilities (e.g. Visitor Centers, rest rooms, marinas, etc.), however the Soil Survey broke down what soil types were best suited for single family dwellings, small commercial buildings, landscape, lawn care, septic tanks, sewage ponds, gravel for roads, topsoil, (sources for reclamation material), trails, picnicking, bike riding and ORV use. It also listed the vegetation/plant life that grow in different soil types. “The general soil map can be used to compare the suitability of large areas for general land uses.”³²

Soils in the 6-10 inch precipitation zone, which covers over half of the Glen Canyon NRA, have dominant vegetation of sand sagebrush, blackbrush, shadscale, and Mat saltbush. The ecological site association includes sandstone rockland, talus slope, sandy loam, shallow sandy loam, very steep stony loam and shallow clay. Soils within the 10-14 inch precipitation zone predominantly support Utah Juniper, pinyon, blackbrush, and fourwing saltbush. The ecological site association includes shallow sand, very steep stony loam, shallow sandy loam, sandy loam and sand. The area of highest precipitation mostly supports pinyon/juniper.

Over 850 species of vascular plants have been identified in Glen Canyon; that includes over 30 Colorado Plateau endemic plant species (ten of which are considered rare by Utah and Arizona, and three that are federally listed).³³ Most of the land below 5,000 feet elevation is considered shrub- and grasslands; areas above 5,000 feet are considered woodlands.

Soil scientists indicate the natural erosive conditions throughout the Glen Canyon NRA make it unique. There are a number of factors that cause extreme erosion.³⁴ The Colorado Plateau has been rising for 5 million years at a rate of 0.22 millimeters a year (for a total of 1,100 meters). Gravitational force and water flow created steeper slopes which increased the overland water flow promoting erosion. Most of the area is dominated by sand, which is non-cohesive. The predominant soils provide a weak substrate for plants to get established. Climate makes the area vulnerable to erosion; Freeze-thaw conditions and violent monsoonal storms wash out large quantities of sand (along with plants and shrubs).

This combination created very shallow soils in Glen Canyon; and thus, structural geology created the landforms (i.e. benches, mesas, talus slopes and rock monoliths). Even though the majority of the area receives more rainfall than most deserts, the shallow soils cannot hold the water. The Soil Survey has charts that estimate the *maximum* average rate of soil erosion per year per soil type. However, they state: “Soil conditions are predictable over long periods of time, but they are not predictable from year to year.”³⁵

³¹ Glen Canyon National Recreation Area Off road Vehicle Management Plan, Final Environmental Impact Statement; National Park Service, Dept. of the Interior. January 2017.

³² United States Department of Agriculture, Natural Resources Conservation Service. 2010. Soil survey of Glen Canyon National Recreation Area, Arizona and Utah. Pg. 15

³³ Glen Canyon National Recreation Area Off road Vehicle Management Plan, Final Environmental Impact Statement; National Park Service, Dept. of the Interior. January 2017.

³⁴ Ibid. pgs. 260 263

³⁵ Ibid. pg. 14

Cultural, Historical, Archeological & Paleontological

Glen Canyon divides cultural resources into five types: archeological, historic/prehistoric, cultural landscapes, ethnographic, and museum collections. More than 2,500 cultural resource sites have been recorded in the Glen Canyon NRA, and that only accounts for about 2% of the area. The majority of the sites are from prehistoric times; the most attention has been given to Bullfrog, Halls Crossing and Hite because they are accessible shoreline areas.

Over 1,900 of the sites are classified as prehistoric Native American. Included are the sites that have significant ethnographic resources from several indigenous peoples (i.e. Navajo, Paiute, Ute, ancestral Puebloan, Archaic and Paleoindian-associated with Zuni and Hopi tribes). If the sites are important to the histories and on-going traditions of groups, they are also included.

Historic sites total 129, which include ferry/ford sites, areas associated with Latter Day Saints settlement, mining, Native American camps, structures and remains of protohistoric people. Seven archeological sites are on the National Register: Charles H. Spencer (paddle wheel steamboat), Davis Gulch Pictograph Panel, Defiance House, Hole-in-the-Rock, Hole-in-the-Rock Trail, Lees Ferry Historic District, and Lonely Dell Ranch Historic District. More have been recommended for the register but action has not been taken on them. There are over 1,000 unevaluated sites, and they were inventoried prior to the construction of Glen Canyon Dam.³⁶

There are four historic properties that are eligible for the National Register of Historic Places: Rainbow Bridge, the Colorado River (and what is now Lake Powell), an archeological site near Lakeshore Drive access road, and a site associated with Halls Crossing access road.³⁷ According to the Glen Canyon NRA Off-road Vehicle Management Plan there are no *documented* cultural landscapes in the area, but Glen Canyon recognizes the corridor that extends to the destination Hole-in-the-Rock as an undocumented cultural landscape and is pursuing funding to have it documented. (A site can have more than one of the five designations.)

Archeological sites are structured by elevation into three zones: lowlands (below 4,500 ft.); midlands (4,500-5,500 ft.); and highlands (above 5,500 ft.). As expected the lowlands have the most sites because of access to water, diverse vegetation and longer growing seasons. Surveys on site density indicate approx. 44% were in the lowland areas, 29% in midlands and 27% in the highlands.³⁸

It has been determined that “All sedimentary rock formations in the Glen Canyon NRA have the potential for fossil discovery.”³⁹ To date, Glen Canyon has a near complete record of the geologic formations that contain fossils. Surveyors have inventoried marine invertebrates, bones and bone fragments, tetrapod tracks, dinosaur tracks, petrified wood, coal, bivalves (molluscs), hair, dung, plant matter, pollen and spores. Protection of fossil resources has been important

³⁶ Ibid. pg. 178 180

³⁷ Ibid.

³⁸ Ibid.

³⁹ Glen Canyon National Recreation Area Off road Vehicle Management Plan, Final Environmental Impact Statement; National Park Service, Dept. of the Interior. January 2017.

because of unauthorized collection (especially the petrified wood). Fossil resources are protected by the Paleontological Protection Act of 2009 as well as other laws and regulations.⁴⁰

Fossils and tracks indicate the presence of publicly revered favorites such as armored dinosaurs, Stegosaurus, Brachiosaurus, a possible brontosaur, types of crocodilians, sharks, amphibians and reptile fossils. There are three published track sites in the Glen Canyon NRA, but only one is in Kane County (at Hite Boat ramp).

Forest & Fire Management

According to the Glen Canyon General Management Plan the “utilization of the region’s commercially valuable forests, covering 10 to 15 percent of the area, constitutes the third most prevalent use of the land.”⁴¹ However, in Kane County, the predominant woodland species in the Glen Canyon NRA is pinyon-juniper, which doesn’t have commercial value. The National Park Service (NPS) indicates that Glen Canyon falls within four “life zones”⁴² that are divided by elevation. The four are: Warm Desert (1,000-3,000 ft.); Semi-Desert Grassland/Shrub Steppe (3,000-5,000 ft.); Pinyon-juniper Woodland (5,000-7,000 ft.); and Ponderosa Pine Forest (7,000-9,000 ft.). Although elevations within the park extend to the Ponderosa Pine Forest level, “excessive aridity prohibits the establishment of ponderosa pine within the park.”⁴³

There is also cottonwood, willow and tamarisk groves near flowing water, but pinyon/juniper is the dominant woodland species; so much so, that there are areas where the P/J is between 400 and 600 years old (Navajo Point).⁴⁴ There are occasional stands of Douglas Fir in shaded alcoves but they are not commercially viable.

A study was conducted between May 2003 and May 2004 to determine historical fire regimes and *natural disturbance* to extrapolate information to predict and/or estimate the potential behavior and severity of fires within Glen Canyon. The study area included approximately 4,500 acres at Navajo Point, which is on the southern-most tip of the Kaiparowits Plateau within the Glen Canyon NRA. Scientists defined three stand types: old growth (300-600 years old and showing no evidence of past fire); mature (less than 300 years old with no evidence of past fire); and post-fire (between 100 and 200 years old, characterized by charred snags).⁴⁵

They concluded that over 50% of the P/J stands had a fire rotation of 600+ years because the old growth trees showed no evidence of fire scarring (P/J covered most of the acreage). Conversely, less than 50% of the study area had burned within the last 300 years.⁴⁶ According to the scientists Glen Canyon has had only three small fires since 1988 and a large one in 2000. These fires did

⁴⁰ Ibid. pgs 204 5.

⁴¹ Glen Canyon National Recreation Area General Management Plan.

⁴² Glen Canyon National Recreation Area, Inventory & Monitoring, Network Parks, Southern Colorado Plateau Network; National Park Service. <https://science.nature.nps.gov/im/units/scpn/parks/glca.cfm> Downloaded April 19, 2017.

⁴³ Ibid.

⁴⁴ Floyd, M.L., Rommer, W.H., Hanna, D.D., Winterowd, M., Hanna, D., and Spence, J., “Fire History of Pinon Juniper Woodlands on Navajo Point, Glen Canyon National Recreation Area” *Natural Areas Journal* 28:26 36. 2008.

⁴⁵ Ibid.

⁴⁶ Ibid.

not burn through the patches of (nearby) old trees. In areas where fires had burned, sagebrush and other shrubs now dominate with an occasional pinyon or juniper sapling.⁴⁷

The analysis determined the historical fire regime (pre-1900) was dominated by infrequent but high severity fires; low severity/frequent widespread surface fires “were insignificant in shaping stand structure or driving stand dynamics.”⁴⁸ They speculate that “it is possible that a more extensive area would have burned after 1900 had not intensive grazing removed fine fuels, thereby reducing the potential for spreading fire.”⁴⁹

In the areas where there are patchy mosaics of different stand types, there is a concern that cheatgrass (*Bromus tectorum* L.) will expand and significantly shorten the centuries-long fire cycle. It is considered the greatest threat because it can easily burn and spread amongst the stands. However, cheatgrass hasn’t dramatically altered the surface conditions, yet; but the situation could change quickly in future years. Fire ignitions from lightning strikes were not a main concern, because they tended to spread only during conditions of drought and high wind.

The study also indicated the abundance of old growth trees were not a result of 20th century fire exclusion; fires were already infrequent prior to this era. It appears that fire behavior today is not different from historical conditions. However, scientists suspect the fuel ladders were more abundant before 1900 than today, because livestock have removed the native grasses and forbs that would easily burn.

Riparian/Wetlands

There are two types of riparian areas in the Glen Canyon NRA: one has permanent water or a shallow water table; and one associated with ephemeral or intermittent streams. The dominant vegetation in the first area is coyote willow, seep willow and arrowweed, with understory that has horsetail, wiregrass, and /or species of bulrush. Along ephemeral or intermittent streams the dominant vegetation is Apache plume, cliffrose, and species of rabbitbrush. The understory is typical of vegetation found in upland areas.

Several riparian shrubland areas have been invaded by Tamarisk, Russian olive, Ravenna grass, camelthorn and Russian knapweed. In the upland areas the principal woodland community is pinyon-juniper, but there is a variety of shrubs that include big sagebrush, Utah serviceberry, mountain mahogany, blackbrush, singleleaf ash, and roundleaf buffaloberry. There are also dense stand of old-growth pinyon/juniper at Navajo Point (tip of Kaiparowits Plateau).

Wilderness

Almost half of GCNRA acreage (47%) is considered suitable for wilderness designation under the National Wilderness Preservation System. An additional 4% that contains oil and gas leases will be proposed wilderness when the leases expire. The proposed wilderness areas are mostly within the Natural Zone (see *Land Use and Glen Canyon Management Zones*) covering

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ Ibid.

approximately 86%. This percentage will increase or decrease with the elevation of Lake Powell because the boundary coincides with the level of the lake. (i.e. Antelope Island ceases to be an island if Lake Powell drops below 3,620 ft. therefore, the boundary changes to the top of the south side of the channel between the island and Castle Rock.)⁵⁰

Law Enforcement

Glen Canyon NRA law enforcement is regulated under USC 16 (Conservation) § 1a–6. *Law enforcement personnel within National Park System*. The specific items that most affect Kane County are:

“The Secretary of the Interior is hereby authorized to: (2) cooperate, within the National Park System, with any State or political subdivision thereof in the enforcement of supervision of the laws or ordinances of that State or subdivision;” and

(e) Federal investigative jurisdiction and State civil and criminal jurisdiction not preempted within National Park System.

“Nothing contained in this Act shall be construed or applied to limit or restrict the investigative jurisdiction of any Federal law enforcement agency other than the National Park Service, and nothing shall be construed or applied to affect any right of a State or a political subdivision thereof to exercise civil and criminal jurisdiction within the National Park System.” and

§ 1a–7b. *Protecting Americans from violent crime.*

(b) Protecting the right of individuals to bear arms in units of the National Park System and the National Wildlife Refuge System:

“The Secretary of the Interior shall not promulgate or enforce any regulation that prohibits an individual from possessing a firearm including an assembled or functional firearm in any unit of the National Park System or the National Wildlife Refuge System if (1) the individual is not otherwise prohibited by law from possessing the firearm; and (2) the possession of the firearm is in compliance with the law of the State in which the unit of the National Park System or the National Wildlife Refuge System is located.”

Kane County Policy:

- All federal agencies need to recognize the authority of the Kane County Sheriff as the Chief Law Enforcement Officer in the County. Federal employees engaged in law enforcement activities need to work under the direction of the County Sheriff. Federal agencies need to execute an agreement with the County Sheriff and be deputized prior to exercising general police powers. Federal agencies need to work cooperatively with the County Sheriff in all law enforcement activities. Federal law enforcement activities need to be discontinued, and agencies need to execute appropriate agreements with the Kane County Sheriff to fulfill law enforcement functions.

⁵⁰ Glen Canyon National Recreation Area Proposed General Management Plan

Mineral, Mining & 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."⁵¹ 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 were 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.⁵² However, any such claims and/or leases have been closed out.

Industrial rock and minerals are varied in the Glen Canyon Region. According to Utah Geological Survey⁵³ there is evidence of gypsum and limestone 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."⁵⁴

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."⁵⁵ Uranium is also associated with copper and silver and occurs in a variety of settings.⁵⁶

Oil was discovered at Bennett's Seep in 1921,⁵⁷ 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."⁵⁸ The Upper

⁵¹ 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. Pg. 15

⁵² Kane County, Utah Mines, <[http://www.usmining.com/Utah/kane county](http://www.usmining.com/Utah/kane%20county)> July 8, 2015.

⁵³ 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, (Metallic and Industrial Minerals), pg. 18-19.

⁵⁴ 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. 138.

⁵⁵ 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.

⁵⁶ Ibid. pg. 20

⁵⁷ Ibid. pg. 22

⁵⁸ Ibid, pg. 24.

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 or collectable in the national recreation area.

Noxious Weed Control

There are 64 known non-native species in the Glen Canyon NRA and while most of them are harmless several have the potential to become invasive or noxious.⁵⁹ Only three of them are on Utah's State Noxious Weed List: *Lepidium latifolium*-known as pepperweed, pepperwort or peppergrass; *convolvulus arvensis*-a species of morning glory; and *Cynodon dactylon*-known as Bermuda grass, dog's tooth, Bahama grass, and devil's grass.

Glen Canyon NRA's policy is to control undesirable plant species as necessary and to prevent the introduction of non-native vegetation and noxious weeds. They have several measures that are initiated during construction or any ground disturbing activities to minimize the possibility of weed seed contaminants.

Because the Glen Canyon NRA area covers more than one state the National Park Service complies with treating any state-listed noxious weed within NRA boundaries.

Recreation & Tourism

Visitors to the National Recreation Area in Glen Canyon come mainly for Lake Powell with its water-based activities and backcountry recreation offerings that include boating, swimming, camping, hiking fishing and off-road vehicle riding. According to data collected in the report "*An Analysis of a Transfer of Federal Lands to the State of Utah*," this NRA attracted an average of 2 million visitors per year between 2003 and 2013.⁶⁰ However, what state they entered from – either Utah or Arizona – determined how much money visitors actually contributed to the local economy.

On average, Utah receives only 18.1 percent (355,563) of the 2 million visitors per year because most enter through Arizona, not Utah.⁶¹ The National Park Service visitor use statistics showed Arizona averaged 1.6 million visitors (81.9 percent) during this period. Most of visitor spending occurs between people's homes and the NRA destination, which translates to the majority of money being spent in Arizona. Wahweap and Lee's Ferry (Arizona districts) averaged 1,425,420 and 194,011 visitors respectively, compared to Utah's districts of Bullfrog (199,306) Hite (75,076) Halls Crossing (67,826) and Escalante (13,354).⁶² "A nationwide study of national

⁵⁹ Hill, M.E., Ayers, T., and Palumbo, J.; "Vascular Plant Inventory of Glen Canyon National Recreation Area"; National Park Service; Technical Report, 2009/264.

⁶⁰ "An Analysis of a Transfer of Federal Lands to the State of Utah" Appendix A Glen Canyon National Recreation Area Operations, pgs. 656 662, Prepared by: Bureau of Economic and Business Research, University of Utah, Utah State University Department of Applied Economics, and Weber State University Department of Economics, November, 2014. Note: The total average of visitors between 2003 and 2013 was 1,974,994. The figure was rounded to 2 million for convenience.

⁶¹ Ibid., pg 656 57; Source: National Park Service, Park Visitor Use Statistics.

⁶² Ibid., pg. 657, Table A.2.

parks, monuments and recreation areas estimated average spending in Glen Canyon NRA and surrounding areas to be \$56 per visitor in 2012.”⁶³ However, it is believed that amount is lower ‘per visitor’ in Utah because there aren’t as many choices for lodging, boat rentals, and restaurants as there are in Arizona.⁶⁴

Kane County asserts that tourism dollars cannot replace agricultural revenue. Both are essential to Kane County’s economic survival, health, safety and welfare of its citizens. Kane County also believes recreation and agriculture are compatible uses of its resources.

Wild & Scenic Rivers

There are no *official* wild and scenic river designations in the Glen Canyon NRA, but it has been proposed that several sections of the Escalante River be included in the National Wild and Scenic River System from its source to Lake Powell. The only river in Utah that currently has a wild and scenic river designation is the Virgin River.

Transportation & Land Access

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 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.⁶⁵ Kane County disagrees with that assessment because there are conventional vehicles that have modified exhaust systems which make them louder than the factory-installed exhaust systems.

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.

⁶³ Ibid., pg 656; Study by Thomas, Huber and Koontz, 2014

⁶⁴ Ibid.

⁶⁵ 36 CFR 2.12, “Audio Disturbance,” prohibits the operation of motorized vehicles on lands administered by NPS that create noise in excess of 60 A weighted decibels (dBA) at a distance of 50 feet from the source or, if below that noise level, noise which is unreasonable.

It is Kane County's policy that all county roads and park service 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.

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."⁶⁶

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) administers 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 Secretaries 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 Act⁶⁷ (CWA) and the Safe Drinking Water Act⁶⁸ (SDWA). The CWA is the cornerstone of surface water quality protection in the U.S. It was created in 1948 under the Federal Water

⁶⁶ Water Encyclopedia, Science and Issues, Legislation, State and Local Water, <[www.waterencyclopedia.com/La Mi/Legislation State and local Water.html](http://www.waterencyclopedia.com/La-Mi/Legislation%20State%20and%20local%20Water.html)>

⁶⁷ Cornerstone of surface water quality protection in the United States originally called the Federal Water Pollution Control Act of 1948; amended in 1972. <<http://www2.epa.gov/laws-regulations/summary-clean-water-act>>

⁶⁸ 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. <<http://www2.epa.gov/laws-regulations/summary-safe-drinking-water-act>>

Pollution Act, and amended in 1972 to become the CWA.⁶⁹ 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.

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 Rule⁷⁰) 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; and the availability and location of these waters has always been a key component of livestock management.

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.⁷¹ In Utah, "...more than 85% of irrigated acreage in the basin is in pasture or forage."⁷² Utah experienced the greatest increase (25%) of all the basin states for irrigated acreage over the last decade.⁷³ 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 (along with the loss of AUMs in other areas) would result in millions of dollars of loss to Kane and Garfield counties, and would have a trickle effect to several other industries.

⁶⁹ Water Encyclopedia, Legislation, Federal Water, <[www.waterencyclopedia.com/La Mi/Legislation Federal Water.html](http://www.waterencyclopedia.com/La%20Mi/Legislation%20Federal%20Water.html)>

⁷⁰ 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>

⁷¹ 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, pgs. 32, 56; <www.pacinst.org/reports/co_river_ag.2013>

⁷² Ibid, pg. 56

⁷³ Ibid. pg. 56

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 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."⁷⁴

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 amount⁷⁵ (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.)⁷⁶ As of July 1, 2015, Lake Mead's elevation was 1075.08 feet.⁷⁷ Because of the compactual allotments that have been secured since 1922 (and 1948) and interim guidelines that run through 2025⁷⁸ Utah's portion of the Colorado River allotment will remain the same.

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

⁷⁴ 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>

⁷⁵ 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.

⁷⁶ 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.

⁷⁷ Bureau of Reclamation: Lower Colorado Region, Lake Mead at Hoover Dam, Elevation (Feet), <www.usbr.gov/lc/region/g4000/hourly/mead_elv.html>

⁷⁸ Bureau of Reclamation, Record of Decision Interim Guidelines for the operation of Lake Powell and Lake Mead, (November, 2007). as referenced in "The Lake Powell Pipeline" by Robert Winsor, pg 10, retrieved July 30, 2015.

regional water source.⁷⁹ 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, and Wingate aquifers. (An additional aquifer, the Entrada, is located within the San Rafael group.) 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”⁸⁰ 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 slow⁸¹) via small seeps and springs. Because the area is so arid, potential evaporation usually exceeds precipitation.

In the Glen Canyon Region, there are over 100 known seeps and springs (some are named, some aren't). Wiregrass Spring, Dewey Seep, Fifty Mile Spring, Soda Spring and Sooner Water are a few of the known named ones; the others 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.”⁸² (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 (Site I.D. 370006111300401).

Ditches & Canals

Glen Canyon Dam is the structure that creates the reservoir of Lake Powell which is used for a myriad of purposes. The water is piped downriver through a controlled flow for irrigation, recreation, and culinary use. It is diverted a number of times through a sophisticated system of canals to serve millions of users in the upper and lower Colorado River Basin. The main purpose of the dam is for flood control.

Lake Powell Pipeline

The Utah Department of Water Resources is working in coordination with local, state, and federal agencies to develop a 139-mile pipeline from Lake Powell to Sand Hollow reservoir in

⁷⁹ “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, pgs. 1 2

⁸⁰ Ibid, pgs. 1 2

⁸¹ Less than 10 gallons per minute. Ibid. pg. 29

⁸² Utah Water Science Center, Active Groundwater Level Network, Groundwater Help Page, Groundwater Watch Overview, <ut.water.usgs.gov>

Washington County, Utah. 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 signed by President Clinton in 1998 (Public Law 105-355) 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 appropriation⁸³ 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 user⁸⁴ 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."⁸⁵

It has been made clear in the Colorado River Basin Water Supply and Demand Study⁸⁶ 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 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."⁸⁷

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.

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

⁸⁴ "The Future of Prior Appropriation in the New West" by Dan Tarlock, (Professor of Law); Natural Resources Journal, Vol. 41, pgs. 769 793. 2000.

⁸⁵ Sect. C. of The Future of Prior Appropriation: Real or Shadow Doctrine.

⁸⁶ U.S. Dept. of the Interior, Bureau of Reclamation, "Colorado River Basin Water Supply and Demand Study", published December 2012. <<http://www.usbr.gov/lc/region/programs/crbstudy.html>>

⁸⁷ Ibid.

The 69-inch buried pipeline is designed to draw 86,249 acre feet of water from Lake Powell, distribute 4,000 acre feet to Kanab City, and the balance to Washington County.⁸⁸

Floodplains & River Terraces

Floodplain management is governed by Executive Order 11988 (FEMA) and 11990 (Protection of Wetlands). The areas of concern are popular backcountry trails, mouths of canyons, locations for facilities or where people congregate. Flash floods are a major concern in the summer and fall because of intense thunderstorms that produce high amounts of rain within short periods of time. Flood hazards in Antelope Canyon, the Warm Creek/Smokey Mountain area, in tributary canyons and in Dark Canyon are considered high.

Floodplain management for the four major tributary rivers that flow into the Colorado River is defined by FEMA's 100-year and 500-year rain event. They are the Escalante, Dirty Devil, San Juan and Paria Rivers. The Dirty Devil and San Juan Rivers are not in Kane County; the Escalante River passes through the northeastern corner of the county to reach Lake Powell and the Paria River empties into the Colorado River at Lee's Ferry in Arizona.

Wildlife & Management

There is a variety of wildlife to manage and protect in the Glen Canyon NRA – both on land and in the water. The multiple activities in the area have the potential to adversely affect wildlife and habitat. The fluctuating levels of Lake Powell have also affected native wildlife habitat. According to NPS staff, unauthorized off-road use is harsher on wildlife and habitat than special use permits like hunting, fishing and grazing. Military over flights appear to have an adverse effect, too, depending on duration and elevation of flights.

The four management zones that have been developed for the NRA have been successful at protecting wildlife habitats, especially in the Natural Zone (which covers over 54% of the area). Glen Canyon has also initiated several management plans aimed at protecting and conserving wildlife and habitat along the shoreline, and within the major activity areas.

Glen Canyon supports a diverse range of vertebrate animals including mammals, fish, reptiles, amphibians, and birds. Small mammals are more common than large ones – bats, rodents, desert cottontail, black-tailed jackrabbit, squirrels and chipmunks are some examples. But there are larger ones such as mule deer, pronghorn antelope, bighorn sheep, and individual elk and bison that wander over from surrounding public lands.⁸⁹

Lizards and snakes are common to the NRA; rattlesnakes are the only venomous ones found in Glen Canyon. There are several frog types that have been documented as well. The most abundant species in Glen Canyon are birds – there are 315 native and 9 non-native species

⁸⁸ Washington County Water Conservancy District, Lake Powell Pipeline, www.wcwcd.org/projects/lake_powell_pipeline April 22, 2017.

⁸⁹ Glen Canyon National Recreation Area Off road Vehicle Management Plan, Final Environmental Impact Statement; National Park Service, Dept. of the Interior. January 2017.

documented in and around the area. The large number is attributed to aquatic and migratory birds that have colonized on or near Lake Powell.

Fisheries

Glen Canyon features community fisheries as well as actual fisheries. Lake Powell is the premier warm water community fishery in the Glen Canyon NRA. Other areas considered “Blue Ribbon” fisheries include Dangling Rope (near Bullfrog between buoys 40 and 43) and is only accessible by water; Halls Crossing, which is 95 miles upstream from Glen Canyon Dam; Bullfrog Marina-across from Hall’s crossing and accessible from both water and land. The only fisheries program that is active in the Glen Canyon NRA is below Lee’s Ferry where Rainbow trout have become abundant since the completion of the Dam.

Grazing & Livestock

According to the Glen Canyon General Management Plan, “grazing is the most *widespread use* of the NRA’s land base, regardless of ownership.”⁹⁰ [emphasis added] 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.⁹¹ 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.

In 1999, the NPS developed a ‘Grazing Management Plan’ designed to manage threats and encourage sound grazing practices to “minimize or avoid impacts to area resources.”⁹² Implementation of the plan has resulted in the reduction of Animal Unit Months (AUMs) within the Glen Canyon area in part due to the restrictions placed on ranching operation and the failure of the agency to implement necessary range improvements. The National Park Service believes that “AUMs and numbers of livestock fluctuated by allotment as a result of economic changes and drought.”⁹³ The County does not dispute this claim but believes that grazing AUMs could increase despite economic and natural conditions, if appropriate range improvements were implemented. Any amendment to the grazing plan should contain these types of options. It is Kane County’s position to utilize all of the allotments and mitigate any conflicts that may arise. The Bureau of Land Management issues all grazing permits for the Glen Canyon NRA.

Predator Control

Predators in the Glen Canyon NRA include coyote, bobcat and mountain lion as well as gray, red and kit foxes. There are smaller predators such as raccoons, ringtail cats, badgers, weasels, and skunks. There is not enough information at this time to determine whether populations of these predators are a problem in the NRA.

There are a number of non-native fish species that are considered predator fish that have changed the dynamics of the Colorado River in the Glen Canyon NRA. With the creation of Glen Canyon

⁹⁰ Glen Canyon National Recreation Area General Management Plan;

⁹¹ Grazing – Glen Canyon National Recreation Area, U.S. National Park Service; <<http://nps.gov/glca/learn/nature/grazing.htm>>

⁹² Grazing – Glen Canyon National Recreation Area, U.S. National Park Service; <<http://nps.gov/glca/learn/nature/grazing.htm>>

⁹³ Ibid, pg 3.

Dam, rainbow trout began to grow in numbers at the mouth of Lee's Ferry outnumbering other species. The Dam also extirpated the Humpback chub (*see Threatened, Endangered & Sensitive Species*) because it could no longer go upstream. There are efforts to reclaim the Humpback chub, the Bonytail chub, and the Razorback sucker, which were lost after the Glen Canyon Dam was completed.

Aquatic Invasive Species: quagga mussel – as early as 2016 thousands of adult quagga mussels had invaded Lake Powell. They have been found attached to canyon walls, the Glen Canyon Dam, boats, underwater structures, and at both Bullfrog and Halls Crossing Marinas. Eradication is difficult; has an Aquatic Invasive Species program that is focusing on containing the spread from Lake Powell to other bodies of water.⁹⁴

Threatened, Endangered & Sensitive Species

The special status species in the Glen Canyon NRA are those listed by the U.S. Fish and Wildlife Service as endangered, threatened, or candidate species. They are listed by the state of Utah as a sensitive species, or by Glen Canyon as a species of concern (indicating they are rare).

Birds:

The **Brown pelican** is a Glen Canyon species of concern although it is considered a rare local transient, meaning there are only three known records when it was sighted within the Glen Canyon NRA: one below the Dam in 1992; one on Lake Powell ½ mile above the Dam in 1987; and six in Hall's Creek Bay in 1994. Although the U.S. Fish & Wildlife Service removed it from the endangered and threatened listing in 2009, it remains protected under the Migratory Bird Treaty Act.

The **Mexican spotted owl** is listed as a threatened species and all the known observations are within Utah. They prefer the canyons of the NRA with some type of water source. "In Glen Canyon, the Mexican spotted owl is a rare permanent resident found in canyons containing deeply fissured cliffs."⁹⁵ In 2004, designated critical habitat was established that included areas within Glen Canyon along the Escalante River corridor.

The **Gold eagle** is a Glen Canyon species of concern which is considered an uncommon, permanent resident that is found throughout the NRA. There have been up to 25 individual birds documented around Lake Powell since 1990. They occasionally forage over the Lone Rock Beach Play area, too. Primary threats to the Golden eagle are habitat alteration and loss, although they have been known to be intolerant of noise and human-related disturbances. It is protected under the Bald and Golden Eagle Protection Act.

The **Burrowing owl** is a state of Utah species of concern; it is also protected under the Migratory Bird Treaty Act. Although it is considered uncommon in Glen Canyon, it is confirmed as a summer resident and inhabits desert scrub such as blackbrush, shadscale and sagebrush. The

⁹⁴ Mussel Frequently Asked Questions, Quagga Mussel Update, Glen Canyon National Recreation Area, National Park Service. www.nps.gov/glca/learn/nature/mussel_frequently_asked_questions.htm Downloaded April 21, 2017.

⁹⁵ Glen Canyon National Recreation Area Off road Vehicle Management Plan, Final Environmental Impact Statement; National Park Service, Dept. of the Interior. January 2017.

greatest threat to this bird is habitat destruction and degradation caused mostly by land development and agricultural activity.

The **Pinyon jay** is a Glen Canyon species of concern, but it is common to the P/J forests of Utah. It is a common and widespread permanent resident in the P/J woodlands of Glen Canyon; in Kane County it is found on the summit of the Kaiparowits Plateau and the southwest rim. The primary threats in the NRA are loss and degradation of habitat.

The **Bald eagle** is a state species of concern and is a common and widespread winter resident along the Lake Powell shoreline, preferring the open bays of Wahweap, Warm Creek, Halls Creek and Bullfrog Bay. The highest documented count in Glen Canyon was 50. The species was delisted from threatened in 2007, but it is still classified as Critically Imperiled S1 by the Utah Natural Heritage Program. It is also protected under the Bald and Golden Eagle Protection Act, the Migratory Bird Protection Act and Utah State Code.

The **Long-billed curlew** is a state species of concern; in Glen Canyon it is an uncommon, restricted migrant and is found along Lake Powell's shoreline and at sewage treatment settling ponds. It has been documented in Warm Creek Bay and Wahweap. The primary threats to this bird includes the loss of breeding habitat and habitat modification.

The **American white pelican** is a state species of concern and is considered an uncommon restricted migrant on Lake Powell. Groups as large as 300 have been documented in Glen Canyon.⁹⁶ But they have been sparse in places like Bullfrog (one), Wahweap (one), Antelope Island (eight), and Wahweap/Page Sewage Treatment Plant. They are disturbed by close passing motor boats.

The **Gray vireo** is a Glen Canyon species of concern. It breeds on arid slopes dominated by mature pinyon/juniper. It is an uncommon, widespread summer resident with the majority found along Fifty Mile Bench at the base of the Kaiparowits Plateau. The biggest threat to the species is habitat loss.

The **Great blue heron** is a Glen Canyon species of concern. Although it is considered the most commonly encountered heron in Utah, it is classified as an uncommon widespread migrant and winter resident on Lake Powell. It is also a resident on the Colorado and San Juan Rivers from July through March and less common the remainder of the year. It has been documented in four areas of Glen Canyon: Lee's Ferry, upper Hall's Creek Bay, at the base of Glen Canyon Dam, and along the Colorado River on a ledge (RM-13.0). The biggest threats to these birds are habitat loss, climate change and increasing predator populations.

Fish:

The **Boneytail chub** has not been found in the wild (outside fish hatcheries since the 1980s).⁹⁷ The last record of capture from Lake Powell was prior to 1990.⁹⁸ Once again, the decline of this

⁹⁶ Glen Canyon National Recreation Area Off road Vehicle Management Plan, Final Environmental Impact Statement; National Park Service, Dept. of the Interior. January 2017.

⁹⁷ Ibid. pg. 10.

⁹⁸ Ibid. pg. 10.

fish is the result of “fundamental ecological changes that have followed the damming of major rivers and tributaries in the Colorado River drainage.”⁹⁹

The **Colorado pikeminnow**’s situation changed with the creation of dams along the Colorado River. It is mostly restricted to the upper Colorado River Basin, although the Utah Dept. of Natural Resources published evidence of the fish on Lake Powell at the mouth of the San Juan River in its ‘Vertebrate Information’ report.¹⁰⁰ There is no report of the Colorado pikeminnow in the Glen Canyon (NRA) Region or in Kane County at this time.

The **Humpback chub** is not found in any of the waters within the Glen Canyon (NRA) Region or within Kane County. Even though the species is listed as endangered, populations of humpback chub are found in eight reaches of the Colorado River basin in western Colorado, Utah, and Grand Canyon. The largest of these populations is in Grand Canyon National Park. In fact, the confluence of the Colorado and Little Colorado Rivers in Grand Canyon supports the largest of the six remaining populations of humpback chub in the world.¹⁰¹

There were records of humpback chub in Lake Powell before 1988 when the water wasn’t so cold, “the numerous threats to extant populations are derived primarily from the fundamental ecological changes that have followed the damming of major rivers and tributaries in the Colorado River drainage. Changes in sediment deposition, flow, and water temperature caused by dams have resulted in loss and alteration of aquatic habitats and have favored non-native competitors and predators.”¹⁰²

The **Razorback sucker** was historically found throughout the Colorado River Basin of Wyoming, Colorado, Utah, Nevada, Arizona, and New Mexico. Most wild fish are now found in Lake Mohave, which represents the largest population within the lower basin. A few adults have been found in Lake Mead and Lake Havasu. In the upper basin, they can be found in unimpounded waters of the Green, Yampa, and main-stem of the Colorado River.¹⁰³ Before the damming of the Colorado River, the species was one, large group, but the damming of the tributaries broke them up into several smaller groups and a few didn’t survive. There is no evidence of this fish in Lake Powell or in Kane County.

Mammals:

The **Desert Bighorn Sheep** are a Glen Canyon species of concern because it supports one of the last relict desert bighorn sheep herds in Utah. The most critical areas for the sheep are the Red, White, and Gypsum Canyon areas that branch off the northeastern portion of Lake Powell, and the Waterpocket fold east of the Escalante River.

The **Kit Fox** is a state of Utah species of concern; it is a specialized species that is adapted to desert and semi-arid areas of the west. In Utah, it likes the cold desert regions below 5,500 ft. in sparsely vegetated habitats like shadscale, greasewood and sagebrush.

⁹⁹ Ibid.

¹⁰⁰ Ibid.

¹⁰¹ www.nps.gov/grca/learn/nature/fish_humpback_chub.htm Downloaded April 11, 2016

¹⁰² “Vertebrate Information” W.R. Bosworth, Publication No. 03 45, Compiled by the Utah Natural Heritage Program, State of Utah, Department of Natural Resources, Division of Wildlife Resources, pgs. 7 9, 2003.

¹⁰³ www.fws.gov/southwest/SJRIP/GB_FS.cfm Downloaded April 11, 2016

Plants

Paria spurge is a species of state concern. It is endemic to several counties on the Colorado Plateau and grows in desert shrubland and grassland communities between 3,800 and 4,800 ft. elevation. It can also be found on dark clay hills, blow sand and stabilized dunes. Potential threats to this species include mineral exploration and ground disturbing activities like road construction.

Cataract gilia is another plant that is a species of state concern and is uncommon in Glen Canyon. It is found in clayish soil and known from only three locations: mainly on the Tropic, Carmel and Straight Cliffs Formations near roads. It grows in shadscale and other mixed desert shrub communities especially in wash bottoms and at the base of ledges.

Tropic goldeneye is a species of state concern and is also considered rare in Glen Canyon. It is endemic to Kane County and restricted to the Tropic Shale Formations. The preferred habitat is saltbush on gumbo clay knolls at elevations of 4,593 to 4,823 ft.

Howell's phacelia is another species of state concern and is endemic to the Colorado Plateau. It is found in four southern Utah counties as well as northern Arizona; it is restricted to clay and basalt hills inhabiting salt and warm desert shrub, and pinyon/juniper communities. Threats include industrial development and other changes in land use.

Nipple phacelia is a species of state concern and is endemic to the Tropic Shale and Kaiparowits Formations east of Big Water. It is considered occasional and widely spread in desert shrublands in Glen Canyon. Primary threats are industrial development and off-road vehicles.

Tompkins phacelia is a Glen Canyon species of concern and is endemic to Utah. It is considered a rare annual forb and is restricted to the Tropic and Straight Cliff Shale Formations. Most of the known locations for this species are in eastern Kane County.

Reptiles

Glossy snake is a Glen Canyon species of concern found in both Arizona and Utah. It is found at elevations along the Colorado River to 6,000 ft. It prefers desert shrubland, semi-desert grassland and Colorado Plateau grassland. It is nocturnal and spends most of its time burrowing underground; however, it tends to favor open roads and trails.

The **Common chuckwalla** is a state of Utah species of concern. It is the second largest lizard in the United States and the largest one found in Glen Canyon (males can reach up to 18-inches).¹⁰⁴ It was historically found along the Colorado River as far as Hite, but the creation of Lake Powell reduced its area of habitat. An additional threat to the species is excessive collection by people.

¹⁰⁴ Glen Canyon National Recreation Area Off road Vehicle Management Plan, Final Environmental Impact Statement; National Park Service, Dept. of the Interior. January 2017.

Region #2 – Grand Staircase Region

Statement of Intent:

Kane County supports multiple-use management of the monument and will coordinate with the various agencies to maintain appropriate balance among all users and uses. The county defines multiple-use as the consumptive and non-consumptive uses historically and traditionally allowed to occur on federal and state lands within the county. These uses include, but are not limited to: livestock grazing, hunting, fishing, mining, mineral exploration and extraction, recreation, wildlife habitat management, telecommunications, water resource use, protection and development of timber/woodland products, utility corridors, county transportation, and circulation roads and corridors.

Introduction:

The Grand Staircase Escalante National Monument is an immense expanse of sedimentary rock layers that climb like a staircase out of the Grand Canyon (in Arizona) through the middle of Kane County into Garfield County on the Colorado Plateau. The name was coined by geologist, Clarence Dutton, in the 1870s when he “conceptualized this region as a huge stairway...with the cliff of each layer forming giant steps.”¹⁰⁵ It was divided into five steps from the youngest (top) rocks to the oldest, by color: pink cliffs, grey cliffs, white cliffs, Vermillion cliffs, and Chocolate cliffs.

This area of Utah has been a part of the public land base since the late 1800s when the boundary lines were drawn for private ownership and open range grazing. It was first under the Department of the Interior when it began its geological survey of the western territories.¹⁰⁶ When the Bureau of Land Management was formed in 1946 after merging the General Land Office and Grazing Service, this public range fell under the jurisdiction of the BLM.¹⁰⁷

As a Monument the Grand Staircase-Escalante National Monument was created on September 18, 1996 by Presidential Proclamation 6920.¹⁰⁸ It encompasses 1.9 million acres of land that traverses Kane and Garfield Counties. The majority of the Monument (68%) lies in Kane County, which accounts for almost half of the county’s acreage (49%).¹⁰⁹ On the east it abuts the Glen Canyon National Recreation Area; on the west it just over-runs Johnson Canyon Road. To the north, the Monument runs through Garfield County (above the town of Boulder), and to the

¹⁰⁵ Clarence E. Dutton, geologist, assigned special duty by J.W. Powell in 1875 to survey the Rocky Mountain Region, then continued to work for the U.S. Geological Survey. He worked with Powell and others to establish some of the basic principles of structural geology. [www.encyclopedia.com/topic/Clarence Edward Dutton.aspx](http://www.encyclopedia.com/topic/Clarence_Edward_Dutton.aspx) and [https://en.wikipedia.org/wiki/Grand Staircase Escalante National Monument](https://en.wikipedia.org/wiki/Grand_Staircase_Escalante_National_Monument)

¹⁰⁶ U.S. Department of the interior, History, www.doi.gov/whowere/history downloaded 3/15/16

¹⁰⁷ Ibid.

¹⁰⁸ Proclamation 6920 Establishment of the Grand Staircase Escalante National Monument, September 18, 1996, by the President of the United States, William J. Clinton. www.gpo.gov/fedsys/pkg/WCPD_1996_09_23/Pg1788.pdf Downloaded December 1, 2015.

¹⁰⁹ H. Doelling, R. Blackett, A. Hamblin, J.D. Powell, and G. Pollock, “Geology of Grand Staircase Escalante National Monument, Utah,” pg. 1, *Geology of Utah’s Parks and Monuments*, 2000 Utah Geological Association Publication 28, D.A. Sprinkel, T.C. Chidsey Jr., and P.B. Anderson, editors.

south, certain sections run adjacent to the Utah/Arizona border, interrupted by segments of State Institutional Trust Lands (SITLA).

Geographically, the Monument is divided into three broad sections: (from west to east) the Grand Staircase section, the Kaiparowits Basin section, and the Escalante (Canyon) section [the northern part of the Kaiparowits section and most of the Escalante section is in Garfield County]. According to studies, “The Grand Staircase section is a broad feature that encompasses the western third of the monument and consists of a series of topographic benches and cliffs that, as its name implies, step progressively up in elevation from south to north.”¹¹⁰ The Kaiparowits section is mostly made up of the Kaiparowits Plateau, which “is a series of plateaus, buttes and mesas...about 1,650 square miles in the central part of the monument.”¹¹¹ The southern portion of the plateau crosses over into the Glen Canyon National Recreation Area. The plateau’s eastern boundary is the Escalante (Canyon) section, and “provides a web of multi-hued, steep, narrow canyons and slickrock, sculpted in the drainage basin of the Escalante River.”¹¹² The change in elevation can be extreme, and there are very few transportation routes through these areas.

Enabling Legislation & Management

The Monument is managed by the U.S. Dept. of Interior through the Bureau of Land Management (BLM). It is subject to a combination of federal and state laws as well as county land use ordinances, via the Federal Land Policy Management Act (FLPMA), National Environmental Policy Act (NEPA), Taylor Grazing Act (TGA), National Historic Preservation Act, Utah Code 63J-4-401, Utah Rangeland Health Standards and Guidelines, Monument Management Plan(s), and Kane County Land Use Ordinances (specifically, Title 9, Chapter 27, Escalante Region Multiple Use/Multiple Functions Grazing Zone) and this Resource Management Plan.

The Monument contains a large amount of Kane County’s natural resources from grazable pasture to mineral reserves. But as a Monument the uses are restricted, which has stifled economic growth throughout the county. Federal land management practices have eroded the ability to make a living through cattle ranching without regard for history, culture and economics. Large swathes of coal reserves in the Kaiparowits Plateau (the center section of the Monument) are untouchable because monument designation literally took it off the market. Kane County supports multiple-use/sustained-yield management¹¹³ of the monument and will coordinate with the various agencies to maintain appropriate balance among all users and uses.

As stated in Section One of this Resource Management Plan, the federal government controls most of the land within the county. Viable and effective use of this (and private lands) is totally dependent upon how federal and state lands are managed. Kane County asserts that Proclamation 6920 protects livestock grazing on the Monument by stating, *“Nothing in this proclamation shall be deemed to affect existing permits or leases for, or levels of, livestock grazing on*

¹¹⁰ Ibid. pg.3

¹¹¹ Ibid. pg.4

¹¹² Ibid. pg.4

¹¹³ Utah Code, 63J 4 401(6)(a)(i) and (ii), asserts “the citizens of the state are best served by applying multiple use and sustained yield principles in public land use planning and management and multiple use and sustained yield management means that federal agencies should develop and implement management plans and make other resource use decisions...”

Federal lands within the monument; existing grazing uses shall continue to be governed by applicable laws and regulations other than this proclamation.” And that “The establishment of this monument is subject to valid existing rights.”

Prior to monument designation, the Taylor Grazing Act¹¹⁴ (TGA) established grazing rights for ranchers through a permit process. Although grazing fees do not convey any “...right, title, interest, or estate in or to the lands” (§315b) federal courts have interpreted the TGA preamble to “(1) provide for the most beneficial use possible of the public range in the interest of ranchers themselves but also the public at large¹¹⁵; (2) “... to define their **grazing rights** (*emphasis added*) and to protect those rights, by regulation, against interference¹¹⁶; and (3) to stabilize the livestock industry dependent upon the [grazing] public range”¹¹⁷ There is evidence that Congress intended for “public domain grazing patterns and forage use quantities [AUMs] to be recognized as grazing use (usufructuary) rights subject to Fifth Amendment protection from takings.”¹¹⁸

Kane County asserts that citizens who hold grazing permits on the Monument (and elsewhere) have an inchoate, contingent right that federal courts have recognized (see above). “...rights under the Taylor Grazing Act do not fall within the conventional category of vested rights in property. Yet, whether they be called rights, privileges, or bare licenses, or by whatever name, while they exist they are something of real value to the possessors and something which have their source in an enactment of the Congress.”¹¹⁹ “...the power of a court of equity may be invoked to protect such right, even if the operator does not own...”¹²⁰ the property.

Kane County asserts “Federal agencies that administer land within the Escalante Region Grazing Zone [aka Monument] shall coordinate with Kane County to develop, amend, and implement land and resource management plans and implement management decisions that are consistent with the purposes, goals, policies, and provisions described...to the maximum extent allowed under federal law.”¹²¹ Kane County maintains that according to FLPMA, NEPA, TGA, and NFMA, “...their implementing regulations and policies contain reciprocal requirements concerning cooperation, consultation and coordination by federal agencies with state and local governments and such cooperation needs to be fully implemented by Kane County and the relevant federal agencies.”¹²²

Kane County is working with the BLM in a coordinated fashion to maintain best practices for the Monument. Kane County promotes responsible management, enhancement, and development of existing and future livestock grazing and other resources. Accountable planning provides protection for the resources that established the customs, culture, economic foundation, and

¹¹⁴ Taylor Grazing Act, Title 43, Chapter, §315 316. Established June 28, 1934

¹¹⁵ Red Canyon Sheep Co. v. Ickes, 1938, U.S Court of Appeals for D.C.

¹¹⁶ United States v. Archabal, 1940 District Court, Nevada

¹¹⁷ Ibid.

¹¹⁸ Frederick Obermiller, Professor of Ag & Resource Economics, Oregon State University, Corvallis, OR. “Did congress intend to recognize grazing rights?” Rangelands 18(5), October 1996.

¹¹⁹ Red Canyon Sheep Co. et.al v. Ickes, May 27, 1938, Secretary of the Interior, United States Court of Appeals for the District of Columbia, 315.

¹²⁰ Goldfield Consol. Mines Co. v. Goldfield M.U. No. 220, 159 F. at page 512, C.C.D. Nev. 1908 Downloaded from <digital.library.unt.edu/ark:/67531> April 26, 2016

¹²¹ Kane County Land Use Ordinance, Title 9, Chapter 27, (9 27A 3 (H).

¹²² Ibid. 9 27A 3(I).

values of the county. This includes the responsible development of abundant deposits of energy and mineral resources such as oil, natural gas, oil shale, oil sands, coal, gold, uranium, and copper, which are compatible with grazing activities in the region.

Coordinated Resource Management Plans

Many ranches in the Grand Staircase-Escalante National Monument (GSENM) are comprised of several land ownerships or lease arrangements. For example, they may contain privately owned or leased land, BLM permits, forest permits, and/or State leases. Management decisions made for one type of land-ownership arrangement has consequences for the remainder of the ranch unit. Therefore, coordinated management plans that consider the entire ranch unit are preferable to piecemeal decisions. There are also entities other than land owners who may have legitimate interests in the management planning effort. For example, county governments have a stake in roads, public safety, tax revenues, and overall economic welfare of the county. State game and fish agencies have authority over wildlife management on all categories of land ownership. Conservation districts and other agencies such as Natural Resource Conservation Service may also be involved. Coordinated plans that are agreed upon by all interested parties help to avoid future conflicts and unintended consequences. Therefore, the county supports the development of coordinated resource management plans for the Monument.

Air Quality

Utah is responsible for regulating air quality in the region where the Grand Staircase is located and it has adopted the National Ambient Air Quality Standards (NAAQS) implemented by the Environmental Protection Agency. 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).

The closest monitoring station is in Hurricane, Utah approximately 75 miles west of the Staircase. Other than the Navajo Steam Station outside of Page, Arizona to the east, there is no immediate industry pollution that would directly affect the Monument's air quality. Indirectly, there is smog from Los Angeles, and Las Vegas, and ozone pollution from China and other countries around the world that have been suspected of affecting air quality.

Wildfire has the potential to affect air quality on the Monument should one start and burn out of control, but there is no record of any recent ones. There is a haze generated from the Burning Hills and Smoky Mountain area on the Kaiparowits Plateau where coal is burning (or smoldering) underground. This is in part of a Wilderness Study Area in the Canyonlands sections of the Colorado Plateau physiographic province. Geologists say it's likely been burning for eons and was started either by a lightning strike¹²³ or by spontaneous combustion.¹²⁴ There are large fissures in the ground that feed oxygen to this fire and can be seen (gaseous fumes) on especially cold days.

¹²³ Holland, James, BLM geologist; "Fires may have been burning for eons in southern Utah" by John Hollenhorst. Posted May 4, 2014. KSL.com

¹²⁴ Robinson, Marshall, "GeoSights Smoky Mountain, Kane County", Utah Geological Survey, Survey Notes, Volume 48, Number 1, January 2016.

There are numerous coal seams on the Kaiparowits Plateau – the area is on the Straight Cliffs Formation – and long fissures or ground cracks run parallel to the cliff’s edge. This makes it all the easier for oxygen to reach the fire so scientists believe it is unlikely it will snuff out on its own.¹²⁵ The U.S. Bureau of Mines tried to extinguish the fire on Smoky Mountain two separate times. They used water and fire retardant, but it didn’t work; they also tried excavators to fill the holes with rocks and dirt, but it did not smother the fire. “Utah has had eleven uncontrolled coal seam fires concentrated in Kane, Emery, and Carbon Counties. Between 1956 and 1976, the U.S. Bureau of Mines attempted to smother eight of Utah’s active coal seam fires...”¹²⁶ They were only successful at extinguishing the Zion Fire located between Mt. Carmel Junction and the east entrance of Zion National Park. The rest remain actively burning fires.

Land Use

Adaptive Management¹²⁷

The GSENM Management Plan (1999)¹²⁸ established that one of the basic precepts of the Monument includes the “unparalleled opportunity” to research “increasing our understanding of the interactions between humans and their environment; improving land management practices; and achieving a properly functioning, healthy and biologically diverse landscape.” This management plan also describes the adaptive management approach to be used in managing the Monument. The approach involves a four-step process of planning, implementation, monitoring and evaluation. These are sound concepts and provide a good basis for achieving the objectives for which the Grand Staircase-Escalante National Monument was established while continuing the historic uses of the Monument protected by the Proclamation.

Unfortunately, the management plan had to list the numerous blanket restrictions (WSAs) on land use and management practices that may or may not provide a basis for achieving management objectives in the most environmentally effective and economic way. Restrictions of use of machinery, aerial application of herbicides, cutting of fence posts, seeding of non-native species, vehicle access to range improvements, etc. should be considered on a case by case basis rather than imposed as general rules.

Land management based on the concepts from the 1999 Management Plan should allow land managers to consider which combination of practices could be applied to achieve specific objectives on a particular piece of land. This approach would allow the costs and benefits (both ecological and economic) of various practices to be considered for specific situations, and would encourage experimentation and innovation. This is the basis for the adaptive management approach to vegetation and resource management.

¹²⁵ Ibid.

¹²⁶ Ibid.

¹²⁷ Grazing Management Guidelines contributed by Lamar Smith, Ph.D., Associate Professor Emeritus, University of Arizona, 2014, Certified Professional in Rangeland Management.

¹²⁸ Grand Staircase Escalante National Monument Management Plan; U.S. Department of the Interior, Bureau of Land Management, effective February 2000.

Trend Monitoring

Monitoring of range trends (changes in soil and vegetation) is essential in the adaptive management process. Changes in plant species (frequency, density, composition, production, etc) or soil surface conditions (litter, bare ground, gravel cover, etc) can provide an indication of how the range is responding to management and/or weather conditions. Monitoring methods must provide data that is repeatable and objective in order to establish valid sampling. Monitoring is usually done on key areas or designated monitoring areas, which are indicative of trends over a larger area. This helps eliminate observer bias or sampling errors.

On the Monument, BLM has used two different techniques for monitoring. The first is the use of trend plots, which are 3x3 or 5x5 foot frames placed in selected locations and marked with angle iron so they can be relocated. Cover (percent of ground covered) and density (number of plants per unit area) was determined in these plots. In some cases, a line intercept transect was also run starting from the square plot. Close-up and general view photographs were also made. These plots were generally established in the 1960s and have been re-measured and/or re-photographed several times since then. Some of them have been re-photographed fairly recently.

Trend plots furnish quantitative data on species cover and density in the plots. However, the size of the plots is inadequate to provide a good representation of changes in plant community at the location. To get a reliable estimate of changes in the plant community would require a number of these plots at each location. Therefore, the data from the plots is not very useful.

Photographs provide a better basis for analyzing trends than plot data. Close-up photos may provide some information about soil surface conditions, at least in the plot. General view photos show the general aspect of the vegetation in the vicinity of the plot. While these photos do not provide quantitative data on species composition or cover, they may furnish a basis for evaluating changes in the plant community such as increase in shrub cover. They can also help determine when major changes in the plant community occurred.

Photos provide a qualitative historical record of vegetation at selected locations on all or most of the allotments on the Monument. They should be re-photographed periodically and any changes that can be noted documented. Changes should be interpreted considering the ecological site on which the plots are located. *Quantitative recording of vegetation information in the 3x3 foot or 5x5 foot plots should be discontinued.*

BLM has recently (in the last 10-15 years) changed its trend monitoring procedures to use frequency and point estimates of ground cover. This method provides quantitative data that can be used to determine changes over time. Frequency is the percentage of a sample of quadrats of a certain size in which a plant species occurs. The frequency of a plant species is related both to the number and distribution of plants of that species. Frequency is related to the size of quadrat used, thus the same quadrat size must be used in repeated sampling. Usually 100-200 quadrats are used at each sample location. Ground cover is measured by recording "hits" on plant bases, litter, rock and/or gravel, and, in some cases, biological crusts. Usually 400-500 points are recorded at each location. The frequency transects may be located at the same place as the trend plots or in new locations as required.

Frequency does not provide information on species composition on a weight or cover basis, or about plant production. If such information is required, additional measurements must be used. The value of frequency is that it requires little training, provides repeatable data, and requires less field time compared to methods that require more training and expertise.

The use of frequency and ground cover (along with photographs) should be continued to monitor key areas on grazing allotments at intervals of 3-5 years. Permittees and other interested parties should be invited to participate in gathering and interpreting the data. Frequency (or other monitoring data) can only be used to establish whether a change has occurred or not; it cannot establish the cause of observed changes. Identifying the probable cause of observed changes (or lack of change) is an integral part of the evaluation portion of the adaptive management process. Without this it is not possible to make informed decisions about what changes in management, if any, are indicated.

Kane County Policy:

- Kane County insists that quantitative recording of vegetation information in 3x3- and 5x5-foot plots (for trend monitoring) be discontinued, and replaced with photographs (both general and close-up).

Assessment of Rangeland Health and Proper Functioning Condition

The 1996 Range Reform regulations adopted by BLM required that all grazing allotments be evaluated according to “*Standards and Guidelines for Rangeland Health*” (S&Gs). *Standards* are attributes of the rangeland; *Guidelines* are management practices to be applied. The BLM of Utah developed S&Gs for the State with cooperation from the Utah Resource Advisory Council (RAC).

There are four Utah Standards which can be summarized as follows:

- Standard 1 – Upland soil productivity and protection is maintained by adequate vegetation and surface cover.
- Standard 2 – Riparian areas (if any) are in proper functioning condition (PFC).
- Standard 3 – Desirable composition and structure of vegetation for the site are present.
- Standard 4 – Utah standards of water quality are met.

Regulations require that each of the standards be evaluated, with due consideration of ecological site potential, to establish whether standards are being met, or if significant progress toward meeting the standard is being achieved. If the standard is not met, or if significant progress is not being made toward meeting it, then the cause must be determined. If the cause is determined to be current livestock grazing management, then a change in grazing must be made to correct the problem, (i.e. improved distribution, change in season of use, change in stocking rate, etc.).

Assessment of these standards is not monitoring; it does not involve measuring change over time and it is not intended to be used for monitoring. It is a *one-point-in-time* qualitative conclusion based on professional judgment and site-specific reference materials. The assessment of both upland rangeland health and riparian PFC should only be done by locally experienced

professionals, preferably by an interdisciplinary team, and it should be based on documented reference materials specific to the ecological sites or riparian types under consideration.

Assessing whether the standard is met is the first step. Determining whether there is progress toward meeting the standard cannot be necessarily identified at one point in time. This determination should be based on an examination of trend data as described above. If such data are lacking or inconclusive, then monitoring should be initiated or continued to establish the trend. Identifying the cause for failure to meet the standard or to make progress toward meeting it also involves judgment and consideration of other data or evidence. Examples would be analysis of precipitation data, comparison with similar situations in other areas, and local knowledge of the area.

Standards 1 and 3 are generally evaluated on uplands with the aid of a check sheet and reference sheets specific to each ecological site. This process is described in the Rangeland Health Technical Reference 1734-6 and BLM Manual 4180 and Handbook 4180-1. Standard 2 is evaluated in a similar fashion with PFC check sheets and instructions for either lotic (flowing water) or lentic (ponds or springs) situations as described in Interagency Technical References 1737-15 and 1737-16.

Standard 4 is different in several respects from the other three. First, it is use-based, where the other three standards relate to ecosystem function irrespective of uses. The State of Utah establishes water quality standards for designated uses (drinking water, full body contact, cold water fisheries, livestock water, etc). These do not have any necessary relation to the health of the upland watershed or the hydrology of the riparian system. Second, the chemical, biological, or sediment content of the water may be related to the natural sources of the water, rather than to land uses. For example, the kind of rock or soil through which the water passes may affect the presence of dissolved minerals or suspended sediments in the water. Without some baseline information on specific streams achievable, water quality cannot be determined. Third, water quality may vary significantly in time and space. For example, the concentration of minerals, biological organisms and sediment may vary by season, within years or among years due to volume of flow.

The water quality standard was included because the federal regulations require it. Determining whether this standard is being met involves very different methods and time frames, and it is dependent on the existence of adequate baseline standards that may or may not exist specific to the water body being considered.

Finally, the assessment of range health is usually done at selected locations on an allotment. These may be representative areas or critical areas identified by the assessment team. Rarely, if ever, does it involve assessment of every acre of any allotment. Therefore, if some areas on an allotment are found to not meet standards, it should not be reported that the entire allotment does not meet standards. After all, every allotment or other area of land may have areas that do not meet standards of rangeland health, e.g. roads, campgrounds, parking lots, corrals, etc. Therefore reporting on the progress of range health evaluation should be done on the basis of the number of allotments assessed and corrective action taken, not on the number of allotments (or acres) that did or did not meet standards.

Kane County Policy:

- Kane County believes that when evaluating the progress of rangeland health that if an allotment has one area that does not meet standards it is not indicative of the entire allotment. The BLM must not report the entire allotment as not meeting standards, nor should their maps portray the same. Only the areas that do not meet standards should be identified.
- Kane County insists that reporting on the progress of range health be done on the basis of the number of allotments assessed and corrective action taken, not the amount of acres or allotments that did not meet standards.

Introduction to Microbiotic Crusts¹²⁹

Understanding the role of microbiotic crusts in resource management is an ongoing challenge. Areas in the United States where crusts are a prominent feature of the landscape include the Great Basin, Colorado Plateau, Sonoran Desert, and the lower Columbia Basin. Crusts are also found in agricultural areas, native prairies, and sandy soils in Glacier Bay, Alaska.

Outside the United States, crusts have been studied in the Antarctic, Australia, China, and Israel, among other locations. In fact, microbiotic crusts have been found on all continents and in most habitats, leaving few areas crust free.

Microbiotic crusts are formed by living organisms and their by-products, creating a surface crust of soil particles bound together by organic materials. Above ground crust thickness can reach up to 10 cm. The general appearance of the crusts in terms of color, surface topography, and surficial coverage varies. Mature crusts of the Great Basin and Colorado Plateau are usually darker than the surrounding soil. This color is due in part to the density of the organisms and to the often dark color of the cyanobacteria, lichens, and mosses. The presence or absence of a crust is partly determined by soil texture and conductivity, pH, moisture, and possibly temperature. Crust coverage varies greatly, from less than 10 percent to nearly 100 percent.

Crusts contribute to a number of functions in the environment. Because they are concentrated in the top 1-4 mm of soil, they primarily affect processes that occur at the land surface or soil-air interface. These include soil stability and erosion, atmospheric N-fixation, nutrient contributions to plants, soil plant-water relations, infiltration, seedling germination, and plant growth.

The land where crusts occur is used for a wide range of purposes from grazing and recreation to military uses, and in some places, crops. Ultimately, land managers want to know how the functions of crusts change under different practices. Where the functions of crusts are impaired or eliminated because of land use practices, and are essential to the health of the ecosystem, land managers need guidelines to adapt their practices to protect or restore the functions of crusts.

¹²⁹ Roxanna Johnston, Botanist, Grazing Lands Technology Institute, U.S. Dept. of Agriculture, Natural Resources Conservation Service, Soil Quality Institute, July, 1997.

Biological Soil Crusts: Desired Condition or Symptom of Degradation?¹³⁰
(Paraphrased report)

In recent years, there has been increasing interest and research on the role of biological soil crusts on rangelands – southern Utah is a major focus of that effort. As a result, some of the agencies have started to incorporate evaluation of biological soil crusts into management plans, environmental impact statements, and range assessments such as rangeland health. While the recent and current research has increased our knowledge of how these crusts function, most of it has been based on comparative studies, small plot experiments, or laboratory research which must be extrapolated with caution to landscape scale ecosystems. Knowledge of the function and importance of biological crusts is insufficient to incorporate them as important indicators of routine range assessments.

There is not sufficient knowledge or consensus on the role of these crusts to incorporate them as major factors in evaluating rangeland condition and trends or prescribing grazing management.

Biological soil crusts (BSC) are widely distributed around the world from the tropics to the arctic, especially in patchy or sparse rangeland vegetation. Few studies on the ecological importance of these crusts were done prior to the 1970s but there has been increasing interest and research since that time. Those who have studied BSC and many rangeland resource managers have apparently accepted that BSC serve important, even critical, roles in the functioning and “conservation” of rangelands, especially sagebrush, pinyon-juniper, and desert shrub regions of the American southwest and Great Basin.

One of the “objects” identified as needing protection in the proclamation forming the Grand Staircase-Escalante National Monument is BSC. The BLM in Utah has added BSC as an 18th factor to be evaluated relative to rangeland health. The National Park Service (NPS) considers that crusts are a good indicator of the return to “pristine” conditions which are the goal of its management. Environmental impact statements and land management plans of the BLM, Forest Service, and NPS contain analyses and projections of impacts of proposed management on crusts, and impose management restrictions designed to protect and encourage crust protection and development. BLM and U.S. Geological Survey have issued a Technical Reference on the ecology and management of crusts¹³¹ and the Natural Resource Conservation Service (NRCS) also has a document describing the importance of crusts.¹³² NRCS has also added descriptions of the potential crust cover in its ecological site descriptions.

The acceptance by federal agencies of the value and ecological importance is having a significant impact on land use and land management in the West, and this will likely intensify. Rangeland multiple-use management has known many conflicts in the past over competing land uses (e.g. grazing verses recreation or wildlife). Such conflicts can be resolved in most cases by altering

¹³⁰ Smith, Lamar, Ph.D., “Biological Soil Crusts”; Cascabel Ranch and Consulting; Associate Professor Emeritus, University of Arizona, 2014, Certified Professional in Rangeland Management.

¹³¹ Belnap, J., Rosentreter R., Leonard, /s., Kaltenecker, J.H., Williams, J. and Eldridge, D., 2001 Biological Soil crusts: ecology and management. USDI BLM Technical Reference 1730 2.

¹³² Johnston, R., 1997. Introduction to microbiotic crusts. USDA NRCS 16 p.

management practices or compromise. But today, the policy of federal agencies is aimed not at multiple-use but healthy ecosystems, and this takes priority over any use of the land.

This belief system is based on the idea that the natural system was in fact functioning properly in the absence of any disturbance by human beings since Anglo settlement and, therefore, management should be to restore those pristine conditions to the extent possible (disturbances caused by Native Americans over the past few thousand years complicate the issue). Whatever can be established as characteristic of those undisturbed ecosystems is therefore “good” and should be a standard by which “health” is evaluated. These kinds of values are not open to compromise like competing land uses – they are beyond question. Since BSC are often observed to be more extensive in areas excluded from human and livestock activity, protection of BSC will become a major limitation to any land use in the future if things continue as they are progressing.

Biological soil crusts are known as cryptogamic crusts, microphytic crusts, and by other names. “Biological soil crusts are a complex mosaic of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria. Cyanobacterial and microfungal filaments weave through the top few millimeters of soil, gluing loose particles together and forming a matrix that stabilizes and protects soil surfaces from erosive forces.... These crusts occur in all hot, cool, and cold arid and semi-arid regions.”¹³³ For simplification, mosses, lichens and algal crusts will be referred to as BSC and grasses, forbs, shrubs, and trees as “higher plants” or “vascular plants” (which means they have internal vessels to transport water and nutrients which the crustal plants lack).

Effects of Crusts in Protection of Soils

BSC tend to bind soil particles together and therefore increase the resistance of soil particles to removal by wind or water. This is the main basis for the claim that erosion is prevented or reduced by crust cover. A number of studies have shown that crusts do reduce the risk of wind erosion. Areas where crusts were experimentally destroyed had higher rates of soil movement and lower thresholds of wind speed to initiate soil movement than where crust was intact. The studies were conducted in the field using portable wind tunnels. These results seem reasonable. Whether this is important in terms of actual soil loss or redistribution on a larger scale has apparently not been established.

The evidence is more complicated with respect to sheet erosion due to water runoff. Several factors enter into this question. One is the presumed protection of soil particles from being picked up and transported by water running off over the soil surface, or from being transported down-slope by the action of “splash erosion” caused by raindrop impact. It seems logical that crusts would provide some protection from these two forces, especially in cases where snow or light intensity rains are experienced, i.e. where raindrop impact and runoff rates are lower (e.g. in some of the cold desert areas).

Other benefits of crusts in terms of reducing erosion rates are related to the effect of crusts on the amount and rate of runoff. The faster water moves over the soil surface the greater the erosion

¹³³ Belnap, J., Rosentreter R., Leonard, /s., Kaltenecker, J.H., Williams, J. and Eldridge, D., 2001 Biological Soil crusts: ecology and management. USDI BLM Technical Reference 1730 2.

risk – the capacity of running water to remove both amount and size of particles increases exponentially as velocity of water increases, and velocity increases with increased discharge, decreased roughness and increased slope. Therefore, crusts are thought to be beneficial because they reduce runoff by increasing the amount of water that infiltrates the soil, and by increasing surface roughness.

Crusts tend to be rough in cold deserts and flat in hot deserts, so the roughness factor would probably only be important in cold deserts. Results of tests of crusts on infiltration rate are variable, with some reporting increased infiltration, some less, and some not differing between crusted and non-crusted soils. In general, infiltration in the hot deserts seems to be inhibited by crusts and in cold deserts it is promoted. It appears the crust itself is generally regarded as reducing, not increasing, the rate of infiltration. Thus the increased infiltration found in some tests on cold deserts is due primarily to the surface roughness factor produced by crusts that hold water on the soil until it can infiltrate. Studies in hot deserts with flat crusts have usually shown that breaking up the crust improves infiltration.

If crusts inhibit infiltration, this would increase surface runoff rates and increase the hazard of sheet erosion. In this sense, water erosion differs from wind in that the amount of water running over the surface, and consequently its erosive power, tends to accumulate as it moves downhill. If crusts inhibit infiltration they will enhance this process and, even though they may reduce the ability of water to pick up sediment, eventually it can reach a velocity where the crust will be removed by running water. This process has been observed in several studies and personally observed in both Arizona and Australia.

Blanket statements about crusts protecting soil from water erosion are not warranted. They may exert some stabilizing effects on some soils in some areas, but even these are not likely to be effective under extreme rainfall events, which is when a lot of the erosion takes place anyway.

The statement that crusts are important to plant-soil-water relations has also been declared. Presumably this meant that crusts are beneficial to the supply of water available to higher plants. This could arise from two mechanisms. First, crusts could increase the amount of water entering the soil (infiltration). That topic was just addressed; the evidence is pretty clear that crusts do not improve infiltration except where the soil roughness due to crusts is well-developed.

The other mechanism is that crusts could impede the loss of soil moisture from the surface and therefore make it available to higher plants. The reasoning here, is that if crusts impede infiltration of water, they might also impede the loss of water from the soil to the air. There are several arguments against this concept:

1. Water evaporates from soil at the surface. It moves from deeper levels in the soil either as liquid (by capillary action) or as water vapor. Anything that breaks the capillary movement will prevent loss by that mechanism. This is what mulches do, and why once the upper layers of sandy soils are dry, there is relatively little loss of moisture from them. It seems doubtful that crusts would have any beneficial effect in this regard. In fact, the crustal organisms themselves absorb water from the soil and have the capacity to do so even at very low moisture content.

2. It is possible that the crust cover could prevent direct exposure of the soil surface to air movement (as does litter) and thus reduce some evaporation.
3. Another factor is that evaporation is affected by temperature and soil crusts generally tend to increase soil temperature due to their dark color, thus any possible reduction of evaporation rate is likely more than offset by the increased temperature.

Finally, studies done in the field that show increased amounts or duration of growth of higher plants associated with crusts that would be expected if, in fact, there was any significant benefit to plant-soil-water relations have not been found [by this author].

Soil crusts are also alleged to increase the nutrient status of soils and enhance the availability of nutrients to higher plants. The emphasis has usually been on nitrogen, as some of the organisms found in soil crusts can fix *atmospheric nitrogen* and release it into the soil. It is also stated that other soil nutrients, including available phosphorus and some micronutrients are consistently found to be higher in crusted soils than in those where crusts are absent. The crustal organisms *do not* create these elements, nor do they “fix” them from the atmosphere like N. The mechanism for enriching the amount or availability of mineral elements has mainly been explained by stating that the crusts tend to trap fine soil particles which have a higher cation exchange capacity and therefore are a source of nutrient ions, or, less often, that decaying crusts increase soil organic matter, which also has a capacity to absorb nutrient ions in a form available to higher plants. There have been some studies that show these nutrients can be taken up by plants growing in crusted soils, although most, if not all, have been pot studies.

The question of N fixation and importance has been the subject of much more research (and speculation) than for any other nutrient. This stems from several factors:

- Some of the organisms involved in crusts are known to have the ability to fix atmospheric N gas into an organic form, which is then converted to NH₄ (ammonium) or NO₃ (nitrate) when the organisms die and decompose.
- Arid and semi-arid soils are low in N; Additions of N to desert soils by symbiotic fixation (legumes and other plants) and by N fixing soil bacteria is not very effective. Therefore, to maintain a level of N in the soil that would not be limiting to higher plant growth might be dependent on N fixation by crusts.
- Crusts have been estimated to fix anywhere from 0 to over 100 kg/ha/yr of N. West estimated that, in Utah, they might fix an average of around 10-12 kg/ha/yr (10 kg/ha is about 9 lb/acre).

There is no question that some components of soil crusts have the capacity to fix atmospheric N. The question is whether this fixation benefits higher plants on the rangeland or is necessary to sustain the N cycle on rangelands.

There is some evidence that higher plants growing together with soil crusts have the ability to take up some of that N and increase its content in the higher plants. According to West¹³⁴ this effect has only been demonstrated in the laboratory. If it has been demonstrated in the field by

¹³⁴ West, Neil E., 1990. Structure and function of microphytic soil crusts in wildland ecosystems of arid and semiarid regions. *Advances in Ecological Research* 20:179-223.

controlled experiments since he made that statement, I have not found it. Although it is possible that N fixed by crusts benefits higher plants, it has not been demonstrated experimentally that overall production and/or composition of rangeland vegetation changes when crusts are reduced or destroyed.

Some have pointed out that, although crusts are estimated to fix significant amounts of N, the N levels in the soils remain low. This means that much of the N fixed is lost either by deep leaching or volatilization. Since deep leaching is unlikely on desert soils, the loss must be through volatilization. Some studies have shown that most of the N fixed is lost to volatilization within just a few weeks. Belnap (et al)¹³⁵ explained this anomaly by concluding N fixation occurred when plant growth was active and therefore N was available to higher plants, even though most of that not used is lost later in the year, so it does not accumulate in the soil.

I have not found any convincing evidence that N fixation by soil crusts has any significant effect on the productivity, composition, or other characteristics of rangeland plant communities, or that destruction of crusts results in long-term loss of productivity.

Effect on Seed Germination

Questions have been raised whether crusts inhibit or enhance the establishment of vascular plants. Some have maintained that well-developed crusts inhibit the establishment of higher plants by preventing the seeds from being covered enough to germinate and/or by preventing roots of germinated seeds to penetrate into the soil.¹³⁶ Others claim that, at least some kinds of seeds are facilitated by crusts. These conflicting views may result from different kinds of plant seeds and germination requirements, and also from different types of crust surfaces. For example, some seeds have hygroscopic awns that help the seed work its way into the soil and some crusts may trap seeds in cracks or other microsites that aid in their establishment. Belnap (et al)¹³⁷ states that crusts have not been found to inhibit seed emergence once seeds germinate, yet Sylla¹³⁸ did find that grass seeds planted under or on top of intact crusts did not penetrate the crust.

Belnap (et al)¹³⁹ also stated that many exotic plants do not have self-burying mechanisms and may not be able to penetrate crusts. The example given was cheatgrass. The implication is that intact crusts would prevent cheatgrass invasion. The effect of crusts on seed germination and establishment varies depending on the conditions. Some of the studies compared species composition on areas with high amounts of crust to those with less indicating that grasses were more abundant where crust cover was low and forbs more abundant where it was high. However, this does not establish a cause and effect relationship.

¹³⁵ Belnap, J., Rosentreter R., Leonard, /s., Kaltenecker, J.H., Williams, J. and Eldridge, D., 2001 Biological Soil crusts: ecology and management. USDI BLM Technical Reference 1730 2.

¹³⁶ Savory, Allan. 1988. Holistic Resource Management. Island Press.

¹³⁷ Belnap, J., Rosentreter R., Leonard, /s., Kaltenecker, J.H., Williams, J. and Eldridge, D., 2001 Biological Soil crusts: ecology and management. USDI BLM Technical Reference 1730 2.

¹³⁸ Sylla, Diaguely. 1987. Effect of microphytic crust on emergence of range grasses. M.S. These. School of Renewable Natural Resource, University of Arizona, Tucson.

¹³⁹ Belnap, J., Rosentreter R., Leonard, /s., Kaltenecker, J.H., Williams, J. and Eldridge, D., 2001 Biological Soil crusts: ecology and management. USDI BLM Technical Reference 1730 2.

BSC as an Ecological Indicator

Some maintain that BSC are good indicators of long term health of the ecosystem. *There seems to be little scientific basis for that belief* since it rests on the assumption that ecosystems represent highly co-evolved balanced systems where one or a few attributes can serve to monitor the health of the entire system. This view implies acceptance of the ecosystem-as-an-organism view underlying the “balance of nature” syndrome of many environmentalists. That doesn’t mean there is no value in monitoring crusts; but it doesn’t necessarily tell any more about the ecosystem than monitoring, for example, jackrabbit populations.

Others have done studies to determine if crust organisms can be used as indicators of certain pollutants or chemicals such as pesticides. Since they are plants it seems likely that crusts could respond to changes related to air pollution or use of chemicals. However, such use would depend on determination of direct cause and effect relationships and does not likely have any necessary relationship to overall ecosystem function.

Applying Science to Management

The science underlying some of the conclusions regarding the processes involved in biological soil crusts and their interpretation in terms of ecological sustainability and resource management, including livestock grazing, *is not sufficient to justify some of the sweeping generalizations and significant impacts to resource management being promoted.* Like many aspects of natural resources, it is difficult or impossible to conduct true controlled experiments (involving controlled treatments and replication) on large landscapes. Therefore, we often resort to small plot or lab studies which can be controlled experiments, and to comparative studies on a larger scale which are not replicated experiments.

That is true in many if not most studies of vegetation change or response to various treatments such as grazing, fire, etc., and it is true of BSC studies in relation to nutrients, soil erosion and other factors as pointed out by West.¹⁴⁰ This is why, with the advent of computers to make it possible, scientists often turn to modeling ecological processes. This is a worthwhile exercise since it helps identify where knowledge is lacking or uncertain and allows exploration of how outcomes vary when inputs are changed. But *these predictions are totally based on assumptions* derived from the same kinds of research already mentioned. Therefore, the predictions may be useful for looking at alternative management scenarios *but often have large and even unknown sources of error and bias built into them.* [emphasis added]

Monitoring and Assessment Guidelines

If BSC are to be used to evaluate range health or management actions, they must be monitored. Although Belnap (et al)¹⁴¹ described some techniques for monitoring there are some problems with [doing it] and interpreting crusts. Range managers often monitor ground cover as a basis for

¹⁴⁰ West, Neil E., 1990. Structure and function of microphytic soil crusts in wildland ecosystems of arid and semiarid regions. *Advances in Ecological Research* 20:179-223.

¹⁴¹ Belnap, J., Rosentreter R., Leonard, /s., Kaltenecker, J.H., Williams, J. and Eldridge, D., 2001 Biological Soil crusts: ecology and management. USDI BLM Technical Reference 1730-2.

interpreting trends to effect soil protection. Categories used usually include basal vegetation, litter, rock, gravel, and bare soil (bare soil being the absence of any other cover). These add to 100% ground cover. If BSC are included as a category, it would most likely be a portion of that which has been classified as bare soil (although some protocols have identified moss as a ground cover type, few have done so for other types of BSC).

Consistently identifying “hits” on vegetation and rocks is pretty straight forward. Deciding whether there is a “hit” on gravel, litter and bare soil is somewhat less so. This is partly due to the arbitrary decisions required about how much gravel or litter is needed to not call the hit bare soil. Adding BSC to this will further complicate the issue and make interpretation of trend data even more difficult. Cover is supposed to be tallied on a point, but in reality, most people cannot avoid making some conclusion about the extent of the item being measured. For example, if you hit one piece of leaf material, does that count as litter when it is clearly transient and ineffectual in protecting the soil; If not, how much areal extent and/or depth is necessary? The same problem will be encountered with BSC – how big does the patch have to be or how well developed the crust?

NRCS is developing descriptions of what the potential cover of BSC is for different ecological sites. They do this by observing crust cover in protected or undisturbed situations as they do for the species composition of vascular plants in the “historic climax plant community.” This process does not establish either the level of BSC or the species composition of the “potential community” is necessarily desirable or required to meet modern management goals and sustainable production. Yet it will be interpreted that way for “range health” determinations or range trends if current practices for higher plants are followed. Since monitoring and reference conditions will continue to be used as a basis for evaluating and supporting management decisions, the practices described above will be a problem for many land uses in the future, especially grazing.

Animal Impact and Mechanical Disturbance

Animals, human footprints, vehicles, and land treatments may break up biological soil crusts. The extent and severity of these impacts on the integrity of the crusts and the length of time required for the crusts to recover depends on the severity of the impact, the spatial distribution and the frequency of repeated impacts. For example, plowing would completely destroy crusts over all the area treated, and even bury crusts below the soil surface therefore it might take some time to recover. Plowing, however, is not usually repeated very often on rangelands.

Chaining may affect the whole area but have less impact, and would leave crust fragments on or near the surface. Animal and human treading, and off road vehicles (including machines used in brush control or seeding) would break up crusts on a portion of the area but would usually not bury the crusts. The extent of this effect would depend on the kind and amount of activity. A lightly stocked cattle range would receive less impact than a heavily stocked one. These impacts can also be affected by the soil type and moisture conditions of the areas and the season the impact occurs.

All of these physical impacts will disturb crusts to some extent, but all of them leave residual crust organisms to re-colonize the disturbed areas. The time required may vary depending on the type of organism (algae versus lichens) weather conditions, etc. When physical impact by animals or machines is heavy and frequent, e.g. along trails or roads, crusts may be completely destroyed (this can be observed even where trails of rabbit or rodent occur).

Livestock grazing has been cited as a major factor contributing to reduced biological soil crusts, and there is no question that livestock, and wildlife, disturb crusts to some degree. There is some question as to the long-term effects of such disturbance, though. Those who accept that crusts are a vital component to ecosystem processes (as described above) view any disturbance as a negative effect, while others (e.g. Allan Savory)¹⁴² claim that breaking up crusts actually benefits seedling establishment and soil moisture.

There have been some studies on how livestock grazing management might be conducted to minimize impacts to crusts. Memmott (et al)¹⁴³ studied the effects of season of grazing by cattle on crusts in Idaho where mosses were the main component of the crusts. Winter grazing had no effect on the moss component of the crusts while spring and summer grazing reduced mosses. While winter grazing had significantly less impact on the lichen component of crusts relative to spring and summer grazing, there was a 50% reduction relative to the control plots. They concluded that controlled winter grazing has minimal impact on the total cryptogamic plant cover that protects soil surfaces on cold desert range ecosystems.

Harper and Marble¹⁴⁴ reviewed literature on the effects of grazing on biological soil crusts. They cited a number of published references that document cryptogamic cover, especially algal crusts that can be maintained at reasonable stocking rates. Some references even stated that “hoof action” may improve seedling establishment by breaking up crusts, as Savory has claimed. They found that livestock impact was most pronounced during dry seasons, when the crusts were brittle, and recommended either avoiding dry season grazing or rotating to provide dry season rest.

Although these studies, and others like them, provide some insight to grazing/crust effects, they may be difficult to implement into practical grazing management. Grazing in winter and avoiding dry season grazing may benefit BSC but may not benefit livestock, wildlife, or vascular range plants. It should be recognized that BSC are only one factor to be considered in planned grazing, and it has not been established that they are very important in determining the overall effects of grazing. Anderson (et al)¹⁴⁵ compared vascular plant cover and BSC inside and outside exclosures on the Desert Experimental Range¹⁴⁶ and found that, although BSC cover was higher inside the exclosures, there was no difference in the composition or cover of vascular plants inside compared to outside the exclosures.

¹⁴² Savory, Allan. 1988. *Holistic Resource Management*. Island Press.

¹⁴³ Memmott, K.L., Anderson, V.J., and Monsen, S.B. 1998. Seasonal grazing impact on cryptogamic crusts in a cold desert ecosystem. *Journal of Range Management*, 51:547-550.

¹⁴⁴ Harper, K.T. & Marble, J.R. 1988. A role for nonvascular plants in management of arid and semiarid rangelands. *Vegetation Science Applications for Rangeland Analysis and Management*, Pp135-170. Kluwer Academic Publishers.

¹⁴⁵ Anderson, D.C., Harper, K.T., and Holmgren, R.C. 1982. Factors influencing development of cryptogamic soil crusts in Utah deserts. *Journal of Range Management*. 35:180-185.

¹⁴⁶ Located west of Milford, USDA Forest Service location.

Neil West¹⁴⁷ made a couple of observations that should give resource managers something to think about. First, he said: "My observations of the continued existence of well-developed microphytic crusts in places like Israel¹⁴⁸ that have had unrestricted livestock use for centuries flies in the face of warnings regarding their permanent loss following livestock use, at least in that region." And he also included the following statement: "Soviet and South African range ecologists regard very abundant microphytic crusts as a sign of desertification or degraded range condition. Antonova¹⁴⁹ cites instances in the central Kara Kum Desert of the USSR where: "tracts of land are now worsening as a result of understocking. This results in the emergence of a superficial crust of mosses and lichens. Where this is the case, range productivity decreases by 20-40%. Thus, desertification in the Kara Kum Desert is induced not only due to excessive influence of the anthropogenic factor but also for the lack of livestock grazing. This demands recognition of the need for uniform, moderate use of the whole area of the desert range."

Factors Causing Crust Mortality

There is one factor that is widely acknowledged to severely impact or completely eliminate BSC – fire. The degree of the impact depends on the intensity of the fire. Relatively “cool” grass fires may have only minimal effects, while fire severe enough to destroy soil organic matter will more or less completely destroy crustal organisms as well. Such areas may require exceedingly long time periods for crustal organisms to re-invade and reestablish. Belnap (et al)¹⁵⁰ pointed out that under “natural fire regimes” burning was less intense and less frequent, and often patchy, which had less effect on crust organisms and allowed more rapid re-invasion than some current fire regimes. These authors concentrated on the increased frequency of fire that resulted from exotic annual invasion. They stated that prescribed fire might be used with caution to reduce shrubs “where increased shrub cover was the result of livestock grazing” (apparently dense shrub cover is only a concern if livestock grazing is the cause) but should be used with caution in most cases because it might facilitate invasion of exotic annuals.

They failed to mention that the intense and widespread wildfires that occur in dense pinyon-juniper and sagebrush stands produce fire intensities more severe than any that occurred in “natural regimes”. Regardless of the apparent fixation of these authors on the role of livestock grazing and “exotic” species, there is one inescapable conclusion: wildfire, either in dense shrub stands or invasive annuals is a much more serious threat to BSC than livestock grazing, off road vehicles, or land treatments.

Indirect Management Effects on Crusts

In general, crusts are more abundant where vascular plants are sparse and/or patchy resulting in increased bare ground for crusts to occupy. Recognizing that soil characteristics and other site

¹⁴⁷ West, Neil E., 1990. Structure and function of microphytic soil crusts in wildland ecosystems of arid and semiarid regions. *Advances in Ecological Research* 20:179 223.

¹⁴⁸ West, N.E. 1986. Desertification or Xerification? *Nature* 321:562 563.

¹⁴⁹ Antonova, K.G. 1981. Influence of reservation management upon range productivity. In: N.T. Nechaeva (ed) *Range Ecology, Management and Productivity: Collection of Instructional Materials of the International Training Course*. Vol 2 pp291 310. UNEP/USSR Publications and Information Support Project, Moscow.

¹⁵⁰ Belnap, J., Rosentreter R., Leonard, /s., Kaltenecker, J.H., Williams, J. and Eldridge, D., 2001 *Biological Soil crusts: ecology and management*. USDI BLM Technical Reference 1730 2.

factors have an influence, BSC is generally inversely related to the cover and uniformity of vascular plants. It seems more logical that BSC cover is determined by vascular plant cover, not the determinant of it. Any practice that increases the amount and uniformity of vascular plant cover will decrease BSC, and any decrease in total cover, or increased patchiness of cover of vascular plants, which results in more bare ground, will increase the opportunity for BSC to develop.

In practical terms this means that any situation or management practice that increases plant cover, or increases the uniformity of plant cover, and decreases bare ground will decrease BSC. It is well accepted that BSC tend to decrease with increased precipitation and overall productivity of higher plants. It is also accepted that a dominance of grasses will have more uniform plant and litter cover than the same site with a dominance of woody species, which results in a patchy distribution of plant cover, litter, and bare soil. Heavy grazing tends to reduce herbaceous cover and litter, and thus provides increased opportunity for BSC. Shrub invasion reduces herbaceous cover and makes plant cover, litter and bare soil distribution more patchy, increasing the opportunity for BSC.

Drought can also reduce plant cover and litter, increasing bare ground. Given these trends, it is difficult to understand why BSC have been so widely accepted to be positively related to “range health.”

Conclusions

Does good science support the present emphasis on the importance of BSC and the need to protect and enhance them even at the expense of grazing and other land uses? The evidence does not indicate that it does. This is not to say that BSC should not be studied further to gain more understanding or that management should necessarily completely ignore their possible role. West¹⁵¹ stated: “Therefore, I agree with Smith¹⁵² that while microphytes can potentially indicate some aspects of stability, condition and their rate of recovery, we need a more complete understanding of the interactions before we incorporate them in our routine assessments. Generalities are being eagerly sought by land managers who want to know how to regard microphytes as indicators of ecosystem productivity, fragility and stability. Ecologists should avoid strongly worded pronouncements until many more results from well-designed field experiments are available”.

Kane County Policy:

- Kane County recognizes that Proclamation 6920 identified cryptobiotic (microbiotic) crusts as having “significant biological interest” but it did not identify it as an object that needed to be protected. It is an absurd notion to try to sequester a huge section of soil on the Monument when that soil is commonly found in semi-arid environments everywhere. According to the National Park Service, “Living soil crusts are found throughout the

¹⁵¹ West, Neil E., 1990. Structure and function of microphytic soil crusts in wildland ecosystems of arid and semiarid regions. *Advances in Ecological Research* 20:179-223.

¹⁵² Smith, E.L. 1986. Soil condition as a factor in assessing range condition. In: E.L. Smith et al eds. *Use of Cover, Soils and Weather Data in Rangeland Monitoring Symposium Proceedings*, Kissimmee, Florida. Society for Range Management, pp. 25-29., Denver, CO.

world from the hottest deserts to polar-regions.”¹⁵³ The U.S. Department of Agriculture and the Natural Resource Conservation Service says these crusts “have been found on all continents and in most habitats, leaving few areas crust free.” In light of the conflicting opinions regarding biological soil crusts no management decisions shall be made that limits the use of the Monument because of its effect on soil crusts.

- Proclamation 6920 refers to a “high number of endemic species” containing “an abundance of unique, isolated communities such as hanging gardens, tinajas, rock crevice, canyon bottom, and dunal pocket communities” for “many ancient plant species” and “large expanses of a variety of geologic strata” that provide the material for “unusual and diverse soils.” Kane County asserts that Proclamation 6920 laid the groundwork to study the historic, scientific, botanic, and cultural variety on the Monument, but it did not isolate every item it mentioned as an object to build a protective range management plan around. In fact, it said such diversity made the Monument an outstanding place for the purposes of study, yet nothing in the proclamation affected “existing permits or leases for, or levels of, livestock grazing on Federal lands within the monument; existing grazing uses shall continue...”

Vegetation Management

Some areas of the Monument have experienced vegetation changes over the years, especially with the invasion of sagebrush and juniper into areas that formerly supported more grasses and other herbaceous plants. These invasions have often caused near-closed canopy situations that support very little herbaceous understory. This condition creates less livestock forage and reduced wildlife habitat value, along with increased soil erosion. Whatever the causes of such changes, it is apparent that livestock grazing management alone, or complete elimination of livestock grazing, will not cause the process to be reversed or prevent it from becoming worse. If the goals for landscape diversity and health stated in the Monument Management Plan are to be achieved, some vegetation treatments and seeding(s) will be required. Such vegetation treatments will directly benefit forage for livestock and help make sustainable ranching possible, but more importantly they will benefit wildlife, soil stability, diversity of plant communities and life forms on a landscape level (and ultimately, the visual quality of the landscape). Blanket and arbitrary rules limit the effective and economical application of these treatments.

Brush treatments and reseeding should be implemented on selected sites where the potential for success is favorable. The most effective and economical treatments, such as controlled burning, should be used on a case by case basis. This includes the use of non-native species for reseeding when they offer the best chance of success. The long term benefits outweigh the (possible) short term damages. It must be recognized that in most cases these treatments will have to be maintained at intervals to prevent re-invasion of shrubs to undesirable levels.

Kane County Policy:

- Kane County insists that brush treatments be immediate and aggressive: Big sagebrush (Basin, Wyoming and Mountain Big Sagebrush) must be managed to maintain a good understory of perennial grasses and forbs with an overstory of big sagebrush and browse

¹⁵³ <<http://www.nps.gov/jotr/learn/nature/cryptocrusts.htm>>

shrubs (on appropriate sites). Invasive annuals must be eliminated or greatly reduced. Prescribed grazing and periodic brush treatments must be used to prevent the loss of perennial understory and the complete dominance of mature sagebrush.

- Desert shrub types (greasewood, blackbrush, salt desert shrub, etc.) must be managed to maintain a dominance of shrubs with a good understory of perennial grasses and forbs (depending on site potential). Invasive annuals must be eliminated or greatly reduced (and controlled).
- Sites that have the potential to support grassland, sagebrush grassland or other vegetation types more useful in terms of watershed condition(s) and resource outputs must have pinyon and juniper eliminated or reduced, unless it has been determined, on a site specific basis, that pinyon-juniper, does not jeopardize watershed condition(s) and adds to the combined resource outputs and values on the site.
- On sites where pinyon juniper occurs that does not have the potential for good perennial grass or shrub cover, or where technology is lacking to establish such cover by reasonable efforts, pinyon-juniper stands must be maintained in an open canopy state when possible to prevent catastrophic wildfire and stand replacement with invasive annuals.

Cultural, Historical, Archeological & Paleontological

There are several areas in the Grand Staircase that have been identified as having cultural, historical, archeological and paleontological significance. The BLM uses the criteria offered by the National Register of Historic Places (NRHP) to determine eligibility to be considered a historic or cultural resource. A resource must have integrity in one or some of the seven characteristics for inclusion in the NHRP: “direct or indirect alteration of the characteristics that qualify a property for inclusion in the NHRP in a manner that diminishes integrity of location, design, setting, materials, workmanship, feeling, or association” (36 CFR, Subpart 800.5[a][1]). It also must be associated with an important local, regional or national event; associated with the lives of an important person; and/or display characteristics, workmanship of a specific type, or possess high artistic value.

As of 2016, 7% of the Grand Staircase has been surveyed for cultural sites.¹⁵⁴ There will be an ongoing inventory to record cultural, historical and archeological sites across the Monument.

The paleontological sites discovered on the Grand Staircase are mostly the remains and traces of terrestrial organisms. Most of them date between 65 and 250 million years ago.¹⁵⁵ It is informally referred to as the Age of Dinosaurs, and formations in the Grand Staircase have yielded exceptional samples from this era. According to the BLM 19 formations that are either known to be or likely to be fossiliferous. A comprehensive inventory has not yet occurred; the primary factors affecting these resources are erosion and human collection (legal and illegal).

¹⁵⁴ Grand Staircase Escalante National Monument, Draft Environmental Impact Statement, November, 2016.

¹⁵⁵ Ibid.

Forest & Fire Management

The Grand Staircase is divided into two EPA level III ecoregions: the Colorado Plateau and the Arizona/New Mexico Plateau. The Colorado Plateau is characterized by pinyon/juniper and Gambel oak woodlands and the latter ecoregion is a large transitional region made up of smaller ecoregions. These ecoregions contain semiarid grasslands to the east; shrublands and woodlands to the north; and deserts to the west and south.¹⁵⁶ The BLM uses the LANDFIRE ecological modeling system to manage the existing vegetation types.

Kane County addresses the best management practices it would like to see followed for adaptive management and rangeland health in the Grazing & Livestock section later in this chapter.

Riparian/Wetlands

Kane County addresses the best management practices it would like to see followed for adaptive management and rangeland health in the Grazing & Livestock section later in this chapter.

Wilderness Study Areas or Wilderness Designation

Kane County is adamantly against any further Wilderness designation on the Monument (or elsewhere in Kane County) because it would decimate the local economy. A study done by Ryan Yonk, PhD., (et.al.) showed that ‘Wilderness’ designation is associated with lower per capita income.¹⁵⁷ They found that, “the argument often stated by the environmental community that Wilderness is good for a local economy is simply not supported by our data.”¹⁵⁸ “We find no evidence that Wilderness land designations represent an economic boon to local economies. Rather, the evidence suggests that Wilderness designations accompany worse economic outcomes.”¹⁵⁹ “...benefits and cost of Wilderness...are not evenly distributed since local communities bear a disproportionate share of the costs of Wilderness designations.”¹⁶⁰

Kane County believes current BLM policies on Wilderness and Wilderness Study Areas are in direct violation of Utah’s Wilderness Act of 1984¹⁶¹ (Act). This Act set the parameters for non-wilderness areas and stated the land “...shall be managed for multiple use in accordance with land management plans...” and “...such areas need not be managed for the purpose of protecting their suitability for wilderness designation prior to or during revision of the initial land management plan.”¹⁶² It is also in violation of the Wilderness Act of 1964¹⁶³ where livestock grazing was established in wilderness areas, and the Taylor Grazing Act, where “...grazing privileges recognized and acknowledged shall be adequately safeguarded”.

¹⁵⁶ Ibid.

¹⁵⁷ R.M.Yonk, Ph.D., Southern Utah University, Brian C. Steed, Ph.D., Utah State University, Randy T. Simmons, Ph. D. Dept. Of Economics & Finance, R. Christopher Martin, Dept. of Economics & Finance; “Boon or Bust: Wilderness Designation and Local Economics”, 2013.

¹⁵⁸ Ibid. pg.21

¹⁵⁹ Ibid. pg.23

¹⁶⁰ Ibid. pg.22

¹⁶¹ Utah Wilderness Act, Public Law 98 428, 98th Congress, September 28, 1984;

¹⁶² Ibid. Title II Release of Lands for Nonwilderness Uses, Sec. 201. (b)(3)

¹⁶³ The Wilderness Act, Public Law 88 577 (16 U.S.C. 1131 1136) 88th Congress, Second Sessions, September 3, 1964.

There are currently 16 Wilderness Study Areas (WSAs) on the Monument which total approximately 877,000 acres (almost half of the BLM administered land within the Grand Staircase). Six of these WSAs are in Kane County (approx. 490,000 acres)¹⁶⁴ and four of them straddle the Kane and Garfield County lines (approx. 184,000 acres).¹⁶⁵ The other six are in Garfield County. According to BLM Manual 6330, livestock grazing (as well as mining and mineral leasing) is a grandfathered use within the WSA's and is allowed to continue in the same manner and degree as it occurred prior to Monument designation, even if the activity impairs wilderness suitability.¹⁶⁶ Further, it is clear the BLM recognizes there are "pre-existing uses" such as livestock grazing, mining and mineral leasing and these were allowed prior to the enactment of the Federal Land Management Policy Act on October 21, 1976.

In the BLM's Manual 6330 it clearly states, other uses such as *recreational activities* [emphasis added] are not included in their grandfathered uses clause.¹⁶⁷ Therefore, the question of conflict between users should never arise. By the BLM's own admission through its policy manual, it cannot use "outstanding opportunities for solitude" or "primitive recreation, or unique and supplemental values including cultural resources or status of indigenous species that are listed or candidates for listing, as threatened..." as indicators that negatively impact a WSA should a cow appear on the horizon when sharing a stream next to a hiker.

Kane County does not believe there is a difference between a 'grandfathered use of livestock grazing within a Wilderness Study Area' and any other land mass on the Monument. A pre-existing use is a pre-existing use. Kane County has already asserted that Proclamation 6920 grandfathered livestock grazing on the Monument by stating, "Nothing in this proclamation shall be deemed to affect existing permits or leases for, or levels of, livestock grazing on Federal lands within the monument; existing grazing uses shall continue to be governed by applicable laws and regulations other than this proclamation." And that "The establishment of this monument is subject to valid existing rights." The remaining acreage on the Monument, outside the land designated as WSA's, needs to remain open for its originally intended use, which, according to Utah's history, is open range ranching and grazing.

There are 90 allotments that are wholly or partially within the Monument for a total of 1,855,600 acres. Within these allotments there are 76,957 active AUMs and Kane County is striving to activate the 29,000+ AUMs that are currently in suspended status throughout the County. (The actual number of 'cows on the ground' is closer to 40,000; the larger number [76,957] represents active permits on the books.)

Kane County's Resource Management Plan (KCRMP) documents that range livestock production is an integral part of the county's history, custom, culture, and economy. Grazing allotments included on the Monument make up a substantial part of the range resources available to ranchers. Reduction or elimination of grazing on the Monument would cripple the livestock

¹⁶⁴ Bureau of Land Management Wilderness Study Areas, <http://www.blm.gov/ut/st/en/fo/grand_staircase_escalante/national_landscape/wilderness_study_areas.html> downloaded 4/27/16

¹⁶⁵ Ibid. w/maps: www.blm.gov/style/medialib/blm/ut/grand_staircase_escalante/programs/wilderness_wsa.Par.25283.File.dat?GSENM_wsa.pdf Downloaded 4/27/16

¹⁶⁶ Bureau of Land Management Manual 6330, Management of Wilderness Study Areas, 1.6 Policy; C. Non Impairment Standard; 2(e) Grandfathered Uses.

¹⁶⁷ Ibid.

industry and have severe consequences for the people and economy of the county. Therefore, it is the position of Kane County, as documented in the KCRMP that livestock grazing continue on the Monument at levels consistent with the sustainability of the resource and the ranching industry. That includes increasing the levels of AUMs per allotment as the forage/utilization formulas support the increase.

Utah Code, 63J-4-401(6)(m)(ii)(iv) and (v) says, “the state opposes the relinquishment or retirement of grazing animal unit months [AUMs] in favor of conservation, wildlife and other uses;” “the state opposes the transfer of grazing animal unit months to wildlife for supposed reasons of rangeland health,” and “reductions in domestic livestock animal unit months must be temporary and scientifically based on rangeland conditions;” (respectively).

Further, Utah Code, 63J-4-401(6)(a)(i) and (ii), asserts “the citizens of the state are best served by applying multiple-use and sustained-yield principles in public land use planning and management;” and “multiple-use and sustained-yield management means that federal agencies should develop and implement management plans and make other resource-use decisions that:

- (A) achieve and maintain in perpetuity a high-level annual or regular periodic output of mineral and various renewable resources from public lands;
- (B) support valid existing transportation, mineral, and grazing privileges at the highest reasonably sustainable levels; (emphasis added)
- (C) support the specific plans, programs, processes, and policies of state agencies and local governments; (emphasis added)
- (D) are designed to produce and provide the desired vegetation for the watersheds, timber, food, fiber, livestock forage, and wildlife forage, and minerals that are necessary to meet present needs and future economic growth and community expansion without permanent impairment of the productivity of the land;” (emphasis added).

Law Enforcement

All federal agencies need to recognize the authority of the Kane County Sheriff as the Chief Law Enforcement Officer in the County. Federal employees engaged in law enforcement activities need to work under the direction of the County Sheriff. Federal agencies need to execute an agreement with the County Sheriff and be deputized prior to exercising general police powers. Federal agencies need to work cooperatively with the County Sheriff in all law enforcement activities. Federal law enforcement activities need to be discontinued, and agencies need to execute appropriate agreements with the Kane County Sheriff to fulfill law enforcement functions.

Minerals, Mining & Energy Resources

Minerals fall into three basic categories or commodity groups: metallic deposits, energy mineral occurrences, and industrial mineral occurrences. Since the Grand Staircase is spread out over three large geographical sections (i.e. Grand Staircase section, Kaiparowits Basin section and

Escalante Canyon section) there is a mixture of all three commodity groups. However, the fact that the minerals lie within the boundaries of a Monument make for limited accessibility.

Kaiparowits Plateau Coal

Of all the natural resources within Kane County, coal is by far the most plentiful. A report by the Utah Department of Natural Resources, Utah Geological Survey, showed 30 percent of Utah's coal resources are contained within the Kaiparowits Plateau (center of the Monument).¹⁶⁸ In that study, it said "the coal resources, by far, [were] the County's most important mineral resource".¹⁶⁹ That same group produced another report after the designation of the Monument in a paper called Circular 93 that said, "The value of the known and potential energy and mineral resources of the Grand Staircase-Escalante National Monument at today's prices [1997] is between \$223 billion and \$330 billion. This figure does not include values for tar sands, carbon dioxide reserves, or any of the other mineral deposits such as titanium, zirconium, uranium, or copper."¹⁷⁰ (Prices break out as: Coal-\$221 bln-\$312 bln; Coal-bed gas \$2 bln-\$17 bln; Petroleum \$20 mln-\$1.1 bln; Minerals \$4.5 mln-unknown.)

At the time, geologists determined there to be approximately 62 billion tons of coal in the Kaiparowits field and calculated at least 11.3 billion tons of it as recoverable. Most of the coal is too deep to be mined, but at current coal prices (between \$39.05 and \$43.20 a short ton on March 3, 2016)¹⁷¹ that figure would range between \$441.26 billion and \$488.16 billion at market prices. That would translate to billions of dollars in royalties for School Trust lands if it hadn't been traded away for \$50 million (and less productive land) after the Monument had been designated.¹⁷² Today, 99% of the coal in the Kaiparowits field is federally owned; 1% is state owned.¹⁷³

The type of coal in the Kaiparowits field falls into three categories: high volatile bituminous C, sub-bituminous A, and sub-bituminous B. Coal becomes more valuable on the market when it has a low sulfur content of 4% or less, and has a high btu (British Thermal Unit) element. The critical component is low sulfur¹⁷⁴ because low sulfur means less pollution. Sulfur content in Kaiparowits coal averages less than one percent¹⁷⁵, and the btu's (heating ability) ranges from

¹⁶⁸ 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," Utah Department of Natural Resources, Utah Geological Survey, Report of Investigation 221, April 1992

¹⁶⁹ Ibid. pg. 3

¹⁷⁰ Circular 93: "A Preliminary Assessment of Energy and Mineral Resources within the Grand Staircase Escalante National Monument," Preface. Utah Department of Natural Resources, Utah Geological Survey, January 1997.

¹⁷¹ U.S. Energy Information Administration, Coal Markets, average weekly coal commodity spot price for the Uinta Basin on 11,700 Btu, 0.8 S02 at \$39.05; and Investment Mine Coal Prices, Thermal Coal Capp Price at \$43.20; www.infomine.com/investment/metal_prices/coal.

¹⁷² The Utah Office of Energy and Resource Planning projected royalty revenues for the Utah School Trust could be around \$1.54 billion dollars over the life of mining, which was approximately 30 years. Circular 93, Utah Geological Survey, Utah Department of Natural Resources.

¹⁷³ "An Analysis of a Transfer of Federal Lands to the State of Utah," Chap. 8.1.2 pg. 378, 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.

¹⁷⁴ Per James Rasmussen, Geologist, Kanab, Utah. February, 2016

¹⁷⁵ Circular 93

10,240-16,720 btu's.¹⁷⁶ "Fewer than 50,000 short tons of coal have been mined to date, and most of the remaining resource would have to be mined using underground methods."¹⁷⁷

Between 1974 and 1976, the Bureau of Land Management did an Environmental Impact Study on a proposed 3,000 mega-watt, coal-fired, electricity-generating station that would have required a new town, a new highway and federal lands to be transferred to state ownership.¹⁷⁸ The Final EIS was based on four underground mines, a 500 kilovolt transmission system with a supporting communication network that would span four states (approx. 1,460 miles) to market the power to Arizona and California. Coal leases and water delivery contracts already existed with the Dept. of the Interior. This project was called the Kaiparowits Power Project and was proposed by Southern California Edison Power Company in 1964. The BLM conducted an impact study because Edison did not break ground on the project before the National Environmental Policy Act (NEPA) was enacted in 1969. The project would have been grandfathered in had any part of the construction started prior to NEPA's enactment since Utah had already approved the project.

When public comment was solicited, strong opposition was received from many environmental groups who tried fervently to influence the BLM against the project. "The EIS indicated strong reliance on the opinions of non-governmental sources in the final assessment of the project."¹⁷⁹ "A total of sixty-six non-governmental (NGO) organizations provided input to the EIS. Of those, fifty-seven could be considered environmentalist groups."¹⁸⁰

In the Final EIS, the BLM had estimated the total population increase from the Kaiparowits Power Project would be 14,000 people, of which, 9,000 would be absorbed by Kane County. Most of the employment would be for the coal mine operation (over 2,500), but initially, statistics showed over 2,000 jobs just for the generating station. At its peak, close to 4,000 people would have been employed between the generating station, coal mine construction, limestone quarry construction and operation, and support facilities. These numbers do not include employees necessary to construct the new town or the 67 miles of highway that would have been required from Highway 89 to Cannonville in Garfield County.¹⁸¹

The project was abandoned because it was fought and delayed so long "the cost of producing a ton of Kaiparowits coal increased five-fold before a single ton could be mined."¹⁸² Edison sold its

¹⁷⁶ R.D. Hettinger, L.N.R. Roberts, L. R.H. Biewick, & M.A Kirschbaum, "Geologic Overview and Resource Assessment of Coal in the Kaiparowits Plateau, Southern Utah," U.S. Geological Survey Professional Paper 1625 B, Appendix 4 Summary of Coal Quality, Tables 1 4, Moist, mineral matter free Btu and apparent rank; U.S. Department of the Interior

¹⁷⁷ Ibid. pg. 143 Coal Resource Summary.

¹⁷⁸ Final Environmental Impact Statement, Proposed Kaiparowits Project, Bureau of Land Management, Department of the Interior, March, 1976. Chapter I of IX, Summary, pg. iii (Nine volumes, plus Regional Analysis for Development of Coal in Southern Utah)

¹⁷⁹ D.K.Sproul, (doctoral candidate at the University of Nevada, Las Vegas), "Environmentalism and the Kaiparowits Power Project, 1964 76"; Utah Historical Quarterly, Fall 2002, Volume 70, No. 4.

¹⁸⁰ Ibid.

¹⁸¹ Final Environmental Impact Statement, Proposed Kaiparowits Project, Bureau of Land Management, Department of the Interior, March, 1976. Chapter I of IX, pages iii, I 221 (Nine volumes, plus Regional Analysis for Development of Coal in Southern Utah)

¹⁸² D.K.Sproul, (doctoral candidate at the University of Nevada, Las Vegas), "Environmentalism and the Kaiparowits Power Project, 1964 76"; Utah Historical Quarterly, Fall 2002, Volume 70, No. 4. As drawn from Deseret News, April 15, 1976. The cost of producing one tone of coal in 1964 was approximately \$7. By 1976, the same ton of coal cost \$35 to extract.

coal lease options in the late 1980s to a Dutch energy company, Andolex Resources, and they made plans “for a 10,000-acre strip mine on the plateau...to mine Kaiparowits coal and ship it to energy-hungry nations such as Japan.”¹⁸³ Andolex proposed opening a 2 million ton-per year coal mine on property situated between Wahweap and Burning Hills.¹⁸⁴ Their plan for transporting the coal was less intrusive than the KPP; they intended to haul it by truck over upgraded access roads to railheads at Moapa, Nevada; Williams, Arizona; and Cedar City, Utah. For six years, Andolex worked at obtaining everything they needed until President Bill Clinton designated the Grand Staircase as a Monument and derailed their plans.

Metallic Minerals¹⁸⁵

In the Kaiparowits Plateau metallic mineral deposits are limited to a paleo-placer deposit of titanium, zirconium and uranium located along the eastern rim with a few occurrences of lead, uranium, and manganese. The Mining District Map for the county shows the known mining district and the individual mineral occurrences in the resource data base kept by the Utah Geological Survey. The uranium-titanium paleo-placers within the plateau are significant because of the resources they contain. The resources were estimated and reported in “Titanium-Zirconium-Bearing Fossil Placers Deposits in the Cretaceous Straight Cliffs Formation, Garfield and Kane Counties, Utah”.

The Mann-Longshot, Croton Canyon, Dewey Sargent and U-429 deposits are also in Kane County. These deposits occur in a large area where additional deposits may be found. An estimate of the resources reported in “Titanium-Zirconium-Bearing Fossil Placers Deposits in the Cretaceous Straight Cliffs Formation, Garfield and Kane Counties, Utah” (Glory and others, 1997), range between 300,000 and 500,000 tons. Grades between 3% and 11 % ZrO₂ and 9.6% to 22% TiO₂ are reported. The Calf Canyon deposit in Garfield County is estimated to contain 300,000 to 600,000 tons. The Croton Canyon and U-429 deposits in Kane County are similar in size.

The only uranium mineral reported in these deposits is monazite, which contains rare earth elements (REE) as well. There is significant interest in REE's as strategically important elements for defense and the computer industry. Rare earth elements are a set of 15 metallic chemical elements¹⁸⁶ (plus two other chemically similar elements) in the periodic table used to make popular consumer items such as, camera lenses, color televisions, commercial lighting, high efficiency lasers, fuel cells, high strength magnets, LED light bulbs, refining petroleum, and cell phones; or they can be used for specialty items such as nuclear reactor control rods, nuclear marine propulsion, aerospace framework, or genetic screening tests.¹⁸⁷ It often takes a

¹⁸³ Ibid.

¹⁸⁴ 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, April 1992, Utah Geological Survey, Utah Department of Natural Resources.

¹⁸⁵ Rasmussen, J., “Introduction to the Mineral Resources in Kane County” 2016 Report; Geologist, County Consultant.

¹⁸⁶ 15 Lanthanides: Lanthanum (La), Cerium (Ce), Praseodymium (Pr), Neodymium (Nd), Promethium (Pm), Samarium (Sm), Europium (Eu), Gadolinium (Gd), Terbium (Tb), Dysprosium (Dy), Holmium (Ho), Erbium (Er), Thulium (Tm), Ytterbium (Yb), Lutetium (Lu); and two chemically similar elements: Scandium (Sc) and Yttrium (Y).

¹⁸⁷ <http://www.rareelementresources.com/rare_earth_elements#> Downloaded February 21, 2017.

<http://www.namibiarearearths.com/rare_earths_industry.asp> Downloaded February 21, 2017

combination of elements to make a product work (i.e. an iPhone uses eight elements for its screen, speakers and miniature circuitry).

Rare earth elements aren't really that rare, but they haven't been found in amounts large enough to make it economical to mine them. What has to be mined are the ores the metallic elements can be extracted from. In the Grand Staircase, rare earth compounds and metals would have to be extracted from monazite. Known rare earth elements in Kane County are found in the Straight Cliffs formation on the southeastern portion of the Kaiparowits Plateau (T40S and T41S, R5E and R6E, Salt Lake Base & Meridian). It occurs primarily as titanium and zirconium and is present in fossil beach placer deposits.¹⁸⁸ At least 14 individual deposits have been identified. Doelling (et.al.) suggests these separate deposits may be parts of "an originally larger deposit."¹⁸⁹

Associated deposits within the beach placers are zirconium, magnetite, ilmenite, rutile, quartz, calcite, monazite, garnet, sphene, hematite, and anastese. Small amounts of gold have also been identified up to 0.04 oz./ton. Early exploration (prior to the establishment of the Grand Staircase as a Monument) suggests there may be from 300,000 to 600,000 tons or more in the Mann-Longshot deposit; no detailed drilling or mapping have been completed to accurately assess the size and grade.¹⁹⁰

Today, there is only one company in the United States that is capable of mining rare earth metallic elements (at Mountain Pass, CA), and it was put on care and maintenance in the fourth quarter of 2015. No rare earth elements were mined domestically in 2016.¹⁹¹ The United States imported 100% of its rare earth compounds and metals which had an estimated value of \$120 million. The U.S. gets the majority of its REE from China (72%), then Estonia (7%), France (5%), Japan (5%) and others (11%).¹⁹² However, "imports of compounds and metals from Estonia, France and Japan were derived from mineral concentrates produced in China..."¹⁹³

It is important to note that "U.S. and world resources are contained primarily in bastnäsite and monazite. Bastnäsite deposits in China *and the United States constitute the largest percentage of the world's rare earth economic resources, and monazite deposits constitute the second largest segment.*"¹⁹⁴ [Emphasis added] Exploration efforts to assess and develop rare earth mining projects in the U.S. include Alaska, Arizona, Idaho, Missouri, Montana, Nebraska, Nevada, Texas, and Wyoming.

Other Mineral & Energy Resources

Since the designation of the Grand Staircase-Escalante National Monument, no large commercial-grade (sized) mining operation has been attempted or allowed to extract coal or

¹⁸⁸ J. Rasmussen, "Rare Earth Elements in Kane County" 2016 Report; Geologist, County Consultant.

¹⁸⁹ Doelling, H.H., Davis, F.D., and Brandt, C. "The Geology of Kane County, Utah" Utah Geological and Mineral Survey, Division of Utah Dept. of Natural Resources, 1989, Bulletin 124. Pg. 134.

¹⁹⁰ Hill, L.M., Edited by "Learning From the Land" Grand Staircase Escalante National Monument science symposium proceedings, Southern Utah University; Produced by Gloyd, R.W., Park, G.M., Reeves, R.G., 1997.

¹⁹¹ U.S. Geological Survey, Mineral Commodity Summaries, January 2017; Rare Earths Prepared by Joseph Gambogi.

¹⁹² Ibid.

¹⁹³ Ibid.

¹⁹⁴ Ibid.

other minerals from the three sections. Several small mining claims for various other minerals are still active for minerals such as gypsum-anhydrite, copper, iron, thorium, titanium, zirconium, gemstones, and abrasives. Although there are claims that are listed as having uranium, they are not being mined at this time.

Other metallic and industrial minerals are widely scattered throughout the county. In an investigative report by the Utah Geological Survey¹⁹⁵ heavy materials are found in the Straight Cliffs of the Monument. They include magnetite, ilmenite (titanium), rutile, quartz, calcite, monazite, garnet, sphene, hematite, and anatase (as stated above). Manganese is found along the Kitchen Corral Wash near Paria as well as gypsum (west of the Cockscomb).

Limestone, which is used in the production of cement, lime, flux for steelmaking, filtration material, poultry grit, coal-mine rock dust, fillers and extenders, and calcium carbide, is found within the Chinle formation on the Grand Staircase.¹⁹⁶ Some of the best sand and gravel pits reported by the Utah Department of Transportation have been mined from Kitchen Corral Wash and beds adjacent to the Paria River.¹⁹⁷

In the Moenkopi formation of the Grand Staircase there is a source for flagstone (see the map). And there is a source for building stone, which is used for the support and ornamentation of buildings. This includes stone used for facades, counter tops and other decorative uses. With the advent of concrete foundations, the use of stone for foundations stopped. The market for various stones depends on architectural style and interior décor fashions. The map shows the location of past production of building stone production.¹⁹⁸

According to the Utah Geological Survey uranium mineralization is associated with copper, vanadium and silver, and that is found along Fifty Mile Bench, the Cockscomb and Buckskin Mountain areas on the Monument.¹⁹⁹ Both oil and gas have also been drilled for, and though there have been what experts call “hydrocarbon shows” all of the wells were classified as dry. However, researchers did a geochemical analysis that indicated there were “relatively untested...hydrocarbon reservoirs” throughout Kane County and these untapped sources “warranted future exploration.”²⁰⁰

Noxious Weeds

Of the 20 Utah Noxious Weeds listed, only nine have been documented on the Grand Staircase: Bermuda grass, Field bindweed, Hoary cress, Johnsongrass, Poison hemlock, Quackgrass, Russian knapweed, Tamarisk (sage cedar), and Scotch thistle. Although not listed, cheatgrass is present and is considered a “change agent” and will burn fast in a wildfire. The BLM has

¹⁹⁵ 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, April 1992, Utah Geological Survey, Utah Department of Natural Resources, pg. 15.

¹⁹⁶ Ibid. pg. 19.

¹⁹⁷ Ibid.

¹⁹⁸ J. Rasmussen, “Introduction to the Mineral Resources in Kane County” 2016 Report; Geologist, County Consultant.

¹⁹⁹ Ibid. pg. 20.

²⁰⁰ Ibid. pg. 28.

contracted with Kane County to treat areas that have noxious weeds to control and/or eradicate the spread of the plants.

Recreation & Tourism

Activities on the Grand Staircase are divided into four management zones:

1. The Frontcountry Zone (78,100 acres, 4% of the Monument) – This is the focal point for visitation offering most day-use opportunities off Highways 12 and 89. It accommodates the visitor centers, trails, overlooks, interpretation sites and roads leading to Grosvenor Arch, Pahreah townsite, Lower Calf Creek Falls, Calf Creek Recreation Area, Hole-in-the-Rock-Road, Dry Fork Slots, and other easy access lands around Escalante.
2. The Passage Zone (39,000 acres, 2% of the Monument) – This accommodates secondary travel routes for recreation destinations. (i.e. dirt and gravel roads only partially maintained; four-wheel drive vehicles recommended.)
3. The Outback Zone (537,700 acres, 29% of the Monument) – This is for the primitive and self-directed experience; there will be motorized routes to travel, but again, it is for four-wheel drive vehicles only on designated routes.)
4. The Primitive Zone (1,210,600 acres, 65% of the Monument) – This is a primitive experience without motorized access. Facilities are non-existent; the zone mostly facilitates landscape scale research and crosses all elevations.

Recreational uses include off-road vehicles (in designated areas), picnicking, hiking, backpacking, horseback riding, road and mountain biking, hunting, canyoneering, scenic touring, non-motorized boating (Escalante Canyon), and camping. Touring companies are allowed to take groups to various areas.

Wild & Scenic Rivers

There are 240 miles of river segments located in the Grand Staircase that have been found to be suitable for designation under the Wild and Scenic Rivers Act. They have been given a tentative “wild” classification until they are officially designated by Congress under the authority of Public Law 90-542, as amended; 16 USC 1271-1287.

Within the Escalante River System, the following segments have been classified as “Wild”:

Escalante River 1 (13.4 miles); Escalante River 3 (19.5 miles); Harris Wash (1.1 mi.); Lower Boulder Creek (13.5 mi.); Slickrock Canyon (2.8 mi.); Lower Deer Creek (7.0 mi.); The Gulch-1 (11.0 mi.); The Gulch-3 (13.0 mi.); Steep Creek (6.0 mi.); Lower Sand Creek & Willow Patch Creek (10.6 mi.); Mamie Creek & west tributary (9.2 mi.); Death Hollow Creek 9.9 mi.); Calf Creek-1 (3.5 mi.); Twenty-five mile Wash (6.8 mi.).

Within the Paria River System, the following segments have been classified as “Wild”:

Upper Paria River-1 (21.7 miles); Lower Paria River-2 (4.3 mi.); Deer Creek Canyon (5.2 mi.); Snake Creek (4.7 mi.); Hogeys Creek (6.3 mi.); Kitchen Canyon (1.3 mi.); Lower Sheep Creek (1.5 mi.); Hackberry Creek (20.1 mi.); Lower Cottonwood Creek (1.6 mi.); Buckskin Gulch/Wire Pass (15.2 mi.).

Transportation – Land Access

The main highway that runs through the southern portion of the Grand Staircase is U.S. Highway 89; all other roads are secondary, and only a small number of them are paved. The western border of the Grand Staircase is accessed via Johnson Canyon Rd., which is paved up to Skutumpah Road (all roads become dirt thereafter) and a small portion are maintained by the county. Access to the Front Country Zone (4% of the Monument) and the focal point for visitation, is via Highway 89 in Kane County and Highway 12 in Garfield County. The Passage Zone (2% of the Monument) contains secondary roads as stated above and are used as throughways and recreation destinations. The Outback Zone (29%) is meant for the primitive experience and accommodates a limited amount of motorized and mechanized (bicycle) routes. The Primitive Zone (65% of the Monument) has no motorized or mechanized access and is intended for hiking and horseback riding as a self-directed, primitive experience.

The philosophy used to determine whether a route is open to the public is based primarily on destination. Routes to camping, scenic overlooks or a heavily used thoroughfare (which also involves other uses such as hunting, fishing, and livestock grazing) will remain open according to the Monument Management Plan established in February, 2000.²⁰¹

Cross-country motorized travel has been prohibited since the Monument Management Plan became effective in February, 2000.²⁰² Street legal motorized vehicles, off-road vehicles and mechanized vehicles (bicycles) are limited to certain routes in the Front Country, Passage and Outback Zones. There are several Administrative routes for authorized users only.

RS-2477

It is Kane County's policy that all county roads that lie within the Grand Staircase 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 Grand Staircase will be properly registered and equipped as required by the State in which it is registered.

The Grand Staircase has a limited number of county maintained roads and even fewer paved ones. The majority of the paths through the Staircase are on primitive, dirt roads, which require four-wheel drive or high clearance vehicles during inclement weather.

Kane County maintains approximately 35 roads on the Monument, mostly on its perimeter. The majority of the interior roads (over 450 @ approx. 1,514 miles) are being claimed by Kane County as R.S. 2477 rights-of-way. In 1866, Congress enacted a law to authorize the construction of roads and trails across federal land. That law, Revised Statute 2477 (Section 8 of the Mining Act of 1866), provided that, "The right-of-way for the construction of highways over public land, not reserved for public uses, is hereby granted." Although R.S. 2477 was repealed

²⁰¹ Grand Staircase Escalante National Monument Approved Management Plan, U.S. Dept. of Interior, Bureau of Land Management, Effective February 2000.

²⁰² 43 CFR 8340 Off Road Vehicle (OHV), code of federal regulations.

when the Federal Land Management Policy Act of 1976 was enacted, all roads and trails used up to 1976 were grandfathered in.

Kane County asserts its citizens have been using the R.S. 2477 roads for decades, some prior to the designation of the Monument, and some prior to the use of motorized vehicles, when driving livestock across county lines. The roads and trails on the Grand Staircase have been used by generations of ranchers, farmers, hunters and settlers over the last 110 years when Mormons and pioneers used the open range to make their living off the land. It is how places like Dance Hall Rock and Hole-in-the-Rock got their names; when the pioneers worked their way across the range. The descendants of the original pioneers who continued to use the trails that became dirt roads, which were then driven by truck and eventually by ATV, are now dying off, but they still left an indelible route that belongs to the citizenship.

In April 2008, Kane County initiated an action under the Federal Quiet Title Act, (28 U.S.C. § 2409a), for two roads, and later amended it to include 15 roads. The case was heard in Federal District Court in August, 2011, and Kane County was granted rights to 12 of the 15 roads it requested. Five of those roads were on the Grand Staircase: Nipple Lake Road, two sections of Swallow Park Road, North Swag Road and Skutumpah Road (total of 46.85 miles). Since then, Kane County has initiated actions on the remaining roads and road segments throughout the county. The attached map at the end of this Region shows the extent of the R.S. 2477 roads Kane County has used for decades. There are approximately 1,514 miles of R.S.2477 roads on the Grand Staircase, alone. The BLM opposes Kane County's action on 312 of these roads.²⁰³

Utility Corridors

There are three utility corridors on the Grand Staircase; two for electricity, and one designated for the Lake Powell Pipeline. The electricity corridors are being utilized by Garkane and Rocky Mountain Power Companies; one runs north and south along Cottonwood Road crossing into Garfield County on the north end and connecting to a line that runs east and west on the lower portion of the Grand Staircase near the Utah/Arizona border. A spur of the line from Cottonwood also parallels Highway 89 to Big Water.

Kane County follows the criteria for Rights-of-Way for power lines on the Monument.

Per Public Law 105-355, a utility corridor was designated along Highway 89 on October 31, 1998, "that extends 240 feet north from the center line of the highway, and 500 feet south from the center line of the highway"²⁰⁴ extending from Glen Canyon National Recreation Area to Mount Carmel Junction. It will be utilized for the Lake Powell Pipeline, a 130-mile water conveyance system, which will run from Lake Powell to Sand Hollow Reservoir in Washington County. Kanab will build a spur off the pipeline which will divert 10,000 acre feet of water per year (it's percentage of the Colorado River annual allotment). (A map showing the utility corridor will be adopted for this region.)

²⁰³ Per email communication from Lou Pratt, GIS Director, Kane County.

²⁰⁴ Grand Staircase Escalante National Monument Management Plan, Bureau of Land Management, November 1999, Rights of Way, LAND 9, pg. 50.

Water Quality & Hydrology

There are limited sources of water in the Grand Staircase-Escalante National Monument. There are a few rivers, springs, seeps, wells, and tinajas. The surface water eventually flows into the Colorado River either at Lake Powell or below Glen Canyon Dam. Last Chance Creek and Wahweap Creek flow off the Kaiparowits Plateau into the main body of Lake Powell; the Paria River extends from Bryce Canyon-Bryce Valley and meets at the confluence of Cottonwood Creek and then flows intermittently to the Colorado River near Lee's Ferry. Hackberry Creek is another water source nearby that is part of the Paria River sub-basin.

There are approximately 114 seeps and springs registered through a GIS system with Kane County. Most are just numbered, but those that are named include: Hog Canyon Spring, Ram Spring, Nipple Spring, Tibbet Spring, Local Coyote Spring, Clints Spring, Maple Seep, John Henry Spring, Wildcat Spring, Harry Colwes Spring, Cottonwood Spring, First Point Spring, Tank Hollow Spring, Old Corral Spring, Needle Eye Water, Pool Hollow Spring, Sand Spring, Cave Spring, Pleasant Grove Spring, Mudhole Spring, Fortymile Spring, Fuller Spring, Pocket Hollow Spring, Elbo Spring, Adams Springs, Fourmile Water, Tommy Water, Kaibato Spring, Pine Spring, Round Valley Seep, Circle Spring, Headquarters Springs, Rock Springs, and Hardhead Water Spring.

The groundwater that serves the Grand Staircase-Escalante National Monument Region is the same aquifer group that flow into the Glen Canyon Region. The Navajo Sandstone aquifer is considered the most relevant regional water source.²⁰⁵ According to the U.S. Geological Survey, 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, and Wingate aquifers. (An additional aquifer, the Entrada, is located within the San Rafael group.) Those aquifers lay in layers above the Coconino Mesa Verde-De Chelly aquifer.

Water Rights

Kane County will cooperate with the State of Utah to achieve the provisions of the State of Utah Water Quality Plan, while complying with Utah constitutional and statutory law as to vested water rights and control of in-stream flow. The county will support efforts to maintain or improve riparian areas and aquatic habitat that represents a range of variability for functioning condition.

Article XVII of Utah Constitution recognized and confirmed the existence of rights to water use in Utah. The nature of water rights as rights of realty, the process by which such rights are acquired, and protection of such vested rights are outlined in Utah Code, Title 73. Utah Code guarantees the right to water livestock from in-stream flow and addresses water quality issues through designation of beneficial uses, specific water quality standards to meet beneficial uses, and the processes to follow in achieving the standards where they are deficient. (See Utah Code, Title 73, Chapter 3, and Title 19, Chapter 5.)

²⁰⁵ "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, pgs. 1 2

Federal land management agencies must comply with Utah Water Quality Act including the processes set forth for achieving water quality standards. Utah Code §§ 19-5-105 and -105.5 outline all rules for regulating water quality must be consistent with the Federal Clean Water Act. Kane County will be an active participant in state and federal water quality planning and implementation actions that affect waters within the county.

Ditches & Canals

Water resources are scarce on the Monument and the distribution of such comes from streams, springs, seeps, tinajas and wells. Perennial streams are limited to the Escalante River and some of its tributaries as well as segments of the Paria River, Wahweap Creek and parts of Last Chance Creek. There are groundwater sources that are useable, but the quantity and quality are variable. Temperature and invasive plants affect water quality on the Monument to a large degree and vegetative treatments would go a long way to get the highest yield in water from the sources that are available.

Any structural range improvement that involves water, such as wells or water pipelines, dams or reservoirs, earthen check dams, erosion control dams, dikes and diversions, guzzlers, storage tanks, improved and developed springs, troughs, or rain gauges that are implemented by a Kane County citizen, permittee, or agent of Kane County, will remain the property of the person or local government agency implementing the improvement. Should such structure or structures require repair or maintenance it will be allowed in a timely manner, and motorized administrative access will be allowed to make repairs so the vital resource of water is not wasted.

Floodplains & River Terraces

From mid-May through October, the National Weather Service in Salt Lake City makes available a flash flood potential rating for both the Monument and Glen Canyon. It is issued twice a day and is good for two days. During the monsoon (late July and August) the Paria River has been known to flood and wash across Highway 89. This occurred in 2016.

Other areas in the Grand Staircase that are prone to flood will be areas already stripped of vegetation, or where vegetation has degraded. Intermittent streams and creeks, as well as washes will fill (and often over fill) with water during heavy rain events.

Wildlife & Management

Wildlife management issues on public lands have the potential to impact the county substantially. Wildlife management not only impacts public land use and access, but it can affect land uses which lead to restrictions and even takings. Recreational factors, such as hunting and fishing, are a vital part of the county's economic base. Recovery plans for sensitive, threatened and endangered species must include evaluation, mitigation, and support of the county's customs and culture, and economic viability. Wildlife management plans shall reduce predation of sensitive species, increase hunting and fishing opportunities (within appropriate carrying

capacities), decrease game damage conflicts, and balance wildlife numbers with other factions, representing the customs and culture and multiple-use values of the county.

The county supports responsible wildlife habitat preservation, development, and management. However, Kane County opposes designation of critical habitat areas in the county when the species is not native to or does not exist in the proposed critical habitat area. Threatened and endangered species should not be introduced into locations where such species are not present.

Kane County will oppose the relocation of Wild Horses or Burros onto the Grand Staircase or anywhere else in the county.

It is Kane County's policy that federal agencies fully quantify and cause mitigation measures to be adopted that would effectively lessen the impact to wildlife populations while carrying out animal damage management activities. Public land managers shall:

1. Allow currently recognized methods of predator control, including aerial gunning of predators, as viable options for predator control on public lands in the county.
2. Conduct non-predator animal damage management such as controlling small mammal populations, and necessary environmental analysis and disclosure on public lands.
3. Coordinate with other federal and state agencies to improve effectiveness of control program activities conducted on federal and state lands.
4. Use an integrated approach to the management and prevention of animal damage programs. Consider a full range of methods, including physical barriers, repellents, habitat manipulation, biological controls, improvement of soil fertility, pesticides, hunting and trapping. Use licensed hunting, fishing, and trapping as a control technique where practicable.
5. Evaluate the effect of agency actions on trends in hunting and, where appropriate, address declining trends. Implement actions that expand and enhance hunting opportunities for the public.
6. Consider the economic impact hunting has on the county when implementing agency actions.
7. Manage wildlife habitats on public lands in a manner that expands and enhances hunting opportunities.
8. Work collaboratively with state governments to manage and conserve game species and their habitats in a manner that respects private property rights and state management authority over wildlife resources.

Wildlife Management & Mitigation

It is Kane County's intent to maintain, improve or mitigate wildlife habitat in order to sustain viable and harvestable populations of big game and upland game species as well as wetland/riparian habitat for waterfowl, fur bearers and a diversity of other game and non-game species.

FLPMA provides that it is the policy of the United States that BLM administered lands be managed in a manner that will protect the quality of multiple resources, provide food and habitat

for fish, wildlife and domestic animals, and provide for outdoor recreation and human occupancy and use. The Public Rangeland Improvement Act directs improvement of rangeland conditions and provides for rangeland improvements which include habitat for wildlife. The authority for management of wildlife rests solely with the State of Utah. See U.S. Constitution, Article IV, Section 3, Clause 1, and 10th Amendment; see also, Utah Enabling Act, Section 1.

Kane County will be an active partner in the development of wildlife management plans and activities for lands within the county.

Kane County will consult with the Utah Division of Wildlife Resources, all affected land owners, lessees and permittees in the development of specific wildlife population targets, harvest guidelines, depredation mitigation and guidelines for future site specific management plans affecting upland, water fowl and big game habitat. Such plans will include provisions to document incidents of wildlife depredation and the extent of game animal harvest in designated management areas of both land and wildlife management agencies. The county will encourage accelerated planning, approval and completion of additional water developments, rangeland treatment projects and prescribed burns with objectives for enhancement of big game and other wildlife habitat.

Kane County will insist that land management agencies provide all necessary maintenance of exclusion fences not specifically placed for improved management of livestock.

The Kane County Resource Development Committee will invite private land owners to regularly report instances of wildlife poaching and related concerns regarding wildlife habitat on private land. The county will formally request participation in the development and establishment of population targets and management guidelines for upland game, water fowl, and big game species.

Kane County will request annual reports from land management agencies regarding monitoring activities undertaken on range improvement projects, rights-of-ways, woodcuts, mining activities, mineral leases and material sales contracts, and multiple recreation uses, to document habitat improvement or disturbance.

Kane County will continue to oppose any listing of a threatened or endangered species which does not include an analysis of the impacts to the county's economic base. Kane County will also continue to oppose the BLM's listing of threatened and/or endangered species such as the Southwestern willow flycatcher when it has not nested on the Grand Staircase in over 15 years, and the data they have collected continues to show there is no evidence of the birds' habitat anywhere in the region.

Fisheries

There are two river systems on the Monument that support fish habitats - the Paria and Escalante Rivers contain four native fish: speckled dace, flannelmouth sucker, bluehead sucker, and roundtail chub. While the Paria River is considered a warm water system, the Escalante has sections of both. There are non-native species such as brown trout, rainbow trout, brook trout,

fathead minnow (and seven others) that fishermen have enjoyed as well as contributing to a healthy aquatic system.

Grazing & Livestock

Kane County recognizes there are two main bodies of law that govern the Grand Staircase-Escalante National Monument (GSENM) - Presidential Proclamation 6920 (the "Proclamation") and the Antiquities Act, 16 U.S.C. § 431.²⁰⁶ Pursuant to the Antiquities Act, the Proclamation set aside federal land within the GSENM for the purpose of protecting certain *historic and scientific objects*. The Proclamation also contains express direction for the protection of grazing: "Nothing in this proclamation shall be deemed to affect existing permits or leases for, or levels of, livestock grazing on Federal lands within the monument; existing grazing uses shall continue to be governed by applicable laws and regulations other than this proclamation."

Congress also enacted the Omnibus Public Land Management Act of 2009 which created the National Landscape Conservation System. However, the Act did not alter the BLM's obligation to manage the GSENM in accordance with specific requirements of the Proclamation, including the President's express direction that grazing at existing levels is consistent with the purposes for which the monument was created. The Act specifically states that nothing "enhances, diminishes, or modifies any law or proclamation" under which a national monument or conservation area was established. 16 U.S.C. § 7202(d)(1). As a result of this language in the Act, the **Proclamation** is the controlling document regarding grazing practices on the GSENM. Furthermore, because the **Proclamation** expressly recognizes grazing as an ongoing, authorized land use within the monument it establishes that creation of the monument does not affect how grazing is managed. Accordingly, the creation and management of the GSENM may not be used as a basis to limit or restrict grazing.²⁰⁷ Grazing stands on an equal footing with the conservation and protection of the Monument's objects; it is not a discretionary use. The deliberate inclusion of continued grazing rights in the Proclamation identifies and protects grazing as a pre-existing use on federal land within the GSENM.

A significant issue to Kane County is the fact that there has been a dramatic decline in grazing levels since the Proclamation was issued. The decline in grazing levels has been accompanied by declines in rangeland condition due to encroachment of pinyon, juniper, creosote, and other woody species; the spread of non-native species such as cheatgrass and red brome; and the deterioration of water features (declining watershed conditions), fencing and other range improvements. These changes have altered the quality of the GSENM's rangeland ecosystem, harming wildlife dependent on rangeland habitat while reducing the monument's livestock carrying capacity (reducing available forage).

²⁰⁶ The Antiquities Act, in relevant part, provides: "The President of the United States is authorized, in his discretion, to declare by public proclamation *historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.*" 16 U.S.C. § 431 (emphasis added)

²⁰⁷ See, e.g., BLM Manual Pt. 6100 § 1.6(B) "Land use planning decisions for each NLCS unit must be consistent with the purposes and objectives of the designating proclamation or Act of Congress." (July 13, 2012)

Kane County recognizes the need for management actions to increase native forage production, restore water features and other range improvements, and prevent the spread of invasive non-native species that are incompatible with the monument's native grassland ecosystem. Consistent with the foregoing and subject to all legal authorities, the county promotes/seeks to:

- increase the level of grazing by domestic livestock within the GSENM in accordance with the Proclamation's recognition of livestock grazing as an existing and authorized monument use;
- increase the monument's carrying capacity through active management and improvement of rangeland resources;
- implement appropriate management strategies to increase native forage production for the benefit of wildlife and domestic livestock;
- address the encroachment of pinyon, juniper and other woody species through a treatment plan and other management actions to improve the condition of rangeland within the GSENM;
- initiate a management program to remove and control invasive non-native species and re-establish native grasses;
- evaluate and initiate fencing and other range improvements needed to support livestock grazing within the GSENM, and initiate a program to restore and replace such features;
- evaluate and initiate essential water features, specifically for obtaining "yield in water" and recharge to aquifers off the public domain.

Another highly concerning issue Kane County has regarding the current management situation for the GSENM is the manner in which recreation is being elevated above grazing. The BLM has created special recreation management areas (SRMAs) within the monument with emphasis on the enhancement of recreation users' experiences. Special attention is being given to whether the recreation users' experience is adversely affected by livestock grazing.²⁰⁸ Though Kane County recognizes recreation is a growing use for the monument, it is not a protected use, since recreation is not specifically addressed in the Proclamation creating the GSENM.

The specific *objects* protected pursuant to the Antiquities Act are geological, paleontological, archeological, historic, and biological. The Act cannot be used to set aside land for recreational purposes and there is no evidence that President Clinton attempted to do so. Livestock grazing is recognized in paragraph 13 of the Proclamation as an existing use that is compatible with the purposes for which the GSENM was created. Recreational uses may occur within the monument only to the extent they are compatible with the protection and preservation of the historic and scientific objects and other land uses specifically identified in the Proclamation, including grazing, hunting and fishing.

Kane County supports recreational uses of the GSENM, but as a secondary use that must be carefully managed and, where necessary, prohibited to prevent harm to monument objects and other conflicts with the purpose of the Proclamation. Given that grazing is specifically

²⁰⁸ Study by Colorado Mesa University analyzing recreation activities within the Monument. Based on a focused analysis of the Hole in the Rock area, the study found that 22% of respondents identified livestock or evidence of them as a quality that diminishes the area's specialness. The largest contributors to diminished specialness were vandalism, overcrowding, lack of solitude, additional improvements, and damage to soils and vegetation. (2014)

recognized as a historic and ongoing use in the Proclamation, while use of the GSENM for recreation is not, it is critical to recognize the proper analysis is whether recreational uses adversely affect grazing. To view it otherwise is in direct conflict with the Proclamation and the Antiquities Act.

Kane County believes there are many ways to mitigate potential conflicts between recreational users, livestock, and wildlife (*see 'Collaboration to Protect Wildlife' later in this section for an example*). Because the GSENM was not created to provide recreational opportunities, it is not a recreation area and cannot be managed as such. It was created under the Antiquities Act to protect discrete historic and scientific objects. Nothing in the Proclamation suggests the BLM can restrict grazing levels to enhance the experience of backcountry enthusiasts. The 1999 Monument Management Plan²⁰⁹ stated in its *Overview* that visitor access would be restricted and the focus would be on the periphery in order to protect monument objects. It also stated:

“Developed recreational and interpretive sites will be limited to small areas of the Monument...Undeveloped recreation will be accommodated as long as no significant impacts to Monument resources will occur. Limits on large groups, commercial uses, and even limits on overall numbers of individuals will be used when needed to protect impacts to Monument resources.”²¹⁰

Kane County supports the recreation industry, but not to the detriment of ranching and livestock grazing. Simple economic calculations show that recreation and tourism cannot replace the annual income that ranching and livestock generates for the county. (*See 'Economic and Cultural Report on Livestock Grazing in the Grand Staircase-Escalante National Monument' by Dr. Gil Miller later in this section.*) It must also be recognized that ranching and grazing are a critical part of the cultural heritage for the county as well as being a part of an American icon (the cowboy). With that comes multi-generational knowledge of conditions on the landscape as well as being an obvious domestic food source for many communities.

Ranching and livestock grazing are a major industry for Kane County. In an effort to keep it healthy and viable, the county has developed its own *Enhanced Grazing Plan* for the GSENM because it recognizes those who work with the land are the best stewards for it. This industry has served to protect the landscape for over 150 years and when allowed to do what's right; when allowed to make improvements, develop water features, repair roads, fences, troughs, and respond to the land as they instinctively know how, the results become self-evident. Allowing active management by land stewards who have feet on the ground will create improved results because they have a vested interest in keeping the GSENM healthy and productive.

Kane County's Enhanced Grazing Plan:

Kane County's Enhanced Grazing Plan (EGP) is a range improvement plan that proposes to actively maintain and improve rangeland health, and restore permitted AUMs by employing a suite of resource improvements, vegetative treatments, adaptive management principles and

²⁰⁹ Grand Staircase Escalante National Monument Management Plan; U.S. Dept. of the Interior, Bureau of Land Management, November 1999. Overview, pgs iv v.

²¹⁰ Ibid. pg. 5

innovative livestock management practices. The foremost goal is to maintain, enhance and restore healthy rangeland ecosystems to produce a wide range of public values such as wildlife habitat, livestock forage, recreation opportunities, (make available) clean water, healthy vegetation, soils, and cultural resources; and protect Monument objects including grazing and functional watersheds. As stated in the Proclamation 6920: “Nothing in this proclamation shall be deemed to affect existing permits or leases for, or levels of, livestock grazing on Federal lands within the Monument; existing grazing uses shall continue to be governed by applicable laws and regulations other than this proclamation.”

This plan adopts an *adaptive management* strategy. Adaptive management is a formal, systematic and flexible approach to learning from the results of management actions. It accommodates change, and then, improves upon the existing management. It involves synthesizing existing knowledge, exploring alternative actions, and making explicit forecasts about results. Management actions and monitoring programs are carefully designed to generate reliable feedback which clarifies the reasons underlying results. Actions and objectives are then adjusted based on this feedback; understanding is then improved to progress toward the desired outcomes. In addition, decisions, actions, and results are carefully documented and communicated to others, so the knowledge gained from the experience is passed on rather than lost when individuals move or leave the organization.

The adaptive management process is flexible and generally involves four phases: planning, implementation, monitoring, and evaluation. As the managing agency obtains new information, it is able to evaluate the data and other resource information to refine and update its desired outcomes, management actions and allowable uses. This allows for the continual refinement and improvement of management prescriptions and practices.

Land Use Plan decisions are not always immediately adaptable; they have to go through a public meeting process to be voted on; then adopted by ordinance. It takes time to go through the local Land Use Authority, then County Commission for implementation. If public lands are involved the process will take time. Whatever guidelines or policies are in place, the process can be encumbering. But regardless the goals and objectives, allowable uses, management actions and special designations, they are *amendable*. Implementation or activity-level decisions *can be adapted*. Future activity-level plans follow NEPA procedures and involve the public.

Specific Goals of the Enhanced Grazing Plan:

1. Manage public lands for multiple use, sustained yield within the framework of applicable laws, regulations and agency policies.
2. Manage resources to protect objects identified in the Proclamation.
3. Implement adaptive management to meet resource objectives in spite of [the restrictions/limitations of] the Monument Management Plan.
4. Stocking rates will apply until individual allotment plans are completed under a NEPA analysis; adaptive management can then be implemented.
5. Apply rangeland standards and guidelines to the decision area. The expectation is that these standards *will be applied* and utilized by qualified experts.

6. Implement ecosystem management in an open, cooperative, responsive atmosphere in accordance with the law.
7. Maintain, improve, enhance and restore (where needed) healthy ecosystems and habitat to support viable populations of livestock and wildlife species while reducing habitat loss and fragmentation.
8. Protect and enhance cultural, ethnographic and natural resource values using a diversity of tools.
9. Provide a variety of recreational, educational and interpretative opportunities compatible with livestock grazing.
10. Reduce conflicts between users and user groups that are consistent with local plans and ordinances.
11. Enhance the viability of rural communities by providing opportunities for grazing and recreation to co-exist within the ecosystem, and enable the ecosystem (through restorative efforts) to sustain both.
12. Recognize the unique cultural, historical, and social values of the Grand Staircase, to develop a plan that manages the land and protects the heritage it engenders.

Objectives of the Enhanced Grazing Plan:

1. Increase forage with rangeland improvements aimed at restoring suspended and unused AUMs.
 - a.) Maintain access and infrastructure for normal ranching operations on the Monument.
 - b.) Provide stockwater improvements to increase effective grazing within allotments.
 - c.) Reduce or eliminate livestock-related rangeland resource problems on all allotments not meeting rangeland health standards while maintaining a production goal of livestock forage in the long term.
2. Manage grazing as a dynamic system (adaptive management)
 - a.) Monitor the assemblage and response of plant species.
 - b.) Actively match the stocking rate to the resource availability.
 - c.) Distribute animal use spatially to provide a diversity of plant offerings.
 - d.) Alter the frequency and duration of grazing and recovery periods based on monitoring data.
 - e.) Redefine allotments based on rangeland conditions.
3. Utilize livestock grazing as a wildfire management tool to control noxious and invasive weeds. (i.e. Fuel reduction through grazing).
4. Use the Monument as a laboratory to research innovative grazing techniques.
 - a.) Employ experimental approaches to advance and improve our knowledge of rangeland health and resilience.
5. Accommodate recreation activities by reducing livestock recreation conflicts within the Monument. (i.e. Use signage/educational brochures covering cowboy heritage).
6. Recognize livestock grazing constitutes a cultural landscape, a traditional cultural use, and an ethnographic resource within the Monument.
7. Integrate livestock use and associated management practices with other multiple-use needs and objectives to maintain, protect and improve rangeland health.
8. Enhance/restore watersheds and rangeland.
 - a.) Employ strategic and aggressive pinyon-juniper removal.

- b.) A mosaic of non-invasive perennial and annual vegetation communities would be present across the landscape with diversity of species, canopy, density, and age class in accordance with ecological site potential.
- c.) Protect, enhance, and/or restore ecological processes and functions by allowing the use of tools that are *necessary* and *appropriate* to mitigate adverse impacts of allowable uses and undesirable disturbances, which contribute to meeting (or not meeting) the *Utah Standards For Rangeland Health*.
- d.) Sustain or re-establish the integrity of the sagebrush communities to provide the quantity, continuity and quality of habitat necessary to maintain sustainable populations of sagebrush-obligate species.
- e.) Contain or reduce invasive plant species from existing extent; prevent establishment of new invasive species through early detection and rapid response actions.
- f.) Restore native and non-native species to meet desired plant community objectives where appropriate.
- g.) Maintain health of ponderosa pine stands within the decision area.
- h.) Maintain and/or restore riparian areas to proper functioning condition, or make progress towards proper functioning condition, where activities have been identified as contributing to riparian impairment.
- i.) Ensure water availability for multiple-use management and functioning, healthy riparian and upland systems.

Actions of the Enhanced Grazing Plan:

1. Restore all suspended and unused AUMs (pre-Monument total 106,000 AUMs; greater if and when the forage allocation justifies the increase; estimate range includes 146,000+ AUMs calculated for EGP).
2. Designate all lands currently used, and restore additional; manage all livestock grazing allotments within the decision area as *available* for livestock grazing, where the terrain, slope, and landscape allow for it.
 - a.) Manage the previously unavailable Dry Hollow allotment as available for livestock grazing and combine with the Boulder Creek allotment. Do not allocate additional AUMs above those permitted for the Boulder Creek allotment.
 - b.) Manage the previously unavailable Flag Point allotment as available for livestock grazing and combine with the White Sage allotment. Do not allocate additional AUMs above those permitted for the White Sage allotment.
 - c.) Manage the previously unavailable Varney Griffin allotment as available for livestock trailing only with 50 AUMs.
 - d.) Maintain Little Bowns Bench, the Wolverine Pasture of the Deer Creek allotment, and the Phipps pasture of the Phipps allotment as available for livestock grazing as *forage reserves*. Maintain structural range improvements such as fences and water developments so that forage reserves will be ready for use when needed. Graze every 1 - 3 years to prevent/maintain plant vigor. Grazing in winter would remove decadent vegetation.

[Note: This action is a placeholder pending input from the State/Counties on whether to retain and expand forage reserves or eliminate forage reserves. If no one needs to use the reserve, a neighbor/allotment holder can use it for a year to help maintain it.]

- e.) Manage the Antone Flat allotment (previously un-allotted) as unavailable for livestock grazing for watershed and wildlife concerns.

[Note: This action is a placeholder pending input from the State/Counties.]

- f.) Maintain the following areas as unavailable for livestock grazing:

[Note: the following actions are subject to change based on input from State/Counties and Glen Canyon NRA. The actions have been identified here as a placeholder. Use mitigation and/or education action where possible.]

- Big Bowns Bench (River pasture and a portion of Horse Canyon pasture) (riparian values and livestock/recreation use conflicts; use mitigation)
 - Deer Creek (Cottonwood and River pastures) (riparian values and livestock/recreation use conflicts; use mitigation)
 - Escalante River (riparian values and livestock/recreation use conflicts; use mitigation/education methods)
 - Harvey's Fear (bighorn sheep conflicts; use mitigation, if possible)
 - Lower Calf Creek (riparian values and livestock/recreation use conflict; use mitigation/education methods)
 - McGrath Point (riparian values and livestock/recreation use conflicts; use mitigation/education methods)
 - Muley Twist (unsuitable for grazing)
 - Navajo Bench (bighorn sheep conflicts; use mitigation, if possible)
 - Phipps (River pasture) (riparian values and livestock/recreation use conflicts; use mitigation/education methods)
 - Rattlesnake Bench (unsuitable for grazing)
 - Rock Creek-Mudholes (Dry Rock Creek and Middle Rock Creek pastures)
 - Saltwater Creek (riparian values and livestock/recreation use conflicts; use mitigation/education methods)
 - Spencer Bench (bighorn sheep conflicts; use mitigation, if possible)
 - Steep Creek (riparian values and livestock/recreation use conflicts; use mitigation/education methods)
3. Use an interdisciplinary allotment evaluation process to provide specific guidance and actions for managing livestock grazing.
 4. Allocate long-term increases and decreases in forage on a case-by-case basis based on an allotment-specific analysis through adaptive management principles.
 5. Allow motorized access to range improved within Wilderness Study Areas according to the *Interim Management Policy for Lands Under Wilderness Review*; allow motorized access to range improvements on all existing roads, and as needed, outside of WSA's.
 6. Consider requests for changes in kinds of livestock on a case-by-case basis, and after review, evaluate potential impacts on riparian and upland vegetation and other resource uses.
 7. Create a 'livestock preference' in areas accommodating visitors or where water is allocated to livestock.
 8. Create a 'visitor preference' in areas designated as a focal point for visitors and only where water has been allocated to domestic/culinary uses.
 9. Develop additional water for vegetative treatments, livestock and wildlife (yield in water source).

10. The research/reference areas are not to exceed 0.5% in any allotment, and not exceed 0.5% cumulative.
11. Protect soils through desirable vegetation.
12. Restore (some) landscapes to pre-1850 conditions; eradicate Tamarisk, Russian olive.
13. Restore vegetation to accommodate desired condition and meet ecological site description conditions.
14. Use native and non-native species to optimize rangeland health, forage and productivity levels.
15. Restore/maintain previous seedings to optimum conditions.
16. Control county and state undesirable species.
17. Use all improvements in forage to restore full AUMs.
18. Implement noxious weed and invasive species control actions per national guidance and local weed management plans, in cooperation with local, state and federal agencies, affected counties, adjoining private land owners, and other interests directly affected.
19. Monitor soil crusts to 70% current level and inventory, if necessary, then use adaptive management.
20. Apply *Utah Standards for Rangeland Health* to all rangelands.
21. Apply *Guidelines for Grazing Management* (1997a) and *Guidelines for Recreation Management for Public Lands in Utah* (no date) for maintenance and rehabilitation of rangelands.
22. Maintain and/or enhance riparian areas (via *Utah Riparian Management Policy*, 2005) through project design features and/or stipulations that protect riparian resources.
23. Consult with water right holders when rights-of-way (ROW) are renewed or amended to determine if water necessary to prevent riparian and aquatic degradation could be left in-stream through design or operation stipulations.
24. Analyze new or amended ROW's for water diversions to determine the amount of water that is available to enhance Monument objects that must be retained to prevent riparian and aquatic degradation. Incorporate design and operation stipulations as necessary to protect riparian and aquatic resources.
25. Monitor riparian conditions as needed for any surface disturbing activity that could affect riparian areas.
26. Fence above-ground distinct cultural sites; monitor areas of high potential to minimize impacts to surface or subsurface sites.

Enhanced Grazing Plan Summary

Overall, livestock grazing on federal and state lands in the county shall continue at levels consistent with the custom and culture, and proper stewardship of the resource. The continued viability of livestock operations within the county shall be achieved by management of land and forage resources, by proper optimization of AUMs for livestock (in forage resources), in accordance with supportable science and the multiple-use provisions of federal and state law.

Federal land management agencies will not adjust AUMs on public lands, without demonstrated scientifically based justification and full consultation between the permittee and the administering agency. Federal management agencies will not permit the relinquishment, transfer,

or retirement of livestock grazing AUMs in favor of conservation, wildlife, or other uses besides livestock grazing.

Federal and state land managers will promote public respect for private structures, corrals, fences, water development, etc., on federal land in an effort to reduce vandalism, educate land users, and promote multiple-use concepts.

AUMs should not be placed in a suspended use category without a demonstrated rationale and scientific determination that the condition of the rangeland allotment or district in question will not sustain the AUMs proposed. Any grazing AUMs that are placed in a suspended use category must be returned to active use when range conditions improve. State-of-the-art monitoring data should be the basis for grazing management decisions on grazing allotments.

In an effort to gather more information on the needs of local ranchers using the Grand Staircase, the Kane County Resource Steering Committee sent out surveys focusing on the needs and economics of livestock grazing. Below is a list of concerns/suggestions local ranchers identified (*also see Appendix F-Revenue Models & Appendix G-Implan Models for specific percentages*):

- Kane County's policy is to oppose reductions in local AUM's, and oppose shortening seasons of use; ranchers should be allowed to improve their allotments;
- Allow re-seeding;
- Routine maintenance needs to be allowed in a timely manner to protect the allotments and grazing uses;
- Kane County will support the full use of active AUMs on all allotments; and
- Kane County will work to eliminate mismanagement, which causes loss of AUMs (i.e. no reseeding or maintenance to water facilities, access roads or fencing).

Mismanagement causes harmful effects to the environment, which adversely affects grazing when maintenance is not allowed in a timely matter. Improvements to allotments need to happen, or be allowed, as found in § 6220 of the BLM standards.

Range mismanagement caused by failure to use best science and modern technologies is an unacceptable practice in Kane County. Restricting the use of current science and proven methods is damaging to range health and proper livestock usage.

Kane County requires current and future science, and proven methods, to be used to enhance the rangelands in the county. The use of current science and methods should be given priority in range development and livestock management and are considered *Best Practices*. The following is a list of current science and proven methods for developing and maintaining range land health, which are acceptable to Kane County as *Best Practices*. The GSENM Management Plan must be revised to reflect the following requirements:

1. Aerial application of spike or herbicides.
2. Chemical applications for brush control. (Example: When blade mowing for rabbit brush.)
3. Chaining for new re-seeds or improvements of existing re-seeds.

4. Bull hog treatments for control of pinyon or juniper encroachments.
5. Cutting of cedar posts or jiggers for the improvement or maintenance of infrastructures on allotments.
6. Gathering of firewood or cutting for fuel.
7. Use of mechanical equipment for the control of erosion or (maintenance) of administrative roads.
8. Extend water lines for better distribution of livestock. (Example: Riparian areas fenced where possible, and water head boxes constructed for moving of water away from existing area.)
9. Flexibility in grazing dates on allotments.

Additional *Best Practices* that Kane County would like to see on the Monument, which are used in other BLM managed lands, include:

1. Renewal of existing seedings and development of newly seeded areas.
2. Flexibility with regards to the turning in and removal of cattle on allotments. (Manage for conditions rather than dates.)
3. Don't let threats of lawsuits from private interest groups stop staff from asking or pursuing new development or improvements.
4. Expand and allow new water developments, such as wells, extensions of water lines and catchments.
5. Use applied science in the development of new and existing improvements.
6. Ability to use aerial application for the control of brush in seedings. (This is the least invasive way)
7. Use of fire in controlled burns for brush, pinyon and juniper control. This is used extensively in other government agencies.
8. Support local economies by expanding local production of agricultural products.
9. Opening up the 16 (currently) closed allotments. These need to have infrastructure maintained by the BLM. Fences and water developments need to be up, running, and ready for use when drought and wildfire destroy present allotments.
10. Permittees be allowed to use tractors and four-wheelers in dry washes to maintain and repair fences, waterlines and other infrastructures.

Kane County asserts and adopts as its policy that these *Best Practices* increase bio-diversity on the Monument and are good for all species of life, including humans.

Ranchers attended scoping meetings and received handouts informing them of the BLM's intentions to create a new grazing management plan on the Monument. A few of the excerpts are listed below for information. In considering changes to the current grazing management practices on the GSENM, Kane County agrees with the BLM in recognizing grandfathered uses such as grazing and mineral uses, even if those uses may impair the wilderness study areas' (WSA) suitability for wilderness. These pre-existing uses are allowed to continue but are restricted to the same manner and degree that was occurring on October 21, 1976, the date that FLPMA was enacted.

Livestock Grazing along Suitable Wild and Scenic Rivers: Livestock currently graze along many of the suitable segments and should be managed to protect identified river values. Existing structures may be maintained and any new facilities to facilitate livestock management should be unobtrusive so as to maintain the values for which the segment was found suitable. [BLM handout/scoping meeting]

Livestock Grazing in GCNRA: When the Glen Canyon area was designated as a national recreation area in 1972, the enabling legislation authorized livestock grazing. [BLM Handout]

GSENM's Objects: Ranching and livestock management remain at the core of the traditional uses of this region's public lands, and have created a cultural landscape rich in tangible objects such as trails, inscriptions, ghost towns, rock houses, and cowboy line-camps and intangible forces, which have shaped essential values of hard work, self-reliance, strong ties to the land, and strong ties to family. [BLM handout]

The BLM livestock Grazing Plan Amendment EIS strives to find a decision that will enable sustained use of the land through improved land health and science-based grazing management. [BLM Handout]

Planning Criteria and Planning Issues National Conservation Lands: The BLM and the National Park Service will coordinate and communicate with State, local, and tribal governments to ensure that the BLM and the NPS consider provisions of pertinent plans, seek to resolve inconsistencies between State, local, and Tribal plans, and provide ample opportunities for State, local, and Tribal governments to comment on the development of amendments. [BLM Handout]

Public Meetings: The Governor's Public Lands Policy Coordinating Office (PLPCO) held a meeting with Kane County ranchers in June, 2016 to hear their issues pertaining to leases they held on public lands. (This was one of many meetings held with ranchers throughout the state of Utah.) Their intent was to act as liaison between the federal agencies – BLM, Forest Service, and National Park Service – to mitigate problems the ranchers felt were aggravating their ability to keep in compliance with maintaining rangeland health on their allotments.

The first meeting identified the top concerns; the second meeting met one-on-one with the agencies to obtain solutions. One of the top concerns from ranchers was that federal agencies would not allow them to take machinery (motorized vehicles) into their allotments to repair water troughs, fences or washed out roads. Yet, the federal agencies would take large, construction (diesel operated) machinery to repair their own. The ranchers also voiced their desire for reactivating suspended AUMs.

Another point was that the ranchers were the best land stewards out there; they needed the land to be productive and healthy. They had a real desire to take care of their allotments so their futures were ensured. The BLM had one Range Conservationist for over a million acres who could not possibly give the land the attention it needed, yet they were the ones who made all the decisions for the rancher's allotments. Ranchers were concerned about the

Range Cons who were making decisions who had never been out in the field or they rotated out of their position on a regular basis so they were always dealing with someone different.

One of the most important things that came out of the meeting was how essential it was to have documentation of the health and care of each allotment. Photographic evidence was the most dramatic documentation a rancher could provide to show improvements and rangeland health when a federal agency accused them of non-compliance. A rancher can take photos of a designated spot on his allotment every season, making sure there is an identifying marker to show the progression. It can be done easily with a cell phone camera. Each lessee should also obtain a copy of their file from the federal agency containing everything they have ever signed or sent. This will help with the many (BLM) employee turnovers.

Flexibility in Grazing Management Plan

A part of the grazing management plan should describe how pastures in the allotment will be used. In some cases, a grazing system is recommended, such as a deferred rotation or best pasture system. To be effective and workable grazing management plans must incorporate flexibility to adapt to weather and other conditions as they occur, rather than rigid requirements of number and movement dates.

Grazing management plans in semiarid rangelands like those of the Grand Staircase-Escalante National Monument must consider and accommodate a large number of factors. Among them are:

1. Kinds and growth patterns of forage plants in different pastures and their needs for growth and reproduction which may dictate season of use and/or need for periodic deferment of grazing.
2. Nutritional and other needs of different classes of stock (dry cows, lactating cows, yearlings, etc.).
3. Availability and reliability of water sources in each pasture.
4. Livestock management needs such as breeding, weaning, replacement heifers, shipping, etc.
5. Topographic factors and natural movement routes of livestock; in rough (and primitive) country it is not always feasible to alter movement patterns between certain pastures.
6. Considerations imposed by other land uses or values such as recreation, hunting, wildlife needs, endangered species, etc.

Based on the factors listed above, a general plan can be developed that provides guidelines for deciding when and where livestock will be grazed during a series of years. However, to be successful, this can only be a general plan. The weather (amount and timing of precipitation, and the temperature patterns in spring and fall) can have dramatic effects on the amount and kind of forage available in each pasture from year to year. It also has an effect on the availability and distribution of water. Precipitation can vary markedly within an allotment in any given year. Therefore, it is imperative that grazing management plans provide the flexibility to alter plans as the grazing year progresses to account for the weather (and other unpredictable events such as wildfire, floods, etc.).

The grazing management plan should provide guidelines, but the permittee must have the flexibility to stay in some pastures longer or to move quicker than planned to accommodate the weather and other factors. To make this work, the permittee should keep good records of numbers and dates when each pasture was stocked, and notes on conditions when the pasture was grazed. Before the next grazing year, the permittee and range specialist should agree on a plan for the coming year based on those records and any other monitoring data collected. For example, if a pasture is grazed heavier or earlier than planned in one year, it could be grazed lighter or deferred the next. The grazing management plan should therefore be a framework laying out guidelines for making grazing management decisions, not for setting an inflexible schedule.

Utilization

Utilization is the percentage of the current year's production of forage plants that has been removed by grazing. It is a useful tool in range management. Proper use is a term used to indicate a level of grazing that is compatible with the sustained productivity of key forage plants or the range as a whole. Research done by clipping and grazing studies has shown that average utilization of about 35-50% will allow adequate growth and reproduction of most range grasses, although these are only guidelines which depend on other factors such as the frequency of grazing, the season of grazing and other factors.

Utilization, as defined above, cannot be measured unless the full year's production is known. It can only be measured after the end of the growing season, which is usually in the fall. Measuring use during the growing season is not utilization since the current growth is not complete. Use-measurement during the growing season should be called seasonal use to distinguish it from true utilization. Utilization guidelines for proper use cannot be applied to seasonal utilization.

Utilization can be used for several purposes in range management. Mapping the amount of utilization on an allotment (use pattern mapping) is very useful in identifying where grazing distribution needs to be improved by fencing, water development, or changes in season of use. Measuring utilization at trend monitoring locations can help to identify when grazing is responsible for observed trends in vegetation cover or composition. Monitoring utilization in key areas can help establish whether reductions in stocking are needed or increases in stocking may be feasible. In making these interpretations, it is important to recognize that measurements of utilization include not only the degree of use by livestock but also by wildlife, insects, and losses due to weather. In some cases, these other sources of use may be a substantial part of the total utilization.

Utilization guidelines are often misused by setting standards that are too strict. Such utilization guidelines should not be used as a trigger to move livestock when grazing is done during the growing season, because the guidelines do not refer to seasonal utilization. Utilization guidelines from grazing studies are developed based on average utilization over a period of years; not a target to be met every year.

Stubble height is another way of approaching the intensity of grazing use. Stubble height is the average height of forage plants remaining after grazing. Unlike utilization, it can be measured at

any time of the year. However, guidelines on stubble height should also recognize that it will vary from year to year. Stubble height guidelines are sometimes used as indicators of cover for certain wildlife species (e.g. nesting birds) or for sediment trapping in riparian systems. If that is the purpose, stubble height measurements should not be confined to forage plants preferred by livestock.

When recommendations for the use of *utilization* are incorporated into range management plans the following guidelines should be followed:

1. **Utilization is not a management objective**; it is a tool for helping guide management to achieve vegetation/soil objectives.
2. Recommendations of proper use should only be based on utilization observed after the growing season – it cannot be applied to seasonal utilization.
3. Utilization, or seasonal utilization, guidelines should not be used as rigid triggers for the movement or removal of livestock.
4. Recommendations for measuring utilization or stubble height should always specify how it is to be measured or observed, the species to be measured, the location to be measured, and the time of year it is to be measured. If that is not done, the data can be easily misused or misinterpreted.

Kane County Policy:

- Kane County insists that utilization and/or stubble height standards will not be used as a strict limit on utilization to be achieved every year on a permittees allotment.
- If utilization is substantially below guidelines over most of the allotment(s) or in most years, then an increase in stocking shall be considered and/or implemented.

Range Improvements

Range improvements include: fences, water developments, trails, roads, cattle guards, corrals and other facilities designed to allow good grazing management. These improvements allow control of the timing, intensity and distribution of grazing by livestock, and give the ability to keep livestock where they are supposed to be. Good improvements are essential to effective grazing management, which not only improves livestock performance but allows grazing to be done in ways that minimize conflicts with other land uses and values. Permittees and the BLM usually share the costs of new improvements and permittees generally perform most of the maintenance of improvements.

Restrictions that make the construction or maintenance of existing and new improvements more expensive (for the BLM and permittees) can cause delays, and therefore, resource management objectives may not be realized. Guidelines for construction or maintenance must include avoiding unnecessary resource damages, but still be realistic. It should balance the (possible) short term damages with the long term benefits that will occur as a result of the improvements.

Kane County Policy:

- Kane County insists that range improvements be allowed on all allotments and the short-term adverse impact be balanced with the long-term benefits of the improvements.

Closed Allotments and Grassbanks

Grazing allotments on the Monument should not be closed or converted to grassbanks when they are voluntarily released by permittees for whatever reason. Any allotment that becomes vacant should be offered to other permittees unless there are compelling and documented reasons for leaving the allotment vacant. Whoever obtains a grazing permit should be required to run a reasonable number of livestock on it, unless there are reasonable and documented resource concerns or personal issues that require a temporary reduction.

Livestock grazing is an important use of BLM land, including the Monument, established by law (Proclamation) and policy. A decision to reduce or eliminate livestock grazing on an allotment should only be made when resource conditions or un-resolvable conflicts with other uses dictate. Because decisions to convert active grazing allotments to non-use or grassbanks have impacts beyond the BLM and the permittee, they should be made only when other affected interests, including county government, are involved.

Grassbanks are vacant allotments or pastures available to existing permittees when additional forage is needed because drought, wildfire and other events have caused a temporary shortage. On the surface this seems like a good idea. But in practice it seldom works and it is really just another way to reduce overall stocking rates. Experience has shown that, when needed, grassbanks are usually not usable because of their location, making it impractical to move livestock to them. In addition, fences, water developments, corrals and other facilities become unusable due to lack of maintenance. Each allotment needs a responsible person (permittee) who has the incentive to keep up improvements for proper management.

Every allotment should be managed so that drought conditions, except perhaps some very extreme conditions, can be managed without undue resource damage or economic disaster for the permittee. In the case of extreme and prolonged drought, it is likely that all allotments will be equally affected therefore a few grassbanks will not make much difference. In the case where only a few pastures or allotments are involved (as in a fire) it should be possible to locate some additional short term grazing that could be made available by mutual agreement with other permittees.

Kane County Policy:

- Kane County insists the practice of grassbanks or “reserves” be discontinued; any allotment that becomes vacant must be offered to other permittees and whoever obtains a grazing permit shall be required to run a reasonable number of livestock on it, unless there are reasonable and documented resource concerns or personal issues that require a temporary reduction.

Predator Control

It is Kane County's policy that federal agencies fully quantify and cause mitigation measures to be adopted that would effectively lessen the impact to wildlife populations while carrying out animal damage management activities. Public land managers shall:

1. Allow currently recognized methods of predator control, including aerial gunning of predators, as viable options for predator control on public lands in the county.
2. Conduct non-predator animal damage management such as controlling small mammal populations, and necessary environmental analysis and disclosure on public lands.
3. Coordinate with other federal and state agencies to improve effectiveness of control program activities conducted on federal and state lands.
4. Use an integrated approach to the management and prevention of animal damage programs. Consider a full range of methods, including physical barriers, repellents, habitat manipulation, biological controls, improvement of soil fertility, pesticides, hunting and trapping. Use licensed hunting, fishing, and trapping as a control technique where practicable.

Wildlife-Threatened, Endangered & Sensitive Species

The county provides habitat for nearly 400 species of vertebrates and an unquantified number of species of invertebrates. Some animals are migratory through the county and others are year-around residents; still others use the county as seasonal habitat.

Many species of birds use the county as breeding and nesting areas and populations of elk move onto the county for winter use. Mule deer and Big Horn sheep are year-long residents. The main riparian systems allow fish to move in and out of the county depending on water flows and seasons. These water systems are the main habitat for most of the identified species of birds.

Habitat manipulation has been a customary practice for improving the vegetation for wildlife for many years and should continue until the desired vegetation mix is achieved. Water in this desert environment is essential to maintain the wide variety of wildlife species in the county. This includes the riparian systems of the Kanab Creek and Paria rivers for fish, amphibians and other associated wildlife species that depend on minimum stream flows. Wildlife populations have grown to depend upon water catchment devices constructed over the years.

There are several species of wildlife listed as threatened or endangered found within Kane County and specifically, the Grand Staircase-Escalante National Monument. Some are listed under the Federal Endangered Species Act and some are identified under the Utah Sensitive Species List (see the chart). Some are *candidates* and require more study.

The only species listed below are the ones that have been found or documented in the Grand Staircase at one time or another.

Group	Name	Scientific Name	Population	Status
Birds	California condor	<i>Gymnogyps californianus</i>	Portions of AZ, NV, & UT	Exp. Pop., Non-Ess.
Birds	Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Western U.S. DPS	Threatened
Birds	Greater sage-grouse	<i>Centrocercus urophasianus</i>	entire	Candidate
Birds	Mexican spotted owl	<i>Strix occidentalis lucida</i>	Entire	Threatened
Birds	Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Entire	Endangered
Fishes	Humpback chub	<i>Gila cypha</i>	Entire	Endangered
Fishes	Colorado pikeminnow	<i>Squawfish/Ptychocheilus lucius</i>	Entire, except EXPN	Endangered
Fishes	Bonytail chub	<i>Gila elegans</i>	Entire	Endangered
Fishes	Razorback sucker	<i>Xyrauchen texanus</i>	Entire	Endangered
Flowering Plants	Jones Cycladenia	<i>Cycladenia humilis</i> var. <i>jonesii</i>		Threatened
Flowering Plants	Kodachrome bladderpod	<i>Lesquerella tumulosa</i>		Endangered
Flowering Plants	Siler pincushion cactus	<i>Pediocactus sileri</i>		Threatened
Flowering Plants	Welsh's milkweed	<i>Asclepias welshii</i>		Threatened
Mammals	Utah prairie dog	<i>Cynomys parvidens</i>	U.S.A.(UT)	Threatened
Snails	Kanab ambersnail	<i>Oxyloma haydeni kanabensis</i>	Entire	Endangered
Insects	Coral Pink Sand Dunes Tiger Beetle	<i>Cicindela limbata albissima</i>		Candidate

Birds:

The **Greater sage-grouse** has been listed as a candidate for ‘threatened species’ and the BLM has indicated it has a wintering habitat in the Skutumpah/Glendale Bench area of the Staircase of approximately 10,500 acres. However, according to Kevin Heaton, Utah State University Extension Faculty in the Garfield/Kane County office, Kane County’s sage-grouse population “is not essential to the survivability of the species.” Heaton has independently tracked the sage-grouse over the last ten+ years, keeping statistics on the leks, and he stated Kane County’s sage grouse are only “important for maintaining the historical range.” Kane County has adopted the State’s ‘Conservation for Greater Sage-grouse in Utah’ plan (see Appendix F).

When the **Mexican spotted owl** nests in the canyon lands of southern Utah it prefers the narrow slickrock canyons closely associated with cliff-forming rock formations like it finds in Zion, Canyonlands, Capitol Reef, and Grand Canyon National Parks. It is not reliant on extensive forest cover though it likes mixed conifers and pinyon-junipers.²¹¹ In the northern portion of its range, which includes northern Arizona, Utah, New Mexico and Colorado, the owls nest primarily in steep-walled, rocky canyons. These canyon systems vary in the amount of forest cover present, but in general they are less heavily forested than are canyons occupied farther south.²¹² Pinyon-juniper woodlands and mixed-conifer forest are prominent cover types used in these canyon systems, but in some cases these canyons are entirely or largely lacking forest or woodland cover.²¹³

In Utah, the type of incised canyon habitat occupied by Mexican spotted owls is present in Dinosaur National Monument, Desolation Canyon, the San Rafael Swell, Zion National Park, Grand Staircase-Escalante National Monument, Glen Canyon National Recreation Area, Capitol Reef National Park, and Canyonlands National Park. Canyon habitat also occurs in the Dixie, Manti LaSal, and Fishlake National Forests and on large tracts of land managed by the BLM.²¹⁴

²¹¹ Mexican Spotted Owl Recovery Plan, First Revision, Sept. 2012; U.S. Fish & Wildlife Service, Southwest Region, Quoted by: Kertell 1977, Rinkevich and Gutiérrez 1996, Willey 1998b, Willey and van Riper 1998, 2007, Willey and Ward 2004, Bowden 2008. Ganey and Dick 1995, Willey 1998b.

²¹² Ibid.

²¹³ Ibid.

²¹⁴ Ibid.

Kane County sits in the U.S. Fish & Wildlife's Colorado Plateau Ecological Management Unit, of which, there are 206 documented Mexican Spotted Owl sites.

Although the **Southwestern willow flycatcher** is still on the list as endangered, there have been no confirmed nesting sites in Kane County on the Grand Staircase for 25 years. In the final 'Environmental Assessment for the Designation of Critical Habitat for the Southwestern Willow Flycatcher' the U.S. Fish & Wildlife state: "While six of the seven management units contain flycatcher territories in their other river segments, the Paria River segment occurs in the only management unit in which no territories have been confirmed since 1991."²¹⁵ An application is currently pending to have the Southwestern willow flycatcher de-listed.

Flowering Plants:

Jones Cycladenia (also known as Jones' Waxy Dogbane) is found in Kane, Garfield, Emery and Grand counties. It is a long-live herbaceous forb from the primrose family. It grows in arid sites at 4,300 to 6,000 ft. elevation in desert scrub and juniper communities making the Grand Staircase one of the perfect environments it has adapted to. It is known by its pink or purple trumpet-shaped flowers that resemble morning glory flowers. It has recently been determined this plant is genetically similar to California populations of *Cycladenia humilis* and has therefore been recommended for delisting.²¹⁶

Kodachrome pladderpod (also known as Breaks Bladderpod) is found only in Kane County (in Utah) and there is a single known population of scattered occurrence in the Kodachrome Flats area of the Paria River drainage.²¹⁷ Most of the species range is within the Grand Staircase and the Kodachrome Basin State Park. There is no threat to the species from cattle grazing because it occurs outside of the reproduction season for the species and it is thought that grazing impacts are minimal. However, road construction and OHV use are a concern.

Welsh's milkweed is currently known to occur in three populations in Kane County: Coral Pink Sand Dunes, Sand Hills, and Sand Cove (along the Utah/Arizona border). It is also found to grow in sagebrush, juniper and ponderosa pine communities on dunes from Navajo Sandstone which is on the Monument outside the Clark Bench area, and the Cockscomb Allotment. It was determined that OHV and cattle have minimal impact on the plant population.

Collaboration to Protect Wildlife

Prior to 2013, there was a 12-mile stretch of U.S. 89 that was considered a killing zone for the Paunsaugunt mule deer. Seen as one of the most treasured herds in the Southwest, these deer crossed the highway twice a year during its migration; once when it summered in Utah and again when it wintered in Arizona. The Utah Department of Transportation (UDOT) had historical data indicating an average of 132 mule deer being killed each year in vehicle collisions between Kanab and the Arizona border. According to the Western Transportation Institution (Montana University) these collisions were costing approximately \$6,600 each; but when this was reported

²¹⁵ EIS Prepared by the Mangi Environmental Group for the Department of the Interior, U.S. Fish & Wildlife Service in December 2012; pg. 27.

²¹⁶ "Threatened, Endangered & Candidate Plant Species of Utah," TN Plant Material No. 52, USDA, Natural Resources Conservation Service Boise, Idaho and Salt Lake City, Utah, January 2013 Revision.

²¹⁷ Ibid. pg. 28

to Congress in 2007, the amount had risen to \$8,388, with an approximate \$2,000 value given for the deer.

Per the Utah Division of Wildlife: “The Utah Division of Wildlife uses a variety of tools to identify potential wildlife vehicle collision problem areas throughout the State of Utah. The wildlife collision problem on Highway 89 was highlighted using data from multiple sources such as agency census counts, habitat mapping using GIS software, UDOT's carcass removal and wildlife collision database, radio telemetry research, input from local sportsmen, and decades of institutional knowledge from current and former DWR personnel. Based on all that data we have gleaned the following facts over the years about the Paunsaugunt mule deer herd as it relates to Highway 89:

The UDWR maintains GIS habitat layers for mule deer that are regularly updated and refined to identify mule deer habitat by season of use as well as value. The Paunsaugunt Plateau north of Highway 89 is identified as *crucial summer range*, and the Buckskin Mountain area [as well as] points south of Highway 89, are identified as *crucial winter range*. This essentially means that this herd is highly motivated on moving between these two areas, [making] Highway 89 a dangerous obstacle. The Paunsaugunt mule deer herd is beloved by the sportsmen of Utah for the quality of bucks it produces. The Paunsaugunt Wildlife Management Unit is one of the state's premium limited entry hunt units.”

In May 2009, several local, state, and federal agencies gathered together with members of the public to mitigate the problem. Their combined efforts created the “U.S. 89 Kanab Paunsaugunt Project” with the goal of preventing wildlife from entering the highway right-of-way, and/or provide a means for escape if they got trapped there. Over a 12.25-mile stretch of road crews built or upgraded wildlife exclusion fencing on both sides of the highway. Where there were existing culverts, underpasses were built to funnel the deer through, plus three more were added for a total of seven.

Wildlife escape ramps were installed every 1.5 to 2.5 miles; right-of-way fences were upgraded; cattleguards were installed at specific locations, and a total of 28 cameras were positioned at each underpass, (at fence ends and at each of two double cattleguards). The cameras were installed and are being monitored by Utah State University.

The U.S. 89 Kanab Paunsaugunt Project was completed in August, 2013 and monitoring will continue until 2018. In the Fall/Autumn, cameras documented over 3,000 mule deer utilizing the underpasses during peak migration even though they were skittish and had a tendency to gather at the mouth of the tunnels. Crews had to post signs along the highway to warn tourists not to stop and frighten the herds when the phenomena caught the attention of people passing in vehicles.

According to Monte Aldridge, UDOT “This project has been a great example of what our agencies can do when we collaborate to find solutions. In 2009, when we scheduled our first meeting in Kanab, we did not have a project scope defined or a funding source identified. However, we knew we needed to start identifying the challenge or we would never get to a

solution. This project is the epitome of collaboration and building partnerships. It would have been impossible for any of the agencies to have independently completed a meaningful project.”

The partnership of inter-agencies and non-profit groups that successfully completed this project were: UDOT, Utah Division of Wildlife Resources, Bureau of Land Management (Grand Staircase-Escalante National Monument), Arizona Game & Fish Dept., Federal Highway Administration, Kane County, Mule Deer Foundation, Sportsmen for Fish & Wildlife and others. UDOT provided \$625,000 in enhancement funds, BLM obtained \$1.5 million in FHWA public lands grant, Kane County provided in-kind contributions through labor and equipment (i.e. cattleguards), and other agencies and groups brought forward more contributions. In all, they raised over \$2.5 million.²¹⁸

Economic and Cultural Report on Livestock Grazing in the Grand Staircase-Escalante National Monument²¹⁹

In 2014, a study was conducted on the dependency of livestock operators on the Grand Staircase-Escalante National Monument (GSENM), researched by Kevin Heaton, Dr. Bruce Godfrey, and Kim Chapman from Utah State University. They sent letters and surveys to every person or business that had a permit to graze an allotment within the boundaries of the Monument, asking questions like: How many acres do you own and/or lease? How many livestock do you own and what percentage of the year do they spend on the monument? Where do you receive your gross income? The ranchers surveyed indicated other businesses in the area were dependent on these ranchers. The ranchers indicated they purchased more than 90% of their operating inputs from local sources. In addition, they locally purchased a high percentage of equipment used on the farm or ranch. The 24 ranchers that returned surveys indicated they employed 35 full time employees (including owners), and 37 part time employees (including owners). This would suggest these ranchers were also a major source of local employment and income.

From the same report, receipts from the sale of livestock were the primary source of gross income for all the livestock operators who returned a survey. The small operators indicated 74% of their gross income was from the sale of livestock with 3% from crop sales and 23% from off-farm income. The mid-sized operations tended to be the most diverse with 70% of gross income from livestock, 8% from crops, 10% from recreation and 7% from off-farm. The large operations were most specialized with 100% of gross income coming from livestock sales.

Results of the survey indicate large operators are most dependent on monument resources for grazing. Their cow herds spend 81% of the year grazing the monument. In comparison, the small and mid-sized operators spend 54% and 43% respectively. The survey respondents manage 1,276 acres of alfalfa hay which would supply approximately 10,700 AUMs (animal unit months). They also manage about 5,600 acres of pasture and 17,500 acres of rangeland. It is not known how many AUMs these lands currently provide because their productivity is unknown. If grazing

²¹⁸ Total approximate cost \$2,517,000: Arizona Game & Fish/Sportsmen Club \$130,000; Utah Dept. Wildlife Resources \$100,000; GSENM/FHA Public Roads Grant \$1,525,000; GSENM Cultural Resources Staff Help \$10,000; UDOT R 4 Transportation Enhancement \$625,000; Kane County Cattle Guards Est. \$125,000; Sportsmen for Fish & Wildlife Signs & Fence Maintenance Est. \$2,000.

²¹⁹ Gilbert D. Miller, Ph.D., Doctor of Philosophy and Economics, Utah State University, Economic and Cultural Report on Livestock Grazing in the Grand Staircase Escalante National Monument, 2014.

was eliminated from the GSENM, there would be major changes in the management and use of private resources. All sizes of operations would feel the effects, particularly the large operators. It was not possible to determine [at the beginning] which, if any, ranchers would go out of business if use of the GSENM was reduced or eliminated.* But any reduction would likely have a negative impact on income and employment in Southern Utah. (*See the results in the Summary of Economic Impact of Livestock Grazing on GSENM, Evaluation of Tourism as Replacement, & Conclusions and Recommendations)

Executive Summary

To determine the economic impact of livestock grazing in the GSENM, Utah State University Extension (USU Extension) and Economic Associates of Utah, Inc. developed a survey to gather information from livestock grazing permit holders. Data from the completed surveys was used in developing revenue models of livestock grazing on GSENM. The output from the revenue models was analyzed for the economic impacts in the Garfield-Kane County's economic region using the input-output model IMPLAN developed by Minnesota IMPLAN Group, Inc.

The results of the analysis of the surveys and the economic models show:

- (i) Livestock grazing on GSENM is essential to the ranching industry in the region;
- (ii) Ranching is a highly valued culture in the region. It is the base of many community activities and traditions. It also provides social and cultural stability to communities in the region;
- (iii) Ranching is an important part of diversifying the economy of the region;
- (iv) Tourism cannot replace livestock grazing in the GSENM without substantial investments by GSENM, local governments, and the private sector into new tourist support infrastructures and services; and
- (v) GSENM is a multiple-use national monument with many defined missions in the Proclamation including, livestock grazing and science research, which can include rangeland restoration and range management research at an allotment scale.

Kane County has implemented and supports an active management alternative livestock grazing plan for the GSENM through its Resource Management Plan and Chapter 27 Land Use Ordinance that:

- (i) Provides for the activation of all Suspended AUMs in the GSENM;
- (ii) Provides for flexibility in managing timing and placement of cattle within allotments;
- (iii) Provides for restoration of rangelands to promote rangeland health and sustainability;
- (iv) Provides for large scale science research on rangeland restoration;
- (v) Provides for allotment-scale science research with integrated range management;
- (vi) Provides for reseeding using appropriate grasses, forbs, and shrub species;
- (vii) Provides for watershed development by removal of invading woody species that creates risky biological monocultures;
- (viii) Provides for development, improvement and maintenance of water facilities; and

- (ix) Provides for the multiple-use aspects of the monument Proclamation i.e. it is not to be managed as a WSA or wilderness area.

Survey

USU Extension and Economic Associates of Utah, Inc. developed a detailed survey to gather information from GSENM livestock grazing permit holders on their operations. The purpose of the survey was to determine the importance of livestock grazing on GSENM to their operation and to determine how they utilized the AUMs of the permits in the operations.

The survey covered livestock and economic data for the individual permit holders. To assure confidentiality of the individual permit holders operations, USU Extension distributed and collected the surveys and Economic Associates of Utah, Inc. compiled the survey data into spreadsheets and documents for analysis and summary without knowledge of which permit holders completed which surveys. At the time of this report approximately forty percent (40%) of the surveys had been returned to the Extension office and forwarded to the compilers.

Summary of Survey Results

The GSENM provided 35.94% of the AUMs for permit holders ranching operations. Other BLM permits provide 8.22% of AUMs. The Glen Canyon National Recreation Area supplied only 3.56% of the AUMs. The Forest Service provided 20.31% of the necessary AUMs. State Lands contribute 0.89% of the AUMs. Private native rangelands provide 8.70% of the AUMs needed by permit holders. Private improved rangelands provide 1.70% of the AUMs. Irrigated pastures contribute 5.90% of the AUMs. Feeding hay and all other sources of AUMs contribute 14.77% of the needed AUMs annually.

Brood cows consume 86.19% of all AUMs. Replacement heifers use 9.17%. Bulls use 4.64% of the total AUMs.

GSENM permit holders who rent or lease livestock grazing allotment(s) from other permit holder's account for only 16.13% of permit holders. Because the question did not specify the location of the leased permits, it is impossible to determine if these lease or rental agreements are for permits within GSENM.

Permit holders are dependent upon their GSENM permits. One hundred percent of permit holders said there is no cost effective way to replace their GSENM AUMs. Seventy nine percent (79.31%) said they could not reduce the size of their operation to their private property and survive. Seventy two percent (72.24%) stated they would be out of ranching. The difference between the two numbers is that some indicated that they would move to another location to continue ranching. Nearly sixty two percent (61.90%) said they would need to sell their private holdings. Sixty two and one half percent (62.5%) said they would need to find off-ranch work if they were not already working off-ranch. Most of the others said they would retire in place, instead of finding off-ranch work.

Most permit holders have hiking trails or other recreational uses within their allotment(s) (93.35%). The typical problems with recreational use were: (1) gates left open; (2) trash; and (3)

damaged property. Many were not having any serious trouble with recreational users. A number of the permit holders said that recreational users enjoyed watching them work the cattle.

The permit holders that indicated the Wilderness Study Areas were part of their allotment(s) said limited access is the major effect on their operations, so far. But encroachment by pinyon-juniper was becoming a major problem.

GSENM permit holders stated there were a number of projects needed to improve their allotment(s). Reseeding was needed on 74.19% of allotments. Fencing was needed on 67.74% of allotments. Water development projects were needed on 93.55% of allotments. Thinning woody plants was needed on 70.97% of allotments. A flexible livestock grazing plan was needed for 64.52% of allotments. With these improvements, the AUMs were estimated to increase by an average of 88.41%.

Ranching culture within the GSENM is long and extensive. Many families have ranched there for 100 years or more (44.82%). Five and six generations have ranched in the same areas, long before there was a BLM or Monument. Another 19.23% have ranched over 50 years. Only 34.48% have ranched within GSENM for less than 50 years. Ranching is a big part of the culture of the Kane and Garfield County economic region.

GSENM Livestock Grazing Economic Impact on Garfield-Kane Counties

Two economic models were developed to estimate revenues from livestock grazing within GSENM. The first model was used to estimate revenues generated from the Active AUMs in GSENM permits. The second model was used to estimate the revenues that would be generated if the Suspended AUMs were to be restored to the permits.

Primary data from the completed surveys were used in both models. Average percent of weaned calves to brood cows, average brood cow death rates, brood cow culling rates, average bull culling rates, average replacement heifer culling rates, average replacement heifer death rates, average price for steer calves, average price for heifer calves sold, average price for cull brood cows sold, average price of culled bull sold and other relevant data were used in the models.

The model for Active AUMs treated the livestock grazing operation as a single ranching operation including all Active AUMs for the livestock grazing allotments within the GSENM, without regard to whether cattle were actually utilizing all AUMs. Since the GSENM livestock grazing permits are essential to most of the ranching operations, all revenues generated on the ranches are dependent on utilization of the GSENM AUMs. Without GSENM AUMs no revenues for most ranches would be generated imposing an economic loss to both ranchers and Garfield-Kane County's economic region. The models for both Active and Suspended AUMs used the same methodology.

The revenues estimated in both models were used in the Garfield-Kane County's economic region IMPLAN models for impact analysis. IMPLAN v3 is an input-output model developed by Minnesota IMPLAN Group, Inc. This model is commonly used by federal, state, and local governments to determine the economic impacts of various public policies, public investments,

and private economic activities. The BLM is one of the federal agencies that use IMPLAN on a continuing basis.

Summary of Economic Impact of Livestock Grazing on GSENM

GSENM AUMs are used during the times when other livestock grazing AUMs are not available. Therefore, all revenues are dependent on utilizing GSENM livestock grazing permits. The revenue model for active GSENM AUMs estimated that \$11,929,380.75 was generated annually from utilizing GSENM AUMs when all Active AUMs were available. When this revenue is put into the IMPLAN model the results are summarized below.

Impact Summary

*Copyright 2014 Minnesota IMPLAN Group, Inc.

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	111.3	\$974,174.2	\$2,087,184.9	\$11,929,380.9
Indirect Effect	90.0	\$1,053,293.6	\$3,120,590.5	\$10,703,373.4
Induced Effect	6.7	\$195,407.0	\$501,394.0	\$810,118.6
Total Effect	208.0	\$2,222,874.9	\$5,709,169.4	\$23,442,872.9

Active GSENM livestock grazing permits have the following estimated benefits to the Garfield-Kane County's economic region: Two hundred and eight (208) people are employed generating \$2,223,000 in labor income; \$5,709,000 in total value-added production is added to the Garfield-Kane County's economic region because of utilizing the GSENM livestock grazing allotments. The total annual output effect of the Active GSENM AUMs is \$23,443,000.

The revenue model for Active and Suspended GSENM AUMs estimated that \$16,561,052.32 was generated from utilizing GSENM AUMs of both Active and Suspended AUMs if all were available. When this revenue is put into the IMPLAN model, the results are summarized below:

Impact Summary

*Copyright 2014 Minnesota IMPLAN Group, Inc.

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	154.5	\$1,352,404.7	\$2,897,550.1	\$16,561,052.5
Indirect Effect	124.9	\$1,462,242.8	\$4,332,183.2	\$14,859,038.5
Induced Effect	9.3	\$271,275.2	\$696,064.0	\$1,124,653.2
Total Effect	288.7	\$3,085,922.7	\$7,925,797.3	\$32,544,744.2

The Suspended GSENM AUMs cost the Garfield-Kane County's economic region 81 jobs, \$863,049 in lost labor income, \$2,216,628 in lost total value-added, and \$9,101,801 in lost output.

These lost economic values reduce the quality of life for the people who live and work in the Garfield-Kane County economic region.

Evaluation of Tourism as Replacement for GSENM Livestock Grazing Allotments

From the time President Theodore Roosevelt “*liberally interpreted the 1906 Antiquities Act when he established by proclamation the 1,279-square-mile area Grand Canyon National Monument in 1908.*” (National Park Service Administrative History of the Grand Canyon National Park), tourist activities and livestock grazing have compatibly been part of Garfield-Kane County’s economic region.

Ranchers are an important part of the public safety and rescue elements within GSENM. They provide directions and assist lost tourists. GPS systems often lead tourists to places and circumstances they cannot get out of on their own. Ranchers report and monitor activities within GSENM that would otherwise go unreported and therefore be unknown to GSENM personnel for long periods.

Some tourists and others oppose livestock grazing. Other tourists and individuals support livestock grazing. Many tourists from foreign countries state that seeing cowboys and cattle on the open range in the American West is the highlight of their trip to America. Ranchers report that when tourists see them working cattle they take many pictures to record their experience.

Replacing the \$11,929,380.75 in revenues generated for the active GSENM allotment AUMs with tourist spending requires:

- (1) A major shift from *windshield tourism* and tour bus accommodations to active destination tourism utilizing the resources found within GSENM. These resources include, but are not limited to, archaeology, paleontology, geology, biology, scenic views and vistas, cultural sites and folklore, and motorized recreation; and
- (2) The Garfield-Kane County’s economic region governments and the GSENM will need to invest limited budgets, resources and personnel on public safety and resource management issues on a greater scale than current resources permit. New economic sources and additional personnel will need to be developed.

With an interior GSENM tourism-focus replacing the active GSENM AUMs, when all AUMs are utilized, they are analyzed. Destination tourists might spend \$200 each day; \$200 divided into \$11,929,380 means that 59,647 visitor days are required to generate the same revenue as the livestock grazing allotments. Prime tourist-days in the Garfield-Kane County’s economic region are approximately 120 days. That means 497 tourists per day must be fed, housed, and have a quality vacation experience. With an average of two people per motel room, it would require 249 new rooms to maintain the current service level.

Local governments in some communities will need to upgrade water systems, sewer systems, streets, and public safety and emergency facilities and equipment. These upgrades require substantial public investment, which must be coupled with private investment in tourism supporting facilities, equipment, and programs. Credit in Garfield-Kane County’s economic region is asset-based and requires cash-flow to cover all expenses within a short period of time. This results in limited opportunities for current residents to fill tourist needs. Outside capital and management would need to be recruited to fill the needs.

If tourism was to be used to replace both the Active and Suspended GSENM AUMs the challenges are even greater. It would take 82,805 tourist days, 345 more motel rooms, etc. to replace the \$16,561,052 from livestock grazing.

The Total Impact Multipliers for Direct, Indirect and Induced are: Cattle Ranching 1.957599; Hotel and Motels 1.343255; Food Services and Drinking Places 1.305925; Gasoline Stations 1.321562; Retail 1.303830.

Cattle ranching total multiplier is 45.74% larger than the highest tourist related multiplier.

Conclusions and Recommendations

Replacing livestock grazing on the GSENM with revenues would require substantial investment by the GSENM, local governments, and the private sector. The type of tourism would need to be changed to include destination tourism to use the resources and values of GSENM to sustain the economy of the Garfield-Kane County's region.

Tourist visitations in the Garfield-Kane County's economic region are dependent upon fuel cost, income levels, and exchange rate. Therefore, tourist visitations are variable. Limiting or removing livestock grazing and replacing with tourism changes the culture, heritage and values of the region.

The economic sustainability of the Garfield-Kane County's economic region is greatly weakened if GSENM livestock grazing allotments are lost by removing an industry, its supporting industries, and reducing the economic diversity of the region.

Ranching families provide year-round stability to communities that have a relatively high population turnover rate. Ranching has fewer impacts on public safety, emergency, and other public infrastructure resources than tourism.

Therefore, Garfield-Kane County's economic region, local governments, and citizens should vigorously oppose any livestock grazing plan that reduces or eliminates livestock grazing in GSENM.

Garfield-Kane County's economic regional local governments and citizens propose an alternative that:

- (i) Provides for the activation of all Suspended AUMs in the GSENM;
- (ii) Provides for flexibility in managing timing and placement of cattle within allotments;
- (iii) Provides for restoration of rangelands to promote rangeland health and sustainability,
- (iv) Provides for large scale science research in rangeland restoration;
- (v) Provides for allotment-scale science research with integrated range management;
- (vi) Provides for reseeding using appropriate grasses, forbs, and shrub species;

- (vii) Provides for watershed development by removal of invading woody species that create risky biological monocultures;
- (viii) Provides for development and maintenance of water facilities; and
- (ix) Provides for the multiple-use aspects of the monument Proclamation, i.e. it is not to be managed as a WSA or wilderness area.

Kane County Summary

The historical, cultural, educational and moral benefits of livestock grazing in the Escalante Region Multiple Use/Multiple Functions Grazing Zone are important to Kane County and its residents; and the loss of its rich historical culture that brings visitors to Kane County would cause irreparable harm to the economy and heritage.

Kane County families have grazed and used the land for multiple generations, a loss of a portion of, or all of, its grazing rights would impact family economics and dynamics that cannot be replaced once lost. Kane County has depended on the livestock grazing industry throughout its history to provide economic stability to the county; therefore, livestock grazing must be protected to ensure the health, welfare and safety of the citizens.

The American legend of the “Cowboy” is found throughout the Escalante Region Grazing Zone and is part of the culture and history of Kane County’s “Western Legends.” This cultural legend is what brings the tourism and movie industries to the county, and helps fuel the local economy. With livestock grazing being pushed out of the county by federal policies, this cultural icon, so identifiable with the persona of Kane County, is becoming endangered.

Livestock grazing in Kane County has the greatest impact on county economics and needs to be protected at all costs.

Kane County recognizes the impact and value livestock grazing provides and that the use of its public lands provides an economical benefit for all its residents and tourists. Kane County is sustained by a small population whose livelihoods have maintained the vast openness and natural beauty of the land treasured by visitors. All sources of economic support must be maintained at their highest possible level in order to sustain the economic stability of the County. To ensure this, the Kane County Board of Commissioners, the Land Use Authority, Resource Management Committee, and the Resource Steering Committee have dedicated themselves to a coordinated land use planning effort, which can hold the federal management agencies to standards set by Congress regarding continuation of multiple uses of federal lands.

The Escalante Region Multiple Use/Multiple Functions Grazing Zone is intended to protect some of Kane County’s most valuable assets, our families, our culture and our history that is unique to our area.

Potential Change of Monument Boundaries

On January 26, 2017 Representative Mike Noel, (R)-Kanab filed H.C.R.-12, a concurrent resolution urging “Utah's congressional delegation to support legislative actions to reduce or

modify boundaries of the Grand Staircase-Escalante National Monument.” The goal was to begin a dialogue with the new political administration to reshape the Grand Staircase to a more manageable structure for Kane County. (H.C.R-12 was signed by Governor Gary Herbert on February 17, 2017.)

This was followed up by the Kane County Commission on February 6, 2017 with Resolution 2017-1 declaring the county’s “Intent to Identify the Minimum Area Necessary for the Grand Staircase-Escalante National Monument”

R-2017-1 is as follows:

WHEREAS, the Grand Staircase – Escalante National Monument (GSENM) was created in 1996 by Presidential Proclamation 6920 without any input or support from Kane or Garfield Counties, their citizens, their public officials, or the State of Utah; and

WHEREAS, the GSENM was created without consideration of roads, local economies, customs, culture and heritage; and

WHEREAS, GSENM has resulted in diminished grazing rights, energy and mineral rights, public road access, state trust land properties, and resource use and preservation; and

WHEREAS, for more than 20 years the GSENM has had a negative impact on the prosperity, development, economy, custom, culture, heritage, educational opportunities, health, and well-being of local communities; and

WHEREAS, establishment of GSENM has resulted in a 44% reduction in Escalante High School enrollment (from 151 to 67) since September, 1996; and

WHEREAS, establishment of GSENM has resulted in loss of business opportunity and out-migration of families, workers and jobs; and

WHEREAS, boundary adjustments are authorized by law and are needed to protect the prosperity, health, safety and welfare of the citizens of Kane and Garfield Counties; and

WHEREAS, boundary adjustments identified by Garfield and Kane Counties are essential to the protection of health, safety, welfare, prosperity, custom, culture, and commercial opportunities for their citizenry; and

WHEREAS, boundary adjustments identified by Garfield and Kane Counties are necessary for optimizing multiple-use and sustained-yield including: 1) access to public lands, 2) commerce, 3) development, and protection of natural resources, 4) traditional recreational resource values, 5) traditional cultural and historical values, 6) agricultural livestock and forest products industries, and 7) other activities vital to the custom, culture and well-being of the area; and

WHEREAS, designation of lands as monument has reduced the ability to actively manage for land health issues such as: vegetation treatments, erosion control, water management, grazing management, wildlife management activities, and invasive plant control.

NOW THEREFORE, BE IT RESOLVED BY THE KANE COUNTY BOARD OF COMMISSIONERS, IN AND FOR KANE COUNTY, STATE OF UTAH, AS FOLLOWS:

Kane County, along with Garfield County and the State of Utah, will consult with the United States Department of Interior Bureau of Land Management and create mapping that indicates the minimum acreage necessary to protect the antiquities and objects identified in Presidential Proclamation 6920;

Kane County urges the Utah State Legislature and the Utah Federal Legislative delegation to support legislative action that will reduce or modify GSENM boundaries to the minimum area necessary to protect antiquities and objects identified in Presidential Proclamation 6920.

Resolution 2017-1 was unanimously passed and adopted on Feb. 6, 2017.

Kane County Assertions

Kane County asserts that should the Utah legislature and/or Utah Federal Legislative delegation take up legislative action that reduces or modifies the boundaries of the GSENM, Kane County will do the following:

- Consult with the BLM and other federal agencies regarding the land areas best suited to keep as monument and those areas best suited to assign to the BLM Kanab Field Office;
- Help reduce the monument to a manageable size that will best suit “Monument” purposes (including providing mapping and GIS services);
- Protect archeological and paleontological sites that have been established in the north-central Kaiparowits Plateau;
- Re-write/establish new assignments for Land Use Ordinance, Chapter 27 “Grand Staircase Escalante Grazing Zone” reflecting the new monument boundaries;
- Create new Land Use Ordinance, Chapter 28 “Kaiparowits Zone”;
- Create models in the Resource Management Plan to best serve the newly modified areas to be assigned under the BLM Kanab Field Office;
- Work in coordination with the BLM Kanab Field Office in determining the best management practices to create a healthy landscape and ecosystem in the newly modified areas – especially those areas that have not had treatments because they were Monument;
- Work in coordination with the GSENM Office in determining the best management practices to create a healthy landscape and ecosystem in the newly modified areas of the Monument regardless of their designated use.

Kodachrome State Park

A portion of Kodachrome Basin State Park lies in Kane County and is surrounded by the Grand Staircase. It falls under the jurisdiction of the Utah State Park system and sits at the 5,600 foot elevation. Originally named Chimney Rock State Park, it gained its name 'Kodachrome' after a group of photographers from National Geographic coined the phrase in 1949. Kodachrome was the unofficial name even when the park officially opened in 1963 as Chimney Rock. A few years later, Kodak gave permission to use the name and Kodachrome Basin State Park became official.

The park contains 180 million years of geologic history; there are huge monolithic stone spires called sedimentary pipes that can rise 170 feet. There is evidence that Native Americans were the first people to wander through the area. Twentieth century cattlemen from Henriville and Cannonville have used the basin as winter pasture for cattle.

The park is well known for Chimney Rock, Shakespeare Arch, and Ballerina Geyser and the area has numerous trails that are popular to hike. It also offers cabins and campsites and is open year round.

Kodachrome is accessible through Highway 12 in Garfield County or via primitive roads in Kane County. It is also within 10 miles of Grosvenor Arch.

Region #3 Municipalities and Unincorporated Areas Region

Statement of Intent:

Kane County asserts it will provide for the protection, conservation, development and management of the natural resources within and surrounding the municipalities and unincorporated areas that are critical to the health, safety and welfare of the citizens of the county.

Introduction:

Of the 29 counties in the State of Utah Kane County ranks 23rd in population at 7,125²²⁰ people, but it is eighth in land mass at 3,992 square miles. It has one incorporated city, four incorporated towns, and three unincorporated towns with names. The rest of the areas are considered political subdivisions of the county. Kanab City is the county seat, with the largest population (approx. 4,312)²²¹, followed by Orderville (approx. 577); Big Water (approx. 475); Glendale (approx. 381); Alton (approx. 119); and Mount Carmel Junction (approx. 116). Although Duck Creek Village (on Cedar Mountain) had 60 fulltime residents at the 2010 census, most of the homes on Cedar Mountain are considered vacation/secondary homes (and yet) make up half of the tax base in the county. Bullfrog, a small settlement/marina on the far northeast corner of the county situated on Lake Powell has approximately 100 fulltime residents.²²²

Kane County is about as rural as a county can get and the lack of accessibility is part of its charm. The county sits at the southern tip of the state bordering Arizona; its *one municipality, four incorporated townships and three unincorporated towns* vary in elevation from 4,100 feet, (Big Water) to 8,474 feet (Duck Creek Village). The main access of transportation is via Highway 89, which runs east from Page, Arizona to Kanab; then it turns due north through the center of Utah sometimes paralleling Interstate-15. State Route 9 at Mt. Carmel Junction runs west from Highway 89 through Zion National Park to Hurricane, Utah; State Route 14 runs west from Highway 89 to Duck Creek Village and Cedar Mountain at Long Valley Junction (also known as Tod's Junction).

There are approximately 270 paved (main) county roads, and there are a lot of undeveloped subdivision roads outside of the city and towns that are difficult to access during the winter and/or wet seasons. The back roads require four-wheel drive or high-clearance vehicles to travel with any degree of safety. Kane County maintains a few of the more frequently driven unpaved roads on a regular basis, except during the peak winter months.

History:

Kane County is one of the first areas explored when Mormon pioneers settled the territory of Utah in the mid-1800s. According to information on the *Colonization of Utah*, Glendale and

²²⁰ 2010 Census Brief, Cities and Counties of Utah, Governor's Office of Planning and Budget Demographic and Economic Analysis, pg. 15 & 21, Published July, 2011.

²²¹ <http://www.kanecountyutah.net/cities.cfm> Downloaded July 18, 2016

²²² Per Visitor Information Services for the National Park Service. The fulltime population swells to approximately 400 between May and October during the main part of tourist season.

Long Valley were explored in the first wave by settlers that came south from Salt Lake City “...an exploring party of 50 persons was outfitted to determine locations for settlement between Salt Lake Valley and what is now the northern border of Arizona,”²²³ The expedition kept detailed records on topography for grazing, water, timber and good locations for settlements and forts. They set up a half-way station at Parowan as a stopping point between California and Salt Lake; they also utilized the spot for its acres of cedar (fuel) and its mountain of ore (iron). “The first group to travel through and explore Long Valley left Parowan in June 1852 for the purpose of examining the mountain timberland.”²²⁴ This group acted like path breakers, traveling up the canyons around Duck Creek, to Panguitch Lake over the divide and into the valley. These pioneers and those who followed helped establish the essential character of the county. “In some places towns grew, inhabited by waves of settlers. These towns began with farming, ranching, lumber, or trading activities, rather than with manufacturing. Farm laborers, miners, cattlemen or small business owners became the earliest builders of economic enterprises that defined the place.”²²⁵

While settlers were exploring new territory to carve out a living, the internal boundaries of Utah were slowly being established. Between 1849 and 1896, the county lines changed 90 times. The Provisional State of Deseret extended from Salt Lake City to the coast of southern California as “. . . part of Brigham Young’s dream for a vast Mormon empire which included territory all the way to the sea.”²²⁶ But the United States Congress had different ideas and in 1850 they established the Territory of Utah with a much smaller land mass (and eight counties). The Territory took up most of Nevada on the west, and parts of Colorado and Wyoming on the east. Within two years, the Legislative Assembly of Utah added four more counties just to define the boundaries.²²⁷ One of those counties was Washington County, and it extended from west to east across the southern portion of the Territory by 600 miles. At the time, Pipe Springs (Arizona) and Short Creek (Colorado City, AZ and Hildale, UT) were considered part of the southern strip that made up Washington County.²²⁸

Originally, Kane County was included within Washington County’s boundaries; the Utah Territorial Legislature didn’t approve the act that officially created Kane as its own political subdivision until January 20, 1864. However, what is now Kanab, and Kane County’s oldest city, “. . . began humbly with the digging of crude dugouts by Jacob Hamblin and others starting in 1858.”²²⁹ Kanab had small beginnings as an outpost and didn’t have a full-fledged fort built until after Kane County was established in 1864.

The first boundaries for Kane County included all of Zion National Park and an eastern section of Nevada (parts of Clark County). It also included the upper Virgin River, and a town called Virgin City, which was a principal locale for the area at the time. Each time the legislature redefined the boundaries, a new county seat was assigned: Grafton (now a ghost town) was

²²³ Leonard J. Harrington, Utah History Encyclopedia, “Colonization of Utah”,

http://historytogo.utah.gov/utah/chapters/pioneers_and_cowboys/colonizationofutah.html

²²⁴ Glendale, Utah: It’s Beginnings – Photos and Stories; <https://familysearch.org> Downloaded 5/3/2016

²²⁵ Bradley, Martha Sonntag, History of Kane County, Utah: Utah State Historical Society, 1999. Print. Pg. 4

²²⁶ Allen, James B. “The Evolution of County Boundaries in Utah.” Utah Historical Quarterly 23 (1955): 262.

²²⁷ Ibid. pg. 264

²²⁸ Bradley, Martha Sonntag, History of Kane County, Utah: Utah State Historical Society, 1999. Print. Pg. 58

²²⁹ Ibid. Pg. 60

named the county seat in January 1866; Rockville was assigned the county seat in 1867 and Toquerville became the county seat in 1869. At that time Harmony and Kanarrville were a part of Kane County, which made it larger in land mass than it is today. Thereafter, Kane County received the same treatment the other counties suffered in boundary reduction until the 1880s when it remained its present size. Once Utah became a State in 1896 it was harder to change any boundaries – it took a vote of the people to change boundary lines, so most boundaries stayed as they were. There were 27 counties in 1896; two more were added after statehood and Utah has remained with 29 counties since.

Interestingly enough, though Long Valley was the first to be explored and settled in what became Kane County, Kanab was assigned the county seat after Kane County was created. This might have been because on two occasions settlers had to abandon their homes in fear of eminent danger and war.

The first time the Territory faced war was between 1857 and 1858; the Territory of Utah believed the Federal Government sent troops to march on them in an event called the “Utah War”. President James Buchanan sent 1,500 U.S. Army troops to the Territory of Utah to escort Alfred E. Cumming to replace Brigham Young as territorial governor. Brigham Young, president of the Church of Jesus Christ of Latter-Day Saints (LDS), had been governor for seven years. His term expired in 1854 and he had been acting as interim governor. President Buchanan sent Young’s replacement without telling him one was newly assigned.

Brigham Young had been running the Territory of Utah as a theocracy, which often put him at odds with federal law.²³⁰ “. . . a succession of federal officers – judges, Indian agents, surveyors – came to the territory only to find that the governor would circumvent or reverse their decisions.”²³¹ The Utah War brought it all to a head after years of hostility regarding independent governing, land ownership, plural marriage and Indian affairs. “Anti-Mormon sentiment spread, inflamed particularly by reports of polygamy.”²³² Eastern newspapers gave the Territory bad press, and suggested the Mormons were forming allegiances with area tribes against the U.S. government.

After most of the federal employees left the Territory the president sent over troops, but his intent was to enforce federal law, not attack the people. Poor communication and rumor enflamed the belief the Army was on its way to fight the LDS because of their way of life. The Mormons prepared by forming a militia (the Nauvoo Legion), and Young ordered Mormon settlers to abandon their homes and retreat south to strategic Forts. The U.S. Troops were expected to march on Salt Lake City, which was then evacuated. Young left men behind with the intention of burning it to the ground. But due to the intervention of an attorney, Thomas L. Kane, (Kane County’s namesake), war was avoided. In exchange for peace, Kane secured Brigham Young’s agreement to hand the governorship over to Cumming’s. President Buchanan then offered a pardon to Utah citizens who then submitted to federal law. That offer was accepted in June, 1858.

²³⁰ Roberts, David, “The Brink of War,” Smithsonian Magazine, 2008 <www.smithsonianmag.com/history/the-brink-of-war>

²³¹ Ibid.

²³² Ibid.

The second time settlers abandoned their homes in Kane County and other areas of southern and central Utah was during the Black Hawk War (1865-1871). “The Black Hawk Indian War was the longest and most destructive conflict between pioneer immigrants and Native Americans in Utah History.”²³³ Utah had a large presence of Native Americans; three tribes accounted for the majority – the Utes (the namesake of Utah Territory), Shoshones, and Paiutes. There were a lot of smaller bands with different names that answered to the authority of a higher chief, and also several neighboring tribes (which included the Navajos to the south).²³⁴ The largest group was the Utes who had different bands throughout Utah, Colorado and Wyoming.²³⁵ History tells that conflicts with Native Americans occurred as more and more pioneers settled in the Utah Territory. However, the Black Hawk War “. . . had an influence on the history and settlement of central and southern Utah that was greater than the loss of life would imply.”²³⁶

The war began on April 9, 1865 in Sanpete County (Manti) between a group of Utes and Mormons trying to settle a dispute over cattle killed by starving Indians. It became violent, and one of the Mormons yanked a young chieftain off his horse. The insulted Utes promised retaliation and over the next few days killed several Mormons, plus they escaped with several hundred head of cattle. They were lead by a young Ute named Black Hawk, whose early successes garnered support from hungry warriors that included other tribes in the area. “. . . he succeeded in uniting factions of Ute, Paiute, and Navajo tribes into a very loose confederacy bent on plundering Mormons throughout the territory. Cattle were the main objectives of Black Hawk’s offensives but travelers, herdsmen, and settlers were massacred when it was convenient.”²³⁷

Settlements in Alton, Berryville (Glendale), Long Valley (Orderville), Winsor (Mt. Carmel), and Kanab were evacuated during this time.²³⁸ Some of the immigrants went southwest to St. George and others were told to migrate north to Salt Lake City. “. . . Mormon militia leaders required settlers to vacate twenty-seven settlements in nine Utah counties.”²³⁹ Empty homesteads were left behind as well as crops. This set the settlements back economically and some of the areas never recovered. “The disruption of normal growth and life for several years severely hampered the economic development of the region.”²⁴⁰

At the same time, the United States had to contend with the assassination of Abraham Lincoln. On April 14, 1865 Lincoln was shot in the head by John Wilkes Booth at Ford’s Theatre (in Washington, D.C.) That sent the nation into more turmoil, since the Civil War had unofficially

²³³ Peterson, John A., “Black Hawk War”, Utah History To Go;

http://historytogo.utah.gov/utah_chapters/american_indians/blackhawkwar.html Download 9/8/2016

²³⁴ Alford, Kenneth L. “Indian Relations in Utah during the Civil War”, Civil War Saints, ed. Kenneth L. Alford (Provo, UT: Religious Studies Center; Salt Lake City: Deseret Book, 2012), 203 25

²³⁵ Wimmer, Ryan E. “The Walker War Reconsidered” MA thesis. Brigham Young University, 2010. Print.

²³⁶ Alford, Kenneth L. “Indian Relations in Utah during the Civil War”, After the Civil War, Civil War Saints, ed. Kenneth L. Alford (Provo, UT: Religious Studies Center; Salt Lake City: Deseret Book, 2012), 203 25

²³⁷ Peterson, John A., “Black Hawk War”, Utah History To Go;

http://historytogo.utah.gov/utah_chapters/american_indians/blackhawkwar.html Download 9/8/2016

²³⁸ Spencer, Deloy J. “The Utah Black Hawk War 1865 1871” MS thesis. Utah State University. 1969. Print.

²³⁹ Alford, Kenneth L. “Indian Relations in Utah during the Civil War”, After the Civil War, Civil War Saints, ed. Kenneth L. Alford (Provo, UT: Religious Studies Center; Salt Lake City: Deseret Book, 2012), 203 25

²⁴⁰ Spencer, Deloy J. “The Utah Black Hawk War 1865 1871” MS thesis. Utah State University. 1969. Print.

ended; in fact, General Robert E. Lee surrendered to General Ulysses S. Grant on the same day the Black Hawk War is said to have started.

Pleas sent to the federal government from the Territory of Utah requesting military help fell upon deaf ears and no assistance was sent. The Black Hawk War is blamed for the loss of many Mormon lives and the theft of thousands of head of livestock, although by Civil War standards “the total deaths on both sides were insignificant.”²⁴¹ The Black Hawk War lasted into the early 1870s with smaller and smaller skirmishes and was considered “... the last major challenge that Indians in Utah Territory mounted against white authority and encroachment.”²⁴²

Mormon settlers built a fort in Kanab in 1865 as a defense against the Indians while they were exploring the southern regions, but they had to abandon it in 1868.²⁴³ New families returned by the early 1870s and began re-establishing the southern areas. One of the first areas was at Berryville (now Glendale) where “A group of families moving from the Muddy River settlement in Nevada...[were]...In search of a more friendly environment in which to re-settle...”²⁴⁴

Incorporated Towns and Cities

Glendale

Glendale is a small community on the upper north end of Long Valley along Highway 89. Originally called Berryville, it was first settled in 1864 after the initial expedition determined that Long Valley contained fertile ground for habitation. The first white child was born in Glendale (and Kane County) from this group that same year.²⁴⁵ The pioneers of Berryville built a fort that could contain their homes, horses and cattle; by the time the Black Hawk War came along, 25 cabins were inside the fort. However, by the summer of 1866, all the settlements in Kane County were ordered evacuated by the president of the LDS Church. They didn’t return until the spring of 1871, when the Bishop of the group renamed the town after his hometown in Scotland. The town’s name stayed as Glendale thereafter.²⁴⁶

Glendale is approximately 7.0 square miles²⁴⁷ and ranks 93rd by land mass compared with other towns in the State. Glendale incorporated on March 29, 1935 and is governed by a mayor and city council. A town clerk runs the day-to-day operations. At the 2010 Census Brief, Glendale’s population was 381.²⁴⁸

²⁴¹ Alford, Kenneth L. “Indian Relations in Utah during the Civil War”, *After the Civil War, Civil War Saints*, ed. Kenneth L. Alford (Provo, UT: Religious Studies Center; Salt Lake City: Deseret Book, 2012), 203 25

²⁴² Ibid.

²⁴³ Kanab, Utah, Agency History #566; Division of Archives & Records Service, Utah Department of Administrative Services; <http://archives.utah.gov/research/agencyhistories/566.html> Downloaded May 31, 2016

²⁴⁴ Glendale, Utah, Agency History #423; Division of Archives & Records Service, Utah Department of Administrative Services; <http://archives.utah.gov/research/agencyhistories/566.html>. Downloaded Sept. 26, 2016

²⁴⁵ Glendale, Utah: It’s Beginnings – Photos and Stories; <https://familysearch.org> Downloaded 5/3/2016

²⁴⁶ Ibid.

²⁴⁷ 2010 Census Brief, Cities and Counties of Utah, Governor’s Office of Planning and Budget Demographic and Economic Analysis, pg. 34, Published July, 2011.

²⁴⁸ Ibid.

Glendale adopted a General Plan in June 2001; a few of the priorities and goals projected over a 20-year period are: to increase the local tax base, establish a historic district to encourage tourism, and increase recreational opportunities. They are also interested in creating a walking and bike trail that connects Glendale and the town of Orderville (to the south). The town's ballpark abuts BLM land and they are considering discussion and coordination with a shared trail system.

Glendale's public community water system falls within the Kanab Creek/Virgin River Basin. It is one of 42 public systems that serve approximately 233,400 people. The Kanab Creek/Virgin River Basin provides water to portions of Iron, Kane and Washington Counties.²⁴⁹

The Glendale Town Corp. is the local water company that provides the culinary water to its residents, which is derived from springs and wells. The majority of Glendale's water comes from springs. The secondary water supply is provided by the Glendale Irrigation Company. Glendale follows Utah State Code relating to water and land use.

There are 4,344.79 acres of land in Glendale; of this, 50% is designated agriculture (2,205.24 acres) and 37% is undeveloped (1,610.01 acres). A high percentage of the land in town is steeply sloped which accounts for the undeveloped and open areas. The third largest category of land use is residential at 6% (272.28 acres).²⁵⁰ Only .58% of the land use is commercial (24.98 acres). Part of this accounts for the fact that Highway 89 runs through Glendale and both businesses and single-family residential housing are on the main drag.

The future conditions for the town of Glendale call for a shift in land use by allowing more open space (an increase of 7.8%) and less for agriculture (a decrease of 14.26%). Areas listed for residential use are almost doubled at 11%, but divided into three categories of medium, low, and very low density. Residential development has not yet met its goals; there has not been an increase in population and/or there are not enough jobs to support an increase in population.

The economy of Glendale has historically centered on agriculture (livestock and farming), natural resource extraction, and the timber industry in the surrounding areas. However, with the closure of coal and uranium mines, lumber mills, and the reduction of the use of cattle on public lands, families have had to shift their focus or move from the area. The General Plan suggests there be more emphasis on tourism to fill in for some of the loss of industry by creating trailer parks, campgrounds and more home shops. Glendale can also capitalize on being part of the "Under the Rim" District of the Mormon Pioneer Heritage Area. Glendale is located along the section of Highway 89 designated as the Utah Heritage Highway (Corridor).

Glendale is a registered participant of the FEMA Flood Program for Utah communities but it does not have its own flood plan. It is currently operating off the Kane County Flood Plain (and drainage system) map but would like FEMA to initiate a flood mitigation study to change the flood zone. In 2016, and the last few years, the monsoon season has brought excess flood waters

²⁴⁹ Municipal and Industrial Water Supply and Uses in the Kanab Creek/Virgin River Basin; Prepared by Utah Dept. of Natural Resources; Division of Water Resources; January 2009.

²⁵⁰ Glendale Town Corporation General Plan, Adopted June 2, 2001; Glendale Town Planning Commission & Town Council.

off the East Bench slope, which results in flooding on property below, including the roads and Highway 89.²⁵¹

Alton

The Town of Alton is located four miles east of Highway 89 off Alton Road. It is an incorporated area that ranks 167th by land area in the State of Utah at 2.2 square miles (1,408 acres);²⁵² however, the Alton General Plan indicates a general land survey divided the town into 260 acres (.40 mile) and various sized lots.²⁵³ Located on the southwestern corner of the Paunsaugunt Plateau, the area ranges in elevation between 6,500 and 9,300 feet.²⁵⁴ The town proper sits at just over 7,000 feet.

Alton is one of the first areas settled by the early Mormon pioneers and has gone through several name changes with each group that chose to stay. It was originally called Roundy's Station after Lorenzo Wesley Roundy in 1865,²⁵⁵ but it was abandoned during the Black Hawk Indian War. The area was often referred to as Upper Kanab, for Upper Kanab Creek, and when people returned to the area in 1872 and "Mail addressed for Upper Kanab or Sink Valley residents nearby was delivered to Ranch, Utah, and held . . . for distribution."²⁵⁶ In 1887, it was known as the Graham Ward, after its Bishop, Graham McDonald.²⁵⁷ By 1907, it was referred to as Oak Flat,²⁵⁸ and the residents in the surrounding area decided to survey the land for a new town. By 1912, the residents chose a town name by having a two-year old child pull the name of Alton Fjord out of a hat.

The Town of Alton incorporated in 1935 and according to the Utah Division of Archives & Records Service their largest population was in the 1930s at 350 people. At the 2010 U.S. Census there were 119 people living there.²⁵⁹

Alton governs itself with a Mayor and Town Council and is responsible for all aspects of community management, including land use. The land has been classified into four areas – residential, church, agriculture and recreation. Residential and agricultural zoning accounts for the majority of the land use; to retain the rural-agricultural sense of community, animals, gardening and farming are permitted on residential lots. The average lot size is 2.03 acres to accommodate rural farming.

The economy is based on agriculture, mineral extraction, tourism, small manufacturing and small home-based businesses. The Town of Alton will develop an economic plan in conjunction with

²⁵¹ Telephone conversation with Glendale Town Clerk, Ellen Lamb on October 25, 2016.

²⁵² 2010 Census Brief, Cities and Counties of Utah, Governor's Office of Planning and Budget Demographic and Economic Analysis, pg. 34, Published July, 2011.

²⁵³ Town of Alton General Plan,

²⁵⁴ Tilton, Terry L., Geologic Map of the Alton Quadrangle, Kane County, Utah; Publication of Utah Geological Survey 01 4, Utah Department of Natural Resources, 2001.

²⁵⁵ Bradley, Martha Sonntag, History of Kane County, Utah: Utah State Historical Society, 1999. Print. Pg. 65 66.

²⁵⁶ Bradley, Martha Sonntag, History of Kane County, Utah: Utah State Historical Society, 1999. Print. Pg 98

²⁵⁷ Alton, Utah; Wikipedia <[https://en.wikipedia.org/wiki/Alton, Utah](https://en.wikipedia.org/wiki/Alton,_Utah)

²⁵⁸ Town of Alton, Utah General Plan, Appendix A, Community Setting an History, Historical Background.

²⁵⁹ Ibid.

Kane County to assist in planning and control of natural resources to protect the economic and cultural interests of the residents of Alton. (See Minerals below)

Alton's public community water system falls within the Kanab Creek/Virgin River Basin. It is one of 42 public systems that serve approximately 233,400 people. The Kanab Creek/Virgin River Basin provides water to portions of Iron, Kane and Washington Counties.²⁶⁰

The town is fed by two springs: Birch and Seegmiller. The water quality from Seegmiller is hard and will require treatment if used for long periods of time. In January 2010 the Kane County Water Conservancy District constructed an eight mile culinary line from Long Valley to the Town of Alton. The line serves as back-up to ensure an adequate water supply.²⁶¹

The terrain slopes from northwest to southeast which creates surface drainage problems through the town. A surface drainage plan will be developed to identify flood control and surface drainage concerns to minimize flooding of property within the town proper.

Kane County maintains the 4.4 miles of paved surface road (Alton Road) from Highway 89 to the Town of Alton. The town formally requested and received from the Utah Department of Transportation deceleration lanes on Highway 89 to the approach of Alton Road because of safety issues.

Law Enforcement is provided by Kane County on a contractual basis. Senior Services (Meals on Wheels) are provided by Kane County from the Town of Orderville (17 miles southwest of Alton.)

Minerals and Extraction

There are large coal reserves in and around the Town of Alton within the Alton coal beds. Geologically, it is part of the Paunsaugunt Plateau and covers the southwestern section.²⁶² In 2010, Alton Coal Development, LLC began building the infrastructure for a surface mining project called the Coal Hollow Mine. Alton Coal leased the property mostly from private property owners, with one section listed as State Institutional Trust Lands (SITLA). The first area mined was southeast of the Town of Alton in the Sink Valley. Mining operations commenced in January, 2011; total production in the first year was 285,000 tons. The forecast for Coal Hollow was two million tons annually, employing 90 people, requiring 150 shipping trucks per day with the life of the mine projected at 40 years.

Prior to the development of Coal Hollow Mine on private land, Alton Coal applied for a "Lease by Application" (LBA) to mine federal coal on 3,576 acres of BLM land using (primarily) surface-mining methods on tracts that were 0.10 mile south of Alton and 2.9 miles east of Hwy. 89. These coal fields were geologically located within the Alton Amphitheatre between the

²⁶⁰ Municipal and Industrial Water Supply and Uses in the Kanab Creek/Virgin River Basin; Prepared by Utah Dept. of Natural Resources; Division of Water Resources; January 2009.

²⁶¹ Kane County Water Conservancy District www.kcwcd.com/projects/cedarmountain; Verified year of construction through phone call on November 22, 2016 to office, Amanda Buhler.

²⁶² Tilton, Terry L., Geologic Map of the Alton Quadrangle, Kane County, Utah; Publication of Utah Geological Survey 01 4, Utah Department of Natural Resources, 2001.

Paunsaugunt Plateau (to the northeast) and Long Valley and Virgin River (to the west). It is also approximately 5 miles north northeast of the Grand Staircase-Escalante National Monument. The BLM required an environmental impact statement which was published in November, 2011.²⁶³ (A Final EIS has not yet been released.)

The Draft determined the following:

- All coal reserves in the Alton Coal Tract are federally managed; surface ownership is mixed.
- Of the 3,576 acres requested in the LBA, 2,280 of the surface and mineral estate are managed by the BLM; 1,296 acres are split estate, (meaning the surface coal is owned by eight different private property owners, and the mineral estate (underground) is managed by the Feds).
- In the Alton Coal Tract there are between 44.9 and 49.1 million tons of recoverable coal reserves. The coal will be mined at the 200 to 300 foot level at an estimated two million tons per year.
- The total recovery value (life of mine) is \$1.49 to \$1.57 billion; \$186.62 to \$197.30 million total federal royalty revenue; and \$93.31 to \$98.64 million royalty revenue disbursed to the State of Utah (50%). Additionally, \$30.20–\$32.04 million appropriation to CIB (32.5% of state revenue); \$37.32–\$39.46 million to UDOT (40% of state revenue).
- The coal will be mined over 25 years; there would be an additional 10 years for reclamation.
- The coal haul transportation route will involve Kane, Garfield and Iron counties (for a total of 110 miles); it will include KFO Route 116, Hwy. 89, SR-20, Interstate-15, and SR-56. The use of the Union Pacific Railroad at Cedar City, Utah is the nearest railroad facility.
- Alton Coal Development has acquired 50-acre feet of water rights from the Town of Alton.
- Assuming two million tons per year of coal production, 25-acre feet of water per year would be required for dust suppression and equipment washing.
- Alton Coal Development has not obtained any water rights to surface waters in the area, yet.
- All water sources must be permitted through the Utah Division of Water Quality and Utah State Engineer's Office.
- Federal and private owner coal *leases* would be required to remove coal from the tract.
- All permits will have to be obtained from the proper authorities (i.e. mine, air, storm discharge, etc.)
- Portions of KFO Route 116 *could be* relocated within the Tract to mine in-place coal reserves under the road.
- Most Utah coal production occurs in Carbon, Emery, and Sevier counties. According to the BLM, no coal production has occurred in Kane and Garfield counties since 1971. However, 53% of the state's estimated recoverable coal can be found in Kane County and 20.6% in Garfield County.

²⁶³ Alton Coal Tract Lease By Application Draft Environmental Impact Statement, Department of the Interior, Bureau of Land Management, Kanab Field Office, November 2011.

- Lands in the Alton Coal Tract are currently managed for wildlife habitat and livestock grazing.
- There are seven (7) grazing allotments affected by the Alton Coal Tract: two are completely within the tract (Alton and Cove) and five are partially within the tract (Isolated, Levanger Lakes, Robinson Creek, Syler Knoll, and Upper Sink Valley). The seven grazing allotments represent approximately 118 AUMs.

Employment Requirements for above LBA

Approximately 160 workers will be required to conduct mining operations at the Alton Coal Tract (and an additional 320 indirect jobs). One hundred (100) of these workers will be employed at the tract conducting mining operations; the remaining 60 workers will be engaged in transporting coal from the tract to market (trucking).

Employees are expected to come primarily from Alton and surrounding towns located within approximately one to two hours (driving time) of the area. This would include towns within three counties – Kane, Garfield and Iron: Kanab, Mt. Carmel, Orderville, Glendale, Hatch, Panguitch, Circleville, Kingston, Junction, Cedar City, Tropic, Enoch, Parowan, Paragonah, La Verkin, Hurricane, Henryville, and Escalante. Mine employees would either commute to and from the work site using their private vehicles or relocate closer to the tract. No housing would be provided at the mine. The initial start-up will only require 16 full-time employees.

Annual wages are estimated at \$6.5 million and \$166 million over the life of the mine.

Wetland/Riparian-Stream Alteration

Approximately 62.8 acres of wetlands are in the northwest part of the Alton Coal Tract. The BLM determined there will need to be modifications made to Lower Robinson Creek for placement of coal mining facilities at one or two road crossings of the creek, and at one or two road crossings of Kanab Creek. The number of crossings will depend on the mining sequence and specific alignment of KFO Route 116 (if it is re-routed). This will require stream alteration permits from the Utah State Engineer's Office. Other permits will need to be issued by the State of Utah.

Leases

The BLM reports there is an oil and gas lease (UTU-079271) in the northeast area of the tract that extends east of the Sink Valley Fault where the Straight Cliff Formation is exposed. In general, the area is classified as high potential for oil and gas development and there are a handful of existing leases near the tract. There is also a potential for the occurrence of coal bed CH₄, though there are no existing proposals to develop this resource.

Other Materials

The geological map for the Alton Coal Tract shows three gravel resource sites that are authorized community pits open to the public for purchase of burnt shale aggregate. Most of these pits have been in operation since the late 1970s and are nearly depleted. Other known burnt shale

resources exist west of the tract. Recent interest in the development of these resources has been shown.

There are also pediment gravel deposits in the tract. They are derived mostly from the erosion of the Claron and Canaan Peak formations and consist of quartzite pebbles and cobbles. These deposits are considered to be salable.

Septarian nodules occur in the tropic shale near the Alton Coal Tract. The nodules in the region are considered of high (gem) quality, and a locatable resource. Active mining for septarian nodules is occurring on leases in the Mount Carmel area southwest of the tract. Development potential is rated as moderate in areas where tropic shale is present. However, since no surveys or studies have been done on this tract it is unknown how common they are or if they are present in sufficient density to be economically viable for development.

Paleontological Resources

The formations that underlie the Alton Amphitheatre are known to have fossils in them. In ascending order, these are the Dakota (target formation for coal mining), Tropic, Straight Cliffs, Wahweap, and Claron formations.²⁶⁴ However, only the Dakota (Sandstone) and Tropic (Shale) formations will be disturbed during mining operations. Cenomanian terrestrial vertebrate fauna, fish, turtles, crocodylians, squamates, and dinosaurs are known to occur in the Dakota Formation. The Tropic Shale similarly yields a robust, highly significant vertebrate fauna. Two partial plesiosaurs have been recovered near the town of Alton, one in the Ford Pasture area approximately 15 km southeast of Alton and one in the Muddy Creek septarian mine approximately 20 km southwest of Alton. A third isolated paddle bone was observed west of Trail Canyon. In addition to the marine fauna, the partial remains of an ornithischian dinosaur was collected from the Tropic Shale in the area of Muddy Creek, east and south of the tract.

In 2006, the BLM found evidence of unusual features of rare, articulated fish remains in the existence of limestone mounds. In spite of the quality and abundance of fossil specimens that occur in the Tropic Shale in the Alton area, exposures of the formation is generally poor, and soil and plant cover is extensive. The likelihood of discovering one of these limestone concretions before they have been damaged, altered or destroyed by natural processes is relatively low.

Wildlife/Management

The tract falls within a cooperative wildlife management unit (CWMU) which is a hunting area consisting primarily of private lands. Its management involves cooperation with public agency land managers to manage healthy and diverse populations of big game animals. The CWMU is 55,000 acres and ranges in elevation from 5,500 feet to 9,000 feet. Public hunting is permitted from June through December. Within the Alton CWMU, 21 deer permits and four elk permits are issued each year.

²⁶⁴ Alton Coal Tract Lease By Application Draft Environmental Impact Statement, Department of the Interior, Bureau of Land Management, Kanab Field Office, November 2011.

Scenic By-Ways

US-89 is designated as a State of Utah scenic byway from the intersection of SR-12 south to the City of Kanab. It is also known as the Mount Carmel Scenic Byway and is designated as a National Heritage Highway. From US-89, 9 miles east of Kanab, the Johnson Canyon/Alton Amphitheatre Scenic *Backway* first passes through portions of the Grand Staircase-Escalante National Monument, including the Vermillion Cliffs, then climbs into the white cliffs. The Alton road spur of the byway travels north to Alton and provides better views of the pink cliffs, the Alton Amphitheater, and extinct volcanoes. The Alton road then loops northeast rejoining US-89 north of Glendale.

Moratorium on Mining at Coal Hollow

In January, 2016 a moratorium was placed on federal coal, which delayed the LBA from going forward. At this point, it has already been approximately 12 years since the original Lease By Application was submitted to the BLM. This has put Alton Coal Development in the position of having to apply for an emergency lease because the company will run out of coal within three years and under the current system, has the right to apply for a lease from the federal coal supply. Alton Coal has modified their LBA and submitted it for reconsideration. This process could take 18-24 months.²⁶⁵

In the meantime, they will continue to surface mine the acreage from private property leases. They are currently operating with 32 employees. Alton Coal has had to lay off an additional three people in the last year and a half. The employees come from as far away as Kanab and Panguitch.

Update: In 2017, newly elected President Donald Trump repealed the coal moratorium on federal coal which should expedite the Lease By Application for Alton Coal.

Mount Carmel/Mount Carmel Junction

Mount Carmel was settled at the same time Glendale (Berryville) was settled in 1864, ten years after the initial wave of Mormon pioneers explored Long Valley. It was first called Windsor in honor of Anson P. Winsor, an LDS Bishop from Grafton.²⁶⁶ The leading families arrived with herds of sheep and livestock; within the first year an irrigation ditch was dug to draw water from Muddy Creek.²⁶⁷ The first habitats were dugouts though they eventually built log houses. By the fall of 1865, settlers had surveyed a townsite, but shortly thereafter, had to move to the fort at Berryville (Glendale) due to Indian trouble. This combined group of settlers eventually fled the area and headed to St. George in Washington County; while going through Kanab the families split up and “. . . the refugees were sent to settlements throughout southern Utah.”²⁶⁸

²⁶⁵ Johnson, Larry; Manager at Alton Coal Development, LLC; Reported at Resource Development meeting on November 1, 2016.

²⁶⁶ Bradley, Martha Sonntag, History of Kane County, Utah: Utah State Historical Society, 1999. Print. Pg 64

²⁶⁷ Ibid.

²⁶⁸ Ibid. Pg 65.

When it was safe to return those that came back to the Valley were under a different edict from Brigham Young to attempt a new order of communal living. The Mt. Carmel United Order was organized March 20, 1874.²⁶⁹ This plan was met with considerable resistance partly because some of the settlers who moved to the area took advantage of the abandoned shelters built by the earlier group. When the original settlers learned of this, they returned to reclaim their homes. Many of the families did not wish to live in a communal-style unit so those who did want to live communally moved north a few miles to a town they named Orderville.

The Mt. Carmel Junction is at the crossroads of SR9 and Highway 89; the turnoff is 14 miles to the east entrance of Zion National Park. Both Mt. Carmel and Mt. Carmel Junction were annexed by the town of Orderville in 1993, but their names were left the same.

Mt. Carmel is also known for artist Maynard Dixon, who is famous for his paintings of the American West. He built a summer home in Mount Carmel Junction in 1939. After his death in 1946, his ashes were buried on a high bluff above the Mount Carmel art studio that was built on the property.

Orderville

According to historical records, the experiment with the LDS church's United Order in Kane County split communities a part.²⁷⁰ However, it was also considered the most successful communal order in that it lasted longer than any that were attempted. The larger scheme of cooperation, joint property ownership and management proved successful partly because it was remotely located, the land was fertile, and the surrounding grazing land was ideal for cattle raising. The Orderville United Order was officially organized July 14, 1875; and had an elected board of nine directors who were responsible for organizing and supervising labor and resources. Most business transactions were brought before the entire group for decision. The order was incorporated for 25 years with a maximum capitalization of \$100K (10,000 shares at \$10 each).

The United Order was first and foremost a religious organization working for the Kingdom of God, adhering to Mormon concepts. However, it also operated as an efficient business with 33 different departments, directors and assigned personnel. The departments reflected the times: blacksmithing, wagon repair, boarding house, board of appraisers, cabinet and carpentry, canal, commissary, cotton farming, sawmill, schools, poultry, livestock, dairy, midwifery, stock feeding, tailoring, and more. Changes in rules required two-thirds vote of the membership to vote in new regulations.

New members had to be members of the Church of Jesus Christ of Latter-day Saints; were in general judgments of moral and religious character rather than economic status; they had to answer questions about why they wanted to enter the order and indicate what they were willing to give up. All members deeded their property over to the order for there was no private property in Orderville and "all things [were] done by common consent."

²⁶⁹ Martha Sonntag, History of Kane County, Utah: Utah State Historical Society, 1999. Print. Pg 98.

²⁷⁰ Ibid. Pg 103

Though the concept was designed that there would be no rich or poor, everyone in Orderville was basically poor. Men received \$1.50 for a day's work; boys 11 to 17 years received 75 cents a day; girls 10 to 13 years received 25 cents and under 10 years half that amount. It is unknown what the women worked for, but adults were charged \$50 per year for rent, and \$17.50 and \$16.50 for men and women's clothing, respectively.

The order conducted commerce with the surrounding communities – they took logs to mill in Winsor (Mt. Carmel) and Berryville (Glendale) until they purchased their own. They also purchased a flour mill from a farmer in Glendale. They were still practicing polygamy at the time so several of the men lived in houses with multiple wives.

The United Order sought to be self-sufficient and for the most part succeeded in being independent of outside influences. But after Brigham Young's death in 1877, the United Order began to change with the changing leadership of the Mormon Church. Men were no longer paid equally for their work; they were paid according to skill. The U.S. government also began persecuting those who practiced polygamy. Ironically, as southern Utah began to do well economically, the United Order began to decline. It finally sold off its assets in 1885. When the order broke up there were approximately 500 people living in Orderville. By 1959 there were 429 people living in the community.²⁷¹ At the 2010 Census Brief²⁷² the population was 577.

The town incorporated in 1935 and the first town ordinances were adopted on September 22nd of that year. Original minutes indicate Orderville's culinary water was obtained from a well. Water for irrigation was from Muddy Creek and first relegated by ownership of the land; then the State of Utah issued title to the Orderville Irrigation Company on the basis of its existing divisions. When the charter ran out the stream was changed. An overnight storage pond was built and water division was changed to an hourly basis. Orderville eventually had to contract for the construction of a dam and canal head to act as a diversion dam.²⁷³

Orderville's public community water system falls within the Kanab Creek/Virgin River Basin. It is one of 42 public systems that serve approximately 233,400 people. The Kanab Creek/Virgin River Basin provides water to portions of Iron, Kane and Washington Counties.²⁷⁴ Ten percent of Orderville's water is derived from springs and 90% from wells. They also have the Orderville Irrigation Company that handles its secondary water system. Their water storage system is capable of containing over 500,000 gallons.²⁷⁵

Orderville combined its efforts with Glendale, Mt. Carmel and Mt. Carmel Junction to form the Long Valley Sewer Improvement District to build holding ponds which solved part of their sewage disposal problems alleviating pollution in the East Fork of the Virgin River. Orderville

²⁷¹ Carroll, E.C., Ed. History of Kane County, Part II, Other Towns in the County Orderville; Published by Kane County Daughters of Utah Pioneers; 1960.

²⁷² Census Brief: Cities and Counties of Utah; State of Utah Governor's Office of Planning and Budget; Demographic and Economic Analysis Section, July, 2011.

²⁷³ Carroll, E.C., Ed. History of Kane County, Part II, Other Towns in the County Orderville; Published by Kane County Daughters of Utah Pioneers; 1960.

²⁷⁴ Municipal and Industrial Water Supply and Uses in the Kanab Creek/Virgin River Basin; Prepared by Utah Dept. of Natural Resources; Division of Water Resources; January 2009.

²⁷⁵ Orderville Master Plan; Prepared by Five County Association of Governments; April, 1981; Provided by Town Clerk, Carol Lamb, 2016.

has also joined the Western Kane County Special Services District to improve land-fill and disposal concerns. They also contract with the Kane County Sheriff for law enforcement.

Orderville has experienced soil problems with clay types that cause shrink-swell problems with foundations, and septic tank filter fields with low infiltration rates. Another soil/rock type is marine shale from the western cliffs that contribute to slippage and mud slides during wet weather. The flood hazard boundary map follows the contours of the East Fork of the Virgin River, crossing over Highway 89.

In 1993, Orderville annexed Mt. Carmel and Mt. Carmel Junction, but left their names the same. The combined area is approximately 7.7 square miles. Orderville's original Master Plan from 1981 (which is still in effect as of the publishing date of this RMP) indicated the majority of the land use was vacant (71%), followed by agricultural use (10%), then residential (8%)²⁷⁶. Commercial only made up about 1% of usage, although with the annexing of Mt. Carmel and Mt. Carmel Junction, that percentage should change. Additionally, Highway 89 runs directly through all three towns and provides for a lot of traffic through the corridor.

Population projections over 20 years ago attempted to take into consideration the development of the Alton Coal fields, anticipating Orderville could be confronted with a low end increase of 882 people to a higher end of 905 people. Though the projections were set for the year 2000, the Long Valley/Highway 89 corridor could face a substantial population increase requiring housing, and other municipal services. According to Orderville's Master Plan, vacant lots within the town limits could be developed for residential purposes before any agricultural land is developed.

Duck Creek

Although not an incorporated town, Duck Creek is one of the better known locations within Kane County. Located off State Route 14, Duck Creek Village has approximately 60 year-round residents, yet is basically the center community for the surrounding property that represents half of Kane County's tax base. There are multiple subdivisions running throughout Cedar Mountain on the Kane County side, which are considered secondary and/or vacation homes. Residency is seasonal in nature, and the busiest period is spring through fall each year.

Duck Creek Village is ten miles from Long Valley Junction (aka Tod's Junction), which is on the crossroads of Highway 89 and also considered the beginning of the Markagunt High Plateau Scenic By-way. Duck Creek sits at the 8,500 foot elevation in the northwestern corner of Kane County in an area considered geomorphologically as the Kolob Region. Duck Creek has established its own Fire Protection District (Cedar Mountain Fire Protection District) with two Fire Stations serving 92 square miles. Parts of it abut or are within the Dixie National Forest. The area is serviced by the Kane County Water Conservancy District, which has the capacity to service 10,000 customers year round.

²⁷⁶ Ibid.

Kane County has recently accepted a proposal for a land conveyance project from the Dixie National Forest Service of approximately 74 acres for the Duck Creek community.²⁷⁷ The land is needed to transfer ownership of the existing wastewater treatment system and for other community health and safety services. The proposed transfer includes land that would serve community services for water and wastewater, fire protection, solid waste management, and other future qualifying needs for schools, medical and utilities. The authority by which the land will be transferred is under the National Forest Townsite Act.²⁷⁸

The area is basically a recreational destination, which features annual festivities hosted out of Duck Creek Village. It has its own post office and zip code and serves as a gateway to Cedar Breaks National Monument and Brian Head resort.

Kanab City

Kanab was the first town to be settled in Kane County in 1858 by Jacob Hamblin, who built a small dugout on Kanab Creek, but it wasn't the first community to be developed. Yet, Kanab became the county seat for a number of different reasons. With all the disruptions experienced in southern Utah in the mid-1800s Kanab ended up being a pathway for many pioneers who passed through on their way to Arizona, Nevada, St. George, Long Valley and Salt Lake City.

Historical records indicate Kanab has a colorful history as it carved itself out of the southern Utah wilderness.²⁷⁹ Kanab became incorporated in 1885 and developed quicker than other communities in the area; it became a hub of activity and remained the most populated even as of today. Kanab is known for several "firsts" such as the first all-woman city council, the first to see an automobile, and the first to have phone service. Kanab has created its reputation on its western culture, which has been built on the backs of the original settlers and all those who continue to keep these values alive.

Kanab's current population is 4,312 people. The Kem C. Gardner Policy Institute at the University of Utah projected that by 2020 Kanab will see an increase of 746 people; and by 2030 that increase will jump by 1,159 people.

Land Use

Kanab has a land mass of approximately 14 square miles of which .04 square miles is water. They have divided land use into three main categories to manage growth and demonstrate planning for community quality of life. The classifications are: residential, commercial and manufacturing. Within each classification are subcategories that allow for agriculture, open space preservation, housing density, buffer zones for surrounding uses, necessary infrastructure, protecting environmental quality, planned development overlays and special/mixed development uses.

²⁷⁷ Letter dated December 16, 2016 from Cedar City Ranger District, Dixie National Forest, National Forest Service, U.S. Dept. of Agriculture.

²⁷⁸ The National Forest Townsite Act, July 31, 1958 (PP.L. 85 569, 72 Stat. 438, 16 U.S.C. 478a, as amended).

²⁷⁹ Kanab, Utah; Agency History; Division of Archives & Records Services, Utah Department of Administrative Services.

Kanab has recognized that preserving open space is conducive to its small town atmosphere; it has earmarked several areas within city limits for open space preservation, new parks and trails that will promote this idea. They also desire to promote open space for wildlife habitat and will investigate potential acreage that could be annexed toward this end.

One of Kanab's main goals is to "promote an attractive, stable and sustainable environment throughout the city."²⁸⁰ Protection of the environment is an important part of its planning process and Kanab wants development plans to be sensitive to areas that are: 1) designated within the 100-year flood plain; and 2) subject to geological hazards, unstable soil conditions, slopes in excess of 20%, or rock slide areas. The city is pursuing updates to the FEMA designated flood plain maps, which are currently out of date. They would also like to partner with the Utah Geologic Survey to obtain more information regarding geologic conditions and hazards within the city.²⁸¹

Fire

Kanab Fire Department is a volunteer department serving both the city and Kane County. There are two stations within the city, which are set for remodeling in the near future. There are also plans to replace and/or enhance the city's fleet of vehicles, as needed. The department is currently working on an Emergency Operations Plan.

Cultural, Historical, Archeological & Paleontological

There are several sites within Kanab that either have historic designation or have the potential to be designated historic spots. Some of the structures are being renovated and restored by the city's Historical Society.

Kanab's claim to fame is its "western theme" and for being known as Little Hollywood after having over 100 movies filmed in and around the town. The downtown area promotes the classic western theme and has several examples of buildings that reflect the architecture of an old western town. Continued emphasis on this theme is important to Kanab's future.

During the construction of Jackson Flats reservoir crews discovered 10 sites containing prehistoric Anasazi ruins including human remains. Sites that would be below the water line were exhumed and turned over to the local band of Paiute Indians for reburial; Sites that were above the water line remained unexcavated.

Law Enforcement

Kanab City is protected by a full-time Chief of Police, six full-time officers and eight reserve officers from outside agencies. The Department also employs one fulltime animal control officer. The department is responsible for over 4,700 residents living within 14 square miles. During tourist season, which runs April through October, the population increases by 3,000 people.

²⁸⁰ Kanab General Plan, revised 2015.

²⁸¹ Ibid.

Recreation & Tourism

Kanab has become the center hub for all destination stops in Kane County and Southern Utah. With the main transportation corridor running through it, most travelers have to pass through the city at one time or another going north, south, east or west. Kanab is within 1-2 hour's drive of Bryce Canyon, Zion National Park, Lake Powell, Grand Staircase, North Rim of the Grand Canyon – and those are just the big ones.

The Coral Pink Sand Dunes are 20 minutes away; Picaboo Slot Canyon is 15 minutes up the road; Best Friends animal Sanctuary is less than that. Kanab has an intricate series of trails for hiking and ATV riding and there are a number of tour companies that will people to exceptional overlooks.

Kanab celebrates Balloons 'n Toons in February; Amazing Earthfest in April; Greyhound Gathering in May; 'Western Legends' in August; and several other annual events that draw thousands of people to the area.

Tourism plays a strong role in the local economy, and though it appears seasonal, it still remains a high priority for the city. Kanab wishes to increase programs that will promote and market Kanab economically. It would also like to promote and encourage conversation with the Kane County Center for Education, Business and the Arts (CEBA), as well as attract more entrepreneurs.

Transportation

An effective and functional transportation system is essential for Kanab to operate effectively. The city has adopted a Transportation Master Plan that provides for a safe, convenient and efficient system of transporting people throughout the community.

The most important aspects of the plan covered the following: creating a pedestrian-friendly atmosphere downtown; investigating the installation of bicycle and walking paths; constructing new road connections and future roadways; and maintenance of existing roadways.

The Kanab Airport at the south end of town provides scenic flights and charter service. As the community grows the use of the airport will too which will require an update to the Airport Master Plan and public input.

Kanab does not offer public transportation other than transport for senior citizens for medical appointments, shopping and activities. This is sponsored by the Council on Aging. The Southwest Utah Coordinated Human Service Public Transportation Plan lists the route between Kanab and St. George as needing bus transportation fulfillment.²⁸²

²⁸² Kanab General Plan, Revised 2015.

Water

Kanab's public community water system falls within the Kanab Creek/Virgin River Basin. It is one of 42 public systems that serve approximately 233,400 people. The Kanab Creek/Virgin River Basin provides water to portions of Iron, Kane and Washington Counties.²⁸³ Ten percent of Kanab's water is derived from springs and 90% from wells. The Kanab Municipal Water System handles the culinary water supply (city) and the Kane County Water Conservancy District (KCWCD) handles the irrigation water. The KCWCD obtains water from wells that serve the customers in the Johnson Canyon area.

Kanab intends to develop additional community water, drainage and sewer resources. They will explore the development of water resources through additional springs, well extraction sources and a booster pump station. They will also implement a drainage improvement program that resolves the nuisance drainage issues in the city.

Ditches & Canals

The main distribution and conveyance system is handled by the Kanab Municipal Water System (Kanab City) for the lines within Kanab city limits, and the conveyance lines that interconnect with Kanab Municipal and extend to Johnson Canyon customers are owned and operated by the Kane County Water Conservancy District. This includes any lines that extend from Jackson Flats Reservoir.

Irrigation

Both Kanab Creek and Jackson Flats Reservoir are used for irrigation purposes. Those who still own water rights to Kanab Creek can draw their acre feet through their own distribution systems, pumping water to their fields. Jackson Flats is used as a storage unit which can contain 4,228 acre feet of water (at full pool). It is fed by a 24-inch pipe and has a depth of 28 feet.

Fisheries

Although Jackson Flats is not an official fishery, it has been stocked with trout, catfish, and bluegill. Motorized boats are not allowed on the reservoir and fishing licenses are required.

Predator Control

Kanab employs a fulltime Animal control officer for domestic animals. The Department of Wildlife Resources handles non-domesticated animals that wander into peoples' yards, but for the most part, they offer live/humane traps for people to capture nuisance animals for a catch and release into the county.

Best Friends Animal Sanctuary does not accept stray cats or dogs.

²⁸³ Municipal and Industrial Water Supply and Uses in the Kanab Creek/Virgin River Basin; Prepared by Utah Dept. of Natural Resources; Division of Water Resources; January 2009.

Big Water

The Town of Big Water is located on Highway 89 on the eastern side of Kane County near the Utah/Arizona border. It is approximately 19 miles northwest of Lake Powell and Page, Arizona surrounded by Bureau of Land Management on the west and the National Park Service on the east. Big Water was originally settled in the 1950s as a construction camp for workers erecting the Glen Canyon Dam. It was then called Glen Canyon City. The name was changed when the community was incorporated on July 1, 1984.

According to the Big Water General Plan dated January 16, 1996 over 80% of the land base within the corporate limits was in public ownership (by the Bureau of Land Management) and approximately 10% had been platted under provisions of the Small Tract Act. The Small Tract Act was a law passed by Congress in 1938 making it possible for any citizen to obtain certain lands from the Federal Government for residence, recreation, or business purposes. The lands weren't free, but they weren't that expensive, either. The Bureau of Land Management (BLM) administered the program for the Federal Government.

In order to qualify for the Small Tract Act, the land had to be classified as vacant public land and it had to be suitable for certain kinds of development. Of the 168 million acres of vacant public land in the United States over 99% were located in the 11 western States. At one time, Utah had 24,200,000 available acres.²⁸⁴ Under the small tracts law parcels could be leased or sold "if they are chiefly valuable for residential, recreation, business, or community sites."²⁸⁵ The parcels could not be larger than five acres, and a small tract could be 1.25 or 2.5 acres. To qualify as a residential site the land had to be suitable for seasonal or year-round use.

Big Water further developed its land base by identifying certain parcels of public land needed for community purposes, and they notified the BLM of their desire to acquire the land through the provisions of the Recreation and Public Purposes Act.²⁸⁶ This law authorizes the sale or lease of public lands for recreational or public purposes to local governments. Political subdivisions could be eligible for special pricing or one-half fair market value for the land.

A lot of land acquired under the Small Tracts Act was transferred to private ownership; there are still a few owned by the BLM near the Grand Staircase Visitor Center and where the Visitor Center is located. The State of Utah owns several tracts of land within and around the town proper-State Institutional Trust Lands-(SITLA) that have been turned into subdivisions like Shelter Cove, which residents are allowed to purchase as long as they abide by SITLA's Covenants, Conditions and Restrictions (CC&Rs).

Although the creation of the Grand Staircase-Escalante National Monument thwarted the expansion of Big Water to the west, the town still has a close relationship with the BLM as it helped coordinate the creation of the Visitor Center. Monument staff also used to assist the town

²⁸⁴ Small Tracts, United State Department of the Interior, Fred A. Seaton, Secretary; Bureau of Land Management, Edward Woosley, Director. 1958.

²⁸⁵ Ibid.

²⁸⁶ Recreation and Public Purposes Act 43 CFR §§ 2740.0 1 2740.0 9 and 2912

with trash disposal. Today, Big Water contracts with a company out of Page, Arizona to handle its services.

Big Water's community public water system falls within the Southeast Colorado River Basin which serves portions of five counties (Garfield, Grand, Kane, Summit and San Juan). The basin has 15 public community water systems and seven unregulated Native American systems. The public community systems serve 17,437 people.²⁸⁷ It also supplies 26 public non-community systems that serve the state parks, NRAs, rest stops, campgrounds and parks. Big Water's culinary water source comes exclusively from wells. It used to be administered by the Glen Canyon Special Services District but as of May, 2017, Big Water has taken over legal ownership of the water system, its debt and assets. The new name will be the Glen Canyon Special Services District of Big Water. The Special Services District has plans to refurbish a 100,000 gallon storage tank and install an 8-inch distribution line.

At the 2010 Consensus Brief, Big Water's population was 475; it is approximately six square miles and ranks 105 in Utah by land area.²⁸⁸ The town has a traditional municipal government with a mayor and four council members. The town has a fulltime Marshall who provides law enforcement services. There is a fire chief and a volunteer fire department. Population projections by the Kem C. Gardner Policy Institute at the University of Utah say by 2020 Big Water could increase by an additional 82 people. By 2030, they optimistically project an additional 127 more.

There is only one way into and out of Big Water and that is via Highway 89. It is a short distance from Lake Powell and the Glen Canyon National Recreation Area, as well as next door to the Grand Staircase. It sits at approximately 4,100 ft. elevation, which makes it exceptionally hot most of the year, with little precipitation. Most businesses and employment serve the recreational industry of Lake Powell.

The surrounding terrain is typical of high desert shrub vegetative communities dominated by saltbush, greasewood and various species of cacti. Wahweap Creek comes in from the northern end of the town, runs along the eastern edge of town, curls back through the southern end before it drains into Lake Powell. There are indications that cottonwood and tamarisk line the riparian corridors of the creek. The upper elevations around Big Water contain pinyon and juniper.

Fisheries:

The Division of Wildlife Resources operates a fish hatchery north northwest of Big Water, at the end of Fish Hatchery Road called Wahweap Warmwater Fish Hatchery. The hatchery opened up in 1972 to stock striped bass in Lake Powell (and other Utah rivers) for recreational purposes. The hatchery sits on 265 acres and currently has 35 ponds that vary in size from .26 to .88 acres. It is operated by pumping well water, which yield a capacity of 1,600 gallons per minute. The

²⁸⁷ Municipal and Industrial Water Supply and Uses in the Southeast Colorado River Basin, Prepared by the Utah Department of Natural Resources, Division of Water Resources, Sept. 2006.

²⁸⁸ Census Brief: Cities and Counties of Utah; State of Utah Governor's Office of Planning and Budget; Demographic and Economic Analysis Section, July, 2011.

well water averages 16.5 centigrade (61.7 F.) but pond temperatures range from 16.3 to 25 C. (77 F.)

The land is owned by the State of Utah, and is surrounded on two sides by State Institutional Trust Lands and abuts the Grand Staircase on its northeast border.

The Hatchery has expanded to include other sports fish such as wipers (a cross between walleye and striped bass), channel catfish, and tiger muskies. They also started culturing endangered fish to assist the Colorado River Recovery Program. The programs became intertwined until the endangered fish program exceeded the sports fish part. Eventually, the endangered fish culture comprised over 70% of the hatchery resources.²⁸⁹

The Hatchery works with several species of endangered fish in the Virgin River system like the woundfin and the Virgin River chub. They hold brood stock or a back-up supply if there happens to be a fish kill in the river or something happens at another hatchery. Over the years, Wahweap has supplied the Virgin River with over 10,000 Virgin River chub for stocking.

The Hatchery also conducts research on feeding regimes, temperatures and pond density to determine whether fish populations can be augmented and restored to their natural habitat. It only requires two fulltime and two part-time personnel to operate the facilities.

²⁸⁹ Virgin River Chub, Salvage, Broodstock and Culture Plan; Utah Division of Wildlife Services, Dept. of Natural Resources, Publication 06 03.

Region #4 National Forest Region

Statement of Intent:

Kane County insists that the Forest Service abide by the listed statutes, regulations, presidential executive orders and agency directives that influence the management of the forest, especially where federal coordination and cooperation with local, state and tribal governments are concerned.²⁹⁰ It is also the policy of Kane County that the historic productive uses²⁹¹ of the national forests and grasslands within the political boundaries of the county be incorporated into all management plans and policies as necessary components of the Multiple-Use, Sustained-Yield Act of 1960 for the purpose of avoiding harm to the county and its residents.

Introduction:

The Dixie National Forest is spread out over five counties in Southern Utah taking in approximately 1.9 million acres. In Kane County, the Dixie National Forest is spread in two separate sections on the Northwest corner of the county. This “National Forest Region” encompasses an estimated 143,334 acres.²⁹²

One section of the Dixie National Forest (DNF) sits on the Markagunt Plateau, which is west of Highway 89 (North) on Cedar Mountain. The DNF southern boundary extends to a point just above the Town of Glendale; its eastern boundary crosses Hwy. 89 at Alton Road for approx. 2-3 miles; its western border encompasses Navajo Lake and Te-Ah Campground along Hwy. 14 and crosses into Iron County to the North. The main access route is SR-14 which runs off Hwy. 89 at Long Valley Junction through Duck Creek Village and into Iron County (to Cedar City). The highway has been designated the “Markagunt High Plateau Scenic Byway.” This section of the DNF falls under the purview of the Cedar City Ranger District.

Markagunt is from the Paiute language meaning *highland of trees*.²⁹³ This plateau is 800 square miles and is part of the Colorado Plateau Province. It is known for a number of recreational spots like Cedar Breaks National Monument and Brian Head Ski Resort, which are not in Kane County, but Navajo Lake, Duck Creek, the volcanic fields of basaltic cinder cones and blocky lava flows are. One of the highest points on the Markagunt Plateau is 11,307 feet at Brian Head Peak.

²⁹⁰ See pages 143-44 where brief summaries of the following enabling legislation are listed: The Healthy Forests Restoration Act of 2003; U.S. Forest Service Planning Rule of 2012; Forest Service Manual 1921.63(a); U.S. Forest Service Manual 1950.2; Regulatory Flexibility Act (5 USC § 601-612); Intergovernmental Cooperation Act (§ 401(3) USC §301); Presidential Executive Order 12372.

²⁹¹ The national forests were originally set aside to provide a continuous supply of timber and for the protection of water sources for local communities and agricultural needs. Later, through the adoption of the Multiple Use Sustained Yield Act of 1960, Congress determined that the forests should be “administered for outdoor recreation, range, timber, watershed, and fish and wildlife purposes,” which were declared to be “supplemental to, but not in derogation of the original purposes.” 16 U.S.C. § 528.

²⁹² Within the administrative boundary there are 55,205 acres in the Powell Ranger District (Paunsaugunt Plateau) and 88,189 acres in the Cedar City Ranger District (Markagunt Plateau); these figures include private in holdings per communication with Laurie Parry, Forest Service, February 10, 2017.

²⁹³ Wikipedia, “Markagunt Plateau”, http://en.wikipedia.org/wiki/Markagunt_Plateau Downloaded 1/18/17

The second section of the Dixie National Forest (DNF) is several miles east of Hwy. 89 past the Town of Alton on the Paunsaugunt Plateau. It is separated from the western section by the entire length of the Long Valley and natural geologic formations such as fault lines and the north-flowing East Fork of the Sevier River. The Forest that sits to the eastside of Hwy. 89 abuts and surrounds the lower half of Bryce Canyon National Park. Access is limited because several Forest Service roads have been closed to motorized vehicle travel. Kane County is currently in negotiation with the Forest Service to open an additional route into the forest via Robinson Creek (outside the Town of Alton). This side of the DNF is governed by the Powell Ranger District, which is operated out of the town of Panguitch in Garfield County.

Southern access can be obtained by going East on Hwy. 89 (from Kanab toward Page, AZ) and then north on Johnson Canyon Road (a left-only turn). Johnson Canyon turns into Skutumpah Road and becomes a dirt road that is maintained by the county; Skutumpah will lead to Deer Springs Ranch and then to Meadow Canyon Road. This road meets with Forest Service Road 092, which is open seasonally from Nov. 1 through August 31 each year. Meadow Canyon Road is closed two weeks out of the year – during deer season in October.

The Paunsaugunt Plateau is very different from the Markagunt Plateau because of its flat-topped dissected mesa. It is only 10 miles wide, 25 miles long, and reaches as high as 9,700 feet. *Paunsaugunt* is a Paiute word meaning “land of the beavers” and was named so by John Wesley Powell.²⁹⁴ Both plateaus have high enough elevations to bring significant amounts of snow in the winter which guarantees enough for melt-off in the spring. Precipitation for both elevations can average up to 35-inches (falling mostly as snow).

History:

The Dixie National Forest is the largest national forest in Utah.²⁹⁵ It was established as a reserve on September 25, 1905 by the General Land Office.²⁹⁶ It became part of the National Forest system on March 4, 1907.²⁹⁷ The Dixie National Forest was expanded twice when the western part of the Sevier National Forest was added on July 1, 1922 and all of Powell National Forest on October 1, 1944.²⁹⁸ It is spread out in six counties - Garfield, Iron, Kane, Piute, Washington and Wayne - stretching about 170 miles across southern Utah. The headquarters for this national forest is in Cedar City although each county has a ranger district office.

The Dixie National Forest operates under the U.S. National Forest system, which was established first as the Division of Forestry within the Department of Agriculture on June 30, 1886. From there the system formed through a series of Acts, amendments and appointments. The Forest Reserve Act of 1891 gave the president the authority to establish forest reserves from public domain land; the Organic Act of 1897 made sure any new reserves had to meet certain criteria of forest and watershed protection and timber production. It also created the management organization to handle the responsibility, but this management came under the Department of

²⁹⁴ Utah Place Names, Paunsaugunt Plateau; Utah Education Network; <https://eq.uen.org/emedial/items>. Downloaded 11/18/17.

²⁹⁵ Wikipedia, “Dixie National Forest,” http://en.wikipedia.org/wiki/Markagunt_Plateau Downloaded 11/18/17.

²⁹⁶ Ibid.

²⁹⁷ Ibid.

²⁹⁸ Ibid.

Interior. Superintendents and rangers who managed the reserves were political appointees of U.S. Senators.²⁹⁹

In February, 1901 the Division of Forestry renamed itself the Bureau of Forestry. On February 1, 1905 the management of forest reserves was moved under the Department of Agriculture; this ended political appointments for employment within the forest service and created a higher standard for the workforce. On July 5, 1905 the Forest Service was created, replacing the name Bureau of Forestry. By 1907, the forests were no longer referred to as “reserves” but as National Forests.

The Dixie National Forest is divided into four geographic areas: there is a section on the Markagunt Plateau, the Paunsaugunt Plateau and Aquarius Plateau, and in the Pine Valley Mountains north of St. George. Elevations vary from 2,800 feet (Pine Valley) to 11,322 feet (Boulder Mountain, Aquarius Plateau). Given the vast differences in elevation, the forest has many climatic extremes. Precipitation ranges from 10 inches in the lower elevations to over 40 inches at higher elevations. At the higher elevations, most of the precipitation falls as snow, but thunderstorms are common in the summer months making both July and August known for producing heavy rains (and flash floods). In some areas, late summer is considered the monsoon season and is the wettest month of the year. Because of the vast differences in elevation forest vegetation changes from sparse arid desert plants at lower levels, to stands of low-growing pinyon/juniper at mid-level and aspen and conifers at the high elevations.

The National Forest System breaks down into nine regions; Dixie National Forest is part of the Intermountain Region (region 4), which is made up of southern Idaho, Nevada, Utah and Western Wyoming. In all, the region covers 12 National Forests.

Enabling Legislation:

The primary statute governing the administration of the Dixie National Forest is the National Forest Management Act of 1976 (16 U.S.C. § 1600-1614).³⁰⁰ It requires the Secretary of Agriculture to assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest System. Under the National Forest Management Act (NFMA) the Secretary of Agriculture is required to prepare a “Renewable Resource Assessment” and update it every ten years. The Secretary must also provide more opportunity for involvement with other interested government agencies and the public.³⁰¹

Prior to NFMA, the statutory framework for management was drawn from the Organic Act of 1897, the Multiple-Use Sustained-Yield Act of 1960, and the Forest and Rangeland Renewable

²⁹⁹ Williams, Gerald, Ph.D., Historical Analyst, “The USDA Forest Service – The First Century”, USDA Forest Service, Washington, D.C., Slightly Revised April 2005. FS 650.

³⁰⁰ The National Forest Management Act reorganized, expanded and amended the Forest and Rangeland Renewable Resources Planning Act of 1974, created August 17, 1974; as amended 1976, 1978, 1980, 1981, 1983, 1985, 1988 and 1990.

³⁰¹ “(d) In developing the reports required under subsection (c) of this section, the Secretary shall provide opportunity for public involvement and consult with other interested governmental departments and agencies.” (16 U.S.C. 1601)

Resources Planning Act of 1974.³⁰² NFMA addressed issues of clear cutting and several broad policy matters, reemphasizing multiple-use and renewable resource management for sustained yield; it altered the road building policy in national forests, introduced a new policy on efficient wood utilization, detailed standards for timber harvesting, detailed procedures for land management plans and made increased public participation in Forest Service planning a requirement.³⁰³

The Dixie National Forest is also governed by the National Environmental Policy Act (NEPA, 42 U.S.C. § 4331. This Act declares “...it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.”

There are several additional statutes, regulations, presidential executive orders and agency directives that influence the management of the forest, especially where federal coordination and cooperation with local, state and tribal governments are concerned. They include:

- The Healthy Forests Restoration Act of 2003³⁰⁴

This is an initiative to allow priority fuels reduction and forest restoration projects identified through collaboration with state, local and tribal governments to be expedited and move forward more quickly. The improved coordination includes the formation of the Interagency Wildland Fire Leadership Council (USDA and DOI) to implement the National Fire Plan and combat fire more effectively.

- U.S. Forest Service Planning Rule of 2012³⁰⁵

This Rule places a new focus on coordination, cooperation, and collaboration between governmental interests and the Forest Service. Both the obligation and the opportunity for the Forest Service to engage State, local, and tribal governments in the planning process are emphasized in the 2012 Planning Rule. In providing opportunities for engagement, the responsible official shall encourage participation by:

(iv) Federal agencies, States, counties, and local governments, including State fish and wildlife agencies, State foresters and other relevant State agencies. Where appropriate, the responsible official shall encourage States, counties, and other local governments to seek cooperating agency status in the NEPA process for development, amendment, or revision of a plan. The responsible official may participate in planning efforts of States, counties, local governments, and other Federal agencies, where practicable and appropriate. (36 CFR 219.4 (a)(1)(iv) and (v)).

³⁰² Mulhern, Timothy L., “The National Forest Management Act of 1976: A Critical Examination” Boston College Environmental Affairs Law Review, Vol. 7, Issue 1. Sept. 1, 1978.

³⁰³ Ibid. pg.101 102.

³⁰⁴ Public Law 108 148, 117 Stat. 1887 1915

³⁰⁵ Published in the Federal Register Monday, April 9, 2012; Part 212, PLANNING, Subpart A National Forest System Land Management Planning.

Furthermore, the rule requires coordination with related planning efforts:

The responsible official shall coordinate land management planning with the equivalent and related planning efforts of federally recognized Indian tribes, Alaska Native Corporations, other Federal agencies, and State and local governments (36 CFR 219.4(b)(1)).

- Forest Service Manual 1921.63(a)

The responsible official shall provide opportunities for coordination with State, local and other Federal agencies and Tribal governments.

- U.S. Forest Service Manual 1950.2

1950.2 Objectives - In meeting requirements of NEPA, the Forest Service seeks to:

- 1) Fully integrate NEPA requirements into agency planning and decision making (36 CFR 220.4(c)(2));
- 2) Use a systematic, interdisciplinary approach to fully consider the impacts of Forest Service proposed actions on the physical, biological, social and economic aspects of the human environment (40 CFR 1507.2(a), 40 CFR 1508.14);
- 3) Involve interested and affected agencies, State and local governments, Tribes, Alaska Native corporations, organizations, and individuals in planning and decision making (40 CFR 1500.1(b), 40 CFR 1500.2(b), and (d), 40 CFR 1501.7, 40 CFR 1503.1, 40 CFR 1506); and
- 4) Conduct and document environmental analyses and subsequent decisions appropriately, efficiently, and cost effectively.

- Regulatory Flexibility Act (5 USC § 601-612)

This requires federal agencies to consider effects of their regulatory actions on small businesses and other small entities (defined as “small government jurisdiction”).

- Intergovernmental Cooperation Act (§ 401(3) USC §301))

Requires federal agencies to coordinate and review with state and local governments, federal programs and plans: ...provides opportunities for strengthening the consultation and coordination between federal, local and state governments through coordination and review of proposed federal assistance and direct federal development programs.

- Presidential Executive Order 12372-Intergovernmental Review of Federal Programs

Requires federal agencies to coordinate with state and local governments; determine official views of state and local governments and communicate with state and local officials early in the program planning cycle to explain specific plans and actions.

At the present time, the Dixie National Forest is operating under the guidance of its 1986 Resource Management Plan.³⁰⁶ At the time it was written, it included 78,899 acres of privately owned land; 20,116 acres are within the boundaries of Kane County, (18,947 on the Markagunt Plateau and 1,169 acres on the Paunsaugunt Plateau). To add to that, the county is agreeing to a

³⁰⁶ The Dixie National Forest will begin revising its plan in 2018 per the Forest Plan Revision Fact Sheet; www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd523008.pdf Downloaded 1 20 17

land conveyance project of 75+ acres above Duck Creek Village (Markagunt Plateau) to assume ownership of the existing wastewater treatment system from the Forest Service.³⁰⁷

The Dixie National Forest on the Markagunt Plateau comes under the purview of the Cedar City Ranger District in Iron County; the DNF on the Paunsaugunt Plateaus comes under the supervision of the Powell Ranger District, in Panguitch, Garfield County. However, both sections of forest are managed under the same land management plan. Each year the Forest Service issues a Land and Resource Evaluation Report, which is a synopsis of monitoring results for possible amendments and/or consideration in Forest Plan revision. In the Management Plan Fiscal Year 2014 report,³⁰⁸ there was indication for the need to either further evaluate or make a change in management direction.³⁰⁹

Kane County strongly asserts the necessity to coordinate with and become a part of the process of revising the forest plan for the Dixie National Forest as it pertains to resource management, conservation and protection as well as addressing access to public lands and rights-of-way, recreation, agriculture, timber sales and production, cultural resources, endangered or threatened species, range condition and trends, wildland-urban interface, fire suppression, special designations and other topics of vital concern to the custom, culture, prosperity and the well-being of the citizenry of the counties.

Air Quality

The Dixie National Forest complies with Utah State Air Quality Guidelines and Standards. All prescribed burning is implemented in compliance with the Utah Interagency Smoke Management Program. An annual burn schedule is submitted every year to the Utah Interagency Smoke Management coordinator; pre-burn information and a burn map with day/night smoke flow maps must be turned in to coordinator for burns over 20 acres. Permission is given to burn on a daily basis.

Kane County Policy:

- Kane County would like to receive the same burn calendar the Utah Interagency Smoke Management coordinator receives on all prescribed burns.

Land Use

Kane County supports multiple-use, sustained-yield management of the Dixie National Forest, and will coordinate with the various management agencies to maintain appropriate balance among all users and uses. Maintaining multiple-use management practices on forest lands is a high priority for the county. Maintaining adequate public access to forest lands and accompanying natural resources is also a high priority.

³⁰⁷ Duck Creek Townsite Act Land Conveyance project; Letter dated December 16, 2016; File Code: 5400; 1950

³⁰⁸ Published May 27, 2015, USDA, Forest Service, Region 4.

³⁰⁹ Management Plan, Fiscal Year 2014 Monitoring and Dixie National Forest, Land and Resource Evaluation Report; Executive Summary Pg. I "Of the monitoring items identified in the Forest Plan and amendments, 21 (25%) indicate a variation causing further evaluation and/or change in management direction."

The county acknowledges that the terms multiple-use and sustained-yield may be interpreted in different ways. For purposes of this plan, the county defines sustained-yield as the management of resources in a manner that will support a consistent level of use on a year-to-year basis.

The county defines multiple-use as the consumptive and non-consumptive uses historically and traditionally allowed to occur on federal and state lands within the county. These uses include, but are not limited to: livestock grazing, hunting, fishing, mining, mineral exploration and extraction, recreation, wildlife habitat management, telecommunications, water resource use, protection and development of timber/woodland products, utility corridors, county transportation, and circulation roads and corridors.

The county asserts that the above uses, as well as many others, are compatible in most management situations. True multiple-use management creates opportunities for the land to be used for many purposes simultaneously. The county is not intending to define multiple-uses for the Forest Service, but will support and participate in efforts to identify appropriate uses, and locations for those uses.

Cultural, Historical, Archeological, & Paleontological Resources

Cultural resources are defined as those sites, artifacts, structures or features which remain from human activity in the past. Included in this definition are archaeological or architectural materials and any item made, used, or modified by humans determined to be over 50 years old. In addition, the location where the past activity occurred is important; it can be considered both fragile and non-renewable. These areas can easily be altered by amateur collectors, vandals, recreationists, grazing, erosion, legitimate construction work, and scientific investigation. In truth, any ground-disturbing activity can have an effect on a cultural resource, and once altered, *you can't grow a new one.*

The Dixie National Forest (DNF) is considered to be a “repository for much of the undisturbed evidence of the prehistoric and historic habitations in south central Utah.”³¹⁰ The Forest Service has assigned personnel to inventory “the thousands of archeological properties within the boundaries...”³¹¹ of the DNF, and per Executive Order 11593, evaluate sites for eligibility for nomination to the National Register of Historic Places.³¹² Although the Forest Service had initially set a target date to finish surveying and creating an inventory of cultural resources on the DNF by 1990, they changed management direction and began conducting surveys on a project-by-project basis.³¹³

The Forest Service will assign an authorized officer to examine a leased area prior to any ground-disturbing activity to determine whether or not cultural resources are present. If there are, the officer will specify mitigation measures for effects on these resources. The lessee has to find out from the Forest Service whether a site-specific cultural resources inventory is required prior

³¹⁰ Land and Resource Management Plan for the Dixie National Forest, U.S. Department of Agriculture, May 1986, Chap. 2, pg. 10.

³¹¹ Ibid. pg. 11

³¹² Protection and Enhancement of the Cultural Environment; signed into law on May 6, 1971 by President Richard Nixon.

³¹³ Land and Resource Management Plan for the Dixie National Forest, U.S. Department of Agriculture, May 1986, Chap. 2, pg. 10.

to undertaking their activity. The lessee may engage the services of their own cultural resource specialist that is acceptable to the Forest Service to conduct this inventory, if required, and they may elect to inventory a larger area to allow for alternative or additional area needed to accommodate the needs of the operation. The lessee has to implement mitigation measures specified by the Forest Service to preserve or avoid destruction of the cultural resource. Mitigation may include relocation of proposed facilities, testing, salvage and recordation or other protective measures. During the course of surface operations on Forest Service lands, the operator is responsible for notifying the Forest Service of the discovery of any cultural or paleontological resources. They are to leave the discoveries intact until they are directed to proceed by the Forest Service.

There have been thousands of acres surveyed for cultural resources on the Dixie National Forest, with a total of 2,870 sites recorded; 350 of the sites evaluated are eligible to be listed for the National Register of Historic Places, but to date only two are, and one is actually a National Historic Landmark. As of February, 2017, there were 25 documented archeological sites on the Markagunt Plateau and 5 on the Paunsaugunt Plateau. According to the Heritage Program Manager,³¹⁴ elevation has a lot to do with the number of sites found. Lower elevations have long-term habitation sites while it appears higher elevation sites were used only in the summer as gathering sites. There is a certain amount of predictability gained from previous archeological surveys that indicate the potential of finding significant cultural resources by vegetative zone.³¹⁵

- Pinyon-Juniper Zone (5,000-7,000 ft.) This zone is especially sensitive in terms of both quantity and significance of sites, especially along or near perennial water sources. Sites found include rock shelters, open camp and archeological sites.
- Ponderosa Zone (7,000-9,000 ft.) Sites tend to decline at this elevation. This indicates that groups migrate to these areas to conduct limited activities on a seasonal basis.
- Spruce/Fire/Aspen Zone (9,000 and up) Sites are less common and appear to be overnight camps. They are generally found along tree and meadow margins and springs.

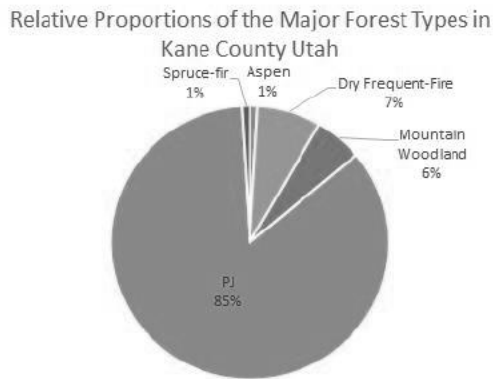
Kane County feels strongly that the cultural sites in the Dixie National Forest need to be protected and conserved, which means the cultural resource inventory and survey must be completed as quickly as possible. Kane County does not want forest treatment plans or commerce delayed because cultural resource surveys are not complete; nor does it want valuable cultural resource sites destroyed by high intensity fires due to areas that need thinning or other forms of treatment. Kane County also urges the Forest Service to continue to employ educated cultural resource specialists with technical assistance (i.e. archeologists, paleontologists, GIS specialists, etc.) to accurately identify and map these sites.

³¹⁴ Email communication with Marian Jacklin, Heritage Program Manager, Forest Service, Dixie National Forest, Supervisor's Office; February, 2017.

³¹⁵ Jacklin, Marian, Dixie National Forest Archeologist, "A Comprehensive Literature Review of the Effects of Livestock Grazing on Natural Resources," U.S. Dept. of Agriculture, Forest Service, Intermountain Region, Dixie National Forest, August 1995.

Forest Management³¹⁶

Kane County has a great diversity of natural vegetation which is reflective of a broad range of environmental conditions. Different types of vegetation are associated with differences in elevation. Increasing elevation is associated with increasing precipitation and decreasing temperatures (both summer and winter). These strong environmental gradients result in zones of vegetation types ranging from hot/dry low elevation desert to cold/wet high elevation alpine communities.



Southern Utah, like the rest of the Middle and Southern Rocky Mountain Region, has both lower and upper tree lines. Below the lower tree line, conditions are generally too dry for trees to survive; above the upper tree line, conditions are generally too cold. Approximately 52% of Kane County is forested (i.e. vegetation dominated or potentially dominated by trees), with pinyon-juniper woodlands representing the largest proportion. Montane forests and woodlands (excluding P/J) occupy about 0.2 million acres in the county. Of this area, 53.1% of forest land is further classified as higher productivity timberland with the potential to produce at least 20 cubic feet per acre per year. Most of the

forest land within the county is on public land and is managed by the federal government. (That is the Dixie National Forest approximately 122,410 acres.)

Figure 1-(Below) Forest cover in Kane County from the National Land Cover Database 2011

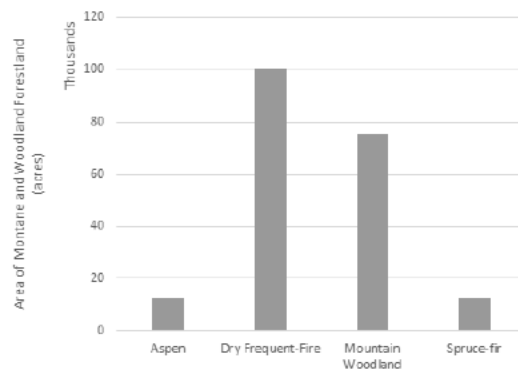
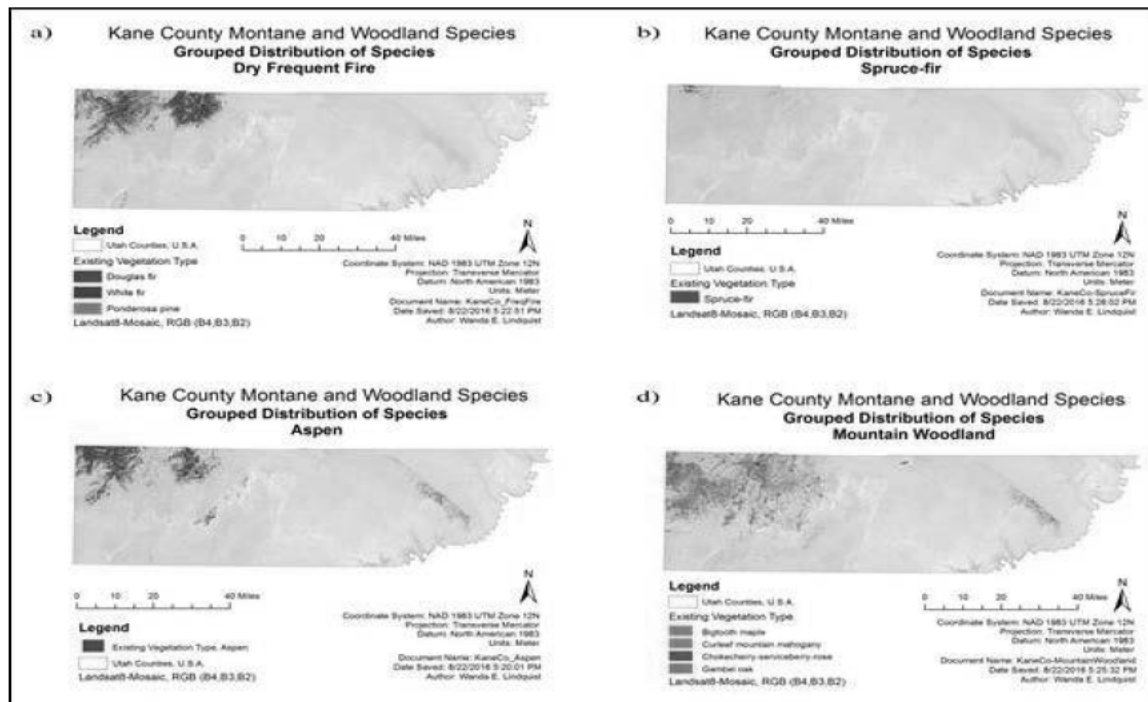


Figure 2-(Above) Acres of the major forest types in Kane County.

³¹⁶ Long, J.N. 2016. Forest Resources of Kane County; Consultant; Department of Wildland Resources and Ecology Center, Utah State University, Logan, Utah.

Within Kane County there are 12 specifically recognized montane forest and woodland types of tree species. Three are pooled under the characterization *Dry frequent-fire type*, which includes ponderosa pine, Douglas-fir, white fir, and mixtures of these three species (see Figure 3a). Two represent various combinations of subalpine fir and Engelmann spruce and are combined as the *Spruce-fir forest type* (see Figure 3b). The remaining types are *Aspen forest type* (Figure 3c) and *Mountain woodland type*-Gambel oak, mountain mahogany and intermountain maple (see Figure 3d). The four types of pinyon/juniper are not addressed in this section.



The common and scientific name for the tree species occurring in Kane County are identified in the table below:

COMMON NAME	GENUS SPECIES	COMMON NAME	GENUS SPECIES
white fir	<i>Abies concolor</i>	common or two needle pinyon*	<i>Pinus edulis</i>
subalpine fir	<i>Abies lasiocarpa</i>	limber pine	<i>Pinus flexilis</i>
bigtooth maple	<i>Acer grandidentatum</i>	singleleaf pinyon*	<i>Pinus monophylla</i>
velvet ash	<i>Fraxinus velutina</i>	ponderosa pine	<i>Pinus ponderosa</i>
Utah juniper*	<i>Juniperus osteosperma</i>	Fremont cottonwood	<i>Populus fremontii</i>
Rocky Mountain juniper*	<i>Juniperus scopulorum</i>	quaking aspen	<i>Populus tremuloides</i>
Engelmann spruce	<i>Picea engelmannii</i>	Douglas fir	<i>Pseudotsuga menziesii</i>
blue spruce	<i>Picea pungens</i>	Gambel oak	<i>Quercus gambelii</i>

*The juniper and pinyon species will be addressed by Drs. Durant McArthur and Dean Anderson in a different section. Specifically, in the Western Kane County Region.

Gambel oak can form pure woodland stands at lower elevations; it can also be a component of conifer-dominated (ponderosa pine) forests up to mid-elevations. Mountain mahogany and intermountain maple are less common than Gambel oak and are included in the *Mountain woodland type*. The *Dry frequent-fire type* can include various combinations of ponderosa pine, Douglas-fir and white fir. Ponderosa pine tends to dominate at lower elevations; Douglas-fir and white fir tend to increase in importance on relatively cooler and more mesic sites (north aspects). Within the broad *Dry frequent-fire type* individual mixed-conifer stands can, depending on specific environmental conditions and disturbance history, include any of the conifer species as well as Gambel oak and aspen.

In addition to being a component of mixed-conifer stands, aspen can form large (>200 ac) stands at middle and upper elevations. The upper elevation *Spruce-fir forest type* includes stands with various proportions of Engelmann spruce and subalpine fir. Limber pine, though never abundant, is often a minor component of mixed-conifer forests across a broad range of elevations. Bristlecone pine is a very long-lived, high-elevation tree typically found on dry or rocky sites.

Natural Disturbance

Natural disturbances in forests almost invariably involve some combination of biotic (insects and disease) and abiotic (fire, wind) agents. Of these, fire and insects are the most important for the forests of Kane County. A natural disturbance regime for a particular forest type is typically characterized by the dominant type of disturbance (e.g., frequent/low severity fire in the *Dry frequent-fire forest type* in contrast to infrequent/high severity fire in the *Spruce-fir forest type*). Regardless of the disturbance type, there is the potential for important interactions between different types of disturbances. For example, a fire that weakens, but does not kill a tree, may make it susceptible to attack by bark beetles.

Natural fire regimes in the Southwest are arrayed from hot dry environments at low elevations to cool wet environments at high elevations (see Figure 5). Reference regimes can be categorized along a gradient from ‘fuel-limited’ to ‘climate-limited’. In deserts and other non-forested vegetation types with very low productivity, the frequency of return fires is limited by the long period of time necessary for fuels to accumulate. The resulting ‘fuel-limited’ fire regime is characterized by very infrequent but high severity fires.

At the opposite environmental extreme are high elevation forests where relatively high productivity results in fairly rapid accumulation of fuels, but weather conditions conducive to wildfire may be rare. The resulting ‘climate-limited’ fire regime is also characterized by very infrequent but high severity fires. Most of the forests in Kane County have natural fire regimes intermediate between these two extremes.

It is important to determine the potential for *uncharacteristic* disturbance in Kane County. The fire regime paradigm helps assess how characteristic or uncharacteristic a fire (or potential fire) might be. Fire hazard refers to the state of the fuels (the presence or absence of fuel ladders), independent of the weather. Fire severity refers to the effect a fire has on wildland systems. Severity is not a characterization of the fire itself, but rather the fire’s effect. A high severity fire

results in the death of most over-story trees. In contrast, a low severity fire might burn understory litter, grass, shrubs, and small trees, but leaves most or all of the mature trees unburned.

Insects, particularly bark beetles and defoliators, can cause considerable damage in Southwestern forests. Each of the forest types represented in Kane County can have insect outbreaks but it is the conifer-dominated forests that are most likely to have substantial mortality during insect outbreaks. Southwestern forests are native to the region. Under normal conditions these insects exist as endemic populations and the associated damage is limited in extent.

Occasionally, during a prolonged drought, the population of a particular insect might transition to outbreak levels, and mortality of the host tree species increases in both amount and extent. The impact of these native insects, at both endemic and outbreak population levels, are a natural part of the forest ecosystem.

There are region-wide changes in the frequency, extent, and severity of insect outbreaks. Some of these changes in insect populations are related to short-term changes in climate (e.g., the increased survival of high-elevation spruce beetle with increased winter temperatures and the increased success of pinyon Ips in drought-stressed host trees). Changes in insect impacts are also associated with changes in the various host forest types. Important stand and landscape changes include shifts in tree species composition, increases in stand density, and decreases in age-class diversity.

Mountain woodland type

This type represents a combination of Gambel oak, mountain mahogany and intermountain maple, with Gambel oak the most common. Based on research done in this type in northern Utah, the following is a likely characterization of changes in the natural fire regime of Gambel oak woodlands in Kane County. Prior to the introduction of domestic livestock and effective fire suppression, a frequent/low-severity fire would have limited the extent of, and the continuity of fuels within, Gambel oak woodlands. With fire exclusion have come fundamental changes in the fuel profile and the increased likelihood of high-severity fires. Changes in the natural fire regime (i.e., decreased frequency and increased severity) has not only altered the structure of oak woodlands, but has resulted in an increase in the abundance of Gambel oak in mixed-conifer stands of the *Dry frequent-fire forest type*.

Dry frequent-fire forest type

The natural fire regime in this forest type is best characterized as frequent/low-severity. Across the range of environmental conditions associated with this important type would have been a range in fire frequency and severity. Under the warmest and driest conditions (sites where ponderosa pine is the dominant species), fires would have been very frequent (< 10 years) and low severity. Under cooler and more mesic conditions (sites where, in addition to ponderosa pine, Douglas-fir and/or white fir are potentially important stand components) fires were somewhat less frequent (<35 years) and would have included a combination of low- and mixed-severity.

An overarching theme in the Southwest and Intermountain West is the implication of long-term fire exclusion. Reasons for fire exclusion can include historic overgrazing near the turn of the

last century, elimination of burning by Native Americans, and especially effective fire-suppression starting in the middle of the last century. Fire exclusion is primarily an issue in the frequent-fire forest types, as exemplified by the *Dry frequent-fire forest type* in Kane County.

Long-term fire exclusion in the *Dry frequent-fire forest type* has had a substantial impact on stands and landscapes. Changes include shifts in species composition, increases in stand density, increases in the amount and continuity of fuels (both canopy fuels and fuel ladders) resulting in fundamental changes in fire behavior, and the nature of insect outbreaks. Changes in tree species composition have resulted where the elimination of low-severity fires has allowed the establishment of shade-tolerant Douglas-fir and white fir in stands that under the natural fire regime were almost entirely dominated by ponderosa pine.

Whereas the natural fire regime limited stand density, fire exclusion has allowed many stands to achieve relative densities associated with high competitive stress and continuity of canopy fuels. As a consequence, these stands are more susceptible to a range of insects as well as to high-severity fire. Changes in vertical structure, for example with the establishment of shade-tolerant Douglas-fir and white fir, represent fuel ladders which a surface fire can transition to the upper canopy. Changes in composition and vertical structure can also make these stands more susceptible to western spruce budworm, an important defoliator of Douglas-fir and white fir (but not, ironically, spruce).

Aspen forest type

Commonly, aspen is more intolerant of shade than any of the conifer species with which it may be associated. This means if aspen-dominated stands are not successional displaced by conifers, there must be periodic disturbance (e.g., natural high-severity fire, prescribed fire, or mechanical treatment). Aspen has some ability to regenerate from seed and tremendous ability to regenerate from root suckers, but this regeneration capacity decreases as stand vigor declines with age. It is, therefore, important that regeneration-initiating disturbance be timely.

Spruce-fir forest type

The natural fire regime in these high-elevation, cool, moist forests is characterized by very infrequent (200+ years) high severity fires. Fire frequency is not limited by fuels, but rather by the infrequent combination of ignition (i.e. dry lightning) and extreme fire weather (i.e., low fuel moisture, high temperature and high wind speed). This is an example of a 'climate-limited' fire regime. Because of the very long average fire return interval compared to the length of the fire suppression era, fire exclusion has had limited impact on composition and structure of individual stands in the *Spruce-fir forest type*. It is likely, however, that fire suppression has resulted in a shift in age-class distribution among spruce-fir stands within large landscapes. Even a modest reduction in the number of young stands could negatively affect landscape resilience following a spruce beetle outbreak.

Under normal conditions, spruce beetle (*Dendroctonus rufipennis*) numbers occur at endemic levels. To complete their typical two-year life cycle, the beetles must find and successfully overcome the defenses of a green host tree. They do this by mass-attacking a large living, or very recently wind-thrown, tree. Under endemic conditions spruce mortality within a stand is modest and restricted to a few scattered trees or small groups of trees. The transition from endemic to epidemic population levels can result from a combination of factors including: large numbers of

suitable host trees; high stand density and/or prolonged drought (both of which stress trees and weaken their defenses); large scale blow-down of mature spruce; and high temperatures. Increases in winter and summer temperatures are particularly conducive to transition of spruce beetle populations from endemic to epidemic levels. Higher winter temperatures increase over-winter survival. Higher summer temperatures can allow larvae to mature faster resulting in a shift to a one-year from a two-year life cycle. Such a shift allows for much more rapid buildup of spruce beetles and the transition to an outbreak.

A characteristic of many stands in Kane County is that they are dense, and high relative densities are associated with high competitive stress and density-related mortality. In the *Dry frequent-fire forest type* (ponderosa pine, Douglas-fir, and white fir) high relative densities potentially makes these stands susceptible to insect attack. It is not possible to predict with certainty when or even if a given stand will be attacked; however, once beetles enter a stand, denser stands can be expected to have greater beetle attack. About 88.3% of stands in this important forest type have a risk rating for mountain pine beetle of moderate or higher.



Figure 4: The spruce beetle outbreak on the Markagunt Plateau in Iron County resulted in the effective elimination of Engelmann spruce stands across an entire landscape and is indicative of the sort of damage insect outbreaks can cause in forests lacking either resistance or resilience.

Currently many, if not most, stands in the *Spruce-fir forest type* in the county have neither resistance nor resilience to attack by the spruce beetle. Limited resistance is indicated by the fact that more than 50% of stands in this important forest type have a risk rating for spruce beetle on Engelmann spruce moderate or higher (calculation of

the spruce beetle risk rating is based on the system developed by Schmid and Frye 1976). Unfortunately, many of these stands also have limited resilience. In the event of what is probably the inevitable spruce beetle outbreak, the result would be the death of virtually all of the mature Engelmann spruce and conversion of the stand to subalpine fir or even non-forest.

In addition, many stands currently have canopy fuel profiles (i.e., canopy bulk density and canopy base height) which make them prone to crown fires. For example, nearly 40% of stands in the *Dry frequent-fire forest type* currently have low torching and/or crowning indexes indicating that fire entering these stands, even under less than extreme wind speeds, can be a crown fire. Proactive management can be used to create and maintain species composition and structure in *Dry frequent-fire forest type* stands resistance to, and resilience from, disturbance. The following examples illustrate the active management scenarios Kane County believes the Forest Service must adopt to create stand conditions where high severity fire would be reduced:

Figure 5 (and 5a) is a representative mixed-conifer stand from the U.S. Forest Inventory and Analysis database. This stand is typical in that fire exclusion has resulted in moderate to high relative density and the development of fuel ladders. With this canopy fuels profile, fire entering the stand in extreme fire weather would be exceedingly destructive (Figure 5b). The Forest Vegetation Simulator and Fire and Fuels Extension were used to simulate a thinning and fuels treatment in the stand and to model pre- and post-treatment fire behavior under severe weather conditions.

Thinning can be used to fundamentally alter stand structure and species composition (Figure 5c). Thinning can eliminate fuel ladders and favor the retention of large fire-resistant ponderosa pine and Douglas-fir. With this altered canopy fuels profile fire entering the stand even in extreme fire weather would be a low-severity surface fire (Figure 5d). Many of the large trees retained in the post-thinning stand would survive such a fire.

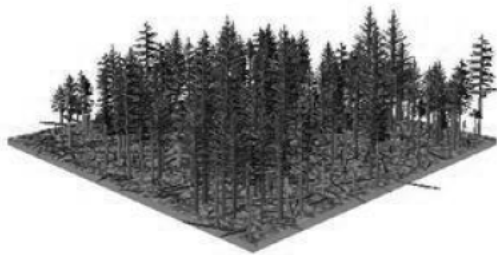
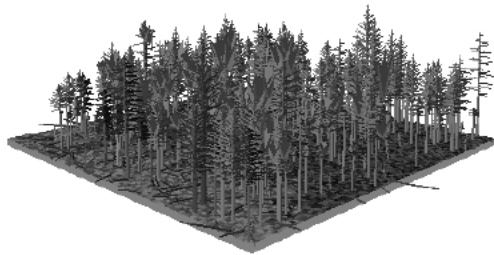
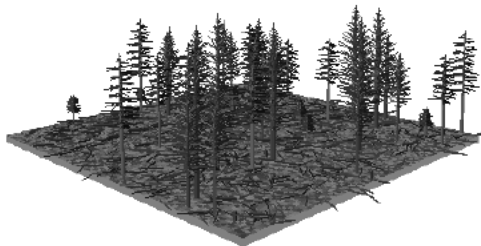


Figure 5: A representative mixed conifer stand in the dry frequent fire forest type.

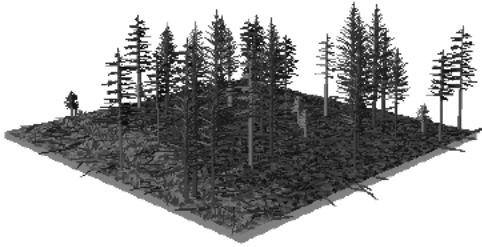
a) With fire exclusion, there has been an increase in shade tolerant species like white fir and an increase in fuel ladders.



b) Under severe weather conditions, fire behavior is likely to be extreme.



c) Simulated thinning and fuels treatment shows the reduction in stand density and fuel ladders and shift species composition toward large, fire resistant ponderosa pine and Douglas fir.



d) Fire behavior in the treated stand is unlikely to be extreme under severe weather conditions.

Timber Harvest – Treatment & Fire Suppression

For the last 30 years, the Dixie National Forest has managed its timber program to *not exceed* a ten percent yearly harvest. In the last 13 years (between 2001 and 2014) total acres harvested in sales sold³¹⁷ only exceeded 1,000 acres three times. In order to maintain a healthy, resilient forest, Kane County wants the forest selectively harvested beginning immediately:

- Acreage must be thinned and treated over a 20-year period at a *minimum* of 6,120.5 acres per year.
- The harvest must include a mix of tree species from aspen to conifer at (\geq) 8-inches diameter at breast height (dbh).
- Management must create a mosaic of non-invasive perennial and annual vegetation communities across the landscape with diversity of species, canopy, density, and at different stages of growth to build tree stands that are both *fire resistant* and *resilient to insect attack*.
- Thinning, mechanical treatments and prescribed fires shall be used to create healthy fire resistant and resilient forest stands.
- Employ silvicultural techniques that meet these objectives (i.e. after treatment, each side of Cedar Mountain will be managed for producing a different capacity of trees – one side might produce 50 per acre and the other side might best produce 75 per acre.)

Building and maintaining forests, particularly in the *Dry frequent-fire forest type* which are resistant and resilient to extreme fire and insect outbreaks require proactive management. In this type of forest, mechanical treatments followed by prescribed fire or pile burning has been shown to be the most effective treatment for reducing the risk of crown fires. Results of extensive research indicate that “mechanical plus fire, fire-only, and mechanical-only treatments using whole-tree harvest systems were all effective at reducing potential fire severity under severe fire weather conditions.”

Managing to create and maintain fire resilient forests is a clear alternative to the current unsustainable fire suppression strategy. Wildland urban interface and back-country lands must be actively managed to maintain structure and tree species composition consistent with low severity fires. To be effective, this management does not have to be done in every stand and on every acre (i.e. mosaic), but it must be extensive enough to achieve the goal of fire resilient forest

³¹⁷ Management Plan Fiscal Year 2014 Monitoring and Dixie National Forest Land and Resource Evaluation Report, USDA, Forest Service, Region 4, Published May 27, 2015.

landscapes. When “communities, adjacent lands, and back-county areas have been made fire-resilient, sustainable wildland fire management would then involve maintaining...” these structures and compositions over time.³¹⁸ There is considerable consensus among scientists and forest resource managers in support of a combination of tools (thinning, mechanical treatments, and prescribed fire) to achieve forests which are resistant and resilient to a broad range of environmental challenges.³¹⁹

Past successes in fire suppression and the limited scale of proactive forest management have resulted in widespread changes in forest structure and composition, particularly in the *Dry frequent-fire forest type*. These forest changes, exacerbated by drought, are associated with fire regime change from frequent/low-severity fire to infrequent/high-severity and mixed-severity fire. In the Southwest and Intermountain West, the increase in the number of ‘mega-fires’ (uncharacteristically large and severe fires) is a region-wide problem. The 8000+ acre Shingle fire on the Markagunt Plateau in 2012 in Kane County is indicative that the condition of forests in southern Utah is a great concern.

Kane County Policy:

Kane County will take definitive steps to protect citizens, land, private property, structures and natural resources if a fire breaks out on forest/public lands adjacent to private land. Kane County will:

- Manage and/or extinguish all fires (excluding those areas that have had treatments) until the fuel ladders are reduced or eliminated;
- Create vegetative conditions between Forest, county and private lands that would contain a fire by creating a natural fire break (i.e. Create a mosaic of non-invasive perennial and annual vegetation communities across the landscape with diversity of species, canopy, density, and at different stages of growth to create tree stands that are both *fire resistant* and *resilient to insect attack*.)
- Protect, enhance, and/or restore ecological processes and functions by allowing tools that are necessary and appropriate to mitigate adverse impacts of allowable uses and undesirable disturbances.

Timber Products

Kane County asserts the private use of timber products from federal (and state) lands for multiple-use purposes shall be continued as an allowable use, which will include: lumber, posts, poles, wood cutting (fuel for winter heating), Christmas trees, etc. A sustainable wood products industry on federal (and state) lands is also an important aspect of economic diversity and will continue in a timely manner especially where the value of the timber products will be reduced or rendered worthless if left un-harvested. Timber harvesting, fire suppression, and treatment programs are to be managed in a way to promote the forest health, reduce disease and insect

³¹⁸ USDA Forest Service. 2015. Wildland fire management futures: insights from a foresight panel. Northern Research Station. General Technical Report NRS 152.

³¹⁹ See J.N. Long report “Forest Resources of Kane County” 2016, References cited.

infestation, and prevent waste of forest products while providing opportunities for local residents and businesses.

Kane County asserts the Forest Service will ensure appraisals for timber sales are consistent with stand values for Southern Utah; they will remain open to new technologies for logging timber products and contract for best outcome conditions rather than the manner in which it has to be harvested; establish a variety of timber sales to meet the needs of different sized companies; and create a partnership with the companies and county agencies to support timber sales and forest health which benefits the surrounding communities.

Decisions and conclusions for forestry management should be consistent with the following:

1. Coordinate with local government agencies to determine the best management practices and strategies which affect the surrounding communities.
2. Avoid management scenarios that result in a static forest condition.
3. Do not restrict management actions to an age of wood material.
4. Concentrate activities on current conditions as compared with desired conditions.
5. Develop an aggressive time table for management implementation.
6. Use a systematic diagnostic approach to anticipate forest health programs.
7. Work with and not against nature.
8. Accurately account for forest health costs and use a long-term risk analysis.
9. Prepare the forest for inevitable periods of drought and encourage research into climate/forest health relationship and aforementioned forest management scenarios.
10. Adjust for timber stand improvement and reforestation as thinning transforms the forest to a healthier condition.
11. Timber supply projections should be consistent with Forest-wide timber inventory.
12. Maintain health of all different tree species stands when conditions are met.

Riparian Areas & Wetlands

The Dixie National Forest's Land and Resource Management Plan³²⁰ characterizes a riparian ecosystem as an area located adjacent to perennial streams and across the Forest. Components of the area include the aquatic and riparian ecosystems (characterized by distinct vegetation), and adjacent ecosystems that are within approximately 100 feet measured horizontally from both edges of perennial streams and from the shores of lakes and other still water bodies. All of the components are managed together as a land unit comprising an integrated riparian area, and not as separate components.

Riparian areas usually have characteristics reflecting a water influence; and although most streamside zones are riparian, some aren't. A non-riparian site along a streambed would include "...areas where the sagebrush ecosystem reaches the water's edge, where the streamside zone is composed of bedrock, where streams are bordered by steep-sided canyon lands, or where streamside environments are composed of boulders or rubble."³²¹ Most riparian areas support a

³²⁰ Land and Resource Management Plan for the Dixie National Forest, U.S. Department of Agriculture, May 1986, Chapter IV, pgs.135-152.

³²¹ Quoted in "A Comprehensive Literature Review of the Effects of Livestock Grazing on Natural Resources," by Platt (1979); U.S. Dept. of Agriculture, Forest Service, Intermountain Region, Dixie National Forest, August 1995.

diversity of vegetation types and are characterized by grasses, woody shrubs, trees, and other vegetation. A riparian zone maintains a relatively high water table, acting like a sponge by holding in stream banks. Within riparian zones, streams are classified by their steepness/slope and depth of channel (A through G).

Riparian zones in the Dixie National Forest have distinct commonalities – they create well defined habitats; they constitute a minor portion of the overall acreage; they are more productive in terms of biomass (where there's water, vegetation will grow); and they create diversity within the Forest ecosystem. The DNF can be categorized into two riparian areas: high elevation/alpine and mid/low elevation riparian. The high elevation/alpine is associated with areas over the 9,000 ft. level (which includes areas above the timberline). These areas can be found on the Aquarius Plateau and the northern part of the Markagunt Plateau. The growing season is 60-70 days a year and precipitation can range up to 40-inches (falling mostly as snow). The mid/low elevation riparian is associated in areas between 2,800 ft. and 9,000 ft. The growing season has a much wider range from as few as 80 days to as long as 180 days; precipitation ranges from 10 to 40 inches at the higher elevations.

The “uplands” of the Dixie National Forest are the higher elevation areas and include other vegetation types than what is found next to streams or seeps. It includes pinyon-juniper (reseedings), sage/grass, mahogany, oak brush, aspen, spruce, and high elevation grasslands. Some areas contain the headwaters to major stream systems (i.e. Virgin and Sevier Rivers). Upland range ecosystems Big Game winter range is included in the upland ecosystem.

The mid/low elevation area includes all of the vegetation types that grow below the 9,000 ft. level in the riparian zones (near streams or seeps). Pinyon/juniper is still prevalent, along with sagebrush, grasses and forbs. This area is associated with intermittent and perennial water (lakes, streams, ponds, seeps, and springs).

In both areas, density of trees and shrubs are an issue, which has an effect on the watershed, habitat, forage, timber production and more. A healthy riparian zone would include an area that maintained a stable watershed, had diverse plant community that provided structure, habitat and food for game and non-game animals, birds, raptors, and reptiles, forage for livestock, and a variety of recreational opportunities as well as aesthetic values.

The Forest Plan requires the Forest Service to maintain riparian areas at $\geq 60\%$ of potential for management of its riparian zones. The conditions of some riparian and wetland areas in the national forest are currently in a state of impairment. Some of the conditions may be attributable to large-scale ecosystem events like fire, or weather events like floods and drought; they have also been impacted by past and ongoing *activities* including: roads, timber harvest and other vegetation management, dams and diversions, and livestock grazing. This has lowered the riparian areas resilience to catastrophic events, and in some cases increased the level of damage from such events. Riparian areas in poor condition are unable to trap soil and water, which results in increased erosion and sedimentation, lowered water tables, and creates an inability to buffer downstream areas from the effects of accelerated runoff.

The Dixie National Forest has set up four objectives for its riparian zones using the Winward³²² greenline methodology of measuring:

- Late-seral vegetation should be present along the greenline in at least 60 percent of the potential for the stream's channel type. The greenline as defined by Winward is the "first perennial vegetation that forms a lineal grouping of community types on or near the water's edge." The greenline often coincides with the presence of water in the plant rooting zone, which allows for the growth of robust, hydrophytic plant species with deep roots that resist the erosive forces of the stream.
- Ground cover objectives should be based on the forest plan and management area direction.
- Percentage of invasive species should be based on the location of the greenline.
- A bank stability rating should be greater than moderate over 50 percent or more of the streambank. The stability rating is based on vegetation along the greenline.

In 2012, readings from 335 data sites³²³ indicated 64% were meeting the riparian vegetation objectives; one-third were not. In the Dixie National Forest Fiscal Year 2014 Monitoring Land and Resource Evaluation Report, a sample of 78 riparian sites indicated 77% were meeting at potential or above. (The larger data collection in 2012 included sites from Fishlake and Manti-La Sal National Forests.) There was an indication that two of the sites had not recovered from a wildfire back in 2002, (within the Powell Ranger District).

No potential ground cover percentages have been defined for riparian areas in the Dixie National Forest, so the Forest uses 100% for all riparian areas. The standard to be met is "80% of potential ground cover within 100 feet of the edges of perennial streams, lakes and other water bodies, or to the outer margin of the riparian ecosystem, where wider than 100 feet."³²⁴ Of the sites measured 16% had ground cover less than 80% along the greenline.

Kane County feels that:

- Riparian corridors and associated stream courses are intact and functioning across the landscape.
- Stream channels and associated flood plains are sustained, given natural flow regimes and associated landforms.
- Vegetative communities comprised of deep-rooted and hydrophytic herbaceous vegetation are present in sufficient quantity to filter sediments, stabilize streambanks, reduce flooding, and provide for ground water recharge within their natural potential.
- Effective ground cover within riparian areas occurs at a level that is at least 80 percent of potential.
- Within the capability of the area, overstory and understory canopy cover shades streams to help regulate water temperature to maintain aquatic habitat. Healthy native vegetation

³²² Winward, A.H. 2000. Monitoring the Vegetation Resources in Riparian Areas Gen. Tech. Rep. RMRS-GTR 47. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 49 p.

³²³ Initial Review of Livestock Grazing on Select Ecosystems of the Dixie, Fishlake and Manti La Sal National Forests, August 2014.

³²⁴ Land and Resource Management Plan for the Dixie National Forest, U.S. Department of Agriculture, May 1986, Chapter IV.

is present in sufficient quantity along the banks to stabilize banks from erosion and dissipate the energy of floodwaters. There are multiple seral stages and age classes of native vegetation represented. Enough seedlings and saplings should be present to allow for adequate replacement and succession.

- Aquatic and riparian habitats are free of or minimally impacted by non-native plant and animal species.
- Sagebrush communities have diversity and cover of perennial plant species, especially perennial forbs.

Kane County Policy:

Kane County supports a healthy and robust riparian ecosystem across forest-lands (and across all areas of the county). The County desires a sustainable ecological system while providing products, values and services for the benefit of present and future inhabitants of the county. Although understanding historical changes in vegetation and other resources is useful, restoration of *natural* or *original* conditions is neither a realistic or desirable goal.

Kane County strongly desires the following conditions across its riparian and wetland ecosystem:

- Riparian areas must be managed to prevent excessive erosion and deposition of sediment and impaired water quality. The desired vegetation must vary from one riparian situation to another depending on temperature regime, timing and reliability of stream flow, and the desired uses of the vegetation for wildlife, livestock and recreational purposes.
- Upland rangeland having vegetation cover and composition which will insure sustained productivity considering site potential and historical impacts. Range and watershed condition (or health) is to be determined on *best available science* and experience without reference to intended uses. Assessments must be based on establishing the kind and amount of vegetation that will provide soil protection and useful vegetation production considering the potential of the site, not necessarily restoring *natural* conditions.
- Water quality must meet State of Utah standards which reflect appropriate uses and local potential to meet standards.
- Noxious and invasive weeds will be detected early and controlled by chemical, mechanical or biological means.
- Desert shrub types (greasewood, blackbrush, salt desert shrub, etc.) must be managed to maintain dominance of shrubs with a good understory or perennial grasses and forbs (depending on site potential). Invasive annuals will be eradicated.
- Big sagebrush (Basin, Wyoming and Mountain Big Sage Brush) must be managed to maintain good understory of perennial grasses and forbs with an overstory of big sagebrush and browse shrubs (on appropriate sites). Invasive annuals must be eradicated. Landscapes must exhibit a diverse mix of communities ranging from almost all perennial grass and forbs to moderately dense stands of sagebrush, depending on treatments applied and the time of such treatments. Sites with higher potential to support sagebrush and grass communities must have pinyon-juniper completely removed or reduced to a minor component.
- Pinyon-juniper must be eliminated or reduced on any site that has the potential to support grassland, sagebrush grassland, or other vegetation types more useful in terms of

watershed conditions and resource outputs, unless it has been determined that pinyon-juniper does not jeopardize watershed conditions or it adds to the values of the site. In areas where there is no potential for good perennial grass and shrub cover, pinyon-juniper stands must be maintained in an open canopy state to prevent catastrophic wildfire or stand replacement with invasive annuals.

Wilderness

There are no wilderness study areas in the Dixie National Forest within Kane County.

Law Enforcement

Kane County and the State of Utah have primary jurisdiction for law enforcement throughout the county. All federal law enforcement activities will be fully coordinated through the county with the County Sheriff's Office. The elected Sheriff is the chief law enforcement officer holding all law enforcement responsibilities laid out in the United States Constitution and Title 17 of the Utah State Code. The elected County Sheriff has the authority to deputize police officers and/or citizens of the county as he or she deems necessary.

It is the county policy to provide protection to the public and their property through coordination with other law enforcement agencies. Any law enforcement agency operating within the jurisdiction of the Kane County Sheriff shall coordinate with the Sheriff prior to undertaking law enforcement operations. Law enforcement officers shall operate under the limitations set forth by the Utah State Legislature and enabling legislation of their respective agency as set forth by the Congress of the United States.

Minerals, Mining & Energy Resources

The National Forest Service is governed by specific laws that identify procedures and conditions under which prospecting, mining and related activities can be carried out within Forest Service boundaries. The ground work was laid by the General Mining Law of 1872, as amended,³²⁵ which governs the prospecting for and appropriation of metallic and most nonmetallic minerals on public domain lands. The Mining and Minerals Policy Act of 1970 declared it the continuing policy of the Federal government to foster and encourage the development of domestic mineral resources and the reclamation of mined land. In addition, the Mineral Leasing Act of 1920, as amended, provides for the disposal of fossil fuels such as coal, oil, gas, oil shale, and related bitumens, as well as sodium, potassium, and sulfur (in certain states) from the public domain; and the subsequent Mineral Leasing Act for Acquired Lands of 1947 provides for the disposal of Federally owned leasable minerals on acquired National Forest System lands.

That leaves the Forest Service with two important tasks: to make minerals available to the national economy and minimize adverse impacts of mineral extraction on other resources. The Forest Service is responsible for the management of *surface* resources on national forest lands, and the Bureau of Land Management (BLM) is responsible for the management of anything in the ground. The agencies have developed cooperative procedures to accommodate each

³²⁵ Amended July, 23, 1955.

respective responsibility and Kane County insists it has cooperating agency status as well as coordination with both agencies pertaining to any issue within the political boundaries of the county. Kane County also insists both federal agencies provide opportunities for mineral exploration, development, and reclamation under the mining and leasing laws (e.g. coal mining, gypsum, limestone, clay, etc.) subject to the legal requirements to protect other resource values. The County also asserts the agencies provide salable and free-use mineral materials to meet local demands.

The Forest Service has issued guidelines under 36 CFR 228 regulations concerning mining and prospecting operations on national forest lands.³²⁶ This includes filing an operations plan whose proposed operations would cause significant disturbance of the surface. This excludes prospecting and sampling that doesn't cause significant resource disturbance; doesn't involve removal of more than a reasonable amount of mineral deposit; gold panning; collecting specimens using hand tools; operations not involving earthmoving equipment; and "operations which will be limited to the use of vehicles on existing public roads or roads used and maintained for National Forest System purposes."³²⁷ Therefore, if a person is unsure whether their operation requires a formal plan of operation they can file a 'Notice of Intention to Operate' and the Forest Service will analyze whether or not an operation plan is necessary.

Minerals fall into three basic categories or commodity groups: metallic deposits, energy mineral occurrences, and industrial mineral occurrences. The Dixie National Forest in Kane County offers different minerals partly because of its two distinct locations on the Markagunt and Paunsaugunt Plateaus, but most of the minerals found in large quantities fall into the latter group. This group is also predominantly used by local, regional and state governments.

The minerals below are discussed in terms of their *potential* – high potential means it will likely get developed, moderate potential means it might occur in the future, and low potential means it is unlikely to be developed. This determination is based on the following criteria:³²⁸

- current geologic understanding of the deposit type
- quality of the resource or concentration of the subject element
- quantity of the resource thought to be present
- current and projected market conditions
- local geologist opinion

Coal

The most known mineral resource in Kane County is coal and is considered to be an energy mineral occurrence. The Dixie National Forest overlies a portion of both the Kolob and Alton coal fields. They are separated by the Sevier fault, which also separates both Plateaus and more or less creates Long Valley. The Kolob coal field runs across western Kane County through the

³²⁶ Issued August 28, 1974; These regulations apply to the protection of non mineral resources affected by mineral related activities.

³²⁷ 36 CFR § 228.4 (a)(1)(i vii)

³²⁸ J. Rasmussen, "Introduction to the Mineral Resources in Kane County" 2016 Report; Geologist, County Consultant.

Northwestern corner into Washington and Iron counties by Cedar City and the north side of Cedar Mountain. It is within the Dakota Formation and ranks subbituminous A averaging a 1.2 percent sulfur content.³²⁹ The ash content ranges between 10 and 15 percent while the heat content varies between 7,500 and 9,500 Btu/lb.³³⁰ The Alton coal field (Paunsaugunt Plateau area) ranks subbituminous B, and averages the same percentages in sulfur, ash content and heat generation as Kolob field coal.³³¹ The Kolob coal field has been inactive since the early 1900s; the Alton coal field is the only field being mined at this time (see Region 3-Municipalities and Unincorporated Areas).

All National Forests are considered unsuitable for surface coal mining unless they are subject to exceptions and/or exemptions based on 20 criteria outlined in 43 CFR 3461.5.³³² Underground coal mining is exempt from the criteria if there are no surface coal mining operations associated with it. (43 CFR 3461.1.1(a)) The Dixie National Forest did a "Coal Unsuitability Study" in 1983 and determined over 90,000 acres were unsuitable for coal mining because of surface impacts that would occur incident to underground mining.³³³ That being said, the Kolob coal field is estimated to have millions of short tons in underground reserves. "The Kolob field ... probably contains reserves of bituminous coal that are slightly less than 3,000 million short tons."³³⁴ When it was mined in the early 1900s in Kane County it was primarily for home use. Kolob field coal that was mined in Washington County was used to power an electric-generating plant called the California Pacific Utilities Company.³³⁵ Once transportation methods and corridors improved coal was obtained from northern Utah counties that were more economically accessible.

In terms of market value, Kolob field coal is worth less than Alton field or Kaiparowits field coal mostly because of its higher ash and sulfur content. When it was assayed back in the 1960s it was summarized as being best suited for generation of electric power or for industrial uses.³³⁶ However, the scientists admitted most of the samples were from the western Kolob field mines (Cedar City) and done on a basis of comparison. The economic factors affecting its values include:

- proximity to adequate markets/lack of transportation facilities
- chemical and physical properties
- abundance or scarcity of coal
- amount of overburden and thickness of seams
- geological conditions that affect mining such as the nature of the floor and roof, amount of groundwater, folding or strata

³²⁹ Kanab Field Office Approved Resource Management Plan, Appendix 6: Kanab Field Office Coal Unsuitability Report; October 2008.

³³⁰ Ibid.

³³¹ Ibid.

³³² Ibid.

³³³ Ibid. Results of the study were carried forward into the Kanab Field Office Approved Resource Management Plan.

³³⁴ Robinson, Richard, A. "A Reconnaissance Survey of the Coal Reserves of Southwestern Utah", Utah Geological and Mineralogical Survey, Special Studies 3; Dept. of Geology, University of Utah; Feb. 1963. Later verified by H.H. Duelling & F.D. Davis, "The Geology of Kane County", Utah Geological and Mineral Survey, Division of Utah Dept. of Natural Resources, Bulletin 124; 1989.

³³⁵ Ibid.

³³⁶ Ibid.

Portions of the Kolob coal field in the Dixie National Forest do not have significant development potential because of the difficulty associated with their physical development and the restrictions placed there by National Forest Systems regulations. Kane County supports the development of these coal reserves when and if the economic viability is conducive to its extraction.

Clay and (Crushed) Stone

Clay and (crushed) stone fall under the industrial mineral occurrence category. Both are available and widespread in the Forest Region according to the BLM and local consultant/geologist reports.³³⁷ As a rock-type, clay is a very fine grained sedimentary rock where most of the grains are composed of the group crystalline minerals (also called clays) and other detrital grains less than four microns in size. The term clay is both a particle size term and a group of crystalline minerals. Most applications of the term state that clay behaves plastically when wet. In general, clay is a natural raw material most commonly formed in two- and three-layer groups. Kane County has the three-layer type (montmorillonite) which has swelling characteristics when wet and is used mostly for water impoundment.

Crushed stone is used in construction of road beds and other applications where size and durability of the material are important criteria. Volcanic (cinder) rock has been used by the Utah Department of Transportation for lining winter road beds because of its traction-enhancing characteristics. In Kane County a durable limestone has been found that also meets these criteria.

Limestone

Limestone is a common stone that is chemically reactive with uses in agriculture and manufacturing. Agricultural uses include adding it to the soil to reduce acidity and increase the calcium in the soil which can increase crop yield; it is also good for calcium supplements for livestock and for sugar refinement. Manufacturing uses include glass and paper production; the production of lime; as a flux for steel production; and in coal-fired power generation where it is burned in smoke stacks scrubbers to reduce emissions of sulfur and nitrogen gases. Limestone is also used in combination with iron and silica to make cement. Transportation of a large quantity of limestone is critical to the economics of mining it; some consider the potential of mining limestone in the Dixie National Forest to be moderate because it is within three miles of a major transportation system (Highway 14), but the preferred mode would be railroad. The limestone in Kane County is considered high quality at +90%.³³⁸

Oil & Gas

Although there are no oil and gas leases in the Dixie National Forest in Kane County maps published by the BLM show there is high potential for both. The BLM is bound by law to determine how much acreage is legally available for oil and gas leases within the planning area. They use landscape-level criteria to make this determination based on mineral potential reports and reasonably foreseeable development scenarios written by geologists commissioned to

³³⁷ Map 39 of Proposed Resource Management Plan for Kanab Field Office, October 2008; and Report and map(s) "Introduction to the Mineral Resources in Kane County" Jim Rasmussen, Geologist; 2016.

³³⁸ J. Rasmussen, "Introduction to the Mineral Resources in Kane County" 2016 Report; Geologist, County Consultant.

produce them.³³⁹ The BLM weighs the results against their classification system (BLM Manual 3031 and Handbook 1624.1 for example). However, the basis for comparison is all BLM-managed property in the United States, which is what makes the criteria “landscape level” and not specific to southern Utah (or to southern Utah anomalies).

In 2011, the Forest Service published its Final Environmental Impact Statement (FEIS) for “Oil and Gas Leasing on Lands Administered by the Dixie National Forest.” This was to determine how much acreage was administratively available for oil and gas leasing within the four ranger districts. The DNF also used reasonably foreseeable development scenarios (RFDs) produced by geologists who could project over a 15-year period the likelihood of *development potential*. However, in response, they chose an alternative that created several restrictions and/or mitigating measures to protect surface resources if a gas and oil lease was granted.

After establishing how much acreage was available for oil and gas leasing, they decided 76 percent could not have surface occupancy (NSO); 14 percent would have controlled surface use (CSU) and the remainder would be time limited (TL). In essence, the limitations/restrictions are so extreme, it isn’t economically feasible to test drill on Forest Service lands.

Kane County recognizes the need to protect its national forest, but not at the cost of eliminating the development of an industry. However, the real issue here is that although there may be potential for oil and gas within the Dixie National Forest the factors affecting development are more obvious:

- proximity to adequate market – remoteness of the area
- transportation to facilities – or lack thereof and lack of infrastructure
- rugged topography
- complex geology (including low drilling success rate)
- and current market rates

Kane County reserves the right to develop the oil and gas industry on forest service land if it ever becomes economically and realistically feasible. At the present time, Kane County recognizes there are more viable markets, although that could change if other circumstances changed.

Noxious Weeds

Dixie National Forest has been treating dwarf mistletoe infestation in pre-commercially thinned areas. Treatments have been prescribed in all affected timber sale project areas and thousands of acres within individual control projects have been completed. Treatment prescriptions have been successful; however the disease continues to be widespread in many stands requiring continued emphasis on treatment and management.³⁴⁰

Land managers must comply with Utah State law to treat noxious and invasive species on public or private land. Neither the county, nor the public land managers can be successful in controlling noxious weeds without joint coordination. It is also important to the county that the public land

³³⁹ Geologists were from the Utah Department of Natural Resources and the Utah Geological Survey.

³⁴⁰ Dwarf Mistletoe Suppression, Section 17. Protection; Management Plan Fiscal Year 2014 Monitoring and Dixie National forest Land and Resource Evaluation Report.

managers control pests on the public lands in order to protect the forest land and other areas where pests become a problem. Mosquito control on federal and state lands should be permitted in order to reduce the risk of transmission of West Nile Virus and other diseases that pose a threat to the health of humans, livestock and wildlife.

Recreation & Tourism

The Dixie National Forest has an abundant amount of recreational activity to offer visitors who enter the forest whether they come for a day or want to stay for multiple nights. The Markagunt Plateau is the most visited in Kane County because of Duck Creek Village, Navajo Lake, Cascade Falls and the extensive off-highway vehicle (OHV) trail system.

Navajo Lake and Duck Creek Pond offer boating, fishing and swimming; there are mountain biking, hiking, horseback and OHV trail-specific areas, which are all marked; backpacking for day hikes or longer are available throughout the Cedar Mountain; one of the most popular trails is Cascade Falls Trail, which leads to the mouth of a cave where water springs forth that is fed from an underground drain system out of Navajo Lake; there are several campgrounds (the major ones include Navajo Lake, Duck Creek, Spruces and TE-AH); there are Visitor Centers and Interpretive Areas to educate travelers about the geography of the area; and there are plenty of opportunities for photography.

Hunting is allowed in the DNF and helps with population control of designated species. Hunters follow the schedule prescribed by the Dept. of Wildlife Resources and pull tags for certain times of the year.

The scenic drive across Highway 14 will take the traveler past many lava fields and cinder cones indicating the placement of several dormant volcanoes. There are many off-highway areas that can be explored for viewing scenery, wildlife and plants.

Although several of the roads are closed in the winter time, there is still snowmobiling, snow-shoeing, ice fishing and fat biking. There is also an Ice Cave that has icicles year-round, which has only one chamber, but visitors are allowed to go in.

Duck Creek is also known for the longest lava tube (12,000+ feet) in the United States and at the highest elevation (8,400 feet). The town itself is not incorporated, but a small population lives there year-round offering eateries, rentals and activities.

The Paunsaugunt Plateau has similar activities as the Markagunt but it isn't as well traveled simply because the access isn't there. The majority of the travel has to occur with either four-wheel drive vehicles or off-highway vehicles (OHV) but there are opportunities for hunting, fishing, camping, and hiking (both day hikes and back country).

Because the Paunsaugunt Plateau surrounds the south end of Bryce National Park it is possible to hike or horseback ride into the scenic area. In the winter time there are also opportunities for cross-country skiing and snow-shoeing.

Kane County Policy:

- Kane County supports a robust and thriving recreation industry in the Dixie National Forest on both plateaus. It is especially interested in having access to roads and trails and strongly asserts the need for the Forest Service to keep transportation and access of paramount importance. This is not only for the enjoyment of forest lands, but for the health, safety and welfare of the citizens of Kane County.

Wild & Scenic Rivers

The only river that has official designation under the Wild & Scenic River Act is the Virgin River.

Transportation – Land Access

According to the Forest Service handbook 2509.22 “Transportation systems are developed to serve the transportation needs of National Forest System lands and resource management programs.” And according to the U.S. Forest Service Planning Rule of 2012³⁴¹ this Rule places a specific focus on coordination, cooperation, and collaboration between governmental interests and the Forest Service. Both the obligation and the opportunity for the Forest Service to engage State, local, and tribal governments in the planning process are emphasized in the 2012 Planning Rule. In providing opportunities for engagement, the responsible official shall encourage participation by:

(iv)Federal agencies, States, counties, and local governments, including State fish and wildlife agencies, State foresters and other relevant State agencies. Where appropriate, the *responsible official shall encourage States, counties, and other local governments to seek cooperating agency status in the NEPA process for development, amendment, or revision of a plan.* The responsible official may participate in planning efforts of States, counties, local governments, and other Federal agencies, where practicable and appropriate. (36 CFR 219.4 (a)(1)(iv) and (v)). [emphasis added]

Furthermore, the rule requires coordination with related planning efforts:

The responsible official shall coordinate land management planning with the equivalent and related planning efforts of federally recognized Indian tribes, Alaska Native Corporations, other Federal agencies, and State and local governments (36 CFR 219.4(b)(1)).

When the Intermountain Region for the Dixie National Forest began the process of creating a Motorized Travel Plan, Kane County accepted cooperating agency status. The county was specifically interested in keeping travel routes open on the Paunsaugunt Plateau in the Robinson Creek area, where access was limited, but a trail had been in existence for decades. Kane County had both a verbal and written agreement with the Powell Ranger District to use the Robinson Creek trail from the Paunsaugunt Plateau into Kane County. The county was prepared to make a formal protest because the Motorized Travel Plan was going to close access to the Robinson

³⁴¹ Published in the Federal Register Monday, April 9, 2012; Part 212, PLANNING, Subpart A National Forest System Land Management Planning.

Creek trail. Kane County made an agreement with the Forest Service to withhold its protest if the Forest Service left access to Robinson Creek open to Kane County.

When the Motorized Travel Plan was moved to its Record of Decision, the Forest Service reneged on its agreement with Kane County and shut down access to the Robinson Creek trail, despite the verbal and written agreements, the multiple meetings, the obvious betrayal of interagency trust, and violation of Federal law that required the Forest Service under the Regulatory Flexibility Act (5 USC § 601-612) "...to consider effects of their regulatory actions on small businesses and other small entities (defined as "small government jurisdiction").

In addition, under FLPMA as a Federal Agency the Forest Service must "...coordinate the land use inventory, planning, and management activities of or for such lands with the land use planning and management programs of other Federal departments and agencies and of the States and local governments within which the lands are located, including, but not limited to, the statewide outdoor recreation plans . . . assure that consideration is given to those State, local, and tribal plans that are germane in the development of land use plans for public lands; assist in resolving, to the extent practical, inconsistencies between Federal and non-Federal Government plans..."³⁴²

The Forest Service uses the authority of FLPMA to initiate the use of Allotment Management Plans in the administration of its grazing program. (*See Grazing Section above*) The authority of FLPMA extends to land use planning on all public lands "... and management activities and programs of other Federal departments and agencies and of the States and local governments within which the lands are located, including, but not limited to, the statewide outdoor recreation plans . . ." ³⁴³

Kane County has very limited access onto the Paunsaugunt Plateau through Forest Service roads; in fact, the only shared access on the east side of the Plateau is through Deer Springs Ranch at Meadow Canyon Road which meets with Forest Service Road 092. The only paved access is through Garfield County off Highway 12 through Bryce Canyon State Park or by way of Tropic Reservoir.

Kane County insists the Forest Service honors its agreement with Kane County and allow access along Robinson Creek trail from the Paunsaugunt Plateau into Kane County, per their written and verbal agreement, prior to the initiation of the Motorized Travel Plan.

The Forest Service has already decommissioned 150 miles of routes in the Duck Creek/Swains Creek area on the Markagunt Plateau per the Motorized Travel Plan. Although Kane County supports the Forest Service in protecting the Dixie National Forest natural resources it insists that no more routes be closed anywhere in the county without prior coordination with Kane County officials.

³⁴² Federal Land Policy Management Act, (43 U.S.C. 1712 Sec 202(c)(1 9)

³⁴³ FLPMA (43 U.S.C. 1712 Sec 202(c)(9)

Water Quality & Hydrology

Water is one of the most important natural resources in Kane County and it is no understatement when it is referred to as “liquid gold.” Most settlements first occurred around or near streams, springs and lakes because the county was so arid and filled with upper rangeland and prairie.

The USDA Natural Resources Conservation Service (NRCS) and the U.S. Geological Survey (USGS) created a hierarchical boundary system for the country that divides its water/hydrologic boundaries into regions, sub-regions, basins, sub-basins, watersheds and sub-watersheds.

In simpler days Kane County was seen as being a part of only four watersheds; today, it has been further subdivided into nine: Fort Pierce Wash, Upper Virgin River, Kanab Creek, Paria, Lower Lake Powell, Upper Lake Powell, Escalante, East Fork Sevier, and Upper Sevier. The East Fork Sevier and Upper Sevier develop surface waters that flow north; the Upper Virgin and Fort Pierce Wash flows to Lake Mead; Kanab Creek and Paria flow to the Colorado River below Glen Canyon Dam; and the rest – Escalante, Upper and Lower Lake Powell flow into Lake Powell.

The three main watersheds that affect the Dixie National Forest in Kane County are the Upper Virgin River, Upper Sevier and Kanab Creek watersheds. Though the East Fork Sevier touches the northern section of the Markagunt Plateau in Kane County, it isn’t as consequential as the others.

Oddly enough, Navajo Lake in the Dixie National Forest is considered part of the Upper Sevier watershed/basin, but it drains into two – the Upper Sevier (north) by way of Duck Creek and the Upper Virgin River (south) watershed by way of Cascade Falls. The main sources of surface water for the Markagunt Plateau are Navajo Lake, Cascade Spring, Duck Creek Spring, Duck Creek, Swains Creek, and Strawberry Creek.

On the Paunsaugunt Plateau the main sources for surface water are Kanab Creek, Sink Valley Wash, and Lower Robinson Creek. The rest of the stream system on the Paunsaugunt is the north flowing East Fork of the Sevier River and its tributaries which doesn’t serve Kane County. The majority of the streams and creeks are not perennial, but seasonal and intermittent (no flow during summer months) except for the largest systems.

On the Markagunt Plateau, it was determined there were hydraulic connections between water lost from Navajo Lake and two nearby springs (Cascade and Duck Creek).³⁴⁴ In what was called “subterranean piracy” water drained from Navajo Lake into sink holes and came out at Cascade Spring (1.2 miles south) and Duck Creek Spring (3 miles east) at different intervals. “Sink holes developed in the Claron [formation] are numerous across the central part of the Markagunt Plateau, and the formation is capable of transmitting large amounts of water to springs, such as Cascade Spring along the Pink Cliffs.”³⁴⁵ Some of these sink holes are 1,000 feet across and 100 feet deep; aerial reconnaissance has photographed surface sink holes near lava rock piles indicating collapse and/or subsidence.

³⁴⁴ Spangler, L.E., 2012, Hydrogeology of the Mammoth Spring groundwater basin and vicinity, Markagunt Plateau, Garfield, Iron and Kane Counties, Utah. U.S. Geological Society Scientific Investigations Report 2012 5199. 56 p.

³⁴⁵ Ibid. pg. 4.

Most of the major springs discharge laterally under gravity flow; Duck Creek discharges as a rise pool and Cascade Spring discharges directly from a cave. Both Duck Creek and Cascade Springs have reported peak flows of 25 to 35 cubic feet per second, but their base flow is less than 1 cubic ft/s. Cascade Spring discharges into the North Fork Virgin River and Duck Creek Spring discharges into the Sevier River system via a “swallow hole”. Within the stream bed the entire stream is channeled underground into fractures or voids in the underlying limestone. “During the peak of snowmelt runoff, these swallow holes can be filled to capacity, and water flows over land in surface water courses that are otherwise dry most of the year.”³⁴⁶

Kanab Creek originates on the Paunsaugunt Plateau and flows south-southwesterly into Arizona. It becomes a part of the Kanab Creek watershed and creates sub-watersheds as it leaves the Dixie National Forest (with Lower Robinson Creek, Lower Kanab Creek, and Sink Valley Wash outside of the Alton area). Lower Robinson Creek originates from small foothills of the Paunsaugunt Plateau, but flows are intermittent and seasonal (usually during heavy precipitation events and spring runoff). Sub-watersheds that begin on the Paunsaugunt Plateau but end in the valley include Skull Valley Wash, Thompson Creek, and Skutumpah Creek. There are at least a dozen sub-watersheds that drain below the plateau but they are considered “6th level watersheds” and not categorized as perennial. Kanab Creek is diverted into transmission ditches that store water in earthen ponds for irrigation purposes in several places along its route.

Wildlife & Management

Individual states hold primary authority for most wildlife species found within their borders; the major exceptions are those native migratory birds, marine mammals and species that fall under the Endangered Species Act. There are some exceptions based on public lands; states do not hold primary authority for wildlife within National Parks, National Wildlife Refuges or on Indian reservations, though they partner with them to manage wildlife on their lands.

All big game species are managed by the Utah Division of Wildlife Resources (UDWR). The UDWR divides the state into “wildlife management units” (WMUs); Kane County has four in it:

- #29 (Zion) Covering western Kane County and most of the Markagunt Plateau;
- #28 (Panguitch Lake) Covering the northern tip of Kane County and the Dixie National Forest on the Markagunt Plateau, with the rest rolling into Iron County;
- #27 (Paunsaugunt) Covering all of the Paunsaugunt Plateau (and all of the DNF on the Plateau) from Garfield County borderline down to the Arizona state borderline;
- #26 (Kaiparowits) Covering half of Kane County (bordering the Paria River to the west) going all the way to Lake Powell on the east.

The Dixie National Forest falls into three WMU’s within Kane County – Zion, Panguitch Lake and Paunsaugunt. Zion and Panguitch Lake WMU are in the Cedar City R.D.; Paunsaugunt WMU is in the Powell R.D. UDWR uses the Regional Advisory Council (RAC) process to make population management recommendations, then UDWR makes the decisions with this input. The Forest Service has a representative on the RAC, but does not have control over population

³⁴⁶ Ibid. pg. 5 6.

numbers. Population estimates are provided by UDWR via their Utah Big Game Annual Report (2015)³⁴⁷. Several factors can influence big game populations such as drought, severe winter, predation, catastrophic fire and disease.

Mule Deer

The Dixie National Forest contains summer, winter and year-round habitat for mule deer. Numbers indicate populations for mule deer are meeting objectives at the Paunsaugunt WMU and are over objective at Zion and Panguitch Lake WMU's. Populations within and adjacent to the National Forest have increased by 4,000 and are healthy, well distributed and will continue to persist across the system.³⁴⁸

Elk

The Dixie National Forest contains summer, winter and year-round habitat for elk populations. The Paunsaugunt and Panguitch Lake WMU's are operating at objective, while the Zion WMU is over objective. Elk populations appear to be healthy across the forest system and will continue to persist. Both elk and deer populations extend beyond the Dixie National Forest boundaries, therefore, other conditions could be influencing their population numbers. Deer winter range conditions have been in decline as well as areas available for wintering habitat. UDWR is trying to keep populations in check by offering accelerated antlerless hunting opportunities in certain units.

Wild Turkey

Utah's Wild turkey population appears to be on the increase; most sightings from the Dixie National Forest are from habitat evaluations and qualified persons (i.e. from pre- and post-timber sale reviews). Duration and intensity of winter, and predators have the most effect on wild turkeys so population fluctuations do not reflect management activities. DNF management is considering dropping the wild turkey as a "management indicator species" with the Forest Plan.

Management, Mitigation & Recovery

All of the species listed within the National Forest Region are being managed for recovery or sustainability by federal land management agencies and/or the State of Utah. Some are subject to various levels of recovery and conservation in management plans prepared by the Forest Service, Park Service, and BLM units within Kane County. ESA recovery plans are typically prepared by the FWS, though plans prepared by a state or other entity may be adopted as *functional equivalents*. When Kane County does not have a county specific conservation plan in place, it will first adopt the state's Utah Wildlife Action Plan as the best available surrogate until it completes its own county plan. Kane County supports the recovery efforts of special status species within the county. Kane County will support and implement current and future special-status species recovery and conservation plans, strategies, and agreements in coordination and consultation with the U.S. Forest Service, the Utah Division of Wildlife Resources, and other state and federal entities.

³⁴⁷ Utah Big Game annual Report, 2015, UT Dept. Natural Resources, Division of Wildlife Resources; Publication No. 16 19; Prepared by H. Bernales, K. Hersey & J. Shannon.

³⁴⁸ Management Plan Fiscal Year 2014 Monitoring and Dixie National Forest Land and Resource Evaluation Report, USDA, Forest Service, Region 4. May 27, 2015.

Fisheries

Fishing is allowed on most of the water systems in the Dixie National Forest; they actually boast of having 500 miles of river and waterways available to fish on. Navajo Lake, Duck Creek, Duck Pond and Aspen Mirror Lake offer four kinds of trout: rainbow, German brown, brook and cut-throat. The East Fork of the Sevier River which runs in both Kane and Garfield Counties has brook and cut-throat trout; a number of tributary streams are also fishable. The Virgin River system is stocked with woundfin and Virgin River chub (from the Wahweap Warmwater Fish Hatchery), and also has Virgin spinedace, flannemouth sucker, desert sucker, and speckled dace.³⁴⁹

Grazing & Livestock

The Forest Service has an established system for grazing management that includes grazing permits and fees, limits on herd size, grazing seasons, and delineation of allotments. The focus of their program rests on the best management of vegetation resources across all rangelands to serve a multitude of needs. The Forest Service uses the authority of the Federal Land Policy Management Act (FLPMA), as amended by the Public Rangelands Improvement Act (PRIA) to create Allotment Management Plans that are included in the permittees grazing permits "...at the discretion of the Secretary of Agriculture (43 U.S.C. 1752(d), as amended by 92 Stat. 1803 (1978)). The Secretary "...delegated his authority to issue regulations in this area to the Chief of the Forest Service (36 CFR 222.1 et seq.)³⁵⁰

As of 2015, the Dixie National Forest had 140 permittees operating on 73 active allotments; that included 74,952 AUMs for cattle and 11,664 AUMs for sheep.³⁵¹ In the Cedar City R.D. there are 27 active allotments, but only seven of these allotments are in Kane County (with two or more crossing into Iron and Garfield counties).³⁵² In the Powell Ranger District, there are 19 allotments, with approximately seven operating in Kane County (and 3-4 of those are straddling the county line between Kane and Garfield counties).

Each allotment has an "Allotment Management Plan" good for ten years (or the term of the grazing permit). The Forest Service uses the definition of an allotment plan defined in FLPMA as a plan prepared in consultation with permittees applying to livestock operations on public lands prescribing:

1. The manner in and extent to which livestock operations will be conducted in order to meet multiple-use, sustained-yield economic and other needs and objectives;
2. Range improvements to be installed and maintained, such other provisions relating to livestock grazing and other objectives found by the Secretary to be consistent with the provisions of the FLPMA (43 USC 1702(k), 36 CFR222.1 (b) (2), and FSM 1023).

³⁴⁹ Virgin River, Wikipedia; https://en.wikipedia.org/wiki/Virgin_River

³⁵⁰ Shingle Mill C&H Allotment Management Plan, Cedar City Ranger District, Dixie National Forest, Introduction and Authority. April 4, 2012.

³⁵¹ Dixie National Forest 2015 Accomplishment Report "The Dixie Connection".

³⁵² Taken from the Dixie National Forest Cedar City Ranger District Allotment map; A number of allotments have been combined into other allotment management plans. <https://www.fs.usda.gov/dixie> Downloaded Feb. 24, 2017.

The plan establishes the current conditions (by summary) which may include a historical, riparian and fisheries report; then it establishes the standards and guidelines that will be implemented based on the Forest's Resource Management Plan adopted in 1986. Most of the guidelines are the same across all allotment plans, with a few variations applied to each individual plan.

Guidelines are set for maintaining the range to desired conditions for upland and riparian areas; the plan covers range improvements, recreation, and management actions based on utilization standard criteria, monitoring and evaluation. The DNF uses different livestock grazing systems for different allotments such as modified deferred rotation, rest-rotation, season of use and season long grazing. The Forest Service also participates in cost-sharing with the permittee for all improvements unless otherwise stated (up to 50%).

The average size allotment management plan for the Cedar City R.D. is 12-15 pages (for the Powell R.D. it ranges between 4-7 pages, but these AMPs are older). The AMP is incorporated into one of the parts of the Term Grazing Permit (e.g. Part 3) and is signed by the permittee, the rangeland management specialist and the district ranger. It is good for the term of the lease, so what becomes more important on an annual basis are the "Annual Operating Instructions". These instructions are signed and in effect after an evaluation has taken place and the allotment has been determined to either be in full compliance or has met standards.

Kane County Policy:

Kane County commends the Forest Service for pro-actively establishing an individual Allotment Management Plan (and annual operating instructions) for its permittees that are short, specific and easy to understand. That being said, Kane County strongly believes that "utilization and stubble height" guidelines should not be used as management objectives or as rigid limits to grazing use on an annual basis.

Using *utilization and stubble height* as a determinant for maximum allowable forage is an incorrect way to apply the method; it was never intended to be used as an administrative tool. According to Dr. Lamar Smith,³⁵³ "The degree of utilization is only one of many factors that may affect resource conditions, and the nature of that relationship is not fully known...While land managers have been taught that utilization and long-term trend should be used together to determine the consequences of their rangeland management, these data indicate little relationship between utilization levels and changes in long-term trend."

Kane County asserts that:

- Measurement before the end of the growing season is not "utilization"; it should be called seasonal utilization.
- Guidelines for *proper use* cannot be applied to seasonal utilization measurements.
- If stubble height guidelines are intended as *end of year conditions*, then measurements taken at an earlier date should account for expected re-growth.

³⁵³ Smith, Lamar, Ph.D., "Forage Utilization and Stubble Height Standards for Grazing Allotments"; Cascabel Ranch and Consulting, 2016.

- Utilization and stubble height guidelines are not limits to be met every year and should not be used as strictly enforced limits to livestock use either within or between grazing periods.
- Strict utilization and stubble height measurements are contrary to the concept of adaptive management.
- Timing for grazing is more important than intensity of grazing.
- Desired levels of use should be used from averages determined over a period of years, not limits to use in any one year.
- Utilization and stubble height measurement should not be used to justify “trigger moves” of livestock from a pasture.
- Procedures for measuring utilization and stubble height must be clear and detailed (i.e. specifying location, time, method, and species of plant). It is essential these locations be chosen and agreed upon by all interested parties.

Measuring stubble height has become more popular in recent years, partly because it is easier to measure. It is used in relation to three resource directives:³⁵⁴

1. To insure the productivity and reproduction of forage plants;
2. To determine proper use on dry portions of riparian areas and upland rangelands as a substitute for utilization;
3. As a set guideline for floodplains in riparian areas with the aim of preventing soil erosion during flooding events.

The first one works if the guideline is adjusted for every situation (e.g. measuring grasses growing along the greenline to stabilize a streambank, but not appropriate where rocks or shrubs stabilize the bank). The second use depends on what is being measured; stubble height guidelines must be realistic in terms of growth habits of a species (i.e. short grasses cannot meet the standards set for taller grasses). And the third use doesn’t have enough research to verify its claim; there is evidence that shorter, more rigid stubble is more effective in trapping sediment, and longer, more flexible stubble (that is flattened by running water) is more effective in preventing erosion.³⁵⁵

Kane County feels strongly the measurements of utilization and stubble height for determining maximum allowable forage use either be discontinued or reorganized to more accurately reflect capacity on an allotment. Uses for utilization and stubble height estimation should include:³⁵⁶

1. Assessing grazing distribution to map livestock use in a pasture/allotment (use pattern mapping). The information is useful to plan range improvements or other changes to reduce pressure on concentrated areas and increase forage use in areas receiving little or no use.
2. Interpreting trend data by monitoring long-term trend in soil and vegetation, providing a record of change or lack of change in the attributes measured. To be useful, this data must

³⁵⁴Smith, Lamar, Ph.D., “Forage Utilization and Stubble Height Standards for Grazing Allotments”; Cascabel Ranch and Consulting, 2016.

³⁵⁵Ibid, Quoting Skinner, 1998.

³⁵⁶Ibid.

be interpreted to determine the cause of observed changes. (Is it livestock or wildlife causing the change?)

3. Use as a guideline for proper use to be achieved at the end of the grazing season, or as an indicator of the time to move from one area to another. In either case, it should never be considered an inflexible limit (or trigger event) to grazing use.
4. Adjusting stocking rates; when considered with actual use (stocking records) and other information (season of use, weather conditions, distribution, etc.) utilization can be used to help decide if adjustments in stocking are needed, and to estimate how much the adjustment should be.

Predator Control

Kane County supports the programs that are geared toward controlling predators (i.e. coyotes) to protect vulnerable species. Any programs of this nature are administered by the Utah Dept. of Wildlife Resources (UDWR) in coordination with the Forest Service.

Threatened, Endangered and Sensitive Species

The Dixie National Forest contains a wide variety of habitats that support many species which are important to the larger ecosystem. It has many sensitive species which are identified by the state or Federal agencies warranting special consideration during the planning and management process. Sensitive species and management indicator species (MIS) do not have Federal status but are recognized as needing extra attention evidenced by significant downward trends in population numbers. The sensitive species known to occur on the Dixie National Forest by Ranger District are as follows:

BIRDS	Cedar City R.D.	Powell R.D.
Northern Goshawk	X	X
Greater Sage-Grouse	X	X
Peregrine falcon	X	X
Bald Eagle	X	X
Flammulated owl	X	X
Three-toed woodpecker	X	X
Northern Common Flicker	X	X
FISHES		
Southern leatherside	X	X
MAMMALS		
Townsend's big-eared bat	X	X
Spotted bat	X	

Birds

Northern Goshawks inhabit montane coniferous woodlands (Englemann spruce), nesting in intermediate to high canopy. They like thin understory interspersed with small openings, fields and wetlands, which includes snags and down woody debris. Goshawks are often associated with mature to old growth stands of Englemann spruce and subalpine fir, followed by aspen. Populations in the Dixie National Forest fluctuate within reproductive seasons; they are affected by factors such as drought, cold and wet early spring conditions, low prey densities, significant wind events, fire, modified vegetation in the landscape, and predators. Out of 191 existing goshawk territories (across all four Ranger Districts), 187 were monitored in 2014.³⁵⁷ It showed an increase in active nests and territory occupancy and although overall numbers tend to fluctuate, the number of occupied goshawk territories across the forest is high and well distributed.³⁵⁸

Greater Sage-Grouse are large chicken-like brownish-grey birds with conspicuous black and white markings. Sage-Grouse are dependent on sagebrush habitat for brood bearing, nesting cover and year-round diet, which is limited by elevation, topography and landscaped encroached by certain vegetation types. Breeding occurs on “leks” or openings surrounded by sagebrush in broad valleys, ridges, benches, and plateaus and mesas. Sites usually have good visibility for predator detection, acoustical qualities for mating sounds to carry and an abundance of sagebrush for escape cover. Hens build nests at the base of live sagebrush with an abundance of insects for chicks to feed; flocks will form in early fall and can move quite extensively during winter lekking. Suitable habitat for sage-grouse occurs on all four Ranger Districts of the Dixie National Forest; two lekking areas are located between the Cedar City and Powell Ranger districts.

Peregrine Falcons occupy a large area of open habitats – cliffs, river banks, nests of other species, tree cavities, or human-made structures. They forage within a ten-mile radius of their nest; wherever small- to medium-sized birds, shorebirds and waterfowl are important hunting sites. That includes marshes, croplands, streams and lakes. Peregrine nest areas have been discovered on both the Cedar City and Powell Ranger Districts. Confirmed nest sites total eight, with three on adjacent BLM lands and numerous sightings within the Forest boundary.³⁵⁹

Bald Eagles occur in Southern Utah on a migratory or wintering basis. They feed on fish, waterfowl, small mammals, or carrion. They tend to concentrate where food is available, roosting in large groups in forest stands that provide protection from the weather. Bald Eagles typically show up in the Dixie National Forest during late winter or fall and spring months. When water bodies freeze in late fall or early winter, eagles move down in elevation to forage off the forest. Wintering sites have been noted across all four ranger districts including Duck Creek Pond, Navajo Lake and Panguitch Lake (Cedar City R.D.) and Tropic Reservoir (Powell R.D.)

Flammulated owls are another bird that can be found across all four ranger districts. They inhabit the montane forest, specifically mature and old growth ponderosa pine and Douglas fir

³⁵⁷ Management Plan Fiscal Year 2014 Monitoring and Dixie National Forest Land and Resource Evaluation Report, USDA, Forest Service, Region 4. May 27, 2015.

³⁵⁸ Ibid.

³⁵⁹ Specialist Report 6.0 Sensitive Species and MIS, Oil and Gas Leasing EIS on Lands Administered by the Dixie National Forest; Prepared by JBR Environmental Consultants, Inc., October 2008.

with open stand structure. They like large cavities made by woodpeckers and they feed on nocturnal arthropods. They seem to be most concentrated in the higher elevations of the Paunsaugunt and Aquarius Plateaus in the Powell and Escalante Ranger Districts, respectively. Suitable nesting habitat exists throughout the high elevation forested areas of the Dixie National Forest.

Three-toed woodpeckers are primarily a high elevation and dense subalpine fir and Englemann spruce tree bird. They like mature to old growth stands for the abundance of insects; and they usually excavate their own nest cavities in snags though they will occasionally build in live trees. They build 5-12 feet off the ground in dead spruce, tamarack pine, cedar, and aspen. Three-quarters of their diet is wood-boring beetles and caterpillars that attack dead or dying conifers. Populations for the three-toed woodpecker have been increasing presumably because of the spruce beetle infestation in the forest. Birds have been detected at Navajo Lake and other spots across three of the four ranger districts.

Northern Common Flickers are another type of woodpecker that prefer montane forests but spend a lot of time on the ground foraging for ants and beetles. They like open habitats near trees, including woodlands, edges and parks. They are present in all ranger districts; a total of 454 flickers were detected in 2014.³⁶⁰ However, over a five year period (2010-2014) there was a 25 percent decline in population likely due to changes in precipitation, insect population and weather conditions.³⁶¹ Protective measures do exist under snag and woody debris across the forest system so flicker populations expect to remain viable.³⁶²

Fish

Southern leatherside - the Forest Service relies on information gathered from the Utah Department of Wildlife Resources for seasonal monitoring of habitat. They will continue to work with the UDWR to accomplish monitoring objectives and identifying population expansion opportunities on this species.

Brown trout were eliminated from Dixie National Forest lands due to the Shingle Fire in 2012 in Kane County. The Forest Service will evaluate the effects of fire on fish and habitat, including proactive measures to reduce the risk of catastrophic fire in key watersheds.³⁶³

There is an effort to remove **non-native trout** from some of the streams and drainage areas in the forest to restore the balance of native species.

Mammals

The **Utah prairie dog** is federally listed as a threatened species under the Endangered Species Act. They are found in seven counties, including Kane County. Although they have been endemic to southwestern Utah, they have only been located in the upper northwest section of the county on the Paunsaugunt Plateau and the general area of Long Valley. This section has become

³⁶⁰ Management Plan Fiscal Year 2014 Monitoring and Dixie National Forest Land and Resource Evaluation Report, USDA, Forest Service, Region 4. May 27, 2015.

³⁶¹ Ibid.

³⁶² Ibid.

³⁶³ Ibid.

part of the Utah Prairie Dog Recovery Implementation Program established in 2010; it is one of three recovery units (Paunsaugunt Recovery Unit).

Townsend's big-eared bats are the most common in Utah, and will roost as high as 10,000 feet. These bats will roost in caves, rocky outcrops, old buildings, and mine shafts. They hibernate in the winter from October to February. The bats are found across all four ranger districts with some of the largest concentrations found on Cedar Breaks and Vermillion Castle (Cedar City R.D.) and Sunset Cliffs and Sevier Plateau (Powell R.D.). Mammoth Cave is closed to the public during winter and spring to protect hibernating bats.

The **Spotted bat** likes a variety of habitat such as ponderosa pine forest, pinyon/juniper woodland, canyon bottoms, open pasture and haystacks. They forage in open coniferous forests, but don't appear to migrate from lower elevations. Documented occurrences have only been in the Cedar City Ranger District, but potential habitat exists within all the districts.

Plants

There are many sensitive plants that are known or suspected to occur in the Dixie National Forest and at least ten of them occur on limestone or within rock garden and bristlecone pine communities (see the *Plants* table). No threatened or endangered species occur on the forest lands.

Kane County Policy:

- Goshawk management plans for forested lands in Kane County will be amended to prioritize first - healthy forests that are resistant and resilient to fire, second - restoration of traditional timber harvests, and third - management of resources for goshawk conservation.
- The goshawk amendment to the Dixie National Forest Plan will be discarded and replaced with an effective plan that meets Kane County's priorities for the beneficial use of land and natural resources.

Region #5 – Western Kane County (Southwest Corner)

Intent:

Kane County insists that all public lands within its boundaries be managed for multiple-use and sustained-yield within the framework of applicable laws, regulations and statutes. It desires that all land use plans utilize adaptive management in meeting rangeland standards and objectives. Kane County also strongly desires that all public land being managed within the Western Kane County Region be maintained to improve and restore a healthy ecosystem to support viable populations of wildlife and habitat including livestock forage, timber products, recreational and other uses. Kane County recognizes the unique cultural, historical and social values of the area and insists upon developing a plan that manages the land and protects the heritage at the same time.

Introduction:

The area that constitutes the Western Kane County Region is made up of the BLM Kanab Field Office territory in the south western corner (west of the Grand Staircase) and State Institutional Trust Lands Administration (SITLA) lands. It includes Coral Pink Sand Dunes State Park and any public lands up to the Dixie National Park borderline. It also includes BLM and SITLA acreage south of Hwy. 89 up to (but not including) Amingiri Resort.

The Kanab Field Office (KFO) manages a huge swathe of BLM land in Kane County, not counting the Grand Staircase-Escalante National Monument. The KFO extends into Garfield County and into parts of the Glen Canyon National Recreation Area. The only part that Western Kane County Region is focusing on is within the political boundaries of the county and in the southwestern-most corner that abuts the Washington County line.

Within the Western Kane County Region, SITLA manages approximately 45,902 acres (also west of the Grand Staircase). It is the largest grouping of SITLA parcels left in Kane County, which is mostly leased out for grazing.

Air Quality

Air quality standards for Western Kane County Region fall under the authority of Environmental Protection Agency (EPA). Specifically, the standards that apply come under the National Ambient Air Quality Standards (NAAQS). 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.

Air quality standards are enforced by the Utah Department of Environmental Quality. Utah also has a Smoke Management Plan and an Administrative Code R307-205 (dust mitigation) used on a case-by-case basis on new projects. The closest monitoring station is in Washington County (Hurricane).

Kane County Policy:

- Kane County supports measures to protect the clean air that is so prevalent in southern Utah.
- Kane County will comply with the Clean Air Act through the application of the National Ambient Air Quality Standards (NAAQS).
- Kane County will comply with Utah Administrative Code R307-205 for dust abatement measures.
- Kane County will abide by the Utah Smoke Management Plan.
- Kane County will continue to work with state and federal agencies on all air quality standards and issues.

Land Use

Some of the predominant uses in the western Kane County Region are livestock grazing, recreation (off-road vehicle, hiking, back packing, horseback riding, etc.), mineral development, agriculture, timber development, wilderness areas, and wilderness study areas. Although the majority of land in this region is under public/federal management plans still allow for community growth and expansion needs for the incorporated and unincorporated communities it surrounds, including the development of rights-of-ways for roads, and pipelines (utilities). The Western Kane County Region also allows for land uses that provide exclusions and avoidance areas to protect sensitive wildlife habitats and other sensitive resources.

According to Section 102(a) of FLPMA, all public lands will be retained in Federal ownership unless it is determined that disposal of a particular parcel will serve the national interest. Furthermore, Section 203(a) of FLPMA provides for sale of public lands (Map 13) if one of the following criteria is met: (1) the tract is difficult and uneconomic to manage as part of the public lands and is not suitable for management by another Federal agency; (2) such tract was acquired for a specific purpose and the tract is no longer required for that or any other Federal purpose; or (3) disposal of such tract will serve important public objectives, including but not limited to, expansion of communities and economic development that cannot be achieved prudently or feasibly on land other than public land. The public lands in the Kanab Field Office that have been identified for consideration for disposal by sale in the Approved RMP meet one or more of these criteria.

Kane County Policy:

- Kane County supports the expansion of all incorporated and unincorporated communities if it serves the health, safety, and welfare of its citizenship.
- Kane County believes the same principles apply to all State Institutional Trust Lands.

Cultural, Historical, Archeological & Paleontological Resources

The goal and objective in the Western Kane County Region is to identify, preserve and protect significant cultural resources to ensure they are available for appropriate use by present and future generations. Cultural Resources are protected by the Federal Land Policy Management

Act (FLPMA) Sections 103(c), 201(a) and (c); the National Historic Preservation Act (NHPA) Section 110(a); and the Archaeological Resources Protection Act (ARPA), Section 14(a). Through these guidelines the Kanab Field Office seeks to reduce threats and resolve conflicts from natural or human-caused deterioration or conflict with other uses (and still provide for traditional Native American uses of cultural sites). The BLM must also comply with the Native American Grave protection and Repatriation Act (NAGPRA).

The State of Utah has an agreement with the Utah State Director of the BLM and the Utah State Historic Preservation Officer on what procedures to follow for cultural sites. The agencies have agreed to the State Protocol Agreement and the National Cultural Programmatic Agreement. There are categories for Public Use, Traditional Use (Native American Traditional properties), and Most Appropriate Use categories.

The NHPA directs the BLM to be pro-active in identifying new inventories of cultural resources by classifying their use (i.e. recreation areas): there will be 100feet on either side of an OHV route; 100-feet on either side from center line of a road; a 5-mile vulnerability zone will surround cities and towns; hiking and horseback trails; areas of special cultural designation (ACECs); and areas that haven't been inventoried yet. Traditional cultural properties have to be managed in coordination with Native American tribes.

Scientific paleontological resources with exceptional educational, historic, cultural or interpretive significance will equally be protected. The BLM will cooperate with federal, state and local agencies in the management of these resources. On-the-ground inventories will be necessary prior to any ground disturbing activities.

There have been archeological resource sites inventoried in the Coral Pink Sand Dunes State Park by the Division of Parks and Recreation.³⁶⁴ Surveyed in May, 1995, 23 sites were recorded with the States Historical Office of Preservation with eight considered significant in terms of "...containing data addressing research questions on the prehistoric use of the area by humans."³⁶⁵

There are cultural sites in the Paria Canyon SRMA (The Wave) area and generally, anywhere rock climbing is allowed, there is a buffer of 300 feet.

The formations that underline the Alton Amphitheatre are known to have fossils in them. In ascending order, these are the Dakota (target formation for coal mining), Tropic, Straight Cliffs, Wahweap, and Claron formations.³⁶⁶ However, only the Dakota (Sandstone) and Tropic (Shale) formations will be disturbed during mining operations. Cenomanian terrestrial vertebrate fauna, fish, turtles, crocodylians, squamates, and dinosaurs are known to occur in the Dakota Formation. The Tropic Shale similarly yields a robust, highly significant vertebrate fauna. Two partial plesiosaurs have been recovered near the town of Alton, one in the Ford Pasture area approximately 15 km southeast of Alton and one in the Muddy Creek septarian mine approximately 20 km southwest of Alton. A third isolated paddle bone was observed west of

³⁶⁴ Coral Pink Sand Dunes State Park General Management Plan, February, 2005.

³⁶⁵ Ibid.

³⁶⁶ Alton Coal Tract Lease By Application Draft Environmental Impact Statement, Department of the Interior, Bureau of Land Management, Kanab Field Office, November 2011.

Trail Canyon. In addition to the marine fauna, the partial remains of an ornithischian dinosaur were collected from Tropic Shale in the area of Muddy Creek, east and south of the tract.

In 2006, the BLM found evidence of unusual features of rare, articulated fish remains in limestone mounds. In spite of the quality and abundance of fossil specimens that occur in Tropic Shale in the Alton area, exposures of the formation is generally poor, and soil and plant cover is extensive. The likelihood of discovering one of these limestone concretions before they have been damaged, altered or destroyed by natural processes is relatively low.

Kane County Policy:

- Kane County feels strongly that the cultural, archeological and paleontological sites inventoried in the western section of the county be protected and conserved.
- Kane County insists that if new areas are under consideration for protection or closure due to cultural, archeological and paleontological discoveries within the Western Kane County Region all Federal and state partners coordinate with the county in the decision making process.

Forest Management

The Utah Standards for Rangeland Health are applied to all rangelands across the Western Kane County Region whether it is BLM, SITLA or State Park land. Within areas that are considered vegetation, riparian and wetland there are multiple uses such as grazing, recreation, mining, and timber harvesting. The definition of “riparian” is characterized by an ecosystem that is located adjacent to perennial streams, springs or seeps. Components of the area include the aquatic and riparian ecosystems (characterized by distinct vegetation), and adjacent ecosystems that are within approximately 100 feet of the greenline.

Riparian areas in the Western section are managed to maintain and enhance areas in order to protect them. They are monitored and analyzed for any surface disturbing activity that could affect them, such as grazing, recreation, mining, timber harvesting, or even maintenance activities like prescribed burns, thinning, vegetative treatments, etc.

Typically, new surface disturbing activities are not allowed within 300 feet of riparian/wetland designated areas unless it can be shown that there are no practical alternatives, all long-term impacts can be mitigated or the activity will benefit and enhance the area.

A mosaic of non-invasive perennial and annual vegetation should be present across the landscape to promote diversity of species, canopy, density, and habitat; protect, enhance and/or restore ecological processes and function by allowing tools that are necessary to mitigate adverse impacts and disturbances. Sustain or re-establish the integrity of the sagebrush community to provide the quality of habitat necessary to maintain sustainable populations of Greater sage-grouse and sagebrush obligate species. (*see study below*)

Pinyon-Juniper & Sagebrush Ecosystems³⁶⁷

The two largest vegetation types in Utah are pinyon-juniper species and sagebrush, (particularly big sagebrush). These communities are approximately equal in their extent and together occupy nearly 40 percent of Utah lands. In the Five (Beaver, Iron, Washington, Kane & Garfield) and Six (Juab, Millard, Wayne, Piute, Sevier & Sanpete) County Association of Governments lands, these types are even more prevalent than in the state as a whole (Figs. 1 and 2). These lands have value for wildlife and livestock in different proportion.

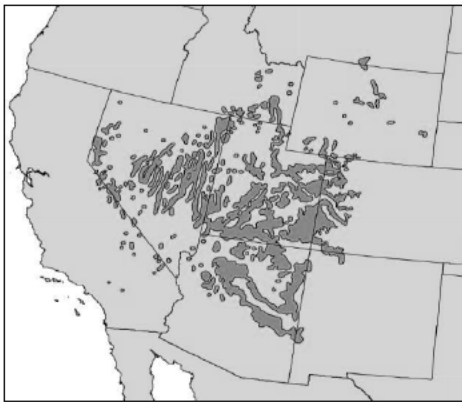


Figure 1. Utah Juniper communities in western United States. By U.S. Geological Survey Digital representation of "Atlas of United States Trees" by Elbert L. Little, Jr. [1], Public Domain, 1976.

In the last couple of centuries, pinyon-juniper, especially Utah juniper, has been expanding into sagebrush communities. The invasion is harmful to the value of sagebrush communities as wildlife habitat and range for domestic livestock. The President of the Rocky Mountain Elk Foundation and editors of their publication, *Bugle*, have made the case for protection and enhancement of sagebrush habitats for the health of mule deer and sage-grouse species populations. In the northwest, a sage-grouse initiative consisting of several government agencies, local ranchers, and wildlife groups concluded that "The invasion of

juniper...into sagebrush rangelands degrades habitat for sage-grouse." They found that when conifer cover is more than 4% of the land area, no sage-grouse leks were found and "The most effective approach for conifer treatment is to target early encroachment stands, where small trees can be completely removed and the existing sagebrush community sustained."³⁶⁸

Several species of sagebrush are important to sage-grouse. These species include big sagebrush, black sagebrush, low sagebrush, and silver sagebrush. Big sagebrush alone once dominated between 400,000 and 600,000 km² of western North America. The distribution of this and other species of sagebrush has dramatically decreased in recent decades creating one of North America's most pressing conservation challenges.

Recent estimates suggest up to a 60% reduction in sagebrush since the beginning of the 19th century. Anthropogenic impacts are recognized as having a large impact as well as encroachment by pinyon or

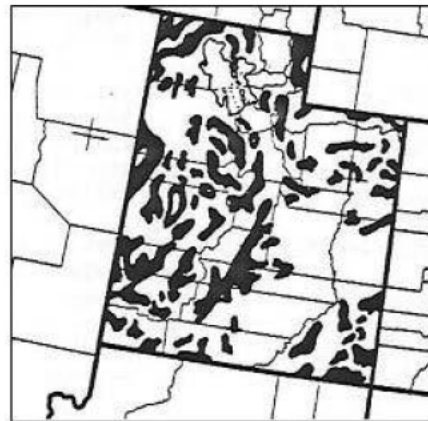


Figure 2. Big Sagebrush communities in Utah (McArthur 1981).

³⁶⁷ McArthur, E. Durant & Anderson, David C., 2016, "Pinyon Juniper and Sagebrush Ecosystems in Central and Southwestern Utah" Wildland Ecosystem Specialists Team, LLC.

³⁶⁸ Paige, C. 2014. Conifer removal restores sage grouse habitat. Sage Grouse Initiative. Science to Solutions. www.sagegrouseinitiative.com.

juniper, and invasion by annual grasses like cheatgrass. Due to the decline, conservation and restoration of remaining suitable habitat has become increasingly important for sage-grouse and other species that use sagebrush.

Sagebrush occurs patchily across most of Utah including the semi-arid regions in the southern half of the state. Sagebrush habitats are naturally fragmented by aspen and conifer at higher elevations and desert scrub at low elevations. Encroachment by pinyon-juniper woodlands has reduced large expanses of sagebrush habitats over the last 150 years.

Sagebrush Obligates

Sagebrush ecosystems provide habitat for a diverse array of wildlife; for sagebrush obligates the degradation, fragmentation, and loss of sagebrush threatens their existence. There is a lot of information regarding sage-grouse, but not so much for other species. However, to touch on some of the species sagebrush effect:

- Sage-grouse (Kane County has adopted the Utah State Conservation Plan);
- Mule deer – populations have increased but they remain below statewide projections.
- Mule deer respond to the same kind of management practices that benefit sage-grouse.

Ground Truthing

The primary objective of pinyon-juniper/big sagebrush interface project was to identify sagebrush communities that were being invaded by adjacent pinyon-juniper. Typically these interfaces are characterized by low pinyon-juniper cover and are in the beginning stages of invading the adjacent sagebrush community. Pinyon-juniper are classified into Phases: Phase 1 represents a canopy cover of less than 33%; Phase 2 represents a canopy cover of greater than 33% and less than 67%; and Phase 3 represents a canopy cover of 67% or greater. Phase 1 areas are of most concern because these areas are where pinyon-juniper invasion is in the initial stages and treatment of such areas will be most cost effective.

Well defined Phase I pinyon-juniper/big sagebrush interfaces were highlighted on field maps and a representative number of those areas were selected for sampling. Sampling was conducted to confirm that the average percent tree canopy cover for the Phase I pinyon-juniper cover class areas shown on the maps was indeed less than 33%, which is the maximum percent cover for this cover class. Sampling validated the accuracy and utility of the field maps in identifying Phases of pinyon-juniper tree canopy as well as sagebrush shrublands. Field reconnaissance missions were conducted on three different occasions over a total of 8 days, beginning in August 2016 and continuing through the middle of September 2016 (Figure 3). Over 1,000 miles were travelled through 11 counties. Ground truth sample sites were located in both Five and Six County regions, and the Basin and the Colorado eco-regions.

A total of 16 sites were sampled; 9 within the Five Counties and 7 within the Six Counties (Figure 3). Three are located on the Colorado Plateau and the remaining 13 in the Great Basin. At least one ground truth sample site was located in each of the 11 counties (Table 1).

Table 1. Summary of ground truth sites for the Five and Six Counties with average percent Pinyon Juniper Cover for each site.

Six County AOG Sites			
County Site #	LOCATION	Ecological Region	Average % Pinyon Juniper Canopy Cover
Juab 9	Dog Valley Wash	Great Basin	9.6%
Millard 8	South Crystal Peak	Great Basin	26.8%
Piute 14	Gold Gulch	Colorado Plateau	7.6%
Sanpete 10	Mouth Axhandle Canyon	Great Basin	7.5%
Sanpete 11	North of Fayette	Great Basin	11.1%
Sevier 12	Strawberry Canyon	Great Basin	11.0%
Wayne 15	Deadman Hollow	Colorado Plateau	19.3%

Five County AOG Sites			
County Site #	LOCATION	Ecological Region	Average % Pinyon Juniper Canopy Cover
Beaver 6	Head Frisco Wash	Great Basin	18.7%
Garfield 2	Sevier Plateau	Great Basin	5.8%
Garfield 3	Dry Wash	Great Basin	16.5%
Iron 16	Bear Valley	Great Basin	10.8%
Iron 7	South Silver Peak	Great Basin	14.5%
Kane 1	North of Lick Wash	Colorado Plateau	13.8%
Kane 4	Glendale Bench	Colorado Plateau	14.1%
Washington 13	Vermilion Cliffs	Colorado Plateau	7.6%
Washington 5	Shoal Creek	Great Basin	20.3%

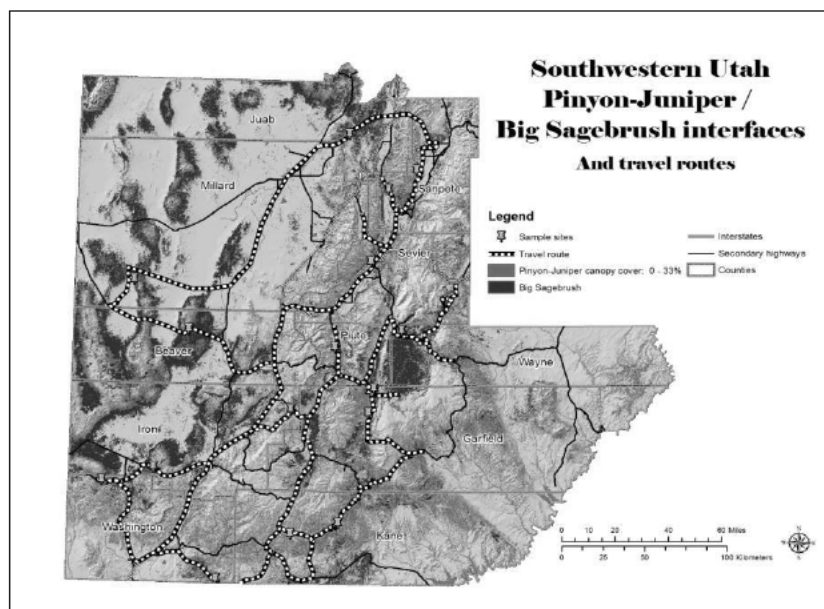


Figure 3: Travel Routes

Average tree canopy cover for the 16 sample sites ranged from a low of 5.8% on the ground truth area on the Sevier Plateau in Garfield County to a high of 26.8% on the ground truth area south of Crystal Peak in Millard County. Average pinyon-juniper canopy was between 10% and 15% in Sanpete (ground truth area #2), Sevier, Iron (both ground truth areas), and Kane (both ground truth areas) Counties. At none of ground truth areas did the average tree canopy cover exceed the high end of the range of canopy cover for Phase I pinyon-juniper distribution.



Figure 4a. Ground truth sampling site on Glendale Bench (Sample Site #4), August 2016.

Potential Treatment Areas

The primary objective was to identify pinyon-juniper big sagebrush interfaces where pinyon-juniper were in the initial stages of invading the adjacent sagebrush community and some form of land treatment would be required to maintain the quality of the range lands. Identification of these areas was accomplished concurrently with field map verification and was classified as

potential treatment areas. Many treatment areas were identified. Fifty-three were verified in the field and 15 were projected to occur based on their similarity to those areas observed in the field. Also factored into their selection was field scientist's familiarity with those geographical regions where the areas were located.

A starting and end point were recorded for each of the potential treatment areas. A buffer of 1,000' on each side of the line delineating the treatment area was used to determine acreage for each area. The 1,000' buffer was not strictly arbitrary but was based on field observations of the typical extent of those areas where pinyon-juniper was invading the sagebrush community.

Thirty five potential treatment areas, covering approximately 18,000 acres were located in the Five County area. The majority of the potential treatment areas are within either sage-grouse or mule deer habitat (Table 2). There are 12 in sage-grouse habitat and 35 in mule deer habitat. The five potential treatment sites in Kane County are in mule deer habitat. Just one is in sage-grouse habitat.

Ground Truth Site #1

The first of two ground truth sites sampled in Kane County is located south of Skutumpah Road in the Lick Wash area. There is evidence of grazing and characterized as a mature stand of pinyon-juniper. There are several species of native grasses present.

Summary Data: North Lick Wash, sampled 8 3 2016, elevation 6,430; Azimuth: 195°
Lat 37° 21' 36" Long 112° 12' 04"

Site 1 – E-393641 N-4134983 P/J Cover 14.8%

Site 2 – E-393593 N-4135038 P/J Cover 2.1%

Site 3 – E-393934 N-4134890 P/J Cover 24.5%

Average Cover: 13.8%

Common Vascular Plants Encountered:

Achnatherum hymenoides, *Achnatherum speciosum*, *Artemisia tridentata* subsp. *tridentata*,
Cordylanthus parviflorus, *Juniperus osteosperma*, *Poa fendleriana*

Table 2. Summary of potential treatment areas in the Five Counties with associated acreages for each county.

Five County AOG	# of Potential Treatment Areas	# Areas Field Verified	Approximate # of Acres	No. in Mule Deer Habitat	No. in Sage Grouse Habitat
Beaver	10	8	6,100	10	3
Garfield	3	2	1,420	3	3
Iron	12	9	6,875	12	5
Kane	5	5	1,980	5	1
Washington	5	5	1,600	5	0
TOTAL	35	29 (83%)	17,980	35	12

Ground Truth Site #2

The second ground truth site in Kane County is located along the Glendale Bench Road on the Skutumpah Terrace. The area is rich botanically with a good mix of several forbs and grasses.

Summary Data: Glendale Bench, sampled 8/4/2016, elevation 6,280; Azimuth: 230°

Lat 37° 17' 29" Long 112° 31' 17"

Site 1 - E-365107 N-4128239 P/J Cover 15.5%

Site 2 - E-365182 N-4128353 P/J Cover 18.5%

Site 3 - E-365228 N-4128366 P/J Cover 8.5%

Average Cover 14.1%

Common Vascular Plants Encountered:

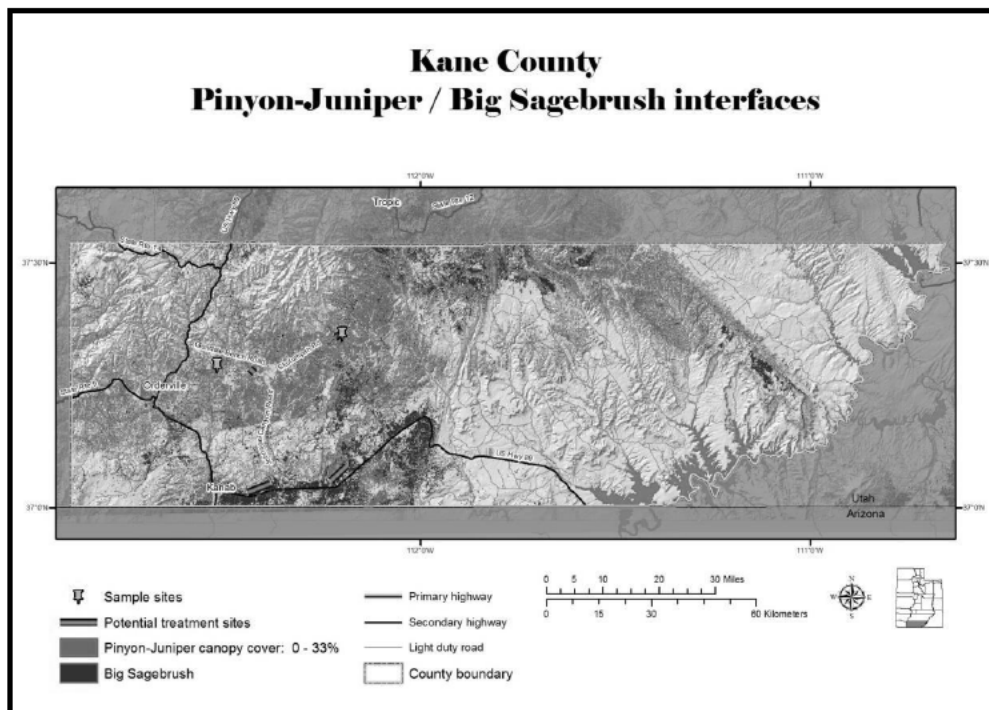
Artemisia tridentata subsp. *vasyleana*, *Juniperus osteosperma*, *Pinus edulis*, *Purshia tridentata*

Potential Treatment Areas

There are five potential treatment areas identified in Kane County. One in the vicinity of ground truth site #1 near Lick Wash, two on Glendale Bench and the other areas are along the south slopes of the Vermilion Cliffs. All of the potential treatment areas are in mule deer habitat and one is located in sage-grouse habitat. About a million and half acres of mule deer habitat have been designated in Kane County and about 50,000 acres of sage-grouse habitat.

Site No.	Start Easting	Start Northing	End Easting	End Northing	Site Description	Site Verified	Habitat *	No. Acres
01	364747	4128464	364963	4130184	Glendale bench	YES	MD	261
02	372418	4127538	373524	4126312	Glendale bench	YES	MD/SG	249
03	393883	4135194	391999	4134231	N. White Cliffs	YES	MD	319
04	371560	4099284	376752	4101236	Vermilion Cliffs	NO	MD	836
05	390543	4101666	394215	4105039	E. Vermilion Cliffs	NO	MD	751
								2,416

* MD-In Mule Deer Habitat SG-In Sage-Grouse Habitat



Kane County Policy:

- The pinyon-juniper/big sagebrush interfaces, where the pinyon-juniper cover is low (Phase I, less than 33% canopy cover) which are identified in maps presented in other sections of this report, are areas that need to be treated first to be the most cost effective.
- Kane County supports the following methods to remove or reduce conifers: bullhog masticator, bull dozers, an anchor chain or other implements, and hand crews with chain saws. Utah has identified treatment of pinyon-juniper woodlands as a focus for the multimillion dollar watershed restoration initiative. This effort will result in treatment of

nearly one million acres in Utah including hundreds of thousands of acres in the four SGMAs occurring in southern Utah.

- Kane County supports the following techniques to reduce sagebrush cover: chaining, brush hogs, Dixie harrow, mowing, roll chopper, and other methods. Most of these methods involve using a tractor to push or drag some form of mechanical implement through sagebrush habitats that uproots or trims sagebrush plants. Treatment of sagebrush typically occurs during the late summer or fall months when sagebrush has set seed. A mixture of grasses and forbs should be seeded in conjunction with the sagebrush thinning.

Woody Plant Treatment Pinyon and Juniper

Miller et al. (2008) in a broad ranging empirical data based study determined that large increases in pinyon and juniper started after 1850 as a result of infill into open low density pre-settlement tree stands in sagebrush-steppe and expansion into sagebrush-steppe communities that were previously treeless. Trees established after 1860 accounted for 90 percent or more of the population measured in the sampled plots.

This encroachment into sagebrush habitats impacts sagebrush obligates including sage-grouse. This encroachment typically involves pinyon or juniper trees and occurs in three identifiable phases. In Phase I, trees establish and an observed reduction in shrub and herbaceous understory is noted. As trees mature, they out compete sagebrush resulting in a loss of canopy cover (Phase II). Eventually, conifers become dominant, shrub and herbaceous plants are severely reduced or eliminated, and bare ground increases (Phase III). Removal or reduction of conifers identified in Phase I or II is considered the most cost effective approach to improving habitat for sage-grouse.

Woody Plant Treatment Sagebrush

Limited reduction of sagebrush in small areas within a sagebrush matrix would allow for increased production of grasses and forbs and it could benefit sage-grouse in some situations.

Thinning of sagebrush in small areas in mosaic patterns within sagebrush landscapes may improve brood-rearing habitat and sage-grouse recruitment if those aspects are limited. Data shows that females with broods used and even selected for areas where sagebrush cover was reduced, particularly within 90 m of treatment edges. Treated areas are particularly favored if they contain increased availability of forbs and arthropods which may improve nutrition.

Extreme caution, particularly in semi-arid regions such as southern Utah, should be practiced with regard to actions that remove or thin sagebrush. Poorly planned or executed treatments will do more harm than good, particularly when spring moisture fails to develop following treatment. Both nesting and winter habitat may be compromised if large areas of sagebrush dominated landscapes have reduced shrub cover. Large treatments that leave little remaining sagebrush have not maintained or improved populations and are associated with significant population declines. Where vegetation is unlikely to respond favorably, sagebrush treatments are not recommended for conservation of sage-grouse or other species such as mule deer. Furthermore, treatment of sagebrush is generally not recommended for Wyoming big sagebrush dominated landscapes at

lower elevations. This recommendation is particularly true where the potential for invasive plants is high (e.g., areas with cheatgrass).

Mechanical treatment of sagebrush, however, may be an appropriate method to enhance sage-grouse brood habitat when treatments target specific locales of dense (> 40 percent) sagebrush, avoid crucial nesting or winter habitat, and leave a mosaic of sagebrush and herbaceous cover. Treatments are most likely to succeed when relatively small areas are treated within a mosaic pattern at mid to high elevations in breeding (nest and early brooding) and summer (late brooding) habitats. Sagebrush treatments were implicated in both the increase (presumably due to increased production) and decrease (due to reduced availability of sagebrush in winter) of sage-grouse populations in Northern Utah. The average annual treatment rate should not exceed the sagebrush recovery rate for effective conservation of sage-grouse.

Seeding

If treatment of woody plants is a management option that is chosen Kane County insists it be followed by seeding so that the soil is protected and desirable plants are put in place for wildlife habitat and domestic animal forage. This is especially important if the herbaceous plant community at the site is depauperate. Use of native plants for restoration and rehabilitation of disturbed or manipulated pinyon-juniper and sagebrush communities is increasing in response to desires of land managers and society in general. Seeds of native plants are becoming more available, but estimates and surveys show there is still more demand than available supply. Field grown seeds and warehousing do anticipate demand but are only partial solutions to the native plant seed shortage. Exotic, developed plant materials, especially Triticeae grasses and legumes, remain important resources for rehabilitation plantings. Private industry seed collectors, growers, and developers will be responsive to plant materials needs of land managers. Seed genetic identity and quality can be better assured through the seed certification process whether the seed is wildland collected or field grown.

The Utah Crop Improvement Association provides updated information about seed availability, certification, and quality for these purposes. Depending upon the size of the areas to be seeded, e. g., individual masticated (bull hogged) trees or chain sawed and lopped trees followed by hand seeding and soil preparation or more mechanical means can be used to seed. It is important that seed be covered. So far as the type of seed to be used, the choices of the manager has available include native plants indigenous to the treatment or similar sites this is often the preferred option but also various other types of seed mixes. For example an ongoing study in Juab County has mixes characterized by:

- Predominately introduced species seed mix that was traditionally used by the U.S. Department of Interior–Bureau of Land Management (BLM),
- A mix of native and introduced species provided by the U.S. Department of Agriculture–Agricultural Research Service (ARS), so called ‘best plant materials available regardless of provenance’,
- Two native seed mixes (high and low diversity) developed for reseeding or mixtures of these classes of plants.

Initial results indicate that each mix could be successfully established. A current ongoing evaluation of the study shows that the various seed mixes both those that were aerially seeded and drilled are generally increasing and are faring relatively better than the unseeded control areas in respect that the seeded areas have less annual grass cover and more perennial grass and seeded forbs and woody plants. Some woody plants, e.g., rubber and low rabbitbrush, broom snakeweed, green ephedra, and spiny phlox are more prevalent on the unseeded areas.

Timber Products

Products must be allowed to be harvested for commercial and non-commercial uses of green and dead pinyon and juniper woodland species for cedar posts, Christmas trees, fuel wood, biomass, and lumber except in specifically designated closed areas or areas with restrictions: wilderness study areas; non-wilderness study areas with wilderness characteristics.

Wildland Fire Management

Firefighting and public safety is the primary goal in all fire management. Wildland fire can be managed to protect resources and, when possible, allowed to burn to reduce hazardous fuel build-up (fuel ladders) within forests or on rangelands. The Wildland Urban Interface (WUI) is the critical area between human development/habitat and public lands which is the focus for management and control of fire.

In the Western Kane County Region there are a few distinct areas of interface the BLM has managed through vegetation treatment. Every area that has burnable vegetation has a fire management plan associated with it. The general focus is to have ecosystems that are at low risk of losing their components following a wildfire. Inside the WUI the desired condition is to have vegetation less prone to burn by modifying the kind of major vegetation group that grew there. The area outside of the WUI would be to have vegetation that is a lower fire regime class but modification would be by the least intrusive methods possible – and still be within the historical range of the ecosystem.

According to the BLM,³⁶⁹ open salt desert scrub vegetation is native and does not burn often. Although it is prone to cheatgrass invasion it can be treated with a combination of mechanical, chemical, seeding and biological treatments to reduce invasion and restore native communities.

A wildland fire plan is in the process of being designed for the Kane County area and should be ready with two years.

Kane County Policy:

- Wherever pinyon-juniper grows it needs to be thinned; however, if wildland fire occurs, it should be allowed to burn, providing it is safe. Prescribed fire should be applied whenever possible when there is low risk of invasive species; after a fire, reseed to restore native community.

³⁶⁹ Kanab Field Office Resource Management Plan, Final, 2008; Wildland Fire Ecology.

- Sagebrush must be carefully balanced between invasive species, wildlife habitat and the need to restore fire. If the sagebrush is thicker than 30% it should be treated with fire, mechanical, or chemical treatments to reduce canopy and improve native grass and forb density.
- Grassland has been lost to pinyon-juniper encroachment, cheatgrass invasion, and non-native plant seedlings. Treat native grassland with fire to reduce encroaching trees (mainly juniper), shrubs and invasive plants. Areas below 7,000 feet have high incidence of cheatgrass invasion especially if they are adjacent to an area of cheatgrass.
- A wildland fire management plan will be implemented for Kane County within two years that will effectively address the treatments for vegetation areas at risk and protocols to handle them.

Riparian, Vegetation & Wetlands

Kane County feels that:

- Riparian corridors and associated stream courses are intact and functioning across the landscape.
- Stream channels and associated flood plains are sustained, given natural flow regimes and associated landforms.
- Vegetative communities comprised of deep-rooted and hydrophytic herbaceous vegetation are present in sufficient quantity to filter sediments, stabilize streambanks, reduce flooding, and provide for ground water recharge within their natural potential.
- Effective ground cover within riparian areas occurs at a level that is at least 80 percent of potential.
- Within the capability of the area, overstory and understory canopy cover shades streams to help regulate water temperature to maintain aquatic habitat. Healthy native vegetation is present in sufficient quantity along the banks to stabilize banks from erosion and dissipate the energy of floodwaters. There are multiple seral stages and age classes of native vegetation represented. Enough seedlings and saplings should be present to allow for adequate replacement and succession.
- Aquatic and riparian habitats are free of or minimally impacted by non-native plant and animal species.
- Sagebrush communities have diversity and cover of perennial plant species, especially perennial forbs.

Kane County Policy:

- Kane County supports a healthy and robust riparian ecosystem across forest-lands (and across all areas of the county). The County desires a sustainable ecological system while providing products, values and services for the benefit of present and future inhabitants of the county. Although understanding historical changes in vegetation and other resources is useful, restoration of *natural* or *original* conditions is neither a realistic or desirable goal.

Kane County strongly desires the following conditions across its riparian and wetland ecosystem:

- Riparian areas must be managed to prevent excessive erosion and deposition of sediment and impaired water quality. The desired vegetation must vary from one riparian situation to another depending on temperature regime, timing and reliability of stream flow, and the desired uses of the vegetation for wildlife, livestock and recreational purposes.
- Upland rangeland having vegetation cover and composition which will insure sustained productivity considering site potential and historical impacts. Range and watershed condition (or health) is to be determined on *best available science* and experience without reference to intended uses. Assessments must be based on establishing the kind and amount of vegetation that will provide soil protection and useful vegetation production considering the potential of the site, not necessarily restoring *natural* conditions.
- Water quality must meet State of Utah standards which reflect appropriate uses and local potential to meet standards.
- Noxious and invasive weeds will be detected early and controlled by chemical, mechanical or biological means.
- Desert shrub types (greasewood, blackbrush, salt desert shrub, etc.) must be managed to maintain dominance of shrubs with a good understory or perennial grasses and forbs (depending on site potential). Invasive annuals will be eradicated.
- Big sagebrush (Basin, Wyoming and Mountain Big Sage Brush) must be managed to maintain good understory of perennial grasses and forbs with an overstory of big sagebrush and browse shrubs (on appropriate sites). Invasive annuals must be eradicated. Landscapes must exhibit a diverse mix of communities ranging from almost all perennial grass and forbs to moderately dense stands of sagebrush, depending on treatments applied and the time of such treatments. Sites with higher potential to support sagebrush and grass communities must have pinyon-juniper completely removed or reduced to a minor component.
- Pinyon-juniper must be eliminated or reduced on any site that has the potential to support grassland, sagebrush grassland, or other vegetation types more useful in terms of watershed conditions and resource outputs, unless it has been determined that pinyon-juniper does not jeopardize watershed conditions or it adds to the values of the site. In areas where there is no potential for good perennial grass and shrub cover, pinyon-juniper stands must be maintained in an open canopy state to prevent catastrophic wildfire or stand replacement with invasive annuals.

Wilderness

Some of the designated wilderness study areas in the Western Kane County Region are: Moquith Mountain WSA, Parunuweap Canyon WSA, North Fork Virgin River WSA, and Orderville Canyon WSA.

The BLM has designated areas of public land that meet the criteria for having “Wilderness Characteristics” which basically means it has the appearance of naturalness, outstanding opportunities for solitude, or primitive and unconfined recreation. These areas can mostly be found in the back-country segments of the Western Kane County Region because the areas are undeveloped and require a certain amount of self-sufficiency to navigate.

The lands with wilderness characteristics are managed specifically to protect, preserve and maintain for the wild characteristics. There are four non-WSA lands within the Western Kane County Region that meet the criteria which are extensions of wilderness study areas: Moquith Mountain (9,600 acres); Orderville Canyon (2,700 acres); Parunuweap Canyon 120 acres; and Upper Kanab Creek (14,500 acres).

Cottonwood Canyon is also designated as an Area of Critical Environmental Concern. There are also some areas that have not been designated ACECs but they are being managed like they are. Additional acreage around the Coral Pink Sand Dunes/ Moquith Mountain WSA, Parunuweap Canyon and Vermillion Cliffs are being managed like an ACEC even without the designation. The VRM Class has been changed and restrictions have been placed for recreation and mineral development.

Kane County Policy:

- Although Kane County supports protecting and conserving the county's natural resources it does not support the continuous expansion of wilderness study area restrictions that management is trying to assert on the ACEC-like areas.

Law Enforcement

Law enforcement in the Western Kane County Region is a combination of jurisdictions depending on whether you are in Kanab (City Police), in the county (County Sheriff) or in one of the smaller incorporated towns (Town Marshall). Jurisdiction for law enforcement when on public lands falls to the County Sheriff.

Minerals, Mining & Energy Resources

Mineral resources in the Western Kane County Region are varied and largely untapped. The reasons for this are current market prices, quality of the resource or subject element, quantity thought to be present, current geologic understanding of the deposit type and BLM management policy. The enabling legislation that allows for extracting mineral resources is:

- General Mining Law of 1872 – governs the prospecting for and appropriation of metallic and most nonmetallic minerals on public domain lands.
- Mineral Leasing Act of 1920, as amended – provides for the disposal of fossil fuels such as coal, oil, gas, oil shale, and related bitumens, as well as sodium, potassium, and sulfur (in certain states) from the public domain.
- Materials Act of 1947 – allows for the disposal of mineral or vegetable products on public lands.
- Minerals Policy and Mining Act of 1970 – declares the continuing policy of the federal government to foster and encourage the development of domestic mineral resources and the reclamation of mined land.

Minerals fall into three basic categories or commodity groups: metallic deposits (base and precious metals), energy mineral occurrences, and industrial mineral occurrences. Most of the

minerals found in large quantities fall into the latter group; this group is also predominantly used by local, regional and state governments.

The BLM is responsible for the management of any minerals in the ground on public land and administers mineral deposits on split-estates (private property, but federally owned mineral deposits). It is also responsible for administering any leases or permits for leasable, locatable and salable minerals. Leasable minerals are: oil & gas, coal, potash and salt where competitive leasing is required. Locatable minerals are: uranium, vanadium, antimony, gypsum, and limestone (including special kinds of stone such as septarian nodules) and are subject to mining claim location. Salable minerals are: sand & gravel, clay, common varieties of stone (including volcanic cinders) and are obtained by contract or free-use permit.

Coal

The most known mineral resource in Kane County is coal and is considered to be an energy mineral occurrence. Both the Kolob and Alton coal fields lie within the Western Kane County Region, separated by the Sevier fault. The Kolob coal field runs across western Kane County through the Northwestern corner into Washington and Iron counties by Cedar City and the north side of Cedar Mountain. It is within the Dakota Formation and ranks subbituminous A averaging a 1.2 percent sulfur content.³⁷⁰ The ash content ranges between 10 and 15 percent while the heat content varies between 7,500 and 9,500 Btu/lb.³⁷¹ The Alton coal field (outside the town of Alton to the east of Hwy. 89) ranks subbituminous B, and averages the same percentages in sulfur, ash content and heat generation as Kolob field coal.³⁷² The Kolob coal field has been inactive since the early 1900s; the Alton coal field is the only field being mined at this time (see Region 3-Municipalities and Unincorporated Areas for other information).

The Kolob coal field is estimated to have millions of short tons in underground reserves. “The Kolob field ... probably contains reserves of bituminous coal that are slightly less than 3,000 million short tons.”³⁷³ When it was mined in the early 1900s in Kane County it was primarily for home use. Kolob field coal that was mined in Washington County was used to power an electric-generating plant called the California Pacific Utilities Company.³⁷⁴ Once transportation methods and corridors improved, coal was obtained from northern Utah counties that were more economically accessible.

In terms of market value, Kolob field coal is worth less than Alton field coal mostly because of its higher ash and sulfur content. When it was assayed back in the 1960s it was summarized as being best suited for generation of electric power or for industrial uses.³⁷⁵ However, the scientists

³⁷⁰ Kanab Field Office Approved Resource Management Plan, Appendix 6: Kanab Field Office Coal Unsuitability Report; October 2008.

³⁷¹ Ibid.

³⁷² Ibid.

³⁷³ Robinson, Richard, A. “A Reconnaissance Survey of the Coal Reserves of Southwestern Utah”, Utah Geological and Mineralogical Survey, Special Studies 3; Dept. of Geology, University of Utah; Feb. 1963. Later verified by H.H. Duelling & F.D. Davis, “The Geology of Kane County”, Utah Geological and Mineral Survey, Division of Utah Dept. of Natural Resources, Bulletin 124; 1989.

³⁷⁴ Ibid.

³⁷⁵ Ibid.

admitted most of the samples were from the western Kolob field mines (near Cedar City) and assayed on the basis of comparison. The economic factors affecting its values include:

- proximity to adequate markets/lack of transportation facilities
- chemical and physical properties
- abundance or scarcity of coal
- amount of overburden and thickness of seams
- geological conditions that affect mining such as the nature of the floor and roof, amount of groundwater, folding or strata

There are large coal reserves in and around the Town of Alton within the Alton coal beds. Geologically, it is part of the Paunsaugunt Plateau and covers the southwestern section.³⁷⁶ In 2010, Alton Coal Development, LLC began building the infrastructure for a surface mining project called the Coal Hollow Mine. Alton Coal leased the property mostly from private property owners, with one section owned by State Institutional Trust Lands (SITLA). The first area mined was south east of the Town of Alton in the Sink Valley. Mining operations commenced in January, 2011; total production in the first year was 285,000 tons. The forecast for Coal Hollow was 2 million tons annually, employing 90 people, requiring 150 shipping trucks per day with the life of the mine projected at 40 years.

Prior to the development of Coal Hollow Mine on private land, Alton Coal applied for a “Lease by Application” (LBA) to mine federal coal on 3,576 acres of BLM land using (primarily) surface-mining methods on tracts that were 0.10 mile south of Alton and 2.9 miles east of Hwy. 89. These coal fields are geologically located within the Alton Amphitheatre between the Paunsaugunt Plateau (to the northeast) and Long Valley and Virgin River (to the west). It is also approximately 5 miles north northeast of the Grand Staircase-Escalante National Monument. The BLM required an environmental impact statement which was finally published in November, 2011.³⁷⁷ (A Final EIS has not yet been published.)

The Draft determined the following:

- All coal reserves in the Alton Coal Tract are federally managed; surface ownership is mixed.
- Of the 3,576 acres requested in the LBA, 2,280 of the surface and mineral estate are managed by the BLM; 1,296 acres are split estate, (meaning the surface coal is owned by eight different private property owners, and the mineral estate (underground) is managed by the Feds).
- In the Alton Coal Tract there are between 44.9 and 49.1 million tons of recoverable coal reserves. The coal will be mined at the 200 to 300 foot level at an estimated 2 million tons per year.
- The total recovery value (for the life of the mine) is \$1.49 to \$1.57 billion; \$186.62 to \$197.30 million total federal royalty revenue; and \$93.31 to \$98.64 million royalty

³⁷⁶ Tilton, Terry L., *Geologic Map of the Alton Quadrangle, Kane County, Utah*; Publication of Utah Geological Survey 01 4, Utah Department of Natural Resources, 2001.

³⁷⁷ Alton Coal Tract Lease By Application Draft Environmental Impact Statement, Department of the Interior, Bureau of Land Management, Kanab Field Office, November 2011.

revenue disbursed to the State of Utah (50%). Additionally, \$30.20–\$32.04 million appropriation to CIB (32.5% of state revenue); \$37.32–\$39.46 million to UDOT (40% of state revenue).

- The coal will be mined over 25 years; there would be an additional 10 years for reclamation.
- The coal haul transportation route will involve Kane, Garfield and Iron counties (for a total of 110 miles); it will include KFO Route 116, Hwy. 89, SR-20, Interstate-15, and SR-56. The use of the Union Pacific Railroad at Cedar City, Utah is the nearest railroad facility.
- Alton Coal Development has acquired 50-acre feet of water rights from the Town of Alton.
- Assuming 2 million tons per year of coal production, 25-acre feet of water per year would be required for dust suppression and equipment washing.
- Alton Coal Development has not obtained any water rights to surface waters in the area, yet.
- All water sources must be permitted through the Utah Division of Water Quality and Utah State Engineer's Office.
- Federal and private owner coal *leases* would be required to remove coal from the tract.
- All permits will have to be obtained from the proper authorities (i.e. mine, air, storm discharge, etc.)
- Portions of KFO Route 116 *could be* relocated within the Tract to mine in-place coal reserves under the road.
- Most Utah coal production occurs in Carbon, Emery, and Sevier counties. According to the BLM, no coal production has occurred in Kane and Garfield counties since 1971. However, 53% of the state's estimated recoverable coal can be found in Kane County and 20.6% in Garfield County.
- Lands in the Alton Coal Tract are currently managed for wildlife habitat and livestock grazing.
- There are seven (7) grazing allotments affected by the Alton Coal Tract: two are completely within the tract (Alton and Cove) and five are partially within the tract (Isolated, Levanger Lakes, Robinson Creek, Syler Knoll, and Upper Sink Valley). The seven grazing allotments represent approximately 118 AUMs.

Employment Requirements

Approximately 160 workers will be required to conduct mining operations at the Alton Coal Tract (and an additional 320 indirect jobs). One hundred (100) of these workers will be employed at the tract conducting mining operations; the remaining 60 workers will be engaged in transporting coal from the tract to market (trucking). Employees are expected to come primarily from Alton and surrounding towns located within approximately one to two hours (driving time) of the area. This would include towns within three counties – Kane, Garfield and Iron: Kanab, Mt. Carmel, Orderville, Glendale, Hatch, Panguitch, Circleville, Kingston, Junction, Cedar City, Tropic, Enoch, Parowan, Paragonah, La Verkin, Hurricane, Henryville, and Escalante. Mine employees would either commute to and from the work site using their private vehicles or relocate closer to the tract. No housing would be provided at the mine. The initial start-up will only require 16 full-time employees.

Annual wages are estimated at \$6.5 million and \$166 million over the life of the mine.

Moratorium on Mining at Coal Hollow

In January, 2016 a moratorium was placed on federal coal, which delayed the LBA from going forward. At this point, it has already been approximately 12 years since the original LBA was submitted to the BLM. This has put Alton Coal Development in the position of having to apply for an emergency lease because the company will run out of coal within three years and under the current system, has the right to apply for a lease from the federal coal supply. Alton Coal has modified their LBA and submitted it for reconsideration. This process could take 18-24 months.³⁷⁸

In the meantime, they will continue to surface mine the acreage from private property leases. They are currently operating with 32 employees. Alton Coal has had to lay off an additional three people in the last year and a half. The employees come from as far away as Kanab and Panguitch.

Due to the current change in administration within the Federal government, and the recent changes to Environmental Protection Agency rules, the moratorium on coal is expected to be lifted and Alton Coal should be able to move forward with its plans.

Leases and Other Materials at Alton Coal Tract

There is an oil and gas lease (UTU-079271) in the northeast area of the tract that extends east of the Sink Valley Fault where the Straight Cliff Formation is exposed. In general, the area is classified as high potential for oil and gas development and there are a handful of existing leases near the tract. There is also a potential for the occurrence of coal bed CH₄, though there are no existing proposals to develop this resource.

The geological map for the Alton Coal Tract shows three gravel resource sites that are authorized community pits open to the public for purchase of burnt shale aggregate. Most of these pits have been in operation since the late 1970s and are nearly depleted. Other known burnt shale resources exist west of the tract. Recent interest in the development of these resources has been shown.

There are also pediment gravel deposits in the tract. They are derived mostly from the erosion of the Claron and Canaan Peak formations and consist of quartzite pebbles and cobbles. These deposits are considered to be salable.

Septarian nodules occur in the tropic shale near the Alton Coal Tract. The nodules in the region are considered of high (gem) quality, and a locatable resource. Active mining for septarian nodules is occurring on leases in the Mount Carmel area southwest of the tract. Development potential is rated as moderate in areas where tropic shale is present. However, since no surveys

³⁷⁸ Johnson, Larry; Manager at Alton Coal Development, LLC; Reported at Resource Development meeting on November 1, 2016.

or studies have been done on this tract it is unknown how common they are or if they are present in sufficient density to be economically viable for development.

Clay and (Crushed) Stone

Clay and (crushed) stone fall under the industrial mineral occurrence category. Both are available and widespread in the Western Kane County Region according to the BLM and local consultant/geologist reports.³⁷⁹ As a rock-type, clay is a very fine grained sedimentary rock where most of the grains are composed of the group crystalline minerals (also called clays) and other detrital grains less than four microns in size. The term clay is both a particle size term and a group of crystalline minerals. Most applications of the term state that clay behaves plastically when wet. In general, clay is a natural raw material most commonly formed in two- and three-layer groups. Kane County has the three-layer type (montmorillonite) which has swelling characteristics when wet and is used mostly for water impoundment.

Crushed stone is used in construction of road beds and other applications where size and durability of the material are important criteria. Volcanic (cinder) rock has been used by the Utah Department of Transportation for lining winter road beds because of its traction-enhancing characteristics. In Kane County a durable limestone has been found that also meets these criteria.

Limestone

Limestone is a common stone that is chemically reactive with uses in agriculture and manufacturing. Agricultural uses include adding it to the soil to reduce acidity and increase the calcium in the soil which can increase crop yield; it is also good for calcium supplements for livestock and for sugar refinement. Manufacturing uses include glass and paper production; the production of lime; as a flux for steel production; and in coal-fired power generation where it is burned in smoke stacks scrubbers to reduce emissions of sulfur and nitrogen gases. Limestone is also used in combination with iron and silica to make cement.

Transportation of a large quantity of limestone is critical to the economics of mining it; some consider the potential of mining limestone in the Western Kane County Region to be moderate because it is within three miles of a major transportation system (Highways 89, & 14), but the preferred mode would be railroad. Some of the limestone in Kane County is considered high quality at +90%.³⁸⁰

Gypsum & Silica

Gypsum is a calcium sulfate mineral used primarily in the manufacturing of wallboard and plaster. It is also broadcast onto agricultural fields to increase sulfate. High-grade gypsum is used in food additive and pharmacological applications. In Kane County, gypsum is found in the Carmel and Moenkopi Formations (largely in the southwest section of the county). One quarry was mined for local use near Mt. Carmel

³⁷⁹ Map 39 of Proposed Resource Management Plan for Kanab Field Office, October 2008; and Report and map(s) "Introduction to the Mineral Resources in Kane County" Jim Rasmussen, Geologist; 2016.

³⁸⁰ J. Rasmussen, "Introduction to the Mineral Resources in Kane County" 2016 Report; Geologist, County Consultant.

Uses for Silica include abrasives, glass and chemical, metallurgical, refractory and electronic applications. Abrasive uses include stone cutting, glass grinding, and blasting. Metallurgical silica is usually pebble in size but some modern smelters require it small. Applications include the making of silica alloys and as a flux. Refractory uses include mold or cord sand in foundry operations, bottom sand in open hearth and electric steel furnaces, and for patching or lining furnaces and vessels. Silica can also be used as a filter media, hydraulic fracturing in the oil and gas industry, and as a component of computer chips. High quality silica is found in the Navajo and Brian Head Formations in Kane County.

Oil & Gas

Maps published by the BLM show there is high potential for both oil and gas in the Western Kane County Region. The BLM is bound by law to determine how much acreage is legally available for oil and gas leases within a planning area. They use landscape-level criteria to make this determination based on mineral potential reports and reasonably foreseeable development scenarios written by geologists commissioned to produce them.³⁸¹ The BLM weighs the results against their classification system (BLM Manual 3031 and Handbook 1624.1 for example). However, the basis for comparison is all BLM-managed property in the United States, which is what makes the criteria “landscape level” and not specific to southern Utah (or to southern Utah anomalies).

After establishing how much acreage is available for oil and gas leasing, the BLM decided 76 percent could not have surface occupancy (NSO); 14 percent would have controlled surface use (CSU) and the remainder would be time limited (TL).

Kane County recognizes the need to protect its public lands but not at the cost of eliminating the development of an industry. However, the real issue here is that although there may be potential for oil and gas within the Western Kane County Region the factors affecting development are more pressing:

- proximity to adequate market – remoteness of the area
- transportation to facilities – or lack thereof and lack of infrastructure
- rugged topography
- complex geology (including low drilling success rate)
- and current market rates

Kane County wants to reserve the right to develop the oil and gas industry with the Western Kane County Region if it ever becomes economically and realistically feasible. At the present time, Kane County recognizes there are more viable markets, although that could change if circumstances changed.

³⁸¹ Geologists were from the Utah Department of Natural Resources and the Utah Geological Survey.

Kane County Policy:

- Kane County insists it has cooperating agency status as well as coordination federal and state agencies pertaining to any issue within the political boundaries of the county.
- Kane County insists federal and state agencies provide opportunities for mineral exploration, development, and reclamation under the mining and leasing laws (e.g. coal mining, gypsum, limestone, clay, etc.) subject to the legal requirements to protect other resource values. The County also asserts the agencies provide salable and free-use mineral materials to meet local demands.
- Kane County supports the development of coal in the Kolob coal fields when and if the economic viability is conducive to its extraction.
- Kane supports the development and extraction of coal in the Alton coal beds; it strongly believes the LBA should be allowed to go forward since the moratorium on coal has been lifted.

Noxious Weeds

Noxious weed and invasive species are handled under the guidance of the Department of Agriculture and Food by way of Utah's Noxious Weed Act (R68-9). The Commissioner of Agriculture and Food publishes a Noxious Weed List for the State of Utah, which designates five classes of noxious weeds in the state: (The current list was updated as of October, 2016)

For a list of the noxious weeds and invasive species that are found in the Western Kane County Region, see Section One: Introduction, under Noxious Weeds.

Recreation & Tourism

Recreation in the Western Kane County Region covers some of the prime hiking and off highway vehicle routes in Southern Utah. There are significant scenic, cultural and scientific opportunities in settings that range from primitive to urban. The city of Kanab is known for being a central hub and stopping point for many of southern Utah's best tourist attractions because it is within an hour's drive of the Grand Canyon (Arizona), Zion National Park (Kane and Washington Counties), Bryce Canyon National Park (Kane and Garfield Counties), Grand Staircase-Escalante National Monument (Kane County), Coral Pink Sand Dunes (Kane County), Dixie National Forest's lava tubes (Kane County), Vermillion Cliffs (Kane County, UT and Coconino County, AZ), The Wave (Coconino County, AZ) and Lake Powell (Kane County).

Travelling north or south along the Highway 89 corridor is more than just a scenic drive; there are a myriad offshoots to explore from sand dunes, slickrock, and slot canyons, to mountain biking, foot, equestrian and ATV trails on various landscapes.

The BLM manages five Special Recreation Management Areas (SRMA), and one Extensive Recreation Management Area (ERMA) in Kane County which encompasses over a half million acres.

The **Kanab Community** Special Recreation Management Area – Off Highway Vehicle (OHV) Recreation Management Zone encompasses 33,100 acres. It is close to Kanab City limits, allows travel in an exceptional scenic setting and offers different trails for different levels of riding skill. It is primarily for day use and easy to access from in town, but here are areas for back country riding that are away from the well driven trails.

The Kanab Community SRMA also has a non-motorized trail section that offers a hiking and equestrian trail network with excellent views, varied terrain and for day use back packers. This network offers front country middle country and back country experiences.

The **Moquith Mountain** Special Recreation Management Area and Dunes Management Zone includes the Coral Pink Sand Dunes State Park as well as the Moquith Mountain trails. This SRMA encompasses 15,000 acres and is part of the Moquith Mountain wilderness study area (WSA). The Dunes Management Zone (approximately 1,000 acres) is a recreation niche that is entirely within the WSA; the non-dunes wooded management zone takes up the rest (approx. 14,000 acres) and it extends beyond the Moquith Mountain WSA into the Cottonwood Canyon area of critical environmental concern (ACEC).

There are extensive trails, camping opportunities along the dune fringes, day use and multiple night stays, cultural sites, hiking and equestrian trails, and hunting (seasonally). Most all off-road vehicles are limited to designated routes, and hiking/equestrian to certain trails in the Moquith Mountain area.

Another SRMA is the **Orderville Canyon** special recreation area that encompasses approximately 1,900 acres and is relatively undeveloped. It is located within the Orderville Canyon WSA, with a small segment (500 acres) considered wild and scenic. Most of this area is for non-motorized travel, primarily multi-day canyoneering, climbing, hiking, backpacking, camping, equestrian, studying geology, viewing nature and wildlife, and hunting. There are limited areas for off-road vehicle travel.

The **North Fork Virgin River** SRMA is basically undeveloped (or primitive) but well visited because of the trails that feed into the area. It takes up a little over 1,000 acres and the primary activities are hiking, backpacking, camping, canyoneering, horseback riding, geology, and hunting. The management area is within a WSA and has a segment that is considered wild and scenic.

The **Paria Canyon** SRMA and Uplands Management Zone encompasses The Wave and other spectacular scenic viewing spots in the surrounding Vermillion Cliffs. This area encompasses approximately 20,000 acres and the primary activities involve slick rock and slot canyon hiking. The scenic views are unparalleled and there are cultural sites, wilderness exploration, camping and horseback riding.

There are approximately 25,000 acres closed to OHV and motorized travel due to designated wilderness and wild and scenic river corridors.

Coral Pink Sand Dunes State Park is one of the most beautiful areas in the Western Kane County Region and is managed by the Utah State Park system. Created in 1963, the park sits at the 6,000 foot elevation and contains approximately 3,700 acres of uninterrupted salmon-pink sand dunes. The dunes are estimated to be about 10,000-15,000 years old and are created by high velocity aeolian winds and sand eroding the Navajo sandstone nearby.

The dunes are bound between the Moquith Mountains on the east and Moccasin Mountains on the west creating a wind funnel that increases the velocity to the point where it carries sand grains through the notch and deposits it once it reaches the open valley. The dunes continue another 1,500 acres to the northeast beyond the park on BLM land into the Moquith Mountain Wilderness Study Area. The dunes to the south of the park are also managed by the BLM.

The park is open year-round and allows off-road vehicles in designated areas, overnight camping, hiking, photography, playing on the sand dunes, and bird watching. There is a conservation area protecting the Coral Pink Sand Dunes Tiger Beetle and no traffic is allowed in those areas.

Kane County Policy:

- Kane County insists all state and federal agencies coordinate with it before making any decisions or implementing any rules that restrict activities on public land.
- Kane County strongly supports a robust and thriving recreation industry in line with the multiple-use concept on all public lands.

Wild & Scenic Rivers

There are approximately 30 miles of Wild & Scenic Rivers that are eligible for inclusion in the National Wild & Scenic River system in the Western Kane County Region. Suitable for inclusion are two segments of the East Fork Virgin River, the North Fork Virgin River, Orderville Canyon, and Meadow Creek/Mineral Gulch. All segments are classified as wild except for the East Fork Virgin River, which is classified as scenic. Getting classified in this system protects the free-flowing nature and “outstanding remarkable values” associated with the river segments, which places a certain amount of restrictions on the activities that can occur there (e.g. no dams or man-made structure or facilities can be made along these segments).

Policy:

- Kane County supports the protection of its Wild & Scenic River segments for the current and future use of its citizens as long as such designation does not affect water rights, water quality of downstream users, water resource planning, and access to and across river corridors within these designated rivers.
- Kane County insists it be included in the coordination and evaluation of any stream or river segment under consideration for inclusion into the National system.

Transportation – Land Access

Arterial highways are limited in the Western Kane County Region. Other than SR9 that runs west to Zion National Park, Highway 14 running west to Duck Creek (over Cedar Mountain), and Highway 89, the majority of roads are dirt or gravel. It is important that Kane County has access to areas throughout the Western Kane County Region.

Off-road vehicles are being limited more and more on public lands due to restrictions being placed on designated routes. Conservation and protection of riparian, vegetation, cultural, and wilderness study areas that are continuously being expanded are limiting the use of large swathes of land in the Western Kane County Region. Although Kane County supports the preservation of its relic plants and vegetation, and wants to preserve its cultural sites, it cannot support the continuous restrictions placed on off-road transportation when it hampers maintenance of grazing allotments; mineral, gas or oil development, and overall economic development. Kane County seeks compatible route systems that would meet the needs of the public and resource management, as well as land managers.

Kane County Policy:

- Kane County strongly supports maintaining access to all roads within the Western Kane County Region that would best serve the needs of the public, resource management and land managers.
- Public access must be considered through all levels of transportation planning.
- Kane County insists that state, federal and/or tribal agencies coordinate with it when making any changes or amendments to transportation planning in the Western Kane County Region.

Water Quality & Hydrology

The Western Kane County Region is affected by a couple different watersheds, but the overall emphasis is on the Colorado River system. Most of the region lies in the Upper Virgin River and Kanab Creek Watersheds; there are multiple smaller 5th level watersheds but the bottom line is that everything within the Virgin River and Kanab Creek drain into the Colorado River.

Part of the goal for these watershed systems is to maintain overall watershed health and reduce erosion, stream sedimentation, maintain soil stability, and provide for optimal plant growth at the site's potential. It is important to maintain and/or restore natural hydrologic functions of the watershed(s), including the ability to capture, store and release water; reduce flood-related incidences to infrastructure and private lands; and maintain water quality to meet state standards.

Water will be monitored for quality in coordination and compliance with the Utah State Division of Water Quality. Water quality will be protected in Cottonwood and South Fork Indian Canyons for the culinary water supply of Fredonia, Arizona. This will be accomplished by closed grazing allotments and limited off-road vehicle use.

Any oil and gas leasing will be moderated to protect the culinary water supply per the Land Use Agreement between the BLM and Kanab City for wells in T 42 S R6W Sections 19, 31 & T 42 S R7W Sections 23, 24, 25, 26, 27, 34, 35. In these specified areas, oil and gas well placement would be relocated to eliminate potential contamination or pollution. Best management practices will be utilized to preserve groundwater quality of water should any mineral exploration be permitted.

Kane County Policy:

- Kane County supports maintaining and restoring the natural hydrologic function of the watersheds with its capability to capture, store and release water for our beneficial uses.
- Kane County strongly desires that watershed conditions be improved on eroding sites and sensitive areas, including flood-related damage to infrastructure.
- Maintain and improve water quality for all Kane County citizens to meet or exceed state standards.
- Kane County will coordinate with local state, tribal and federal authorities on all water related issues.

Water Rights

Kane County will work with the Utah State Division of Water rights to apply for state water rights to meet all its resource needs.

Ditches & Canals

In the Western Kane County Region there are various conveyance systems that operate for each municipality or incorporated area. Most of these systems are addressed in Region 3- Municipalities and Unincorporated Region. The Western Kane County Region falls within the Kanab Creek/Virgin River Basin. The public community water system provides 42 public systems that serve approximately 233,400 people. There are various irrigation companies that provide secondary water for each area.

Floodplains & River Terraces

Most stream and river segments within the Western Kane County Region have the potential to flood if conditions are suitable for such events. The main drainage system in this region is the Kanab Creek/Virgin River Basin and it has had several flooding events during the monsoon season (July through August). Several towns along Highway 89 have reported flash flooding (Glendale, Orderville, Mt. Carmel and Mt. Carmel Junction) due to high precipitation events in short amounts of time.

Given the nature of the soil types and the species of vegetation the potential for flooding is moderate to high wherever there is a water source. At the present time, all of Kane County is considered a Class-A flood zone with FEMA.

Kane County Policy:

- Kane County will participate with the current effort to re-map the areas flood zone to more accurately reflect Kane County's floodplain.

Wildlife & Management

The BLM has management authority over the majority of the acreage in the Western Kane County Region, and the management of wildlife and habitat falls under the guidelines of the Endangered Species Act (ESA). The goals and objectives are to maintain, protect and recover habitats of federally listed threatened, endangered or candidate plant, animal or fish species, and promote recovery so that the provisions of the ESA are not required.

The BLM cooperates with the U.S. Fish & Wildlife and the Utah Dept. of Wildlife Resources in managing special status species and their habitat. They also collaborate with appropriate local, state and federal agencies to promote public education on species at risk. The BLM works in cooperation with the Utah Dept. of Wildlife Resources and the U.S. Fish & Wildlife Service to identify and protect important wildlife and fish habitat in order to maintain a diverse population. The main goal and objective is to make sure there are quality forage, water, cover, space and security sufficient to support productive populations. It includes conserving habitat for migratory birds, maintaining vegetation treatments that benefit wildlife, prioritizing treatments to improve habitats and coordinating predator control.

The BLM manages Deer, Elk, Big Horn Sheep, and Pronghorn habitats; and various raptor habitats (eagle, hawks, turkey, osprey, harrier, owls, falcon) when nesting. In the Western Kane County Region there are specific months of the year that each species is either nesting or breeding.

Cooperative Wildlife Management Unit: The tract falls within a cooperative wildlife management unit (CWMU) which is a hunting area consisting primarily of private lands. Its management involves cooperation with public agency land managers to manage healthy and diverse populations of big game animals. The CWMU is 55,000 acres and ranges in elevation from 5,500 feet to 9,000 feet. Public hunting is permitted from June through December. Within the Alton CWMU, 21 deer permits and four elk permits are issued each year.

Kane County Policy:

- Kane County insists the BLM coordinate with local government when creating, implementing and managing any decision or policy that affects wildlife management and habitat within the western Kane County Region (or anywhere within county boundaries).

Fisheries

The various streams and river segments in the Western Kane County Region offer a variety of fish such as rainbow trout, cut-throat trout and brown trout. Federal agencies are monitoring

stream habitat for Roundtail chub, Bluehead sucker, Flannelmouth sucker, Woundfin and Virgin River chub.

Kane County Policy:

- Kane County would like to be involved when creating, implementing and managing any decision or policy that affects wildlife management and habitat within the western Kane County Region (or anywhere within county boundaries).

Grazing & Livestock

The Grazing program administered under the Kanab Field Office is managed differently than how the Grand Staircase Escalante National Monument is handled even though the same agency is in charge. Monuments are more restrictive in what they allow, but both offices strive to obtain sustainable rangeland ecosystems by meeting the Utah Standards for Rangeland Health. The main goal is to produce a wide range of uses such as recreation, sustainable wildlife habitat, forage, clean water, and functional watersheds. This includes integrating livestock use with other multiple-use practices while maintaining, protecting and improving rangeland health.

Grazing is managed according to the guidelines of the Grazing Management Plan from 1997 (e.g. the Paria Management Framework Plan and Vermillion Management Framework Plan) and will be updated if and when the Grand Staircase-Escalante-National Monument Grazing Plan is adopted.

Grazing is scattered throughout the Western Kane County Region within the KFO perimeter and on parcels of SITLA land. Under the current framework, grazing allotments are managed by the KFO as available; the only exception to that rule is the closure of Water Canyon allotment, which is closed for the life of the plan in order to protect Fredonia's (Arizona) culinary water supply.

Livestock grazing can be used to enhance ecosystem health and help accomplish goals where invasive weeds and hazardous fuel reduction are issues. Livestock will feed on certain weeds and woody species for forage if that's what's available to them. Use mitigation measures Complete all land treatments to maintain AUMs in all allotments and provide additional AUMs needed to meet the demand for livestock and wildlife forage. Divide the AUMs equitably and proportionally among all permittees within the affected allotments (in the Western Kane County Region).

Kane County Policy:

- Kane County insists that all mitigation efforts be utilized and exhausted should any conflicts arise between users before reducing AUMs in any area.
- Kane County insists it be a part of all decision making processes that affect livestock grazing, AUMs, grazing management plans, etc.

- If AUMs are reduced on a grazing allotment due to rangeland health conditions, Kane County insists the AUMs are increased if the rangeland health improves, or is in the preferred condition that meets Utah Rangeland Standards.

Predator Control

The Western Kane County Region will use the same predator control management tools that are allowed on public lands as stated in other regions.

Endangered, Threatened and Sensitive Species

Birds:

The **California condor** is considered an experimental/non-essential population of bird, yet is among the largest and rarest in North America. It can be seen in California, Arizona or over the red-rock cliffs of southwestern Utah. The California condor is protected under the Endangered Species Act and the Migratory Bird Treaty Act. Many of the free-flying birds go back and forth between Utah and Arizona on a regular basis. There are now more than 70 birds in the Arizona/Utah population.³⁸² In a recent winter count, one condor was identified in Orderville (Kane County) on its way to the Vermillion Cliffs in Coconino County (Arizona).³⁸³

The **Bald eagle** is Utah's third largest raptor and is on the UDWR sensitive species list. It is considered an experimental/non-essential population bird, but they are protected under the Migratory Bird Treaty Act and the Eagle Protection Act. They occur in Southern Utah on a migratory or wintering basis. They feed on fish, waterfowl, small mammals, or carrion. They tend to concentrate where food is available, and roost in large groups in tree stands that provide protection from the weather. Bald Eagles typically show up in the forest during late winter or fall and spring months. When water bodies freeze in late fall or early winter, eagles move down in elevation to forage off the forest.

The **Mexican Spotted Owl** was listed as threatened by the U.S. Fish & Wildlife Service in 1993. Critical habitat was designated in 2004 on Federal lands in Arizona, Colorado, New Mexico and Utah. The two biggest threats to the Mexican Spotted Owl are timber harvest and stand-replacing wildland fire. Habitat is primarily ponderosa pine-Gambel oak, mixed conifer, and riparian forest; they will nest in other forest and woodland types such as ponderosa pine forest, spruce-fire forest, and pinyon-juniper woodland. Nesting and roosting occurs either in well structured forests with high canopy cover or in steep and narrow rocky canyons with cliffs, caves and ledges within specific geologic formations.

³⁸² Ibid.

³⁸³ Bureau of Land Management, Kanab Field Office, Wildlife Biologist/Field Staff member Brandon Crosby, winter count, December 2016.

When the Mexican Spotted Owl nests in the canyon lands of southern Utah it prefers the narrow slickrock canyons closely associated with cliff-forming rock formations like it finds in Zion, Canyonlands, Capitol Reef, Glen Canyon Recreation Area and Grand Canyon National Parks. It is not reliant on extensive forest cover though it likes mixed conifers and pinyon-junipers.³⁸⁴ In the northern portion of its range, which includes northern Arizona, Utah, New Mexico and Colorado, the owls nest primarily in steep-walled, rocky canyons. These canyon systems vary in the amount of forest cover present, but in general they are less heavily forested than are canyons occupied farther south.³⁸⁵ Pinyon-juniper woodlands and mixed-conifer forest are prominent cover types in these canyon systems, but in some cases these canyons are entirely or largely lacking forest or woodland cover.³⁸⁶

The **Greater Sage-grouse** is a candidate species that agencies have gone to great lengths to keep from being listed as endangered. The decline of the species, especially in southern Utah, is primarily attributed to habitat degradation due to wildfires, pinyon/juniper encroachment on sagebrush steppe, human disturbance which increased invasive cheatgrass, and the increase of woodland species causing herbaceous cover decline and the increase of bare ground. “Within a juniper stand, shrub cover declines to <1%, forb availability declines, and the micro-climate of the habitat becomes more xeric than a sagebrush community, eliminating both nesting habitat and food resources for sage-grouse.”³⁸⁷ To improve populations, management agencies must improve habitat, “creating environments suitable for nesting, brood-rearing, and winter survival.”³⁸⁸

Sage-grouse in the Western Kane County Region have been studied in the area referred to as the “Panguitch Sage-Grouse Management Area” (SGMA) which covers parts of Kane, Garfield, Paiute and Wayne Counties, incorporating more than a dozen, often connected leks.³⁸⁹ The purpose was to determine home range use, movement patterns, and the connectivity of Greater sage-grouse in the SGMA. The level of connectivity and population has critical implications for habitat management and mitigation activities; depending on the level and extent of connectivity, human activities could adversely impact more than one population or sub-population of bird. Conversely, an adverse impact in one area may not be as critical to the survival of the population and its distribution as first believed.

A team from Utah State University led by Dr. Nicole Frey tracked twelve birds using radio telemetry from March 2013 through February 2016; they used ten males and two hens (affording one year of pilot research and two full years of study).³⁹⁰ There were 12,112 locations of the birds used in the study, downloading data at eight-hour intervals. The sage-grouse used five types of habitat greater than 5% of the time: Colorado Plateau-mixed low sagebrush shrubland,

³⁸⁴ Mexican Spotted Owl Recovery Plan, First Revision, Sept. 2012; U.S. Fish & Wildlife Service, Southwest Region, Quoted by: Kertell 1977, Rinkevich and Gutiérrez 1996, Willey 1998b, Willey and van Riper 1998, 2007, Willey and Ward 2004, Bowden 2008. Ganey and Dick 1995, Willey 1998b.

³⁸⁵ Ibid.

³⁸⁶ Ibid.

³⁸⁷ Frey, S. Nicole, Curtis, Rachel, & Heaton, Kevin, Response to a small population of greater sage grouse to tree removal: implications of limiting factors; Human Wildlife Interactions 7(2):260-272, Fall 2013.

³⁸⁸ Ibid.

³⁸⁹ Frey, Dr. Nicole, Movements and Associations of Greater Sage grouse in the Panguitch Valley to Sink Valley Corridor. Project L19AC20537, Department of Wildland Resources, Utah State University. 2016

³⁹⁰ Ibid.

Intermountain-Basins big sagebrush shrubland, Intermountain-Basins semi-desert shrub-steppe, pinyon-juniper woodland, and treated areas (the timing of the project overlapped with a habitat treatment project by the BLM to restore and improve sagebrush habitat by removing invasive pinyon/juniper trees).

The most active lek was the group at Alton and Sink Valley. Radio telemetry indicated the sage-grouse moved from the Sink Valley to Alton throughout the year. But GPS mapping displayed a wide range of distances for individual birds; for instance, sage-grouse in different leks moved quite a ways north of Panguitch in Garfield County, and west into the Dixie National Forest into Iron County. Some sage-grouse in the Sink Valley/Alton lek also went south into Ford's Pasture. "Based on observations of the number of [sage] grouse in leks during the breeding season, and data collected regarding [sage] grouse moving among leks in other studies in southern Utah, it was hypothesized that [sage] grouse that attend leks at Hoyt's Ranch and Sink Valley are using other areas within the Panguitch Valley–Sink Valley corridor."³⁹¹

Analysis of the study highlights Sage-Hen Hollow (Garfield, County) as a hub for sage-grouse and possibly a source population for the region. Sage-grouse that spent time in that lek dispersed into at least four distinct areas during the summer and fall, which included Alton/Sink Valley, Hoyt's Ranch, and Sage-Hen Hollow. The birds moved more than expected and in more directions; the working hypothesis was that sage-grouse moved more frequently than other areas because of habitat fragmentation and lack of available resources. The study is being continued to determine if the birds move as far or as often after habitat treatment.³⁹²

This study also showed the hens used the treated areas a greater percentage of the time than any other habitat; they tended to select intermountain sagebrush communities most likely for the taller shrub canopy and a higher proportion of forbs and grasses for their chicks. Conversely, males preferred low sagebrush, which has a higher nutritional content.³⁹³

Dr. Frey indicated the Greater sage-grouse in the Panguitch SGMA were completely different from sage-grouse commonly studied and referred to (i.e. Wyoming's).³⁹⁴ This unique group(s) of leks have been a) highly mobile; b) reactive; and c) very resilient. They don't rely on cover as much as first thought, and before vegetation treatments the birds spent time in Alton, after the treatments they didn't go back to the agricultural fields or water troughs any more.

Data collection will continue to determine: if water developments influence habitat use in the summer months; sage-grouse response to current and future treatments in the valley; connectivity of Greater sage-grouse in the northern portion of the Panguitch SGMA to the middle and southern parts; survivorship and recruitment in the area.

Mammals:

The **Utah prairie dog** is federally listed as a threatened species under the Endangered Species Act. They are found in seven counties, including Kane. Although they have been endemic to

³⁹¹ Ibid.

³⁹² Ibid.

³⁹³ Ibid.

³⁹⁴ Interview with Dr. Nicole Frey, January 26, 2017, USU Extension Office, Cedar City, Utah.

southwestern Utah, they have only been located in the upper northwest section of the county on the Paunsaugunt Plateau and the general area of Long Valley. This section has become part of the Utah Prairie Dog Recovery Implementation Program established in 2010; it is one of three recovery units called the Paunsaugunt Recovery Unit. Each recovery unit must contain 2,000 adult animals, with a spring count of 1,000 adults, for five consecutive years. According to the Fish & Wildlife Service (FWS), Region 6 Office, none of the Recovery Units have met this numeric goal for five consecutive years, although spring counts in the Paunsaugunt Recovery Unit have significantly increased in the last few years and exceeded 1,000 adults for the spring count in 2014.³⁹⁵

More than 70% of the Utah prairie dog can be found on non-federal land. They prefer semi-arid shrub-steppe and grassland where they use well drained soils for burrowing. Their preferred habitat often places them in the same areas used by farmers, ranchers and developers. The biggest threat to the little rodent is habitat/colony loss and disease. Recovery efforts have been focusing on translocating colonies from non-federal lands to federal lands and controlling the transmission of plagues. FWS say the Dixie National Forest has seen improved success at translocation sites (68%) because they have dusted prairie dog burrows with insecticides.³⁹⁶ The National Park Service has done the same at Bryce Canyon National Park. The Bureau of Land Management initiated plague dusting in 2014.³⁹⁷

Plants:

Jones' cycladenia or Waxy Dogbane has been listed as threatened since 1986, but it was recommended for delisting in 2009 since it is genetically similar to the California populations of *Cycladenia humilis*. It is a member of the primrose family and resembles the morning glory flower. It grows in arid sites between 4,600-6,000 feet elevation in desert scrub and juniper plant communities. It grows well in gypsiferous and saline soils and has adapted well to the arid scrub environment because of its deep taproot.

The Jones' cycladenia is sensitive to disturbance; major threats to it include off-road vehicles, oil, gas and mineral exploration, mountain biking, and livestock grazing. It doesn't germinate well and it is believed that the species has a complex pollination system that may have been lost (lack of suitable pollinators); Attempts at forced pollination results in aborted fruit.³⁹⁸

The **Siler's pincushion cactus** was listed as an endangered species in 1979 by the U.S. Fish & Wildlife Service and later reclassified as threatened in 1993. It is found along the borders of Kane & Washington Counties (Utah); and Mohave & Coconino Counties (Arizona). The majority of the plants are found on BLM land; some portions are also found on the Kaibab-Paiute Indian Reservation (Arizona) and Utah State Trust Lands (SITLA).

The cactus is sensitive to off-road vehicle use, wildlife (herbivore), trampling, mining, drought, collectors, and traffic. Efforts to manage the cactus have included exclosures to prevent livestock

³⁹⁵ U.S. Fish & Wildlife, "Utah Prairie Dog Progress Toward Recovery", Mountain Prairie Region, June 2014. Downloaded January 30, 2017.

³⁹⁶ Ibid.

³⁹⁷ Ibid.

³⁹⁸ Threatened, Endangered, & Candidate Plant Species of Utah, USDA, Natural Resources Conservation Service, Boise, Idaho and Salt Lake City, Utah; January 2013.

trampling; raptor poles to allow raptors more opportunity to prey on rabbits which have been consuming the cactus; and fencing to keep off-road vehicles away from the habitat.

At the time the Siler's pincushion cactus was listed, surface mining of gypsum was considered a major threat since the cacti grow in gypsiferous clay and sandy soil. This was *observed* from mining and mineral exploration near Fredonia, Arizona, which was on the eastern edge of the range where it grew. However, it was determined some of the cacti population was on gypsiferous substrate of low economic value, and was also remote, sufficiently numerous and scattered that it wasn't as dire as originally "observed".³⁹⁹ Mining, in general, is considered a threat because of its surface disturbing qualities, so mitigation would be required as long as the cactus remains listed as threatened.

Conservation assistance has been provided to the Kaibab-Paiute Indian Tribe, and yearly monitoring of plant plots are conducted by the BLM.

Welch's Milkweed⁴⁰⁰ is a perennial forb that grows in shifting sands and dunes adjacent to sagebrush, juniper and ponderosa pine communities. It is well adapted to aeolian sands on active dunes in the arid deserts of southern Utah and northern Arizona. The plants grown from one to several erect stems from 10-39 inches; they form a globose cluster of around 30 cream colored flowers with a rose-tinged middle, and the fruit is 1 to 3 inch long pod or follicle with a tuft of hair. There are no known human uses and it is not toxic to livestock; in fact, large animals tend to avoid the unconsolidated sands that make up Welch's milkweed habitat, leaving it largely unutilized by grazers.

It occurs in three populations, the largest on the Coral Pink Sand Dunes, the second on Sand Hill (also in Kane County), and the third at Sand Cove on the Utah/Arizona border. Welch's milkweed was listed as a threatened species in 1987 with designated critical habitat in Utah; however, in a monitoring update by the University of Arizona, Welch's milkweed had shown "a severe drop in population..." in areas that "...have little to no direct human impacts." In fact, the plot areas tested were very remote and were "seldom visited by livestock or man."⁴⁰¹ Off-road vehicle restrictions are based on the original conservation plan for Welch's milkweed created in 1992 by the U.S. Fish & Wildlife Service. New information suggests both OHV and livestock have no adverse affect on the plant.

Snails:

The **Kanab ambersnail** was listed in 1992 by the U.S. Fish & Wildlife Service as a critically endangered species. At the time it had two known habitats: Three Lakes, a privately owned wet pond/meadow 10 km north of Kanab (Utah) and a large, riverside spring in Vaseys Paradise along the Colorado River in the Grand Canyon (Arizona).

³⁹⁹ Siler Pincushion Cactus (*Pediocactus sileri*) Recovery Plan; Region 2, U.S. Fish & Wildlife Service, Albuquerque, New Mexico, 1986.

⁴⁰⁰ Threatened, Endangered, & Candidate Plant Species of Utah, USDA, Natural Resources Conservation Service, Boise, Idaho and Salt Lake City, Utah; January 2013.

⁴⁰¹ Hughes, Lee E., "Monitoring Update on Five Listed Plants and One Candidate Species on the Arizona Strip," University of Arizona, Tucson, Desert Plants.

The Kanab ambersnail belongs to the snail genus *Oxyloma* which contains about 16 different classifications or taxons.⁴⁰² It is a small landsnail restricted to wetlands, springs and seeps. However, there has been a controversy over whether this ambersnail is its own species – *Oxyloma haydeni kanabense*. Previous anatomical and genetic analysis did not correspond with traditional criteria, raising questions about the validity of its “taxonomy” and its protected status under the Endangered Species Act.⁴⁰³

A study published in 2013 by the U.S. Geological Survey indicates the Kanab ambersnail is related to other non-endangered ambersnail populations across the Southwest. Because the status is unclear, authors of the study sought out other populations of *Oxyloma*. They found 12 sites from which they took samples (in Utah and Arizona) and completed detailed analysis of morphological and genetic variations from the specimens. According to the authors, “Our major taxonomic conclusion is that all samples collected for this study were drawn from populations of the same species.”⁴⁰⁴

Samples were taken from Center Creek (East Fork Sevier River, Garfield County), Escalante River (Garfield County), Glendale Highway (East Fork Virgin River, Kane County), Indian Garden (Grand Canyon, Arizona), Lees Ferry (Coconino County, Arizona), Pass Creek (Garfield County), Panguitch Creek (Garfield County), Sevier River (Garfield County), The Greens (Best Friends Ranch, Kane County), Three Lakes (Kane County), Elves Chasm (Grand Canyon, Arizona), Vaseys Paradise (Colorado River, Arizona). “...the Kanab ambersnail population at Three Lakes and the Niobrara ambersnail population at Indian Garden (Haplotype BB), when included with a sample of a more diverse set of populations, continued to form part of the same evolutionary clade.”⁴⁰⁵

The study was able to determine which group of snails branched out first and migrated (or dispersed) to other areas. “...in the course of performing the new anatomical work, tissue samples were preserved separately and used to obtain DNA for genetic and molecular evolutionary analyses of nuclear and mitochondrial genetic variation.”⁴⁰⁶ Overall, the data indicated that “...*Oxyloma haydeni kanabense* plausibly can be regarded as a member of the same species as the populations of *Oxyloma* in this study.”⁴⁰⁷ Any differences in looks can be accounted for by “short- or long-distance dispersal events” between the populations, especially since these snails have the ability for “selfing” (impregnate themselves) which could explain genetically unique species that arise in short periods of time.

The irony is that “...previous anatomical analyses of southwestern *Oxyloma* were performed on very small sizes (1-3 individuals) from each location.”⁴⁰⁸ Yet, the U.S. Fish & Wildlife Service accepted the information as valid evidence for listing the Kanab ambersnail as an endangered

⁴⁰² Culver, M., Herrman, HW, Miller, M., Roth, B., and Sorenson, J., (2013) USGS: Anatomical and Genetic Variation of Western *Oxyloma* (Pulmonata: Succineidae) Concerning the Endangered Kanab Ambersnail (*Oxyloma haydeni kanabense*) in Arizona and Utah. Scientific Investigations Report 2013 5164.

⁴⁰³ Ibid.

⁴⁰⁴ Ibid.

⁴⁰⁵ Ibid.

⁴⁰⁶ Ibid.

⁴⁰⁷ Ibid.

⁴⁰⁸ Ibid.

species. Now that there is controversy about whether it should ever have been listed, the FWS will not revise its recovery plan or consider delisting until a “more fine-scale taxonomic resolution of *Oxyloma* populations on the Colorado Plateau” is provided. Therefore, interagency cooperators must continue to manage the Kanab ambersnail as an endangered species even though all the other snails of the same species remain non-endangered. The authors of the study suggest it would be better to protect the habitat, which will allow for future dispersals and colonization to occur, rather than to protect each unique genetic “selfie” that may be founded by a dispersal event.

Insects:

The **Coral Pink Sand Dunes Tiger Beetle** is confined to the Coral Pink Sand Dunes three miles north of the Utah/Arizona border. It is distinct enough to be considered a full species (listed as a category 2 species by the U.S. Fish & Wildlife Service) and only occurs within a small area of the sand dunes in southwestern Utah. It can run from 1-3 cm long from head to the end of the elytra, and has a unique metallic color/pattern on its back. Its life span averages 2-3 years; the larval CPSD tiger beetle keeps to the vegetated swale areas and the adults use most of the dune areas from the swales to the upper dune slopes.

Rainfall and associated soil moisture appears to be a critical factor in affecting species survivorship. Years of higher precipitation are followed by higher larval and adult counts.

The CPSD tiger beetle lives in two distinct populations of the dunes – the central population is within (and approx. center of) Coral Pink Sand Dunes State Park and the northern population (on the northern geologic feature of the CPSD) BLM managed land. The CPSD tiger beetle is considered a “narrow habitat specialist”⁴⁰⁹ which limits the areas of suitable habitat where it can thrive. In the central section of the sand dunes there is the least amount of shift, which additionally explains why the central population is the core group. However, the northern group was placed there by translocation⁴¹⁰ as an experiment to see if it would thrive. After four years, only nine adults have been counted (out of 328 larvae moved).

A conservation agreement was signed between the U.S. Fish & Wildlife Service, BLM, Dept. of Natural Resources and Kane County to provide benefits for the beetle in lieu of a federal listing. Two conservation areas were established that overlap the central and northern populations. No off-road vehicles are allowed in these areas. The Central population area (Conservation Area A) has 266 acres of protected habitat; and the northern area (Conservation Area B) has 263 acres of protected habitat. There are additional habitat island patches along a 3-mile stretch between the two conservation areas that are also protected from ORV use. The CPSD tiger beetle will continue to be monitored annually.

Kane County Policy:

- Kane County will support the conservation of any species that is listed as threatened,

⁴⁰⁹ Ibid.

⁴¹⁰ Gowan, C. & Knisley, C.B. (2014): Distribution, abundance and conservation of the highly endemic Coral Pink Sand Dunes tiger beetle, *Cicindela albissima* Rumpff, Biodiversity, DOI: 10.1080/14888386.2014.930718.

- endangered, or sensitive so that it can be either delisted or become a viable population in the wild without special consideration.
- Kane County will adopt any state conservation plan for threatened, endangered or sensitive species until it develops one of its own.
- Kane County will coordinate with its state and federal partners (BLM, National Park Service, Forest Service, Fish & Wildlife Service, etc.) to create agreements on how to conserve sensitive species in lieu of listing as threatened or endangered.
- Kane County strongly suggests the Siler's pincushion cactus be re-addressed since the majority of the evidence for its listing was based on "observational" evidence that turned out to be incorrect (and moot since the gypsum the plant grows on has low economic value, making the potential for mining extremely low).
- Kane County insists the Kanab ambersnail be immediately delisted in light of the U.S. Geological Study determining it is not its own taxonomic species, and the same snail found in other areas of the county, State of Utah and State of Arizona are the same species, but are not listed as endangered.
- Kane County will continue to support the conservation and study of the Greater sage-grouse through habitat treatment(s), landscape management and coordination with state and federal partners.
- Kane County strongly suggests the BLM change the boundaries of the conservation areas for the Coral Pink Sand Dunes tiger beetle, specifically, Conservation Area B, where translocation of the CPSD tiger beetle has failed. This area should be abandoned as habitat and re-opened for ORV use.

Region #6 Zion National Park (East Entrance)

Statement of Intent:

Kane County recognizes that Zion National Park is one of the most beautiful and scenic parks in the State of Utah and having access to its east entrance is not only a privilege, but a responsibility when it comes to helping protect park resources. Kane County is committed to assisting Zion National Park in mitigating its increased visitation, its overwhelmed park facilities, and the preservation of a national treasure. Kane County believes that by developing the east entrance into the park, it will help relieve some of the pressures being experienced on the western entrance.

Introduction:

Zion National Park became a park on November 19, 1919, but it was first a National Monument called Mokuntuweap National Monument by President Howard Taft in 1909.⁴¹¹ In 1918, the director of the National Park Service changed it to Zion because it had greater appeal and thanks to the United States Congress it became official.

The park is located in parts of three counties – Washington, Iron and Kane. At its highest point it rises to 8,726 feet and as low as 3,666 feet. It is approximately 229 square miles and has two main entrances; on the west side, at Springdale, which is the most populated and the most visited. The other is the east entrance which is perhaps the better kept secret.

Accessed by Zion-Mount Carmel Scenic Highway (State Route 9), the east entrance into Zion National Park is still in Kane County. From the Mount Carmel Junction at Highway 89 it is 12 miles due west. This section of the park is at the 5,700 foot elevation and leads directly to the one-mile tunnel which delivers you into Zion Canyon and the main part of the park.

According to the National Park Service visitor stats, the east entrance to the park received a little over 25% of the overall visitor usage in 2016. The east entrance counted an estimated 1,097,782 visitors (2.5 visitors per car) out of the 4.3 million visitors for the year. In 2015, Zion National Park had approximately 3.6 million visitors with the east entrance garnering 943,242.⁴¹²

Land Use:

There is a lot of focus around the area outside the east entrance of Zion National Park that would suggest it will see development in the future. This could help alleviate the problems being experienced at the western entrance and it could assist Kane County with affordable housing, employment and other issues.

⁴¹¹ https://en.wikipedia.org/wiki/Zion_National_Park Downloaded April 27, 2017.

⁴¹² National Park Service Monthly Public Use Report, 2016 & 2015. <https://irma.nps.gov/Stats/SSRSRReports/> Downloaded March 29, 2017.

Conservation

There are two conservation easements that affect development around the eastern side of Zion National Park's border. Buffalo Meadows and the Chamberlain Ranch are locked into a land trust intended to preserve scenic, wildlife, historic, agricultural and recreational values of open space. A conservation easement is a voluntary legal agreement, and while every easement is unique, there are usually some common terms, like, farming and ranching are permitted, but development is limited; and many do not allow public access.

Buffalo Meadows is held by the Virgin River Land Preservation Association and the Chamberlain Ranch is held by the Utah Department of Agriculture and Food. Buffalo Meadows can be seen off SR9 en route to Zion National Park; it has approximately 65 bison ranging free. The Chamberlain Ranch is an 1880s farm with a 100-year old orchard, with access to the Zion Narrows Trailhead.

Recreation

The East entrance is the least crowded and offers several scenic trails that range in difficulty from easy half-hour strolls to strenuous, rock-rappelling feats. The Canyon Overlook Trail is one of the few official trails in the upper east canyon and starts just east of the tunnel entrance. The trail ends at a viewpoint that looks into the main canyon. A moderate day hike is going along the East Mesa Trail (to Observation Point inside the Park). The entrance to this trail is in Kane County along the upper east plateau and must be accessed from primitive roads. (From SR9: North Fork Road, 5 miles; to Pine Angle Road, which will go northwest to the East Mesa Trailhead).

There is another trail entrance into Zion called the East Rim Trail that can be accessed up North Fork Road, to Pine Angle Road, left at Buck Road, which will lead directly to the Trailhead and border of the Park. There are several more excursions from the east entrance to see places like: Gifford Canyon, Jolly Gulch, Cockeye Falls, Slickrock Pass, and Lost Peak. There are maps of every trail available online or at the visitor center.

Going into the east entrance there is often Big Horn Sheep either walking along the side of the road or standing on the rocks overlooking the traffic. Small herds gather at different intervals and can be seen climbing the slick rock or sitting amongst the boulders.

Management

Zion National Park is managed by the National Park Service; Kane County has signed a memorandum of understanding to be a cooperating agency in the creation of Zion National Park's Visitor Use Management Plan and Environmental Assessment. It will make every effort to assist the park in mitigating overcrowding to keep visitor experience from diminishing.

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Section Three: Economic Conditions

Statement of Intent:

It is the position of Kane County to support only those public land plans and decisions that result in a sustainable net benefit to the county's local economy. The county's coordination agreement should include provisions for a quantitative estimate of the economic effects of all proposed management decisions. These estimates should be generated in consultation with the county. Further, it is the policy of the county that all decisions regarding land use management must take into account the history, culture, and customs of the county as defined by the activities and values that residents of the county, in the past, present, and future, depend upon for well-being and subsistence. Customs and culture are defined as the activities and decisions that make the county what it is and has historically been. The county will oppose any activities and plans that adversely impact the customs and culture of Kane County.

Kane County supports efforts to maintain or improve the overall economic base through the judicious use and enjoyment of federal and state lands. The county policy is that economic diversity and long-term stability are beneficial to the welfare of county residents. Any proposed change in land use must evaluate, mitigate, and minimize impacts to customs and culture and the economic stability of the county. The prioritizing of any one multiple-use should only occur after the impacts to other multiple-uses are fully quantified and mitigated. Any proposal to close federal lands to a particular use must be reviewed with the county after public hearings and meetings with county officials.

Introduction

All economic activity in the arid and semiarid western United States depends on adequate dependable water supplies. Kane County is just as dependent on water availability as the rest of the interior West. Kane County's water supply is dependent upon the health of the watersheds in County. The watersheds are almost exclusively on Federal Lands managed by the U.S. Forest Service, Bureau of Land Management, or National Park Service. Therefore, how these watersheds are managed determines the long run sustainability of Kane County and the rest of the arid and semiarid West.

Industries in Kane County

The industries in Kane County are dependent upon the natural resources in the County. This dependence may be from the direct use of resources or service of public lands, the indirect use or service by supplying goods and services to those who directly use the resources or services, or from the induced effects of the money generated in the county by direct, indirect and other induced economic activities.

Agricultural Industries

The agricultural sector in 1994 was composed of 16 different industrial classifications producing output valued at \$6.9 million in 2015 dollars. Agricultural operations employed about 200 people. By 2015, the agricultural sector was composed of 11 different industrial classifications producing output valued at \$10.6 million and employed about 160 people.

In Kane County, agriculture is dominated by cattle and hay production with output valued at \$9.1million and employing 154 people. The social, cultural and character has its foundation in agriculture and natural resources. Agriculture and natural resources has provided for community stability and resilience throughout the history of Kane County. Kane County was settled because the natural resources could maintain them and their families for generations. The economic values stated here understate the real economic value because many of the permittees using Federal lands live outside of Kane County and their economic activities show up in the places where they live.

Forest Industries

Forest industries have historically been an important part of the Kane County economy. The early settlers used the abundant forest resources to build their homes, farms and shops. They also heated their homes and shops with wood. As late as the 1980s Kane County had a working sawmill in (nearby) Fredonia, Arizona. The timber for this sawmill came from the Kaibab National Forest. Many of the workers in the forest and sawmill lived in Kane County. In the early 1990s the sawmill shutdown. The assets were sold. By 2015 the forest industries produced only, \$13,552 of output and employed just 1 person.

The impact of losing a viable forest industry was catastrophic to many Kane County residents and businesses. Kane County lost a primary industry and more than a hundred jobs. The school district lost students and tax base. Families lost members to far off jobs and long haul trucking. Families suffered increased financial problems causing family discord and other social problems. Although these costs are not quantified they are real, significant and there impacts cannot be overstated here. The sawmill eventually re-opened, but on a much smaller scale. It no longer operates in the capacity it did before.

Tourist Industries

Tourist industries have been a major part of the Kane County economy. For decades Kane County has been a stopping point between Grand Canyon National Park and Zion National Park. This has been the center piece for tourism in the County. Although there are State Parks, National Monuments, Wilderness Areas and a National Recreation Area, Kane County has invested a substantial amount of money, time and effort to diversify tourist opportunities with varying success. In 1994 tourist industries accounted for about \$25.2 million and employed about 500 people. By 2015 tourist industries accounted for about \$64.5 million and employed about 970 people. Tourism in Kane County is natural resource-based. Tourist industries depend upon the quality and scenic values of nature.

Service Industries:

Since 1994 service industries have grown the most in Kane County. In 1994, service industries accounted for about \$86.6 million and employed about 1,000 people. By 2015, this had grown to about \$273 million and employment grew to about 1,770 people. Included in service industries are Banking, Credit Agencies, Security and Commodity Brokers, Insurance Carriers, Insurance Agents and Brokers, Owner-occupied Dwellings, Real Estate, Laundry, Cleaning, Shoe Repair, Portrait and Photographic Studios, Beauty and Barber Shops, Funeral Service, Car Wash, Automobile Repair, Miscellaneous Personal Services, Advertising, Commercial Photography, Equipment Rental and Leasing, Personnel Supply Services, Computer and Data Processing Services, Automobile Rental and Leasing, Motion Pictures, Theatrical Producers, Membership Sports and Recreation Clubs, Doctors and Dentists, Nursing and Protective Care, Hospitals, Other Medical and Health Services, Legal Services, Child Day Care Services, Social Services, N.E.C., Residential Care, Other Nonprofit Organizations, Business Associations, Labor and Civic Organizations, Religious Organizations, Engineering, Architectural Services, Accounting, Auditing and Bookkeeping, Management and Consulting Services, and Domestic Services. Service industries cover many types of businesses many which are not in Kane County.

Air Quality:

The social economic impact of air quality is complex because the monetary cost of pollution control is easily calculated, but the benefits are not. Benefits take place over a much longer period of time and there is a diverse population of beneficiaries that are difficult to identify.

As a rural county that has limited development relative to its landmass most of Kane County is classified as a Type II Air Shed; the national parks and wilderness area classified as Type I Air Sheds. Type II Sheds must limit significant deterioration of air quality within the air shed. Type I are subject to restrictions on allowable air quality deterioration.

The management of social economic activities of 85% of the landmass is done by federal agencies. Therefore, how these agencies operate is a major determinate of air quality in the county. The other 15% fall under EPA Utah Department of Environmental Quality Division of Air Quality.

Among Kane County Air Quality desired conditions are:

1. Kane County's air quality be maintained or improved while allowing development of projects needed for social-economic stability.
2. Federal agencies quantify and mitigate impacts from drift, fugitive dust and fires prior to restricting projects needed for social-economic stability.
3. Natural fugitive dust is reduced through improved vegetative cover, vigor and utilization.
4. Federal agencies resolve inconsistencies with biogenic pollutants, natural fugitive dust, wildland fire, and prescribed fire prior to restricting projects needed for social-economic stability.
5. Air quality is cooperatively managed and coordinated by local, State and Federal agencies.

6. Land managers develop ambient background levels for PM₁₀ or PM_{2.5} emissions within their jurisdictions and for drift from their adjacent lands outside Kane County. Projects on private lands should continue to be managed under existing air quality laws and regulations.
7. Federal agencies control emissions from sources on public lands, including wildland and prescribed fire, prior to implementing regulations that impact areas of Kane County under state and local management, and prior to negatively impacting federal land projects deemed to promote social-economic stability in the County.
8. Prior to wildland or prescribed fire, land managers analyze and disclose ambient and proposed air quality conditions, including BACTs that can be implemented to reduce air quality impacts.
9. Land managers develop accurate, site specific air quality information to accurately assess programs associated with wildland and prescribed fires.
10. Land managers recognize all fires impact air quality and initiate BACTs, including commercial harvesting of excess fuels and other methods for reducing potential fire related air pollutants and for achieving harmony between man and his environment.
11. Land managers implement BACTs to minimize regional haze on their own lands while advancing projects deemed to promote social-economic stability in the County.
12. BACTs and other programmatic mitigating measures be implemented and fire related projects be reviewed similar to the state permitting and PSD review process.
13. Land managers implementing prescribed fire or that are subject to wildland fire be treated as a new or modified source of air pollution and be required to obtain an Approval Order before initiating prescribed burns.
14. Land managers improve the disclosure and analysis of fire related air quality impacts.
15. Land managers recognize visibility is impacted by natural suspended particulate matter from wind-blown dust over exposed areas and smoke from wildland fires and prescribed burns just as easily as it is impacted from particulate matter generated by construction activities, vehicles traveling on access roads and off-highway vehicles (OHVs).
16. Land managers need to analyze the separate and cumulative air quality impacts of natural and human activities associated with fire related activities.
17. A County ordinance be developed that assures land managers will accurately depict air quality impacts and will conduct appropriate reviews.
18. Land managers comply with Kane County Air quality plans, policies, programs and ordinances.

Social-economic Benefits:

As these 18 desired conditions are achieved the following social-economic benefits will be realized.

1. Minimal air quality deterioration as development occurs
2. Improved landscape health
3. Less erosion by wind and water
4. Increased vegetative diversity
5. Increased wildlife habitat and species diversity

6. Increased social-economic sustainability.
7. Decreased tension between residents and agency personnel
8. Increased economic benefit from public land through services and goods
9. Fewer wildfires with their associated air quality, biologic, erosion, and other costs
10. View-shed are maintained and in some cases enhanced
11. Increased water shed health and water yield
12. Increased water quality and reduced sediment in rivers and streams
13. Increased soil health and productivity

Land Use

Agriculture:

Kane County Desires:

1. To the maximum extent allowed by law, federal actions must be implemented in a way to ensure farmers and ranchers do not face undue or burdensome restrictions.
2. The social, custom, cultural and heritage value of local farms, ranches and agriculture are identified, analyzed and disclosed in NEPA analysis and land use plans developed by federal agencies.
3. Additional water must be developed for agriculture and livestock interests on public and private land.
4. A permanent revenue source must be established to fund ongoing water resource projects that support and expand agriculture; and additional water must be developed to accommodate municipal growth without jeopardizing agricultural interests.
5. Federal and state agencies must transfer suitable lands to private ownership for farming and ranching purposes.
6. The agricultural lifestyle of Kane County needs to be preserved and enhanced.
7. Federal and state agencies must strictly adhere to the County's No Net Loss of Private Lands policy, especially regarding farms, ranches and agricultural interests.
8. Federal and state agencies must develop lands under their management for conservation of special status species, and, to the maximum extent allowed by law, relieve the burdens on private agricultural lands imposed by the Endangered Species Act.
9. Utah prairie dogs must be removed from private lands and relocated on suitable federal lands.
10. The use and production of federal lands for livestock grazing must be preserved and enhanced.
11. Wildlife impacts to agriculture and ranching interests must be reduced.
12. Wildlife managers must strictly adhere to population objectives established on or before January 1, 2015.
13. Federal agencies must eradicate noxious weeds in their jurisdiction which are suspected of being the seed source for private lands.
14. Federal agencies must restore lands occupied by invasive conifers and annual grasses to desired vegetative communities, consistent with ecologic site descriptions.

Social-economic Benefits:

As these 14 desired conditions are achieved the following social-economic benefits will be realized:

1. Preservation and enhancement of an important historic and cultural significant economic sector of Kane County.
2. Increased social-economic sustainability.
3. Increased water shed health and water yield.
4. Increased water quality and reduced sediment in rivers and streams
5. Increased soil health and productivity
6. Increased vegetation and vegetative diversity
7. Improved landscape health
8. Increased wildlife habitat and species diversity
9. Increased economic benefit from public land through services and goods.
10. Less erosion by wind and water
11. Decreased tension between residents and agency personnel.
12. Fewer wildfires with their associated air quality, water quality, biologic, erosion, and other costs.
13. View-shed are maintained and in some cases enhanced.

Forests and Forest Services:

Kane County Desires:

1. Restoration of a viable regional commercial forest products industry. In the forests of the 11 counties in the Five and Six County Associations of Governments there are 3.9 billion board feet of Aspen and 7.3 billion board feet of conifers 5-inch and larger in diameter. Using a 150 harvest rotation 75.5 million board feet can be harvested each year. That is enough timber to support 5 sawmills using 15 million board feet each per year sustainable in perpetuity.
2. Each ranger district shall have a 150 year harvest plan.
3. Each ranger district shall have completed the required NEPA study two years before the planned harvest date.
4. No area larger than 50 acres shall have trees in a uniform stage of development.
5. Restoration after wildfires and prescribed burns shall provide for establishment of diverse development stages.
6. All restoration projects and harvest projects shall be designed to develop and maintain an open canopy so that all future wildfires remain on the ground and not in the canopy.
7. Each ranger district shall have a watershed plan.
8. Each ranger district shall have a recreation plan that includes a wide range of recreational activities including but not limited to ATV, hiking, camping, and hunting.
9. Each ranger district shall have a transportation plan to provide access throughout the forest for recreation, grazing administration, public safety, wildfire management and control. The transportation plan shall provide for new logging roads and the continued use for multi-use activities such as those mentioned above.
10. Each ranger district shall have a grazing improvement plan for each grazing allotment.

11. Forest and woodland health is restored to the historical range of variability, including but not limited to composition, age, size, and density in accordance with ecologic site descriptions.
12. The use of timber harvesting will be increased to restore resilience and resistance to fire, insects, and other disturbances.
13. Appraisals for timber sales will be revised to reflect timber values in Kane County and to encouraged resurgence of timber harvesting infrastructure and the timber harvesting industry.
14. Insect and disease epidemics that could degrade forest and woodland health will be prevented.
15. Silvicultural practices must be used to increase the presence of large trees in Ponderosa Pine stands.
16. Biomass or other markets will be developed for smaller diameter and other materials that promote competition and surface build up.
17. Mixed conifer forests will be returned to earlier successional stages and have age and spatial diversity increased.
18. Prescribed fire will be used judiciously after harvests, thinning, mechanical mastication, and other fuel reduction projects in mixed conifer forests to eliminate undesirable seedlings.
19. Additional forage resulting from improved forest health will be allocated first to livestock to restore suspended or un-used AUMs, second to wildlife to meet objectives in place on January 1, 2015 and third equally between livestock and wildlife.
20. Spruce fir forests will be restored and maintained in a healthy condition that are resilient and resistant to fire and insect damage
21. Aspen will be regenerated and rejuvenated.
22. The impact of elk on forests managed for aspen regeneration will be controlled.
23. 80 million board feet of timber will be harvested annually to reduce high risk stands and increase short term resilience and long term resistance to insect outbreaks and crown fires.

Social-economic Benefits:

Forest restoration treatments cost approximately \$200 per acre. If the post treatment average-yield over 20 years of livestock grazing after a 2 year recovery period is 367 pounds per acre, for each 100 acres treated 36,700 pounds of forage is produced annually. If livestock harvest is 33.33% then 12,232 pounds is harvested by livestock. At 790 pounds per AUM 15.48 AUMs is harvested. At \$56.97 per AUM, the average value per AUM for the past 5 years using Cedar City Livestock Auction November prices for cattle yields \$881.90 in revenue to ranchers and another \$573.87 in economic activity in Kane County. Each increased AUM is worth \$94.04 in economic output to Kane County.

Restoration of a viable commercial forest products industry in the 11 county region is worth approximately \$22.7 million annually in direct output impact at a composite price of \$300 for both lumber and fiber, \$1.1 million indirect output and \$32.3 inducted output for a total output effect of \$56.1 million. Employing approximately 2,100 directly, 36 indirectly and 635 induced for a total employment effect of approximately 2,800.

As these 10 desired conditions are achieved the following social-economic benefits will be realized:

1. Restoration and enhancement of an important historic and cultural significant economic sector of Kane County.
2. Increased social-economic sustainability through a more diverse economy and more and better recreational opportunities.
3. Increased water shed health and water yield.
4. Increased water quality and reduced sediment in rivers and streams
5. Increased soil health and productivity
6. Increased vegetation and vegetative diversity
7. Improved landscape health
8. Increased wildlife habitat and species diversity
9. Increased economic benefit from public land through services and goods.
10. Less erosion by water
11. Decreased tension between residents and agency personnel.
12. Fewer wildfires with their associated air quality, water quality, biologic, erosion, and other costs.
13. View-shed are maintained and in some cases enhanced.

Fire Ecology & Management:

Kane County desires:

1. Resources must be managed to ensure fire resilience and resistance. Desired Fire Regime Condition Classes (FRCCs) in Kane County are: 30% to 50% FRCC1; 30% to 40% FRCC2; and less than 25% FRCC3.
2. Prescribed fire is used as part of an integrated approach after mechanical, chemical, grazing, and vegetative harvesting techniques have been appropriately implemented.
3. An average of at least 8 million-board must be harvested annually for the next 20 years to restore woodlands to desirable Fire Regime Condition Classes.
4. Managers implement aggressive vegetative treatments to restore vegetative resources to desirable Fire Regime Condition Classes.
5. Areas identified as FRCC3 and managed for potential climate change are reduced by at least 5% annually.
6. Managers must be consistent with the County's plans, policies and programs for fire ecology and management and impacted/related resource values.
7. Managers must prevent fire related impacts to WUI areas and other areas occupied by infrastructure.
8. Aggressive and effective emergency stabilization and rehabilitation programs must be incorporated in all wildland and prescribed fire events.

Social-economic Benefits:

As these 8 desired conditions are achieved the following social-economic benefits will be realized:

1. Increased sustainability of endangered and special status species.
2. Healthy sustainable habitats for endangered and special status species.
3. Increased vegetation and vegetative diversity.
4. Increased wildlife habitat and species diversity
5. Increased water shed health and water yield
6. Increased flood control capacity.
7. Increased social-economic sustainability.
8. Increased water quality and reduced sediment in rivers and streams
9. Increased soil health and productivity
10. Improved landscape health
11. Increased economic benefit from public land through services and goods.
12. Less erosion by wind and water
13. Decreased tension between residents and agency personnel.
14. Fewer wildfires with their associated air quality, water quality, biologic, erosion, and other costs.
15. View-shed are maintained and in some cases enhanced.

Social-economic Cost of Wildfires and Prescribed Burns:

U.S. taxpayers typically experience 10 to 50 times more costs and losses to wildfire each year than just the \$1 - \$2 billion in suppression costs commonly reported by USFS representatives and the media that is, US taxpayers are losing \$20 billion to \$100 billion (or more) a year in such wildfire related damages as escalating fire management costs, human deaths, long-term public health problems, air pollution, soil degradation, wildlife habitat destruction, structural damage, water pollution, etc.

Sagebrush - Steppe/Semi-Desert:

Kane County desires:

1. Sagebrush dominant vegetation communities must be restored to the historical range of variability, including but not limited to composition, age, size, and density in accordance with ecologic site descriptions.
2. Managers must increase vegetative treatments in sagebrush ecosystems to restore the historic and natural range of variability.
3. Invading conifers, especially pinyon/juniper associations, must be recognized as the greatest threat to a desired and healthy sagebrush ecosystem in Kane County; and treatments must be implemented to restore sagebrush ecosystems to their historic range.
4. Loss of sagebrush ecosystems to invading conifers needs to be recognized for its impact on water quality, wildlife, erosion and other ecological resources.
5. Suspended AUMs for livestock needs to be restored commensurate with restoration of invading conifers to desirable sagebrush communities.
6. Water gain from restoration of invading conifers to sagebrush communities needs to be optimized for rangeland health and multiple uses.
7. Additional water needs to be developed in current and restored sagebrush ecosystems to optimize multiple use/sustained yield benefits.

8. Prescribed fire must be used judiciously after thinning, mechanical mastication, and other treatment projects are completed.
9. Additional forage resulting from improved rangeland health must be allocated first to livestock to restore suspended or un-used AUMs, second to wildlife to meet objectives on January 1, 2015 and third equally between livestock and wildlife.
10. As sagebrush communities are restored, sage-grouse related prescriptions need to be removed.

Social-economic Benefits:

Rangeland restoration treatments for class 3 or phase 3 pinion-juniper cost approximately \$200 per acre. If the post treatment average-yield over the 20 years of livestock grazing after a 2 year recovery period is 367 pounds per acre for each 100 acres treated 36,700 pounds of forage is produced annually. If livestock harvest is 33.33% then 12,232 pounds is harvested by livestock. At 790 pounds per AUM 15.48 AUMs are harvested. At \$56.97 per AUM, the average value per AUM for the past 5 years using Cedar City Livestock Auction November prices for cattle yields \$881.90 in revenue to ranchers and another \$573.87 in economic activity in Kane County. Each increased AUM is worth \$94.04 in economic output to Kane County.

As these 10 desired conditions are achieved the following social-economic benefits will be realized:

1. Preservation and enhancement of an important historic and cultural significant economic sector of Kane County.
2. Increased social-economic sustainability.
3. Increased water shed health and water yield.
4. Increased water quality and reduced sediment in rivers and streams
5. Increased soil health and productivity
6. Increased vegetation and vegetative diversity
7. Improved landscape health
8. Increased wildlife habitat and species diversity
9. Increased economic benefit from public land through services and goods.
10. Less erosion by wind and water
11. Decreased tension between residents and agency personnel.
12. Fewer wildfires with their associated air quality, water quality, biologic, erosion, and other costs.
13. View-shed are maintained and in some cases enhanced.

Desert Shrub-Scrub:

Kane County desires:

1. Land managers must implement a full complement of integrated management techniques to restore appropriate disturbance regimes, desirable seral stages and to enhance rangeland health and the vigor of arid vegetative communities.

2. Undesirable annual grasses/cheatgrass must be reduced by 5% annually until it can be eradicated.
3. Additional water resources must be developed to diversify forage utilization by livestock and wildlife.
4. Intense early season grazing, herbicide treatments and biologic agents must be aggressively employed in areas of undesirable annual grass expansion.
5. Additional encroachment by undesirable native species, invasive non-native vegetation, and noxious weeds must be eliminated.
6. Other than cheatgrass, areas previously encroached by undesirable native species, invasive non-native vegetation, and noxious weeds must be restored to properly functioning and desired future conditions at a rate of 25% based on a 10 year average.
7. Unless prohibited by law, naturalized or biologically equivalent non-native species must be allowed or used when they optimize vegetative cover or improve land health.
8. Managers will enhance vegetative production and forage by livestock and wildlife to combat any effects of climate change.
9. Where native grasslands or non-native seedings have been lost to pinyon and juniper encroachment, cheatgrass/halogeton invasion or other undesirable vegetation, lands will be restored to the native or treated condition. The desired future condition is the vegetative community (native or non-native) that optimizes rangeland health, ground cover and vegetative production.
10. Salt desert shrub communities consist of native and/or naturalized and biologically equivalent non-native open salt desert scrub vegetation with little to no cheatgrass or halogeton cover, and scattered pockets and patches of herbaceous material and forbs, primarily in the lower areas of the terrain.
11. Blackbrush and shrubland communities consist of dense-to-scattered shrubs and dense-to-open native and/or naturalized and biologically equivalent non-native grasses. Where surface disturbance occurs, areas will be aggressively seeded with a seed mix optimized to reduce invasion of undesirable species and erosion.
12. Following fire, vegetative communities in this biome will be seeded and revegetated, prior to the first rains supporting germination with a native and non-native mix designed to optimize short term and long term rangeland health.

Social-economic Benefits:

If the post treatment average-yield over 20 years of livestock grazing after a 2 year recovery period is 220 pounds per acre for each 100 acres treated 22,000 pounds of forage is produced annually. If livestock harvest is 33.33% then 12,232 pounds is harvested by livestock. At 790 pounds per AUM 9.28 AUMs are harvested. At \$56.97 per AUM, the average value per AUM for the past 5 years using Cedar City Livestock Auction November prices for cattle yields \$528.68 in revenue to ranchers and another \$344.02 in economic activity in Kane County. Each increased AUM is worth \$94.04 in economic output to Kane County.

As these 12 desired conditions are achieved the following social-economic benefits will be realized:

1. Preservation and enhancement of an important historic and cultural significant economic sector of Kane County.
2. Increased social-economic sustainability.
3. Increased water shed health and water yield.
4. Increased water quality and reduced sediment in rivers and streams
5. Increased soil health and productivity
6. Increased vegetation and vegetative diversity
7. Improved landscape health
8. Increased wildlife habitat and specie diversity
9. Increased economic benefit from public land through services and goods.
10. Less erosion by wind and water
11. Decreased tension between residents and agency personnel.
12. Fewer wildfires with their associated air quality, water quality, biologic, erosion, and other costs.
13. View-shed are maintained and in some cases enhanced.

Soils:

Soils are said to be living organisms because they have both a mineral component and an organic component. The mineral component provides the underlying structure, inorganic nutrient and in large measure the water holding capacity of the soil. The type of minerals and the amount of organic matter in the soil determines its productive capacity of the soil. The productive capacity determines the potential economic value of the land. The productive capacity determines the amount and kind of vegetation that the soil can support under the climate and weather conditions. Healthy productive soils provide for wildlife and human needs. To assure healthy soils Kane County desires the following future conditions:

1. 80% of the soils in Kane County are producing at least 60% of their capacity.
2. Encroaching Class I conifers are managed to limit their extent to pre-European settlement conditions.
3. Class II and Class III Pinyon/Juniper woodlands are managed to limit their extent to pre-European settlement conditions.
4. Soils are stabilized through vegetative treatments that utilize an optimum combination of native and non-native species.
5. Surface disturbing activities are managed consistent with Kane County's Best Management Practices.
6. A reduction of soil loss on watersheds in Kane County by performing appropriate land treatments and restoration of desirable sagebrush / semi-desert grassland vegetation communities.
7. Surfaces disturbances are reclaimed in a timely manner during or upon completion of authorized activities, as appropriate.
8. Temporary roads be evaluated to determine if continued use provides a benefit to the public without jeopardizing land health.

9. Fragile soils are identified during preparation of project-level plans, and necessary mitigation measures are developed to allow the project to move forward, while minimizing risks and degradation to soil resources.

Social-economic Benefits:

As these 9 desired conditions are achieved the following social-economic benefits will be realized.

1. Minimal air quality deterioration as development occurs
2. Improved landscape health
3. Less erosion by wind and water
4. Increased vegetation and vegetative diversity
5. Increased social-economic sustainability.
6. Decreased tension between residents and agency personnel.
7. Increased economic benefit from public land through services and goods.
8. Fewer wildfires with their associated air quality, biologic, erosion, and other costs.
9. View-shed are maintained and in some cases enhanced.
10. Increased water shed health and water yield
11. Increased water quality and reduced sediment in rivers and streams
12. Increased soil health and productivity
13. Increased wildlife habitat and species diversity

Law Enforcement:

Kane County Desires:

1. The authority of the County Sheriff as the primary law enforcement officer will be recognized by all federal agencies.
2. Federal employees engaged in law enforcement activities will work under the direction of the County Sheriff.
3. Agreements will be executed with the County Sheriff prior to federal employees exercising any general police powers.
4. Federal employees do not exercise any general police powers prior to being deputized by the County Sheriff.
5. Federal agencies work in cooperation with and under the direction of the County Sheriff prior to exercising any general police powers.
6. Federal law enforcement activities need to be discontinued, and agencies need to execute appropriate agreements with the Kane County Sheriff to fulfill law enforcement functions.

Social-economic Benefits:

As these 6 desired conditions are achieved the following social-economic benefits will be realized:

1. Decreased tension among residents, local law officers and agency personnel.
2. Personal safety of agency personnel will be improved.
3. Improved communications between local law officers and agency personnel.

Minerals, Mining & Energy Resources

Kane County Desires:

1. Mineral development that will protect and expand the tax base and level of economic activity which will provide a good standard of living and will provide the necessary county services for its residents and visitors.
2. Section 40-8-2 of the Utah Code must be recognized and complied with by federal agencies. The code states that a mining industry is essential to the economic and physical well-being of the state. It is necessary to alter the earth's surface to extract minerals required by our society, but such mining should be done in a manner that minimizes undesirable effects and provides for reclamation of the surface when mining is completed.
3. Mineral and mining development must be recognized and advanced as a valuable component of multiple-use management and community development.
4. Permitting must be streamlined and regulations must be consistent and coordinated between federal and state agencies and consistent with Kane County Resource Management Plan.
5. Mineral and mining resources must be developed at an expanded rate.
6. Mineral and mining resources must be optimized to support community sustainability and stability.
7. Kane County and the Conservation District must be involved in any reclamation initiative, mitigation enforcement or compensatory action taken against mineral development entities.
8. Section 63J-8-104 of the Utah Code must be recognized and complied with by federal agencies. Kane County supports the state's position, which requires federal land management agencies achieve and maintain at the highest reasonably sustainable levels, a continuing yield of energy, hard rock, and nuclear resources in those subject lands with economically recoverable amounts of such resources.
9. Mineral and mining resources located outside Park Service lands and designated wilderness must be available for development to the maximum extent allowed by law.
10. Additional material pits must be developed near communities.
11. Additional material pits must be developed for road maintenance, erosion control, stream stabilization and other activities that promote productive and enjoyable harmony between man and his environment.
12. WSA lands that are not suitable for Wilderness designation as identified in the County land use plan must be released from further consideration and made available for mineral and mining extraction.

Social-economic Benefits:

As these 12 desired conditions are achieved the following social-economic benefits will be realized:

1. Preservation and enhancement of an important historic and cultural significant economic sector of Kane County.
2. Increased social-economic sustainability through addition of good paying jobs.
3. Increased water shed health and water yield through remediation and reclamation projects.
4. Increased water quality and reduced sediment in rivers and streams through operation planning, mitigation and reclamation.
5. Increased soil health and productivity through reclamation and vegetation projects
6. Increased vegetation and vegetative diversity through vegetation reclamation planning and implementation.
7. Improved landscape health through reclamation planning and implementation
8. Increased wildlife habitat and species diversity
9. Increased economic benefit from public land through mineral and fuel services and goods.
10. Less erosion by wind and water through operation planning and implementation.
11. Decreased tension between residents and agency personnel.
12. View-sheds are maintained and in some cases enhanced after reclamation.

Invasive Plants and Noxious Weeds:

The social economic impacts of Invasive Plants and Noxious Weeds are complex because the past monetary costs to county governments, state agencies, and federal agencies of invasive plants and noxious weed control is easily calculated; the non-monetary costs of lost production, water yield loss, and environmental degradation are not. The benefits of effort to eliminate or control the spread of invasive plants and noxious weeds are not easily calculated. The reason is the benefits take place over a much longer period of time and over a larger and diverse population of beneficiaries that are difficult to identify.

The management of social economic activities of 85% of the landmass is done by federal agencies. Therefore, how these agencies operate is a major determinate of invasive plants and noxious weeds control and management in the county. The other 15% fall under Utah Department Agriculture and Food and county government.

The costs and benefits of effort to control and manage invasive plants and noxious weeds are not quantified in this report. Agencies and others are always concerned about the costs but have more difficulty identifying the benefits. This report identifies some of the benefits that are expected to occur over time if Kane County's desired future conditions are met.

Kane County desires:

1. All noxious weed infestations on federal lands must be identified and mapped prior to January 2020.
2. Land managers must significantly increase efforts to eradicate noxious weeds and replace invasive species with desirable historic plant communities.
3. All noxious weed infestations on state and federal lands must be eradicated by January 2025.
4. Native and non-native invasives must be replaced with desirable plant communities, consistent with ecologic site descriptions. Class II and Class III pinyon/juniper woodlands must be reduced by 25% based on a 10 year rolling average.
5. Sage-grouse management areas must be aggressively treated to eradicate all noxious weeds and replace invasive species with desirable vegetation.
6. All herbicides and treatments authorized for use on private lands must be available for use on federal lands with the same restrictions that apply to the general public.
7. The most efficient techniques possible must be used to control cheatgrass, invasive conifers, rabbitbrush and noxious weeds.
8. Fire breaks must be created in cheatgrass and other fire susceptible habitats to reduce the impacts of future wildfire.
9. Noxious weeds and invasive species, especially cheatgrass, rabbitbrush and conifers that are inconsistent with historic vegetative communities must be recognized as a visible impact of man; and lands occupied by such species must not be designated as: a) natural, b) possessing wilderness characteristics, or c) suitable for management as wilderness, wilderness study areas or non-WSA lands with wilderness characteristics.
10. Conditions which promote infestation by noxious weeds and invasive species, such as bare ground, must be minimized through active and adaptive management.
11. Federal agencies must spend an equal amount on noxious weed control on their lands in proportion to the acres under their control as Kane County does for private lands under County control.
12. 40% ground cover must be retained in areas of prescribed fire and 60% recruitment must be achieved by the next rainy season.
13. Lands impacted by wildfire must be reseeded with desirable native and/or non-native plant communities prior to infestation by noxious or invasive weeds.

Social-economic Benefits:

As these 13 desired conditions are achieved the following social-economic benefits will be realized:

1. Increased watershed health and water yield
2. Increased flood control capacity.
3. Increased social-economic sustainability.
4. Increased water quality and reduced sediment in rivers and streams
5. Increased soil health and productivity
6. Increased vegetation and vegetative diversity
7. Improved landscape health

8. Increased wildlife habitat and species diversity
9. Increased economic benefit from public land through services and goods.
10. Less erosion by wind and water
11. Decreased tension between residents and agency personnel.
12. Fewer wildfires with their associated air quality, water quality, biologic, erosion, and other costs.
13. View-shed are maintained and in some cases enhanced.
14. Increased opportunities for non-consumptive uses of water resources.

Recreation & Tourism:

According to the Kem C. Gardner Policy Institute, Kane County had a 43.5% share of leisure and hospitality jobs in 2015, ranking 4th statewide. That year, tourists and travelers spent a record \$8.17 billion in Utah. Occupancy rate was up 5.4% in and exceeded overall state numbers which were only 4.1%. Kane County also made the top ten counties in TRT collections when they hit \$1.9 million, right on the heels of Salt Lake City and Washington County.

Kane County is set to break that record in 2016, because local tourism collected \$1,939,608 in County Transient Room Tax; \$165,540 in Municipality Transient Room Tax; \$754,785 in Resort Communities' Sales Tax; and \$200,510 in Restaurant Sales Tax. The total TRT revenue was \$2,309,303. (Reported by the Kane County Office of Tourism) The numbers for occupancy were not yet out as of the date of publication of this RMP, but Kane County seemed poised to exceed last year's percentage. They also received \$207,000 in state grants for marketing purposes.

Water Resources:

All economic activity in the arid and semiarid western United States depends on adequate dependable water supplies. Kane County's water supply is dependent upon the health of the watersheds in the County. Eighty-five percent of the land in Kane County watersheds is managed by the U.S. Forest Service, Bureau of Land Management, or National Park Service. Therefore, how these watersheds are managed determines the long run sustainability of Kane County and the rest of the arid and semiarid West. Kane County's watersheds provide water along the Virgin River Drainage in Utah, Arizona and Nevada and along the Colorado River Drainage in Utah, Arizona, Nevada, and California. No attempt is made to put a dollar value on the benefits of healthy water sheds in Kane County.

Kane County has identified the following desired future conditions:

1. Scarce water resources are maximized for the beneficial use of man
2. Land managers prepare for changing climatic conditions by optimizing land health by while protecting and enhancing multiple use activities
3. A greater emphasis be placed on water development projects that optimize use and benefit of scarce water resources
4. Land managers eradicate Tamarisk and noxious weeds in Kane County.
5. Land managers maximize desirable native and non-native vegetative cover to optimize use of water resources.

Social-economic Benefits:

As these 5 desired conditions are achieved the following social-economic benefits will be realized.

1. Increased water shed health and water yield
2. Increased social-economic sustainability.
3. Increased water quality and reduced sediment in rivers and streams
4. Increased soil health and productivity
5. Increased vegetation and vegetative diversity
6. Improved landscape health
7. Increased wildlife habitat and species diversity
8. Increased economic benefit from public land through services and goods.
9. Less erosion by wind and water
10. Decreased tension between residents and agency personnel.
11. Fewer wildfires with their associated air quality, water quality, biologic, erosion, and other costs.
12. View-shed are maintained and in some cases enhanced.

Water Quality:

Kane County Desires:

1. The quality and quantity of existing water resources be improved and enhanced.
2. Kane County has a more active role in water quality management.
3. Implementation of County water quality plans, regulations, ordinances and best management practices for forest and rangelands to reduce sediment and debris in the County's watercourses.
4. Without diminishing existing multiple use levels and uses, implement Best Management Practices, including vegetative treatments and restoration of invasive conifer woodlands to sagebrush / semi-desert grasslands, to reduce pollutant loading in impaired streams and to reduce sedimentation in all perennial, intermittent and ephemeral watercourses.
5. Degrading water quality, especially in ephemeral water courses, resulting from encroaching conifers and inadequate desirable vegetative cover be recognized for their impacts on water quality.
6. Site specific and cumulative impact analysis of Class II and Class III pinyon / juniper woodlands on water quality be included in future NEPA analysis.
7. Beneficial uses of water bodies in Kane County be coordinated, re-evaluated and brought in to consistency with Kane County's Resource Management Plan.
8. Land managers actively manage for increased forage production to reduce sedimentation in and hydrologic modification of Kane County's perennial, intermittent and ephemeral water resources.
9. Land managers develop additional detention areas, lakes, ponds, wetlands, riparian areas, grade structures, and mesic conditions to slow storm water and reduce erosion.

10. Consistent with ecologic site conditions, land managers replace biologic soils and pinyon / juniper woodlands with sagebrush, semi-desert grasslands to increase vegetative soil cover and reduce sediment transport and erosion.
11. While developing additional detention areas, lakes and ponds, land managers recognize storm water management approaches that rely solely on peak flow storage do not usually targeted pollution reduction and only treat sediments after they have entered the watercourse.
12. Upland vegetative productivity and cover also needs to be enhanced and optimized with appropriate native and non-native seed mixes.
13. Consistent with ecologic site descriptions and the County's RMP, land managers improve the vegetative productivity of their soils.
14. Consistent with ecologic site descriptions, Kane County soils produce 50% of their potential by 2025 and 70% of their potential by 2050.
15. Consistent with ecologic site descriptions and based on a 10 year rolling average, land managers restore 25% of Class II and Class III pinyon / juniper woodlands to sagebrush / semi-desert grassland habitat.

Socio-economic Benefits:

As these 15 desired conditions are achieved the following social-economic benefits will be realized:

1. Increased water shed health and water yield
2. Increased water security through additional storage capacity.
3. Increased flood control capacity.
4. Increased social-economic sustainability.
5. Increased water quality and reduced sediment in rivers and streams
6. Increased soil health and productivity
7. Increased vegetation and vegetative diversity
8. Improved landscape health
9. Increased wildlife habitat and species diversity
10. Increased economic benefit from public land through services and goods.
11. Less erosion by wind and water
12. Decreased tension between residents and agency personnel.
13. Fewer wildfires with their associated air quality, water quality, biologic, erosion, and other costs.
14. View-shed are maintained and in some cases enhanced.
15. Increased opportunities for non-consumptive uses of water resources.

Hydrology:

Kane County desires:

1. Land management agencies significantly increase implementation of projects to improve vegetative cover, stream bank stabilization, water detention, and eradication of undesirable invasive species.

2. Land managers increase native and non-native vegetative ground cover percentages to 50% of soil potential by 2025 and 70% by 2050.
3. Land managers prioritize structural and non-structural projects and best management practices that are designed to reduce storm water volume, peak flows, and/or nonpoint source pollution through evapotranspiration, infiltration, detention, hydrograph extension, and filtration over restricting human development and multiple use / sustained yield activities.
4. Land managers implement structural and non-structural perennial, intermittent and ephemeral stream stabilization projects that reduce stream sedimentation and erosion while enhancing riparian areas, wetlands and vegetation for wildlife and livestock.
5. Russian olive and Tamarisk are removed and replaced with desirable native and non-native vegetation communities that retain bank stability and provide appropriate channel shade.
6. Acceptable ground cover is recruited, established, re-established, or retained after prescribed and wildland fire prior to the first season prone to erosive storms.
7. Land managers coordinate programmatic agreements, best management practices and prioritization schedules for improving hydrologic functions and conditions with Kane County.
8. Enhanced programmatic agreements and best management practices associated with prescribed and wildland fire are implemented to protect hydrologic function and condition in Kane County.

Social-economic Benefits:

As these 8 desired conditions are achieved the following social-economic benefits will be realized:

1. Increased water shed health and water yield. The Natural Resources Conservation Service identified 548,016 acres as forest lands and 1,890,058 acres as rangelands. If these conditions are met water yield most likely will increase by 0.5 acre feet per acre for forest lands and 0.05 acre feet per acre of rangeland. If the water is valued at \$30.00 per acre foot. Then the economic value of the water yield would increase by approximately \$11 million. This value can be realized in Utah, Arizona, Nevada, California, or Mexico. The value does not include the value for wildlife (fish) or recreation on or in the rivers, streams, lakes and reservoirs.
2. Increased social-economic sustainability.
3. Increased water quality and reduced sediment in rivers and streams
4. Increased soil health and productivity
5. Increased vegetation and vegetative diversity
6. Improved landscape health
7. Increased wildlife habitat and species diversity
8. Increased economic benefit from public land through services and goods.
9. Less erosion by wind and water
10. Decreased tension between residents and agency personnel.
11. Fewer wildfires with their associated air quality, water quality, biologic, erosion, and other costs.
12. View-shed are maintained and in some cases enhanced.

Water Rights:

Kane County desires:

1. Adequate water is developed to meet the diverse current and future needs of Kane County.
2. Water related issues are coordinated with Kane County and managed consistent with Kane County's Resource Management Plan.
3. Federal, state and local entities coordinate definitive resolution of federal reserved water rights consistent with the provisions of this RMP.
4. The State of Utah develops definitive resolution regarding ownership of water rights on federal lands for wildlife, livestock and other authorized uses.

Social-economic Benefits:

As these 4 desired conditions are achieved the following social-economic benefits will be realized:

1. All social-economic activities in Kane County are dependent on adequate, dependable, and secure water. The desired conditions assure that Kane County's social, cultural and economic condition are secured and can grow at a sustainable rate. The value of water to Kane County future cannot be overstated.
2. Decreased tension between residents and agency personnel.

Surface Waters:

Kane County Desires:

1. Land managers preserve, enhance, improve or optimize surface water resources through active management, especially watershed restoration and improving desirable native and non-native vegetative ground cover.
2. The regulatory control of surface waters under the Clean Water Act needs to be recognized and implemented.
3. Land managers need to cooperate and coordinate in accordance with federal laws, regulations, rules, and manuals regarding state and local direction of water resource management issues.
4. Surface waters must be re-evaluated to verify the designated beneficial use is consistent with hydrologic and environmental conditions. The upper reaches of the Escalante River from Boulder Creek confluence to Pine Creek need to be reconsidered for classification as a warm water fishery.
5. Upland soil loss due to lack of desired vegetative ground cover be recognized as the primary source of nonpoint pollution in Kane County.
6. The provisions of this RMP be accepted as the controlling maintenance, mitigation, enhancement, and improvement standard for surface water resources in Kane County, until such time as state and federal agencies coordinate surface water management and implementation plans with Kane County.

7. Invasion and encroachment of Tamarisk, Russian Olive, pinyon / juniper woodlands and other undesirable species is recognized as negatively impacting surface waters to a much greater extent than human development and impacts from man.

Social-economic Benefits:

As these 7 desired conditions are achieved the following social-economic benefits will be realized.

1. Increased social-economic sustainability.
2. Increased water shed health and water yield.
3. Increased water quality and reduced sediment in rivers and streams
4. Increased soil health and productivity
5. Increased vegetation and vegetative diversity
6. Improved landscape health
7. Increased wildlife habitat and species diversity
8. Increased economic benefit from public land through services and goods.
9. Less erosion by wind and water
10. Decreased tension between residents and agency personnel.
11. Fewer wildfires with their associated air quality, water quality, biologic, erosion, and other costs.
12. View-shed are maintained and in some cases enhanced.

Groundwater:

Kane County desires:

1. Groundwater resources are preserved, improved and developed for the use of man while supporting multiple use and sustained yield principles.
2. Land managers comply with current and future laws and regulations promulgated by federal, state and local entities.
3. Land managers optimize forest and rangeland health and vegetative cover as a means of preserving and protecting groundwater resources.
4. Watersheds that are the source of supply for community and culinary water systems be managed for resistance and resilience to fire.
5. Groundwater resources are managed under the principles of multiple use and sustained yield, with community and culinary water systems as the highest priority.
6. Groundwater resources are protected through appropriate implementation of best management practices applied to human and multiple use/sustained yield activities.

Social-economic Benefits:

As these 6 desired conditions are achieved the following social-economic benefits will be realized:

1. Increased water shed health and water yield

2. Increased water security through additional aquifer recharge.
3. Increased social-economic sustainability through increased water security in droughts.
4. Increased water quality.
5. Increased vegetation and vegetative diversity
6. Improved landscape health
7. Increased wildlife habitat and species diversity
8. Increased economic benefit from public land through non-consumptive uses.
9. Less erosion by wind and water
10. Decreased tension between residents and agency personnel.
11. View-shed are maintained and in some cases enhanced.

Ditches & Canals:

Kane County desires:

1. Existing ditches will be preserved, enhanced and improved to permit the unimpeded flow of water.
2. Ditches and canals will be recognized as important cultural resources and their function will be preserved, enhanced and improved.

Social-economic Benefits:

As these 2 desired conditions are achieved the following social-economic benefits will be realized.

1. Increased social-economic sustainability.
2. Increased understanding of the historic value water delivery structures and the social and cultural impacts on the communities.
3. Increased understanding of the importance of secure water rights to the future development of the County.
4. Increased soil health and productivity
5. Increased vegetation and vegetative diversity
6. Improved landscape health through improved water distribution
7. Increased wildlife habitat and species diversity in hay fields and irrigated pastures.
8. Less erosion by wind and water through more vegetative cover and root density.
9. Increased security of rights-of-way for water distribution structures
10. View-shed are maintained and in some cases enhanced.

Rivers & Streams:

Kane County desires:

1. The beneficial use of Kane County's rivers and streams will be maximized through protection and development of water quantity and quality and through more aggressive vegetative management in watersheds and other areas impacting rivers and streams.

2. Land managers will be consistent with Kane County's plans, programs and policies for resources impacting rivers and streams, including but not limited to actions for vegetation, water quality, pinyon/juniper reduction, fish & wildlife, livestock grazing, special status species, and soil resources to the maximum extent allowed by law.
3. Wild, scenic and recreational river evaluations and designations will be consistent with Kane County's criteria, plans, programs and policies.
4. Increased access for law enforcement and emergency medical services, solid waste collection services, human waste collection services, recreation, and the general public will be provided to Kane County's rivers and streams, especially on public lands.
5. Impaired waters in the Escalante River will be reclassified to include only those tributaries with native targeted fish populations and conditions suitable for cold water fisheries.
6. Class II and Class III pinyon/juniper woodlands will be reduced by 25% on a rolling 10 year average and replaced with desirable vegetative communities to reduce erosion and impacts to the County's rivers and streams.
7. Additional structural (dams, reservoirs, impoundments, etc.) and non-structural improvements will be constructed to improve the efficiency of Kane County's rivers and streams.
8. Transplantation of beavers is limited to areas approved by the Kane County Commission and that will not impede the free flow of water.
9. Tamarisk, Russian olive and noxious weeds will be eradicated from all of Kane County's public land rivers and streams and their associated riparian zones.
10. A new reservoir needs to be built upstream from Wide Hollow Reservoir to reduce stream sedimentation and protect water resources.

Social-economic Benefits:

As these 10 desired conditions are achieved the following social-economic benefits will be realized:

1. Increased water shed health and water yield
2. Increased water security through additional storage capacity.
3. Increased flood control capacity.
4. Increased social-economic sustainability.
5. Increased water quality and reduced sediment in rivers and streams
6. Increased soil health and productivity
7. Increased vegetation and vegetative diversity
8. Improved landscape health
9. Increased wildlife habitat and species diversity
10. Increased economic benefit from public land through services and goods.
11. Less erosion by wind and water
12. Decreased tension between residents and agency personnel.
13. Fewer wildfires with their associated air quality, water quality, biologic, erosion, and other costs.
14. View-shed are maintained and in some cases enhanced.
15. Increased opportunities for non-consumptive uses of water resources.

Floodplains & River Terraces:

Kane County desires:

1. Floodplains, especially on undeveloped federal lands, will be restored to properly functioning conditions.
2. Coordinated, strategic planning must be implemented to outline a plan of attack to restore uplands, floodplains and vegetation and to improve rangeland health.
3. Structural and non-structural improvements must be made to degraded watercourses and floodplains.
4. The role of upland watershed management must be recognized and incorporated in floodplain management and restoration.
5. Structural and non-structural improvements will be made to degraded uplands to a) replace Class II and Class III pinyon/juniper woodlands with desirable historic vegetative communities, b) reduce runoff and c) reduce the amount of bare ground.
6. Check dams and restoration projects will be implemented to arrest down-cutting and to restore natural stream grade and sinuosity.
7. Active management and restoration projects on federal lands will be implemented to restore sinuosity, vegetation and floodplain function which mimic the natural hydrologic system.
8. Long term hydrologic function must be prioritized over short term ground disturbance.
9. Analysis/approval processes for floodplain restoration are simplified and authorized as categorical exclusions under NEPA. Corps of Engineers and other federal agency involvement are eliminated or reduced to the minimum required under law.
10. Land managers must restore to properly functioning condition at least 1% or 10 miles of non-functioning floodplains per year.

Social-economic Benefits:

As these 10 desired conditions are achieved the following social-economic benefits will be realized:

1. Increased water shed health and water yield
2. Increased water security through additional aquifer recharge.
3. Increased flood control capacity by health floodplain's water-holding capacity and slow return to flowing rivers and stream.
4. Increased social-economic sustainability by reducing damage outside the floodplain.
5. Increased water quality and reduced sediment in rivers and streams
6. Increased soil health and productivity
7. Increased vegetation and vegetative diversity
8. Improved landscape health
9. Increased wildlife habitat and species diversity
10. Increased economic benefit from public land through non-consumptive uses.
11. Less erosion by wind and water
12. Decreased tension between residents and agency personnel.
13. View-shed are maintained and in some cases enhanced.

Irrigation:

Kane County desires:

1. Irrigation must be preserved, improved and enhanced and federal land managers support preservation, improvement and enhancement of irrigation on private lands through appropriate actions on federal lands.
2. Irrigation must be recognized as a cultural resource and management actions be taken that will result in preserved, improved and enhanced irrigation.
3. Land managers will implement avoidance, minimization and mitigation techniques and best management practices to support irrigation while allowing appropriate multiple use / sustained yield activities to proceed.
4. Land managers will recognize Kane County as the primary headwaters of the Sevier River and actions in Kane County impact numerous activities downstream.
5. Unimpeded and efficient flow of current and future irrigation waters across federal lands.
6. Appropriate irrigation related resources must be added to the County's list of historic/cultural resources and landmarks.
7. Removal of encroaching pinyon/juniper woodlands, Tamarisk, Russian olive, and cheatgrass which negatively impact water quality, water quantity and irrigation resources in Kane County and for downstream users.
8. Lands are managed to increase water development and resources.

Social-economic Benefits:

As these 8 desired conditions are achieved the following social-economic benefits will be realized:

1. Increased social-economic sustainability. From settlement to the mid-twentieth century Kane County residents depended on what they raised in their local communities and on their ranches. Irrigation was and is required to grow crops in Kane County. These activities became the foundation of the social, cultural and character fabric of the community and economy. Continued irrigation is essential to the culture of Kane County.
2. Increased water shed health and water yield.
3. Increased water quality and reduced sediment in rivers and streams
4. Increased soil health and productivity
5. Increased vegetation and vegetative diversity
6. Improved landscape health
7. Increased wildlife habitat and species diversity
8. Increased economic benefit from public land through services and goods.
9. Less erosion by wind and water
10. Decreased tension between residents and agency personnel.
11. Fewer wildfires with their associated air quality, water quality, biologic, erosion, and other costs.
12. View-shed are maintained and in some cases enhanced.

Dry Washes & Ephemeral Streams:

Kane County desires:

1. Dry washes and ephemeral streams, especially on undeveloped federal lands, will be restored to properly functioning conditions.
2. Coordinated, strategic planning must be implemented to restore uplands, vegetation and to improve rangeland health associated with dry washes and ephemeral streams.
3. Structural and non-structural improvements must be made to degraded watercourses, dry washes and ephemeral streams.
4. The role of upland watershed management will be recognized and incorporated in dry wash and ephemeral stream management and restoration.
5. Structural and non-structural improvements will be made to degraded uplands to: a) replace Class II and Class III pinyon/juniper woodlands with desirable historic vegetative communities, b) reduce runoff, and c) reduce the amount of bare ground.
6. Check dams and restoration projects will be implemented to arrest down cutting and to restore natural grade, vegetation, cross section, and sinuosity in dry washes and ephemeral streams.
7. Active management and restoration projects on federal lands must be implemented to restore sinuosity, vegetation and floodplain function which mimic the natural hydrologic system.
8. Long term hydrologic function must be prioritized over short term ground disturbance.
9. Analysis/approval processes for dry wash and ephemeral stream restoration will be simplified and authorized as categorical exclusions under NEPA. Corps of Engineers and other federal agency involvement will be eliminated or reduced to the minimum required under law.
10. Land managers must restore to properly functioning condition at least 2% of non-functioning dry washes and ephemeral streams per year.

Social-economic Benefits:

As these 10 desired conditions are achieved the following social-economic benefits will be realized:

1. Increased water shed health and water yield
2. Increased water security through additional aquifer recharge.
3. Increased flood control capacity by slowing the water velocity as it flows into constantly flowing rivers and stream.
4. Increased social-economic sustainability by reducing damage outside the floodplain.
5. Increased water quality and reduced sediment in rivers and streams
6. Increased soil health and productivity
7. Increased vegetation and vegetative diversity
8. Improved landscape health
9. Increased wildlife habitat and species diversity
10. Increased economic benefit from public land through non-consumptive uses.
11. Less erosion by wind and water

12. Decreased tension between residents and agency personnel.
13. View-shed are maintained and in some cases enhanced.

Livestock Grazing

Kane County Desires:

1. Land management agencies must recognize state and local designation of the significant historic role of livestock grazing and its value as a cultural resource.
2. Land managers must recognize Kane County's Resource Management Plan and comply, to the maximum extent allowed by law, with Kane County's stated goals, plans, desires, and needs.
3. Federal agencies must manage lands to maximize sustained yield, including optimization of available forage for livestock grazing.
4. Federal agencies must restore forests and rangelands to a condition that supports the full number of permitted livestock and increase forage available for livestock grazing over time.
5. Prior to FY 2050 federal agencies must enhance forests and rangelands to a condition that supports an additional 30% of forage over what is necessary to accommodate the full number of livestock and wildlife permitted at present.
6. Federal agencies must restore Pinyon/Juniper stands to desired conditions, eliminate Tamarisk and Russian olive, eradicate noxious weeds, and replace rabbit brush and other unproductive species with vegetation that will optimize sustained yield and benefit to wildlife, livestock, recreation and other multiple uses.
7. Water generated from Pinyon/Juniper, Tamarisk and Russian olive removal must be conserved, developed and enhanced to be used: 1) for livestock on lands that are not designated as the focal point for visitors or that have water rights allocated to livestock; 2) for recreation on lands designated as the focal point for visitors and that have water rights allocated to culinary/domestic uses; 3) for livestock on lands designated by Kane County or the State of Utah where grazing is the highest and best use; and 4) for multiple use/sustained yield purposes in compliance with Utah State Water Law on lands that are undesignated.
8. New water sources must be developed: 1) for livestock and wildlife on lands that are not designated as the focal point for visitors or that have water rights allocated to livestock and wildlife; 2) for recreation on lands designated as the focal point for visitors and that have water rights allocated to culinary/domestic uses; 3) for livestock on lands designated by Kane County or the State of Utah where grazing is the highest and best use; and 4) for multiple use/sustained yield purposes in compliance with Utah State Water Law on lands that are undesignated.
9. The full number of permitted livestock must be restored and expanded at the earliest possible time in a phased approach as the conditions of paragraph d) are achieved.
10. Desired ecological site conditions identified by the Natural Resources Conservation Service must be achieved.

Social-economic Benefits:

Rangeland restoration treatments for class 3 or phase 3 pinion-juniper cost approximately \$200 per acre. If the post treatment average-yield over 20 years of livestock grazing after a 2 year recovery period is 367 pounds per acre. For each 100 acres treated 36,700 pounds of forage is produced annually. If livestock harvest 33.33% then 12,232 pounds is harvested by livestock. At 790 pounds per AUM 15.48 AUMs were harvested. At \$56.97 per AUM, the average value per AUM for the past 5 years using Cedar City Livestock Auction November prices for cattle yields \$881.90 in revenue to ranchers and another \$573.87 in economic activity in Kane County. Each increased AUM is worth \$94.04 in economic output to Kane County.

As these 10 desired conditions are achieved the following social-economic benefits will be realized:

1. Preservation and enhancement of an important historic and cultural significant economic sector of Kane County.
2. Increased social-economic sustainability.
3. Increased water shed health and water yield.
4. Increased water quality and reduced sediment in rivers and streams
5. Increased soil health and productivity
6. Increased vegetation and vegetative diversity
7. Improved landscape health
8. Increased wildlife habitat and species diversity
9. Increased economic benefit from public land through services and goods.
10. Less erosion by wind and water
11. Decreased tension between residents and agency personnel.
12. Fewer wildfires with their associated air quality, water quality, biologic, erosion, and other costs.
13. View-shed are maintained and in some cases enhanced.

Special Status Species:

The social economic impacts of the Endangered Species Act with its associated Special Status Species are complex because the ESA set a value of an endangered species as infinite and species is to be saved at all cost in all locations. No single piece of legislation has had as great a negative impact on rural counties in the West. Environmental groups have used the ESA and the courts to stop commercial logging and new mining and reduce grazing throughout the western U.S. including Kane County.

The management of social economic activities of 85% of the landmass is done by federal agencies. Therefore, how these agencies operate is a major determinate of how much enforcement of ESA costs the county.

The costs and benefits of ESA and Special Status Species are not quantified in this report. Agencies and others are always concerned about the costs expected for enforcing ESA. The benefit of saving a species is more difficult to identify at the county level. The costs of enforcing

ESA are disproportionally carried by local communities while the benefits disproportionally go to distant beneficiaries. If the focus of the ESA was changed from population protection to habitat restoration and development the long run viability of the species would be greatly improved. A species prospers in a healthy habitat and declines in a deteriorating habitat. Habitat restoration and development shall be based on scientific research completed under similar geography and climate conditions and not on other dissimilar studies, untested theories, beliefs or hopes.

This report identifies some of the benefits to the county from enforcing ESA in the least costly manner available and within the policies and ordinances of Kane County; the expected benefits that will occur over time if Kane County's desired future conditions are met.

The County desires that:

1. The need for future listings under the Endangered Species Act is precluded through the use of proactive habitat enhancements and sound resource management.
2. Currently listed special status species are recovered to the point they are delisted and their future as viable populations are secured.
3. The Utah Wildlife Action Plan is used as a principal guide for implementing species conservation strategies until Kane County develops individual conservation plans for the various species.
4. When developed, Kane County's species conservation plans replace the Utah Wildlife Action Plan as a principal guide for implementing species conservation strategies in Kane County.
5. Restrictions on land use associated with special status species are removed from lands that do not contain: a) permanent populations, or b) high value habitat of the targeted species.
6. Conservation/recovery plans and habitat evaluation guides are developed for each special status species in Kane County.
7. Existing conservation recovery plans and critical, crucial and priority habitat designations are reviewed and revised to reflect only those lands suitable for species recovery and long term conservation.
8. Goshawk management plans for forested lands in Kane County are amended to prioritize first healthy forests that are resistant and resilient to fire, second restoration of traditional timber harvests, and third management of resources for goshawk conservation.
9. The goshawk amendment to the Dixie National Forest Plan is discarded and replaced with an effective plan that meets Kane County's priorities for the beneficial use of land and natural resources.
10. Special status species conservation and recovery is managed in concert with traditional multiple uses such as livestock grazing, timber harvest and energy development to promote the productive and enjoyable harmony between man and his environment.
11. Kane County communities thrive and are sustainable due to a healthy balance between man, development, natural resources, and land health.
12. Decisions regarding management of special status wildlife and plant species and their habitats are made based on the best available, site specific, biological and social scientific knowledge and information.

13. Critical habitats and recovery plans are not based on landscape or ecoregion level analysis but are based on local population and habitat conditions.
14. Scientifically accurate and scale-appropriate counts, data and maps concerning the location of special status species are available to assist with site-level analysis.
15. Spurious attempts to halt responsible land use through species listings, designation of critical habitats and other ESA and sensitive species-related strategies are precluded through active management emphasizing habitat vitality and vigor.
16. Kane County is recognized as a full and vital partner with state and federal agencies in the management of special status species and habitats.
15. The County's jurisdictional authority and expertise concerning land use, planning, zoning, site specific conditions, habitat, socio-economics, cultural impacts and other subjects is recognized, accepted and acknowledged by other levels governments.
16. A single special status species list and a single repository for conservation plans are developed for all governmental entities in Kane County.

Social-economic Benefits:

As these 16 desired conditions are achieved the following social-economic benefits will be realized:

1. Increased sustainability of endangered and special status species.
2. Healthy sustainable habitats for endangered and special status species.
3. Increased vegetation and vegetative diversity.
4. Increased wildlife habitat and species diversity
5. Increased water shed health and water yield
6. Increased flood control capacity.
7. Increased social-economic sustainability.
8. Increased water quality and reduced sediment in rivers and streams
9. Increased soil health and productivity
10. Improved landscape health
11. Increased economic benefit from public land through services and goods.
12. Less erosion by wind and water
13. Decreased tension between residents and agency personnel.
14. Fewer wildfires with their associated air quality, water quality, biologic, erosion, and other costs.
15. View-shed are maintained and in some cases enhanced.

Economic Report contributed by Gilbert D. Miller, Ph.D, Doctor of Philosophy and Economics, Utah State University, Emeritus, 2017.

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Section Four: Geologic History

Kane County has a geologic history reaching back over a billion years. Approximately 270 million years of this history is revealed in the rocks, paleontology, and scenery of the county. The oldest rocks found in the county record a time when the equator angled northeast from southern California past the southeastern corner of Utah. Kane County was then marginal marine lowlands of streams, flood plains, and tidal flats. The sea lay to the west, but occasionally spread east across the area leaving beds of limestone with sea shells, sponges, and other fossils between red beds of sandstone and mudstone. The Hermit, Toroweap, Kaibab and Moenkopi Formations record these events covering the first 35 million years (middle of the Permian through early Triassic) of geological history. Periods of erosion are recorded between the Kaibab and Moenkopi Formations and between the Moenkopi and Chinle Formations. Reptile tracks are found in beds of the Moenkopi Formation. These Permian through Triassic formations are seen in the Buckskin Mountain areas of the county.

During the late Triassic, this region was subjected to a period of erosion before being covered by great sand dunes in early Jurassic time (208 to 187 million years ago). The depositional environment changed from windblown sand dunes to stream laid sand beds and back to windblown sand dunes. Early Jurassic rocks form the Vermillion (Wingate/Moenave and Kayenta Formations) and White Cliffs (Navajo Sandstone) of the Grand Staircase. Though generally void of fossils, these rocks occasionally exhibit the fossilized tracks of reptiles including small to medium sized dinosaurs.

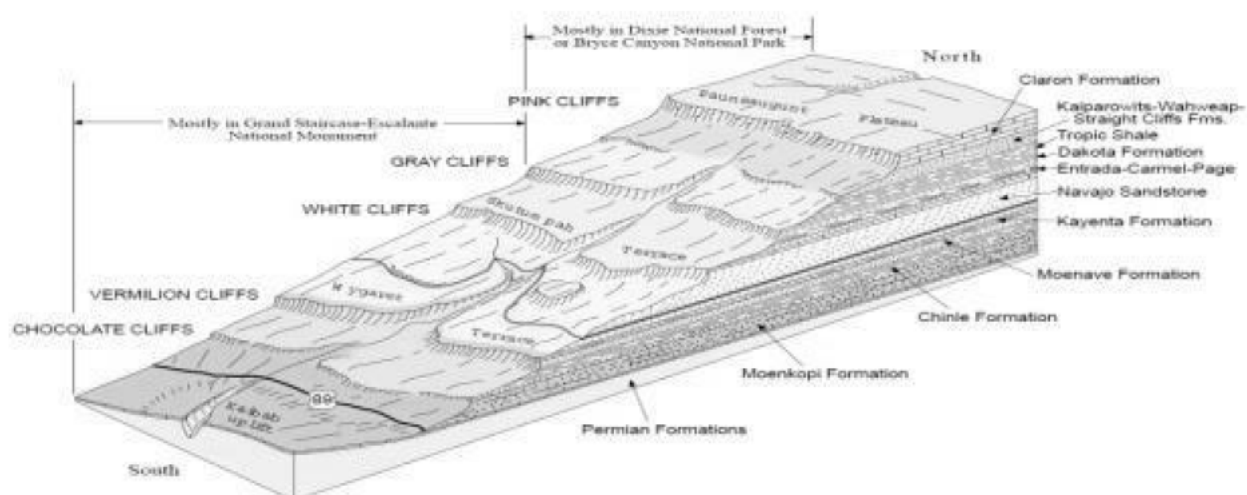
The middle Jurassic is represented by the Carmel Formation. It is composed of color banded layers of sandstone, limestone, calcareous shale, siltstone, gypsum, and mudstone. They were deposited in and near the southern edge of a shallow sea that advanced into the area from the north. Limestones contain marine fossils of mollusks, brachiopods, crinoids, coral and algae. Desert sand dunes of the Entrada Formation formed on top of the Carmel Formation as the sea retreated to the north. Another period of erosion occurred before the Late Jurassic Morrison Formation (famous for its dinosaur fossils) was deposited by in lakes and east flowing streams. The Morrison is found on the east side of the county at the foot of the Straight Cliff and southeast of the Kaiparowits Plateau. Middle and Late Jurassic sedimentary formations along with periods of erosion span time from about 180 to 144 million years ago. Early Cretaceous erosion and non-deposition represent a period of 45 million years.

During Late Cretaceous time, mountains rose to the west and provided sediments for streams flowing east into a great continental sea. This sea covered most of the interior continental United States from Alaska to the Gulf of Mexico. As sediments accumulated, the area along the shore sagged. The shoreline moved back and forth from east to west creating a series of alternating terrestrial-marine deposits covering over 30 million years at the end of the Cretaceous Period. The Dakota Formation was deposited on remnants of either Morrison (east) or Entrada (west) and is a mix of stream sediments and near-shore marine deposits. The Dakota was covered by marine clays of Tropic Shale. Deposition continued, becoming more terrestrial through time, resulting in the Straight Cliffs Formation, the Wahweap Formation, and the Kaiparowits Formation. These formations are seen on and around the Kaiparowits Plateau and form the Gray Cliffs of the Grand Staircase.

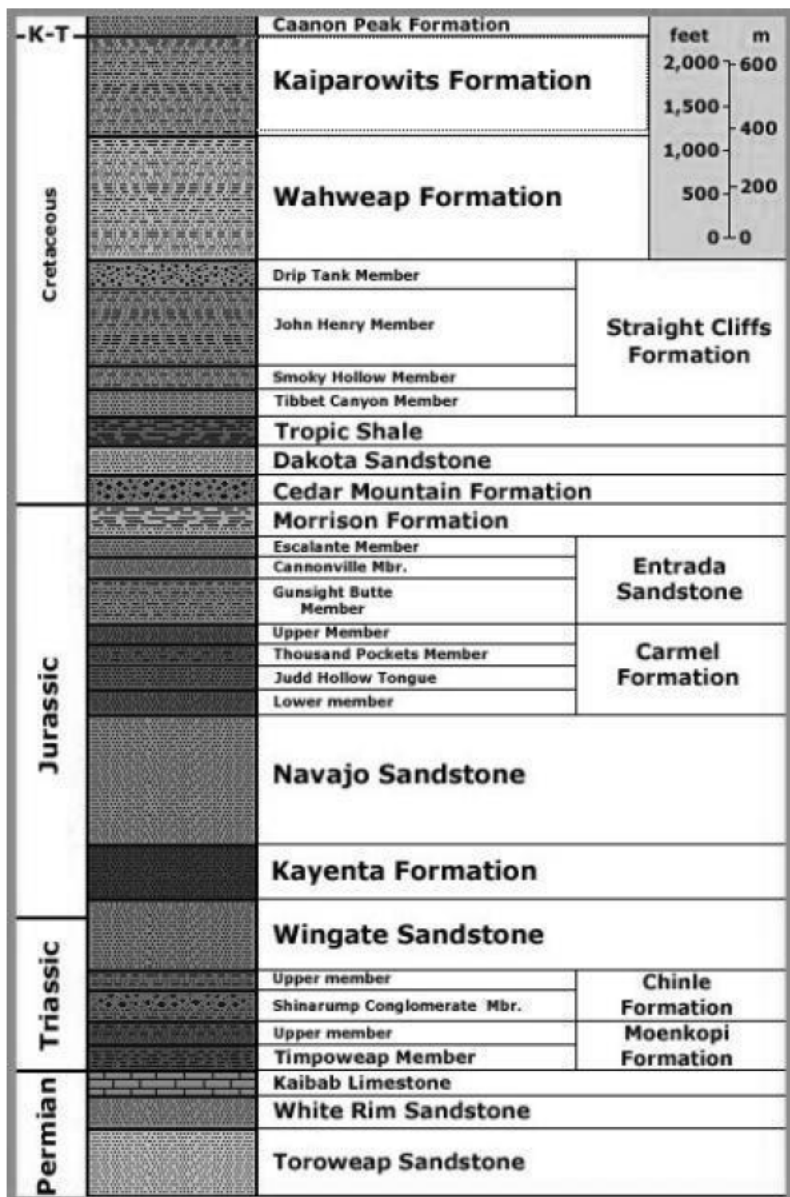
The thickness, continuity and broad temporal distribution of the Kaiparowits Plateau's stratigraphy provide opportunities to study the paleontology of the late Cretaceous Era. Extremely significant fossils, including marine and brackish water mollusks, turtles, crocodilians, lizards, dinosaurs, fishes, and mammals, have been recovered from the Dakota, Tropic Shale and Wahweap Formations, and the Tibbet Canyon, Smoky Hollow and John Henry members of the Straight Cliffs Formation. Within the county,

these formations have produced the only evidence in our hemisphere of terrestrial vertebrate fauna, including mammals, of the Cenomanian-Santonian ages. This sequence of rocks, including the overlying Wahweap and Kaiparowits Formations, contain one of the best and most continuous records of Late Cretaceous terrestrial life in the world.

The Canaan Peak Formation straddles the boundary between the Cretaceous and Tertiary Periods. The beginning of the Tertiary Period marked the end of marine environments in or near the monument. The dinosaurs had become extinct and radical changes began to occur in the geology of the county. Several large lakes occupied an area from southwestern Wyoming to southwestern Utah. The Claron Formation, seen as the Pink Cliffs at Bryce Canyon, was deposited at this time. The Tertiary Period lasted about 64 million years during which time Utah experienced uplifts, folding, faulting, and volcanism. Uplift of the Colorado Plateau and Utah in general over the last 15 million years activated the erosion cycle which uncovered geologic formations dating back 270 million years and created the topography and scenery we now see in the county. Quaternary sediments (younger than 1.6 million years) also occur in the county and have a potential for Pleistocene fossils.



Above: A cross sectional diagram of the Grand Staircase from *Geology of Grand Staircase Escalante National Monument* by Doelling, et al.



Above: Stratigraphy of Kane County, Utah
 Utah Geological Association Publication 28

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Section Five: Coordination & Management

Federal and State land management planning processes will include Kane County as an active, on-going partner and will coordinate with us to be consistent with county goals and policies. The county will insist that the uses of State Institutional Trust Lands conform to county land policies and regulations.

There is a recognition that living in close proximity to a variety of lands held in the public trust has myriad benefits to those who live in or visit Kane County. Federal and state lands provide opportunities for commerce and sustainability with community watersheds, livestock grazing, logging, firewood gathering, mining, mineral exploration and development. In addition, outdoor recreation such as water sports, hiking, horseback riding, photography, hunting, all-terrain vehicles/off-highway vehicles (ATV/OHV) and four-wheel drive vehicles support tourism and visitor use.

It is the responsibility of the Kane County Commission to facilitate a land use pattern which allows private unincorporated land owners to make and attain reasonable use of their lands within the constraints presented by the land itself, as well as traditional and recreational uses, customs, culture and available public services. Convenient access to public lands is of vital importance in maintaining and growing sustainable communities and economies in the county. Each of these land uses presents different challenges and opportunities to residents and county officials.

Kane County is recommending coordination management planning that involves input from local residents and all stake holders pertaining to public land use, thereby working with the needs of local and federal planners to best manage multiple-use, multiple-function zones. Kane County believes entities and citizens can coordinate their efforts to accomplish what is impossible for a single agency or individual to do.

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 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. 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.

The Kane County Commission intends to remain a proactive coordinating partner in all public lands planning processes that impact the county's land base, culture and economy. All attempts to lock down public lands and prohibit access to these lands will be resisted by Kane County by educating the public and partnering with entities that share its vision and values.

Given these basic premises, the Kane County Commission will be an active coordinating partner with other governments to foster a sustainable, broad-based economy which allows traditional economic uses to remain vibrant, while fostering new economic activities and protecting

important scenic, cultural and social qualities. Federal land management planning processes will include Kane County as an active, coordinating, on-going partner, consistent with federal mandates involving coordination and will be consistent with county goals and policies, such as: the Kane County Land Use Ordinance; Kane County General Plan; the Kane County Resource Management Plan; and any other plans involving the coordination process where not unreasonably constrained by federal rules or law.

Federal and State Resource Management Planning

It is Kane County's policy to coordinate with public land management agencies in the planning and management processes. The county's participation and responsibilities will be guaranteed by, and contingent upon, a formal coordination agreement. Any formal county coordination agreement shall be contingent upon the county's full involvement at the earliest stage of the proposed process. The county would like to see increased coordination among the county, the Bureau of Land Management, U.S. Forest Service, Utah Department of Natural Resources, National Park Service and other land management agency. It is the county's belief that all land use decisions must be based on valid science, sound principles of consensus building, and coordination of local interests.

The position of Kane County is that weight given to public comment and opinion should be directly proportionate to the geographic and economic impact of the decision. The county policy is to provide clear and timely comments, and encourage its residents to do the same.

It is the preference of Kane County that managing agencies coordinate with the county on all planning at the earliest possible time. The county has limited personnel to dedicate to public land planning. Nevertheless, the county will make every effort to coordinate planning documents and achieve consistency. Kane County requests full coordination by all federal land managers to achieve consistency with Kane County's Land Use Ordinance, Resource Management Plan, and General Plan, and any other plans which comply with federal law.

It is the policy of Kane County that federal and state land management agencies:

- 1) Establish effective government-to-government relationships with Kane County.
- 2) Identify a county relations liaison to serve as the first point of contact with the county commission and also the person who will generally initiate agency contact with the county.
- 3) Implement federal land management programs and activities consistent with the county's ordinances, and respect the county's rights in fulfilling the federal government's legally mandated coordination responsibility.
- 4) Manage federal lands and resources in coordination with the county.
- 5) Work to reduce or remove legal or administrative program impediments that inhibit the agency's and the county's capacity to work directly and effectively with each other.
- 6) Consult with the county on matters that may affect the public's rights and interests. Promptly notify the county at the earliest opportunity of proposed policy, plans, projects or actions that may affect the public's rights or interests in order to provide

the county an opportunity for meaningful dialogue on potential implications and effects.

- 7) Develop, in consultation and collaboration with the county, agreements and statements of relationships that help clarify the county's rights and interests, and set forth procedures and protocols for consultation, including the points of contact. Involve designated county representatives, including staff, in the development of proposed policies, plans, projects, or actions, where appropriate.
- 8) Involve the county early in the planning process, and in the preparation of in-depth socio-economic information.
- 9) Fully consider recommendations by the county to address county concerns on proposed decisions.
- 10) ***Inform the county as to how its information and recommendations were considered in public land management decisions, including explanations, particularly in the event that county input was not adopted or incorporated.***
- 11) Document the process and actions taken to consult with the county, the results of those actions, and how the public land manager's final decision was communicated to the county. This consultation review and monitoring process shall involve the county officials and representatives; and
- 12) Conduct annual planning meetings for specific projects and other multiple-use interests in affected areas that include participation by livestock permittees, affected adjacent land owners, and county representatives.

Access & Transportation

Transportation is critically important to Kane County. The county believes that proper access to public lands is essential, and is an inherent right of every citizen. It is the county's position that no access should be closed except in situations of duplication, danger to the public, or serious threat to the resource, and then only with input and consultation with the county. The county further believes that no closure should occur on any of its RS2477 rights-of-way assertions without express consent of the county commission.

The county supports general public access through private lands as historically provided and allowed. The county will continue to work with individual land owners as necessary to maintain these traditional thoroughfares while also protecting private rights. It is vitally important that all existing public rights-of-way, including both RS2477 (roads) as well as prescriptive rights across private lands, be maintained.

Customs and Culture

Residents of Kane County highly value the quality of life the customs and culture of the county provides. Many residents have traditionally earned their livelihoods from activities associated with the county's customs and culture. While the economy of the county is not as dependent on agricultural activities as it once was, many residents continue to rely on these or similar activities either as a primary or a secondary income source.

The livestock industry is still a major income source for Kane County as a whole, but it has suffered significantly by the reduction of grazing permits over the last several years. County residents and visiting tourists greatly prize the outdoor recreation opportunities detailed in the previous section. These activities are a way of life in Kane County, having sprung up from a traditional western lifestyle heavily dependent on the land as a natural resource to provide sustenance and enjoyment. At its core, the county is a place where its residents enjoy a rural environment and closeness to nature. These activities have been kept alive as they are passed from generation to generation. Parents, children, and grandchildren enjoy the outdoors together as a family unit. Access to public lands in the county for multiple uses is a prized privilege, even a right, inherent in residency, which is the foundation of the lifestyle that has kept families here for generations. In recent years, it has become the main attraction for new residents seeking a rural, family centered way of life.

Kane County's quality of life and economy, is and will continue to be, dependent upon these activities. Since the county is directly dependent upon all its natural resources, management decisions affecting public land directly impacts and potentially changes the county's customs and culture. Therefore, a critical tie exists between the use of private, federal, and state natural resources and the continuance of our way of life. It is imperative that the county, stakeholders, and informed representatives review and coordinate with one another when dealing with natural resource issues as they occur, to assure public land management decisions do not negatively impact the county's customs and culture.

The historical, cultural and educational benefits of livestock grazing in the Escalante Region Multiple Use/Multiple Functions Grazing Zone are important to Kane County and its residents. The loss of our rich historical culture, which brings visitors to Kane County and keeps residents living here, would cause irreparable harm to the economy and detract from the richness of our culture and heritage. Kane County families have grazed livestock and used the land for multiple generations; a loss of a portion or all of their grazing rights would impact family economics and dynamics which cannot be replaced once lost.

Kane County recognizes the impact and value of livestock grazing and that the use of public lands provides a benefit for all residents, tourists, and future generations.

The establishment of the Escalante Region Multiple Use/Multiple Functions Grazing Zone is intended to protect Kane County's most valuable assets: families, livelihoods, culture and history, (which are unique to the area).

Kane County is sustained by a population whose livelihoods have maintained the vast openness and natural beauty of the land treasured by visitors. All sources of economic support must be maintained at their highest possible level in order to sustain the economic stability of the county. To ensure this, the Kane County Board of Commissioners and the Land Use Authority have dedicated themselves to a coordinated land use planning effort, which can hold federal management agencies to standards set by Congress regarding continuation of multiple uses of federal lands.

Kane County has depended on the livestock grazing industry throughout its history to provide economic stability to the county; therefore, livestock grazing must be protected to ensure the health, welfare and safety of its citizens.

The American legend of the *Cowboy* is found throughout the Escalante Region Multiple Use/Multiple Functions Grazing Zone and is part of the culture and history of Kane County's "Western Legends." This cultural icon brings the tourism and movie industries to the area, and helps fuel the local economy. With livestock grazing being pushed out of the county by federal policies, this cultural icon, which is so identifiable with the persona of Kane County, becomes downgraded. Continuing current public land management practices diminishes opportunities for viable livestock grazing and threatens the custom, culture, heritage, value and economy incorporated in the Escalante Region Multiple Use/Multiple Functions Grazing Zone.

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Section Six: County Goals, Strategies and Actions

Federal land management planning processes will include Kane County as an active, on-going coordinating partner and will be consistent with county goals and policies when not constrained by federal law. The county will insist that State Institutional and Trust Lands (SITLA) uses conform to county land use policies and regulations.

Introduction

Historically, federal and state trust lands management has taken place with little regard to Kane County land use plans. County officials have asked to become a coordinating agency in developing federal land management plans. The County Commission has asserted federal land managers coordinate with local government in their planning processes.

Findings

- A. The historic cooperative efforts of the Western livestock industry, local governments, federal land management agencies and State land management agencies have resulted in notable progress in sustainability of rangeland productivity. Bureau of Land Management (BLM) records show a 100% increase in good condition rangeland and a 50% reduction of poor condition rangeland in the past 50 years.
- B. As a result of significant management effort and cooperation, populations of big game and wildlife are increasing throughout the county. Continuation of these cooperative efforts is in the best interest of the rangelands, and the economic activity and wildlife dependent upon them.
- C. As new knowledge of riparian area management has been available and applied, significant changes have occurred in riparian areas that benefit wildlife as well as livestock grazing and recreational use. The latest available technology must be used to support innovative application to continue the improvement in riparian habitat.
- D. In order to promote the economic, cultural, and social well-being of Kane County and our rural communities, grazing preferences must continue to be adequately safeguarded.
- E. Maintaining the economic viability of Kane County livestock industry is essential for maintaining the open space and habitat for big game, wildlife and fish. The alternative is to sell off land for developments that would preclude big game, wildlife and fish.
- F. Incentives for increased public input into management planning for public lands and in private investment in rangeland development will support continued cooperative management efforts.
- G. In spite of statutory requirements, federal land use plans have not been developed in full coordination with local county government.
- H. Maintaining the economic viability of Kane County minerals and energy industry is essential for maintaining workforce and economies along with tax base.

Purposes

- A. Promote healthy sustainable rangeland supporting a viable livestock industry upon which Kane County, our small communities and our citizens depend for their custom, culture, economic viability, and social stability.
- B. Providing for orderly multiple-use/multiple functions and development of rangelands to facilitate recreational uses, wildlife, mineral extraction, wood product supply and rights-of-way.
- C. Provide for sustainable productive watersheds for a continued supply of waters for Kane County's irrigated agriculture sector which is dependent on both stream flows and water storage.
- D. Provide for the protection of all property rights and interests related to water, livestock grazing, rights-of-way, mineral extraction, and use of State land leases.
- E. Provide for statutory requirements for coordination and consistency between federal land use plans and Kane County Land Use Plans for federal and state Lands.
- F. Assure that both state and federal statutes are followed in the administration of the public lands in Kane County.

Goal Statements:

Air Quality

Kane County will take an active role in air quality management processes, especially in how federal and state agencies employ prescribed burning to manage vegetation. A primary purpose of county involvement with air quality management is to prevent significant deterioration of the excellent air quality enjoyed by county residents and visitors.

Background: The Federal Clean Air Act and State of Utah regulations establish standards and provide guidance to management agencies regarding parameters affecting air quality. Smoke management is one element (both prevention of significant deterioration [PSD] and total suspended particulate [TSP]) of several elements in the National Ambient Air Quality Standards established in the Clean Air Act (1967) and amendments to the Act (1972, 1977 & 1990).

Strategies: Strengthen Kane County's participation in amending and implementing Utah State Implementation Plan (SIP) provisions that affect Kane County. Maximize Kane County's involvement in Color Country Interagency Fire Center planning and implementation activities.

Actions: Contact Utah State Division of Air Quality staff to request an annual briefing before the County Commission and Resource Development Committee regarding how Kane County can most effectively participate in air quality and smoke management processes.

At the annual briefing by Utah Division of Air Quality, request an evaluation by state staff regarding when and how to implement the following provision in the Utah Code, which allows for the creation of a cooperative agreement to implement air pollution prevention plans and operations in Kane County:

19-2-122. "Cooperative agreements between political subdivisions and department.

- (1) Any political subdivision of the state may enter into and perform with other political subdivisions of the state or with the department contracts and agreements as they find proper for establishing, planning, operating, and financing air pollution programs.*
- (2) The agreements may provide for an agency to:*
 - (a) Supervise and operate an air pollution program;*
 - (b) Prescribe, subject to the approval of the board, the agency's powers and duties; and*
 - (c) Fix the compensation of the agency's members and employees."*

Assure that the Kane County Fire Marshal communicates to the County Commission all state and interagency authorizations for burning events allowable under air quality standards, including projected amounts of particulates and smoke management objectives.

Request the annual briefing from state air quality staff and Color Country Interagency Fire Center include a review of Best Practices for managing smoke from prescribed burns, such as smoke avoidance, dilution and emission reduction and limiting unnecessary emissions from existing and new, point and nonpoint sources.

Kane County will participate in annual Regional Fire Management Updates where Color Country Interagency Fire Center representatives describe plans for prescribed burns and results of restoration activities on recent burns.

Establish quarterly meetings with the Grand Staircase-Escalante National Monument Manager, the BLM Kanab Field Office Manager, the Cedar City District Ranger, and National Park Service managers to coordinate management activities, including the backlog of prescribed burns and applications and requests for additional prescribed burns.

Areas of Critical Environmental Concern

The BLM is on Notice that Kane County insists on coordination in the evaluation, planning, and designation activities for Areas of Critical Environmental Concern (ACEC) established by the BLM. Kane County insists that BLM ACEC do not become surrogates for wilderness areas without Congressional authorization.

Background: The Federal Land Policy & Management Act (FLPMA), Section 201 (a) requires the BLM to prepare and maintain on a continuing basis an inventory of BLM administered lands, their resources and other values giving priority to areas of critical environmental concern. *See* 43 U.S.C. §1711. The Act further requires that the inventory must be kept current in order to reflect changes in conditions and to identify new and emerging resource and other values. The Act also mandates that neither the preparation nor maintenance of the inventory or the identification of Areas of Critical Environmental Concern (ACEC) shall in and of itself change management or use of the lands.

FLPMA also requires the BLM to coordinate the land use inventory, as well as planning and management activities for land uses with other federal departments and agencies of the state and local governments within which the land lies. *See* 43 U.S.C. §1711.

FLPMA also requires the BLM give priority in the planning process to designation and protection of ACEC. *See* 43 U.S.C. §1712. Such areas are defined as areas where special management attention is required to protect and prevent damage to important historic, cultural or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. The inventory and planning process mandated by FLPMA was re-emphasized in the Public Rangelands Improvement Act.

The National Environmental Policy Act (NEPA) requires the BLM to use a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences in planning and decision making “which may have an impact on man’s environment” (42 U.S.C. §4332). NEPA further requires the BLM decision making process give appropriate consideration to presently un-quantified environmental amenities and values, and to economic and technical considerations. The Act also requires an Environmental Impact Statement (EIS) prepared in accordance with 42 U.S.C. §4332 prior to any major federal action significantly affecting the quality of the human environment.

BLM completed the Kanab Field Office Resource Management Plan (RMP) in 2008. The RMP designated one ACEC, Cottonwood Canyon (3,800 acres), for the purpose of protecting the Fredonia, Arizona culinary water supply. Grand Staircase Escalante National Monument did not designate any ACEC during the development of its management plan. ACEC nominations can come at any time, from any source. BLM normally holds such nominations until RMP revisions are considered.

Strategy: Monitor BLM planning initiatives by making a formal request for coordinating agency status for any ACEC evaluation and analysis. Additionally, Kane County shall insist on coordination related to any inventory of public lands and their resources and other values, including, but not limited to ACEC.

Actions: Confirm that any ACEC nomination evaluated by BLM describes the important uniqueness (one of a kind), historic, cultural or scenic value, the fish and wildlife resource, or other natural systems or processes of any proposed ACEC, and describe and document the damage which will occur to such value unless special management attention is given to the area, or describe and document the natural hazards of the area which will endanger life or safety unless special management attention is given.

Assure that BLM ACEC analysis describes and documents special management attention which is necessary to protect a proposed ACEC from imminent damage to the statutory unique (one of a kind), relevance and importance values, or to protect life and safety from natural hazards, and quantifies the manner in which such special management attention is expected to provide the needed protection.

The following standards will be the basis for agency evaluation of any draft ACEC management plan:

The Draft Plan employs a systematic interdisciplinary approach in order to achieve integrated consideration of physical, biological, economic, and other scientific data.

The Draft Plan uses and observes the principles of multiple-use and sustained-yield set forth in Federal statutory law.

The Draft Plan considers present and potential uses of the land and the impacts of special management on private in-holdings, adjacent private lands and state-leased lands.

The Draft Plan considers the relative scarcity of the values involved and the availability of alternative means and sites for realization of those values.

The Draft Plan weighs long-term benefits to the public against short-term benefits of the existing or proposed action regarding ACEC status.

The Kane County Resource Development Committee will meet bi-monthly, or as needed otherwise, with federal land management agencies, state and local government planning agencies, affected land owners, and interested public users to review data regarding existing and proposed ACECs.

Cultural Resources

Kane County will invite federal and state land management agencies to consult and coordinate with the county when considering ground disturbance activities to ensure protection of cultural resources. The county will request that federal and state agencies establish and maintain agreements with Kane County regarding the management of any historic, archeological, paleontological, or other cultural resource within the boundaries of the county.

Background: FLPMA directs that BLM administered lands be managed so as to protect archeological values. The Antiquities Act of 1906 and the Archeological Resources Protection Act of 1979 require protection of paleontological resources and require permits for excavation or appropriation of such resources.

NEPA directs preservation of important natural aspects of national heritage. The National Historic Preservation Act of 1966 describes federal agencies responsibility to preserve prehistoric and historic cultural resources.

Strategy: Kane County will establish a formal consultation relationship with federal and state land management agencies that gives Kane County similar standing to Native American tribes as agencies develop and implement cultural resource protection strategies.

Actions: Kane County Commissioners will request formal coordination agreements with the National Park Service, Bureau of Land Management and the U.S. Forest Service regarding

cultural resource management activities patterned after similar agreements already in place with Native American tribes.

Kane County will consult with federal agencies regarding the protection of those portions of the Spanish Trail and associated cultural resource sites on federal lands within Kane County.

Kane County will coordinate with interested groups and agencies to nominate appropriate site/areas to the national register of historic places in accordance with the policies and procedures outlined in NEPA.

Consultation agreements between Kane County and federal land management agencies will include provisions that require agencies to document and make available to the county all legally accessible data that details conditions found at specific cultural and paleontological sites.

The Kane County Resource Development Committee will meet bi-monthly, or as needed otherwise, with federal land management agencies, state and local government planning agencies, affected land owners, and interested public users to review data regarding cultural resource sites.

Federal Resource Management Planning-Coop Agency

Kane County will insist that the county become a cooperating agency in all federal land management planning processes that affect lands within the county. Kane County insists that federal agencies coordinate with Kane County for consistency with Kane County's plans, policies, and land use ordinances. The county will also expect formal consultation status in all federal land management planning activities.

Background: Counties may use duly adopted plans, programs or policies to directly influence federal natural resource and land planning efforts by informing the federal agencies of the plans and their provisions. As part of these plans, counties may want to make known their interpretation of the criteria the federal planning agencies must consider as land and resource management plans are developed. This could, for example, be used to define, among other things, the desired future conditions for the county's economy, lifestyle, or recreational needs of the citizens, and the necessary use of the federal natural resources to achieve these desired future conditions.

Strategy: Kane County will request formal status as a consulting entity for all federal land management planning processes affecting lands inside the boundaries of the county, as well as cooperating agency status. Kane County insists that federal agencies coordinate with Kane County for consistency with Kane County's plans, policies, and land use ordinances.

Actions: The following land management schemes and actions have been reviewed by Kane County Commissioners, Land Use Authority and County Resource Development Committee and found to be inconsistent with the county's land use plans and policies:

Designation of “*Integral Vistas*” that by definition expand federal land management controls across state and private lands by holding states responsible to incorporate such controls as part of air quality implementation plans.

Establishment of Class I “*Attainment Areas*” that expand Class I air quality standards outside of National Park Units.

Developing or proposing “*Buffer Zones*” that attempt to impose federal land management prescriptions on adjacent state or private lands.

Designating “*Critical Habitat*” without involvement and concurrence of county officials.

Employing “*Visual Resource Management*” provisions intended to constrain uses of adjacent state or private lands.

Any other form of federal land management that intentionally or unintentionally affects the ability of state or private land owners to pursue otherwise lawful activities under state and local land use authorities.

Key scenic areas where tourist and local resident access is essential are identified and included on the General Plan Map.

All federal land management agencies in Kane County should include a full assessment of the social and economic impacts of management actions as part of the NEPA analysis.

In coordination with federal agencies and state and local government planning agencies, and in cooperation with interested members of the public, Visual Resource Management classifications shall be re-evaluated every 10 years.

Kane County will coordinate in land management planning processes to assure that approved ATV/OHV roads and trails systems reflect demands of users, while recognizing that cross-country travel, except under special circumstances will not be an acceptable land use practice.

Grazing Management

Kane County insists that state and federal land management agencies coordinate for consistency with county plans regarding landscape, vegetation maintenance, and improvements which support restoration of suspended animal unit months (AUM's), allocation of continuously available temporary non-renewable use as active preference, and will support continued use and/or increased use of acreage designated.

Background: The Taylor Grazing Act mandates stabilization of the livestock industry by providing for the orderly use, improvement, and development of the range in a manner which adequately safeguards vested grazing and water rights, and in a manner that will not impair the value of the grazing unit of the permittee when such unit is pledged as debt security by the permittee.

The Public Rangeland Improvement Act (PRIA) provides that BLM administered lands be managed in accordance with the Taylor Grazing Act. PRIA further provides that the range should be made "*as productive as feasible*" in accordance with the Congressional objective of preventing "*economic disruption and harm to the western livestock industry*". PRIA mandates improvement of the rangelands in order to expand forage resources and increase the resulting benefits to livestock and wildlife production.

FLPMA directs that BLM administered lands be managed in a manner which "*recognizes the Nation's need for domestic sources of minerals, food, timber, and fiber from the public lands*". NEPA requires consideration of all environmental actions on the culture, heritage and custom of local government (16 U.S.C. sec. 4331 (a) (4)). Current active preference and continuously available supplemental use is considered the established allowable use for livestock grazing.

Strategy: Kane County will actively participate in federal and state processes governing grazing on public lands by becoming a coordinating agency in grazing management planning processes and partnering with grazing permit holders in responding to any alterations in grazing systems, numbers, or actions.

Actions: Formally support rangeland improvement programs by submitting comments regarding proposed activities, including but not limited to: water developments, rangeland restoration, juniper/shrub control, and weed control to achieve forage and livestock grazing as well as other multiple-use resource goals. Kane County insists that federal agencies coordinate with Kane County's plans, policies, and land use ordinances in relation to any grazing activities.

Work with the state of Utah, local conservation districts, the Kane County Water Conservancy District, and private land owners to identify and develop off-stream water sources where such opportunities exist, in all allotment-pastures with sensitive riparian areas and in all allotments where improved livestock distribution will result from such development.

Support private land owner and conservation districts to identify and implement all possible livestock distribution, forage production enhancement, and weed control programs before accepting changes in livestock use levels.

Do not support the initiation of reductions in stocking levels until monitoring data demonstrates that grazing management supported by range improvements and specialized grazing systems are not supporting basic soils, vegetation and watershed goals.

Insist that grazing management actions and strategies fully consider impact on property rights of in-holders, adjacent private land owners and state land-lessees; as well as the potential impacts of such actions on grazing animal production.

Support private landowners who can document monitoring history, actual use or authorization of *temporary non-renewable* use demonstrates that supplemental use is continuously available, and can or should be used to improve or protect rangelands (e.g. reduction of fuel loads to prevent recurring wildfire) to initiate a process to allocate such use to permittees as active grazing preference.

Nonrenewable grazing permits or leases may be issued on an annual basis to qualified applicants when forage is temporarily available, provided this use is consistent with multiple-use objectives and does not interfere with existing livestock operations on the public lands. The authorized officer shall consult, cooperate and coordinate with affected permittees or lessees, the State having lands or responsible for managing resources within the area, and the interested public prior to the issuance of nonrenewable grazing permits and leases.

Encourage the authorization of supplemental forage during years when climatic conditions result in such availability.

Encourage livestock operators to document the amount of livestock use through review of actual use, authorized active use, suspended use and temporary nonrenewable use and provide the information to the county Resource Development Committee.

Encourage livestock operators to document all rangeland and livestock management improvement programs as to acres affected by vegetation manipulation, water development, specialized grazing systems and weed control and provide the information to the county Resource Development Committee.

Encourage livestock operators to document grazing use in each allotment through use pattern mapping and provide the information to the county Resource Development Committee.

Encourage livestock operators to document the direction of rangeland trend and serial class acreage changes that support changes in the amount of use being authorized or denied and provide the information to the county Resource Development Committee.

Encourage livestock operators to document all decisions or agreements resulting in changes in active preference and approvals or denial of applications for supplemental use, and provide the information to the county Resource Development Committee.

Request information regarding monitoring data, trend studies and serial class rangeland studies from federal land management agencies in order to establish the amount of authorized use that can be sustained and to determine the degree to which, data supported requests for increases in active preference or applications for supplemental use are approved and authorized.

The Kane County Resource Development Committee will use the information provided to determine the degree to which vegetation manipulation projects, range improvement practices, specialized grazing systems, and weed control projects are being implemented.

Land Acquisition

Utilize, to the greatest extent possible agricultural use, mining entry, land exchange, and land sale for disposal of all public lands, which by virtue of their size or location render them difficult and expensive to manage and do not serve a significant public need or where disposal will serve important public objectives. Authorize as needed the use of those lands

not currently authorized, for rights-of-way, leases and permits. There will be "No Net Increase of Acreage" of federal lands in Kane County.

Background: FLPMA provides for effective use of BLM administered lands by providing continuity of uses for roads, power, water, and other utilities. FLPMA mandates multiple-use of BLM administered lands, provides for continuing inventory and classification reviews of the BLM administered land, authorizes the director to acquire lands when necessary to provide more efficient management through consolidation, and authorizes disposal of certain BLM administered lands.

Lands currently under the jurisdiction of other agencies or lands currently withdrawn need a management plan to assure multiple-use development when that existing withdrawal is revoked. The BLM is required to comply with federal, state and local government laws relating to hazardous materials.

Strategy: Kane County will identify parcels of public lands needed for community development purposes, and partner with other agencies and appropriate organizations to facilitate necessary authorizations for use of public lands to accommodate legitimate rights of way, leases or other permits.

Actions: Kane County will identify parcels of public lands needed for community development purposes, including the development of an inventory of public lands which should be disposed of in the public good and made available for further application for agricultural or locatable and leasable mineral purposes.

Kane County will continue to partner with appropriate public entities to facilitate the use of federal lands for recreation and public purposes pursuant to the Recreation and Public Purposes Act of 1926, as amended, to include access roads and parking areas in locations receiving tourist visitation.

Any acquisition of or easements across private lands by a federal land management agency will be reviewed by the Kane County Commission. The concerns of the commission will be addressed in the NEPA documentation prepared for such acquisition.

Identify and give priority consideration to requests for exchanges or purchases from private land owners with fenced federal range, isolated tracts, or irregular boundary lines.

Seek legal administrative access only through purchase or exchange where significant administrative need exists, construct new roads around private lands where easement acquisition is not feasible, and consider significant public access needs in all land tenure adjustment transactions.

Insist that federal land management actions for lands that have been returned to federal management through revocation or withdrawals will occur in accordance with existing land use plans for adjacent land.

Document access needs, procedures and methods utilized to achieve such access.

Determine annually the degree of progress in achieving disposal of lands classified for priority disposal.

Evaluate the degree to which access needs are being met.

Pursue increased public access opportunities in both motorized and non-motorized settings through the acquisition of rights-of-way or easements, both public and private.

Minerals Development

Facilitate environmentally responsible exploration and development of mineral resources in Kane County.

Background: The Mineral Leasing Act of 1920, as amended, and the Mining and Mineral Policy Act of 1970 declare that it is the continuing policy of the federal government to foster and encourage private enterprise in the development of domestic mineral resources. The 1872 Mining Law along with the Mining and Mineral Policy Act of 1970 declare that it is the continuing policy of the United States to foster and encourage private enterprise in the development of domestic mineral resources.

FLPMA reiterates that the Mining and Minerals Policy Act of 1970 is to be implemented, and directs that BLM administered lands are to be managed in a manner which recognizes the nation's need for domestic sources of minerals and other resources. The National Materials and Minerals Policy, Research and Development Act of 1980 restates the need to implement the 1970 Act and requires the Secretary of the Interior to improve the quality of minerals data in land-use decision making.

Strategy: In coordination with federal agencies, state and local government planning agencies and with interested members of the public, evaluate, classify and inventory the potential for coal, locatable or leasable mineral, oil, gas, geothermal, and material mineral exploration or development in Kane County to insure that lands shall remain open and available.

Actions: Develop an evaluation program which relies upon and uses all available data retrieval and interpretation methods, including, but not limited to: reviewing existing data, geochemical and geophysical testing, geological mapping and sampling, and, where appropriate, drill-testing.

Provide for mineral material needs through negotiated sales, free use permits and community pits.

Determine the degree to which mineral exploration and development are occurring compared to needs and potential for the county.

Determine whether the time required to obtain necessary permits and approvals is excessive.

Multiple-Use/Sustained-Yield

Continue to insist that federal land management plans which regulate public lands in Kane County promote the multiple-use/sustained-yield concept of public lands use, including multiple recreation uses, high quality recreational opportunities and experiences at developed and undeveloped recreation sites, allowing historic uses and access, and maintaining existing amenities, including providing new recreation sites for the public's enjoyment. Recognize that multiple recreation uses are mandated by the multiple-use concepts and that adequate outdoor recreation resources must be provided on BLM administered lands and waterways.

Background: FLPMA declares it to be the policy of the United States that BLM administered lands be managed on the basis of multiple-use in a manner which provides for outdoor recreation and human occupancy and use, while at the same time protecting scenic, ecological, environmental, water, and archaeological values. The Act also mandates outdoor recreation to be considered one of the principle uses in the multiple-use concept for BLM administered lands.

In 1963, Congress enacted the Outdoor Recreation Coordination Act, declaring it *"desirable that all American people of present and future generations be assured adequate outdoor recreation resources"*. See 16 U.S.C. § 460L. The Secretary of Interior was authorized to prepare and maintain *"a continuing inventory and evaluation of outdoor recreation needs and resources"*. 16 U.S.C. § 460L (1). This Act also requires consideration of the management plans of federal agencies, states, and the political subdivisions of states, and required the BLM to cooperate with states, political subdivisions of states and private interests with respect to outdoor recreation. 16 U.S.C. § 460L(l) (c)(d).

The Intermodal Surface Transportation Efficiency Act, 16 U.S.C. § 1302, National Recreational Trails Fund, 26 U.S.C. § 9511, and National Trails System Act, 16 U.S.C. § 1241, provide for *"the preservation, development and funding of roads and trails for recreation use..."* These statutes mandate that trails for multiple recreation uses be made available for a diversity of motorized and non-motorized uses. Multiple recreation uses must also be provided for the elderly, physically challenged and very young in order to provide diversity of recreation opportunities. See e.g., 42 U.S.C. § 12182.

All areas historically accessed by off-highway recreational vehicles, mechanized vehicles, horses and boats should continue to be available for their historical uses. These historically accessed areas include roads, trails, sand washes, and waterways identified to the Kane County Clerk as Revised Statute 2477 rights-of-way.

Strategy: In compliance with applicable local, state and federal laws, identify specific areas for additional trailhead facilities for both motorized and non-motorized access, development and/or maintenance of roads, trails, and waterways for both motorized and non-motorized access, restoration of those areas formerly available for historical recreational uses, e.g. motorized and equestrian access for recreational and competitive events, hunting and boating.

Actions: Provide for continued multiple recreation uses in special and extensive recreation management areas, including those areas where state, federal and/or private funds and materials were or are considered to be used to provide for recreational facilities.

Provide for adequate outdoor recreation resources by revising the designated areas to decrease or eliminate limitations and restrictions where the review and evaluation shows that the limitations and restrictions are no longer appropriate and necessary.

Assist appropriate entities to establish designated equestrian, foot, and off-highway vehicle trail systems and waterways for compatible recreation, commercial, and other multiple-uses so that such uses can continue unabated.

Invite federal and state land managers to provide an annual update on the maintenance of existing facilities at developed recreational sites and proposed upgrades, reconstruction and/or added recreation facilities, when needs are indicated by monitoring data, at currently undeveloped sites. The report will describe methods of minimizing or mitigating documented use conflicts or damage and define the manner in which each method is expected to accomplish minimization or mitigation.

The Kane County Resource Development Committee will review and analyze data relating to the demand for recreation use, the impact of the various recreation uses on land values, and any actual conflict or damage caused by each of the multiple recreation uses.

In coordination with federal, state and local planning agencies, the Kane County Resource Development Committee will review data to determine whether temporary climatic conditions, wildlife activities, or range conditions which may require temporary or seasonal restrictions or limitations on historic and present recreation uses, and review data to determine the earliest point at which temporary restrictions or limitations can be removed.

Invite federal and state land managers to review management actions taken specifically to meet requirements of the ADA and records of use and requests for use from ADA eligible individuals.

Document all user conflicts reported to Kane County and or federal land management agencies.

Meet annually with interested hunters, fishermen and other recreation users and review the data regarding recreation demands, outdoor recreation resources, and multiple recreation uses and their impact.

Coordinate with federal, state and local government planning agencies to annually review and analyze recreational inventory, classification and designation information to validate the relevance and importance criteria, the impact on land values and on recreation uses, historic and present.

Analyze data on recreational uses in areas with special-use designations or which are under study for such designation to identify any adverse impacts.

Special Designations/Wilderness Management

Seek immediate congressional designation action on all Wilderness Study Area (WSA) recommendations in Kane County to release these areas for multiple-use management and in the interim prevent, minimize or mitigate impairment or degradation of such areas to the extent that congressional actions are not pre-empted.

Background: FLPMA directs the Secretary of the Interior to review BLM administered lands and recommend those found to meet wilderness characteristics. Between submission of the Secretary's recommendations and final congressional action, the Act provides that the lands be managed in such manner so as not to impair their wilderness characteristics, "*subject, however, to the continuation of existing mining and grazing uses and mineral leasing in the manner and degree in which the same was being conducted on October 21, 1976*". The Act directs prevention of "*unnecessary or undue degradation of the lands and their resources*" and implementation of environmental protection. Enabling legislation will identify specific management direction for each wilderness area or specify that these lands be placed under multiple-use management.

FLPMA declares as a policy of the United States that BLM administered lands will be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource and archaeological values, that will provide food and habitat for fish and wildlife and domestic animals, that will provide for outdoor recreation and human occupancy and use, and, where appropriate, will preserve and protect certain BLM administered lands in their natural condition.

Strategy: Kane County will continue to insist that BLM WSAs and Forest Service Inventoried Road-less Areas (IRAs) receive congressional designation as wilderness areas, or be released for multiple-use management.

Actions: Kane County will develop a comprehensive recommendation to Congress seeking immediate release of all WSA's and IRAs to multiple-use management.

Upon congressional release, Kane County will formally request that BLM and Forest Service management plans and policies for the affected areas be amended to be consistent with non-wilderness full multiple-use concepts mandated by FLPMA and Public Rangelands Improvement Act. The county will document the implementation of multiple-use management on lands released through congressional action.

Track the development of congressional recommendations and congressional action on wilderness areas, and Wild and Scenic River recommendations.

Vegetation Management

Maintain or improve conifer tree health, vegetation diversity, wildlife, and watershed values through active management of conifer forests in Kane County and prevent encroachment of pinyon-juniper into these communities.

Background: The Public Rangelands Improvement Act directs that the condition of the federally administered rangelands be improved so they become as productive as feasible for all rangeland values. FLPMA mandates that BLM administered lands be managed in a manner that will protect the quality of ecological and other resource values and provide food and habitat for fish, wildlife and domestic animals, and recognizes the nation's need for domestic sources of minerals, food, timber, and fiber from BLM administered lands.

Strategy: Kane County will actively monitor vegetation management planning and implementation.

Actions: Invite National Park Service, Forest Service, and BLM land managers to present an annual report to the Kane County Resource Development Committee, Resource Development Planner or Land Use Authority detailing proposed vegetation management activities for the upcoming 12 months, as well as the status of vegetation management activities undertaken in the past 12 months.

The annual report will also include an evaluation of monitoring documentation to determine the degree to which coniferous forests are continuing to be affected by insect damage and displaced by pinyon/juniper.

Water Management

Kane County will cooperate with the State of Utah to achieve the provisions of the State of Utah water quality plan, while complying with Utah constitutional and statutory law as to vested water rights and control of in-stream flow. The county will support efforts to maintain or improve riparian areas and aquatic habitat that represents a range of variability for functioning condition.

Background: Article XVII of Utah Constitution recognized and confirmed the existence of rights to water use in Utah. The nature of water rights as rights of realty, the process by which such rights are acquired, and protection of such vested rights are outlined in Utah Code, Title 73. Utah Code guarantees the right to water livestock from in-stream flow and addresses water quality issues through designation of beneficial uses, specific water quality standards to meet beneficial uses, and the processes to follow in achieving the standards where they are deficient. See Utah Code, Title 73, Chapter 3, and Title 19, Chapter 5.

Federal land management agencies must comply with Utah Water Quality Act including the processes set forth for achieving water quality standards. Utah Code §§ 19-5-105 and -105.5 outline all rules for regulating water quality must be consistent with the federal Clean Water Act.

Strategy: Kane County will be an active participant in state and federal water quality planning and implementation actions that affect waters within the county.

Actions: Invite federal and state land management agencies to present an annual report on Best Management Practices (BMP's) used to protect water quality across Kane County.

Encourage federal land management agencies to standardize forms and procedures for all monitoring data related to riparian and aquatic, habitat, condition and trend.

The Kane County Resource Development Committee will participate in the development of management plans for multiple-uses in high erosion hazard watersheds, or watersheds where accelerated erosion is occurring, which assures that planning documents and/or other agreements which affect multiple-uses reflect Kane County priorities.

Kane County will invite the Utah Department of Wildlife Resources to present an annual report regarding in-stream flow impact on fish and wildlife habitat, aquatic life, recreation, aesthetic beauty and water quality in light of Utah Code which prohibits impairment, diminution, control or divestiture of *"existing or vested water rights"*.

Kane County will invite the Kane County Water Conservancy District to present an annual report regarding the status of development and maintenance of water conveyance systems.

Kane County will invite federal land management representatives to annually report progress in the development of Allotment Management Plans including site specific BMPs that impact water development.

Wildlife Management

Maintain, improve or mitigate wildlife habitat in order to sustain viable and harvestable populations of big game and upland game species as well as wetland/riparian habitat for waterfowl, fur bearers and a diversity of other game and non-game species.

Background: FLPMA provides that it is the policy of the United States that BLM administered lands be managed in a manner that will protect the quality of multiple resources, provide food and habitat for fish, wildlife and domestic animals, and provide for outdoor recreation and human occupancy and use. The Public Rangeland Improvement Act directs improvement of rangeland conditions and provides for rangeland improvements which include habitat for wildlife. The authority for management of wildlife rests solely with the State of Utah. See U.S. Constitution, Article IV, Section 3, Clause 1, and 10th Amendment; see also, Utah Enabling Act, Section 1.

Strategy: Kane County will be an active partner in the development of wildlife management plans and activities for lands within the county.

Actions: Kane County will consult with the Utah Division of Wildlife Resources, all affected land owners, lessees and permittees in the development of specific wildlife population targets, harvest guidelines, depredation mitigation and guidelines for future site specific management plans affecting upland, water fowl and big game habitat. Such plans will include provisions to document incidents of wildlife depredation and the extent of game animal harvest in designated management areas of both land and wildlife management agencies. The county will encourage accelerated planning, approval and completion of additional water developments, rangeland

treatment projects and prescribed burns with objectives for enhancement of big game and other wildlife habitat.

Kane County will insist that land management agencies provide all necessary maintenance of exclusion fences not specifically placed for improved management of livestock.

The Kane County Resource Development Committee will invite private land owners to regularly report instances of wildlife poaching and related concerns regarding wildlife habitat on private land. The county will formally request participation in the development and establishment of population targets and management guidelines for upland game, water fowl, and big game species.

Kane County will request annual reports from land management agencies regarding monitoring activities undertaken on range improvement projects, rights-of-ways, woodcuts, mining activities, mineral leases and material sales contracts, and multiple recreation uses, to document habitat improvement or disturbance.

Kane County will continue to oppose any listing of a threatened or endangered species which does not include an analysis of the impacts to the county's economic base.

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Section Seven: Legal Authority

Kane County asserts the following principles and legal authority as an integral component of its land use and resource management policy:

County Resource Development Committee

The State Legislature has given county commissions the authority to appoint a Resource Development Committee pursuant to Utah Code Ann. § 17-53-312. The Committee is charged with promoting the development of the county's mineral, water, manpower, industrial, historical, cultural and other resources, and makes recommendations to the County Commission. This Plan lays out a series of resource development goals, objectives, and policies which will guide the efforts of the Resource Development Committee in coordination with the county Land Use Authority. Both the Resource Development Committee and the Land Use Authority advise the County Commission regarding planning and development issues.

Kane County Commissioners will work hand in hand with Resource Development and the Land Use Authority to be an active coordinating partner with other government entities, in order to foster a sustainable, broad-based economy which allows traditional economic uses to remain vibrant, while fostering new economic activities with the potential to expand economic opportunity and protect important scenic, cultural and social qualities.

Federal land management planning processes shall include Kane County as an active, coordinating, on-going partner, consistent with federal mandates involving coordination. Federal land management plans shall be consistent with county goals and policies, such as: the Kane County Land Use Ordinance; the Kane County General Plan; the Kane County Resource Management Plan; and any other plans, policies, resolutions, or ordinances relevant to land and resource management, that shall be utilized in coordinating for consistency in the coordination process, where not unreasonably constrained by federal rules or law.

Utah State Planning Coordination

The State of Utah has enacted a statewide Resource Management Plan for federal lands found in Title 63J, Chapter 8 of the Utah Code, and reproduced in Appendix C. This section was developed for the specific purpose of setting forth policies the federal natural resource agencies must coordinate with in the development and management of public lands within the State of Utah. The State of Utah Resource Management Plan for Federal Lands is hereby incorporated into this Kane County Resource Management Plan, as amended, including, but not limited to, the following provisions requiring the BLM and Forest Service to create and/or modify their planning documents to be consistent state and local land use plans, to the maximum extent consistent with federal law and FLPMA's purposes, as follows:

- A. Preserve traditional multiple-use, sustained-yield management processes.
- B. Do not employ management prescriptions that parallel, duplicate, or resemble wilderness management without congressional designation of wilderness areas.

- C. Coordinate inventories for wilderness characteristics with state and local governments.
- D. Achieve and maintain highest reasonably sustainable levels of energy, hard rock, and nuclear resources, with economically recoverable amounts.
- E. Achieve and maintain highest reasonably sustainable levels of livestock grazing.
- F. Achieve and maintain highest reasonably sustainable levels of watersheds.
- G. Preserve traditional access for recreational opportunities.
- H. Recognize and incorporate county transportation plans for motorized access, including recognition of R.S. 2477 rights-of-way, the county's right to maintain, repair, and make reasonable improvements to such roads, and the additional roads and trails that may be needed for reasonable access for a broad range of resources and opportunities.
- I. Protect and preserve cultural resources in cooperation with the State Historic Preservation Office.
- J. Preserve property rights of private landowners.
- K. Recognize and incorporate State School and Institutional Trust Lands Administration fiduciary agreement provisions when planning for uses near trust lands.
- L. Oppose the designation of Areas of Critical Environmental Concern (ACECs) except in well-documented special cases.
- M. Coordinate Visual Resource Management provisions with state and local governments. Class I and II VRM designations are generally not compatible with state and local plans. Objectives for Visual Resource Classes:
 - i. Class I Objective. The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
 - ii. Class II Objective. The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
 - iii. Class III Objective. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
 - iv. Class IV Objectives. The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.
- N. Include a comprehensive analysis of the social and economic impact in all decision documents.

According to Utah Code 63J-4.401(6), *“The state planning coordinator shall recognize and promote a comprehensive set of principles when preparing any policies, plans, programs, processes, or desired outcomes relating to federal lands and natural resources on federal lands.”* This set of principles is found in Appendix B. Major provisions include:

- A. Incorporate the plans, policies, programs, processes and desired outcomes of counties into state responses to federal resource management planning processes.
- B. Identify inconsistencies and conflicts between state and local resource management plans, and seek resolution of the conflicts as early as possible.
- C. Present unresolved conflicts to the Governor for a decision on how the state will proceed.
- D. Develop, research, and use factual information, legal analysis and documents to aid in planning coordination activities.
- E. Establish and coordinate agreements between the state and federal land management agencies.
- F. Work in conjunction with political subdivisions to establish agreements for coordinated participation in federal land management planning processes.

Utah also employs a Public Lands Policy Coordinating Office, charged to assist in fulfilling the state planning coordinator's duties. Relevant direction in the statute includes:

- A. *“Differences of opinion between the state's plans and policies on use of the subject lands and any proposed decision concerning the subject lands pursuant to federal planning or other federal decision making processes should be mutually resolved between the authorized federal official, including federal officials from other federal agencies advising the authorized federal official in any capacity, and the governor of Utah.”* Utah Code § 63J-8-103(2).
- B. *“The subject lands managed by the BLM are to be managed to the basic standard of the prevention of unnecessary or undue degradation of the lands, as required by Federal Land Policy and Management Act (FLPMA). A more restrictive management standard should not apply except through duly adopted statutory or regulatory processes wherein each specific area is evaluated pursuant to the provisions of the BLM's planning process and those of the National Environmental Policy Act.”* Utah Code § 63J-8-103 (3).

National Environmental Policy Act

Preparation of land and natural resource management plans by BLM and the Forest Service is a major federal action requiring the preparation of an Environmental Impact Statement (EIS) under the provisions of the National Environmental Policy Act (NEPA). See 42 U.S.C. § 4231 et seq.

NEPA requires federal agencies to fully disclose the nature and condition of the environment within the area of interest. Under NEPA, agencies must formulate various alternatives for proposed management, and to compare those alternatives to a “no-action” alternative of continuing the current management scheme. NEPA specifically requires the agency preparing the EIS to seek decisions that, “attain the widest range of beneficial uses of the environment without degradation,” “preserve important historic, cultural and natural aspects of our national heritage,”

“achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities.” 42 U.S.C. 4331 (b).

The development of an EIS by a federal agency as part of the process to decide upon a land and resource management plan or proposed project has a number of well established steps. Each of these steps provides an opportunity for comment by local government based upon their own plans and policies. These steps, in general, are:

- The “scoping” of the issues;
- Preparation of an analysis of the management situation;
- Preparation of the various alternatives with the associated necessary management scenario and conditions;
- Issuance of a “draft EIS” for public comment;
- Issuance of a “final EIS” and the “proposed record of decision” (ROD), which lays out the proposed final decision, including the terms and conditions for management of the lands and natural resources for the life of the plan or for that specific project; and
- Issuance of the proposed ROD is followed by a period for protest by interested parties, which, upon resolution of the protests, is followed by adoption of the ROD and implementation of the plan.

The Governor of the State of Utah is given an opportunity for a consistency review of BLM plans immediately following the issuance of the proposed Record of Decision. BLM is required to “identify any known inconsistencies with State or local plans, policies, or programs,” and to “assist in resolving, to the extent practical, inconsistencies between federal and non-federal government plans.” The Governor is given sixty (60) days to “identify inconsistencies and provide recommendations in writing” in response. The BLM must accept the recommendations of the Governor if the BLM State Director determines the recommendations “provide for a reasonable balance between the national interest and the State’s interest.” 43 U.S.C. § 1712(b) (9); 43 C.F.R. § 1610.3-2(e); see also 40 C.F.R. § 1506.2(d).

The Federal Council on Environmental Quality (CEQ) has issued regulations related to the implementation of NEPA. One of these regulations provides for the elimination of duplication with state and local processes. The regulation requires federal agencies to cooperate with state and local agencies to the fullest extent possible to reduce duplication between NEPA and state and local requirements. This cooperation specifically includes:

- Joint planning processes;
- Joint environmental research and studies;
- Joint public hearings; and
- Joint environmental assessments. 40 C.F.R. § 1506.2(b)

The Council on Environmental Quality has also supported an invitation to state and local governments to become cooperating agencies in the preparation of federal land and natural resource management plans and associated EIS’s. The invitation to become a cooperating agency is specifically based upon the state or local government’s position, having jurisdiction by law in the planning area, or professionals holding special expertise in an issue that will be addressed in

the analysis or decision (June 24, 2005, memo from James Connaughton, Chairman of the CEQ). This status does not relieve the federal agency of the responsibility as the decision-maker, and does not guarantee a decision that the cooperating agency may necessarily favor. Cooperating agency status does allow the cooperators to participate in the scoping process, the inventory of data and analysis, the preparation of alternatives, the impact analysis, and in the preparation of the draft and final EIS's.

Kane County understands that as a cooperating agency, the input of the county may or may not be incorporated into the federal plans as provided by cooperating agency. However, federal law distinguishes between input from a cooperating agency and the requirement of coordination.

NEPA requires federal agencies to coordinate the analysis with local governments. Congress declared the National Environmental Policy Act to be the creation and maintenance of conditions under which man and nature can exist in "productive" harmony and to carry out this policy, coordinate the federal plans with state and local governments.

(a) "The Congress...recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments,...to use all practicable means and measures...to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this chapter, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate federal plans, functions, programs and resources..." 42 U.S.C. § 4331.

Congress defined coordination to mean that local plans and policies are not only to be considered during the planning process, and in this case the environmental analysis, but the federal planning efforts work to be consistent with these plans. NEPA and the corresponding Council on Environmental Quality give specific direction to the federal agencies as to how this is to be achieved.

First, the agency is to "study, develop and describe appropriate alternatives to recommend courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." 42 U.S.C. § 4332(e). When there is a conflict between the federal proposal and the local plan and policies, the analysis must include an alternative that resolves this conflict.

Second, the agency is required to resolve these conflicts early in the process. "Agencies shall integrate the NEPA process with other planning at the earliest possible time to insure that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts." 40 C.F.R. § 1501.2. This requires that coordination with the county begin early in the development of the EIS in order to identify and resolve policy conflicts before they cause delays. This also infers if the agency does not perform this coordination early, and conflicts are later identified, the obligation is on the agency to delay the study until resolution can be made.

Third, the position of the county should be clearly stated and identified in the analysis, especially if it is in conflict with the proposal, so that decision makers and the public can weigh this in their analysis of the overall impact of the action. In the Environmental Consequences section of the study, there should be a section discussing the “Possible conflicts between the proposed action and the objectives of Federal, regional, State and local...land use plans, policies and controls for the area concerned.” 40 C.F.R. § 1502.16(c).

Fourth, where there is inconsistency with the local plans, the federal agency needs to provide a reasonable explanation as to how the agency will reconcile this conflict. “[S]tatements shall discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law.” 40 C.F.R. § 1506.2(d).

Resolving the specific inconsistencies between the federal proposal and local plans and policies is to be done in the coordination process, government-to-government. While the local governments must be invited to participate as a cooperating agency in the development of the EIS, the federal government is required to coordinate that same decision making process with local governments for the purpose of resolving conflicts between federal and local plans.

It is the policy of Kane County to require coordination of all federal agencies in relation to federal land management decisions, including with NEPA studies. The county may also participate as a cooperating agency as appropriate.

Federal Land and Natural Resource Planning

Two of the major federal land managers in Utah, the Bureau of Land Management (BLM), and the US Forest Service (Forest Service), are required to engage in land and natural resource planning processes, which can affect the use and development of natural resources. The BLM is required by United States Code, Section 1712, the Federal Land Policy and Management Act of 1976 (FLPMA) to “*develop, maintain, and...revise land use plans which provide by tracts or areas for the use of the [BLM] lands.*” Similarly, the Forest Service is required to “*develop, maintain, and...revise land and resource management plans for units of the National Forest System.*” 16 U.S.C. § 1604(a).

Coordination and Consistency with State, Local and Tribal Government Plans

Both the BLM and the Forest Service are required to coordinate their land and resource planning efforts with those of state, local and tribal jurisdictions. Congress recognized that the federal policies developed through the planning process can harm the county if the uses of the natural resources are diminished or restricted. To ensure neither the local economy nor the citizens would be harmed by federal policies, Congress requires federal agencies to coordinate their planning and management activities with local governments.

FLPMA, 43 U.S.C. § 1712(b)(9), sets forth what Congress defined as the minimum requirement for coordination to be carried out by federal agencies. These are:

- i. *Keep apprised of state, local and tribal land use plans;*
- ii. *Assure that consideration is given to state, local and tribal plans that are germane to plans for public lands;*

These two provisions place the duty on federal agencies to ensure that the county's plans and policies will be continually reviewed and incorporated into the federal planning and management process.

- iii. *Assist in resolving....inconsistencies between federal and non-federal government plans;*
- iv. *Provide for meaningful involvement of state and local governments, including early public notice of proposed decisions;*

Provisions three and four require the federal agencies to resolve any conflicts between the local plans and policies, and the federal objectives prior to the action being carried out. Congress directed the agencies to meaningfully involve the local governments early in the process, prior to public involvement, so that these conflicts could be resolved before the release of proposed decisions. Further, state and local officials are “*authorized to furnish advice to the [BLM] with respect to the development and revision of land use plans....guidelines....rules and regulations for the public lands.*” 43 U.S.C. § 1712(b)(9). Congress clearly intended for the policies and plans of local governments to be an essential part of the federal planning process.

- v. *Make federal plans consistent with local plans to the maximum extent consistent with federal law and purposes of the Act.*

The fifth provision for coordination defined in FLPMA places the obligation on the federal agency to modify its plans and policies to be consistent with local plans. As long as the local plans are consistent with federal law, or do not conflict with federal statutes, and the purposes of the federal planning acts, this duty is required of the federal agency, and the burden falls to them to either incorporate the local policies or demonstrate how the local plans conflict with federal law.

The duly adopted regulations of the BLM further define this consistency requirement by requiring that the BLM's resource management plans be “*consistent with officially approved or adopted resource related plans, and the policies and programs contained therein, of....State and local governments, and Indian tribes, so long as the guidance and resource management plans are also consistent with the purposes, policies, and programs of federal laws and regulations applicable to public lands.*” 43 C.F.R. § 1610.3-1.

BLM regulations also provide that “*in the absence of officially approved or adopted resource management plans of State and local governments...[Federal] resource managements plans shall, to the maximum extent practical, be consistent with officially approved and adopted resource related policies and programs of state and local governments’ to the extent the policies and programs are consistent with the policies, programs, and provisions of federal laws and regulations applicable to public lands.*” 43 C.F.R. § 1610.3-2(b).

The Forest Service is also required to coordinate with local governments. The National Forest Management Act of 1976 (NFMA) directs the agency to “*develop, maintain, and as appropriate, revise land and resource management plans...coordinated with the land and resource management planning processes of State and local governments...*” 16 U.S.C. § 1604(a). The NFMA planning regulations further direct the agency to specifically address and resolve inconsistencies with local plans.

- a) The responsible official shall coordinate land management planning with the equivalent and related planning efforts of...local governments.*
- b) For plan development or revision, the responsible official shall review the planning and land use policies of...local governments, where relevant to the plan area. The results of this review shall be displayed in the environmental impact statement (EIS) for the plan (40 CFR 1502.16(c), 1506.2). The review shall include consideration of:*
 - 1) The objectives of...local governments, as expressed in their plans and policies;*
 - 2) The compatibility and interrelated impacts of these plans and policies;*
 - 3) Opportunities for the plan to address the impacts identified or contribute to joint objectives; and*
 - 4) Opportunities to resolve or reduce conflicts, within the context of developing the plan's desired conditions or objectives. 36 C.F.R. § 219.4(b)(1).*

Forest Service rules further emphasize the need to closely involve local governments in the planning and management process and to work towards achieving consistency with local plans. Where this is not accomplished they are to provide a reasonable explanation as to why this was not achieved. The acknowledgement in the directive is clear that Congress views the role of local governments to be higher than that of the public, as they are elected by the public and trusted with their representation. The county should be coordinated with on all planning and management issues early in the process.

Notably, the statutory language requiring both the BLM and Forest Service to involve local governments, does not limit this coordination to just the planning phase of projects, but rather directs the agencies to coordinate continuously in all management and implementation phases as well.

It is the policy of Kane County to provide every opportunity to the federal agencies to coordinate continuously with their planning and management activities.

Federal Planning Criteria

Kane County affirms and adopts as its policy the following federal planning criteria: Counties may use duly adopted plans, programs or policies to directly influence federal natural resource and land planning efforts by informing the federal agencies of the plans and their provisions. As part of these plans, counties may want to make known their interpretation of the criteria the federal planning agencies must consider as land and resource management plans are developed. This could be used to define the desired future conditions for the county's economy, lifestyle, or recreational needs of the citizens, and the necessary use of the federal natural resources to achieve these desired future conditions.

The BLM is specifically directed to coordinate the federal planning criteria with Kane County early in the process when preparing management plans, revisions or amendments. *“Planning criteria will generally be based upon applicable law...and coordination with...local governments”* 43 C.F.R. § 1610.4-2(b).

It is the policy of Kane County to coordinate the development of the planning criteria with federal agencies at the beginning of the planning stages of all federal projects that impact the county’s natural resources.

Forest Service

The national forests were originally set aside to provide a continuous supply of timber and for the protection of water sources for local communities and agricultural needs. Later, through the adoption of the Multiple-Use Sustained-Yield Act of 1960, Congress determined that the forests should be *“administered for outdoor recreation, range, timber, watershed, and fish and wildlife purposes,”* which purposes were declared to be *“supplemental to, but not in derogation of the original purposes.”* 16 U.S.C. § 528.

The Forest Service is required to *“use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences,”* in its land and resource plans. The Forest Service must assure that the plans *“provide for the multiple-use and sustained-yield of the products and services obtained there in accordance with the Multiple-Use Sustained-Yield Act of 1960, and, in particular, include coordination of outdoor recreation, range, timber, watershed, fish and wildlife, and wilderness.”* The plans must *“determine forest management systems, harvesting levels [of timber] and procedures,”* based upon all of the uses mentioned above, the definitions of multiple-use and sustained-yield as laid out in the law, and the availability of lands and their suitability for resource management. 16 U.S.C. §1604(b) and (e).

The regulations of the Forest Service specifically define principles of planning natural resources. See 36 C.F.R. § 219 et seq. Land management planning is an adaptive management process that includes social, economic, and ecological evaluation; plan development, amendment, revision, and monitoring. The overall aim of planning is to produce responsible land management for the national forest system based on useful and current information and guidance. Land management and planning guides the Forest Service in fulfilling its responsibilities for stewardship to best meet the needs of the American people.

Sustaining the productive use of the national forests and grasslands is part of the overall principles of the federal laws and rules regulating lands managed by the Forest Service. Specifically, at 36 CFR 219.1(b), the rules identify the lands wide variety of uses, including human uses:

The national forests and grasslands provide a wide variety of uses, values, products, and services that are important to many people, including outdoor recreation, forage, timber, wildlife and fish,

biological diversity, productive soils, clean air and water, and minerals. They also afford intangible benefits such as beauty, inspiration, and wonder; Sustainability of these uses is the overall goal for these lands.

(ii) To assure the continuation of this array of benefits, this regulation affirms sustainability as the overall goal for stewardship of the natural resources of each national forest and grassland consistent with the laws that guide management of these lands;

The rules recognize that these productive uses of natural resources must continue to support the ecological, social and economic needs of the people, which are represented by the county. Impairment to the productivity of the land must be avoided. This includes understanding the historic uses of the land are now part of the ecological balance; removing these would dramatically change the sustainability of the land by the social and economic structure dependent upon its uses.

(iii) Sustainability, composed of interdependent ecological, social, and economic elements, embodies the principles of multiple-use and sustained-yield without impairment to the productivity of the land. Sustainability means meeting needs of the present generation without compromising the ability of future generations to meet their needs. Planning contributes to social and economic sustainability without compromising the basic composition, structure, and functioning of ecological systems. The progress toward achievement of sustainability is assessed through monitoring and evaluation.

It is the policy of Kane County that the historic productive uses of the national forests and grasslands within the political boundaries of the county continue to be incorporated into all management plans and policies as necessary components of the multiple-use and sustained-yield of these lands, and for the purpose of avoiding harm to the county and its residents.

Bureau of Land Management

FLPMA provides that the BLM must manage the land under its jurisdiction (called public lands) “in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values” and will provide for, among other things, “outdoor recreation and human occupancy and uses,” and “food and habitat for fish and wildlife and domestic animals.” However, the BLM must specifically manage the public lands “in a manner which recognizes the Nation’s need for domestic sources of minerals, food, timber, and fiber from the public lands.” 43 U.S.C. § 1701(8) and (12).

The BLM is required to “use and observe the principles of multiple-use and sustained-yield” just as the Forest Service, must “use a systematic and interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences” in the preparation of its plans. 43 U.S.C. § 1712(c)(1) and (2). The BLM must also “consider present and potential uses of the public lands” and “provide for the compliance with applicable pollution control laws, including State and Federal air, water, noise, or other pollution standards or implementation plans.” 43 U.S.C. § 1712(c)(5) and (8).

Multiple-Use and Sustained-Yield

Both the Forest Service and the BLM are required to manage the lands under their jurisdiction pursuant to the principles of multiple-use and sustained-yield. These terms have been defined within the provisions of FLPMA for the BLM and within the provisions of the Multiple-Use Sustained-Yield Act of 1960 for the Forest Service.

The definitions state that multiple uses are to be considered in the context of the best combination of land use that meet the present and future needs of the nation with respect to recreation, range, timber, minerals, watershed, fish and wildlife, and natural, scenic, and historical values. Furthermore, these resources are to be managed in a “harmonious and coordinated manner that does not lead to permanent impairment of the productivity of the land and quality of the environment.” Finally, multiple-use does not, by definition, mean the greatest economic return or the greatest unit output for the natural resources. 43 U.S.C. §1702(c); see also 16 U.S.C. § 531(a).

For the Forest Service, the “establishment and maintenance of areas of wilderness” is specifically determined to be consistent with the principle of multiple-use. 16 U.S.C. § 529. The term “sustained-yield” is defined to mean the achievement of a “high level annual or regular periodic output of the various renewable resources of the public land consistent with multiple-use.” 43 U.S.C. § 1702(h); see also 16 U.S.C. § 531(b).

Federal Advisory Committee Act

The Federal Advisory Committee Act of 1972 (FACA) was enacted to formalize and stabilize the process where federal agencies receive advice from interested parties. FACA establishes conditions under which federal agencies may establish committees of interested parties, how they must be composed and chartered, and requires meetings and activities to be open to the public. FACA does not affect the requirement under FLPMA to coordinate with state and local governments, nor does it affect the establishment of a cooperating agency relationship. FACA also does not apply to any state or local committee or other group including land and natural resource utilization issues. 5 U.S.C. Appendix 2.

Federal Standards and Guidelines for Grazing

Kane County affirms and adopts, as policy, the Standards & Guidelines for Grazing Administration (43 C.F.R. §§ 4180.2 & 4100.0-5), included, but not limited to, the following:

If a standards assessment indicates to the authorized officer that the rangeland is failing to achieve standards or that management practices do not conform to the guidelines, then the authorized officer will use monitoring data to identify the significant factors that contribute to failing to achieve the standards or to conform to the guidelines. If the authorized officer determines through standards assessment and monitoring that existing grazing management practices or levels of grazing use on public lands are significant factors in failing to achieve the standards, and conform with the guidelines that are made effective under this section, the authorized officer will, in compliance with applicable laws and with the consultation

requirements of this part, formulate, propose, and analyze appropriate action to address the failure to meet standards or to conform to the guidelines.

(ii) The authorized officer will take appropriate action as defined in this paragraph by the deadlines established in paragraphs (c)(1) and (c)(2) of this section [43 C.F.R. § 4180.2]. Appropriate action means implementing actions pursuant to subparts 4110, 4120, 4130, and 4160 of this part that will result in significant progress toward fulfillment of the standards and significant progress toward conformance with the guidelines. Practices and activities subject to standards and guidelines include the development of grazing-related portions of activity plans, establishment of terms and conditions of permits, leases, and other grazing authorizations, and range improvement activities such as vegetation manipulation, fence construction, and development of water.

The Taylor Grazing Act of 1934, 43 U.S.C. § 315, authorizes the Secretary of the Interior “to establish grazing districts, or additions thereto and/or to modify the boundaries thereof, of vacant, unappropriated and unreserved lands from any part of the public domain...which in his opinion are chiefly valuable for grazing and raising forage crops...” The Act also provides for the classification of lands for particular uses.

The Public Rangelands Improvements Act of 1978, 43 U.S.C. § 1901, provides that the public rangelands should be managed, maintained, and improved “so that they become as productive as feasible” in accordance with management objectives and the land use planning process established pursuant to 43 U.S.C. § 1712.

Presidential Proclamation 6920: Establishment of the Grand Staircase-Escalante National Monument

In 1996, President Clinton executed Presidential Proclamation 6920 (“Proclamation”), pursuant to the authority granted in Section 2 of the Antiquities Act, 16 U.S.C. § 431, establishing the Grand Staircase-Escalante National Monument (GSENM), containing 1.7 million acres of federally managed lands. The purpose of the Proclamation is to protect various objects identified in the Proclamation, described in very general terms. The Proclamation specifically recognized livestock grazing as a pre-existing use and provided that it would not be affected by the creation of the Monument:

“The establishment of this monument is subject to valid existing rights...

“Nothing in this proclamation shall be deemed to affect existing permits or leases for, or levels of, livestock grazing on Federal lands within the monument; existing grazing uses shall continue to be governed by applicable laws and regulations other than this proclamation...”

This Proclamation is unusually broad in comparison to other proclamations creating national monuments, and indicates a specific intent to protect grazing. This specific provision of the Proclamation precludes any agency authority to categorically eliminate or restrict grazing within the GSENM.

National Landscape Conservation System, National Monuments, National Conservation Areas, Similar Designations and Wilderness Study Areas

The National Landscape Conservation System (NLCS) was established through the 2009 Omnibus Public Land Management Act (Omnibus Act). The purpose of the NLCS was to “[C]onserve, protect, and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of current and future generations...” 16 U.S.C. §7202. However, the NLCS specifically subjugates its authority to any proclamation, thereby foreclosing, what would normally be, its superior statutory authority to modify anything established by proclamation, including the Proclamation establishing the GSENM. The NLCS specifically states:

“Nothing in this chapter enhances, diminishes, or modifies any law or proclamation...including...[any provision in] the Federal Land Policy and Management Act of 1976 (43 U.S.C. § 1701 et seq.).”

Thus, NLCS subjugates its effect to proclamations and other applicable laws, and the Presidential Proclamation establishing the GSENM states the intent of the Proclamation to preclude any effect on existing permits or leases for, or levels of, livestock grazing on the GSENM at the time of establishment, other than by the existing laws that regulated grazing at that time.

Therefore, Kane County asserts as its policy that provisions of the NLCS should not have an effect upon grazing on the GSENM, nor inhibit the normal activities associated therewith.

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Section Eight: Monitoring

Intent:

Progress toward the desired resource management setting will be measured by working towards, and ultimately achieving, the goals and objectives set forth in the Kane County Resource Management Plan. Regular progress reports will be made to the County Commission by the Land Use Authority, Resource Development Committee, and public land managers regarding the achievement of these objectives. Recommendations and updates shall be made to the plan on a regular basis by the Land Use Authority to the County Commission.

Partnerships

Progress regarding planning and development changes on state and public lands will be made by continued close relationships with public land managers in a coordination effort with the county.

Local Economic Impact

Economic changes which could affect the economic well-being of county residents will always be of primary importance to county officials. Much of Kane County's employment is linked to the use of public lands; any policy changes or management decisions which may impact the county's customs and culture, or affect its overall economic well-being, must be addressed as soon as the county becomes aware of these changes.

Public Involvement

The county should keep the public informed as much as possible in understanding public land policy. The county should take into account feedback from the public in evaluating public land issues and in determining the county's policy and position.

County Resource Development Committee Meetings

Actions identified in Sections Six and Seven, will require regular meetings to which appropriate agency representatives are invited to discuss pertinent topics for resource management. Members of the Resource Development Committee will organize bi-monthly meetings, or meet more or less as may be necessary, to monitor progress regarding planning and development changes on state and public lands. The Resource Development Committee will coordinate with federal, state and local government planning agencies on the date, time, and location of the meetings, as well as facilitating the topics on each agenda.

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Appendix A

State of Utah Resource Management Plan for Federal Lands

[See Utah Code, Title 63J, Chapter 8, as amended]

63J-8-101. Title.

This chapter is known as "State of Utah Resource Management Plan for Federal Lands."

Enacted by Chapter 49, 2011 General Session

63J-8-102. Definitions.

As used in this chapter:

- (1) "ACEC" means an area of critical environmental concern as defined in 43 U.S.C. Sec. 1702.
- (2) "AUM" means animal unit months, a unit of grazing forage.
- (3) "BLM" means the United States Bureau of Land Management.
- (4) "BLM recommended wilderness" means a wilderness study area recommended for wilderness designation in the final report of the president of the United States to the United States Congress in 1993.
- (5) "Federal land use designation" means one or a combination of the following congressional or federal actions included in proposed congressional land use legislation:
 - (a) designation of wilderness within the National Wilderness Preservation System;
 - (b) designation of a national conservation area;
 - (c) designation of a watercourse within the National Wild and Scenic River System;
 - (d) designation of an ACEC;
 - (e) designation of a national monument in accordance with the Antiquities Act of 1906, 16 U.S.C. Sec. 431 et seq. or by Congress;
 - (f) designation of a national park within the National Park System;
 - (g) designation of a national recreational area; or
 - (h) any other designation, classification, categorization, reservation, withdrawal, or similar action that has the purpose or effect of eliminating, restricting, or reducing energy and mineral development, motorized travel, grazing, active vegetation management, or any other traditional multiple use on public land.
- (6) "FLPMA" means the Federal Land Policy and Management Act of 1976, 43 U.S.C. Sec. 1701 et seq.
- (7) "Forest Service" means the United States Forest Service within the United States Department of Agriculture.

(8) "Green River Energy Zone" means the lands described as follows in Subsections (8)(a) and (b), as more fully illustrated in the maps prepared by the Carbon County and Emery County GIS Departments in February 2013, each entitled "2013 Green River Energy Zone":

(a) BLM and Forest Service lands in Carbon County that are situated in the following townships: Township 12S Range 6E, Township 12S Range 7E, Township 12S Range 8E, Township 12S Range 9E, Township 12S Range 10E, Township 12S Range 11E, Township 12S Range 12E, Township 12S Range 13E, Township 12S Range 14E, Township 12S Range 15E, Township 12S Range 16E, Township 12S Range 17E, Township 12S Range 18E, Township 13S Range 6E, Township 13S Range 8E, Township 13S Range 9E, Township 13S Range 10E, Township 13S Range 11E, Township 13S Range 12E, Township 13S Range 13E, Township 13S Range 14E, Township 13S Range 15E, Township 13S Range 16E, Township 13S Range 17E, Township 14S Range 6E, Township 14S Range 8E, Township 14S Range 9E, Township 14S Range 11E, Township 14S Range 12E, Township 14S Range 13E, Township 14S Range 14E, Township 14S Range 15E, Township 14S Range 16E, Township 14S Range 17E, Township 15S Range 7E, Township 15S Range 8E, Township 15S Range 9E, Township 15S Range 10E, Township 15S Range 11E, Township 15S Range 12E, Township 15S Range 13E, Township 15S Range 14E, Township 15S Range 15E, and Township 15S Range 16E; and

(b) BLM and Forest Service lands in Emery County, excluding any areas that are or may be designated as wilderness, national conservation areas, or wild or scenic rivers, that are situated in the following townships and represented in the Emery County Public Land Management Act DRAFT Map prepared by Emery County and available at emerycounty.com/publiclands/LANDS_USE_15.pdf: Township 13S Range 6E, Township 14S Range 6E, Township 14S Range 7E, Township 15S Range 6E, Township 15S Range 7E, Township 16S Range 6E, Township 16S Range 7E, Township 16S Range 8E, Township 16S Range 9E, Township 16S Range 10E, Township 16S Range 11E, Township 16S Range 12E, Township 16S Range 13E, Township 16S Range 14E, Township 16S Range 15E, Township 17S Range 6E, Township 17S Range 7E, Township 17S Range 8E, Township 17S Range 9E,

Township 17S Range 10E, Township 17S Range 11E, Township 17S Range 12E, Township 17S Range 13E, Township 17S Range 14E, Township 17S Range 15E, Township 18S Range 6E, Township 18S Range 7E, Township 18S Range 8E, Township 18S Range 9E, Township 18S Range 10E, Township 18S Range 11E, Township 18S Range 12E, Township 18S Range 13E, Township 18S Range 14E, Township 18S Range 15E, Township 19S Range 6E, Township 19S Range 7E, Township 19S Range 8E, Township 19S Range 9E, Township 19S Range 10E, Township 19S Range 11E, Township 19S Range 12E, Township 19S Range 13E, Township 19S Range 14E, Township 19S Range 15E, Township 20S Range 6E, Township 20S Range 7E, Township 20S Range 8E, Township 20S Range 9E, Township 20S Range 10E, Township 20S Range 11E, Township 20S Range 12E, Township 20S Range 13E, Township 20S Range 14E, Township 20S Range 15E, Township 20S Range 16E, Township 21S Range 6E, Township 21S Range 7E, Township 21S Range 8E, Township 21S Range 9E, Township 21S Range 14E, Township 21S Range 15E, Township 21S Range 16E, Township 22S Range 6E, Township 22S Range 7E, Township 22S Range 8E, Township 22S Range 9E, Township 22S Range 14E, Township 22S Range 15E, Township 22S Range 16E, Township 23S Range 6E, Township 23S Range 7E, Township 23S Range 8E, Township 23S Range 9E, Township 23S Range 13E, Township 23S Range 14E, Township 23S Range 15E, Township 23S Range 16E, Township 24S Range 6E, Township 24S Range 7E, Township 24S Range 8E, Township 24S Range 12E, Township 24S Range 13E, Township 24S Range 14E, Township 24S Range 15E, Township 24S Range 16E, Township 24S Range 17E, Township 25S Range 6E, Township 25S Range 7E, Township 25S Range 8E, Township 25S Range 11E, Township 25S Range 12E, Township 25S Range 13E, Township 25S Range 14E, Township 25S Range 15E, Township 25S Range 16E, Township 25S Range 17E, Township 26S Range 6E, Township 26S Range 7E, Township 26S Range 8E, Township 26S Range 9E, Township 26S Range 10E, Township 26S Range 11E, Township 26S Range 12E, Township 26S Range 13E, Township 26S Range 14E, Township 26S Range 15E, Township 26S Range 16E, and Township 26S Range 17E.

(9) "Multiple use" means proper stewardship of the subject lands pursuant to Section 103(c) of FLPMA, 43 U.S.C. Sec. 1702(c).

(10) "National conservation area" means an area designated by Congress and managed by the BLM.

(11) "National wild and scenic river" means a watercourse:

(a) identified in a BLM or Forest Service planning process; or

(b) designated as part of the National Wild and Scenic River System.

(12) "National Wild and Scenic River System" means the National Wild and Scenic River System established in 16 U.S.C. Sec. 1271 et seq.

(13) "Office" means the Public Lands Policy Coordinating Office created in Section 63J 4 602.

(14) "OHV" means off highway vehicle as defined in Section 41 22 2.

(15) "Proposed congressional land use legislation" means a draft or a working document of congressional legislation prepared by a person that includes a federal land use designation.

(16) "RARE II" means the second United States Forest Service Roadless Area Review and Evaluation report of 1984.

(17) "R.S. 2477 right of way" means a right of way established in accordance with 43 U.S.C. Sec. 932 repealed by FLPMA 1976.

(18) "Settlement Agreement" means the written agreement between the state and the Department of the Interior in 2003 (revised in 2005) that resolved the case of State of Utah v. Gale Norton, Secretary of Interior (United States District Court, D. Utah, Case No. 2:96cv0870).

(19) "SITLA" means the School and Institutional Trust Lands Administration as created in Section 53C 1 201.

(20) (a) "Subject lands" means the following non WSA BLM lands:

(i) in Beaver County:

(A) Mountain Home Range South, Jackson Wash, The Toad, North Wah Wah Mountains, Central Wah Wah Mountains, and San Francisco Mountains according to the region map entitled "Great Basin Central" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011; and

(B) White Rock Range, South Wah Wah Mountains, and Granite Peak according to the region map entitled "Great Basin South" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(ii) in Box Elder County: Little Goose Creek, Grouse Creek Mountains North, Grouse Creek Mountains South, Bald Eagle Mountain, Central Pilot Range, Pilot Peak, Crater Island West, Crater Island East, Newfoundland

Mountains, and Grassy Mountains North according to the region map entitled "Great Basin North" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(iii) in Carbon County: Desbrough Canyon and Turtle Canyon according to the region map entitled "Book Cliffs" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(iv) in Daggett County: Goslin Mountain, Home Mountain, Red Creek Badlands, O wi yu kuts, Lower Flaming Gorge, Crouse Canyon, and Diamond Breaks according to the region map entitled "Dinosaur" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(v) in Duchesne County: Desbrough Canyon according to the region map entitled "Book Cliffs" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(vi) in Emery County:

(A) San Rafael River and Sweetwater Reef, according to the region map entitled "Canyonlands Basin" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(B) Flat Tops according to the region map entitled "Glen Canyon," which is available by clicking the link entitled "Dirty Devil" at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011; and

(C) Price River, Lost Spring Wash, Eagle Canyon, Upper Muddy Creek, Molen Reef, Rock Canyon, Mussentuchit Badland, and Muddy Creek, according to the region map entitled "San Rafael Swell" linked at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(vii) in Garfield County:

(A) Pole Canyon, according to the region map entitled "Great Basin South" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(B) Dirty Devil, Fiddler Butte, Little Rockies, Cane Spring Desert, and Cane Spring Desert Adjacents, according to the region map entitled "Glen Canyon," which is available by clicking the link entitled "Dirty Devil" at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(C) Lampstand, Wide Hollow, Steep Creek, Brinkerhof Flats, Little Valley Canyon, Death Hollow, Studhorse Peaks, Box Canyon, Heaps Canyon, North Escalante Canyon, Colt Mesa, East of Bryce, Slopes of Canaan Peak, Horse Spring Canyon, Muley Twist Flank, Pioneer Mesa, Slopes of Bryce, Blue Hills, Mud Springs Canyon, Carcass Canyon, Willis Creek North, Kodachrome Basin, and Kodachrome Headlands, according to the region map entitled "Grand Staircase Escalante" linked at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011; and

(D) Notom Bench, Mount Ellen, Bull Mountain, Dogwater Creek, Ragged Mountain, Mount Pennell, Mount Hillers, Bullfrog Creek, and Long Canyon, according to the region map entitled "Henry Mountains" linked at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(viii) in Iron County: Needle Mountains, Steamboat Mountain, Broken Ridge, Paradise Mountains, Crook Canyon, Hamlin, North Peaks, Mount Escalante, and Antelope Ridge, according to the region map entitled "Great Basin South" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(ix) in Juab County: Deep Creek Mountains, Essex Canyon, Kern Mountains, Wild Horse Pass, Disappointment Hills, Granite Mountain, Middle Mountains, Tule Valley, Fish Springs Ridge, Thomas Range, Drum Mountains, Dugway Mountains, Keg Mountains West, Keg Mountains East, Lion Peak, and Rockwell Little Sahara, according to the region map entitled "Great Basin Central" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(x) in Kane County:

(A) Willis Creek North, Willis Creek, Kodachrome Badlands, Mud Springs Canyon, Carcass Canyon, Scorpion, Bryce Boot, Paria Hackberry Canyons, Fiftymile Canyon, Hurricane Wash, Upper Kanab Creek, Timber Mountain, Nephi Point, Paradise Canyon, Wahweap Burning Hills, Fiftymile Bench, Forty Mile Gulch, Sooner Bench 1, 2, & 3, Rock Cove, Warm Bench, Andalex Not, Vermillion Cliffs, Ladder Canyon, The Cockscomb, Nipple Bench, Moquith Mountain, Bunting Point, Glass Eye Canyon, and Pine Hollow, according to the region map entitled "Grand Staircase Escalante" linked at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011; and

(B) Orderville Canyon, Jolley Gulch, and Parunuweap Canyon, according to the region map entitled "Zion/Mohave" linked at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(xi) in Millard County: Kern Mountains, Wild Horse Pass, Disappointment Hills, Granite Mountain, Middle Mountains, Tule Valley, Swasey Mountain, Little Drum Mountains North, Little Drum Mountains South, Drum Mountains, Snake Valley, Coyote Knoll, Howell Peak, Tule Valley South, Ledger Canyon, Chalk Knolls, Orr Ridge, Notch View, Bullgrass Knoll, Notch Peak, Barn Hills, Cricket Mountains, Burbank Pass, Middle Burbank Hills, King Top, Barn Hills, Red Tops, Middle Burbank Hills, Juniper, Painted Rock Mountain, Black Hills, Tunnel Springs, Red Canyon, Sand Ridge, Little Sage Valley, Cat Canyon, Headlight Mountain, Black Hills, Mountain Range Home North, Tweedy Wash, North Wah Wah Mountains, Jackson Wash, and San Francisco Mountains, according to the region map entitled "Great Basin Central" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(xii) in Piute County: Kingston Ridge, Rocky Ford, and Phonolite Hill, according to the region map entitled "Great Basin South" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(xiii) in San Juan County:

(A) Horseshoe Point, Deadhorse Cliffs, Gooseneck, Demon's Playground, Hatch Canyon, Lockhart Basin, Indian Creek, Hart's Point, Butler Wash, Bridger Jack Mesa, and Shay Mountain, according to the region map entitled "Canyonlands Basin" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(B) Dark Canyon, Copper Point, Fortknocker Canyon, White Canyon, The Needle, Red Rock Plateau, Upper Red Canyon, and Tuwa Canyon, according to the region map entitled "Glen Canyon," which is available by clicking the link entitled "Dirty Devil" at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(C) Hunters Canyon, Behind the Rocks, Mill Creek, and Coyote Wash, according to the region map entitled "Moab/La Sal" linked at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011; and

(D) Hammond Canyon, Allen Canyon, Mancos Jim Butte, Arch Canyon, Monument Canyon, Tin Cup Mesa, Cross Canyon, Nokai Dome, Grand Gulch, Fish and Owl Creek Canyons, Comb Ridge, Road Canyon, The Tabernacle, Lime Creek, San Juan River, and Valley of the Gods, according to the region map entitled "San Juan" linked at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(xiv) in Sevier County: Rock Canyon, Mussentuchit Badland, Limestone Cliffs, and Jones' Bench, according to the region map entitled "San Rafael Swell" linked at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(xv) in Tooele County:

(A) Silver Island Mountains, Crater Island East, Grassy Mountains North, Grassy Mountains South, Stansbury Island, Cedar Mountains North, Cedar Mountains Central, Cedar Mountains South, North Stansbury Mountains, Oquirrh Mountains, and Big Hollow, according to the region map entitled "Great Basin North" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011, excluding the areas that Congress designated as wilderness under the National Defense Authorization Act for Fiscal Year 2006; and

(B) Ochre Mountain, Deep Creek Mountains, Dugway Mountains, Indian Peaks, and Lion Peak, according to the region map entitled "Great Basin Central" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(xvi) in Uintah County:

(A) White River, Lower Bitter Creek, Sunday School Canyon, Dragon Canyon, Wolf Point, Winter Ridge, Seep Canyon, Bitter Creek, Hideout Canyon, Sweetwater Canyon, and Hell's Hole, according to the region map entitled "Book Cliffs" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011; and

(B) Lower Flaming Gorge, Crouse Canyon Stone Bridge Draw, Diamond Mountain, Wild Mountain, Split Mountain Benches, Vivas Cake Hill, Split Mountain Benches South, Beach Draw, Stuntz Draw, Moonshine Draw, Bourdette Draw, and Bull Canyon, according to the region map entitled "Dinosaur" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(xvii) in Washington County: Cougar Canyon, Docs Pass, Slaughter Creek, Butcher Knife Canyon, Square Top, Scarecrow Creek, Beaver Dam Wash, Beaver Dam Mountains North, Beaver Dam Mountains South, Joshua Tree, Beaver Dam Wilderness Expansion, Red Mountain, Cottonwood Canyon, Taylor Canyon, LaVerkin Creek, Beartrap Canyon, Deep Creek, Black Ridge, Red Butte, Kolob Creek, Goose Creek, Dry Creek, Zion National Park Adjacent, Crater Hill, The Watchman, and Canaan Mountain, according to the region map entitled "Zion/Mohave" linked at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011, excluding the areas that Congress designated as wilderness and conservation areas under the Omnibus Public Lands Management Act of 2009; and

(xviii) in Wayne County:

(A) Sweetwater Reef, Upper Horseshoe Canyon, and Labyrinth Canyon, according to the region map entitled "Canyonlands Basin" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(B) Flat Tops and Dirty Devil, according to the region map entitled "Glen Canyon," which is available by clicking the link entitled "Dirty Devil" at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(C) Fremont Gorge, Pleasant Creek Bench, Notom Bench, Mount Ellen, and Bull Mountain, according to the region map entitled "Henry Mountains" linked at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011; and

(D) Capital Reef Adjacent, Muddy Creek, Wild Horse Mesa, North Blue Flats, Red Desert, and Factory Butte, according to the region map entitled "San Rafael Swell" linked at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://www.protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011.

(b) "Subject lands" also includes all BLM and Forest Service lands in the state that are not Wilderness Area or Wilderness Study Areas;

(c) "Subject lands" does not include the following lands that are the subject of consideration for a possible federal lands bill and should be managed according to the 2008 Price BLM Field Office Resource Management Plan until a federal lands bill provides otherwise:

(i) Turtle Canyon and Desolation Canyon according to the region map entitled "Book Cliffs" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011;

(ii) Labyrinth Canyon, Duma Point, and Horseshoe Point, according to the region map entitled "Canyonlands Basin" linked in the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011; and

(iii) Devil's Canyon, Sid's Mountain, Mexican Mountain, San Rafael Reef, Hondu Country, Cedar Mountain, and Wild Horse, according to the region map entitled "San Rafael Swell" linked at the webpage entitled "Citizen's Proposal for Wilderness in Utah" at <http://protectwildutah.org/proposal/index.html> as the webpage existed on February 17, 2011.

(21) "Uintah Basin Energy Zone" means BLM and Forest Service lands situated in the following townships in Daggett, Duchesne, and Uintah counties, as more fully illustrated in the map prepared by the Uintah County GIS Department in February 2012 entitled "Uintah Basin Utah Energy Zone":

(a) in Daggett County, Township 3N Range 17 E, Township 3N Range 18E, Township 3N Range 19E, Township 3N Range 20E, Township 3N Range 22E, Township 3N Range 23E, Township 3N Range 24E, Township 3N Range 25E, Township 2N Range 17E, Township 2N Range 18E, Township 2N Range 19E, Township 2N Range 20E, Township 2N Range 21E, and Township 2S Range 25E;

(b) in Duchesne County, Township 3N Range 4W, Township 3N Range 3W, Township 3N Range 2W, Township 3N Range 1W, Township 2N Range 6W, Township 2N Range 5W, Township 2N Range 4W, Township 2N Range 3W, Township 2N Range 1W, Township 1N Range 9W, Township 1N Range 8W, Township 1N Range 7W, Township 1N Range 6W, Township 1S Range 9W, Township 1S Range 8W, Township 4S Range 9W, Township 4S Range 3W, Township 4S Range 2W, Township 4S Range 1W, Township 8S Range 15E, Township 8S Range 16E, Township 8S Range 17E, Township 5S Range 9W, Township 5S Range 3W, Township 9S Range 15E, Township 9S Range 16E, Township 9S Range 17E, Township 6S Range 9W, Township 6S Range 8W, Township 6S Range 7W, Township 6S Range 6W, Township 6S Range 5W, Township 6S Range 3W, Township 10S Range 15E, Township 10S Range 16E, Township 10S Range 17E, Township 7S Range 9W, Township 7S Range 8W, Township 7S Range 7W, Township 7S Range 6W, Township 7S Range 5W, Township 7S Range 4W, Township 10S Range 11E, Township 10S Range 12E, Township 10S Range 13E, Township 10S Range 14E, Township 10S Range 15E, Township 10S Range 16E, Township 10S Range 17E, Township 11S Range 10E, Township 11S Range 11E, Township 11S Range 12E, Township 11S Range 13E, Township 11S Range 14E, Township 11S Range 15E, Township 11S Range 16E, and Township 11S Range 17E; and

(c) in Uintah County: Township 2S Range 18E, Township 2S Range 19E, Township 2S Range 20E, Township 2S Range 21E, Township 2S Range 22E, Township 2S Range 23E, Township 2S Range 24E, Township 2N Range 1W, Township 2N Range 1E, Township 2N Range 2E, Township 3S Range 18E, Township 3S Range 19E, Township 3S Range 20E, Township 3S Range 21E, Township 3S Range 22E, Township 3S Range 23E, Township 3S Range 24E, Township 4S Range 19E, Township 4S Range 20E, Township 4S Range 21E, Township 4S Range 22E, Township 4S Range 23E, Township 4S Range 24E, Township 4S Range 25E, Township 5S Range 19E, Township 5S Range 20E, Township 5S Range 21E, Township 5S Range 22E, Township 5S Range 23E, Township 5S Range 24E, Township 5S Range 25E, Township 6S Range 19E, Township 6S Range 20E, Township 6S Range 21E, Township 6S Range 22E, Township 6S Range 23E, Township 6S Range 24E, Township 6S Range 25E, Township 7S Range 19E, Township 7S Range 20E, Township 7S Range 21E, Township 7S Range 22E, Township 7S Range 23E, Township 7S Range 24E, Township 7S Range 25E, Township 8S Range 17E, Township 8S Range 18E, Township 8S Range 19E, Township 8S Range 20E, Township 8S Range 21E, Township 8S Range 22E, Township 8S Range 23E, Township 8S Range 24E, Township 8S Range 25E, Township 9S Range 17E, Township 9S Range 18E, Township 9S Range 19E, Township 9S Range 20E, Township 9S Range 21E, Township 9S Range 22E, Township 9S Range 23E, Township 9S Range 24E, Township 9S Range 25E, Township 10S Range 17E, Township 10S Range 18E, Township 10S Range 19E, Township 10S Range 20E, Township 10S Range 21E, Township 10S Range 22E, Township 10S Range 23E, Township 10S Range 24E, Township 10S Range 25E, Township 11S Range 17E, Township 11S Range 18E, Township 11S Range 19E, Township 11S Range 20E, Township 11S Range 21E, Township 11S Range 22E, Township 11S Range 23E, Township 11S Range 24E, Township 11S Range 25E, Township 12S Range 20E, Township 12S Range 21E, Township 12S Range 22E, Township 12S Range 23E, Township 12S Range 24E, Township 12S Range 25E, Township 13S Range 20E, Township 13S Range 21E, Township 13S Range 22E, Township 13S Range 23E, Township 13S Range 24E, Township 13S Range 25E, Township 13S Range 26 E, Township 14S Range 21E, Township 14S Range 22E, Township 14S Range 23E, Township 14S Range 24E, Township 14S Range 25E, and Township 14S Range 26E.

(22) "Wilderness" is as defined in 16 U.S.C. Sec. 1131.

(23) "Wilderness area" means those BLM and Forest Service lands added to the National Wilderness Preservation System by an act of Congress.

(24) "Wilderness Preservation System" means the Wilderness Preservation System established in 16 U.S.C. Sec. 1131 et seq.

(25) "WSA" and "Wilderness Study Area" mean the BLM lands in Utah that were identified as having the necessary wilderness character and were classified as wilderness study areas during the BLM wilderness review conducted between 1976 and 1993 by authority of 43 U.S.C. Sec. 1782 and labeled as Wilderness Study Areas within the final report of the President of the United States to the United States Congress in 1993.

Amended by Chapter 321, 2014 General Session

63J-8-103. State participation in managing public lands.

In view of the requirement in FLPMA, 43 U.S.C. Sec. 1712, that BLM must work through a planning process that is coordinated with other federal, state, and local planning efforts before making decisions about the present and future uses of public lands, the requirement in FLPMA, 43 U.S.C. Sec. 1714 that BLM may not withdraw or otherwise designate BLM lands for specific purposes without congressional approval, and the requirement in the Forest Service Multiple Use Sustained Yield Act of 1960, 16 U.S.C. Sec. 528, that lands within the national forests be managed according to the principles of multiple use, and in view of the right which FLPMA, the National Environmental Policy Act, 42 U.S.C. Sec. 4321 et seq. and the Federal Advisory Committee Act, 5 U.S.C. Appendix 2, give to state and local governments to participate in all BLM and Forest Service efforts to plan for the responsible use of BLM and Forest Service lands and the requirement that BLM and the Forest Service coordinate planning efforts with those of state and local government, the state adopts the following policy for the management of the subject lands:

(1) Pursuant to the proper allocation of governmental authority between the several states and the federal government, the implementation of congressional acts concerning the subject lands must recognize the concurrent jurisdiction of the states and accord full recognition to state interpretation of congressional acts, as reflected in state law, plans, programs, and policies, insofar as the interpretation does not violate the Supremacy Clause, U.S. Constitution, Article VI, Clause 2.

(2) Differences of opinion between the state's plans and policies on use of the subject lands and any proposed decision concerning the subject lands pursuant to federal planning or other federal decision making processes should be mutually resolved between the authorized federal official, including federal officials from other federal agencies advising the authorized federal official in any capacity, and the governor of Utah.

(3) The subject lands managed by the BLM are to be managed to the basic standard of the prevention of undue and unnecessary degradation of the lands, as required by FLPMA. A more restrictive management standard should not apply except through duly adopted statutory or regulatory processes wherein each specific area is evaluated pursuant to the provisions of the BLM's planning process and those of the National Environmental Policy Act.

(4) The subject lands should not be segregated into separate geographical areas for management that resembles the management of wilderness, wilderness study areas, wildlands, lands with wilderness characteristics, or the like.

(5) The BLM and the Forest Service should make plans for the use of the subject lands and resources subject to their management pursuant to statutorily authorized processes, with due regard for the provisions of the National Environmental Policy Act, by:

(a) recognizing that the duly adopted Resource Management Plan or Forest Service equivalent is the fundamental planning document, which may be revised or amended from time to time;

(b) avoiding and eliminating any form of guidance or policy that has the effect of prescreening, segregating, or imposing any form of management requirements upon any of the subject lands and resources prior to any of the planning processes subject to Subsection (5)(a); and

(c) avoiding and eliminating all forms of planning that parallel or duplicate the planning processes subject to Subsection (5)(a).

Enacted by Chapter 49, 2011 General Session

63J-8-104. State land use planning and management program.

(1) The BLM and Forest Service land use plans should produce planning documents consistent with state and local land use plans to the maximum extent consistent with federal law and FLPMA's purposes, by incorporating the state's land use planning and management program for the subject lands that is as follows:

(a) preserve traditional multiple use and sustained yield management on the subject lands to:

(i) achieve and maintain in perpetuity a high level annual or regular periodic output of agricultural, mineral, and various other resources from the subject lands;

(ii) support valid existing transportation, mineral, and grazing privileges in the subject lands at the highest reasonably sustainable levels;

(iii) produce and maintain the desired vegetation for watersheds, timber, food, fiber, livestock forage, wildlife forage, and minerals that are necessary to meet present needs and future economic growth and community expansion in each county where the subject lands are situated without permanent impairment of the productivity of the land;

- (iv) meet the recreational needs and the personal and business related transportation needs of the citizens of each county where the subject lands are situated by providing access throughout each such county;
- (v) meet the needs of wildlife, provided that the respective forage needs of wildlife and livestock are balanced according to the provisions of Subsection 63J 4 401(6)(m);
- (vi) protect against adverse effects to historic properties, as defined by 36 C.F.R. Sec. 800;
- (vii) meet the needs of community economic growth and development;
- (viii) provide for the protection of existing water rights and the reasonable development of additional water rights; and
- (ix) provide for reasonable and responsible development of electrical transmission and energy pipeline infrastructure on the subject lands;
- (b) (i) do not designate, establish, manage, or treat any of the subject lands as an area with management prescriptions that parallel, duplicate, or resemble the management prescriptions established for wilderness areas or wilderness study areas, including the non impairment standard applicable to WSAs or anything that parallels, duplicates, or resembles that non impairment standard; and
- (ii) recognize, follow, and apply the agreement between the state and the Department of the Interior in the settlement agreement;
- (c) call upon the BLM to revoke and revise BLM Manuals H 6301, H 6302, and H 6303, issued on or about February 25, 2011, in light of the settlement agreement and the following principles of this state plan:
 - (i) BLM lacks congressional authority to manage subject lands, other than WSAs, as if they are or may become wilderness;
 - (ii) BLM lacks authority to designate geographic areas as lands with wilderness characteristics or designate management prescriptions for such areas other than to use specific geographic based tools and prescriptions expressly identified in FLPMA;
 - (iii) BLM lacks authority to manage the subject lands in any manner other than to prevent unnecessary or undue degradation, unless the BLM uses geographic tools expressly identified in FLPMA and does so pursuant to a duly adopted provision of a resource management plan adopted under FLPMA, 43 U.S.C. Sec. 1712;
 - (iv) BLM inventories for the presence of wilderness characteristics must be closely coordinated with inventories for those characteristics conducted by state and local governments, and should reflect a consensus among those governmental agencies about the existence of wilderness characteristics, as follows:
 - (A) any inventory of wilderness characteristics should reflect all of the criteria identified in the Wilderness Act of 1964, including:
 - (I) a size of 5,000 acres or more, containing no visible roads; and
 - (II) the presence of naturalness, the opportunity for primitive and unconfined recreation, and the opportunity for solitude;
 - (B) geographic areas found to contain the presence of naturalness must appear pristine to the average viewer, and not contain any of the implements, artifacts, or effects of human presence, including:
 - (I) visible roads, whether maintained or not; and
 - (II) human made features such as vehicle bridges, fire breaks, fisheries, enhancement facilities, fire rings, historic mining and other properties, including tailings piles, commercial radio and communication repeater sites, fencing, spring developments, linear disturbances, stock ponds, visible drill pads, pipeline and transmission line rights of way, and other similar features;
 - (C) factors, such as the following, though not necessarily conclusive, should weigh against a determination that a land area has the presence of naturalness:
 - (I) the area is or once was the subject of mining and drilling activities;
 - (II) mineral and hard rock mining leases exist in the area; and
 - (III) the area is in a grazing district with active grazing allotments and visible range improvements;
 - (D) geographic areas found to contain the presence of solitude should convey the sense of solitude within the entire geographic area identified, otherwise boundary adjustments should be performed in accordance with Subsection (1)(c)(iv)(F);
 - (E) geographic areas found to contain the presence of an opportunity for primitive and unconfined recreation must find these features within the entire area and provide analysis about the effect of the number of visitors to the geographic area upon the presence of primitive or unconfined recreation, otherwise boundary adjustments should be performed in accordance with Subsection (1)(c)(iv)(F);

(F) in addition to the actions required by the review for roads pursuant to the definitions of roads contained in BLM Manual H 6301, or any similar authority, the BLM should, pursuant to its authority to inventory, identify and list all roads or routes identified as part of a local or state governmental transportation system, and consider those routes or roads as qualifying as roads within the definition of the Wilderness Act of 1964; and

(G) BLM should adjust the boundaries for a geographic area to exclude areas that do not meet the criteria of lacking roads, lacking solitude, and lacking primitive and unconfined recreation and the boundaries should be redrawn to reflect an area that clearly meets the criteria above, and which does not employ minor adjustments to simply exclude small areas with human intrusions, specifically:

(I) the boundaries of a proposed geographic area containing lands with wilderness characteristics should not be drawn around roads, rights of way, and intrusions; and

(II) lands located between individual human impacts that do not meet the requirements for lands with wilderness characteristics should be excluded;

(v) BLM should consider the responses of the Department of the Interior under cover of the letter dated May 20, 2009, clearly stating that BLM does not have the authority to apply the non impairment management standard to the subject lands, or to manage the subject lands in any manner to preserve their suitability for designation as wilderness, when considering the proper management principles for areas that meet the full definition of lands with wilderness characteristics; and

(vi) even if the BLM were to properly inventory an area for the presence of wilderness characteristics, the BLM still lacks authority to make or alter project level decisions to automatically avoid impairment of any wilderness characteristics without express congressional authority to do so;

(d) achieve and maintain at the highest reasonably sustainable levels a continuing yield of energy, hard rock, and nuclear resources in those subject lands with economically recoverable amounts of such resources as follows:

(i) the development of the solid, fluid, and gaseous mineral resources in portions of the subject lands is an important part of the state's economy and the economies of the respective counties, and should be recognized that it is technically feasible to access mineral and energy resources in portions of the subject lands while preserving or, as necessary, restoring nonmineral and non energy resources;

(ii) all available, recoverable solid, fluid, gaseous, and nuclear mineral resources in the subject lands should be seriously considered for contribution or potential contribution to the state's economy and the economies of the respective counties;

(iii) those portions of the subject lands shown to have reasonable mineral, energy, and nuclear potential should be open to leasing, drilling, and other access with reasonable stipulations and conditions, including mitigation, reclamation, and bonding measures where necessary, that will protect the lands against unnecessary and undue damage to other significant resource values;

(iv) federal oil and gas existing lease conditions and restrictions should not be modified, waived, or removed unless the lease conditions or restrictions are no longer necessary or effective;

(v) any prior existing lease restrictions in the subject lands that are no longer necessary or effective should be modified, waived, or removed;

(vi) restrictions against surface occupancy should be eliminated, modified, or waived, where reasonable;

(vii) in the case of surface occupancy restrictions that cannot be reasonably eliminated, modified, or waived, directional drilling should be considered where the mineral and energy resources beneath the area can be reached employing available directional drilling technology;

(viii) applications for permission to drill in the subject lands that meet standard qualifications, including reasonable and effective mitigation and reclamation requirements, should be expeditiously processed and granted; and

(ix) any moratorium that may exist against the issuance of qualified mining patents and oil and gas leases in the subject lands, and any barriers that may exist against developing unpatented mining claims and filing for new claims, should be carefully evaluated for removal;

(e) achieve and maintain livestock grazing in the subject lands at the highest reasonably sustainable levels by adhering to the policies, goals, and management practices set forth in Subsection 63J 4 401(6)(m);

(f) manage the watershed in the subject lands to achieve and maintain water resources at the highest reasonably sustainable levels as follows:

(i) adhere to the policies, goals, and management practices set forth in Subsection 63J 4 401(6)(m);

(ii) deter unauthorized cross country OHV use in the subject lands by establishing a reasonable system of roads and trails in the subject lands for the use of an OHV, as closing the subject lands to all OHV use will only spur increased and unauthorized use; and

(iii) keep open any road or trail in the subject lands that historically has been open to OHV use, as identified on respective county road maps;

(g) achieve and maintain traditional access to outdoor recreational opportunities available in the subject lands as follows:

(i) hunting, trapping, fishing, hiking, family and group parties, family and group campouts and campfires, rock hounding, OHV travel, geological exploring, pioneering, recreational vehicle parking, or just touring in personal vehicles are activities that are important to the traditions, customs, and character of the state and individual counties where the subject lands are located and should continue;

(ii) wildlife hunting, trapping, and fishing should continue at levels determined by the Wildlife Board and the Division of Wildlife Resources and traditional levels of group camping, group day use, and other traditional forms of outdoor recreation, both motorized and non motorized, should continue; and

(iii) the broad spectrum of outdoor recreational activities available on the subject lands should be available to citizens for whom a primitive, non motorized, outdoor experience is not preferred, affordable, or physically achievable;

(h) (i) keep open to motorized travel, any road in the subject lands that is part of the respective counties' duly adopted transportation plan;

(ii) provide that R.S. 2477 rights of way should be recognized by the BLM;

(iii) provide that a county road may be temporarily closed or permanently abandoned only by statutorily authorized action of the county or state;

(iv) provide that the BLM and the Forest Service must recognize and not unduly interfere with a county's ability to maintain and repair roads and, where reasonably necessary, make improvements to the roads; and

(v) recognize that additional roads and trails may be needed in the subject lands from time to time to facilitate reasonable access to a broad range of resources and opportunities throughout the subject lands, including livestock operations and improvements, solid, fluid, and gaseous mineral operations, recreational opportunities and operations, search and rescue needs, other public safety needs, access to public lands for people with disabilities and the elderly, and access to Utah school and institutional trust lands for the accomplishment of the purposes of those lands;

(i) manage the subject lands so as to protect prehistoric rock art, three dimensional structures, and other artifacts and sites recognized as culturally important and significant by the state historic preservation officer or each respective county by imposing reasonable and effective stipulations and conditions reached by agreement between the federal agency and the state authorized officer pursuant to the authority granted by the National Historic Preservation Act, 16 U.S.C. Sec. 470 et seq.;

(j) manage the subject lands so as to not interfere with the property rights of private landowners as follows:

(i) the state recognizes that there are parcels of private fee land throughout the subject lands;

(ii) land management policies and standards in the subject lands should not interfere with the property rights of any private landowner to enjoy and engage in uses and activities on an individual's private property consistent with controlling county zoning and land use laws; and

(iii) a private landowner or a guest or client of a private landowner should not be denied the right of motorized access to the private landowner's property consistent with past uses of the private property;

(k) manage the subject lands in a manner that supports the fiduciary agreement made between the state and the federal government concerning the school and institutional trust lands, as managed according to state law, by:

(i) formally recognizing, by duly authorized federal proclamation, the duty of the federal government to support the purposes of the school and institutional trust lands owned by the state and administered by SITLA in trust for the benefit of public schools and other institutions as mandated in the Utah Constitution and the Utah Enabling Act of 1894, 28 Stat. 107;

(ii) actively seeking to support SITLA's fiduciary responsibility to manage the school trust lands to optimize revenue by making the school trust lands available for sale and private development and for other multiple and consumptive use activities such as mineral development, grazing, recreation, timber, and agriculture;

(iii) not interfering with SITLA's ability to carry out its fiduciary responsibilities by the creation of geographical areas burdened with management restrictions that prohibit or discourage the optimization of revenue, without just compensation;

- (iv) recognizing SITLA's right of economic access to the school trust lands to enable SITLA to put those sections to use in its fiduciary responsibilities;
- (v) recognizing any management plan enacted by SITLA pursuant to Section 53C 2 201; and
- (vi) acting responsibly as the owner of land parcels with potential for exchange for state land parcels by:
 - (A) moving forward with the process for identifying federal land parcels suitable and desirable for exchange for state land parcels;
 - (B) removing barriers to the exchange of federal land parcels for state land parcels;
 - (C) expediting the procedures and processes necessary to execute the exchange of federal land parcels for state land parcels; and
 - (D) lobbying and supporting in good faith any congressional legislation to enact and finalize the exchange of federal land parcels for state land parcels;
- (l) oppose the designation of BLM lands as areas of critical environmental concern (ACEC), as the BLM lands are generally not compatible with the state's plan and policy for managing the subject lands, but special cases may exist where such a designation is appropriate if compliance with FLPMA, 43 U.S.C. Sec. 1702(a) is clearly demonstrated and where the proposed designation and protection:
 - (i) is limited to the geographic size to the minimum necessary to meet the standards required by Section 63J 4 401;
 - (ii) is necessary to protect not just a temporary change in ground conditions or visual resources that can be reclaimed or reversed naturally, but is clearly shown as necessary to protect against visible damage on the ground that will persist on a time scale beyond that which would effectively disqualify the land for a later inventory of wilderness characteristics;
 - (iii) will not be applied in a geographic area already protected by other protective designations available pursuant to law; and
 - (iv) is not a substitute for the nonimpairment management requirements of wilderness study areas; and
 - (m) recognize that a BLM visual resource management class I or II rating is generally not compatible with the state's plan and policy for managing the subject lands, but special cases may exist where such a rating is appropriate if jointly considered and created by state, local, and federal authorities as part of an economic development plan for a region of the state, with due regard for school trust lands and private lands within the area.
- (2) All BLM and Forest Service decision documents should be accompanied with an analysis of the social and economic impact of the decision. Such analysis should:
 - (a) consider all facets of the decision in light of valuation techniques for the potential costs and benefits of the decision;
 - (b) clarify whether the costs and benefits employ monetized or nonmonetized techniques;
 - (c) compare the accuracy, completeness, and viability of monetized and nonmonetized valuation techniques used as part of the analysis, including all caveats on use of the techniques; and
 - (d) compare the valuation techniques employed in the analysis to the federal standards for valuation employed by the U.S. Department of Justice in court actions.

Amended by Chapter 328, 2014 General Session

63J-8-105. Maps available for public review.

A printed copy of the maps referenced in Subsections 63J 8 102(8), (20), and (21) shall be available for inspection by the public at the offices of the Utah Association of Counties.

Amended by Chapter 321, 2014 General Session

63J-8-105.1. State of Utah Transportation Plan for the Cedar City, Powell, Escalante, and Fremont ranger districts of the Dixie National Forest.

- (1) (a) The state of Utah designates this state of Utah transportation plan for the Cedar City, Powell, Escalante, and Fremont ranger districts of the Dixie National Forest.
- (b) The plan was established pursuant to:
 - (i) the requirement in the United States Forest Service's Multiple Use Sustained Yield Act of 1960, 16 U.S.C. Sec. 528, that lands within the national forests be managed according to the principles of multiple use; and
 - (ii) the right which FLPMA, the National Environmental Policy Act, 42 U.S.C. Sec. 4321 et seq., and the Federal Advisory Committee Act, 5 U.S.C. Appendix 2, give to state and local governments to participate in all BLM and United States Forest Service efforts to plan for the responsible use of BLM and United States Forest

Service lands and the requirement that BLM and the United States Forest Service coordinate planning efforts with those of state and local governments.

(c) This section is a statement of the state of Utah's policy and plan for a desired transportation system for the Cedar City, Powell, Escalante, and Fremont ranger districts of the Dixie National Forest.

(d) This section does not mandate compliance with this policy by the United States Forest Service nor does it override or usurp the United States Forest Service's authority within this area.

(e) This section is a statement of state policy for use by the United States Forest Service and other interested stakeholders as required by federal law in making planning decisions and project management decisions within the Cedar City, Powell, Escalante, and Fremont ranger districts of the Dixie National Forest.

(2) There is established and designated a state of Utah transportation plan for the Cedar City, Powell, Escalante, and Fremont ranger districts of the Dixie National Forest in Garfield, Iron, Kane, and Wayne counties, Utah for the purpose of:

(a) preserving and protecting against threats to the longstanding transportation networks that have served the public for decades within these ranger districts;

(b) preserving and protecting against threats to the longstanding traditional recreation resource values that have served the public for decades within these ranger districts;

(c) preserving and protecting against threats to the longstanding public road access that is vital to the agricultural livestock and forest products industries within these ranger districts;

(d) preserving and protecting against threats to the significant history, culture, customs, and economic values in these ranger districts, and in the various communities situated near these ranger districts;

(e) preserving and protecting against threats to the civil rights of the disabled, the elderly, and the economically disadvantaged to have access to the great outdoor resource and values existing in these ranger districts;

(f) preserving and protecting against threats to road networks vital to restoring, reclaiming, preserving, protecting, enhancing, and developing the state's water resources on the watersheds existing within these ranger districts;

(g) protecting, preserving, and enhancing affected natural, historical, and cultural activities within these ranger districts from ongoing threats; and

(h) preserving and protecting the longstanding network of publicly accessible roads within these ranger districts, in order to protect:

(i) the health, safety, and welfare of citizens who live near these ranger districts, and persons who visit and recreate therein, from the threat of catastrophic fire and its resulting problems of watershed and habitat destruction, erosion, silt load, and flooding, which can only be managed, prevented, combatted, and mitigated through a proper transportation network throughout these ranger districts;

(ii) hunter access to manage wildlife populations; and

(iii) forage conditions for livestock grazing and wildlife habitat.

(3) The state of Utah transportation plan for the Cedar City, Powell, Escalante, and Fremont ranger districts of the Dixie National Forest consists of all roads shown in the map jointly prepared by the Garfield, Iron, Kane, and Wayne County GIS departments in February 2014, entitled "State of Utah Transportation Plan for Dixie National Forest," printed copies of which will be maintained by the Utah Association of Counties and made available to the public upon request.

(4) (a) (i) The map described in Subsection (3) also documents the move by Dixie National Forest to close and otherwise deny the public's longstanding access to many of the roads shown on the map in the Cedar City, Powell, Escalante, and Fremont ranger districts, by reason of the United States Forest Service's implementing a recent motorized travel plan for the Dixie National Forest.

(ii) These closures and other denials of public road access through the motorized travel plan of the Dixie National Forest constitute an ongoing direct threat to the resources and values referenced in Subsection (2).

(b) The state of Utah's transportation plan for these ranger districts conflicts with the United States Forest Service's recent motorized travel plan for the Dixie National Forest.

(c) The state of Utah's transportation plan for these ranger districts recognizes that all roads shown on the map referenced in Subsection (3) should be kept open to the public.

(5) The state finds that keeping open to the public all roads shown on the map referenced in Subsection (3) is necessary and vital to preserve and protect the values cited in Subsection (2).

(6) The state requests that the federal agencies that administer lands within the Cedar City, Powell, Escalante, and Fremont ranger districts of the Dixie National Forest:

(a) fully cooperate and coordinate with the state of Utah and the respective counties in which these ranger districts lie, to develop, amend, and implement United States Forest Service land and resource management plans and transportation plans, and implement management decisions pursuant to those plans, that are consistent with the purposes, goals, and policies described in this section to the maximum extent allowed under federal law;

(b) enter into agreements regarding the maintenance, upkeep, and improvement of roads in these ranger districts;

(c) refrain from any planning decisions and management actions that will undermine, restrict, or diminish the goals, purposes, and policies as stated in this section; and

(d) refrain from implementing a policy that is contrary to the goals and purposes described within this section.

(7) (a) The state recognizes the importance of longstanding road networks in all national forests in the state but establishes this transportation plan to provide special protection and preservation against the identified threats found to exist in the Cedar City, Powell, Escalante, and Fremont ranger districts of the Dixie National Forest.

(b) It is the intent of the state to designate additional forest transportation plans in future years as circumstances warrant their special protection and preservation.

(8) The state calls upon applicable federal, state, and local agencies to coordinate with each other and establish applicable intergovernmental standing commissions, with membership consisting of representatives from the United States government, the state of Utah, and local governments, to coordinate and achieve consistency in planning decisions and management actions consistent with the goals and policies of this section for the Cedar City, Powell, Escalante, and Fremont ranger districts of the Dixie National Forest.

Enacted by Chapter 361, 2014 General Session

63J-8-105.5. Uintah Basin Energy Zone established -- Findings -- Management and land use priorities.

(1) There is established the Uintah Basin Energy Zone in Daggett, Uintah, and Duchesne Counties for the purpose of maximizing efficient and responsible development of energy and mineral resources.

(2) The land area and boundaries of the Uintah Basin Energy Zone are described in Subsection 63J 8 102(21) and illustrated on the map described in Section 63J 8 105.

(3) The state finds that:

(a) the lands comprising the Uintah Basin Energy Zone contain abundant, world class deposits of energy and mineral resources, including oil, natural gas, oil shale, oil sands, gilsonite, coal, phosphate, gold, uranium, and copper, as well as areas with high wind and solar energy potential; and

(b) the highest management priority for all lands within the Uintah Basin Energy Zone is responsible management and development of existing energy and mineral resources in order to provide long term domestic energy and supplies for Utah and the United States.

(4) The state supports:

(a) efficient and responsible full development of all existing energy and mineral resources located within the Uintah Basin Energy Zone, including oil, oil shale, natural gas, oil sands, gilsonite, phosphate, gold, uranium, copper, solar, and wind resources; and

(b) a cooperative management approach among federal agencies, state, and local governments to achieve broadly supported management plans for the full development of all energy and mineral resources within the Uintah Basin Energy Zone.

(5) The state calls upon the federal agencies who administer lands within the Uintah Basin Energy Zone to:

(a) fully cooperate and coordinate with the state and with Daggett, Uintah, and Duchesne Counties to develop, amend, and implement land and resource management plans and to implement management decisions that are consistent with the purposes, goals, and policies described in this section to the maximum extent allowed under federal law;

(b) expedite the processing, granting, and streamlining of mineral and energy leases and applications to drill, extract, and otherwise develop all existing energy and mineral resources located within the Uintah Basin Energy Zone, including oil, natural gas, oil shale, oil sands, gilsonite, phosphate, gold, uranium, copper, solar, and wind resources;

(c) allow continued maintenance and increased development of roads, power lines, pipeline infrastructure, and other utilities necessary to achieve the goals, purposes, and policies described in this section;

(d) refrain from any planning decisions and management actions that will undermine, restrict, or diminish the goals, purposes, and policies for the Uintah Basin Energy Zone as stated in this section; and

(e) refrain from implementing a policy that is contrary to the goals and purposes described within this section.

(6) The state calls upon Congress to establish an intergovernmental standing commission among federal, state, and local governments to guide and control planning decisions and management actions in the Uintah Basin Energy Zone in order to achieve and maintain the goals, purposes, and policies described in this section.

(7) Notwithstanding the provisions of this section, the state's grazing and livestock policies and plans on land within the Uintah Basin Energy Zone shall continue to be governed by Sections 63J 4 401 and 63J 8 104.

Amended by Chapter 321, 2014 General Session

63J-8-105.7. Green River Energy Zone established -- Findings -- Management and land use priorities.

(1) There is established the Green River Energy Zone in Carbon and Emery Counties for the purpose of maximizing efficient and responsible development of energy and mineral resources.

(2) The land area and boundaries of the Green River Energy Zone are described in Subsection 63J 8 102(8) and illustrated on the maps described in Section 63J 8 105.

(3) The state finds that:

(a) the lands comprising the Green River Energy Zone contain abundant world class deposits of energy and mineral resources, including oil, natural gas, oil shale, oil sands, gilsonite, coal, phosphate, gold, uranium, and copper, as well as areas with high wind and solar energy potential;

(b) for lands within the Carbon County portion of the Green River Energy Zone, the highest management priority is the responsible management, development, and extraction of existing energy and mineral resources in order to provide long term domestic energy and supplies for Utah and the United States; and

(c) for lands within the Emery County portion of the Green River Energy Zone:

(i) the responsible management and development of existing energy and mineral resources in order to provide long term domestic energy and supplies for Utah and the United States is a high management priority; and

(ii) the management priority described in Subsection (3)(c)(i) should be balanced with the following high management priorities:

(A) watershed health;

(B) water storage and water delivery systems;

(C) Emery County Heritage Sites;

(D) facilities and resources associated with the domestic livestock industry;

(E) wildlife and wildlife habitat; and

(F) recreation opportunities.

(4) The state supports:

(a) efficient and responsible full development of all existing energy and mineral resources located within the Green River Energy Zone, including oil, oil shale, natural gas, oil sands, gilsonite, coal, phosphate, gold, uranium, copper, solar, and wind resources; and

(b) a cooperative management approach by federal agencies, the state of Utah, and local governments to achieve broadly supported management plans for the full development of all energy and mineral resources within the Green River Energy Zone.

(5) The state requests that the federal agencies that administer lands within the Green River Energy Zone:

(a) fully cooperate and coordinate with the state of Utah and with Carbon and Emery Counties to develop, amend, and implement land and resource management plans and to implement management decisions that are consistent with the purposes, goals, and policies described in this section to the maximum extent allowed under federal law;

(b) expedite the processing, granting, and streamlining of mineral and energy leases and applications to drill, extract, and otherwise develop all existing energy and mineral resources located within the Green River Energy Zone, including oil, natural gas, oil shale, oil sands, gilsonite, coal, phosphate, gold, uranium, copper, solar, and wind resources;

(c) allow continued maintenance and increased development of roads, power lines, pipeline infrastructure, and other utilities necessary to achieve the goals, purposes, and policies described in this section;

(d) refrain from any planning decisions and management actions that will undermine, restrict, or diminish the goals, purposes, and policies for the Green River Energy Zone as stated in this section; and

(e) refrain from implementing a policy that is contrary to the goals and purposes within this section.

(6) The state calls upon Congress to establish an intergovernmental standing commission, with membership consisting of representatives from the United States government, the state of Utah, and local governments to guide and control planning and management actions in the Green River Energy Zone in order to achieve and maintain the goals, purposes, and policies described in this section.

(7) Notwithstanding the provisions of this section, the state's grazing and livestock policies and plans on land within the Green River Energy Zone shall continue to be governed by Sections 63J 4 401 and 63J 8 104.

Amended by Chapter 321, 2014 General Session

63J-8-105.8. Utah Grazing Agricultural Commodity Zones established -- Findings -- Management and land use priorities.

(1) There are established Utah Grazing Agricultural Commodity Zones in the counties of Beaver, Emery, Garfield, Kane, Piute, Iron, Sanpete, San Juan, Sevier, and Wayne for the purpose of:

(a) preserving and protecting the agricultural livestock industry from ongoing threats;

(b) preserving and protecting the history, culture, custom, and economic value of the agricultural livestock industry from ongoing threats; and

(c) maximizing efficient and responsible restoration, reclamation, preservation, enhancement, and development of forage and watering resources for grazing and wildlife, practices, and affected natural, historical, and cultural activities from ongoing threats.

(2) The titles, land area, and boundaries of the zones are as follows:

(a) "Escalante Region Grazing Zone," consisting of certain BLM and Forest Service land in the following townships in Garfield and Kane counties, as more fully illustrated in the map jointly prepared by the Garfield County and Kane County Geographic Information Systems departments entitled "Escalante Region Grazing Zone":

(i) in Garfield County, Township 32S Range 6E, Township 32S Range 7E, Township 33S Range 4E, Township 33S Range 5E, Township 33S Range 6E, Township 33S Range 7E, Township 33S Range 8E, Township 34S Range 2E, Township 34S Range 3E, Township 34S Range 4E, Township 34S Range 5E, Township 34S Range 6E, Township 34S Range 7E, Township 34S Range 8E, Township 35S Range 1E, Township 35S Range 2E, Township 35S Range 3E, Township 35S Range 4E, Township 35S Range 5E, Township 35S Range 6E, Township 35S Range 7E, Township 35S Range 8E, Township 36S Range 1W, Township 36S Range 2W, Township 36S Range 3W, Township 36S Range 1E, Township 36S Range 2E, Township 36S Range 3E, Township 36S Range 4E, Township 36S Range 5E, Township 36S Range 6E, Township 36S Range 7E, Township 36S Range 8E, Township 36S Range 9E, Township 37S Range 1W, Township 37S Range 2W, Township 37S Range 3W, Township 37S Range 4W, Township 37S Range 1E, Township 37S Range 2E, Township 37S Range 3E, Township 37S Range 4E, Township 37S Range 5E, Township 37S Range 6E, Township 37S Range 7E, Township 37S Range 8E, and Township 37S Range 9E; and

(ii) in Kane County, Township 38S Range 1W, Township 38S Range 2W, Township 38S Range 3W, Township 38S Range 4W, Township 38S Range 1E, Township 38S Range 2E, Township 38S Range 3E, Township 38S Range 4E, Township 38S Range 5E, Township 38S Range 6E, Township 38S Range 7E, Township 38S Range 8E, Township 38S Range 9E, Township 39S Range 1W, Township 39S Range 2W, Township 39S Range 3W, Township 39S Range 4W, Township 39S Range 4.5W, Township 39S Range 1E, Township 39S Range 2E, Township 39S Range 3E, Township 39S Range 4E, Township 39S Range 5E, Township 39S Range 6E, Township 39S Range 7E, Township 39S Range 8E, Township 39S Range 9E, Township 40S Range 1W, Township 40S Range 2W, Township 40S Range 3W, Township 40S Range 4W, Township 40S Range 4.5W, Township 40S Range 5W, Township 40S Range 1E, Township 40S Range 2E, Township 40S Range 3E, Township 40S Range 4E, Township 40S Range 5E, Township 40S Range 6E, Township 40S Range 7E, Township 40S Range 8E, Township 40S Range 9E, Township 40.5S Range 9E, Township 41S Range 1W, Township 41S Range 2W, Township 41S Range 3W, Township 41S Range 4W, Township 41S Range 4.5W, Township 41S Range 5W, Township 41S Range 1E, Township 41S Range 2E, Township 41S Range 3E, Township 41S Range 4E, Township 41S Range 5E, Township 41S Range 6E, Township 41S Range 7E, Township 41S Range 8E, Township 41S Range 9E, Township 42S Range 1W, Township 42S Range 2W, Township 42S Range 3W, Township 42S Range 4W, Township 42S Range 4.5W,

Township 42S Range 5W, Township 42S Range 1E, Township 42S Range 2E, Township 42S Range 3E, Township 42S Range 4E, Township 42S Range 5E, Township 42S Range 6E, Township 42S Range 7E, Township 42S Range 8E, Township 42S Range 9E, Township 42.5S Range 6.5E, Township 42.5S Range 7E, Township 43S Range 1W, Township 43S Range 2W, Township 43S Range 3W, Township 43S Range 4W, Township 43S Range 4.5W, Township 43S Range 5W, Township 43S Range 1E, Township 43S Range 2E, Township 43S Range 3E, Township 43S Range 4E, Township 43S Range 5E, Township 43S Range 6E, Township 44S Range 1W, Township 44S Range 2W, Township 44S Range 3W, Township 44S Range 4W, Township 44S Range 4.5W, Township 44S Range 5W, Township 44S Range 1E, Township 44S Range 2E, Township 44S Range 3E, Township 44S Range 4E, and Township 44S Range 5E;

(b) "Beaver County Southwest Desert Region Grazing Zone," consisting of BLM lands in the following townships in Beaver County, as more fully illustrated in the map prepared by the Beaver County Geographic Information Systems Departments entitled "Beaver County Southeast Desert Grazing Zone": Township 26S Range 11W, Township 27S Range 11W, Township 28S Range 11W, Township 29S Range 11W, Township 30S Range 11W, Township 26S Range 12W, Township 27S Range 12W, Township 28S Range 12W, Township 29S Range 12W, Township 30S Range 12W, Township 26S Range 13W, Township 27S Range 13W, Township 28S Range 13W, Township 29S Range 13W, Township 30S Range 13W, Township 26S Range 14W, Township 27S Range 14W, Township 28S Range 14W, Township 29S Range 14W, Township 30S Range 14W, Township 26S Range 15W, Township 27S Range 15W, Township 28S Range 15W, Township 29S Range 15W, Township 30S Range 15W, Township 26S Range 16W, Township 27S Range 16W, Township 28S Range 16W, Township 29S Range 16W, Township 30S Range 16W, Township 26S Range 17W, Township 27S Range 17W, Township 28S Range 17W, Township 29S Range 17W, Township 30S Range 17W, Township 26S Range 18W, Township 27S Range 18W, Township 28S Range 18W, Township 29S Range 18W, Township 30S Range 18W, Township 26S Range 19W, Township 27S Range 19W, Township 28S Range 19W, Township 29S Range 19W, Township 30S Range 19W, Township 26S Range 20W, Township 27S Range 20W, Township 28S Range 20W, Township 29S Range 20W, and Township 30S Range 20W;

(c) "Tushar Mountain Region Grazing Zone," consisting of certain BLM and Forest Service lands in the following townships in Beaver, Garfield, and Piute counties, as more fully illustrated in the map jointly prepared by the Beaver, Garfield, and Piute counties GIS departments in February 2014, entitled "Tushar Mountain Region Grazing Zone":

(i) in Beaver County, Township 28S Range 4W, Township 29S Range 4W, Township 27S Range 5W, Township 28S Range 5W, Township 29S Range 5W, Township 30S Range 5W, Township 26S Range 6W, Township 27S Range 6W, Township 28S Range 6W, Township 29S Range 6W, and Township 30S Range 6W;

(ii) in Piute County, Township 26S Range 6W, Township 27S Range 6W, Township 26S Range 5W, Township 27S Range 5W, Township 28S Range 5W, Township 29S Range 5W, Township 30S Range 5W, Township 26S Range 4.5W, Township 26S Range 4W, Township 27S Range 4W, Township 28S Range 4W, Township 29S Range 4W, Township 30S Range 4W; and

(iii) in Garfield County, Township 32S Range 5 1/2 W, Township 31S Range 5W, Township 32S Range 5W, Township 33S Range 5W, Township 32S Range 4 1/2W, Township 33S Range 4 1/2W, Township 31S Range 4W, and Township 31S Range 3W;

(d) "Last Chance Region Grazing Zone," consisting of BLM and Forest Service lands in the following townships in Sevier County, as more fully illustrated in the map prepared by the Sevier County GIS department in February 2014, entitled "Last Chance Region Grazing Zone": Township 23S Range 5E, Township 24S Range 4E, Township 24S Range 5E, Township 25S Range 5E, Township 26S Range 5E;

(e) "Muddy Creek Region Grazing Zone," consisting of certain BLM lands in the following townships of Emery County, as more fully illustrated in the map prepared by the Emery County GIS department in February 2014, entitled "Muddy Creek Region Grazing Zone": Township 22S Range 7E, Township 23S Range 7E, Township 24S Range 7E, Township 25S Range 7E, Township 22S Range 8E, Township 23S Range 8E, Township 24S Range 8E, Township 25S Range 8E, Township 23S Range 9E, and Township 24S Range 9E;

(f) "McKay Flat Region Grazing Zone," consisting of certain BLM lands in the following townships of Emery County, as more fully illustrated in the map prepared by the Emery County GIS department in February 2014, entitled "McKay Flat Region Grazing Zone": Township 25S Range 9E, Township 26S Range 9E, Township 23S Range 10E, Township 24S Range 10E, Township 25S Range 10E, Township 24S Range 11E, and Township 25S Range 11E;

(g) "Sinbad Region Grazing Zone," consisting of certain BLM lands in the following townships of Emery County, as more fully illustrated in the map prepared by the Emery County GIS department in February 2014, entitled "Sinbad Region Grazing Zone": Township 20S Range 11E, Township 21S Range 11E, Township 21S Range 12E, Township 22S Range 12E, Township 23S Range 12E, Township 21S Range 13E, Township 22S Range 13E, and Township 23S Range 13E;

(h) "Robbers Roost Region Grazing Zone," consisting of certain BLM lands in the following townships of Emery County, as more fully illustrated in the map prepared by the Emery County GIS department in February 2014, entitled "Robbers Roost Region Grazing Zone": Township 25S Range 13E, Township 26S Range 13E, Township 25S Range 14E, Township 26S Range 14E, Township 25S Range 15E, and Township 26S Range 15E;

(i) "Western Iron County Region Grazing Zone," consisting of BLM and Forest Service lands in the following townships in Iron County, as more fully illustrated in the map jointly prepared by the Iron County GIS department in February 2014, entitled "Western Iron County Region Grazing Zone": Township 31S Range 7W, Township 31S Range 8W, Township 31S Range 9W, Township 31S Range 10W, Township 31S Range 11W, Township 31S Range 12W, Township 31S Range 13W, Township 31S Range 14W, Township 31S Range 15W, Township 31S Range 16W, Township 31S Range 17W, Township 31S Range 18W, Township 31S Range 19W, Township 31S Range 20W, Township 32S Range 8W, Township 32S Range 9W, Township 32S Range 10W, Township 32S Range 11W, Township 32S Range 12W, Township 32S Range 13W, Township 32S Range 14W, Township 32S Range 15W, Township 32S Range 16W, Township 32S Range 17W, Township 32S Range 18W, Township 32S Range 19W, Township 32S Range 20W, Township 33S Range 8W, Township 33S Range 9W, Township 33S Range 10W, Township 33S Range 11W, Township 33S Range 12W, Township 33S Range 13W, Township 33S Range 14W, Township 33S Range 15W, Township 33S Range 16W, Township 33S Range 17W, Township 33S Range 18W, Township 33S Range 19W, Township 33S Range 20W, Township 34S Range 9W, Township 34S Range 10W, Township 34S Range 11W, Township 34S Range 12W, Township 34S Range 13W, Township 34S Range 14W, Township 34S Range 15W, Township 34S Range 17W, Township 34S Range 18W, Township 34S Range 19W, Township 34S Range 20W, Township 35S Range 10W, Township 35S Range 12W, Township 35S Range 13W, Township 35S Range 14W, Township 35S Range 15W, Township 35S Range 17W, Township 35S Range 18W, Township 35S Range 19W, Township 35S Range 20W, Township 36S Range 11W, Township 36S Range 12W, Township 36S Range 13W, Township 36S Range 14W, Township 36S Range 15W, Township 36S Range 17W, Township 36S Range 18W, Township 36S Range 19W, Township 36S Range 20W, Township 37S Range 12W, Township 37S Range 13W, Township 37S Range 14W, and Township 38S Range 12W;

(j) "Eastern Iron County Region Grazing Zone," consisting of certain BLM and Forest Service lands in the following townships in Iron County, as more fully illustrated in the map jointly prepared by the Iron County GIS department in February 2014, entitled "Eastern Iron County Region Grazing Zone": Township 31S Range 6W, Township 31S Range 7W, Township 32S Range 6W, Township 32S Range 7W, Township 33S Range 6W, Township 33S Range 7W, Township 33S Range 8W, Township 34S Range 7W, Township 34S Range 8W, Township 34S Range 9W, Township 35S Range 8W, Township 35S Range 9W, Township 35S Range 10W, Township 36S Range 8W, Township 36S Range 9W, Township 36S Range 10W, Township 36S Range 11W, Township 37S Range 8W, Township 37S Range 9W, Township 37S Range 11W, Township 37S Range 12W, Township 38S Range 11W, Township 38S Range 12W, Township 38S Range 10W, Township 38S Range 11W, and Township 38S Range 12W, excluding Zion National Park;

(k) "Panguitch Lake Region Grazing Zone," consisting of BLM and Forest Service lands in the following townships in Kane and Garfield counties, as more fully illustrated in the map prepared by the Kane County GIS department in February 2014, entitled "Panguitch Lake Region Grazing Zone":

(i) in Kane County, Township 38S Range 9W, Township 38S Range 8W, Township 38S Range 7W, Township 38S Range 6W, Township 39S Range 8W, and Township 39S Range 7W; and

(ii) in Garfield County, Township 35S Range 7W, Township 36S Range 7W, Township 34S Range 6W, Township 35S Range 6W, Township 36S Range 6W, Township 37S Range 6W, Township 34S Range 5W, Township 35S Range 5W, Township 36S Range 5W, and Township 37S Range 5W;

(l) "East Fork Region Grazing Zone," the land area of which consists of certain BLM and Forest Service lands situated in the following townships in Kane and Garfield counties, as more fully illustrated in the map jointly prepared by the Kane and Garfield counties GIS departments in February 2014, entitled "East Fork Region Grazing Zone":

(i) in Kane County, Township 38S Range 5W, Township 38S Range 4.5W, Township 39S Range 5W, and Township 39S Range 4.5W; and

(ii) in Garfield County, Township 34S Range 4 1/2W, Township 35S Range 4 1/2W, Township 36S Range 4 1/2W, Township 37S Range 4 1/2W, Township 33S Range 4W, Township 34S Range 4W, Township 35S Range 4W, Township 36S Range 4W, Township 37S Range 4W, Township 33S Range 3W, Township 34S Range 3W, Township 35S Range 3W, Township 36S Range 3W, Township 33S Range 2W, Township 34S Range 2W, and Township 35S Range 2W;

(m) "Sevier River Region Grazing Zone," consisting of certain BLM and Forest Service lands in the following townships in Piute County, as more fully illustrated in the map prepared by the Piute GIS department in February 2014, entitled "Sevier River Region Grazing Zone": Township 27S Range 3W, Township 28S Range 3W, and Township 29S Range 3W;

(n) "Kingston Canyon Region Grazing Zone," the land area of which consists of certain BLM and Forest Service lands situated in the following townships in Piute and Garfield counties, as more fully illustrated in the map jointly prepared by the Piute and Garfield counties GIS departments in February 2014, entitled "Kingston Canyon Region Grazing Zone":

(i) in Piute County, Township 30S Range 3W, Township 30S Range 2.5W, and Township 30S Range 2W; and

(ii) in Garfield County, Township 32S Range 4W, Township 31S Range 3W, Township 32S Range 3W, Township 31S Range 2 1/2W, Township 31S Range 2W, Township 32S Range 2W, Township 31S Range 1W, and Township 32S Range 1W;

(o) "Monroe Mountain Region Grazing Zone," consisting of certain BLM and Forest Service lands in the following townships in Piute County, as more fully illustrated in the map prepared by the Piute County GIS department in February 2014, entitled "Monroe Mountain Region Grazing Zone": Township 26S Range 3W, Township 27S Range 2.5W, Township 28S Range 2.5W, Township 29S Range 2.5W, Township 26S Range 2W, Township 27S Range 2W, Township 28S Range 2W, Township 29S Range 2W, Township 26S Range 1W, and Township 27S Range 1W;

(p) "Parker Mountain Region Grazing Zone," consisting of certain BLM and Forest Service lands in the following townships in Wayne County, as more fully illustrated in the map jointly prepared by the Wayne County GIS department in February 2014, entitled "Parker Mountain Region Grazing Zone": Township 26S Range 2E, Township 27S Range 2E, Township 28S Range 2E, Township 29S Range 2E, and Township 30S Range 2E;

(q) "Boulder Mountain Region Grazing Zone," the land area of which consists of certain Forest Service lands situated in the following townships in Wayne and Garfield counties, as more fully illustrated in the map jointly prepared by the Wayne and Garfield counties GIS departments in February 2014, entitled "Boulder Mountain Region Grazing Zone":

(i) in Wayne County, Township 30S Range 3E, Township 30S Range 4E, and Township 30S Range 5E; and

(ii) in Garfield County, Township 35S Range 3W, Township 33S Range 2W, Township 34S Range 2W, Township 35S Range 2W, Township 31S Range 1W, Township 32S Range 1W, Township 33S Range 1W, Township 34S Range 1W, Township 35S Range 1W, Township 31S Range 1E, Township 32S Range 1E, Township 33S Range 1E, Township 34S Range 1E, Township 31S Range 2E, Township 32S Range 2E, Township 33S Range 2E, Township 34S Range 2E, Township 31S Range 3E, Township 32S Range 3E, Township 33S Range 3E, Township 31S Range 4E, Township 32S Range 4E, Township 33S Range 4E, Township 30 1/2S Range 5E, Township 31S Range 5E, Township 32S Range 5E, and Township 31S Range 6E;

(r) "Thousand Lake Region Grazing Zone," consisting of certain Forest Service lands in the following townships in Wayne County, as more fully illustrated in the map jointly prepared by the Wayne County GIS department in February 2014, entitled "Thousand Lake Region Grazing Zone": Township 26S Range 4E, Township 27S Range 4E, Township 28S Range 4E;

(s) "Hartnet Middle Desert Region Grazing Zone," consisting of certain BLM lands in the following townships in Wayne County, as more fully illustrated in the map jointly prepared by the Wayne County GIS department in February 2014, entitled "Hartnet Middle Desert Region Grazing Zone": Township 28S Range 7E, Township 27S Range 8E, and Township 28S Range 8E;

(t) "Sandy No. 1 Region Grazing Zone," consisting of certain BLM lands situated in the following townships in Wayne County, as more fully illustrated in the map jointly prepared by the Wayne County GIS department in February 2014, entitled "Sandy No. 1 Region Grazing Zone": Township 29S Range 8E, Township 30S Range 8E;

(u) "Blue Benches Region Grazing Zone," consisting of certain BLM lands in the following townships in Wayne County, as more fully illustrated in the map jointly prepared by the Wayne County GIS department in February 2014, entitled "Blue Benches Region Grazing Zone": Township 29S Range 9E, Township 29S Range 10E, and Township 30S Range 10E;

(v) "Wild Horse Region Grazing Zone," consisting of certain BLM lands in the following townships in Wayne County, as more fully illustrated in the map jointly prepared by the Wayne County GIS department in February 2014, entitled "Wild Horse Region Grazing Zone": Township 27S Range 10E, and Township 27S Range 11E;

(w) "Hanksville Region Grazing Zone," consisting of certain BLM lands in the following townships in Wayne County, as more fully illustrated in the map jointly prepared by the Wayne County GIS department in February 2014, entitled "Hanksville Region Grazing Zone": Township 29S Range 11E, Township 30S Range 11E, Township 28S Range 12E, Township 29S Range 12E, Township 30S Range 12E, and Township 30S Range 13E;

(x) "Jeffery Wells Region Grazing Zone," consisting of certain BLM lands in the following townships in Wayne County, as more fully illustrated in the map jointly prepared by the Wayne County GIS department in February 2014, entitled "Jeffery Wells Region Grazing Zone": Township 27S Range 14E and Township 27S Range 15E;

(y) "Robbers Roost Region Grazing Zone," consisting of certain BLM lands situated in the following townships in Wayne County, as more fully illustrated in the map jointly prepared by the Wayne County GIS department in February 2014, entitled "Robbers Roost Region Grazing Zone": Township 29S Range 14E;

(z) "French Springs Region Grazing Zone," the land area of which consists of certain BLM lands situated in the following townships in Wayne County, as more fully illustrated in the map jointly prepared by the Wayne County GIS department in February 2014, entitled "French Springs Region Grazing Zone": Township 30S Range 16E;

(aa) "12 Mile C&H Region Grazing Zone," consisting of certain Forest Service lands in the following townships of Sanpete County, as more fully illustrated in the map prepared by the Sanpete County GIS department in February 2014, entitled "12 Mile C&H Region Grazing Zone": Township 19S Range 3E and Township 20S Range 3E;

(bb) "Horseshoe Region Grazing Zone," consisting of certain Forest Service lands in the following townships of Sanpete County, as more fully illustrated in the map prepared by the Sanpete County GIS department in February 2014, entitled "Horseshoe Region Grazing Zone": Township 14S Range 5E, Township 14S Range 6E, Township 15S Range 5E, and Township 15S Range 6E;

(cc) "Nokai Dome Region Grazing Zone," consisting of certain BLM and National Park Service lands in the following townships of San Juan County, as more fully illustrated in the map prepared by the San Juan County GIS department in February 2014, entitled "Nokai Dome Region Grazing Zone": Township 38S Range 11E, Township 38S Range 12E, Township 39S Range 11E, Township 39S Range 12E, Township 39S Range 13E, Township 39S Range 14E, Township 39S Range 15E, Township 40S Range 10E, Township 40S Range 11E, Township 40S Range 12E, Township 40S Range 13E, Township 40S Range 14E, Township 41S Range 9E, Township 41S Range 10E, Township 41S Range 11E, and Township 41S Range 12E;

(dd) "Grand Gulch Region Grazing Zone," consisting of certain BLM and National Park Service lands in the following townships of San Juan County, as more fully illustrated in the map prepared by the San Juan County GIS department in February 2014, entitled "Grand Gulch Region Grazing Zone": Township 37S Range 17E, Township 37S Range 18E, Township 38S Range 16E, Township 38S Range 17E, Township 38S Range 18E, Township 39S Range 14E, Township 39S Range 15E, Township 39S Range 16E, Township 39S Range 17E, Township 39S Range 18E, Township 40S Range 14E, Township 40S Range 15E, Township 40S Range 16E, Township 40S Range 17E, and Township 40S Range 18E;

(ee) "Cedar Mesa East Region Grazing Zone," consisting of certain BLM and National Park Service lands in the following townships of San Juan County, as more fully illustrated in the map prepared by the San Juan County GIS department in February 2014, entitled "Cedar Mesa East Region Grazing Zone": Township 36S Range 20E, Township 37S Range 18E, Township 37S Range 19E, Township 37S Range 20E, Township 37S Range 21E, Township 38S Range 18E, Township 38S Range 19E, Township 38S Range 20E, Township 38S Range 21E, Township 39S Range 18E, Township 39S Range 19E, Township 39S Range 20E, Township 39S Range 21E, Township 40S Range 18E, Township 40S Range 19E, Township 40S Range 20E, Township 40S Range 21E, Township 41S Range 18E, Township 41S Range 19E, Township 41S Range 20E, and Township 41S Range 21E;

(ff) "Mancos Mesa Region Grazing Zone," consisting of certain BLM and National Park Service lands in the following townships of San Juan County, as more fully illustrated in the map prepared by the San Juan County GIS department in February 2014, entitled "Mancos Mesa Region Grazing Zone": Township 35S Range 13E, Township 36S Range 12E, Township 36S Range 13E, Township 36S Range 14E, Township 37S Range 12E, Township 37S Range 13E, Township 37S Range 14E, Township 37S Range 15E, Township 38S Range 11E, Township 38S Range 12E, Township 38S Range 13E, Township 38S Range 14E, Township 38S Range 15E, Township 38S Range 18E, Township 39S Range 13E, Township 39S Range 14E, and Township 39S Range 15E;

(gg) "Red Canyon Region Grazing Zone," consisting of certain BLM and National Park Service lands in the following townships of San Juan County, as more fully illustrated in the map prepared by the San Juan County GIS department in February 2014, entitled "Red Canyon Region Grazing Zone": Township 33S Range 14E, Township 34S Range 13E, Township 34S Range 14E, Township 34S Range 15E, Township 35S Range 13E, Township 35S Range 14E, Township 35S Range 15E, Township 36S Range 14E, Township 36S Range 15E, Township 36S Range 16E, Township 36S Range 17E, Township 37S Range 14E, Township 37S Range 15E, Township 37S Range 16E, Township 37S Range 17E, Township 38S Range 15E, and Township 38S Range 16E;

(hh) "White Canyon Region Grazing Zone," consisting of certain BLM and National Park Service lands in the following townships of San Juan County, as more fully illustrated in the map prepared by the San Juan County GIS department in February 2014, entitled "White Canyon Region Grazing Zone": Township 33S Range 14E, Township 33S Range 15E, Township 33S Range 16E, Township 34S Range 14E, Township 34S Range 15E, Township 34S Range 16E, Township 34S Range 17E, Township 35S Range 15E, Township 35S Range 16E, Township 35S Range 17E, Township 35S Range 18E, Township 36S Range 15E, Township 36S Range 16E, Township 36S Range 17E, Township 36S Range 18E, Township 37S Range 17E, and Township 37S Range 18E;

(ii) "Dark Canyon/Hammond Canyon Region Grazing Zone," consisting of certain Forest Service lands in the following townships of San Juan County, as more fully illustrated in the map prepared by the San Juan County GIS department in February 2014, entitled "Dark Canyon/Hammond Canyon Region Grazing Zone": Township 34S Range 17E, Township 34S Range 18E, Township 34S Range 19E, Township 34S Range 20E, Township 35S Range 17E, Township 35S Range 18E, Township 35S Range 19E, Township 35S Range 20E, Township 36S Range 18E, Township 36S Range 19E, Township 36S Range 20E, and Township 37S Range 19E;

(jj) "Chippewan/Indian Creek Region Grazing Zone," consisting of certain Forest Service lands in the following townships of San Juan County, as more fully illustrated in the map prepared by the San Juan County GIS department in February 2014, entitled "Chippewan/Indian Creek Region Grazing Zone": Township 32S Range 21E, Township 32S Range 22E, Township 33S Range 21E, Township 33S Range 22E, Township 34S Range 20E, Township 34S Range 21E, Township 34S Range 22E, Township 35S Range 20E, Township 35S Range 21E, and Township 35S Range 22E;

(kk) "Henry Mountain Region Grazing Zone," the land area of which consists of certain BLM lands situated in the following townships in Garfield County, as more fully illustrated in the map prepared by the Garfield County GIS department in February 2014, entitled "Henry Mountain Region Grazing Zone": Township 31S Range 7E, Township 31S Range 8E, Township 32S Range 8E, Township 33S Range 8E, Township 34S Range 8E, Township 31S Range 9E, Township 32S Range 9E, Township 33S Range 9E, Township 34S Range 9E, Township 35S Range 9E, Township 31S Range 10E, Township 32S Range 10E, Township 33S Range 10E, Township 34S Range 10E, Township 35S Range 10E, Township 31S Range 11E, Township 32S Range 11E, Township 33S Range 11E, Township 34S Range 11E, Township 32S Range 12E, Township 33S Range 12E, and Township 34S Range 12E;

(ll) "Glen Canyon Region Grazing Zone," the land area of which consists of certain BLM and National Park Service lands situated in the following townships in Garfield County, as more fully illustrated in the map prepared by the Garfield County GIS department in February 2014, entitled "Glen Canyon Region Grazing Zone": Township 36S Range 9E, Township 36S Range 10E, Township 37S Range 10E, Township 35S Range 11E, Township 36S Range 11E, Township 37S Range 11E, Township 31S Range 12E, Township 32S Range 12E, Township 33S Range 12E, Township 34S Range 12E, Township 35S Range 12E, Township 35 1/2S Range 12E, Township 36S Range 12E, Township 37S Range 12E, Township 31S Range 13E, Township 32S Range 13E, Township 33S Range 13E, Township 34S Range 13E, Township 35S Range 13E, Township 35 1/2S Range 13E, Township 36S Range 13E, Township 31S Range 14E, Township 32S Range 14E, Township 32 1/2S Range 14E, Township 33S Range 14E, Township 31S Range 15E, Township 32S Range 15E, Township 32 1/2S Range 15E, Township 33S Range 15E, Township 30 1/2S Range 16E, Township 31S Range 16E, Township 32S Range 16E, Township 30 1/2S Range 17E,

Township 31S Range 17E, Township 32S Range 17E, Township 30 1/2S Range 18E, and Township 31S Range 18E;

(mm) "Glendale Bench Region Grazing Zone," the land area of which consists of certain BLM and Forest Service lands situated in the following townships in Kane County, as more fully illustrated in the map prepared by the Kane County GIS department in February 2014, entitled "Glendale Bench Region Grazing Zone": Township 39S Range 6W, Township 39S Range 5W, Township 39S Range 4.5W, Township 40S Range 7W, Township 40S Range 6W, Township 41S Range 7W, and Township 41S Range 6W; and

(nn) "John R. Region Grazing Zone," the land area of which consists of certain BLM and Forest Service lands situated in the following townships in Kane County, as more fully illustrated in the map prepared by the Kane County GIS department in February 2014, entitled "John R. Region Grazing Zone": Township 41S Range 7W, Township 41S Range 6W, Township 42S Range 7W, Township 42S Range 6W, Township 43S Range 6W, and Township 44S Range 6W.

(3) Printed copies of the maps referenced in Subsection (2) shall be available for inspection by the public at the offices of the Utah Association of Counties.

(4) The state finds with respect to the grazing zones described in Subsection (2) that:

(a) agricultural livestock industry on the lands comprising these zones has provided a significant contribution to the history, customs, culture, economy, welfare, and other values of each area for more than 100 years;

(b) the potential for abundant natural and vegetative resources exists within these zones if managed properly, that will support and expand continued, responsible agricultural livestock activities and wildlife habitat;

(c) agricultural livestock activities in these zones and the associated historic resources, human history, shaping of human endeavors, variety of cultural resources, landmarks, structures, and other objects of historic or scientific interest are worthy of recognition, preservation, and protection;

(d) (i) the highest management priority for lands within these zones is the preservation, restoration, and enhancement of watershed and rangeland health to sustain and expand forage production for both livestock grazing and wildlife habitat, and the restoration and development of historic, existing, and future livestock grazing and wildlife habitat resources in order to provide protection for the resources, objects, customs, culture, and values identified above; and

(ii) notwithstanding Subsection (4)(d)(i), if part or all of any zone lies within a sage grouse management area, then the management priorities for such part shall be consistent with the management priorities set forth in Subsection (4)(d)(i) to the maximum extent consistent with the management priorities of the sage grouse management area;

(e) subject to Subsection (4)(d)(ii), responsible development of any deposits of energy and mineral resources, including oil, natural gas, oil shale, oil sands, coal, phosphate, gold, uranium, and copper, as well as areas with wind and solar energy potential, that may exist in these zones is compatible with the management priorities of Subsection (4)(d)(i) in these zones; and

(f) subject to Subsection (4)(d)(ii), responsible development of any recreation resources, including roads, campgrounds, water resources, trails, OHV use, sightseeing, canyoneering, hunting, fishing, trapping, and hiking resources that may exist in these grazing zones is compatible with the management priorities of Subsection (4)(d)(i) in these grazing zones.

(5) The state finds with respect to the zones described in Subsection (2) that the historic levels of livestock grazing activity and other values identified in Subsection (4) in each zone have greatly diminished, or are under other serious threat, due to:

(a) unreasonable, arbitrary, and unlawfully restrictive federal management policies, including:

(i) de facto managing for wilderness in nonwilderness areas and non WSAs;

(ii) ignoring the chiefly valuable for grazing designation of the Secretary of the Interior applicable to each of these zones; and

(iii) the arbitrary administrative reductions in animal unit months of permitted forage;

(b) inflexible federal grazing practices that disallow grazing at different times each year proven to be most effective for maintaining and enhancing rangeland conditions;

(c) mismanagement of wild horses and burros resulting in competition for forage by excess and mismanaged populations of wild horses and burros in Beaver and Emery counties;

- (d) improper management of vegetation resulting in the overgrowth of pinion, invasive species, and juniper, and other woody vegetation that:
 - (i) compromise watershed and rangeland health;
 - (ii) crowd out grazing forage;
 - (iii) degrade habitat and limit wildlife populations;
 - (iv) reduce water yield; and
 - (v) heighten the risk of catastrophic wildfire; and
 - (e) other practices that degrade overall rangeland health.
- (6) To protect and preserve against the threats described in Subsection (5), the state supports the following with respect to the zones described in Subsection (2):
 - (a) efficient and sustained policies, programs, and practices directed at preserving, restoring, and enhancing watershed and rangeland health to maximize:
 - (i) all permitted forage production for livestock grazing and other compatible uses, including flexible grazing on and off dates adaptive to yearly climate and range conditions; and
 - (ii) forage for fish and wildlife;
 - (b) a cooperative management approach by federal agencies, the state, and local government agencies to achieve broadly supported management plans for the full development of:
 - (i) forage resources for grazing livestock and wildlife; and
 - (ii) other uses compatible with livestock grazing and wildlife utilization;
 - (c) effective and responsible management of wild horses and burros to eliminate excess populations; and
 - (d) effective and responsible management of wildlife habitat.
- (7) The state requests that the federal agencies that administer lands within each grazing zone:
 - (a) fully cooperate and coordinate with the state and the respective counties within which each grazing zone is situated to develop, amend, and implement land and resource management plans, and implement management decisions that are consistent with the purposes, goals, and policies described in this section to the maximum extent allowed under federal law;
 - (b) expedite the processing, granting, and streamlining of grazing permits, range improvements, and applications to enhance and otherwise develop all existing and permitted grazing resources located within each grazing zone, including renewable vegetative resources;
 - (c) allow continued maintenance and increased development of roads, power lines, pipeline infrastructure, and other utilities necessary to achieve the goals, purposes, and policies described in this section and consistent with multiple use and sustained yield principles;
 - (d) refrain from any planning decisions and management actions that will undermine, restrict, or diminish the goals, purposes, and policies for each grazing zone as stated in this section;
 - (e) subject to Subsection (4)(d)(ii), refrain from implementing a policy that is contrary to the goals and purposes described within this section; and
 - (f) refrain from implementing utilization standards less than 50%, unless:
 - (i) implementing a standard of less than 50% utilization on a temporary basis is necessary to resolve site specific concerns; and
 - (ii) the federal agency consults, coordinates, and cooperates fully with local governments.
- (8) (a) The state recognizes the importance of all grazing districts on Utah BLM and Forest Service lands but establishes the grazing zones described in Subsection (2) to provide special protection and preservation against the identified threats found in Subsection (5) to exist in these zones.
- (b) It is the intent of the state to designate additional grazing agricultural commodity zones in future years, if circumstances warrant special protection and preservation for new zones.
- (9) The state calls upon applicable federal, state, and local agencies to coordinate with each other and establish applicable intergovernmental standing commissions, with membership consisting of representatives from the United States government, the state, and local governments to coordinate and achieve consistency in planning decisions and management actions in zones described in Subsection (2) in order to achieve the goals, purposes, and policies described in this section.
- (10) Notwithstanding the provisions of this section, and subject to Subsection (4)(d)(ii), the state's mineral, oil, gas, and energy policies and plans on land within the zones described in Subsection (2) shall be governed by Sections 63J 4 401 and 63J 8 104.

Enacted by Chapter 321, 2014 General Session

63J-8-105.9. Utah Timber Agricultural Commodity Zones established -- Findings -- Management and land use priorities.

(1) There are established and designated Utah Timber Agricultural Commodity Zones for the purpose of:

(a) preserving and protecting the agricultural timber, logging, and forest products industry within these zones from ongoing threats;

(b) preserving and protecting the significant history, culture, customs, and economic value of the agricultural timber, logging, and forest products industry within these zones from ongoing threats; and

(c) maximizing efficient and responsible restoration, reclamation, preservation, enhancement, and development of timber, logging, and forest products and affected natural, historical, and cultural activities within these zones, in order to protect and preserve these zones from ongoing threats.

(2) The titles, land area, and boundaries of these zones are described as follows:

(a) "Tushar Mountain Region Timber Zone," the land area of which consists of certain Forest Service lands in the following townships in Beaver County, as more fully illustrated in the map jointly prepared by the Beaver and Piute counties GIS departments in February 2014, entitled "Tushar Mountain Region Timber Zone":

(i) in Beaver County, Township 28S Range 4W, Township 29S Range 4W, Township 27S Range 5W, Township 28S Range 5W, Township 29S Range 5W, Township 30S Range 5W, Township 26S Range 6W, Township 27S Range 6W, Township 28S Range 6W, Township 29S Range 6W, Township 30S Range 6W; and

(ii) in Piute County, Township 26S Range 6W, Township 27S Range 6W, Township 26S Range 5W, Township 27S Range 5W, Township 28S Range 5W, Township 29S Range 5W, Township 30S Range 5W, Township 26S Range 4.5W, Township 26S Range 4W, Township 28S Range 4W, Township 29S Range 4W, Township 30S Range 4W;

(b) "Panguitch Lake Region Timber Zone," the land area of which consists of certain Forest Service lands situated in the following townships in Iron, Kane, and Garfield counties, as more fully illustrated in the map jointly prepared by the Iron, Kane, and Garfield counties GIS departments in February 2014, entitled "Panguitch Lake Region Timber Zone":

(i) in Iron County, Township 34S Range 7W, Township 35S Range 8W, Township 36S Range 8W, Township 36S Range 9W (excluding Cedar Breaks National Monument and Ashdown Wilderness Area), Township 37S Range 8W, and Township 37S Range 9W;

(ii) in Kane County, Township 38S Range 9W, Township 38S Range 8W, Township 38S Range 7W, Township 38S Range 6W, Township 39S Range 8W, Township 39S Range 7W, Township 39S Range 6W; and

(iii) in Garfield County, Township 35S Range 7W, Township 35S Range 6W, Township 36S Range 7W, Township 36S Range 6W, Township 37S Range 7W, and Township 37S Range 6W;

(c) "Monroe Mountain Region Timber Zone," consisting of certain Forest Service lands in the following townships in Piute County, as more fully illustrated in the map prepared by the Piute County GIS department in February 2014, entitled "Monroe Mountain Region Timber Zone": Township 26S Range 3W, Township 27S Range 2.5W, Township 28S Range 2.5W, Township 29S Range 2.5W, Township 26S Range 2W, Township 27S Range 2W, Township 28S Range 2W, Township 29S Range 2W, Township 26S Range 1W, and Township 7S Range 1W;

(d) "Boulder Mountain Region Timber Zone," the land area of which consists of certain Forest Service lands situated in the following townships in Wayne and Garfield counties, as more fully illustrated in the map jointly prepared by the Wayne and Garfield counties GIS departments in February 2014, entitled "Boulder Mountain Region Timber Zone":

(i) in Wayne County, Township 30S Range 3E, Township 30S Range 4E, and Township 30S Range 5E; and

(ii) in Garfield County, Township 31S Range 1E, Township 31S Range 2E, Township 31S Range 3E, Township 32S Range 2E, Township 32S Range 3E, Township 32S Range 4E, Township 33S Range 3E, Township 33S Range 4E, Township 30 1/2S Range 5E, Township 31S Range 5E, Township 31S Range 6E, Township 32S Range 5E, and Township 32S Range 6E;

(e) "Thousand Lake Region Timber Zone," consisting of certain Forest Service lands in the following townships in Wayne County, as more fully illustrated in the map jointly prepared by the Wayne County GIS department in February 2014, entitled "Thousand Lake Region Timber Zone": Township 26S Range 4E, Township 27S Range 4E, and Township 28S Range 4E;

(f) "Millers Flat Region Timber Zone," the land area of which consists of certain Forest Service lands situated in the following townships in Sanpete County, as more fully illustrated in the map jointly prepared by the Sanpete County GIS department in February 2014, entitled "Millers Flat Region Timber Zone": Township 16S Range 5E, Township 17S Range 5E, Township 17S Range 4E, and Township 17S Range 6E;

(g) "East Fork Timber Zone," the land area of which consists of certain Forest Service lands situated in the following townships in Garfield and Kane counties, as more fully illustrated in the map jointly prepared by the Garfield and Kane counties GIS departments in February 2014, entitled "East Fork Region Timber Zone":

(i) in Garfield County, Township 36S Range 4 1/2W, Township 36S Range 4W, Township 37S Range 5W, Township 37S Range 4 1/2W, and Township 37S Range 4W; and

(ii) in Kane County, Township 38S Range 5W, Township 38S Range 4.5W, Township 39S Range 5W, and Township 39S Range 4.5W;

(h) "Upper Valley Timber Zone," the land area of which consists of certain Forest Service lands situated in the following townships in Garfield County, as more fully illustrated in the map jointly prepared by the Garfield County GIS department in February 2014, entitled "Upper Valley Region Timber Zone": Township 34S Range 1W, Township 35S Range 1W, Township 35S Range 1E, Township 36S Range 1W, Township 36S Range 1E, and Township 37S Range 1E;

(i) "Iron Springs Timber Zone," the land area of which consists of certain Forest Service lands situated in the following townships in Garfield County, as more fully illustrated in the map jointly prepared by the Garfield County GIS department in February 2014, entitled "Iron Springs Region Timber Zone": Township 32S Range 1E, Township 33S Range 1W, Township 33S Range 1E, and Township 34S Range 1W; and

(j) "Dutton Timber Zone," the land area of which consists of certain Forest Service lands situated in the following townships in Garfield County, as more fully illustrated in the map jointly prepared by the Garfield County GIS department in February 2014, entitled "Dutton Region Timber Zone": Township 32S Range 3W, Township 32S Range 2W, Township 33S Range 3W, and Township 33S Range 2W.

(3) Printed copies of the maps referenced in Subsection (2) shall be available for inspection by the public at the offices of the Utah Association of Counties.

(4) The state finds with respect to the zones described in Subsection (2) that:

(a) agricultural timber, logging, and forest product industries on the lands comprising these timber zones have provided a significant contribution to the history, customs, culture, economy, welfare, and other values of each area for many decades;

(b) abundant natural and vegetative resources exist within these zones to support and expand continued, responsible timber, logging, and other forest product activities;

(c) agricultural timber, logging, and forest product activities in these zones, and the associated historic resources, human history, shaping of human endeavors, variety of cultural resources, landmarks, structures, and other objects of historic or scientific interest are worthy of recognition, preservation, and protection;

(d) (i) the highest management priority for lands within these zones is maintenance and promotion of forest and vegetation ecosystem health achieved by responsible active management in development of historic, existing, and future timber, logging, and forest product resources in order to provide protection for the resources, objects, customs, culture, and values identified above; and

(ii) notwithstanding Subsection (4)(d)(i), if part or all of any zone lies within a sage grouse management area, then the management priorities for such part shall be consistent with the management priorities set forth in Subsection (4)(d)(i) to the maximum extent consistent with the management priorities of the sage grouse management area;

(e) subject to Subsection (4)(d)(ii), responsible development of any deposits of energy and mineral resources, including oil, natural gas, oil shale, oil sands, coal, phosphate, gold, uranium, and copper, as well as areas with wind and solar energy potential, that may exist in these zones is compatible with the management priorities of Subsection (4)(d)(i) in these zones; and

(f) subject to Subsection (4)(d)(ii), responsible development of any recreation resources, including wildlife, roads, campgrounds, water resources, trails, OHV use, sightseeing, canyoneering, hunting, fishing, trapping, and hiking resources that may exist in these timber zones is compatible with the management priorities of Subsection (4)(d)(i) in these timber zones.

(5) The state finds that the historic levels of timber, logging, and forest products activities in the zones described in Subsection (2) have greatly diminished, or are under serious threat, due to:

- (a) unreasonable, arbitrary, and unlawfully restrictive federal management policies, including:
 - (i) de facto managing for wilderness in nonwilderness areas;
 - (ii) ignoring the multiple use sustained yield mission of the Forest Service;
 - (iii) ignoring the fact that the Forest Service's parent agency is the United States Department of Agriculture whose mission includes providing timber as an important agriculture resource; and
 - (iv) the arbitrary administrative reductions in timber, logging, and forest products activities;
- (b) improper management of forest vegetation resulting in the overcrowding of old growth alpine species and the crowding out of aspen diversity, all of which results in:
 - (i) devastation of entire mountainsides due to insect infestation and disease;
 - (ii) reduced water yield;
 - (iii) increased catastrophic wildfire;
 - (iv) increased soil erosion;
 - (v) degradation of wildlife habitat; and
 - (vi) suppression and threatened extinction of important rural economic activities; and
 - (c) other practices that degrade overall forest health.
- (6) To protect and preserve against the threats described in Subsection (5), the state supports the following with respect to the zones described in Subsection (2):
 - (a) efficient and responsible development, within each timber zone, of:
 - (i) robust timber thinning and harvesting programs and activities; and
 - (ii) other uses compatible with increased timber, logging, and forest product activities, including a return to historic levels of timber, logging, and forest product activity in each of these zones;
 - (b) a cooperative management approach by federal agencies, the state, and local governments to achieve broadly supported management plans for the full development, within each timber zone, of:
 - (i) forest product resources; and
 - (ii) other uses compatible with timber activities; and
 - (c) effective and responsible management of wildlife habitat.
 - (7) The state requests that the federal agencies that administer lands within each timber zone:
 - (a) fully cooperate and coordinate with the state and the respective counties within which each timber zone is situated to develop, amend, and implement land and resource management plans and implement management decisions that are consistent with the purposes, goals, and policies described in this section to the maximum extent allowed under federal law;
 - (b) expedite the processing, granting, and streamlining of logging and forest product harvesting permits, range improvements, and applications to enhance and otherwise develop existing and permitted timber resources located within each timber zone, including renewable vegetative resources;
 - (c) expedite stewardship programs to allow private enterprise to carry out the timber, logging, and forest activities described in this section;
 - (d) allow continued maintenance and increased development of roads, power lines, pipeline infrastructure, and other utilities necessary to achieve the goals, purposes, and policies described in this section and consistent with multiple use and sustained yield principles;
 - (e) refrain from any planning decisions and management actions that will undermine, restrict, or diminish the goals, purposes, and policies for each timber zone as stated in this section; and
 - (f) subject to Subsection (4)(d)(ii), refrain from implementing a policy that is contrary to the goals and purposes described within this section.
 - (8) (a) The state recognizes the importance of all areas on BLM and Forest Service lands high value lumber and forest product resources but establishes the special Timber Agricultural Commodity Zones to provide special protection and preservation against the identified threats found in Subsection (5) to exist in these zones.
 - (b) It is the intent of the Legislature to designate additional Timber Agricultural Commodity Zones in future years, if circumstances warrant special protection and preservation for new zones.
 - (9) The state calls upon applicable federal, state, and local agencies to coordinate with each other and establish applicable intergovernmental standing commissions, with membership consisting of representatives from the United States government, the state, and local governments to coordinate and achieve consistency in planning decisions and management actions in the zones described in Subsection (2).

(10) Notwithstanding the provisions of this section, and subject to Subsection (4)(d)(ii), the state's mineral, oil, gas, and energy policies, as well as its grazing policies, on land within zones described in Subsection (2), shall continue to be governed by Sections 63J 4 401 and 63J 8 104.

Enacted by Chapter 321, 2014 General Session

63J-8-106. County supported federal land use designation proposed in proposed congressional land use legislation -- Process for legislative review of proposed federal legislation land use within a county.

(1) (a) Notwithstanding any other provision of this chapter, the Legislature may, in accordance with this section, recommend to the Utah congressional delegation proposed congressional land use legislation that is supported by a county.

(b) A county that fails to comply with the requirements of this section may not communicate or otherwise represent in any way that a federal land use designation contained in proposed congressional land use legislation has the support or approval of the Legislature.

(2) If a county supports a federal land use designation contained in proposed congressional land use legislation, the county shall:

- (a) prepare a report on the proposed congressional land use legislation in accordance with Subsection (3);
 - (b) draft a concurrent resolution for a legislative committee's consideration, in accordance with Subsection (7)(a), in support of the proposed congressional land use legislation; and
 - (c) subject to Subsection (4)(a), deliver the report and draft concurrent resolution to the office.
- (3) The report required in Subsection (2)(a) shall include:
- (a) a copy of the proposed congressional land use legislation;
 - (b) a detailed description of the land or watercourse proposed for a federal land use designation, including:
 - (i) the total acres of federal land proposed for a federal land use designation;
 - (ii) (A) a map showing the location of the land or watercourse; and
 - (B) the proposed type of federal land use designation for each location;
 - (iii) a proposed land conveyance or land proposed for auction by the BLM, if any; and
 - (iv) (A) school and institutional trust land, as defined in Section 53C 1 103, proposed for a land exchange, if any; and
 - (B) whether the county has coordinated with SITLA on the proposed land exchange;
 - (c) an explanation of whether a federal land use designation will assist in resolving long standing public lands issues, such as wilderness disputes, economic development, recreational use, and access to public lands;
 - (d) a narrative description of the economic, recreational, and cultural impacts, taken as a whole, on a county and the state that would occur if Congress adopted the proposed congressional land use legislation, including an impact on state revenues;
 - (e) an account of actions, if any, proposed in a federal land use designation to minimize impacts on:
 - (i) resource extraction activities occurring on the land or in the watercourse proposed for a federal land use designation, including mining and energy development; and
 - (ii) motorized recreational use and public access;
 - (f) a summary of potential benefits gained by the county and state if Congress adopts the proposed congressional land use legislation;
 - (g) a description of the stakeholders and their positions on a federal land use designation;
 - (h) whether land identified for a federal land use designation is BLM recommended wilderness;
 - (i) an explanation of what the proposed congressional land use legislation proposes for federal land located in the county other than land identified for the federal land use designation;
 - (j) (i) a description of the impact that, if adopted by Congress, the proposed congressional land use legislation would have on access to roads currently identified as part of an adopted county transportation plan as described in Section 63J 4 401; and
 - (ii) if a federal land use designation proposes to close a road described in Subsection (3)(j)(i), an explanation for the road closure and a copy of the minutes of any county public hearing in which the proposed road closures were discussed and public comment was taken;
 - (k) (i) a description of a proposed resolution for an R.S. 2477 right of way, if any, located within the area identified in a federal land use designation; and

- (ii) whether a proposed resolution described in Subsection (3)(k)(i) would include a quiet title action concerning an R.S. 2477 right of way;
 - (l) an explanation of whether a federal land use designation proposes a hard release of all public lands and watercourses not included in the federal land use designation, placing the land and watercourses in multiple use management;
 - (m) an explanation of whether a federal land use designation proposes a prohibition on further federal action under the Antiquities Act of 1906, 16 U.S.C. Sec. 431 et seq.;
 - (n) a narrative description of a federal land use designation's interaction with, if any, a regional haze rule adopted by the United States Environmental Protection Agency;
 - (o) an explanation of whether a federal land use designation would authorize best management practices as part of an active effort to control on the land or watercourse proposed for a federal land use designation:
 - (i) wildfire;
 - (ii) invasive species, including insects; and
 - (iii) disease;
 - (p) if applicable, a statement as to whether a federal land use designation would allow for the continuation of existing grazing permits;
 - (q) a statement as to the presence or need of passive water management facilities or activities for livestock or wildlife, such as guzzlers or fencing, for the management of wildlife or livestock;
 - (r) if a federal land use designation identifies land that has oil, gas, or mineral deposits, an explanation as to why the federal land use designation includes the land;
 - (s) (i) a statement as to whether a federal land use designation:
 - (A) affects land or a watercourse located exclusively within the county; or
 - (B) affects, whether by an actual federal land use designation or by implication if a federal land use designation is adopted, land or a watercourse located in another county; and
 - (ii) if the land use proposal would affect land or a watercourse located in another county, whether that county supports the proposed congressional land use legislation;
 - (t) an explanation of whether a proposed land use designation designates land as wilderness in the National Wilderness Preservation System or designates land as a national conservation area that is not part of:
 - (i) BLM recommended wilderness; or
 - (ii) Forest Service land recommended for wilderness designation in RARE II; and
 - (u) a statement explaining whether and to what extent members of Utah's congressional delegation and their staff were consulted in preparing the proposed congressional land use legislation and the federal land use designation contained therein.
- (4) (a) No later than 60 days before delivering a report and draft concurrent resolution in accordance with Subsection (2), a county shall contact and inform the office of the county's intention to prepare and deliver the report and draft concurrent resolution.
- (b) The office may give general guidance to a county described in Subsection (4)(a), as requested, as to compliance with this section.
- (5) The office shall prepare an evaluation of the county's report, including whether the county has addressed each matter described in Subsection (3).
- (6) The office shall deliver the evaluation described in Subsection (5), including a copy of the county's report, the proposed congressional land use legislation, and the draft concurrent resolution, no later than 30 days after receiving the county's report:
- (a) if the Legislature is not in session, and subject to Subsection (6)(b), to the chair of the Natural Resources, Agriculture, and Environment Interim Committee; or
 - (b) if the Legislature is in session or there are no scheduled meetings of the Natural Resources, Agriculture, and Environment Interim Committee before the beginning of the next legislative session, to the chair of either the House Natural Resources, Agriculture, and Environment Committee or the Senate Natural Resources, Agriculture, and Environment Committee.
- (7) (a) At a committee's next scheduled meeting after receiving a report, the draft concurrent resolution, and a copy of the proposed congressional land use legislation, the committee shall:
- (i) review:
 - (A) the county's report;

- (B) the draft concurrent resolution, if the concurrent resolution has a legislative sponsor; and
 - (C) the office's evaluation;
 - (ii) if the draft concurrent resolution is presented to the committee, consider whether to approve or reject the draft concurrent resolution;
 - (iii) if the draft concurrent resolution is rejected, provide direction to the county as to the reasons the resolution was rejected and the actions that the county might take to secure committee approval of the resolution; and
 - (iv) take any additional action the committee finds necessary.
 - (b) A legislative committee may not accept for review a county supported federal land use designation contained in proposed congressional land use legislation that does not meet the requirements of this section.
 - (8) (a) If the committee rejects the draft concurrent resolution, a county may resubmit a revised report and draft concurrent resolution to the office in accordance with the terms of this section.
 - (b) Upon receipt of a revised report and draft concurrent resolution, the office shall comply with the procedures set forth in this section.
 - (c) Upon receipt of a revised report, evaluation, and draft concurrent resolution by the office, a committee described in Subsection (6) shall comply with the procedures set forth in this section.
 - (9) The governor may call a special session to consider the concurrent resolution presented to and approved by a committee described in Subsection (7)(a).
 - (10) If a concurrent resolution described in this section is adopted by the Legislature and signed by the governor, the Office of the Governor shall forward a copy of the concurrent resolution, the county's report, and the proposed congressional land use legislation to Utah's congressional delegation.
- Repealed and Re enacted by Chapter 165, 2012 General Session*

63J-8-107. Authority of the governor.

Nothing in this chapter may be construed to alter, affect, or diminish the authority of the governor.

Enacted by Chapter 165, 2012 General Session

Appendix B

Planning Duties of the Planning Coordinator and Office

[See Utah Code, Title 63J, Chapter 4, as amended]

63J-4-401. Planning duties of the planning coordinator and office.

- (1) The state planning coordinator shall:
 - (a) act as the governor's adviser on state, regional, metropolitan, and local governmental planning matters relating to public improvements and land use;
 - (b) counsel with the authorized representatives of the Department of Transportation, the State Building Board, the Department of Health, the Department of Workforce Services, the Labor Commission, the Department of Natural Resources, the School and Institutional Trust Lands Administration, and other proper persons concerning all state planning matters;
 - (c) when designated to do so by the governor, receive funds made available to Utah by the federal government;
 - (d) receive and review plans of the various state agencies and political subdivisions relating to public improvements and programs;
 - (e) when conflicts occur between the plans and proposals of state agencies, prepare specific recommendations for the resolution of the conflicts and submit the recommendations to the governor for a decision resolving the conflict;
 - (f) when conflicts occur between the plans and proposals of a state agency and a political subdivision or between two or more political subdivisions, advise these entities of the conflict and make specific recommendations for the resolution of the conflict;
 - (g) act as the governor's planning agent in planning public improvements and land use and, in this capacity, undertake special studies and investigations;
 - (h) provide information and cooperate with the Legislature or any of its committees in conducting planning studies;
 - (i) cooperate and exchange information with federal agencies and local, metropolitan, or regional agencies as necessary to assist with federal, state, regional, metropolitan, and local programs;
 - (j) make recommendations to the governor that the planning coordinator considers advisable for the proper development and coordination of plans for state government and political subdivisions; and
 - (k) oversee and supervise the activities and duties of the public lands policy coordinator.
- (2) The state planning coordinator may:
 - (a) perform regional and state planning and assist state government planning agencies in performing state planning;
 - (b) provide planning assistance to Indian tribes regarding planning for Indian reservations; and
 - (c) assist city, county, metropolitan, and regional planning agencies in performing local, metropolitan, and regional planning, provided that the state planning coordinator and the state planning coordinator's agents and designees recognize and promote the plans, policies, programs, processes, and desired outcomes of each planning agency whenever possible.
- (3) When preparing or assisting in the preparation of plans, policies, programs, or processes related to the management or use of federal lands or natural resources on federal lands in Utah, the state planning coordinator shall:
 - (a) incorporate the plans, policies, programs, processes, and desired outcomes of the counties where the federal lands or natural resources are located, to the maximum extent consistent with state and federal law, provided that this requirement shall not be interpreted to infringe upon the authority of the governor;
 - (b) identify inconsistencies or conflicts between the plans, policies, programs, processes, and desired outcomes prepared under Subsection (3)(a) and the plans, programs, processes, and desired outcomes of local government as early in the preparation process as possible, and seek resolution of the inconsistencies through meetings or other conflict resolution mechanisms involving the necessary and immediate parties to the inconsistency or conflict;

(c) present to the governor the nature and scope of any inconsistency or other conflict that is not resolved under the procedures in Subsection (3)(b) for the governor's decision about the position of the state concerning the inconsistency or conflict;

(d) develop, research, and use factual information, legal analysis, and statements of desired future condition for the state, or subregion of the state, as necessary to support the plans, policies, programs, processes, and desired outcomes of the state and the counties where the federal lands or natural resources are located;

(e) establish and coordinate agreements between the state and federal land management agencies, federal natural resource management agencies, and federal natural resource regulatory agencies to facilitate state and local participation in the development, revision, and implementation of land use plans, guidelines, regulations, other instructional memoranda, or similar documents proposed or promulgated for lands and natural resources administered by federal agencies; and

(f) work in conjunction with political subdivisions to establish agreements with federal land management agencies, federal natural resource management agencies, and federal natural resource regulatory agencies to provide a process for state and local participation in the preparation of, or coordinated state and local response to, environmental impact analysis documents and similar documents prepared pursuant to law by state or federal agencies.

(4) The state planning coordinator shall comply with the requirements of Subsection 63C 4a 203(8) before submitting any comments on a draft environmental impact statement or on an environmental assessment for a proposed land management plan, if the governor would be subject to Subsection 63C 4a 203(8) if the governor were submitting the material.

(5) The state planning coordinator shall cooperate with and work in conjunction with appropriate state agencies and political subdivisions to develop policies, plans, programs, processes, and desired outcomes authorized by this section by coordinating the development of positions:

(a) through the Resource Development Coordinating Committee;

(b) in conjunction with local government officials concerning general local government plans;

(c) by soliciting public comment through the Resource Development Coordinating Committee; and

(d) by working with the Public Lands Policy Coordinating Office.

(6) The state planning coordinator shall recognize and promote the following principles when preparing any policies, plans, programs, processes, or desired outcomes relating to federal lands and natural resources on federal lands pursuant to this section:

(a) (i) the citizens of the state are best served by applying multiple use and sustained yield principles in public land use planning and management; and

(ii) multiple use and sustained yield management means that federal agencies should develop and implement management plans and make other resource use decisions that:

(A) achieve and maintain in perpetuity a high level annual or regular periodic output of mineral and various renewable resources from public lands;

(B) support valid existing transportation, mineral, and grazing privileges at the highest reasonably sustainable levels;

(C) support the specific plans, programs, processes, and policies of state agencies and local governments;

(D) are designed to produce and provide the desired vegetation for the watersheds, timber, food, fiber, livestock forage, and wildlife forage, and minerals that are necessary to meet present needs and future economic growth and community expansion without permanent impairment of the productivity of the land;

(E) meet the recreational needs and the personal and business related transportation needs of the citizens of the state by providing access throughout the state;

(F) meet the recreational needs of the citizens of the state;

(G) meet the needs of wildlife;

(H) provide for the preservation of cultural resources, both historical and archaeological;

(I) meet the needs of economic development;

(J) meet the needs of community development; and

(K) provide for the protection of water rights;

(b) managing public lands for "wilderness characteristics" circumvents the statutory wilderness process and is inconsistent with the multiple use and sustained yield management standard that applies to all Bureau of Land Management and U.S. Forest Service lands that are not wilderness areas or wilderness study areas;

- (c) all waters of the state are:
 - (i) owned exclusively by the state in trust for its citizens;
 - (ii) are subject to appropriation for beneficial use; and
 - (iii) are essential to the future prosperity of the state and the quality of life within the state;
 - (d) the state has the right to develop and use its entitlement to interstate rivers;
 - (e) all water rights desired by the federal government must be obtained through the state water appropriation system;
 - (f) land management and resource use decisions which affect federal lands should give priority to and support the purposes of the compact between the state and the United States related to school and institutional trust lands;
 - (g) development of the solid, fluid, and gaseous mineral resources of the state is an important part of the economy of the state, and of local regions within the state;
 - (h) the state should foster and support industries that take advantage of the state's outstanding opportunities for outdoor recreation;
 - (i) wildlife constitutes an important resource and provides recreational and economic opportunities for the state's citizens;
 - (j) proper stewardship of the land and natural resources is necessary to ensure the health of the watersheds, timber, forage, and wildlife resources to provide for a continuous supply of resources for the people of the state and the people of the local communities who depend on these resources for a sustainable economy;
 - (k) forests, rangelands, timber, and other vegetative resources:
 - (i) provide forage for livestock;
 - (ii) provide forage and habitat for wildlife;
 - (iii) provide resources for the state's timber and logging industries;
 - (iv) contribute to the state's economic stability and growth; and
 - (v) are important for a wide variety of recreational pursuits;
 - (l) management programs and initiatives that improve watersheds, forests, and increase forage for the mutual benefit of wildlife species and livestock, logging, and other agricultural industries by utilizing proven techniques and tools are vital to the state's economy and the quality of life in Utah; and
 - (m) (i) land management plans, programs, and initiatives should provide that the amount of domestic livestock forage, expressed in animal unit months, for permitted, active use as well as the wildlife forage included in that amount, be no less than the maximum number of animal unit months sustainable by range conditions in grazing allotments and districts, based on an on the ground and scientific analysis;
 - (ii) the state opposes the relinquishment or retirement of grazing animal unit months in favor of conservation, wildlife, and other uses;
 - (iii) (A) the state favors the best management practices that are jointly sponsored by cattlemen's, sportsmen's, and wildlife management groups such as chaining, logging, seeding, burning, and other direct soil and vegetation prescriptions that are demonstrated to restore forest and rangeland health, increase forage, and improve watersheds in grazing districts and allotments for the mutual benefit of domestic livestock and wildlife;
 - (B) when practices described in Subsection (6)(m)(iii)(A) increase a grazing allotment's forage beyond the total permitted forage use that was allocated to that allotment in the last federal land use plan or allotment management plan still in existence as of January 1, 2005, a reasonable and fair portion of the increase in forage beyond the previously allocated total permitted use should be allocated to wildlife as recommended by a joint, evenly balanced committee of livestock and wildlife representatives that is appointed and constituted by the governor for that purpose;
 - (C) the state favors quickly and effectively adjusting wildlife population goals and population census numbers in response to variations in the amount of available forage caused by drought or other climatic adjustments, and state agencies responsible for managing wildlife population goals and population census numbers will give due regard to both the needs of the livestock industry and the need to prevent the decline of species to a point where listing under the terms of the Endangered Species Act when making such adjustments;
 - (iv) the state opposes the transfer of grazing animal unit months to wildlife for supposed reasons of rangeland health;
 - (v) reductions in domestic livestock animal unit months must be temporary and scientifically based upon rangeland conditions;

(vi) policies, plans, programs, initiatives, resource management plans, and forest plans may not allow the placement of grazing animal unit months in a suspended use category unless there is a rational and scientific determination that the condition of the rangeland allotment or district in question will not sustain the animal unit months sought to be placed in suspended use;

(vii) any grazing animal unit months that are placed in a suspended use category should be returned to active use when range conditions improve;

(viii) policies, plans, programs, and initiatives related to vegetation management should recognize and uphold the preference for domestic grazing over alternate forage uses in established grazing districts while upholding management practices that optimize and expand forage for grazing and wildlife in conjunction with state wildlife management plans and programs in order to provide maximum available forage for all uses; and

(ix) in established grazing districts, animal unit months that have been reduced due to rangeland health concerns should be restored to livestock when rangeland conditions improve, and should not be converted to wildlife use.

(7) The state planning coordinator shall recognize and promote the following findings in the preparation of any policies, plans, programs, processes, or desired outcomes relating to federal lands and natural resources on federal lands under this section:

(a) as a coholder of R.S. 2477 rights of way with the counties, the state supports its recognition by the federal government and the public use of R.S. 2477 rights of way and urges the federal government to fully recognize the rights of way and their use by the public as expeditiously as possible;

(b) it is the policy of the state to use reasonable administrative and legal measures to protect and preserve valid existing rights of way granted by Congress under R.S. 2477, and to support and work in conjunction with counties to redress cases where R.S. 2477 rights of way are not recognized or are impaired; and

(c) transportation and access routes to and across federal lands, including all rights of way vested under R.S. 2477, are vital to the state's economy and to the quality of life in the state, and must provide, at a minimum, a network of roads throughout the resource planning area that provides for:

(i) movement of people, goods, and services across public lands;

(ii) reasonable access to a broad range of resources and opportunities throughout the resource planning area, including:

(A) livestock operations and improvements;

(B) solid, fluid, and gaseous mineral operations;

(C) recreational opportunities and operations, including motorized and non motorized recreation;

(D) search and rescue needs;

(E) public safety needs; and

(F) access for transportation of wood products to market;

(iii) access to federal lands for people with disabilities and the elderly; and

(iv) access to state lands and school and institutional trust lands to accomplish the purposes of those lands.

(8) The state planning coordinator shall recognize and promote the following findings in the preparation of any plans, policies, programs, processes, or desired outcomes relating to federal lands and natural resources on federal lands pursuant to this section:

(a) the state's support for the addition of a river segment to the National Wild and Scenic Rivers System, 16 U.S.C. Sec. 1271 et seq., will be withheld until:

(i) it is clearly demonstrated that water is present and flowing at all times;

(ii) it is clearly demonstrated that the required water related value is considered outstandingly remarkable within a region of comparison consisting of one of the three physiographic provinces in the state, and that the rationale and justification for the conclusions are disclosed;

(iii) it is clearly demonstrated that the inclusion of each river segment is consistent with the plans and policies of the state and the county or counties where the river segment is located as those plans and policies are developed according to Subsection (3);

(iv) the effects of the addition upon the local and state economies, agricultural and industrial operations and interests, outdoor recreation, water rights, water quality, water resource planning, and access to and across river corridors in both upstream and downstream directions from the proposed river segment have been evaluated in detail by the relevant federal agency;

(v) it is clearly demonstrated that the provisions and terms of the process for review of potential additions have been applied in a consistent manner by all federal agencies;

(vi) the rationale and justification for the proposed addition, including a comparison with protections offered by other management tools, is clearly analyzed within the multiple use mandate, and the results disclosed;

(vii) it is clearly demonstrated that the federal agency with management authority over the river segment, and which is proposing the segment for inclusion in the National Wild and Scenic River System will not use the actual or proposed designation as a basis to impose management standards outside of the federal land management plan;

(viii) it is clearly demonstrated that the terms and conditions of the federal land and resource management plan containing a recommendation for inclusion in the National Wild and Scenic River System:

(A) evaluates all eligible river segments in the resource planning area completely and fully for suitability for inclusion in the National Wild and Scenic River System;

(B) does not suspend or terminate any studies for inclusion in the National Wild and Scenic River System at the eligibility phase;

(C) fully disclaims any interest in water rights for the recommended segment as a result of the adoption of the plan; and

(D) fully disclaims the use of the recommendation for inclusion in the National Wild and Scenic River System as a reason or rationale for an evaluation of impacts by proposals for projects upstream, downstream, or within the recommended segment;

(ix) it is clearly demonstrated that the agency with management authority over the river segment commits not to use an actual or proposed designation as a basis to impose Visual Resource Management Class I or II management prescriptions that do not comply with the provisions of Subsection (8)(t); and

(x) it is clearly demonstrated that including the river segment and the terms and conditions for managing the river segment as part of the National Wild and Scenic River System will not prevent, reduce, impair, or otherwise interfere with:

(A) the state and its citizens' enjoyment of complete and exclusive water rights in and to the rivers of the state as determined by the laws of the state; or

(B) local, state, regional, or interstate water compacts to which the state or any county is a party;

(b) the conclusions of all studies related to potential additions to the National Wild and Scenic River System, 16 U.S.C. Sec. 1271 et seq., are submitted to the state for review and action by the Legislature and governor, and the results, in support of or in opposition to, are included in any planning documents or other proposals for addition and are forwarded to the United States Congress;

(c) the state's support for designation of an Area of Critical Environmental Concern (ACEC), as defined in 43 U.S.C. Sec. 1702, within federal land management plans will be withheld until:

(i) it is clearly demonstrated that the proposed area satisfies all the definitional requirements of the Federal Land Policy and Management Act of 1976, 43 U.S.C. Sec. 1702(a);

(ii) it is clearly demonstrated that the area proposed for designation as an ACEC is limited in geographic size and that the proposed management prescriptions are limited in scope to the minimum necessary to specifically protect and prevent irreparable damage to the relevant and important values identified, or limited in geographic size and management prescriptions to the minimum required to specifically protect human life or safety from natural hazards;

(iii) it is clearly demonstrated that the proposed area is limited only to areas that are already developed or used or to areas where no development is required;

(iv) it is clearly demonstrated that the proposed area contains relevant and important historic, cultural or scenic values, fish or wildlife resources, or natural processes which are unique or substantially significant on a regional basis, or contain natural hazards which significantly threaten human life or safety;

(v) the federal agency has analyzed regional values, resources, processes, or hazards for irreparable damage and its potential causes resulting from potential actions which are consistent with the multiple use, sustained yield principles, and the analysis describes the rationale for any special management attention required to protect, or prevent irreparable damage to the values, resources, processes, or hazards;

(vi) it is clearly demonstrated that the proposed designation is consistent with the plans and policies of the state and of the county where the proposed designation is located as those plans and policies are developed according to Subsection (3);

(vii) it is clearly demonstrated that the proposed ACEC designation will not be applied redundantly over existing protections provided by other state and federal laws for federal lands or resources on federal lands, and that the federal statutory requirement for special management attention for a proposed ACEC will discuss and justify any management requirements needed in addition to those specified by the other state and federal laws;

(viii) the difference between special management attention required for an ACEC and normal multiple use management has been identified and justified, and that any determination of irreparable damage has been analyzed and justified for short and long term horizons;

(ix) it is clearly demonstrated that the proposed designation:

(A) is not a substitute for a wilderness suitability recommendation;

(B) is not a substitute for managing areas inventoried for wilderness characteristics after 1993 under the BLM interim management plan for valid wilderness study areas; and

(C) it is not an excuse or justification to apply de facto wilderness management standards; and

(x) the conclusions of all studies are submitted to the state, as a cooperating agency, for review, and the results, in support of or in opposition to, are included in all planning documents;

(d) sufficient federal lands are made available for government to government exchanges of school and institutional trust lands and federal lands without regard for a resource to resource correspondence between the surface or mineral characteristics of the offered trust lands and the offered federal lands;

(e) federal agencies should support government to government exchanges of land with the state based on a fair process of valuation which meets the fiduciary obligations of both the state and federal governments toward trust lands management, and which assures that revenue authorized by federal statute to the state from mineral or timber production, present or future, is not diminished in any manner during valuation, negotiation, or implementation processes;

(f) agricultural and grazing lands should continue to produce the food and fiber needed by the citizens of the state and the nation, and the rural character and open landscape of rural Utah should be preserved through a healthy and active agricultural and grazing industry, consistent with private property rights and state fiduciary duties;

(g) the resources of the forests and rangelands of the state should be integrated as part of viable, robust, and sustainable state and local economies, and available forage should be evaluated for the full complement of herbivores the rangelands can support in a sustainable manner, and forests should contain a diversity of timber species, and disease or insect infestations in forests should be controlled using logging or other best management practices;

(h) the state opposes any additional evaluation of national forest service lands as "roadless" or "unroaded" beyond the forest service's second roadless area review evaluation and opposes efforts by agencies to specially manage those areas in a way that:

(i) closes or declassifies existing roads unless multiple side by side roads exist running to the same destination and state and local governments consent to close or declassify the extra roads;

(ii) permanently bars travel on existing roads;

(iii) excludes or diminishes traditional multiple use activities, including grazing and proper forest harvesting;

(iv) interferes with the enjoyment and use of valid, existing rights, including water rights, local transportation plan rights, R.S. 2477 rights, grazing allotment rights, and mineral leasing rights; or

(v) prohibits development of additional roads reasonably necessary to pursue traditional multiple use activities;

(i) the state's support for any forest plan revision or amendment will be withheld until the appropriate plan revision or plan amendment clearly demonstrates that:

(i) established roads are not referred to as unclassified roads or a similar classification;

(ii) lands in the vicinity of established roads are managed under the multiple use, sustained yield management standard; and

(iii) no roadless or unroaded evaluations or inventories are recognized or upheld beyond those that were recognized or upheld in the forest service's second roadless area review evaluation;

(j) the state's support for any recommendations made under the statutory requirement to examine the wilderness option during the revision of land and resource management plans by the U.S. Forest Service will be withheld until it is clearly demonstrated that:

- (i) the duly adopted transportation plans of the state and county or counties within the planning area are fully and completely incorporated into the baseline inventory of information from which plan provisions are derived;
- (ii) valid state or local roads and rights of way are recognized and not impaired in any way by the recommendations;
- (iii) the development of mineral resources by underground mining is not affected by the recommendations;
- (iv) the need for additional administrative or public roads necessary for the full use of the various multiple uses, including recreation, mineral exploration and development, forest health activities, and grazing operations is not unduly affected by the recommendations;
- (v) analysis and full disclosure is made concerning the balance of multiple use management in the proposed areas, and that the analysis compares the full benefit of multiple use management to the recreational, forest health, and economic needs of the state and the counties to the benefits of the requirements of wilderness management; and
- (vi) the conclusions of all studies related to the requirement to examine the wilderness option are submitted to the state for review and action by the Legislature and governor, and the results, in support of or in opposition to, are included in any planning documents or other proposals that are forwarded to the United States Congress;
- (k) the invasion of noxious weeds and undesirable invasive plant species into the state should be reversed, their presence eliminated, and their return prevented;
- (l) management and resource use decisions by federal land management and regulatory agencies concerning the vegetative resources within the state should reflect serious consideration of the proper optimization of the yield of water within the watersheds of the state;
- (m) (i) it is the policy of the state that:
 - (A) mineral and energy production and environmental protection are not mutually exclusive;
 - (B) it is technically feasible to permit appropriate access to mineral and energy resources while preserving nonmineral and nonenergy resources;
 - (C) resource management planning should seriously consider all available mineral and energy resources;
 - (D) the development of the solid, fluid, and gaseous mineral resources of the state and the renewable resources of the state should be encouraged;
 - (E) the waste of fluid and gaseous minerals within developed areas should be prohibited; and
 - (F) requirements to mitigate or reclaim mineral development projects should be based on credible evidence of significant impacts to natural or cultural resources;
- (ii) the state's support for mineral development provisions within federal land management plans will be withheld until the appropriate land management plan environmental impact statement clearly demonstrates:
 - (A) that the authorized planning agency has:
 - (I) considered and evaluated the mineral and energy potential in all areas of the planning area as if the areas were open to mineral development under standard lease agreements; and
 - (II) evaluated any management plan prescription for its impact on the area's baseline mineral and energy potential;
 - (B) that the development provisions do not unduly restrict access to public lands for energy exploration and development;
 - (C) that the authorized planning agency has supported any closure of additional areas to mineral leasing and development or any increase of acres subject to no surface occupancy restrictions by adhering to:
- (I) the relevant provisions of the Federal Land Policy and Management Act of 1976, 43 U.S.C. Sec. 1701 et seq.;
- (II) other controlling mineral development laws; and
- (III) the controlling withdrawal and reporting procedures set forth in the Federal Land Policy and Management Act of 1976, 43 U.S.C. Sec. 1701 et seq.;
- (D) that the authorized planning agency evaluated whether to repeal any moratorium that may exist on the issuance of additional mining patents and oil and gas leases;
- (E) that the authorized planning agency analyzed all proposed mineral lease stipulations and considered adopting the least restrictive necessary to protect against damage to other significant resource values;
- (F) that the authorized planning agency evaluated mineral lease restrictions to determine whether to waive, modify, or make exceptions to the restrictions on the basis that they are no longer necessary or effective;

(G) that the authorized federal agency analyzed all areas proposed for no surface occupancy restrictions, and that the analysis evaluated:

(I) whether directional drilling is economically feasible and ecologically necessary for each proposed no surface occupancy area;

(II) whether the directional drilling feasibility analysis, or analysis of other management prescriptions, demonstrates that the proposed no surface occupancy prescription, in effect, sterilizes the mineral and energy resources beneath the area; and

(III) whether, if the minerals are effectively sterilized, the area must be reported as withdrawn under the provisions of the Federal Land Policy and Management Act; and

(H) that the authorized planning agency has evaluated all directional drilling requirements in no surface occupancy areas to determine whether directional drilling is feasible from an economic, ecological, and engineering standpoint;

(n) motorized, human, and animal powered outdoor recreation should be integrated into a fair and balanced allocation of resources within the historical and cultural framework of multiple uses in rural Utah, and outdoor recreation should be supported as part of a balanced plan of state and local economic support and growth;

(o) off highway vehicles should be used responsibly, the management of off highway vehicles should be uniform across all jurisdictions, and laws related to the use of off highway vehicles should be uniformly applied across all jurisdictions;

(p) (i) rights of way granted and vested under the provisions of R.S. 2477 should be preserved and acknowledged;

(ii) land use management plans, programs, and initiatives should be consistent with both state and county transportation plans developed according to Subsection (3) in order to provide a network of roads throughout the planning area that provides for:

(A) movement of people, goods, and services across public lands;

(B) reasonable access to a broad range of resources and opportunities throughout the planning area, including access to livestock, water, and minerals;

(C) economic and business needs;

(D) public safety;

(E) search and rescue;

(F) access for people with disabilities and the elderly;

(G) access to state lands; and

(H) recreational opportunities;

(q) transportation and access provisions for all other existing routes, roads, and trails across federal, state, and school trust lands within the state should be determined and identified, and agreements should be executed and implemented, as necessary to fully authorize and determine responsibility for maintenance of all routes, roads, and trails;

(r) the reasonable development of new routes and trails for motorized, human, and animal powered recreation should be implemented;

(s) (i) forests, rangelands, and watersheds, in a healthy condition, are necessary and beneficial for wildlife, livestock grazing, and other multiple uses;

(ii) management programs and initiatives that are implemented to increase forage for the mutual benefit of the agricultural industry, livestock operations, and wildlife species should utilize all proven techniques and tools;

(iii) the continued viability of livestock operations and the livestock industry should be supported on the federal lands within the state by management of the lands and forage resources, by the proper optimization of animal unit months for livestock, in accordance with the multiple use provisions of the Federal Land Policy and Management Act of 1976, 43 U.S.C. 1701 et seq., the provisions of the Taylor Grazing Act of 1934, 43 U.S.C. 315 et seq., and the provisions of the Public Rangelands Improvement Act of 1978, 43 U.S.C. 1901 et seq.;

(iv) provisions for predator control initiatives or programs under the direction of state and local authorities should be implemented; and

(v) resource use and management decisions by federal land management and regulatory agencies should support state sponsored initiatives or programs designed to stabilize wildlife populations that may be experiencing a scientifically demonstrated decline in those populations; and

(t) management and resource use decisions by federal land management and regulatory agencies concerning the scenic resources of the state must balance the protection of scenery with the full management requirements of the other authorized uses of the land under multiple use management, and should carefully consider using Visual Resource Management Class I protection only for areas of inventoried Class A scenery or equivalent.

(9) Notwithstanding any provision of Section 63J 8 105.5, the state is committed to establishing and administering an effective statewide conservation strategy for greater sage grouse.

(10) Nothing contained in this section may be construed to restrict or supersede the planning powers conferred upon state departments, agencies, instrumentalities, or advisory councils of the state or the planning powers conferred upon political subdivisions by any other existing law.

(11) Nothing in this section may be construed to affect any lands withdrawn from the public domain for military purposes, which are administered by the United States Army, Air Force, or Navy.

Amended by Chapter 101, 2013 General Session

Appendix C

Public Lands Policy Coordinating Office

[See Utah Code, Title 63J, Chapter 4]

63J-4-601. Definitions.

As used in this part:

- (1) "Coordinator" means the public lands policy coordinator appointed in this part.
- (2) "Office" means the Public Lands Policy Coordinating Office created by this part.
- (3) "Political subdivision" means a county, municipality, local district, special service district, school district, inter local cooperation agreement entity, or any administrative subunit of them.
- (4) "State planning coordinator" means the person appointed under Subsection 63J 4 202(1)(a)(ii).

Amended by Chapter 121, 2009 General Session

63J-4-602. Public Lands Policy Coordinating Office -- Coordinator -- Appointment -- Qualifications -- Compensation.

(1) There is created within state government the Public Lands Policy Coordinating Office. The office shall be administered by a public lands policy coordinator.

(2) The coordinator shall be appointed by the governor with the consent of the Senate and shall serve at the pleasure of the governor.

(3) The coordinator shall have demonstrated the necessary administrative and professional ability through education and experience to efficiently and effectively manage the office's affairs.

(4) The coordinator and employees of the office shall receive compensation as provided in Title 67, Chapter 19, Utah State Personnel Management Act.

Renumbered and Amended by Chapter 382, 2008 General Session

63J-4-603. Powers and duties of coordinator and office.

(1) The coordinator and the office shall:

(a) make a report to the Constitutional Defense Council created under Section 63C 4a 202 concerning R.S. 2477 rights and other public lands issues under Title 63C, Chapter 4a, Constitutional and Federalism Defense Act;

(b) provide staff assistance to the Constitutional Defense Council created under Section 63C 4a 202 for meetings of the council;

(c) (i) prepare and submit a constitutional defense plan under Section 63C 4a 403; and

(ii) execute any action assigned in a constitutional defense plan;

(d) under the direction of the state planning coordinator, assist in fulfilling the state planning coordinator's duties outlined in Section 63J 4 401 as those duties relate to the development of public lands policies by:

(i) developing cooperative contracts and agreements between the state, political subdivisions, and agencies of the federal government for involvement in the development of public lands policies;

(ii) producing research, documents, maps, studies, analysis, or other information that supports the state's participation in the development of public lands policy;

(iii) preparing comments to ensure that the positions of the state and political subdivisions are considered in the development of public lands policy;

(iv) partnering with state agencies and political subdivisions in an effort to:

(A) prepare coordinated public lands policies;

(B) develop consistency reviews and responses to public lands policies;

(C) develop management plans that relate to public lands policies; and

(D) develop and maintain a statewide land use plan that is based on cooperation and in conjunction with political subdivisions; and

(v) providing other information or services related to public lands policies as requested by the state planning coordinator;

(e) facilitate and coordinate the exchange of information, comments, and recommendations on public lands policies between and among:

(i) state agencies;

(ii) political subdivisions;

- (iii) the Office of Rural Development created under Section 63M 1 1602;
- (iv) the Resource Development Coordinating Committee created under Section 63J 4 501;
- (v) School and Institutional Trust Lands Administration created under Section 53C 1 201;
- (vi) the committee created under Section 63F 1 508 to award grants to counties to inventory and map R.S. 2477 rights of way, associated structures, and other features; and
- (vii) the Constitutional Defense Council created under Section 63C 4a 202;
- (f) perform the duties established in Title 9, Chapter 8, Part 3, Antiquities, and Title 9, Chapter 8, Part 4, Historic Sites;
- (g) consistent with other statutory duties, encourage agencies to responsibly preserve archaeological resources;
- (h) maintain information concerning grants made under Subsection (1)(j), if available;
- (i) report annually, or more often if necessary or requested, concerning the office's activities and expenditures to:
 - (i) the Constitutional Defense Council; and
 - (ii) the Legislature's Natural Resources, Agriculture, and Environment Interim Committee jointly with the Constitutional Defense Council;
- (j) make grants of up to 16% of the office's total annual appropriations from the Constitutional Defense Restricted Account to a county or statewide association of counties to be used by the county or association of counties for public lands matters if the coordinator, with the advice of the Constitutional Defense Council, determines that the action provides a state benefit;
- (k) provide staff services to the Snake Valley Aquifer Advisory Council created in Section 63C 12 103;
- (l) coordinate and direct the Snake Valley Aquifer Research Team created in Section 63C 12 107; and (m) conduct the public lands transfer study and economic analysis required by Section 63J 4 606.
- (2) The coordinator and office shall comply with Subsection 63C 4a 203(8) before submitting a comment to a federal agency, if the governor would be subject to Subsection 63C 4a 203(8) if the governor were submitting the material.
- (3) The office may enter into a contract or other agreement with another state agency to provide information and services related to:
 - (a) the duties authorized by Title 72, Chapter 3, Highway Jurisdiction and Classification Act;
 - (b) legal actions concerning Title 72, Chapter 3, Highway Jurisdiction and Classification Act, or R.S. 2477 matters; or
 - (c) any other matter within the office's responsibility.

Amended by Chapter 101, 2013 General Session

Amended by Chapter 337, 2013 General Session

Appendix D

Federal Land Policy and Management Act of 1976

Section 202; Land Use Planning

LAND USE PLANNING

Sec. 202. [43 U.S.C. 1712] (a) The Secretary shall, with public involvement and consistent with the terms and conditions of this Act, develop, maintain, and, when appropriate, revise land use plans which provide by tracts or areas for the use of the public lands. Land use plans shall be developed for the public lands regardless of whether such lands previously have been classified, withdrawn, set aside, or otherwise designated for one or more uses.

(b) In the development and revision of land use plans, the Secretary of Agriculture shall coordinate land use plans for lands in the National Forest System with the land use planning and management programs of and for Indian tribes by, among other things, considering the policies of approved tribal land resource management programs.

(c) In the development and revision of land use plans, the Secretary shall

(1) use and observe the principles of multiple use and sustained yield set forth in this and other applicable law;

(2) use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences;

(3) give priority to the designation and protection of areas of critical environmental concern;

(4) rely, to the extent it is available, on the inventory of the public lands, their resources, and other values;

(5) consider present and potential uses of the public lands;

(6) consider the relative scarcity of the values involved and the availability of alternative means (including recycling) and sites for realization of those values;

(7) weigh long term benefits to the public against short term benefits;

(8) provide for compliance with applicable pollution control laws, including State and Federal air, water, noise, or other pollution standards or implementation plans; and

(9) to the extent consistent with the laws governing the administration of the public lands, coordinate the land use inventory, planning, and management activities of or for such lands with the land use planning and management programs of other Federal departments and agencies and of the States and local governments within which the lands are located, including, but not limited to, the statewide outdoor recreation plans developed under the Act of September 3, 1964 (78 Stat. 897), as amended [16 U.S.C. 4601 4 et seq. note], and of or for Indian tribes by, among other things, considering the policies of approved State and tribal land resource management programs. In implementing this directive, the Secretary shall, to the extent he finds practical, keep apprised of State, local, and tribal land use plans; assure that consideration is given to those State, local, and tribal plans that are germane in the development of land use plans for public lands; assist in resolving, to the extent practical, inconsistencies between Federal and non Federal Government plans, and shall provide for meaningful public involvement of State and local government officials, both elected and appointed, in the development of land use programs, land use regulations, and land use decisions for public lands, including early public notice of proposed decisions which may have a significant impact on non Federal lands. Such officials in each State are authorized to furnish advice to the Secretary with respect to the development and revision of land use plans, land use guidelines, land use rules, and land use regulations for the public lands within such State and with respect to such other land use matters as may be referred to them by him. Land use plans of the Secretary under this section shall be consistent with State and local plans to the maximum extent he finds consistent with Federal law and the purposes of this Act.

(d) Any classification of public lands or any land use plan in effect on the date of enactment of this Act is subject to review in the land use planning process conducted under this section, and all public lands, regardless of classification, are subject to inclusion in any land use plan developed pursuant to this section. The Secretary may modify or terminate any such classification consistent with such land use plans.

(e) The Secretary may issue management decisions to implement land use plans developed or revised under this section in accordance with the following:

(1) Such decisions, including but not limited to exclusions (that is, total elimination) of one or more of the principal or major uses made by a management decision shall remain subject to reconsideration, modification, and termination through revision by the Secretary or his delegate, under the provisions of this section, of the land use plan involved. (2) Any management decision or action pursuant to a management decision that excludes (that is, totally eliminates) one or more of the principal or major uses for two or more years with respect to a tract of land of

one hundred thousand acres or more shall be reported by the Secretary to the House of Representatives and the Senate. If within ninety days from the giving of such notice (exclusive of days on which either House has adjourned for more than three consecutive days), the Congress adopts a concurrent resolution of nonapproval of the management decision or action, then the management decision or action shall be promptly terminated by the Secretary. If the committee to which a resolution has been referred during the said ninety day period, has not reported it at the end of thirty calendar days after its referral, it shall be in order to either discharge the committee from further consideration of such resolution or to discharge the committee from consideration of any other resolution with respect to the management decision or action. A motion to discharge may be made only by an individual favoring the resolution, shall be highly privileged (except that it may not be made after the committee has reported such a resolution), and debate thereon shall be limited to not more than one hour, to be divided equally between those favoring and those opposing the resolution. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to. If the motion to discharge is agreed to or disagreed to, the motion may not be made with respect to any other resolution with respect to the same management decision or action. When the committee has reprinted, or has been discharged from further consideration of a resolution, it shall at any time thereafter be in order (even though a previous motion to the same effect has been disagreed to) to move to proceed to the consideration of the resolution. The motion shall be highly privileged and shall not be debatable. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to.

(3) Withdrawals made pursuant to section 204 of this Act may be used in carrying out management decisions, but public lands shall be removed from or restored to the operation of the Mining Law of 1872, as amended (R.S. 2318-2352; 30 U.S.C. 21 et seq.) or transferred to another department, bureau, or agency only by withdrawal action pursuant to section 204 or other action pursuant to applicable law: *Provided*, That nothing in this section shall prevent a wholly owned Government corporation from acquiring and holding rights as a citizen under the Mining Law of 1872.

(f) The Secretary shall allow an opportunity for public involvement and by regulation shall establish procedures, including public hearings where appropriate, to give Federal, State, and local governments and the public, adequate notice and opportunity to comment upon and participate in the formulation of plans and programs relating to the management of the public lands.

Appendix E

The National Environmental Policy Act

The National Environmental Policy Act of 1969, as amended (Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), Sept. 13, 1982)

An Act to establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Environmental Policy Act of 1969."

Purpose

Sec. 2 [42 USC § 4321].

The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

TITLE I

CONGRESSIONAL DECLARATION OF NATIONAL ENVIRONMENTAL POLICY

Sec. 101 [42 USC § 4331].

(a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may --

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;
5. achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

Sec. 102 [42 USC § 4332].

The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall --

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision making along with economic and technical considerations;

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on --

- (i) the environmental impact of the proposed action,
- (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
- (iii) alternatives to the proposed action,
- (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
- (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

(D) Any detailed statement required under subparagraph (C) after January 1, 1970, for any major Federal action funded under a program of grants to States shall not be deemed to be legally insufficient solely by reason of having been prepared by a State agency or official, if:

- (i) the State agency or official has statewide jurisdiction and has the responsibility for such action,
- (ii) the responsible Federal official furnishes guidance and participates in such preparation,
- (iii) the responsible Federal official independently evaluates such statement prior to its approval and adoption, and
- (iv) after January 1, 1976, the responsible Federal official provides early notification to, and solicits the views of, any other State or any Federal land management entity of any action or any alternative thereto which may have significant impacts upon such State or affected Federal land management entity and, if there is any disagreement on such impacts, prepares a written assessment of such impacts and views for incorporation into such detailed statement.

The procedures in this subparagraph shall not relieve the Federal official of his responsibilities for the scope, objectivity, and content of the entire statement or of any other responsibility under this Act; and further, this subparagraph does not affect the legal sufficiency of statements prepared by State agencies with less than statewide jurisdiction.

(E) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(F) recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(G) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(H) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(I) assist the Council on Environmental Quality established by title II of this Act.

Sec. 103 [42 USC § 4333].

All agencies of the Federal Government shall review their present statutory authority, administrative regulations, and current policies and procedures for the purpose of determining whether there are any deficiencies or inconsistencies therein which prohibit full compliance with the purposes and provisions of this Act and shall propose to the President not later than July 1, 1971, such measures as may be necessary to

bring their authority and policies into conformity with the intent, purposes, and procedures set forth in this Act.

Sec. 104 [42 USC § 4334].

Nothing in section 102 [42 USC § 4332] or 103 [42 USC § 4333] shall in any way affect the specific statutory obligations of any Federal agency (1) to comply with criteria or standards of environmental quality, (2) to coordinate or consult with any other Federal or State agency, or (3) to act, or refrain from acting contingent upon the recommendations or certification of any other Federal or State agency.

Sec. 105 [42 USC § 4335].

The policies and goals set forth in this Act are supplementary to those set forth in existing authorizations of Federal agencies.

TITLE II

COUNCIL ON ENVIRONMENTAL QUALITY

Sec. 201 [42 USC § 4341].

The President shall transmit to the Congress annually beginning July 1, 1970, an Environmental Quality Report (hereinafter referred to as the "report") which shall set forth (1) the status and condition of the major natural, manmade, or altered environmental classes of the Nation, including, but not limited to, the air, the aquatic, including marine, estuarine, and fresh water, and the terrestrial environment, including, but not limited to, the forest, dryland, wetland, range, urban, suburban and rural environment; (2) current and foreseeable trends in the quality, management and utilization of such environments and the effects of those trends on the social, economic, and other requirements of the Nation; (3) the adequacy of available natural resources for fulfilling human and economic requirements of the Nation in the light of expected population pressures; (4) a review of the programs and activities (including regulatory activities) of the Federal Government, the State and local governments, and nongovernmental entities or individuals with particular reference to their effect on the environment and on the conservation, development and utilization of natural resources; and (5) a program for remedying the deficiencies of existing programs and activities, together with recommendations for legislation.

Sec. 202 [42 USC § 4342].

There is created in the Executive Office of the President a Council on Environmental Quality (hereinafter referred to as the "Council"). The Council shall be composed of three members who shall be appointed by the President to serve at his pleasure, by and with the advice and consent of the Senate. The President shall designate one of the members of the Council to serve as Chairman. Each member shall be a person who, as a result of his training, experience, and attainments, is exceptionally well qualified to analyze and interpret environmental trends and information of all kinds; to appraise programs and activities of the Federal Government in the light of the policy set forth in title I of this Act; to be conscious of and responsive to the scientific, economic, social, aesthetic, and cultural needs and interests of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.

Sec. 203 [42 USC § 4343].

(a) The Council may employ such officers and employees as may be necessary to carry out its functions under this Act. In addition, the Council may employ and fix the compensation of such experts and consultants as may be necessary for the carrying out of its functions under this Act, in accordance with section 3109 of title 5, United States Code (but without regard to the last sentence thereof).

(b) Notwithstanding section 1342 of Title 31, the Council may accept and employ voluntary and uncompensated services in furtherance of the purposes of the Council.

Sec. 204 [42 USC § 4344].

It shall be the duty and function of the Council --

to assist and advise the President in the preparation of the Environmental Quality Report required by section 201 [42 USC § 4341] of this title;

to gather timely and authoritative information concerning the conditions and trends in the quality of the environment both current and prospective, to analyze and interpret such information for the purpose of determining whether such conditions and trends are interfering, or are likely to interfere, with the achievement of the policy set forth in title I of this Act, and to compile and submit to the President studies relating to such conditions and trends;

to review and appraise the various programs and activities of the Federal Government in the light of the policy set forth in title I of this Act for the purpose of determining the extent to which such programs and

activities are contributing to the achievement of such policy, and to make recommendations to the President with respect thereto;
 to develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation;
 to conduct investigations, studies, surveys, research, and analyses relating to ecological systems and environmental quality;
 to document and define changes in the natural environment, including the plant and animal systems, and to accumulate necessary data and other information for a continuing analysis of these changes or trends and an interpretation of their underlying causes;
 to report at least once each year to the President on the state and condition of the environment; and
 to make and furnish such studies, reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

Sec. 205 [42 USC § 4345].

n exercising its powers, functions, and duties under this Act, the Council shall --
 consult with the Citizens' Advisory Committee on Environmental Quality established by Executive Order No. 11472, dated May 29, 1969, and with such representatives of science, industry, agriculture, labor, conservation organizations, State and local governments and other groups, as it deems advisable; and
 utilize, to the fullest extent possible, the services, facilities and information (including statistical information) of public and private agencies and organizations, and individuals, in order that duplication of effort and expense may be avoided, thus assuring that the Council's activities will not unnecessarily overlap or conflict with similar activities authorized by law and performed by established agencies.

Sec. 206 [42 USC § 4346].

Members of the Council shall serve full time and the Chairman of the Council shall be compensated at the rate provided for Level II of the Executive Schedule Pay Rates [5 USC § 5313]. The other members of the Council shall be compensated at the rate provided for Level IV of the Executive Schedule Pay Rates [5 USC § 5315].

Sec. 207 [42 USC § 4346a].

The Council may accept reimbursements from any private nonprofit organization or from any department, agency, or instrumentality of the Federal Government, any State, or local government, for the reasonable travel expenses incurred by an officer or employee of the Council in connection with his attendance at any conference, seminar, or similar meeting conducted for the benefit of the Council.

Sec. 208 [42 USC § 4346b].

The Council may make expenditures in support of its international activities, including expenditures for: (1) international travel; (2) activities in implementation of international agreements; and (3) the support of international exchange programs in the United States and in foreign countries.

Sec. 209 [42 USC § 4347].

There are authorized to be appropriated to carry out the provisions of this chapter not to exceed \$300,000 for fiscal year 1970, \$700,000 for fiscal year 1971, and \$1,000,000 for each fiscal year thereafter.

The Environmental Quality Improvement Act, as amended (Pub. L. No. 91- 224, Title II, April 3, 1970; Pub. L. No. 97-258, September 13, 1982; and Pub. L. No. 98-581, October 30, 1984.

42 USC § 4372.

(a) There is established in the Executive Office of the President an office to be known as the Office of Environmental Quality (hereafter in this chapter referred to as the "Office"). The Chairman of the Council on Environmental Quality established by Public Law 91-190 shall be the Director of the Office. There shall be in the Office a Deputy Director who shall be appointed by the President, by and with the advice and consent of the Senate.

(b) The compensation of the Deputy Director shall be fixed by the President at a rate not in excess of the annual rate of compensation payable to the Deputy Director of the Office of Management and Budget.

(c) The Director is authorized to employ such officers and employees (including experts and consultants) as may be necessary to enable the Office to carry out its functions ;under this chapter and Public Law 91-190, except that he may employ no more than ten specialists and other experts without regard to the provisions of Title 5, governing appointments in the competitive service, and pay such specialists and experts without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification

and General Schedule pay rates, but no such specialist or expert shall be paid at a rate in excess of the maximum rate for GS-18 of the General Schedule under section 5332 of Title 5.

(d) In carrying out his functions the Director shall assist and advise the President on policies and programs of the Federal Government affecting environmental quality by --

providing the professional and administrative staff and support for the Council on Environmental Quality established by Public Law 91- 190;

assisting the Federal agencies and departments in appraising the effectiveness of existing and proposed facilities, programs, policies, and activities of the Federal Government, and those specific major projects designated by the President which do not require individual project authorization by Congress, which affect environmental quality;

reviewing the adequacy of existing systems for monitoring and predicting environmental changes in order to achieve effective coverage and efficient use of research facilities and other resources;

promoting the advancement of scientific knowledge of the effects of actions and technology on the environment and encouraging the development of the means to prevent or reduce adverse effects that endanger the health and well-being of man;

assisting in coordinating among the Federal departments and agencies those programs and activities which affect, protect, and improve environmental quality;

assisting the Federal departments and agencies in the development and interrelationship of environmental quality criteria and standards established throughout the Federal Government;

collecting, collating, analyzing, and interpreting data and information on environmental quality, ecological research, and evaluation.

(e) The Director is authorized to contract with public or private agencies, institutions, and organizations and with individuals without regard to section 3324(a) and (b) of Title 31 and section 5 of Title 41 in carrying out his functions.

42 USC § 4373. Each Environmental Quality Report required by Public Law 91-190 shall, upon transmittal to Congress, be referred to each standing committee having jurisdiction over any part of the subject matter of the Report.

42 USC § 4374. There are hereby authorized to be appropriated for the operations of the Office of Environmental Quality and the Council on Environmental Quality not to exceed the following sums for the following fiscal years which sums are in addition to those contained in Public Law 91- 190:

(a) \$2,126,000 for the fiscal year ending September 30, 1979.

(b) \$3,000,000 for the fiscal years ending September 30, 1980, and September 30, 1981.

(c) \$44,000 for the fiscal years ending September 30, 1982, 1983, and 1984.

(d) \$480,000 for each of the fiscal years ending September 30, 1985 and 1986.

42 USC § 4375.

(a) There is established an Office of Environmental Quality Management Fund (hereinafter referred to as the "Fund") to receive advance payments from other agencies or accounts that may be used solely to finance -- study contracts that are jointly sponsored by the Office and one or more other Federal agencies; and Federal interagency environmental projects (including task forces) in which the Office participates.

(b) Any study contract or project that is to be financed under subsection (a) of this section may be initiated only with the approval of the Director.

(c) The Director shall promulgate regulations setting forth policies and procedures for operation of the Fund.

(Appendix F)

**Conservation Plan for
Greater Sage-grouse in Utah
February 14, 2013**

FINAL

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1.0 Introduction

Utah's Conservation Plan for Greater Sage grouse (Plan) is designed to protect high quality habitat, enhance impaired habitat and restore converted habitat to support, in Utah, a portion of the range wide population of greater sage grouse (*Centrocercus urophasianus*) necessary to eliminate threats to the species and negate the need for the listing of the species under the provisions of the federal Endangered Species Act (ESA). The U.S. Fish and Wildlife Service's (FWS) most recent finding on the need for a listing, issued in March, 2010, found that the listing of the greater sage grouse was warranted on a range wide basis, but that further action was precluded by higher ESA priorities of the Service. The FWS is now bound by a court decree to review this decision by the end of 2015.

This Plan is designed to eliminate the threats facing the sage grouse while balancing the economic and social needs of the residents of Utah through a coordinated program which provide for:

- **incentive-based programs** for private, local government and School and Institutional Trust Lands Administration (SITLA) lands, and a
- **reasonable and cooperative regulatory programs** on other state and federally managed lands.

Implementation of the Plan requires a cooperative effort among local, state and federal agencies, working in concert with private interests.

1.1 Background

Currently, the state supports about 8% of the total range wide population of greater sage grouse, distributed throughout the northern, western, and central parts of Utah in a highly discontinuous habitat pattern. This habitat occupancy pattern is a result of the natural topography of Utah, and by the land use activities associated with, and necessary for, the human population.

The FWS determined the range wide listing was warranted because of habitat fragmentation, and the lack of a regulatory structure designed to protect habitat. Various "threats" to habitat were identified and discussed in the finding. As a result of the finding, the Bureau of Land Management (SLM), the U.S. Forest Service (USFS), the State of Utah and the other western states with sage grouse habitat, have each initiated planning and other actions designed to mitigate the identified threats and protect important sagebrush habitats, develop adequate regulatory mechanisms, and thereby eliminate the need for a listing under the ESA.

Within Utah, Governor Herbert chartered a Working Group to develop recommendations for a statewide plan for the conservation of sage grouse, while also providing for the continued economic health of the state. The Working Group met in open, public meetings from late February to October of 2012. In addition to the recommendations of the Working Group, the Governor's Office, through the Public Lands Policy Coordination Office, received comments and advice from other interested parties, including industry, environmental organizations and county commissioners.

1.2 Conservation Principles

The overall effort to protect habitat and associated populations of sage grouse in Utah is based upon the principles set forth in the Greater Sage Grouse Conservation Objectives Final Report, prepared by the FWS chartered Conservation Objectives Team (COT), and dated February, 2013. The COT report reiterates that sage grouse are a landscape species, and long term species conservation will require the cooperation of the western states and federal agencies to negate the need for a listing of the species. The COT report emphasized the need to protect the "best of the best" habitat given the high cost, long time frame to completion and relative uncertainty of sagebrush restoration, and recognized that not all populations are required to contribute to a range wide conservation of the species. The COT report also recognized that because of variation in range wide, and local, environmental conditions, state wildlife

management agencies are in the optimal position to determine the appropriate conservation goals for the species, and give advice on the necessary methods to achieve the goals.

2.0 Conservation Goal and Objectives

This Plan builds upon earlier efforts of state agencies to protect sage grouse. In 2003, the Utah Wildlife Board adopted the first Strategic Plan for the Management of Sage Grouse in Utah. In 2009, the plan was revised. Those plans identified local population dynamics, site specific threats, and research needs, and recommended management strategies to conserve the species. Many of the research needs were subsequently addressed, thereby contributing to the deep body of knowledge about sage grouse in Utah (See Appendix 8).

The biological pillars of sage grouse conservation remain;

- 1) protection of habitat which provides for the year round life cycle needs of the species,
- 2) perpetuation of conditions necessary to ensure recruitment of a continuing population within the aggregate state population, and
- 3) enhancement or improvement of sage grouse habitat that has been impaired or altered through restoration or rehabilitation activities.

Sustaining the best of the best existing sage grouse populations and increasing populations through habitat restoration and rehabilitation are the basis of this Plan. Utah's current distribution of sage grouse is dictated by;

- 1) the discontinuous nature of habitat which reflects the rugged and incised topography in the eastern and southern parts of the state,
- 2) previous human caused habitat modifications,
- 3) natural events (such as wildfire), and
- 4) the connection of habitat with habitat occupied by birds in Nevada and Idaho, and physical and genetic connections to larger populations in the Wyoming Basins, Great Basin in the northern and western parts of the state, and to populations in northwest Colorado.

To prevent the need to list sage grouse under the provisions of the ESA, the goals and objectives for the conservation of the species in Utah include:

Sage grouse Management Goal: Protect, maintain, improve and enhance sage grouse populations and habitats within the established Sage grouse Management Areas.

2.0.1 Objective 1 Population: Sustain an average male lek count of 4100 males (based on a ten year rolling average on a minimum of 200 monitored leks) in the Sage grouse Management Areas, and increase the population of males to an average of 5000 (based on the same ten year rolling average on a minimum of 200 monitored leks) within the Sage grouse Management Areas. (See Appendix 3 for baseline male lek counts.)

2.0.2 Objective 2 Habitat: Protect 10,000 acres of sage grouse habitat on private and School and Institutional Trust Lands Administration (SITLA) lands annually through conservation covenants, leases, easements or other legal tools, with emphasis on the best of the best populations.

2.0.3 Objective 3 Habitat: Enhance an average of 25,000 acres of sage grouse habitat in Sage grouse Management Areas annually.

2.0.4 Objective 4 Habitat: Increase the total amount of sage grouse habitat acreage within Sage grouse Management Areas by an average of 50,000 acres per year, through management actions targeting Opportunity Areas.¹

¹ Opportunity Areas which offer the best potential for creating new habitat for greater sage grouse. (See definition in Section 10.0 below.)

2.0.5 Objective 5 Distribution: Maintain viable populations within each SOMA.

2.0.5.1 Employ the management protocol (Section 6.0 below) requiring avoidance, minimization, and mitigation to preserve habitat and bird populations. Ensure a path for birds to migrate within SGMAs on a seasonal basis, and ensure a long term genetic connection between populations as needed.

2.0.5.2 Viability of the populations in the Ibapah and Hamlin Valley SGMAs is tied to habitat occupied by birds in Nevada. Other SGMAs connect to habitat occupied by birds in neighboring states, but the viability of the populations within the SGMAs is not dependent upon the habitat outside Utah.

2.0.5.3 This objective, more than any other, has potential to be affected by factors (stressors) beyond the management control of the state, such as catastrophic wildfire. Should the population trends within an SGMA temporarily or permanently suffer from the effects of such factors, management controls in the other SGMAs will be adjusted to achieve the other objectives listed above.

These Objectives will be tracked on a statewide basis through the Public Lands Policy Coordination Office (PLPCO), with support from the Division of Wildlife Resources (DWR), the BLM, the USFS, the FWS, and local governments. Habitat enhancement, improvement and restoration will be implemented and coordinated on a statewide basis through programs such as the Watershed Restoration Initiative (WRI), Utah Partners for Conservation and Development (UPCD), the Natural Resources Conservation Service's (NRCS) Sage grouse Initiative (SGI), the Grazing Improvement Program (GIP), and others.

3.0 Sage grouse Management Areas (SGMAs)

3.0.1 This Plan is anchored around efforts to conserve the species within eleven specifically identified Sage grouse Management Areas (SGMAs). The SGMAs represent the best opportunity for high value, focused conservation efforts for the species in Utah. This approach recognizes and accepts current use of the land, and identifies potential future uses which may cause conflict with the needs of the species. The sage grouse populations within the SGMAs all lend themselves to increases through appropriate protective measures and habitat enhancements, so each SGMA identifies areas on the landscape that provide these additional habitat enhancement opportunities (Opportunity Areas) for greater sage grouse. In addition, habitat in the Rich County area of Utah is connected to habitat in eastern Idaho and western Wyoming, habitat in Box Elder Tooele, Juab, and Beaver Counties is connected to the habitat supporting populations in southern Idaho and Nevada, and habitat in the Uintah and Daggett County areas is connected to habitat in Wyoming and Colorado.

These SGMAs encompass the highest sage grouse breeding density areas, which together currently support greater than 90% of the Utah aggregate population of greater sage grouse.

3.0.2 Sage grouse habitat outside the SGMAs is not required for long term conservation of the species. Much of this habitat has already been disturbed by human and natural causes, and is not suitable for enhancement or improvement. Therefore, greater sage grouse populations in these areas are not considered essential to perpetuation of the species in Utah, and no specific management actions for this habitat are recommended or required.

3.1 Scientific Information and Studies

The boundaries of each SGMA reflect the biological and geographical realities of area currently occupied by a population or populations of sage grouse. The SGMAs are based upon the location of occupied leks, the identification of nesting and brood rearing habitat, on average, within a 3.0 mile radius of the occupied leks² and associated winter

² In Utah, based on statewide averages, 91% of greater sage grouse hens nest within 3 miles of a lek. This is based upon data compiled by the DWR, Utah State University and Brigham Young University. These data include 478 sage grouse nests within

and other habitat. For decades prior to the current review, the DWR has been supporting research and community based conservation efforts to learn more about the ecology of the species. Appendix 8 contains a listing of research studies and reports on sage grouse conducted in Utah. To facilitate this effort, the DWR established ten Local Area Working Groups (LAWGs) under the general direction of Utah State University, with the first established as far back as 1996. These LAWGs were composed of private interests and governmental entities, and were charged to assess the local nature and scope of the threats to the species, and to recommend a course of action to address those threats. Because of this early and ongoing assessment, the State of Utah is fortunate to have a high level of knowledge about seasonal range, migration routes, and other factors known to be essential to maintenance of the species, all in the context of Utah's unique conditions. This information, along with peer reviewed scientific studies, forms the basis for this plan.

When local or county, state agency, and federal agency planning is aggregated into a statewide plan for sage grouse, the collective result provides a complete and credible means of addressing the factors used by the FWS to measure the success of conservation efforts. Specifically, the objectives to enhance and increase habitat, and the implementation of this Plan to eliminate threats to greater sage grouse populations will address the need for *resiliency* of the species the ability of birds to persist in each management area in the face of normal or catastrophic events, and provide adequate *representation* of the species across its range in Utah. This plan further protects against the need for this species to be listed as threatened or endangered by providing a level of *redundancy* numerous resilient populations that contribute to the long term viability of the species across its range.

3.2 Geography of Utah

Sage grouse occupied habitat in Utah is highly influenced by the geography of Utah, which is characterized by mountainous terrain, separated by broad valleys in the Great Basin, and by deeply incised canyons in the Colorado Plateau. Sage grouse habitat may be found in intact blocks in the Great Basin, or in disconnected "islands" of habitat in the Colorado Plateau.

3.3 Analysis of Current Land Uses

The development of energy and mineral resources, maintenance and development of utility infrastructure needed to serve Utah's existing and future residential and commercial needs, housing developments, and the pursuit of recreational activities in Utah are a vital component of the state and local economies, and the quality of life in Utah. Additionally, a strong economy provides some of the funding necessary to implement the Management Protocol and mitigation procedures outlined in this Plan. In some areas, mineral extraction, housing developments, recreational activities, wildfire, and other factors have, or will in all likelihood in the near future, negatively impact local sage grouse populations. These realities were considered in the preparation of this Plan as a means of allocating available funding to areas with the greatest likelihood of success for species conservation (see USFWS 2013 Conservation Objectives Report). For this reason, some sage grouse populations are considered non essential, and they have not been included in SGMA boundaries, and no management provisions are expected or provided for those areas.

3.4 Sage-Grouse Management Areas

The SGMAs for Utah are: Bald Hills, Box Elder, Carbon, Hamlin Valley, Ibapah, Panguitch, Parker Mountain Emory, Rich Morgan Summit, Sheeprock Mountains, Strawberry.

A map of each SGMA is attached to this Plan.

SGMAs. The Strawberry SGMA is excluded from this analysis due to the transplanted nature of the population and the on going establishment of new leks.

3.5 Maps and Mapped Habitat

3.5.1 Maps

Of necessity, identification of the eleven SGMAs requires the establishment of boundaries. These boundaries include 1) delineation of the extent of the SGMA, 2) delineation among habitat, non habitat and opportunity lands within the SGMA, and 3) within habitat, delineation among nesting, winter and other habitat. The GIS maps which accompany this Plan contain representations of these boundaries for informational purposes, but are not meant to themselves represent, for example, a survey grade boundary, and are not intended to be the final authority for habitat delineation issues. Parties should consult with the DWR to determine the precise delineation of habitat as part of the consultation for any particular development proposal. If in the review of any proposal or other action, differences between the maps and the on the ground situation become apparent, the on the ground boundaries shall control.

3.5.2 Annual Review of SGMA Boundaries and Other Provisions of the Plan

The SGMAs should be reviewed annually through the coordination efforts of PLPCO as set forth in Section 4.2 below. Review should include, for example, changes in the distribution of disturbance, the increases in habitat through enhancement or improvement, decreases in habitat through wildfire or other events, status of population numbers, and related items.

3.5.2.1 Adjustments to SGMA boundaries will be reviewed every five years, unless large scale events such as wildfire, and successful annual events, such as habitat enhancement or improvement, necessitate a more frequent adjustment.

3.5.2.2 Adjustments may include expansion or constriction of the external boundaries and a redrawing of the internal boundaries among habitat, non habitat and opportunity areas.

3.5.2.3 Before mitigated areas are considered to be habitat within an SGMA, a preponderance of the evidence must indicate that sage grouse are occupying the mitigated area. Habitat altered by fire shall not be removed from an SGMA until rehabilitation or restoration of the burned areas is determined to be unsuccessful or not feasible.

3.6 Habitat Types Included Within SGMAs

Within each SGMA, lands were classified based on current or potential sage grouse habitat:

3.6.1 **Habitat** The aggregation of seasonal habitats used by sage grouse at some point during the yearly life cycle of the birds. Habitat includes the geographical extent of leks, nesting, brood rearing, late brood rearing, transitional and winter areas.

3.6.2 **Non Habitat** Non habitat areas within SGMAs include lands that do not contribute to the annual life cycle of sage grouse. Effort has been made to minimize the amount of non habitat within an SGMA, but given the topographic, physiographic and land cover features within Utah and the scale and detail of mapping, the inclusion of some non habitat was unavoidable.

3.6.3 **Opportunity Areas** Opportunity areas are those portions of a SGMA that currently do not contribute to the life cycle of sage grouse but are areas where restoration or rehabilitation efforts can provide additional habitat when linked to existing sage grouse populations. In Utah, the majority of these areas are lands that have been altered due to wildfire or the proliferation of invasive plant species. Examples include areas where pinon juniper, conifers, deciduous shrubs or other plant species have encroached upon habitat, rendering it less useful or useless as habitat. Opportunity areas may be transformed into either habitat or non habitat based upon natural events or management choices, and may be used to mitigate disturbance within habitat as appropriate.

3.6.4 **Additional Mapping of Habitat, Non habitat and Opportunity Areas**

Implementation of this Plan should be accompanied by efforts to refine mapping of each of these habitats. These efforts should be coordinated among federal, state and local agencies, and private landowners who may choose to participate. On the ground projects conducted under this Plan may contribute to this refined mapping for the project area.

3.7 Land Ownership

The eleven SGMAs contain lands owned or managed by:

- Private or corporate citizens and local government,
- School and Institutional Trust Lands Administration,
- Division of Wildlife Resources,
- Division of State Parks and Recreation,
- Confederated Tribes of the Goshute Reservation,
- Bureau of Land Management, and
- United States Forest Service.

Each type of land requires a different approach for successful protection of sage grouse. See Appendix 4 for the property ownership breakdown within each Sage Grouse Management Area.

3.7.1 Private Lands

Five SGMAs will be the focal point for state and local efforts to obtain incentive based negotiated covenants, easements, leases or other legal tools necessary for sage grouse conservation on private lands. These SGMAs contain the highest percentage of private lands, along with larger and flourishing populations of birds, and represent the center of the state's effort. The SGMAs are

- Box Elder
- Parker Mountain Emery
- Rich Morgan Summit
- Strawberry
- Uintah

Private landowners should follow the protocol identified in Appendix 3 in order to participate in the conservation efforts.

3.7.2 School and Institutional Trust Lands Administration (SITLA)

Use of SITLA lands for any purpose requires compensation, including the conservation purposes of this Plan. Pursuant to state constitutional and statutory law, the beneficiaries of the various trusts do not include general governmental or public purposes. (See Utah Code 53C 1 102(2) (d).)

Similar to the effort for private lands, SITLA lands within the same five SGMAs will be the center of the state's efforts to negotiate incentive based covenants, easements, or leases to achieve conservation purposes on SITLA lands.

3.7.3 Local Government Lands

County or municipally owned lands shall be treated like private or SITLA lands, requiring the acquisition of voluntarily negotiated covenants, easements, leases, or other legal tools necessary for greater sage grouse conservation.

3.7.4 BLM, USFS, and State Agency Lands

The remaining six SGMAs have a larger percentage of federally managed lands, and will require cooperative management decisions among local, state and federal agencies. In line with federal land planning and decision making processes, this portion of the Conservation Plan will feature conditions and stipulations to be employed by

the BLM and USFS when considering approvals for activities on federally managed lands. Similarly, state agencies will employ the necessary management actions to fulfill the purposes of this strategic conservation plan for state lands.

3.7.5 Department of Defense Lands and Airspace

Lands and airspace owned, managed or controlled by the Department of the Defense, or its various services or directorates are near or over SGMAs. Operations on these lands or within this airspace shall not be affected by the implementation of this Plan, unless strong and credible evidence directly linking such operations to a loss of habitat or bird populations is presented at one of the annual SGMA review meetings. Such evidence shall be reviewed by the parties to the implementation plan for possible adjustments to the SGMAs or implementation of the Plan.

3.7.6 Tribal Lands

The Iapah SGMA contains lands under the jurisdiction of the Confederated Tribes of the Goshute Reservation with the permission of the Goshute Tribe. Decisions concerning the implementation of this Plan on the tribal lands will be coordinated with other efforts through the efforts of PLPCO and the LAWGs, but remain under the jurisdiction of the Goshute Tribe on reservation lands. The state recognizes that greater sage grouse exist on lands under the jurisdiction of the Ute Tribe, but has chosen not to incorporate any of those lands into this Plan absent the permission of the Ute Tribe. The state will continue to seek a cooperative relationship with the Ute Tribe on greater sage grouse conservation efforts and recognizes that the Ute Tribe may wish to coordinate its efforts for the conservation of the greater sage grouse with this Plan, or propose its own Conservation Plan to the FWS.

3.7.7 Mineral Estate

The state recognizes that there are situations where the surface is owned by one entity or person, and the subsurface mineral estate is owned by another, including tribal governments. Because the surface estate is the key to conservation of habitat, the SGMAs have been mapped according to surface ownership, but the state recognizes that implementation of this Plan will have to accommodate the dominant nature of the mineral estate, and react accordingly.

4.0 Implementation of the Conservation Plan

4.1 Private and SITLA lands

The necessary covenants, easements, leases or other protective tools for habitat on private and SITLA lands will be secured through cooperative assistance and funding efforts provided by all interested parties, including:

- Utah Department of Agriculture and Food (UDAF)
- Utah Department of Natural Resources (DNR)
- U.S. Department of Agriculture Natural Resources Conservation Service (NRCS)
- U.S. Department of Agriculture Forest Service
- U.S. Department of Interior Bureau of Land Management (BLM)
- U.S. Department of the Interior Fish and Wildlife Service
- Private sources industry and non governmental organizations
- Other

4.2 Coordination among Local Government, State Agencies and Federal Agencies

The PLPCO will coordinate the efforts of BLM, Forest Service, Fish and Wildlife Service, state agencies, local government and others to accomplish the purposes of this Plan. The PLPCO will convene a Working Group with

membership including the DNR, UDAF, SITLA, BLM, USFS, NRCS, FWS, and others as needed. The Working Group will meet as often as needed to coordinate the implementation of this Plan. The Working Group will initiate and coordinate the efforts of necessary technical teams to assure scientific and monitoring information is shared by all management agencies, and that efforts to achieve the necessary conservation goals are progressing.

4.3 Local Area Working Groups (LAWG)

The existing LAWGs have functioned well over the years, and provide the proper forum for the assessment of the nature and scope of localized threats which may affect the species. The LAWGs will, under the management supervision of Utah State University, assist the coordination efforts of PLPCO, defined in Section 4.2 above, by providing information concerning the effects of local disturbance on the species. In addition, the LAWGs will:

1) make recommendations for projects to improve or enhance habitat or opportunity areas, 2) make recommendations for voluntary agreements on private, SITLA or county lands to benefit the species, and 3) make recommendations for conservation of the species on state and federal land as part of the implementation of this Plan.

5.0 Threat Assessment and Management Provisions

Based on information obtained from the DWR and the ongoing LAWG process, (which is based on peer reviewed and observational science), the following threats have been identified for greater sage grouse and habitat in Utah as those of the greatest concern statewide. It is crucial to note that not all of these threats exist in each of the eleven SGMAs. These potential threats are presented in a non hierarchical order. In all cases, evaluation of disturbance due to the listed threats should be addressed through the Management Protocol discussed in Part 6.0 below. The management provisions listed below to address threats to the species should be reviewed if new research demonstrates a modification is necessary. It will be necessary to allocate sufficient resources to fully address habitat loss and degradation in the next ten years.

5.1 Fire Control, Suppression and Rehabilitation

Habitat loss due to fire and replacement of (burned) native vegetation by invasive plants is the single greatest threat to greater sage grouse in Utah. However, fires ignited by natural events and human activities are beyond the control of human planning efforts. While unscheduled fires may occur, response to fire can have a large impact on the severity of the effects, especially over time as rehabilitation or restoration continues. The Governor has established a committee to develop a collaborative process to protect the health and welfare of Utahns and our lands by reducing the size and frequency of catastrophic fires. This committee is operating under the direction of the Commissioner of Agriculture and Food. Implementation of this Plan will coordinate needs and efforts related to sage grouse with this committee.

Fire by natural ignition should be addressed as a serious threat, and prescribed fire should only be used at higher elevations and in a manner designed prescriptively to benefit greater sage grouse. Immediate, proactive means to reduce or eliminate the spread of invasive species, particularly cheatgrass, after a wildfire, is a high priority. All federal, state and local governmental agencies, and other interested parties, should implement the following:

5.1.1 Create and implement a statewide fire agency agreement(s) that will eliminate jurisdictional boundaries and allow for immediate response to natural fire. These should include fire suppression actions recommended locally, including, but not limited to:

- a) first strike agreements that allow aggressive fire control on an all land jurisdictional basis;
- b) allocation of resources to maintain enhanced abilities of all fire agencies to combat ignitions in SGMAs;
- c) allocation of resources to immediately commence restoration of habitats impacted by wildfire by all responsible agencies; and

d) removal or establishment of waiver provisions for procedural barriers that may impact the ability of responsible agencies to respond to wildfire with effective reclamation or rehabilitation, such as federal raptor stipulations, cultural assessments, and the like.

5.1.2 Amend land management provisions which restrict the use of non native species on federal lands to allow use of fire retardant vegetation that will buffer areas of high quality greater sage grouse habitat from catastrophic fire.

5.1.3 Focus research efforts on effective reclamation and restoration of landscapes altered by wildfire, and provide adequate funding to do so.

5.1.4 Conduct effective research into controlling fire size and protecting remaining greater sage grouse areas that are adjacent to high risk cheatgrass areas.

5.1.5 Consider the use of prescriptive grazing to specifically reduce fire size and intensity on all types of landownership, where appropriate. This could be particularly effective in areas where cheatgrass is encroaching on sagebrush habitat. This will require cooperation and coordination among different land managers and owners and livestock owners. In some cases feed supplementation and water hauling may need to be utilized to obtain the desired results.

5.1.6 Use prescriptive fire with caution in sagebrush habitat. The Western Association of Fish and Wildlife Agencies has prepared information that explains the risks from using prescribed fire in xeric sagebrush habitats.³

5.2 Invasive Species

Habitat loss due to invasive species, such as whitetop, medusahead, knapweeds, tamarisk, cheatgrass and others are a serious threat to greater sage grouse habitat. These species displace native communities, and alter the soil and environment in a way that makes reestablishment of native ecosystems very difficult. An aggressive response to new infestations is key to keeping invasive species from spreading. Every effort should be made to identify and treat new infestations before they become larger problems. Additionally containment of known infestations in or near sagebrush habitats should be a high priority for all land management agencies.

5.3 Predation

Predation is often tied to habitat quality, particularly in areas where an interface exists between human disturbance and the remaining habitat. While predator control may not be a long term solution to a general range wide decline in populations of greater sage grouse, it has been shown to be an effective tool to gain increased survival of specific populations. Predation has been identified as a key threat in many SGMAs, primarily due to increased populations of corvids (primarily ravens) and emergence of non native canids (red fox) that did not co evolve with greater sage grouse. Predation control and management should be managed by USDA APHIS Wildlife Services (WS), UDAF, in consultation with the DWR.

5.3.1 Eliminate or minimize external food sources for corvids, particularly dumps, waste transfer facilities, and road kill.

5.3.2 Apply habitat management practices (e.g., grazing management, vegetation treatments) that decrease the effectiveness of predators.

5.3.3 Develop strategies for active short term predator control based on biological assessments appropriate to local conditions.

5.3.4 Monitor effects of predator control to determine causal connections with greater sage grouse survivability and modify control strategies accordingly.

³ See Appendix 5

5.4 Vegetation Management

Habitat loss in Utah is caused by both natural and man made alterations to existing habitat. Protection of remaining habitat is the primary focus of conservation efforts, but many locations can be reclaimed or restored by active vegetation management actions. For example,

- a) removal of encroaching conifers may create new habitat or increase the carrying capacity of habitat and thereby expand grouse populations, or
- b) the distribution of water into wet meadow areas may improve seasonal brood rearing range and enhance greater sage grouse recruitment.

Utah has a unique partnership to and a demonstrated record of enhancing and improving habitat through restoration and reclamation on a large scale through the Utah Partners in Conservation and Development (UPCD and the Watershed Restoration Initiative WRI.) See Appendix 9 for a listing of greater sage grouse habitat projects completed since FY2006.

5.4.1 Aggressively remove encroaching conifers and other plant species to expand greater sage grouse habitat where possible.

5.4.2 Aggressively remove cheatgrass and other invasive species, and rehabilitate areas to provide additional habitat for greater sage grouse where possible.

5.4.3 Sagebrush treatment projects within nesting and winter habitat should be limited and require pre approval by the appropriate regulatory agency in consultation with the DWR. Sagebrush treatment projects should maintain 80% of the available habitat as sagebrush within the project area; 20% of the habitat can be managed for younger age classes of sagebrush, if appropriate. These treatments are generally recommended only to improve brood rearing habitat, but need to be carefully considered before use in winter and other habitat.

5.4.4 Design water developments to enhance mesic habitat for use by greater sage grouse and maintain adequate vegetation in wet meadows. Within SGMAs, greater sage grouse stipulations should take precedence over stipulations for other species if conflicts occur, if otherwise allowable by law.

5.4.5 Appendix 6 discusses the complexities and factors to be considered in restoring and improving sage grouse habitat.

5.5 Extractive Mineral Development

In SGMAs, limit or ameliorate impacts through the use of the Management Protocol (Section 6.0 below).

5.5.1 Recognize that surface vents associated with underground mining are essential for human safety, and must be permitted under the provisions of this Plan.

5.5.2 Engage in reclamation efforts as projects advance or are completed.

5.5.3 Recognize that stipulations for other species (e.g. raptors) may impede the ability to effectively reclaim disturbed areas, and remove those barriers in order to achieve immediate and effective reclamation, if otherwise allowable by law.

5.5.4 Prioritize areas for habitat improvement to make best use of mitigation funds.

5.6 Transmission Corridors

Most existing utility corridors (pipelines, roads, major overhead electrical transmission lines) are well defined at the present time, and this threat is seen as minimal. With respect to major transmission lines, research completed to date has not shown immediate impacts from existing power lines on nest or brood success. As a result, management stipulations and conditions should focus on mitigating direct disturbance during construction. Should new research demonstrate indirect impacts to greater sage grouse production, additional mitigation measures may be required (see Appendix I for a discussion of the current research).

5.6.1 Apply mitigation standards based on habitat type as discussed in the Management Protocol, and best management practices accepted by industry and state and federal agencies.

5.6.2 For electrical transmission lines, and where feasible and consistent with federally required electrical separation standards, site new linear transmission features in existing corridors, or at a minimum, in concert with existing linear features in greater sage grouse habitat. Siting linear features accordingly shall be deemed to be mitigation for the siting of that linear feature. Mitigation for the direct effects of construction is still required.

5.6.3 Engage in reclamation efforts as projects are completed.

5.7 Renewable Energy Development

Development of renewable energy is a high priority for the State of Utah, and should employ the same Management Protocol recommended for extractive mineral development. Preliminary results from scientific research have indicated that wind energy development near greater sage grouse nesting and brood rearing habitat may have a negative impact on nest success, brood success, and populations. However, research completed to date has not shown an immediate impact from transmission lines on nest or brood success, so necessary stipulations and conditions related to transmission lines associated with renewable energy projects should focus on disturbance during construction (see Appendix 1 for a discussion of the current research).

5.7.1 Engage in reclamation efforts as projects are completed.

5.7.2 Recognize that stipulations for other species (e.g. raptors) may impede the ability to effectively reclaim areas of impact and remove those barriers to achieve immediate and effective reclamation, if otherwise allowable by law.

5.7.3 Prioritize areas for habitat improvement.

5.7.4 Apply mitigation standards based on habitat type as discussed in the Management Protocol in Section 6.0.

5.7.5 New permanent tall structures should not be located within one mile of the lek, if visible by the bird's within the lek.

5.8 Recreation and OHV Use

Recreational activities, particularly motorized off highway uses, may conflict with greater sage grouse, most often in nesting and winter habitats where and when birds are unable to move freely. In SGMAs, limit or ameliorate impacts through the use of the Management Protocol discussed in Section 6.0 below.

5.8.1 Restrict OHV use to identified trails and roads in nesting and winter habitat.

5.8.2 Develop an educational process to advise OHV users of the potential for conflict with greater sage grouse.

5.8.2.2 Counties should adopt and enforce travel management plans that include consideration for greater sage grouse.

5.9 Improper Livestock Grazing

Livestock grazing is a major resource use in most SGMAs, and can be an effective tool to improve habitat quality and seasonal nutrition, and thereby enhance local populations. Existing grazing operations which utilize recognized rangeland best management practices increase the necessary vegetation, and thereby increase the potential for nesting success and population recruitment. Should concerns be raised about the effect of grazing on sage grouse, and such effects are documented over a sufficiently long time frame, corrective management actions should be addressed through the best management practices identified by the Department of Agriculture and Food's Grazing Improvement Program. (UDAF GIP).

More detail on grazing practices and greater sage grouse conservation are found in Appendix 2.

5.9.1 Rangeland habitat treatments to improve grazing should fully consider the impact on sage grouse seasonal habitat during planning and implementation.

5.9.2 Address incompatible grazing strategies through established rangeland management practices consistent with the maintenance or enhancement of habitat.

5.9.3 Allocate funds and effort to the development of grazing strategies that will enhance or improve habitat for the preservation of greater sage grouse.

5.9.4 Locate livestock fences away from leks and employ the NRCS fence standards. (See NRCS/CEAP Conservation Insight Publication "Applying the Sage Grouse Fence Collision Risk Tool to Reduce Bird Strikes.")⁴

5.10 Hunting

Limited hunting of greater sage grouse is currently (2013) allowed, by permit, in the Box Elder, Rich Morgan Summit, Uintah, and Parker Mountain Emery SGMAs. These SGMAs have the largest stable populations. Hunt quotas are determined annually based on very conservative estimates, and are based on criteria found in the Utah 2009 Greater Sage grouse Strategic Management Plan. Decreases in population in any particular year due to natural or human caused events, will lead to a reduced number of hunting permits or cancellation of the hunt for the year. Hunting fees are expended only for the benefit of species subject to the hunts, so a complete cessation of hunting of greater sage grouse would lead to a cessation of expenditures from that funding source for the species' benefit.

5.10.1 Maintain the interest of the sportsman's community by continuing a viable hunting program.

5.10.2 Continue to gather scientific data from the birds harvested.

5.10.3 Continue to support the bird through the use of hunter fees and expenditures.

5.11 Other Threats Identified in the FWS Listing Decision

The 2010 FWS listing decision identified other threats to greater sage grouse. These threats include: wild horses and burros, climate change, religious use, scientific and educational use, disease, drought, pesticides and contaminants. Wild horses and burros were determined to not have population level impacts if managed in accordance with existing land management standards. Climate change is undefined at this time and is addressed by preservation of habitat and habitat improvements. Religious use was not determined to be a threat for Utah sage grouse populations. Scientific and educational use is regulated by the DWR and is not viewed as a threat in Utah. Disease has not been documented to have population level effects on Utah sage grouse populations. West Nile virus has been documented in one Utah sage grouse; testing and mosquito control does occur. Drought cannot be directly addressed, however by protecting large blocks of habitat sage grouse should be able to adapt. Pesticides and contaminants were not identified as a threat for Utah sage grouse populations. These perceived threats are adequately addressed by existing protocol or plans, and do not require additional management provisions at this time.

6.0 Management Protocol and Mitigation

Management of activities on state and federally managed lands within SGMAs will be based on a hierarchical protocol that provides as follows:

- 1) Avoidance of disturbance to habitat or birds by an activity is the preferred option;
- 2) Minimization of the disturbance is desired if the disturbance cannot be avoided in greater sage grouse habitat, with mitigation for the effects of the minimization decisions; and finally

⁴ See http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1049415.pdf

- 3) Mitigation of the disturbance from an activity within sage grouse habitat is required if a disturbance cannot be avoided.

This Management Protocol does not apply to private, SITLA or local government lands unless an agreement has been reached with the landowner to incorporate these provisions.

6.1 Disturbance

Disturbance, as defined in Section 10.0, is any ground disturbing activity, event or action, natural or human caused, which will either eliminate or render greater sage grouse habitat unusable for the life cycle of the bird, *or* human activities and presence which causes a negative response from birds within the SGMA. Disturbance based on ground disturbing activities can be temporary or permanent, while negative response disturbances can cause negative effects year round, seasonally, or only at certain times of day.

6.1.1 Temporary ground disturbance is defined as any ground disturbing activity which lasts less than five years. Temporary disturbances do not need to be mitigated, if the reclamation or restoration work is effective within the five year period.

6.1.2 Permanent ground disturbance is defined as any ground disturbing activity which lasts five years or more.

6.2 "Avoidance" means an overt action that eliminates disturbance to greater sage grouse and its habitat.

Examples include:

- a) purposefully siting activities in non habitat or opportunity areas rather than habitat areas, or siting the project outside the SGMA, or
- b) the use of seasonal noise restriction stipulations.

Avoidance requires no mitigation.

6.3 "Minimization" means actions that reduce the amount, duration, or impact of disturbance within habitat.

Examples include:

- a) using a smaller development footprint;
- b) the reduction of noise levels below identified thresholds, or
- c) the reduction of traffic volume on a road.

Minimization does not preclude the need to mitigate (compensate) for the disturbance which does occur within habitat.

6.4 "Mitigation" means actions that are designed to create new habitat or ameliorate disturbances by the creation of or protection of other habitat or birds. Mitigation for a disturbance must be shown to be effective in the time frame of the activity, not at some future date. Effective mitigation does not require that birds are immediately present using the land, only that the habitat is capable of supporting birds as part of their yearly life cycle, however, as stated in Section 3.5.2.3 above, SGMA boundaries may not be adjusted in response to mitigation until birds are occupying the site. Mitigation should be performed in areas which have the highest likelihood of occupation by the species. The amount of mitigation, if required, should be calculated based on the effects generated within habitat inside an SGMA.

6.4 Mitigation Program (including Mitigation Banks)⁵

Effective mitigation in Utah will require the creation of a mitigation program, which includes banks, to allow projects to proceed, while enhancing or improving habitat elsewhere. For this reason, mitigation for a disturbance should not necessarily be tied to reclamation efforts at the actual site of the disturbance. Mitigation may occur locally, elsewhere

⁵ Mitigation Bank is a defined term used by the Army Corps of Engineers, so the Utah effort for greater sage grouse will be referred to as a Mitigation Program, which may include a mitigation bank.

in the same SGMA, or in another SGMA, based upon the location which offers greater potential for enhancing greater sage grouse populations, so long as the location of the mitigation does not result in the loss of resiliency, representation or redundancy of the species in Utah. The PLPCO, with assistance from the DWR, BLM, USFS, NRCS, DNR, UDAF, and other entities, shall coordinate and oversee the creation and operation of a Greater Sage grouse Mitigation Program in Utah. The operation of this Mitigation Program will seek to rehabilitate or restore lands as habitat prior to need, as well as coordinate the mitigation for development or other effects upon the habitat of the greater sage grouse. Once operational, contributions to the Program will be welcome.

6.5 Management Protocol

Agencies should follow application of the following Management Protocol upon federally managed lands and state lands within an SGMA as follows:

6.5.1 Habitat: Areas identified as habitat on federal and state lands should be managed to avoid surface disturbance to the greatest degree possible. Consultation with the DWR must occur at the earliest opportunity when land use which may result in a disturbance is contemplated. This protocol may be applied by the private landowner, or on SITLA property, through an incentive based agreement.

For purposes of determining the specific appropriate management response to a proposed disturbance, habitat is divided into four subcategories:

- 1) the lek⁶ itself;
- 2) the nesting and brood rearing area, *e.g.*, habitat within a three (3) mile radius of the lek;⁷
- 3) winter habitat; and
- 4) other seasonal habitat.

6.5.1.1 Lek

Management provisions include:

- a) Avoid disturbance within the lek, if possible. Project proponents must demonstrate why avoidance is not possible.
- b) If avoidance is not possible, use minimization as appropriate to the lek.
- c) If minimization is not sufficient, mitigation is required. Mitigation should be calculated at a minimum of a 4:I ratio starting with the first acre disturbed. Mitigation must produce lands capable of supporting greater sage grouse as habitat before the proposed disturbance occurs, though birds do not need to be using the mitigated area. The proponent of the disturbance must demonstrate that the conditions have been met.

Successful mitigation for effects may include:

- i) Removal of trees on or adjacent to the lek
- ii) Removal or marking of fences on or adjacent to the lek.
- iii) Employment of the Mitigation Program, if appropriate
- d) New permanent disturbance, including structures, fences, and buildings, should not be located within the lek itself.
- e) No permanent disturbance within one mile of the lek, unless it is not visible to the sage grouse using the lek.
- f) Fences should not be located adjacent to leks where bird collisions would be expected to occur. If required, the construction of any fences near the lek should follow the standards identified in the NRCS fence collision risk

⁶ Occupied leks. (See Section 10.6)

⁷ See footnote 2, *supra*.

tool (See NRCS/CEAP Conservation Insight Publication "Applying the Sage Grouse Fence Collision Risk Tool to Reduce Bird Strikes.")

- g) A disturbance outside the lek should not produce noise which rises more than 10db above the background level at the edge of the lek during breeding season.
- h) Employ seasonal disturbance stipulations as follows:
 - i) implement time of day stipulations during the season when the lek is occupied. (*e.g.*, no activity from two (2) hours before **sunrise** to two (2) hours after **sunrise**)
 - ii) avoid activities (construction, vehicle noise, etc.) that will disturb lek attendance or breeding from February 15 May 15. The local DWR biologist should be consulted for time and distance determinations based on site specific conditions.

6.5.1.2 Nesting and Brood-Rearing Area

Management provisions include:

- a) Avoid disturbance within nesting and brood rearing area, if possible. Project proponents must demonstrate why avoidance is not possible.
- b) If avoidance is not possible, use minimization as appropriate in the nesting and brood rearing area. For example, try to minimize effects by locating development in habitat of the least importance, take advantage of topographic features to screen the disturbance, or maintaining and enhancing wet meadow and riparian vegetation to provide food and shelter.
- c) If minimization is not sufficient, mitigation is required. Mitigation should be calculated at a minimum of a 4:1 ratio starting with the first acre disturbed. Mitigation must produce lands capable of supporting sage grouse as habitat before the proposed disturbance occurs, though birds do not need to be using the mitigated area. The proponent of the disturbance must demonstrate that the conditions have been met.

Successful mitigation may include:

- iv) Removal of trees to no more than 5% cover (the closer to 0% the better) and maintenance of at least 10% sagebrush cover;
- v) Maintain forb cover greater than 10% and greater than 10% grass cover during nesting and brood rearing season;
- vi) Maintain or improve wet meadows, when present; and
- vii) Installation of green strips or firebreaks to protect existing nesting habitat.
- viii) Employment of the Mitigation Program, if appropriate.
- d) Cumulative new permanent disturbance within the SGMA should not exceed 5% of the spatial extent of the nesting habitat within the SGMA.⁸ Allowances must be made to include the temporal effects of any temporary disturbance, if any such effects are expected. The calculation of the spatial extent of each proposed project or land use, or the area of a natural event, such as wildfire, to be employed in this calculation, is defined as part of the definition of disturbance found in Section 10 below. The base upon which this calculation is made may be increased through successful rehabilitation or restoration of habitat, or other mitigation actions as appropriate.
- e) Employ seasonal stipulations as follows:

⁸ The 5% limitation must be implemented in concert with the provisions of Section 8.9, *infra*.

Avoid activities (construction, vehicle noise, etc.) that will disturb nesting or brood rearing from April 1 August 15. The local DWR biologist should be consulted for time and distance determinations based on site specific conditions.

6.5.1.3 Winter Habitat

Winter habitat in Utah is mostly dominated by Wyoming Big and Black Sagebrush. Management provisions include:

- a) Avoid disturbance within winter habitat, if possible. Project proponents must demonstrate why avoidance is not possible.
- b) If avoidance is not possible, minimize as appropriate in winter habitat. Minimization provisions include, for example, the location of development in habitat of least importance or by locating development to take advantage of topographic screening.
- c) If minimization is not sufficient, mitigation is required. Mitigation should be calculated at a 4:1 ratio starting with the first acre disturbed. Mitigation must produce lands capable of supporting greater sage grouse as habitat before the proposed disturbance occurs, though birds do not need to be using the mitigated area. The proponent of the disturbance must demonstrate that the mitigation conditions have been met.

Successful mitigation may include:

- i) Removal of trees to no more than 5% cover (and the closer to 0% the better) and maintenance of minimum of 10% sage brush cover; and
- ii) Installation of green strips or firebreaks to protect existing winter habitat.
- iii) Employment of the Mitigation Program, if appropriate.
- d) Cumulative new permanent disturbance should not exceed 5% of the surface area of winter habitat within the SGMA.⁹ Allowances must be made to include the temporal effects of any temporary disturbance, if any such effects are expected. The calculation of the spatial extent of each proposed project or land use, or the area of a natural event, such as wildfire, to be employed in this calculation, is defined as part of the definition of disturbance found in Section 10 below. The base upon which this calculation is made may be increased through successful rehabilitation or restoration of habitat, or other mitigation actions as appropriate.
- e) Manage winter habitat to maintain maximum amount of sagebrush, especially tall sagebrush, which would be available to greater sage grouse above snow during a severe winter. Tall sagebrush is capable of standing above heavier than normal snowfall. Greater sage grouse do not require an understory component in winter habitat.
- f) Employ seasonal disturbance stipulations as follows:
Avoid activities (construction, vehicle noise, etc.) that will disturb wintering sage grouse from November 15 March 15. The local DWR biologist should be consulted for time and distance determinations based on site specific conditions.
- g) Sagebrush treatment projects within winter habitat need pre approval by the appropriate regulatory agency in consultation with the DWR. Sagebrush treatment projects within winter habitat should maintain 80% of the available habitat as tall sagebrush; 20% of the habitat can be managed for younger age classes, if appropriate.

6.5.1.4 Other Habitat

Other Habitat is habitat within SGMA's but which is not part of the lek, nesting or wintering areas. Management provisions include:

⁹ The 5% limitation must be read in concert with the provisions of Section 8, *infra*.

- a) Avoid disturbance in other habitat if possible. Project proponents must demonstrate why avoidance is not possible.
- b) If avoidance is not possible, minimize as appropriate in other habitat. Minimization provisions include, for example, the location of development in habitat of least importance or by locating development to take advantage of topographic screening.
- c) If minimization is not sufficient, mitigation is required. Mitigation should be calculated at a 1:1 ratio starting with the first acre disturbed. Mitigation must produce lands capable of supporting greater sage grouse as habitat before the proposed disturbance occurs, though birds do not need to be using the mitigated area. The proponent of the disturbance must demonstrate that the mitigation conditions have been met.

Successful mitigation includes:

- i) Removal of trees to less than 5% cover and maintenance of at least 10% sage brush cover;
- ii) Maintain forb cover greater than 10% and grass cover greater than 10% during nesting/brood rearing season;
- iii) Maintain or improve wet meadows, when present; and
- iv) Installation of green strips or firebreaks to protect existing habitat.
- v) Employment of the Mitigation Bank, if appropriate.
- d) Cumulative new permanent disturbance should not exceed 5% of the surface area of other habitat within the SGMA.¹⁰ Allowances must be made to include the temporal effects of any temporary disturbance, if any such effects are expected. The calculation of the spatial extent of each proposed project or land use, or the area of a natural event, such as wildfire, to be employed in this calculation, is defined as part of the definition of disturbance found in Section 10 below. The base upon which this calculation is made may be increased through successful rehabilitation or restoration of habitat, or other mitigation actions as appropriate.
- e) Manage the lands to avoid barriers to migration, if applicable.

6.5.2 Non-habitat: No specific management provisions are proposed for non habitat areas within SOMAs, except to consider noise and permanent structure stipulations around a lek, and to note that, birds may fly over the non habitat as they connect to other populations or seasonal habitat areas.¹¹

6.5.3 Opportunity Areas: Opportunity areas may be employed to meet improvement, restoration or rehabilitation goals, or as mitigation areas for disturbance within habitat. If this occurs, an opportunity area may become habitat and be treated as discussed under the habitat section above, especially as part of the calculation for disturbance limitations. Alternatively, opportunity areas may be employed as the site for disturbances which are diverted from habitat, or other economic proposals not involving habitat, and therefore become non habitat. In either event, boundaries of the SOMA, or the land types within, should be adjusted accordingly.

7.0 Existing Land Uses

7.1 Every effort has been made to exclude existing land disturbance within SOMAs, however in order to focus the state's efforts to conserve greater sage grouse populations by creation of the SOMAs, some may remain within the

¹⁰ The 5% limitation must be read in concert with the provisions of Section 8.0, *infra*.

¹¹ Corridors may or may not be included as habitat within the SOMA, depending on local conditions, topography, and other factors. Corridors are important to sage grouse, but may not require restrictions on human activity. As a general rule, it will be adequate to avoid removal of sagebrush and to minimize development that would create a physical barrier to sage grouse movement in these areas.

exterior boundaries. These existing uses may be considered either: 1) concentrated within a discrete area (*e.g.*, cement plants, agricultural fields, coal mine portals and related facilities) or 2) dispersed throughout a larger area (*e.g.*, oil and gas pads and roads within a developed field, wind farms, transmission lines). All existing uses are explicitly recognized by this Plan, and shall not be affected by the implementation of this Plan. Incorporated towns which may be physically within the exterior boundaries of an SOMA are expressly removed, and are not to be considered as within the SOMAs for purposes of implementation of this Plan. Existing concentrated uses within SOMAs are to be considered non habitat.

7.2 Planned developments that are under review by city, county, or state or federal agency project review processes, such as a Planning Commission review, or a review under the provisions of the National Environmental Policy Act (NEPA), which may be within an SOMA, should not be discontinued simply by virtue of presence of the proposed project within an SOMA, but should be reviewed, and permission to proceed resolved by the landowner, and other applicable law.

7.3 Existing Review Processes

7.3.1 Proposals which have completed environmental reviews, including the Narrows Project in Sanpete County and the Sigurd to Red Butte Transmission Line, are recognized as in compliance with this (Existing Uses) provision of the Plan.

7.3.2 Proposals which are nearly completed environmental reviews, such as the Alton Lease by Application coal mine proposal in Kane County, the Trans West Transmission Line proposal, the Sufco Mine Green's Hollow Tract Lease by Application coal mine proposal and the Kinney Mine proposal in Carbon County, and which have independently considered the effects of the project on greater sage grouse, may continue the pending evaluation without recourse to the provisions of this Plan.

8.0 Five Percent Permanent Disturbance Limitation.

8.1 The provisions of this Plan include, under certain circumstances, a general limit on new permanent disturbance of five (5) percent of habitat on state or federally managed lands within any particular SOMA. The fundamental purpose of this provision is to limit the effects of a large amount of disturbance to the existing habitat or activities of the greater sage grouse. The cumulative calculation of permanent disturbance in any SOMA, and specific habitats within an SOMA, is the aggregate of the various project, land use, or natural event disturbances, as defined within the definition of disturbance in Section 10 below, and as modified by the effects of rehabilitation, restoration or other mitigation actions.

8.2 Many of the SGMAs extend into two or more counties. In such case, the five (5) percent limitation shall be apportioned to each county in proportion to the total amount of habitat within the larger SOMA.

8.3 Because of the highly discontinuous nature of greater sage grouse habitat in Utah, each of the SGMAs is a composite of habitat, non habitat and opportunity areas. In many cases, it may be difficult to discern whether an existing dispersed use is part of habitat or non habitat, and thereby make an accurate calculation of the base for the limitation calculation difficult to determine. As part of the implementation of this Plan, such issues should be brought to the interagency review effort coordinated by the PLP C O to insure consistency in interpretation throughout the state. In addition, if it should become sufficiently apparent that an accurate determination of the base for the limitation calculation is not feasible, then the interagency coordination effort may propose and seek approval for an alternative measurement of, or technique to measure, the cumulative effects of disturbance, and this Plan may be amended to approve such alternative measurement or technique.

9.0 Effective Date

9.1 This Plan shall become effective when approved by the Governor, and shall remain in effect until June 2016, unless extended by the Governor.

9.2 By the end of June 2016, the Plan shall be reviewed, by such public process as the Governor shall direct, for effectiveness and continued need.

9.3 If there is a continued need, the Governor may extend the Plan, or approve an amended Plan. The Plan shall thereafter be reviewed for effectiveness and need every five years.

9.4 Notwithstanding the provisions of Section 9 above, if the FWS should finalize a regulation which lists the greater sage grouse as threatened or endangered under the provisions of the Endangered Species Act, this Plan shall immediately become optional, and may be revoked and rendered ineffective by the Governor at that time.

10.0 Definitions

10.1 Brood success: The success of a brood is achieved when one or more chicks in a brood survive to 50 days of age or more.

10.2 Corridors: Areas between greater sage grouse habitat that provide a path for birds to move between populations. Corridors are generally found as sagebrush “islands of habitat” within other landforms, and assist with the natural movement of birds.

10.3 Disturbance: Disturbance is defined as:

10.3.1 Any ground disturbing activity, event or action, natural or human caused, that will either eliminate or render greater sage grouse habitat not useable for the life cycle of the bird, *or*

10.3.2 Human activities and presence which causes a negative response from birds within the SGMA. Any activity or presence that disrupts common activities or behavior of sage grouse within a habitat at either the population or local scale is included.

10.3.3 The area of permanent disturbance is the area within a spatial polygon defined by the outside limits of the actual disturbed area, *plus* the area outside of this polygon where effects of the project, based on the type of project, could be expected to cause a disturbance, as defined in Section 10.3.2 above, to greater sage grouse.

10.3.4 Duration of a Disturbance

Disturbance as defined in Section 10.3.1 and 10.3.2 is further divided into:

10.3.3.1 Permanent disturbance: Any ground disturbing activity where the effects would be expected to last five years or more; and

10.3.3.2 Temporary disturbance: Any ground disturbing activity where the effects would be expected to last less than five years.

10.4 Habitat: The aggregation of seasonal habitat used by greater sage grouse at some point during the yearly life cycle of the birds. Habitat includes the geographical extent of leks, nesting, brood rearing, late brood rearing and winter areas.

Seasonal habitat: Areas of crucial importance to greater sage grouse population survival throughout the year. Includes: leks, nesting, brood rearing, transitional, and winter habitat.

10.5 Habitat enhancement: An improvement to existing habitat that does not result in an acreage gain. For example: Removal of pinon juniper conifer trees in young open canopy stands still used by sage grouse.

10.6 Habitat improvement: An improvement in opportunity areas that results in an acreage gain in habitat. For example: Removal of pinon juniper conifer trees in closed canopy stands not used by greater sage grouse.

10.7 Lek: An area where two or more strutting males attend the same location for two years or more; not necessarily consecutive years.

10.7.1 Active lek: Based on a year by year review, a lek that has been attended by male greater sage grouse during the annual strutting and breeding season.

10.7.2 Occupied lek: A lek which has been active at least once within the last 10 years.¹²

10.8 Observational Science: Observational science (or scientifically observed) is defined to mean measurements recorded according to some pre set scientific protocol, and is published literature which has not been peer reviewed, (e.g., Master's Theses)

10.9 Opportunity Area: An area adjacent to habitat that can be treated by management actions. After treatment, the area becomes sage grouse habitat.

10.10 Population: A group of greater sage grouse utilizing habitat in a geographic area that share genetic traits and have regular genetic exchange.

10.10.1 Migratory population: A greater sage grouse population that moves 6 miles (10 km) or more between seasonal habitat locations.

10.10.2 Non migratory population: A greater sage grouse population that does not move more than 6 miles (10 km) between seasonal habitat locations.

10.11 Reclamation/ Rehabilitation: Affirmative action to return an area to a functioning habitat condition immediately after a disturbance, and is generally related to a temporary disturbance or a planned activity.

10.12 Restoration: Affirmative action to return an area to a functioning habitat condition, most often with a lapse between disturbance and action, and generally not planned when the disturbance occurred.

10.13 SITLA lands: Lands owned or managed by the Utah School and Institutional Trust Lands Administration.

10.14 State lands: State Lands are lands managed by state agencies other than the School and Institutional Trust Lands Administration.

Appendix 1

Summary of the Current Knowledge of the Effects of Tall Structures upon Sage-Grouse

Tall structures can range from fences to meteorological towers, including transmission lines and wind turbines. Fences can cause direct mortality of sage grouse, mostly collisions with the fence wires near leks (Stevens 2011). Marking fences reduces the risk of fence collisions. The impact on sage grouse from the remaining tall structures is mostly indirect.

A literature review of the impacts tall structures may have on sage grouse was conducted by Utah Wildlife in Need and Utah State University. The final report was released in September of 2010. This report was in response to some of the goals outlined in the 2006 Greater Sage grouse Conservation Strategy. Although Dr. Jim Sedinger, University of Nevada, Reno, has been conducting research on sage grouse and tall structures in Nevada for a number of years, he has not published his work at this time. The report concluded there was a lack of science upon which to base tall structure BMPs and decisions. The report recommended research be conducted to gain sound science.

In the winter of 2011 a group of researchers and managers with expertise in sage grouse met at Bear Lake, UT to establish research protocols to evaluate the impacts from Electric Transmission and Distribution lines on greater sage

¹² This is a standard definition adopted by all states which contain greater sage grouse habitat.

grouse and their habitat. The final report was released July 6, 2011. It provides researchers with the protocols to follow while conducting research on transmission lines and sage grouse using a Before After Control Impact (BACI) design. Research sites have been tentatively identified; none occur in Utah, mostly due to low sage grouse population sizes.

In October, 2012 the Avian Power Line Interaction Committee, <http://www.aplic.org/index.php> held a workshop specifically discussing sage grouse and powerlines. Utah participated. Their next steps are to develop BMPs for sage grouse and power lines using available information.

In addition to the tall structure report and transmission line research protocols, the National Wind Coordinating Collaborative (NWCC), <http://www.nationalwind.org/sagegrouse.aspx>, has a group that is looking at wind energy development and sage grouse.

The Sage Grouse Research Collaborative (SGC), which is part of the NWCC, was formed in 2010 under the Wildlife Workgroup's Grassland and Shrub Steppe Species Subgroup to coordinate studies examining the potential impacts of wind energy development on sage grouse across their range with the goal of informing wind development and sage grouse management strategies. Three research projects were selected:

"A study of the impacts of a wind energy development on Greater Sage Grouse populations in southeastern Wyoming," led by Wyoming Wildlife Consultants LLC

"Ecology of male Greater Sage Grouse in relation to wind energy development in Wyoming," led by University of Missouri and Power Company of Wyoming

"Response of Greater Sage Grouse to wind power development," led by Idaho Department of Fish and Game (postponed due to BLM planning efforts)

Utah has been involved with and updated on these research efforts. In February 2011, the group met in Salt Lake City to discuss updates.

The first publication from the NWCC SGC was released in August 2012, a thesis by Chad LeBeau (LeBeau, C. W. 2012; Evaluation of greater sage grouse reproductive habitat and response to wind energy development in south central, Wyoming). This project used VHF radio telemetry to study greater sage grouse in Wyoming from 2008-2012; 116 female sage grouse were collared and followed for this research. The thesis covers short term effects; however, this research will continue into the future and look at long term effects. Lag effects on sage grouse populations due to disturbance have been shown to take up to 10 years in oil and gas fields (Harju et al 2010). Our conclusion is that LeBeau did not document any effects from transmission lines on sage grouse nest or brood success but did document that brood success and nest success decreased closer to wind turbines.

The following is a brief summary of LeBeau's findings sorted by general, transmission line effects, turbine effects, and lek attendance effects (all statements are direct quotes from the thesis; readers are encouraged to read the full publication for proper context.)

General Comments

"Greater sage grouse nest and brood survival decreased in habitats in close proximity to wind turbine, ..."

"Greater sage grouse were not avoiding the wind energy development two years following construction and operation of the wind energy facility. This is likely related to high site fidelity inherent in sage grouse. In addition, more suitable habitat may exist closer to turbines at Seven Mile Hill [SMH, wind turbine area], which may also be driving selection."

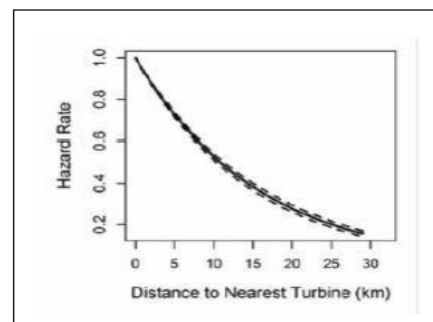
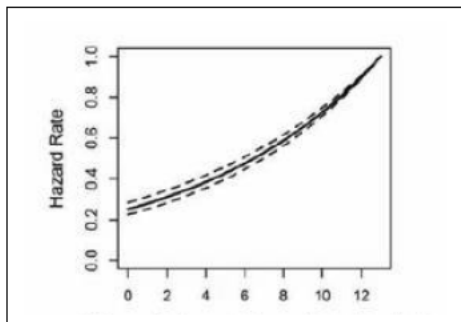
"The presence of turbines did not influence sage grouse nest site selection or brood rearing habitat selection. However, sage grouse appeared to select for habitats in close proximity to wind turbines during the summer period. These results

may be related to the fact that areas near turbines are comprised of high quality habitats that were used extensively by sage grouse prior to development of the SMH wind energy facility; however without the collection of pre development data, it is difficult to speculate the reasons for these selection patterns.... I caution the interpretations of these results because of the strong site fidelity exhibited by sage grouse and the inherent time lags associated with population level response to anthropogenic infrastructure as seen in oil and gas developments."

"...placing wind turbines at least 5 km from nesting and brood rearing habitat should reduce negative influences from wind energy infrastructure on sage grouse nest and brood survival."

Transmission Line Effects Nests

"The risk or the odds of a nest failing increased by 11.1% $[(\exp(i0) - 1) * 100]$ with every 1.0 km increase in the distance to nearest overhead transmission line..." [higher nest survival closer to overhead transmission lines jr comment].

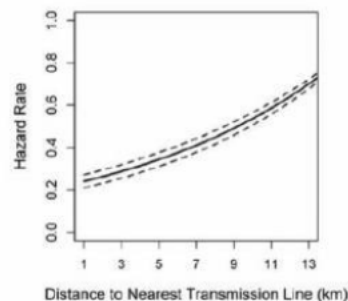


Broods

Impacts to brood survival didn't come into the top AIC models, which may show transmission lines are not as important for brood survival as other criteria evaluated (e.g. distance to turbine, terrain ruggedness, or % shrub cover).

Hen Survival

"Spatially, habitats closer to transmission lines had higher odds of survival than habitats farther from transmission lines..."

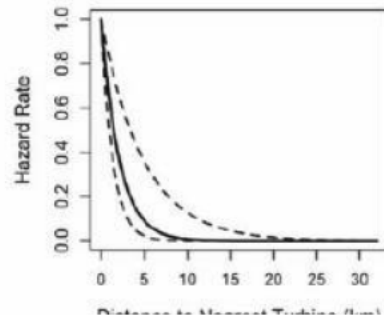


Wind Turbine Effects

Nests

"...the risk of a nest failing decreased by 6.2% as distance from turbine increased by 1 km (90% CI: 5.9 6.5%). More specifically, as distance increased from turbines, the risk of failure decreased by 17.5% ($\ln(0.064)$) at 3.0 km to 47.3% at 10.0 km ($\ln(0.064)$) from the nearest turbine."

"Spatially, habitats closer to turbines had higher odds of a nest failing than habitats farther from turbines (Fig. 3 3)."



Broods

"Results of the univariate model estimating differences in survival among study areas indicated that broods located within the SMH study area [wind turbine study area] were 2.9 times more likely to fail than broods within SR [no wind turbine study area](hazard ratio = 2.9; 90% CI: 1.1 7.6)."

"...the risk of a brood failing decreased by 38.1% with every 1.0 km increase in distance from nearest turbine (hazard ratio = 0.619; 90% CI: 18.6 52.9%; Table 3 3; Fig. 3 4)."

"...the effect of a 0.50 km increase in distance to nearest turbine decreased the risk of brood failure by 21.3%. As distance increased from turbine, the relative risk of failure decreased from 76.2% at 3 km to 97.8% at 8 km from the nearest turbine (Fig. 3 4)."

"Spatially, habitats closer to turbines had higher odds of a brood failing than habitats farther from turbines.**Hen Survival**

"The univariate model estimating differences in female survival among study areas indicated that study area (SMH vs. SR) did not influence female survival (hazard ratio = 0.84; 90% CI: 0.73 0.36)."

"Overall female survival was not influenced by proximity to turbines or any other landscape habitat feature used in the analysis; however, female survival was highest around transmission lines throughout the study area."

Lek Attendance Effects

"Peak male lek attendance within both study areas experienced significant declines from 1 year pre development to 4 years post development; however, this decline was not attributed to the presence of the wind energy facility."

"Leks located within wind energy development experienced a significant decline in male lek attendance from pre development to 4 years post development. However, leks located outside of the wind energy development experienced similar significant declines."

"The significant decline in male lek attendance from 1 year pre development to 4 years post development cannot solely be attributed to the presence of the wind energy facility. Impacts from the wind energy facility may not be initially realized due to the time lags associated with sage grouse breeding populations. More than 4 years of post development monitoring and multiple sites may be necessary to adequately assess greater sage grouse breeding response to wind energy development."

"...the results from other studies where leks have been impacted by oil and gas development indicate there is a time lag and effects may not be realized until 2 10 years following development. There is only one grouse wind

energy published study I am aware of that assessed male grouse lek attendance relative to wind energy development. Black grouse (*Tetrao tetrix*) in Austria, were not impacted by the wind energy facility the immediate year following construction, but did show considerable declines 4 years after construction suggesting there may be a similar time lag to wind development as oil and gas development in grouse (Zeiler and Grilnschachner Berger 2009)."

Appendix 2

Grazing Practices and Greater Sage-grouse Conservation Introduction

This is a synthesis of contemporary knowledge regarding the relationship between grazing by domestic livestock (cattle and sheep) and greater sage grouse (*Centrocercus urophasianus*; hereafter sage grouse) in occupied sagebrush (*Artemisia* spp.) habitats in Utah. It is intended to provide general perspective and guidance regarding the management of Utah rangelands to benefit sage grouse. Although, the published literature contains extensive descriptions of sage grouse biology and habitat requirements, it is largely void of grazing best management practices (BMPs) based on replicated experimental research, which can be universally applied to benefit sage grouse. Hence, some of the options provide some historical perspective and also constitute salient hypotheses, which may require further experimentation.

Background

Sage grouse are a sagebrush obligate species; as such their survival is tied to having access to sagebrush plant communities. The general reduction and fragmentation of sagebrush habitats throughout western North America is cited as a primary factor in the decline of sage grouse populations (Aldridge 2000, Braun 1998, Schroeder 1997). At the local level, factors such as a lack of suitable seasonal rangeland sagebrush habitats may limit species production and survival thus further exacerbating local population declines.

The decline of sage grouse populations and their associated habitats is of great concern to wildlife managers and private landowners. Current estimates suggest that private lands may constitute up to 30% of the remaining range wide habitat base for sage grouse. In Utah, the Division of Wildlife Resources (DWR) estimates that up to 50% of the sage grouse populations in the state inhabit private land. Thus, private land owned by ranchers is important to sage grouse survival. Furthermore, the vast majority of those private lands are held by federal land grazing permit holders whose ranching operations are tightly tied to public land decisions regarding sage grouse recovery. The unintended consequences of decisions that negatively impact public land grazing permits will also impact sage grouse habitat on private lands. For example in the Grouse Creek Valley in Box Elder County, the privately held lands are important spring and summer habitats for sage grouse. The same ranches rely on public allotments to sustain viable economic enterprises. (BARM 2006) A historical, landscape scale perspective of livestock stocking rate on public land is worth consideration in relationship to sage grouse decline. Permitted Livestock AUMs have dropped dramatically on BLM lands from 1940 to today. Using Utah as an example; permitted BLM AUMs in 1940 were 2.75 million, by 1960 permitted AUMs had dropped to 1.75 million, and by 2008 AUMs had dropped to .67 million. The 4 fold decrease in permitted livestock AUM's harvest occurred at the same time that sage grouse populations have declined in Utah. Varva (2005) reported that livestock grazing can change forage composition, production, and quality, such as increasing the availability of forbs. Second, the loss of the vast numbers of sheep that wintered on sage brush, killing some brush plants and pruning others, has resulted in a decline of multiple age classes of sagebrush from which grouse can select more favorable winter nutrition. Guttery (2011) found that sage grouse preferred brood rearing

habitat grazed by sheep the previous fall and winter. Peterson (2012) reported that livestock grazing of sagebrush during the dormant season increases the herbaceous understory the following spring.

The management literature clearly documents that the presence of large, contiguous intact sagebrush communities are paramount to ensuring that sage grouse seasonal habitat needs are met (Braun et al. 1977, Connelly et al. 2000). The communities must contain an adequate sagebrush canopy with a forb rich herbaceous understory. Such areas provide breeding (e.g., nesting and early brood rearing), summer and fall transitional habitats. Large scale manipulations that remove dense stands of sagebrush in sage grouse winter habitat can be harmful.

The BLM states that grazing can be "used as a tool to protect intact sagebrush habitat and increase habitat extent and continuity which is beneficial to [the] Greater Sage Grouse and its habitat." The BLM continues by indicating that "Given the potential financial constraints in addressing the primary threats identified by the FWS, enhanced management of livestock grazing may be the most cost effective economic opportunity in many instances to improve Greater Sage Grouse habitat on public lands." According to Natural Resources Conservation Service (NRCS), grazing "has been responsible for retaining expansive tracts of sagebrush dominated rangeland from conversion to cropland" and can "stimulate growth of grasses and forbs, and thus livestock can be used to manipulate the plant community toward a desired condition." The NRCS has developed several conservation practice programs through which private landowners can receive cost share to manage sagebrush rangelands to improve wildlife habitat. These practices include Upland Wildlife Habitat Management (645), Prescribed Grazing (528), Prescribed Fire (338), Brush Management (314), and Grazing Land Mechanical Treatment (548). Each of these practices has specific criteria and standards NRCS planners must consider when developing landowner conservation plans. However, in the case of sage grouse, additional considerations may be warranted because of their unique seasonal habitat requirements.

Sage-grouse Habitat Requirements

Sage grouse depend on sagebrush dominated landscapes yearlong. In addition, they prefer heterogeneous stands of sagebrush (Crawford et al. 2004, Aldridge and Boyce 2007). Unfortunately, dense stands of sagebrush reduce the biodiversity of forbs and grasses in the understory (West 1993). Thus, sagebrush densities must be assessed and manipulated to provide adequate cover and nutrition for survival of sage grouse and their chicks.

Lekking (Late February to May)

Leks may be open areas within sagebrush communities used by males during the breeding season to attract females to breed. The areas surrounding the leks exhibit sagebrush stands used for nesting, feeding, roosting, and escape cover. These areas may contain plants that green up early providing pre laying nutrition, which can increase initiation, hatching success, and chick survival.

Nesting (April to mid-June)

In the contiguous sagebrush habitats most hens nest within 4 miles of the lek where they are bred. In non contiguous habitats hens may move greater distances to nest. Sage grouse hens exhibit a strong preference to nest in the same general area every year. Research in Utah confirms that the overall production of sage grouse populations is tied to survival of adult hens, which live for several years and produce multiple broods over time (Connelly et al. 2000, Fischer et al. 1993). Hens typically select nest sites under sagebrush plants that are taller than those in the surrounding area and in areas that exhibit 20-25 percent live sagebrush canopy cover.

Early Brood-Rearing (June to mid-July)

Research confirms that most sage grouse chicks are capable of sustained flight three weeks after hatching. In contiguous sagebrush habitats that exhibit a diverse mosaic of green vegetation that also support abundant insects, chicks may spend most of their early life within a couple of miles of the nest. In non contiguous habitats, hens may

move their broods several miles in search of similar conditions. As the distance hens must move broods in search of food increases, both hen and chick mortality risks also increase. Early brood rearing habitat typically exhibits more open patches (10-15 percent live sagebrush canopy cover) containing more forbs. Having dense stands of sagebrush close to these areas provides important escape cover and shelter from inclement weather. In Utah, research suggests that habitat manipulations that open small "resource" patches in dense sagebrush stands (>30%) can provide important early brood rearing habitats (Guttry 2011, Dahlgren et al. 2006).

Late Brood-Rearing (Mid-July to mid-September)

As temperature rises and precipitation decreases, green vegetation in early brood rearing areas may dry out. Hens with broods and broodless hens will often move considerable distances in search of green vegetation. In Utah, preferred late brood rearing areas may include riparian areas, irrigated hay fields, upland seeps and springs, and open meadows. The presence of tall sagebrush stands in late brood rearing areas can provide shelter for loafing and roosting. Sage grouse mortality is typically low in Utah during late brood rearing periods. Livestock distribution patterns during late brood rearing periods are tied to water availability. High livestock utilization levels in areas coupled with reduced water availability can reduce green vegetation and long term productivity if repeated year after year during the same season. However, both upland and riparian areas grazed by livestock in April, May, and June, followed by rest, can provide the protein needed by broods July through September. Sage grouse will select grazed meadows over sites that have not been grazed for several years. Managing "time," "timing," and "intensity" of grazing across the broad landscape will provide for this need, not only in riparian, but also on uplands. In areas where time controlled grazing is not currently practiced any practice that will improve the quantity and quality of the green vegetation by delaying seed set and increased accessibility to low growing broad leaf plants preferred by sage grouse will be beneficial. (Examples include offsite watering facilities and mini catchments.)

Fall (Mid-September to October)

The transitional habitats used by sage grouse in the fall are largely dependent on weather conditions. As the green vegetation and insects disappear, the amount of sagebrush in their diet gradually increases. For most populations in Utah, fall habitats are those used during migration to winter areas. The time of use depends on temperatures and snow depths.

Winter (November to February)

During the winter, the primary requirement of sage grouse is sagebrush available above the snow. Exposed sagebrush is used for food and cover; sage grouse feed almost exclusively on sagebrush in the winter. Winter ranges are typically characterized by large expanses of dense sagebrush on flatter land with south to west facing slopes or windswept ridges. During deep snow periods, steeper drainages with taller sagebrush and the deep soil canyon bottoms with basin big sagebrush may be the only areas with exposed sagebrush. Winter habitat may be limiting when deep snows occur; however, in most areas and years, sage grouse will actually gain weight during winter. Sage grouse select sagebrush habitat type with lower secondary metabolites (monoterpenes, sesquiterpene lactones, phenolics) at multiple spatial scales; black sagebrush selected over Wyoming big sagebrush, (Frye et al. in press).

Migration

Many sage grouse populations in Utah are migratory. Some populations must cross non habitat areas to reach their winter habitats. Other populations inhabiting contiguous sagebrush stands at lower elevations may not make long distance movements between or among distinct seasonal ranges. In these areas, nesting habitats may also provide winter range. Thus, it is important to determine sage grouse seasonal ranges prior to conducting habitat manipulations.

Leks

Be cautious of man made structures on lek sites. However, it is important to recognize the current lek sites are often areas of heavy historical livestock use, such as watering locations, salt licks, corrals, and old sheep bed grounds. Biologists have mowed and used other types of disturbance on lek sites to reduce shrub encroachment and maintain the "open" area that characterizes a typical lek site. Identify the location of leks through consultation with DWR biologists.

Nesting/Early Brood-Rearing

Maintain and enhance the existing sagebrush/plant communities. Manage these areas to increase herbaceous cover by sustaining a mosaic of sagebrush and open areas. Avoid repeated, annual heavy use of these areas by implementing periodic rest and/or deferment periods during the critical growing season.

Late Brood-Rearing

Summer sage grouse habitat in Utah is tied to healthy wet meadows, riparian areas, hay fields and irrigated alfalfa. Avoid continuous (season long) grazing of wet meadows and riparian habitats, especially under drought conditions when temperatures are high.

Winter

Grazing by cattle has limited effect on winter sage grouse habitat. Patchy winter grazing of sagebrush by sheep can add nutritional diversity beneficial to sage grouse. Carefully manage levels of browsing or activities in sagebrush areas that constitute sage grouse habitat that would reduce sage grouse access to these areas for food and cover. The potential impact of livestock grazing on winter habitat can be positive or negative depending on scale and location of use. As suggested earlier, areas winter grazed by sheep can provide diversity of sagebrush age class and nutritional opportunity needed by sage grouse. Sagebrush manipulations in winter habitat must be carefully planned to assure the winter needs of grouse are met or enhanced. Also, grazing of herbaceous cover during the spring at high utilization rates may increase sagebrush density.

Special Considerations

Landscape Level Grazing Use Patterns - The Importance of Monitoring

The development and implementation of a monitoring plan that includes an understanding of how sage grouse use the landscape and how the area is to be grazed is crucial to sustaining productive habitats.

Carefully managing the "time," "timing," and "intensity" of grazing in sagebrush/sage grouse habitats will provide for the seasonal needs of sage grouse. Specific prescriptions can be applied through more intensive management to address special needs or weak links in the biological year of grouse production (e.g. winter sagebrush grazing by sheep). A monitoring plan to assess the effects on sage grouse seasonal needs will enhance the opportunity for effective adaptive management. Where time controlled grazing is not an option, moderate use of occupied sage grouse habitats will usually leave mosaic or patchy areas where some plants are ungrazed.

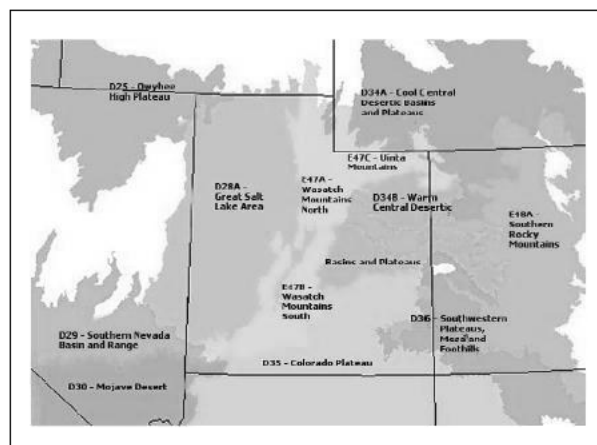


Figure 1. Utah Major Land Resource Areas (MLRAs), along with Utah Ecological Site Descriptions, should be referred to prior to developing site-specific grazing management plans to benefit sage-grouse.

Managing for moderate utilization levels (40%) after the period of rapid vegetation growth may provide enough residual cover for sage grouse nesting and early brood rearing the subsequent spring (France et al. 2008).

Evaluation of sage grouse nesting and escape cover must be determined on a site specific basis. Livestock operations with a small amount of nesting habitat should consider special management activities to protect nesting and early brood rearing areas. Lighter use of areas may be warranted. In areas with large tracts of contiguous habitat, livestock producers should manage the vegetation on a rotational grazing basis, which may leave 10–20 percent of the area ungrazed periodically in combination with deferring or altering timing of grazing in other areas. In areas where sage grouse nesting is common, managing for moderate use of plant growth across the landscape would be appropriate. Well managed ranches with comprehensive grazing strategies that include short term or duration grazing, higher levels of use may be acceptable, provided these higher levels of use include rested vegetation in nearby areas.

Multi-species Grazing

One specific habitat type that may be limiting in some sage grouse populations in Utah is brood rearing habitat. Numerous studies have described the importance of high quality brood rearing habitat to chick survival and population recruitment. Research conducted on Parker Mountain in Utah has documented that the proper application of mechanical and chemical (mainly Tebuthion) sagebrush treatments (NRCS 314) can enhance brood rearing habitats in higher elevation (> 7000 feet) rangelands dominated by mountain big sagebrush (Dahlgren et al. 2006). While both chemical and mechanical treatments can reduce sagebrush cover and increase forb production within the levels suggested in the brood rearing habitat guidelines, concerns have been expressed about the longevity, environmental impacts, and fossil fuel dependency of these methods.

One possible alternative method of managing sagebrush ecosystems is through grazing by livestock. When properly applied, grazing can promote vegetation change and alter community composition as well as ecosystem structure and function. Research conducted on Parker Mountain demonstrated that strategic intensive sheep grazing constituted a viable means of managing sage grouse brood rearing habitat at higher elevations that receive at least 16 inches of precipitation annually. The strategic component was actually two fold. First, habitats and the need for management were clearly defined. Secondly, the timing of the application was chosen carefully to maximize the likelihood of achieving the desired goal. High grazing intensity during dormant growing season was key to the success of the method (Guttry 2011).

Research conducted at Utah State University has further demonstrated that livestock also may be conditioned over many successive generations to eat sagebrush. High stocking density may encourage animals to consume sage brush more quickly and allows for the desired utilization level to be achieved quickly providing nutritional benefits to the animals (Dziba et al. 2007, Guttry 2011, Petersen 2012).

Most of the available literature on the impacts of grazing on wildlife species consists of observational studies. Thus, there is a need for designed, controlled experiments on the interaction between appropriate grazing regimes and wildlife.

Working Ranches as the Infrastructure of Sage-grouse Conservation in Utah

Rangeland plant communities in Utah are influenced by the long term grazing management of the past. Grazing management in sage grouse seasonal use areas need careful consideration to assure that the results will benefit sage grouse. Well planned grazing management strategies can achieve producer economic objectives while providing for

sage grouse habitat requirements. Utah is fortunate to have some long term grazing management models that exemplify successful sage grouse management.

Because sage grouse are a landscape species, larger ranching operations that encompass multiple pastures managed to optimize plant productivity may offer better control of grazing time, timing, and intensity. Barriers to improved grazing programs on public land involve bureaucratic delays, regulations, and the greater investment in infrastructure, such as fencing and water development, and increased labor cost to implement active management.

Effective herding can substitute for a substantial portion of infrastructure if there are large enough herds to justify the required investment in full time personnel. The final approach should be based on an individual livestock operation's site specific strategy. From a sage grouse management perspective, revised management systems are only desirable if they are effective in promoting both rangeland health and seasonal habitat sage grouse requirements.

There are benefits and risks associated with any management action. Implementing rotational landscape level grazing management may require construction of fences and/or water developments. Care must be taken to assure the new infrastructure is sage grouse friendly. Further information can be obtained through the Sage Grouse Initiative sponsored by the NRCS. For example, the combination of several smaller grazing units to achieve scale can often meet this need without additional fences.

Grazing management based on the principles of "time," "timing," and "intensity" provide for improved ecological health of the land and the life cycle needs of sage grouse. The landscape scale habitat benefits far outweigh the risks from additional infrastructure required, as long as the NRCS/SGI guidelines for fence and water developments are followed.

In areas where West Nile virus has been documented to be an issue, follow the guidance provided by NRCS/SGI for new water infrastructure.

Management plans to improved grazing management and sage grouse habitat must be assessed on a case by case basis. The grazing management principles assembled by the UGIP Technical Committee will provide for the needs for nesting, early brood rearing, late brood rearing, and wintering of Sage Grouse in sagebrush habitats while improving overall rangeland health. Use of the Grazing Response Index (GRI) can provide a good measuring method for managers.

Literature

Aldridge, C.L. 2000. Reproduction and habitat use by sage grouse (*Centrocercus urophasianus*) in a northern fringe population. M.S. Thesis. University of Regina. Regina, SK.

Aldridge, C.L. and M.S. Boyce. 2007. Linking occurrence and fitness to persistence: habitat based approach for endangered greater sage grouse. *Ecological Applications* 17: 508-526.

Braun C.E., T. Britt, and R.O. Wallested. 1977. Guidelines for maintenance of sage grouse habitats. *Wildlife Society Bulletin* 5:99-106.

Braun, C.E. 1998. Sage grouse declines in western North America: what are the problems? *Proceedings of the Western Association of State Fish and Wildlife Agencies* 78:139-156.

Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines for management of Sage Grouse populations and habitats. *Wildlife Society Bulletin* 28:967-985.

Crawford, J.A., R.A. Olson, N.E. West, J.C. Mosley, M.A. Schroeder, T.D. Whitson, R.F. Miller,

M.A. Gregg, and C.S. Boyd. 2004. Ecology and management of sage grouse and sage grouse habitat. *Journal of Range Management* 57: 2-19.

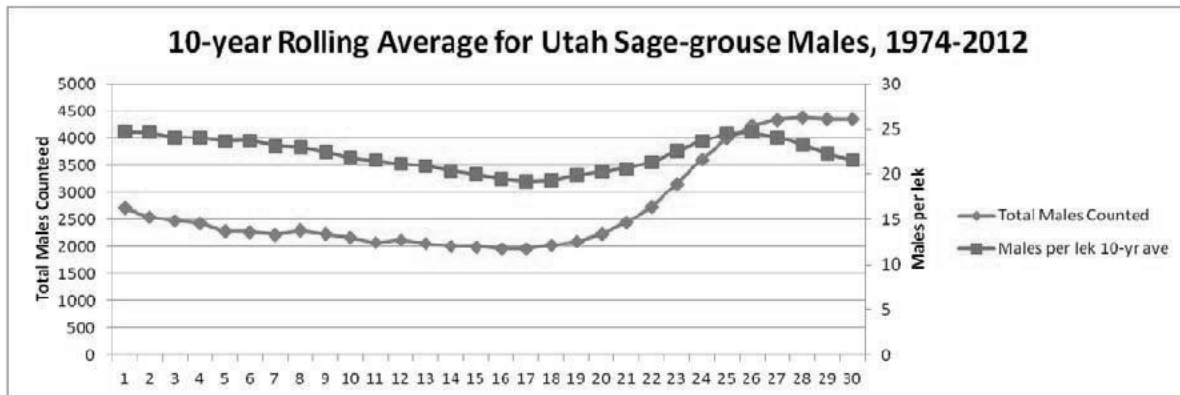
- Dahlgren, D. K., R. Chi, and T.A. Messmer. 2006. Greater sage grouse response to sagebrush management in Utah. *Wildlife Society Bulletin* 34:975 985.
- Dziba, L.E., F.D. Provenza, J.J. Villalba, and S.B. Atwood. 2007. Supplemental energy and protein increase use of sagebrush by sheep. *Small Ruminant Research* 69:203 207.
- Fischer, R.A., A.O. Apa, W.L. Wakkinen, K.P. Reese, and J.W. Connelly. 1993. Nesting area fidelity of sage grouse in southeastern Idaho. *Condor* 95: 1038 1041.
- France, K.A., D.C. Ganskopp, and C.S. Boyd. 2008. Interspace/undercanopy foraging patterns of beef cattle in sagebrush habitats. *Rangeland Ecology and Management* 61:389 393.
- Frye, G.G., J.W. Connelly, D.D. Musil, and J.S. Forbey. In Press. Phytochemistry predicts habitat selection by an avian herbivore at multiple spatial scales. *Ecology* In Press.
- Guttery, M.R. 2011. Ecology and management of a high elevation southern range greater sage grouse population: vegetation manipulation, early chick survival, and hunter motivations. PhD Dissertation. Utah State University, Logan, UT.
- Petersen, C.A. 2012. Cattle browsing sagebrush steppe during fall: effects on plant community structure and influence of experience on cattle foraging behavior and body weights. MS Thesis. Utah State University, Logan, UT.
- Schroeder, M.A. 1997. Unusually high reproductive effort by sage grouse in a fragmented habitat in north central Washington. *Condor* 99: 933 941.
- West, N.E. 1993. Biodiversity of rangelands. *Journal of Range Management* 46:2 13.

Appendix 3

Utah Greater Sage-grouse Baseline Male Lek Counts, 2003-2012

Each year, March May, UDWR attempts to count all occupied leks in Utah. Most leks are counted a minimum of 3 times per year. Only males on the leks are recorded, the maximum number of males counted is recorded each year for each lek visited. All leks within each Sage grouse Management Area are used in the analysis. The 10 year average, maximum, and minimum are calculated for the years 2003 2012. Below is a summary of the number of males counted in each of the 11 Sage grouse Management Areas.

Management Area	10-yr Average	10-yr Maximum	10 yr Minimum
Box Elder	755	1194	329
Bald Hills	68	118	29
Carbon	119	160	43
Hamblin Valley	89	129	50
Ibapah	39	84	0
Panguitch	304	490	153
Parker Mountain-Emery	851	1403	493
Rich	1219	1651	671
Sheeprock Mountains	92	190	43
Strawberry	82	158	34
Uintah	452	822	238
<u>Statewide Total</u>	<u>4070</u>	<u>6399</u>	<u>2083</u>



Appendix 4

Protocol for Private Landowners to Participate in Greater Sage Grouse Conservation Efforts

A number of different state and federal agencies and organizations make a variety of technical assistance available to private landowners interested in doing work on their lands to benefit the conservation of greater sage grouse. The Utah Division of Wildlife Resources employs biologists and other staff with training and expertise in the conservation, ecology, and management of sage grouse and their habitat. The Utah Department of Natural Resources has funding available through the Watershed Restoration Initiative. The Utah Department of Agriculture and Food has staff and funding available, particularly for landowners with livestock grazing on their property. The Natural Resources Conservation Service has staff dedicated to sage grouse conservation on private lands. Some sage grouse Local Working Groups can provide assistance through staff and members of the LWG. All can assist landowners with projects that can benefit both the landowner's needs and the conservation needs of sage grouse. State and federal conservation programs are available to assist landowners with sage grouse conservation efforts.

With all of these options, the biggest problem for a private landowner is to find the right person and program to meet their needs without getting lost in the quest. As a result, the State of Utah will provide a single point of contact for private landowners to request assistance with sage grouse conservation projects, whether a habitat improvement project like removing pinyon juniper encroaching in sage brush, or obtaining a conservation lease or easement to avoid development of sage grouse habitat. The contact will forward the landowner's need to the correct person and agency.

Please check the website of the Public Lands Policy Coordination Office (<http://governor.utah.gov/publiclands>) or the Department of Natural Resources (<http://naturalresources.utah.gov>), or call the Public Lands Office at 801 537 9801 to obtain the latest contact information.

Appendix 5 Charts Must be Obtained from State of Utah

Appendix 6

Rehabilitation and Restoration of Sage-grouse Habitat

Very little sagebrush within its range remains undisturbed or unaltered from its condition prior to EuroAmerican settlement in the late 1800s (Knick *et al.* 2003, and references therein). Due to the disruption of primary patterns, processes and components of sagebrush ecosystems since EuroAmerican settlement (Knick *et al.* 2003; Miller *et al.* 2011), the large range of abiotic variation, the minimal short lived seed banks, and the long generation time of

sagebrush, restoration of disturbed areas is very difficult. Not all areas previously dominated by sagebrush can be restored because alteration of vegetation, nutrient cycles, topsoil, and living (cryptobiotic) soil crusts has exceeded recovery thresholds (Knick *et al.* 2003; Pyke 2011). Sagebrush Ecosystems lacking resilience may cross ecological thresholds leading them to alternative stable communities, which differ considerably in structure and function from the original. Returning to original communities are unlikely without human intervention in the form of control of undesirable species or reintroductions of previously dominant species (Briske *et al.* 2006).

The use of ecological site descriptions and state and transition models can assist in determining if passive or active management might improve greater sage grouse habitat, by determining a site's potential and its current state (Pyke 2011). Active revegetation and rehabilitation methods within greater sage grouse habitats vary depending on the site's current state and potential. Different methods of revegetation, weed control and combinations of both are common (Monsen *et al.* 2004). Sagebrush ecology and restoration have been and continue to be researched extensively (see SageSTEP project website and bibliography http://www.sagestep.org/educational_resources/bibliographies/sagebrush.html). The Sage Grouse Habitat Restoration Symposium also provides valuable information on sagebrush ecology and restoration (Shaw *et al.* 2005). There are advantages and disadvantages that should be considered before applying a particular set of techniques. Success is not guaranteed in semi arid environments when conducting greater sage grouse habitat restoration projects, often due to annual weather conditions which can vary widely. It is necessary to follow useful guidelines in preparing and implementing a restoration project for best results (Pyke 2011).

Except for areas where active restoration is attempted following disturbance (e.g., mining, wildfire), management efforts in sagebrush ecosystems are usually focused on maintaining the remaining sagebrush (Miller *et al.* 2011; Wisdom *et al.* 2011). Landscape restoration efforts require a broad range of partnerships (private, State, and Federal) due to landownership patterns, and may require decades or centuries (Knick *et al.* 2003, and references therein). Utah has been very active in rehabilitation and restoration efforts through the Utah Watershed Initiative, the Grazing Improvement Program and others. These efforts have shown success in bringing degraded habitat into use by sage grouse in very short time frames.

References:

- Briske, D. D., S. D. Fuhlendorf, and F. E. Smeins. 2006. A united framework for assessment and application of ecological thresholds. *Rangeland Ecology and Management* 59:225–236.
- Monsen, S. S., R. Stevens, and N. L. Shaw (compilers). 2004. Restoring western ranges and wildlands. USDA Forest Service RMRS GTR 136. USDA Forest Service, Rocky Mountain Research Station, Fort Collins, CO.
- Shaw, N. L., M. Pellant, S.B. Monsen., comps. 2005. Sage grouse habitat restoration symposium proceedings; 2001 June 4–7, Boise, ID. Proc. RMRS P 38. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 130 p.

Appendix 7

The Use of Prescribed Fire to Manage Sage-grouse Habitat

PREScribed FIRE AS A MANAGEMENT TOOL IN XERIC SAGEBRUSH ECOSYSTEMS: IS IT WORTH THE RISK TO SAGE GROUSE?

A White Paper prepared by the Sage and Columbian Sharp tailed Grouse Technical Committee for the Western Association of Fish and Wildlife Agencies

Executive Summary

The sagebrush biome has diminished and been fragmented across much of its historic range. Several factors are responsible including agricultural conversion, large wildfires, pinyon pine and juniper expansion, urban development and, more recently, energy development. Xeric sagebrush communities typically receive ≤ 12 " precipitation and include Wyoming big sagebrush, low elevation mountain big sagebrush, and low or black sagebrush communities. These habitats are not adapted to frequent fire and an extensive amount of this habitat type has been lost to wildfire, particularly in the Great Basin, over the last two decades. Natural fire return intervals in these settings have recently been estimated at 100 years or more. Invading exotic species such as cheatgrass are often spread as a result of fire, leading to vegetation type conversion, particularly where understory herbaceous vegetation is already depleted.

In the past, land managers implemented sagebrush eradication projects to enhance forage production for livestock. More recently managers have implemented habitat treatments, including prescribed fire, on remaining sagebrush grasslands to achieve a number of objectives, which at times have included benefits to sage grouse. Although researchers have documented sage grouse use of treated areas, no research has shown a direct benefit to sage grouse survival or reproduction. Our review of scientific literature, however, includes considerable documentation revealing direct negative impacts of prescribed fires on sage grouse nesting, wintering, and brood rearing habitats, which in some cases have resulted in population declines. Effects of fire on insect communities, important to juvenile sage grouse, have been variable. No study presents a case where prescribed fire resulted in a significant increase in either ants or beetles for an extended period of time, diminishing the idea of using prescribed fire to improve insect abundance and diversity. In general, negative effects of prescribed fire appear more profound and prolonged in xeric sites. Numerous researchers have alternatively realized the need for maintaining sagebrush as a critical habitat component for sage grouse and many other native species.

Managers considering treatments in xeric sage grouse habitats that will result in a reduction in sagebrush cover should be aware of the negative impact this type of treatment could have, potentially for an extended period of time. Prescribed fire and other treatments can result in furthering habitat conversion or fragmentation. Aggressive vegetative treatments require a complete understanding of habitat availability and sage grouse use of the treatment area and the broader landscape. Cumulative impacts to sage grouse and other species should be well understood and considered before proceeding with any treatment. As an example, a sagebrush habitat that lacks understory may be important for wintering sage grouse. A treatment of the area for improving understory could inadvertently reduce or eliminate winter habitat, which may already be depleted as a result of other human activities. In general, smaller treatment sizes spread over multiple decades are likely to reduce negative impacts.

Prescribed burning may have application in pinyon and juniper woodlands. Vegetative thresholds pertaining to tree canopy cover and understory components directly affect potential for restoring sagebrush grasslands overtaken by conifers. The risk of invasion by annuals and associated factors affecting invisibility should be considered when assessing treatment appropriateness and technique. When prescribed fire is used to control pinyon pine and juniper woodland expansion, sagebrush stands should be protected to conserve sagebrush habitat and allow sagebrush recruitment into burned areas.

In some circumstances where sagebrush occurs but severely lacks herbaceous understory, chemical or mechanical treatments that reduce sagebrush cover and allow for mechanical seeding of native grasses and forbs may be necessary for accelerating sagebrush grassland habitat restoration. These sites would be characterized by: an absence of typical dominant native species and depleted seed bank; bare soils dominate even under sagebrush; and long term attempts to restore habitat through herbivore rest, deferment, and proper stocking have failed. Treatments are most

appropriate where loss of topsoil is an imminent risk. Treatments should not be implemented without a high likelihood of success. From an ecological standpoint, treatments should always emphasize use of native species adapted to treatment areas to avoid eventual dominance by competitive exotic species and resultant loss of habitat function. Mechanical or chemical treatments that conserve sagebrush and enable re establishment of native herbs is preferred. By comparison, fire treatments are less selective, tend to burn the best remaining habitats, and are at risk of invasion by cheatgrass or other invasive species in areas where they occur. The likelihood of habitat restoration success using aggressive vegetation treatments in areas lacking topsoil is very low. In these settings any remnant native cover should instead be protected.

Given the large losses of xeric sagebrush habitats that have occurred to date, we encourage managers to first consider protecting and improving vegetative integrity and habitat function in place of stand replacing treatments that further fragment degraded sagebrush habitats and face other risks. Realizing these habitats deteriorated over long periods of time and over large expanses, a long term approach to large scale restoration appears more feasible. A combination of fire suppression and conservative management techniques such as proper grazing strategies should be considered first. For most circumstances, this approach conserves sagebrush, allows herbaceous vegetation to recover directly benefiting sage grouse. This involves the least amount of risk and cost, both financially and ecologically. We question vegetation models that do not recognize sagebrush grasslands as an ecological endpoint or sustainable climax community. Instead we recommend such models be based on principles of plant ecology and iterative refinement involving scientific testing, observation, and adaptation. For those habitats in a healthy intact status, actively conserving these areas pays ecological dividends and avoids the future prospect of intensive treatments with uncertain outcomes.

Position Statement

With the attached white paper as justification provided by the Western States Sage and Columbian Sharp tailed grouse Technical Committee, the Western Association of Fish and Wildlife Agencies adopts the following position statement:

"Sagebrush grasslands, which support sage grouse and a host of other wildlife species, have declined in area by more than 50%. Remaining habitats are becoming increasingly important to the sustainability of sage grouse; however, they are facing considerable threats from wildfire, conversion, exotic plant invasion, and many forms of human development. In addition to these perturbations, treatments are often recommended to set back succession in sagebrush communities. Prescribed fire is often promoted to achieve this, which has the potential to alter sagebrush communities for long periods of time. As agencies responsible for conserving wildlife associated with these habitats, we strongly caution against the use of prescribed fire within xeric sagebrush communities. Such areas typically receive ≤ 12 " precipitation and include Wyoming big sagebrush, low elevation mountain big sagebrush, and low or black sagebrush communities. Prescribed fire fragments and reduces available sagebrush stands and increases the risks for cheatgrass and other invasive weed establishment, leading to negative impacts to seasonal sage grouse habitats, and can result in long term effects on sage grouse populations. Further, we recommend maintaining sagebrush through a conservative long term approach to management and habitat restoration."

Appendix 8

Greater Sage-grouse Research History in Utah, 1939-2012

Bambrough, D. J. 2002. Greater sage grouse winter and male and female summer habitat selection in Strawberry Valley, Utah. Thesis. Brigham Young University, Provo, Utah.

- Barber, H. A. 1991. Strutting behavior, distribution, and habitat selection of sage grouse in Utah. Thesis. Brigham Young University, Provo, Utah.
- Baxter, J. J., Hennefer, J. P., Baxter, R. J., Larsen, R. T., and J. T. Flinders. 2013. *Accepted with revisions*. Survival of Greater Sage Grouse chicks in Strawberry Valley, Utah using micro transmitters: Does handling time negatively influence survival rates? *Western North American Naturalist*.
- Baxter, R. J. 2003. Greater sage grouse brood and non reproductive female habitat selection and population dynamics in Strawberry Valley, Utah. Thesis. Brigham Young University, Provo, Utah.
- Baxter, R. J. 2007. The ecology of translocated greater sage grouse in Strawberry Valley, Utah. Dissertation. Brigham Young University, Provo, Utah.
- Baxter, R. J., J. T. Flinders, and D. L. Mitchell. 2008. Survival, movements, and reproduction of translocated greater sage grouse in Strawberry Valley, Utah. *Journal of Wildlife Management* 72(1): 179-186.
- Baxter, R. J., Bunnell, K. D., Flinders, J. T., and D. L. Mitchell. 2009. Impacts of predation on Greater sage grouse in Strawberry Valley, Utah. *Transactions of North American Wildlife*. 72nd North American Wildlife and Natural Resources Conference. Portland, Oregon. February 2008.
- Baxter, R. J., Flinders, J. T., Whiting, D. G., and D. L. Mitchell. 2009. Factors affecting nest site selection and nest success of translocated greater sage grouse in Strawberry Valley, Utah. *Journal of Wildlife Research* 36:479-487.
- Baxter, R. J., Larsen, R. T., and J. T. Flinders. 2013. *Accepted*. Survival of Resident and Translocated Greater Sage Grouse in Strawberry Valley, Utah: a 13 Year Study. *Journal of Wildlife Management* In Press.
- Beck, J. L., and D. L. Mitchell. 1997. Brief guidelines for maintaining and enhancing sage grouse habitat on private lands in Utah. Utah technical notes: UT-90-7-3. U.S. Natural Resources Conservation Service, Salt Lake City, Utah.
- Beck, J. L., D. L. Mitchell, and B. D. Maxfield. 2003. Changes in the distribution and status of sage grouse in Utah. *Western North American Naturalist* 63: 203-214.
- Belton, L. R. 2008. Factors related to success and participants' psychological ownership in collaborative wildlife management: A survey of sage grouse local working groups. Thesis. Utah State University, Logan.
- Boswell, R. L., and N. S. Frey. 2007a. Annual Report: The effects of tebuthurion on shrub steppe ecology and greater sage grouse use in Lower Hamlin Valley, Utah. Southern Utah University, Cedar City.
- Boswell, R. L., and N. S. Frey. 2007b. Annual Report: The effects of mechanical disking on shrub steppe ecosystems and greater sage grouse use in Pine Valley, Utah. Southern Utah University, Cedar City.
- Burnett, A. C., and N. S. Frey. 2012. Update: Modeling habitat use of a fringe greater sage grouse population at multiple spatial scales. Utah State University, Logan.
- Bunnell, K. D. 2000. Ecological factors limiting sage grouse recovery and expansion in Strawberry Valley, Utah. Thesis. Brigham Young University, Provo, Utah.
- Cardinal, C. J., and T. A. Messmer. 2012. Annual Report: Factors influencing the ecology of greater sage grouse inhabiting the Bear Lake Plateau and Valley, Idaho Utah. Utah State University, Logan.
- Caudill, D. 2011. Factors affecting greater sage grouse (*Centrocercus urophasianus*) survival and movement in south central Utah. Thesis. Utah State University, Logan.
- Chi, R. Y. 2004. Greater sage grouse reproductive ecology and tebuthiuron manipulation of dense big sagebrush on Parker Mountain. Thesis. Utah State University, Logan.
- Christensen, B. 2003, 2005. Short Summary Report: Anthro Mountain sage grouse project. Ashley National Forest, Utah.
- Crabb, B., T. Black. 2012. Annual Report: Development of statewide 30 meter winter sage grouse habitat models for Utah. Utah State University, Logan.

- Crompton, B., and D. L. Mitchell. 2005. The sage grouse of Emma Park Survival, production, and habitat use in relation to coalbed methane development. Utah Division of Wildlife Resources Report, Salt Lake City, Utah.
- Cook, A., B. Wing, T. Black, and T.A. Messmer. 2012. Annual Report: Demography, vital rates, habitat use, and seasonal movements of greater sage grouse in the Ruby Pipeline HUC 8 Watershed. WRI Project ID: 2119. Utah State University, Logan.
- Curtis, R., and B. Crompton. 2009. Draft Report: The effect of natural gas drilling on West Tavaptus Plateau sage grouse. Utah Division of Wildlife Resources Report. Salt Lake City, Utah.
- Dahlgren, D. K., R. Y. Chi, and T.A. Messmer. 2006. Greater sage grouse response to sagebrush management in Utah. Wildlife Society Bulletin 34: 975-985.
- Dahlgren, D. K. 2006. Greater sage grouse reproductive ecology and response to experimental management of mountain big sagebrush on Parker Mountain, Utah. Thesis. Utah State University, Logan.
- Dahlgren, D.K. 2009. *Greater sage grouse Ecology, Chick Survival, and Population Dynamics, Parker Mountain, Utah*. Dissertation. Utah State University, Logan.
- Danvir, R. E. 2002. Sage grouse ecology and management in the northern Utah sagebrush steppe. Deseret Land and Livestock, Inc., Wildlife Research Report, Woodruff, Utah.
- Dettenmaier, S., T. Black, and T.A. Messmer. 2012. Annual Report: greater sage grouse response to season long and prescribed grazing (NRCS Conservation Practice 528) on paired ecological sites (phase 1). Utah State University, Logan.
- Duvuvuei, O. and T.A. Messmer. 2012. Annual Report: Anthro Mountain greater sage grouse. Utah State University, Logan.
- Graham, S., T. Black, and T.A. Messmer. 2012. Annual Report: Greater sage grouse habitat selection and use patterns in response to vegetation management practices in western Box Elder County, Utah. Utah State University, Logan.
- Griner, L. A. 1939. A study of sage grouse (*Centrocercus urophasianus*), with special reference to life history, habitat requirements, and numbers and distribution. Thesis. Utah State Agricultural College, Logan.
- Gruber, N. W. 2012. Population dynamics and movements of translocated and resident greater sage grouse on Anthro Mountain, Utah. Thesis. Utah State University, Logan.
- Guttry, M.R. 2011. Ecology and management of a high elevation southern range greater sage grouse population: vegetation manipulation, early chick survival, and hunter motivations. Dissertation. Utah State University, Logan.
- Guttry, M.R., D.K. Dahlgren, and T.A. Messmer. 2011. Evaluation of Alternative Methods to Estimate Greater Sage grouse Populations. Project Completion Report. Utah State University, Logan.
- Hennefer, J. P. 2007. Analyses of greater sage grouse (*Centrocercus urophasianus*) translocation release methods and chick survival in Strawberry Valley, Utah. Thesis. Brigham Young University, Provo, Utah.
- Kaze, J., C. Balzotti, S.L. Petersen, R.T. Larsen, and R.J. Baxter. 2012. Annual Report: Greater sage grouse habitat selection at multiple spatial scales in Utah. Brigham Young University, Provo, Utah.
- Knerr, J. S. 2007. Greater sage grouse ecology in western Box Elder County, Utah. Thesis. Utah State University, Logan.
- McPherron, H.H., and N.S. Frey. 2012. Update: Habitat utilization and movements of greater sage grouse and the effects of fence lines on grouse and avian predators in Hamlin Valley, Utah. Utah State University, Logan. Messmer, T. A., and J. Flory. 2002. Annual Report: Parker Mountain Adaptive Management working group. Utah State University, Logan.
- Peck, R. D. 2011. Winter habitat selection and nesting ecology of greater sage grouse in Strawberry Valley, Utah. Thesis. Brigham Young University, Provo, Utah.
- Peck, R. D., Baxter, R. J., and R. T. Larsen. 2012. Nest Area Fidelity by Greater Sage Grouse in Strawberry Valley, Utah. Western North American Naturalist 72:425-431.
- Perkins, C. J. 2010. Ecology of isolated greater sage grouse populations inhabiting the wildcat knolls and horn mountain, South central Utah. Thesis. Utah State University, Logan.

- Robinson, J. D. 2007. Ecology of two geographically distinct greater sage grouse populations inhabiting Utah's West Desert. Thesis. Utah State University, Logan.
- Smith, L. S. 2009. Greater sage grouse and energy development in northeastern Utah: implications for management. Thesis. Utah State University, Logan.
- Stringham, R. B. 2010. Greater sage grouse response to sagebrush reduction treatments in Rich County, Utah. Thesis. Utah State University, Logan.
- Taylor, J.M., and T.A. Messmer. 2011. Annual Report: Evaluation of mechanical, biological, and chemical treatments to restore sagebrush steppe in northeastern Utah. Utah State University, Logan.
- Thacker, E. 2010. Greater sage grouse seasonal ecology and responses to habitat manipulations in northern, Utah. Dissertation. Utah State University, Logan.
- Westover, M.D. 2012. Habitat Selection of Greater Sage Grouse (*Centrocercus urophasianus*) and Northern River Otters (*Lontra canadensis*) in Utah. Thesis, Brigham Young University, Provo.

Appendix 9

Utah Partners for Conservation and Development Projects benefitting Greater Sage-grouse

The UPCD is a partnership of state and federal agencies who manage public natural resources (e.g. BLM, USFS, USFS, SITLA, UDNR) or have expertise in public natural resource management (NRCS, USU, RC&D, UDAF).

In 2006, the partnership established as their mission to provide coordinated leadership in natural resource management and public service in cooperation with property owners and users for the long term sustainability of Utah's natural resources. The partnership was implemented with the establishment of 5 regional teams to design and implement coordinated management projects in focus areas to improve water sheds, wildlife habitat and ecosystem health. Funding to initiate the highest priority projects came from several agencies and the Utah Legislature. The *WRI*, housed in the Utah Department of Natural Resources, is the implementation arm of the partnership that coordinates the program, including distributing funding and other resources. In FY2012, over 50 groups and individuals participated in WRI projects. Since 2006, the WRI with all of its partners has enhanced or restored over 1,000,000 million acres in Utah. Following is a list of projects and acres treated for FY2006 FY2012 that had greater sage grouse a primary beneficiary of the project.

See the next page.

ID #	Project	Acreage
10	Taylor flat p/j removal	1040
17	Lower fish creek sagr habitat improve	418
22	Monument ridge p/j removal	1004
24	Deep creek valley saBr improve-yr2	647
28	Steinaker draw p/j project	612
31	Sand Wash/Sink Draw Conservation Easement	5762
32	Wildcat Canyon P/J removal	140
33	Warner Fence	0
39	Snake john greenstripping	173
52	Golden Stairs chain and seed	170
53	Asay Creek Stream enhancement	228
55	Bennion ranch sage demo project-yr-1	443
64	Richmond WMA	161
66	Rabbit Gulch chain, herbicide, re-seed	167
69	Skitz Canyon PJ chain and re-seed	530
73	Seep/Winter Ridge P/J removal	734
92	Heaton property 319 stream enhancement	18
93	Grey Wolf Mountain Rehab	463

101	Wallsburg WMA habitat improvement	577
103	Long Hollow PJ removal and seeding	1113
104	South Beaver Veg Enhance project Year 1	1646
115	The Neck	556
118	Bagley LIP	199
119	P-hill one-way harrow	1784
120	Alton Sink Valley	821
121	Sanford sagegrouse 2	488
123	Bald hills guzzler	0
155	Chokecherry springs	571
157	Etna mechem canyon	568
162	Arimo water project	82
163	Coldwater Ranch-Dees Inc.	1945
178	Ruple cabin sagr range enhancement	1680
188	Alton/Mill Creek sagebrush restoration-yr 1	1630
189	5 mile hollow sagebrush restoration-yr 1	1542
205	Basque cross ranch	553
210	South Narrows Dix Harrow-west side	529
212	TeBBs Hollow sabr restore, p/j removal	456
212	TeBBs Hollow PJ and sagebrush removal	456
228	Price west Benches-yr2	2658
229	Price west Benches porphyry bench	1104
242	Buckskin valley hwy 20	270
249	Grouse creek grazing association	0
250	Hereford grazing association	1240
258	Snake john valley lop and scatter	1008
259	Wolf point lop and scatter	811
270	MR Spring Rehab	1
276	Lazy 8 land and livestock	345
291	Sage valley/vemon sabr enhance,byr1	500
296	Dry fork emergency fire rehab	469
297	Goslin mtn p/j encroachment removal	1677
298	Wolf Point phase II p/j removal	1323
299	Red creek flat lop and scatter	883
302	JG Discretionary Seed	84
305	Bunting discretionary seed, seed	122
310	V-canyon ridges lop and scatter project	1066
314	Kings point p/j removal	511
315	Brush creek Bench sage restore	279
316	Chew-Blue mtn sagr enhancement	236
317	Clay Basin-daggett p/j removal	994
319	Winter Ridge-little asphalt pj removal	673
323	Trout Creek sageBrush enhancement	168

328	Coyote draw pinyon and juniper thinning	1240
330	Sanford 2 UPD Fence	
333	Monroe sagebrush improve	815
333	DM Sagebrush Improvement, disc and seed	815
340	JB seed contribution	114
346	Fruitland lop and scatter project	413
348	Park valley Burn rehab	3152
349	Tanner Ranch	389
353	East onaquí bullhog	647
354	Discretionary seed for tribal p/j project	776
357	West Stuntz–Blue Mtn SAGR Enhancement	200
358	Winter Ridge Phase III	1988
359	Red Creek Flat Phase 2	503
369	Big Hollow Juniper Thinning and Seeding Yr. 1	511
392	Clay basin-daggett SITLA	411
393	Red Fleet-donkey flat seeding	24
394	Blue Knoll Lop and Scatter	1091
396	Bennion ranch sagr demo project–yr2	381
397	Anthro mtn SAGR project Y–1	1003
398	Smith dixie harrow 05	208
399	Chew/USU sheep grazing project	41
417	Sink Draw Interseeding	546
423	Woodruff co-op Crested wheatgrass conversion	96
442	East onaquí saBr improvement	159
445	JB sagegrouse yr-1	2333
452	Water for wildlife–Box elder guzzlers	0
458	Tebbs hollow/mud springs	456
461	Sevier Plateau Dixie Harrow and re-seeding	516
465	Fishlake NF PJ Maint. & Sagebrush Enhancement	3505
467	Fivemile hollow sagebrush restor yr-2, L&S	1369
479	Salt cabin reseed	733
504	Pocatello Valley Burn rehab	718
504	Pocatello Valley Burn Rehab, reseed	718
513	Gordon creek roller chopping	199
514	Black Dragon	4358
562	Hall Well	0
563	Bowler chaining	854
566	SITLA burn seeding	458
589	Hardware ranch fencing project	0
594	Seven Mile/North Mtn. dixie harrow and seed	1650
606	Blind springs ranch	747
607	H Farms seeding	900
608	Ruple cabin wildfire rehab	1207

613	Rose ranch	350
659	Diagonal/Electric Dixie harrow project	993
661	Sage valley lop and scatter project	1297
662	Deep creek east pasture habitat improve	172
678	Blue Knoll phase II	1999
680	Goring ranches, disc and seed	50
682	Rees Burn rehab	5063
685	Winter ridge bullhog	474
687	Diamond Mtn lop and scatter	972
691	Goslin Mtn phase II lop and scatter	1221
692	Teepee Mountain bullhog	535
696	Nuaers Ridge lop and scatter	1199
712	Clover creek habitat enhancement	409
730	lbapah sabr improvement-yr 1	166
731	East terra junip Lop and scatter project	626
745	Hogup burn rehab, reseed	2700
757	Limekin 2-Ut prairie dog	200
772	Mail Draw Fences Phase II	0
802	Southern Region Shrub Plantings Year 3	565
841	Anthro mtn prescrib burn	642
842	Dowd Mtn. Wildlife habitat improvement	1717
853	South cache cattleman's assoc. herbicide app.	259
862	Tebbs Hollow PJ encroachment, bullhog	1477
878	Mt. Terrill-harrow and reseed in silver sage	1732
883	5 mile habitat restor complex	336
887	Badger fire rehab project	649
895	S. beaver veg enhancement yr 3	385
900	Alton mill creek sagebrush restor yr 3	912
901	5 mile hollow sage restore yr 3	6465
918	South Beaver SITLA, chain reseed	402
927	MW Fence Phase II	0
941	Hardware ranch seeding	474
967	ZV Discretionary Seed	200
973	Hardware ranch Plateau	474
978	Currant Creek fire rehabilitation	140
979	Cunningham chaining seed donation	129
980	Terza Flat et al. Seeding Trials	30
986	Greenville Fire Seeding	3806
987	Paradise Fire Reseeding	4249
992	Dairy Valley fire rehab	14633
993	Greenville Bench Aerial Seeding	11065
995	Clear creek burn rehab	5514
996	Johnson Canyon fire	2059

1006	Milford flat fire rehab	2896
1007	Missouri flat fire rehab	9613
1010	Kaufman fire rehab	786
1024	Paradise fire-Hall chain air reseed	331
1025	Paradise fire-Bowler, chain and air reseed	804
1026	Paradise fire-Schriever, chain and air reseed	92
1029	Milford Flat Circle 4 fire reseeding	3225
1033	Greenville Bench-Poorman aerial seed and chain	647
1034	Greenville Bench-yardley aerial seed, chain	500
1035	Greenville Bench-barnes aerial seed	378
1043	Pine canyon fire rehab	1148
1050	Sabie mtn habitat improve, lop and scaer	1312
1058	Henefer Echo burn rehab, reseed	92
1061	Mount bartles sagebrush enhancement	363
1076	Tabby mtn lop and scatter	1022
1077	Anthro mtn Lop and scatter	695
1078	3 pines lop and scatter	1943
1081	Deadman bench range improve, greenstrip	523
1082	Current creek lop and scatter	555
1084	Tolivers creek bullhog	195
1085	Scofield sagr habitat improve	151
1089	Agency draw lop and scatter	2348
1090	Goslin bullhog phase 2	2595
1093	Upper sevier river stream enhance-hatch area	59
1102	Tintic knapweed control, chemical spray	55
1103	Gilson Mtn drill seed	978
1104	Ibapah sagebrush improvement yr-2	2189
1105	Shearing corrals lop and scatter	491
1106	Cherry mesa bullhog	576
1109	Mccook ridge cheatgrass control	384
1117	Grantsville chaining project	608
1131	James ranch bullhog project	473
1133	West onaquí bullhog phase 3	512
1137	Sand Wash/Sink Draw CE Fee Title Acquisition	5732
1140	Horse ridge lop and scatter	366
1149	Brotherson lop and scatter	1104
1150	Brotherson chaining and reseed	347
1152	Browns park fields, reseed	174
1153	Johnson mtn ranch chaining	526
1155	North narrows yr-1, harrow reseed	1369
1159	Joe's Valley PJ Retreatment-bullhog	1313
1161	Wildcat knolls Hab. Improve.	810
1169	Five mile mtn habitat restor phase III	1310

1173	Spry sagebrush restore, lop and scatter	1746
1177	Diamond mtn-buckskin hills bullhog	208
1185	Hamlin Valley Flinspach	561
1199	North cottonwood canyon lop and scatter bullh	816
1201	Greens canyon lop and scatter	424
1206	Panguitch creek WMA PJ thinning	383
1215	Round Mountain Ranch PJ removal & seed	607
1216	Hereford juniper thinning	397
1218	Milford flat wildfire rehab	80818
1223	Greenville bench enhanc project	6358
1224	South Beaver Veg Enhance Yr 4	1528
1236	Seep ridge bullhog	204
1260	Promontory ptn seed drilling	40
1266	Brotherson discret. Seed, forb seeding	208
1267	Sanford 2 Utah p-dog yr 2	204
1280	Greenville bench-shrub seeding air seed	1297
1321	Duck Creek Allotment grazing mgt. changes	2730
1323	Johnson draw chaining,P/J chaining & seed	81
1327	Missouri flat reseed ph II, seed burned area	255
1337	Cedar camp lop and scatter	2042
1340	Red creek flat bullhog, P/J removal	250
1342	Johnson Canyon Greenstrips	104
1343	Marshall draw bullhog, remove P/J	344
1347	Wallsburg knapweed control, herbicide	929
1348	Tintic June knapweed II, control/reseed	227
1360	Strawberry valley SAGR habitat improv, harrow	393
1361	Benmore pastures harrow project	731
1362	Terra east juniper thin II, bullhog & seed	2188
1377	Ilapah Sagebrush improvement yr3	1351
1380	Big hollow bullhog II, bullhog	363
1392	Wildcat SABR restore Project II, disc & seed	466
1396	Swasey wildlife/fuels 1	400
1420	Circleville Cove, sagebrush treatment	1305
1422	Nevershine 09 PJ thinning	202
1426	Jackson Draw fencing	0
1435	Woodruff coop. lawson aerator to thin sabr	103
1438	Crystal Ranch Riparian Improvement-fencing	0
1439	Lazy 8 ranch, chaining and seed	353
1441	Antimony seeding, reseed bullhog area	3891
1451	Sand ledges, chain P/J	977
1461	Upper sevier stream enhance, river work/reseed	11
1470	Middle fork WMA project, disc/seed/plantings	4
1471	Henefer-echo wma, ely chain and seed	30

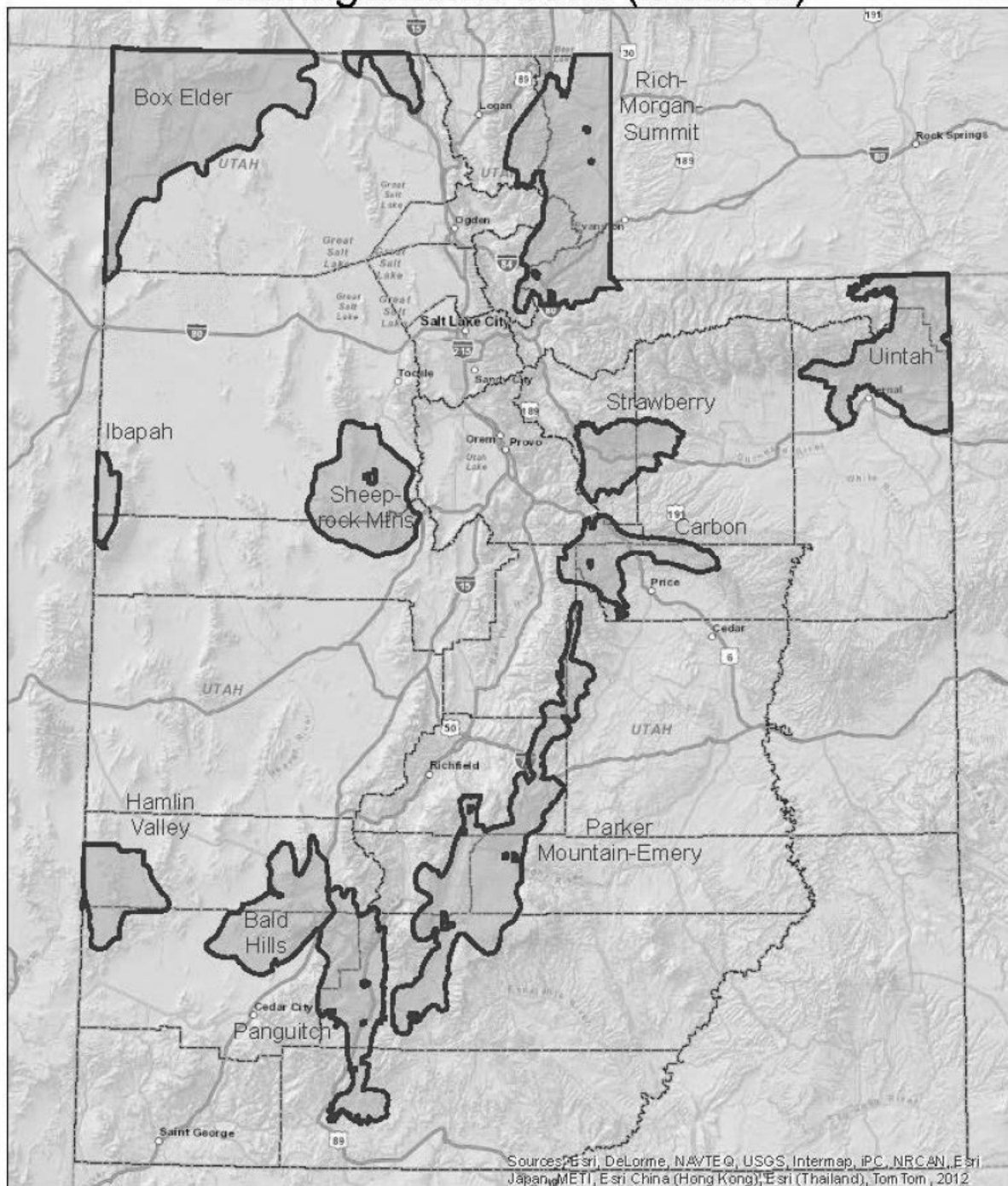
1474	Arimo burn rehab, drill seed	166
1477	Woodruff Longhill, reduce sabr cover	3193
1487	North narrows yr 2, harrow and seed sagebrush	1049
1491	Indian peaks, L&S of P/J	298
1499	Birch Creek fencing, brush treatment	558
1503	Morris ranch, dozing juniper trees	1311
1504	Morris ranch phase II, bulldozer junipers	798
1505	Medusahead control project & seeding	923
1533	Anthro Mtn CSI Project, P/J removal	1544
1564	Bitterbrush seedling project, increase sabr	19
1568	Marshall Draw Inholding Acquisition	1001
1582	Blind Canyon Fire Rehab— aerial seeding	2132
1583	Badger ISMF seeding	1554
1590	Cedarview harrow and seed	20
1593	Baboon Fire 2009 Rehab	189
1594	Sharps Valley lop & scatter / bullhog	997
1607	Garden Creek Fire Rehab— herbicide and seed	102
1610	Eagle Spring Discretionary Seed	142
1622	Badger Flat Greenstripping	837
1638	Nonument Ridge Bullhog	504
1652	Rock Springs Bullhog	553
1657	Upper Kanab Creek Maintenance — lop/scatter	2492
1658	Archy Bench pinyon/juniper lop and scatter	1122
1659	Brush Creek Bench Drill–Seeding	408
1671	Deadman Bench harrow, herbicide, seed	611
1675	Rock Spring/Cherry Mesa lop and scatter	717
1678	Grass Valley Brush Treatment and Seeding	2
1693	Mail Draw Lop and Scaer Phase 1	1347
1697	South Dutton Wildlife Water	0
1705	Swasey Wildlife Improvement and Fuels Reduce	686
1711	South Beaver PJ removal and seeding	2707
1715	Anthro Mtn. Lop and Scatter	1728
1716	South Canyon bullhog and seeding	1749
1722	Cedar City Riparian Exdosure Maintenance	0
1738	South Alton PJ removal and seeding.	782
1739	Kimball Creek-mower, lop/scatter, harrow, seed	142
1741	Curtis Ridge Prescribed Burn	134
1744	Tabby Mountain WMA Fencing	0
1754	South Strawberry Sagebrush Treatment	144
1772	South Hamlin PJ chaining and seeding	521
1787	Carrus/Birch Creek Chain and Seed	207
1790	Tushar Mtn Watershed Improvement-fencing	0
1794	Cow and Cottonwood Creek Lop & Scatter	2100

1816	Badger Hollow/Chicken Springs Ridge	439
1828	Crouse Reservoir Fence Phase I	0
1877	Chokederry chaining and seeding	731
1879	Stanrod Chaining	308
1882	Badger and Hot Springs Fire Rehab	673
1887	Greenville Bench Chain and Seed	735
1904	Birch Creek Pond/Fenceline Rehab	18
1927	Shearing Corrals bullhog and seeding	2146
1928	Ibapah Bullhog	152
1936	Crawford Mountain Bullhog	1015
1937	Grass Valley Revegetation Project	124
1938	Grouse Creek Bullhog	1031
1945	Red Creek (Clay Basin) Restoration	10
1966	Horse Ridge lop and scatter	328
1989	Raven Ridge Harrow	501
2020	Anthro Lop and Scatter—Jeep Trail/Gilsonite	567
2024	West Government pinyon/juniper removal	2582
2027	South Canyon Bullhog and seeding	1901
2041	Trail Hollow East lop and scatter	1268
2050	Archy Bench Sagebrush Restoration	607
2061	Buck Camp Canyon PJ Removal	213
2091	Swasey Improvement and Fuels Reduction	1074
2124	Trail Hollow West Lop and Scatter	1043
2150	Atchison Creek Sage-grouse Project	496
2163	Interplanetary Airstrip Lop and Scatter	1295
2172	Yellow Mtn Fire Stabilization	262
2176	Jericho Fire Habitat Improvement	509
2181	Cave Creek Chain Harrow	201
2217	KP Private Land Seeding	126
2237	South Alton Browse Seeding	90

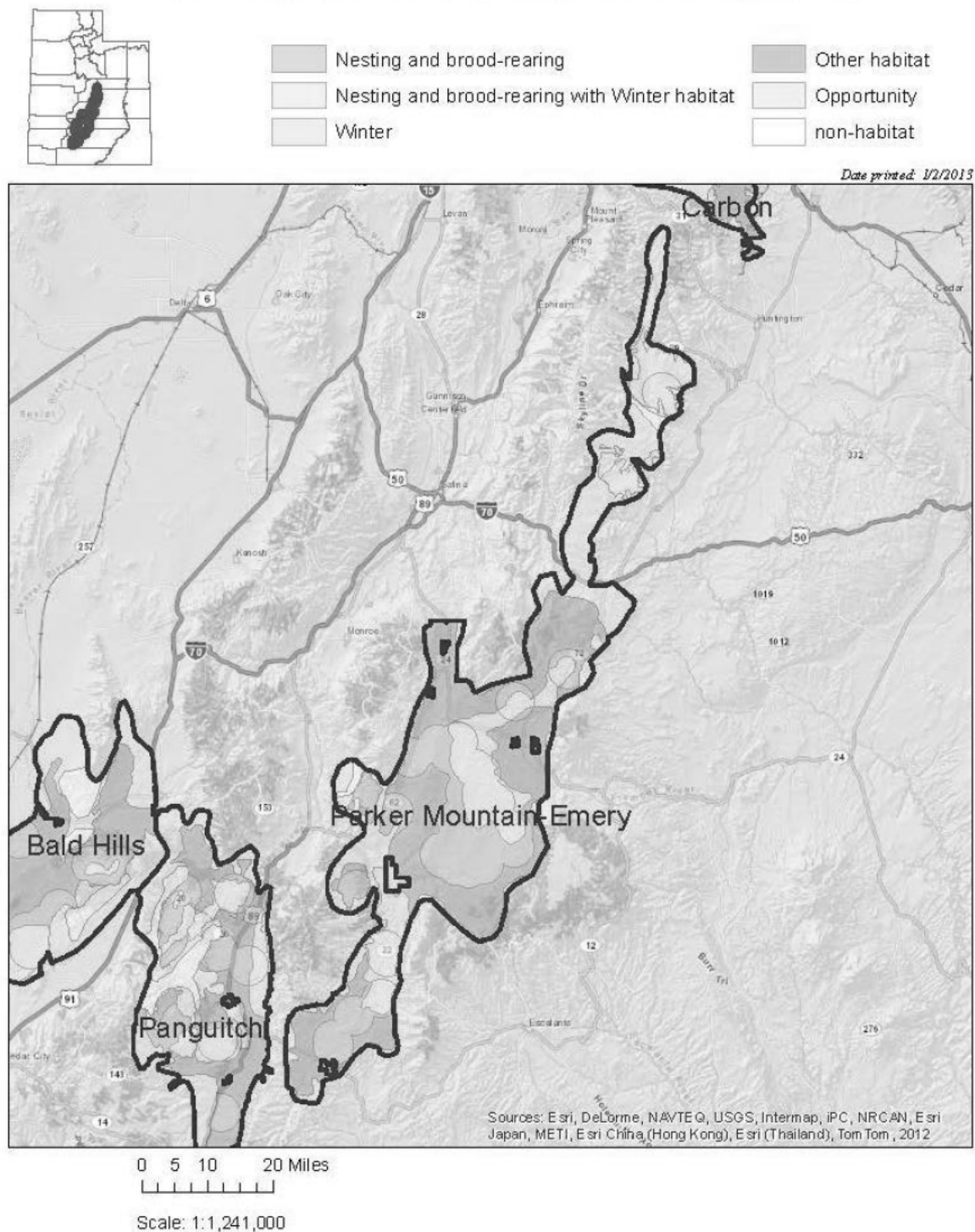
Total: 382,365 acres

Utah Sage-grouse Management Areas (SGMAs)

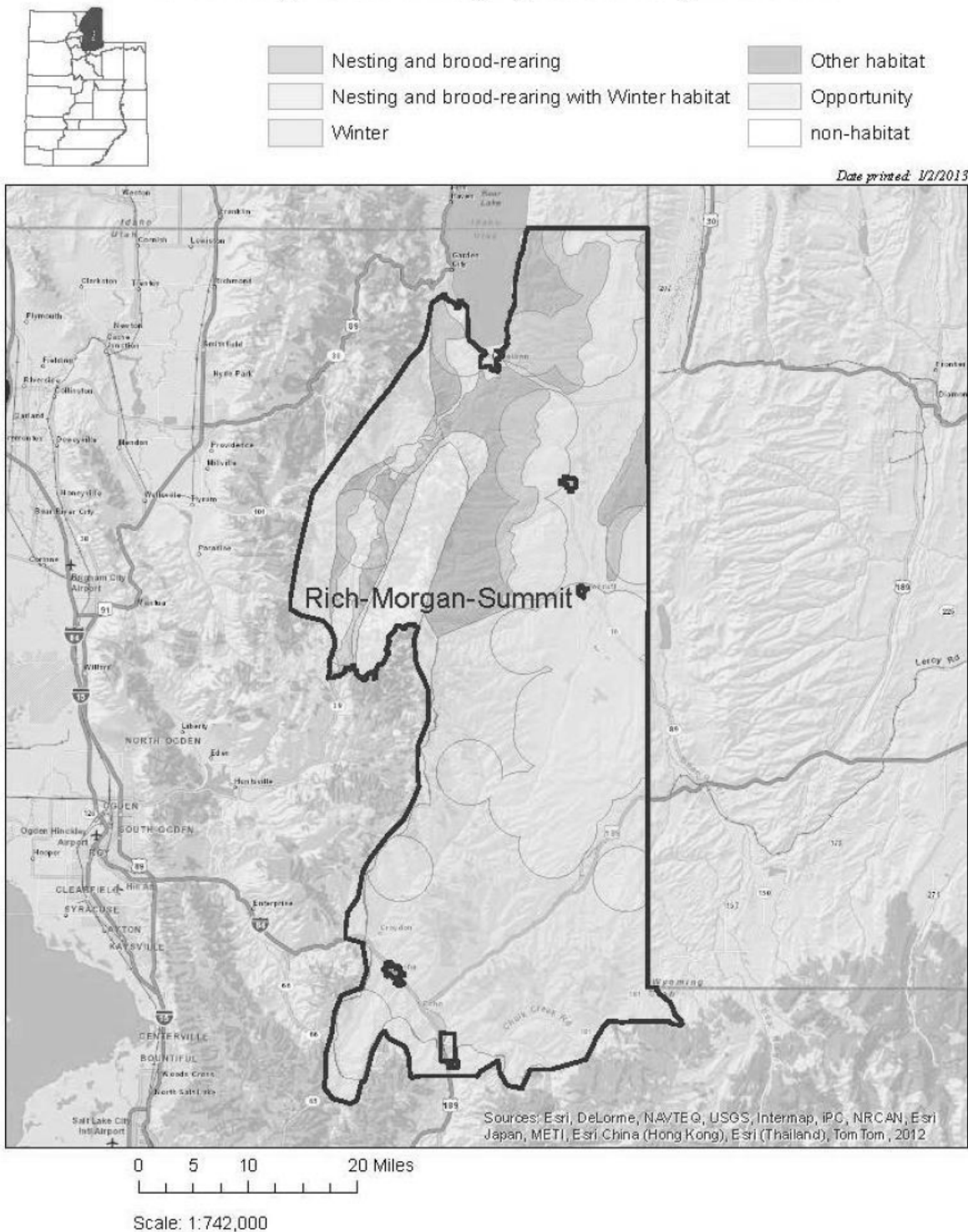
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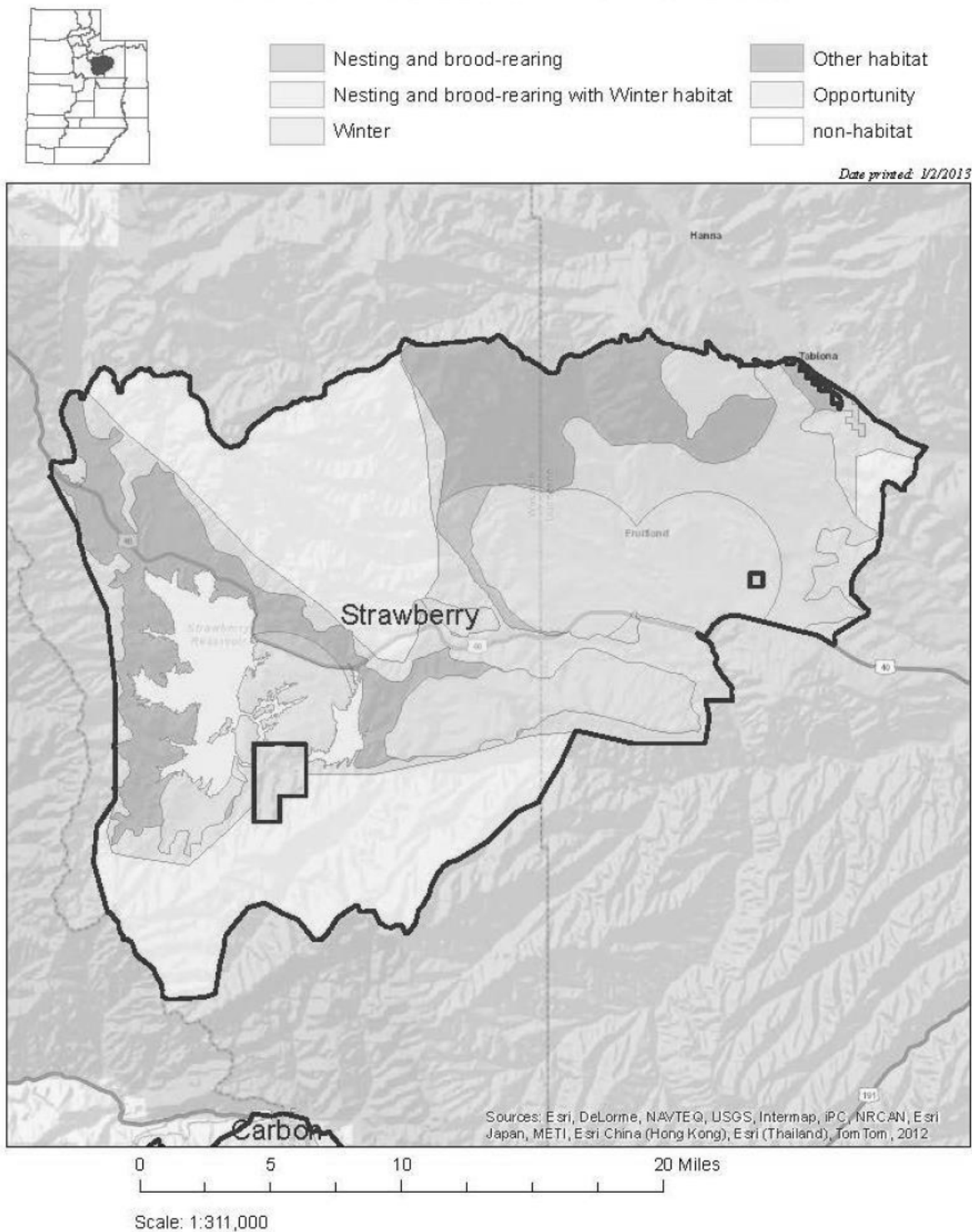
Parker Mountain-Emery Sage-grouse Management Area



Rich-Morgan-Summit Sage-grouse Management Area









Strawberry Sage-grouse Management Area

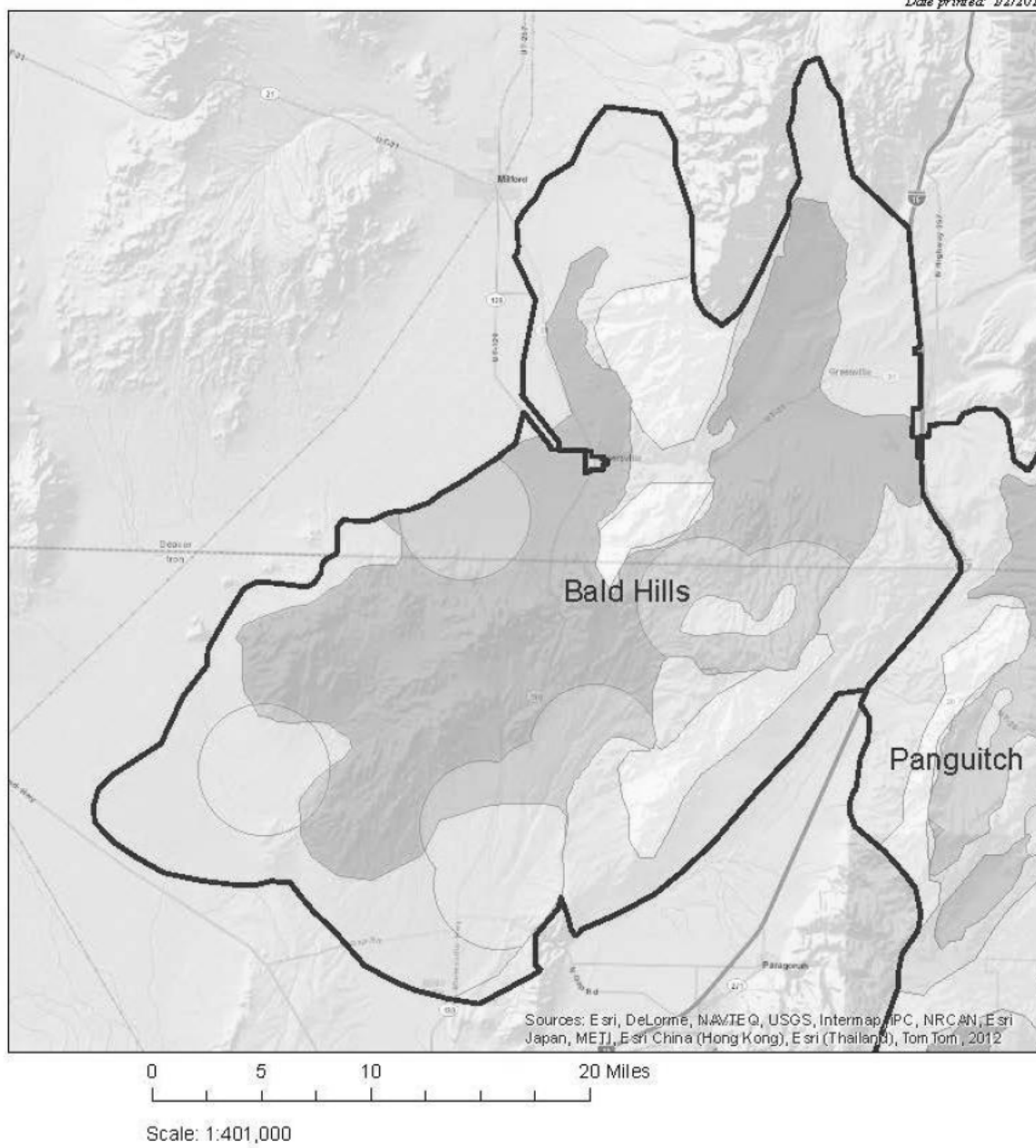


Bald Hills Sage-grouse Management Area

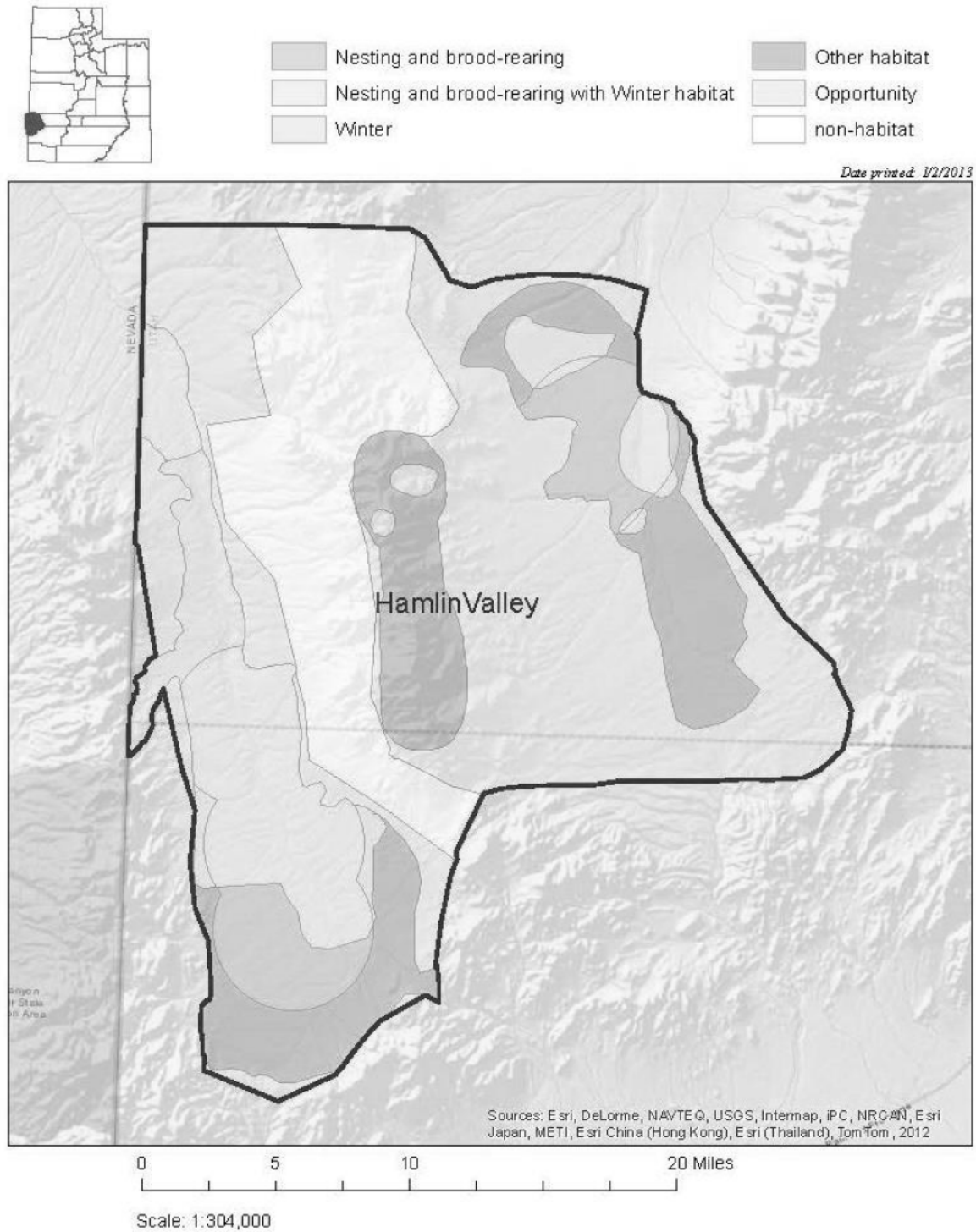


- | | |
|---|---|
|  Nesting and brood-rearing |  Other habitat |
|  Nesting and brood-rearing with Winter habitat |  Opportunity |
|  Winter |  non-habitat |

Date printed: 1/2/2013



HamlinValley Sage-grouse Management Area

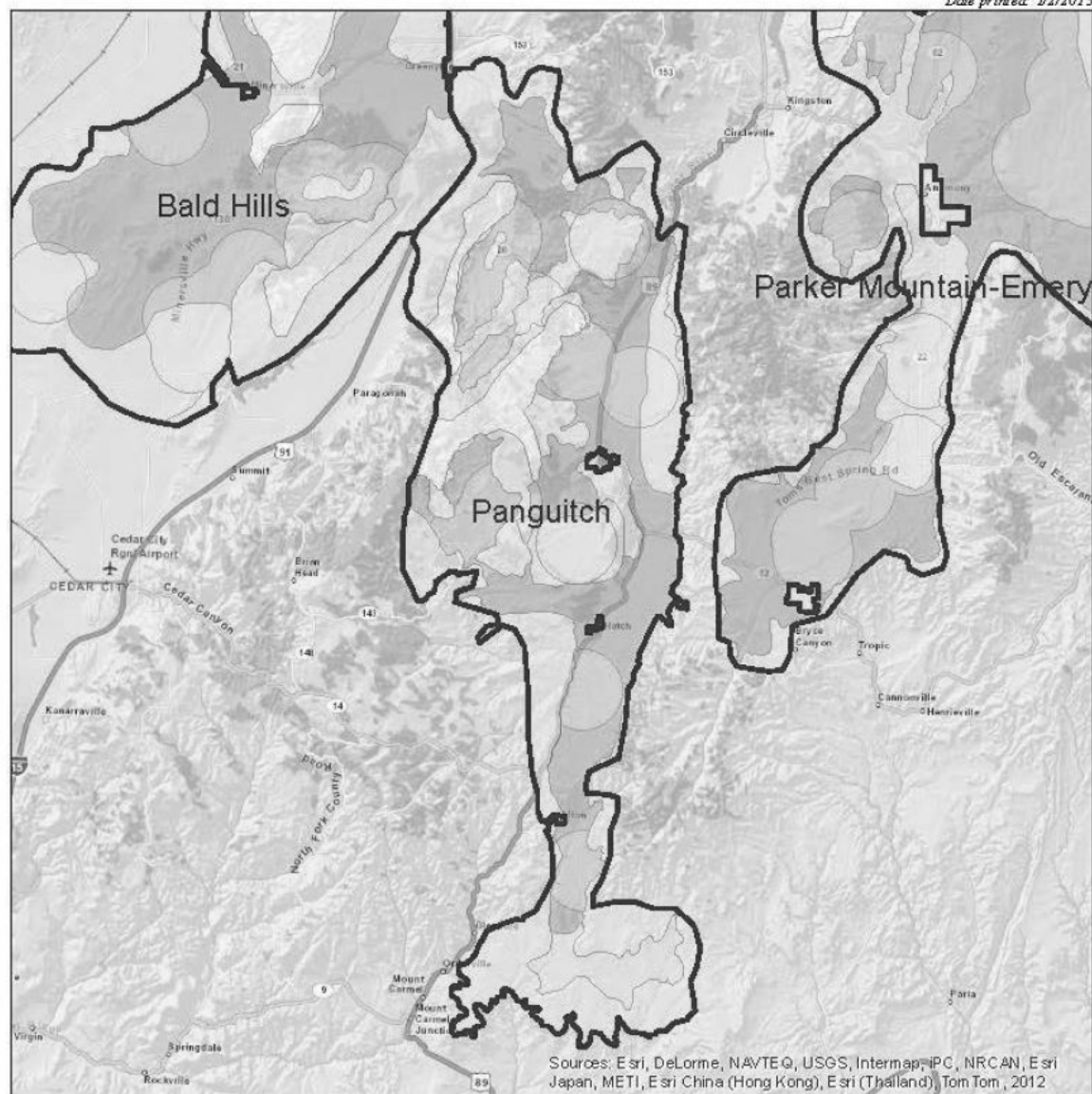


Panguitch Sage-grouse Management Area



- | | | | |
|--|---|--|---------------|
| | Nesting and brood-rearing | | Other habitat |
| | Nesting and brood-rearing with Winter habitat | | Opportunity |
| | Winter | | non-habitat |

Date printed: 1/2/2013

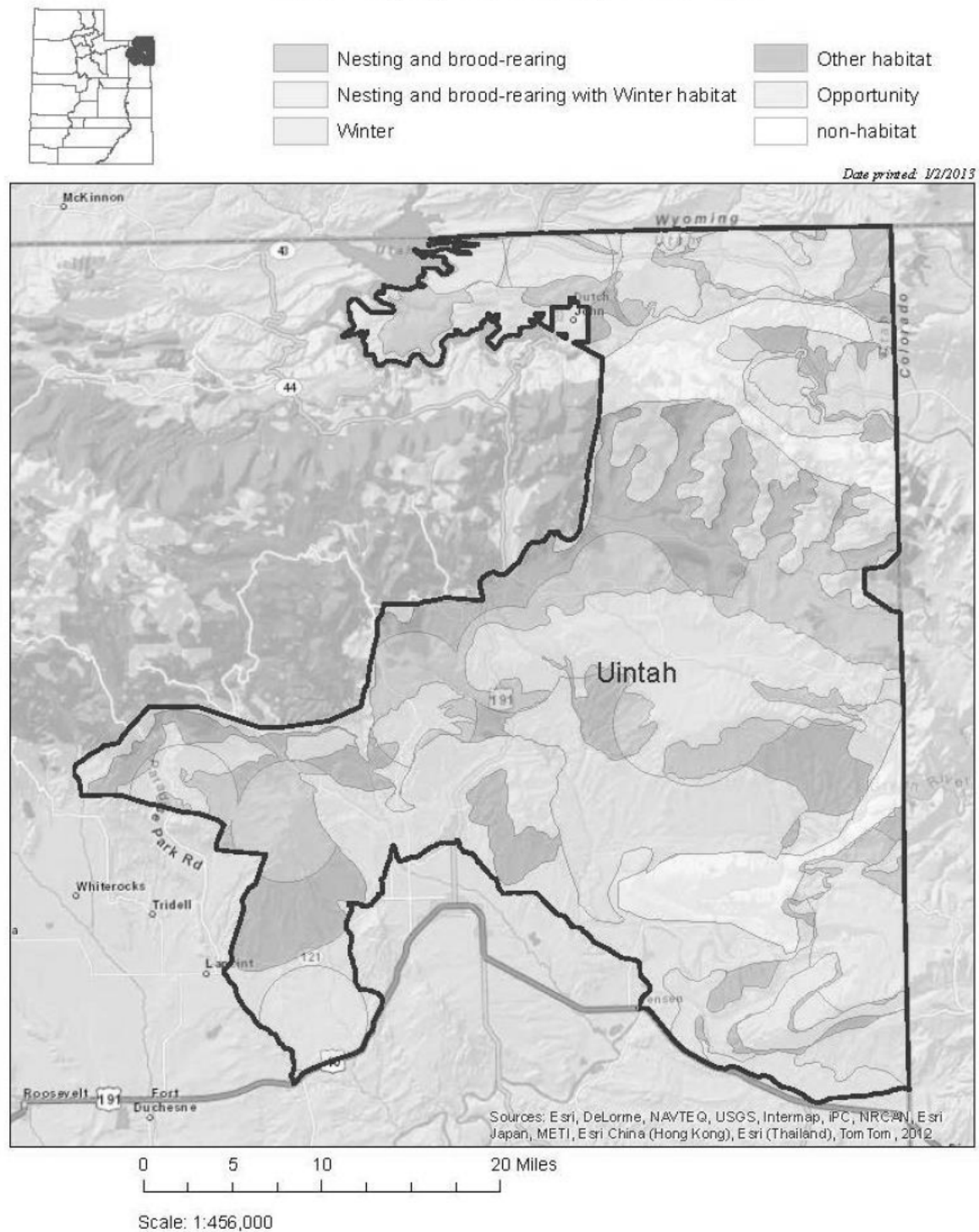


Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

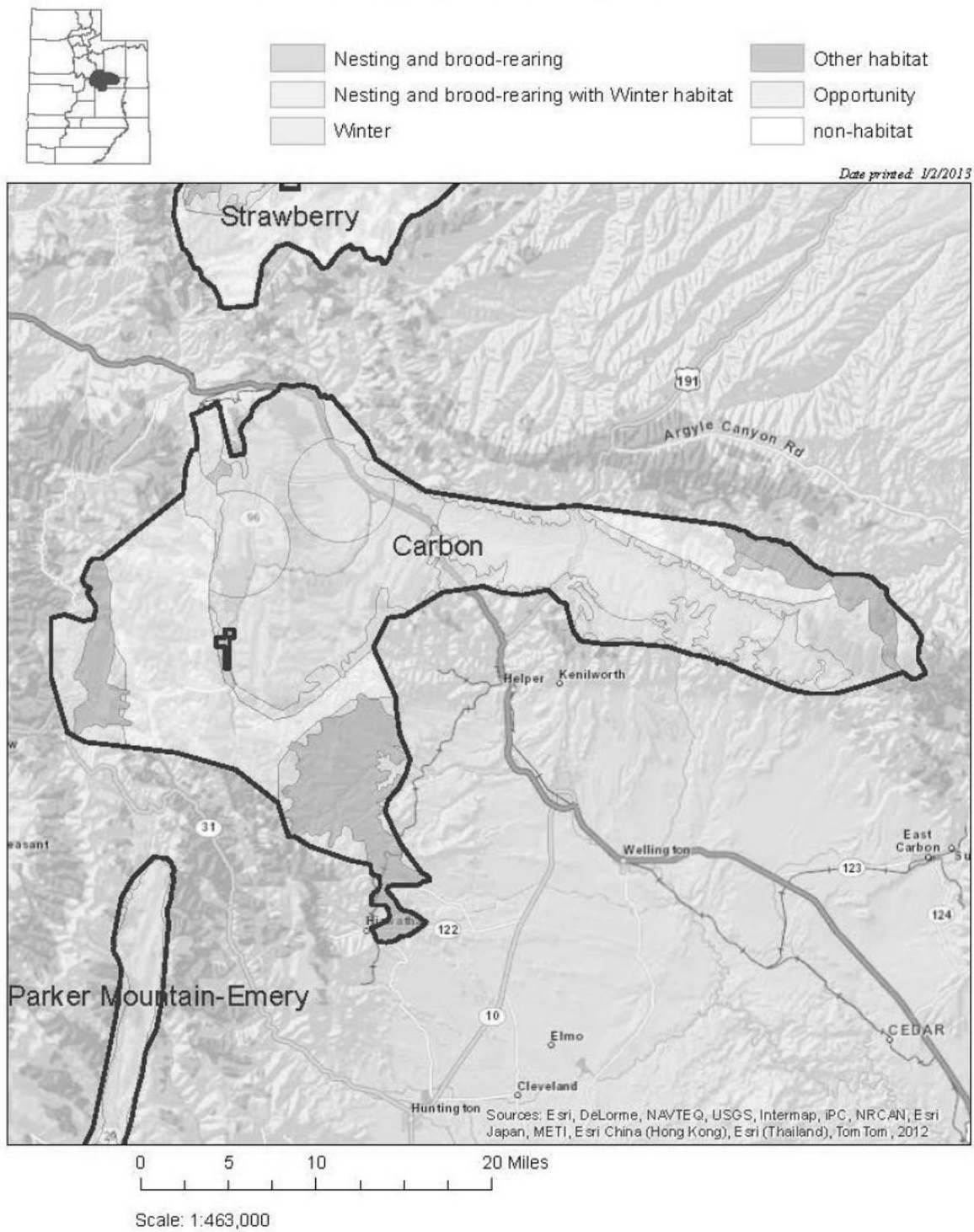
0 5 10 20 Miles

Scale: 1:679,000

Uintah Sage-grouse Management Area









Carbon Sage-grouse Management Area



Ibapah Sage-grouse Management Area



- | | |
|---|---|
|  Nesting and brood-rearing |  Other habitat |
|  Nesting and brood-rearing with Winter habitat |  Opportunity |
|  Winter |  non-habitat |

Date printed: 1/2/2013

