



FRIENDS of *Great Salt Lake*

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Being Still by Charles Uibel

The mission of FRIENDS of Great Salt Lake is to preserve and protect the Great Salt Lake ecosystem and to increase public awareness and appreciation of the lake through education, research, and advocacy.

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EXECUTIVE DIRECTOR'S MESSAGE

RAILROAD CAUSEWAY PROPOSAL NEEDS MORE ANALYSIS: THE ARMY CORPS OF ENGINEERS SHOULD REQUIRE AN INDIVIDUAL PERMIT TO AVOID CONTINUING IMPACTS TO GREAT SALT LAKE

For the first time in 52 years, the Union Pacific Railroad has a golden opportunity to atone for a history of impacts on the Great Salt Lake. But to do this, it will require help from the Army Corps of Engineers (ACOE) to authorize an Individual Standard Permit for proposed re-construction of the Great Salt Lake Northern Railroad Causeway (Causeway). Only an Individual Permit can provide a scope of alternatives, a meaningful and thorough analysis of the possible impacts, and the involvement of the public in the decision making process. The People of Utah should finally have an opportunity to be involved with a user of the Lake that has gained a reputation for causing significant ecological impairment to our Public Trust. With any luck, the ACOE will come through.

A glance down at the Lake when flying into Salt Lake City or a quick review of a satellite image confirms the cumulative impacts that the Causeway has created over time to Great Salt Lake. It is divided into two visually and ecologically distinct water bodies – a hypersaline Gunnison Bay (North Arm) and a fresher Gilbert Bay (South Arm).

Ever since the Southern Pacific Railroad Company chose Great Salt Lake as a “shortcut” for the transcontinental railroad, it has been cursed with a Sisyphean engineering task. The task is to build and maintain a trestlewood bridge (eventually replaced in 1959 by the current rock-fill Causeway) through the middle of the Lake. The Lucin Cutoff was conceived by the railroad in 1902 as a brilliant way to save time and money by shaving off 43 miles of hill climbs and track maintenance. But the Cutoff translated into “sinking costs” and a relentless struggle between engineering prowess and the inherent nature of Great Salt Lake. It also translated into the divided Lake we have today.

Given this salty saga it was no surprise when the Union Pacific Railroad (Union Pacific) submitted a preconstruction proposal with an ambitious timeline to the Army Corps of Engineers (ACOE) in February 2011. Union Pacific was requesting permission under a Nationwide 14 (NWP 14) Permit to replace the two 15' wide x 22' deep culverts in the Causeway with a bridge - 150 feet long and 38 feet wide further to

the west. The rationale behind the proposal was that the culverts were “in imminent danger of failing”, which could result in the interruption of train traffic across the Causeway. Union Pacific characterized this condition as cause to declare a national emergency unless its plan was implemented with great speed.

Unfortunately for the railroad, this kind of problem is not uncommon. Eleven years earlier, in August 2000, a Causeway failure did occur. Rail traffic stopped for 8 days and trains had to be re-routed for months until the structure was stabilized.

In 2005 – 2010 a series of cracks were detected in the culverts, and measures were taken to rectify the situation. Ironically, the fortification work to maintain the structural integrity of the Causeway and culverts also reduced its permeability. This prevented the bi-directional flow of salts from the North Arm (which was becoming hypersaline) back into the South Arm.

But the underlying cause of this perpetual engineering nightmare could not be attributed to arbitrary and capricious “acts of God”. Nope. It is because this particular section of the 21-mile Causeway is located in the deepest part of the Lake. It's an area where a number of slow moving seismic faults are located. As a consequence, things are constantly settling or sinking.

In fact, this portion of the Causeway where the culverts are located, has settled an average of 9 feet. So although these inherent problems were nothing new to Union Pacific, suddenly it wanted the ACOE to authorize a Nationwide 14 permit instead of an Individual Permit so it could begin construction last June.

The proposed bridge would have a surface span of 150' but taper below the track into the water to form a trapezoidal shape about 38' wide. The depth of the opening below the bridge would be at an elevation of about 4177' (The natural lakebed elevation is 4182'). Although this increases the capacity of water flow, it does not necessarily increase the bi-directional flow of the deep brine layer from Gunnison Bay south into Gilbert Bay. In fact, concerns were raised about the design ac-

The underlying cause of this perpetual engineering nightmare is that this particular section of the Causeway is in the deepest part of the Lake.



tually increasing south to north flows instead. This dynamic would create problems with salinity levels in the South Arm, affecting the ecology and impacting the mineral extractive industries there. A rock shoofly would be constructed as a temporary measure to keep trains moving while the bridge was being erected. Once the bridge was operational, the culverts would be closed and the shoofly removed.

As an existing facility, the railroad claimed that the construction footprint would be relatively “small”. It also claimed that no impacts on the waters of the U.S. or on existing water flows through the Causeway would result from this work. Clearly Union Pacific wanted to expedite the process so it could continue to fulfill its industrial mandate of “We will deliver.”

The original function of the culverts was to keep the water on both sides of the Causeway level and to allow bi-directional flow of salts. Through time, the culverts began to clog up with detritus from wave action. To facilitate salinity exchange, the railroad was required by the State to keep the culverts open. But its follow through was less than stellar. From 2000 – 2004 the culverts were essentially blocked.

The basic difference between the two permits is that Nationwide 14 is only authorized for those projects that have minimal adverse effects on the aquatic environment. It does not require a NEPA process which would include a thorough evaluation of alternatives, and thorough analysis of impacts to the Lake. And it also keeps the public out of the decision making process.

At least in the context of Great Salt Lake, this is totally consistent with how the railroad has always operated. It’s not a big fan of public process. It has never been particularly forthcoming as one of the users of our Public Trust resource. It is prone to taking unauthorized and unilateral actions in the interest of its assets. For example during the high water years of the 1980’s, boxcars filled with boulders were dumped into the Lake to fortify the Causeway under the guise of Causeway maintenance. And meeting its responsibility to keep the culverts free of detritus was like pulling teeth for the State.

Perhaps this behavior has something to do with fact that the railroad was already on the Lake before environmental laws like the Clean Water Act were enacted. It was there before regulatory rules like a 401 Certification (a certification issued by the Utah Division of Water Quality to verify that a proposed project will not impair the quality of Utah waters). By the time these regulatory measures came on line, holding Union Pacific accountable for continuing impacts to the

Lake was sort of like trying to catch a tiger by the tail. But this does not excuse the State’s lax oversight in protecting the Public Trust by acquiescing to these conditions. It’s only served to get us and the Lake where we are today.

So now everyone is playing a game of “catch up”. But what really matters is how and when will the Lake ever catch up with years of industrial single mindedness?

After receiving the preconstruction proposal, the ACOE held a series of informal meetings with interested state and federal agencies. All of them expressed significant concerns with the proposal. There is consensus that the project has a strong potential to have significant individual and cumulative impacts on the aquatic ecosystem of Great Salt Lake. And all parties agreed that there should be a robust opportunity for the public to comment on the proposal. A corollary to these concerns is the recognition that the proposal must undergo significant analysis in order to determine with more certainty how to design the project to minimize its adverse effects or even to benefit the Great Salt Lake Ecosystem.

Reliable sources have indicated that the railroad has already hired a contractor to do the work. The Division of Forestry, Fire and State Lands is waiting for Union Pacific to provide answers to a number of questions, including documentation to verify its right of way on sovereign lands.

FRIENDS encourages the ACOE to require an Individual Standard Permit rather than a Nationwide 14 Permit, and ensure that a proper evaluation of the possible impacts of this proposal is conducted. It’s time to restore our Public Trust.

In saline,

Lynn



What you can do:

Visit www.fogsl.org to review comments submitted by FRIENDS, federal and state agencies and other conservation interests.



FRIENDS ORGANIZATIONAL STATEMENT

FRIENDS of Great Salt Lake is a membership-based non-profit 501c3 organization founded in 1994. The mission of FRIENDS is to preserve and protect the Great Salt Lake Ecosystem and to increase public awareness and appreciation of the lake through education, research, and advocacy. The long-term vision of FRIENDS is to achieve comprehensive watershed-based restoration and protection for the Great Salt Lake Ecosystem.

FRIENDS has a very active Board of Directors and an Advisory Board consisting of professionals in the scientific, political, literary, education, and broadcast communities. The organization sponsors an array of programs, activities, and materials in pursuit of its mission.

Every two years, FRIENDS hosts the Great Salt Lake Issues Forum to provide a focused discussion about the Lake for policy makers, researchers, planners, industry and other stakeholders. The goal of each Forum is to encourage constructive dialogue about the future of the lake's ecosystem and its resources, and to illuminate the complexities involved in research, management and planning for the lake.

The Friend of the Lake award, given at each forum, acknowledges a citizen, business or organization working to promote Great Salt Lake awareness in the community.

In 1997, Bruce Thompson was hired as Education Director to initiate a regional education project designed to enhance both the knowledge about and care for the future of Great

Salt Lake. Bruce wrote and produced a live-narrative slide-show program "The Lake Affect: Living Together Along the Shores of Something Great." The program is now available on DVD.

In 1998, the Utah Chapter of the Wildlife Society awarded FRIENDS the Conservation Achievement Award..

In 2000, Project SLICE, a 4th grade curriculum using Great Salt Lake as a system of study, was initiated. The Lakeside Learning field trip program, a component of SLICE, continues to grow.

In 2002, the Doyle W. Stephens Scholarship Award was established. The scholarship provides support to undergraduate and graduate students engaged in new or on-going research that focuses on Great Salt Lake.

In 2002, Lynn de Freitas was awarded the outstanding volunteer educator award by the Utah Society for environmental Education.

In 2006, FRIENDS was the recipient of the Calvin K. Sudweeks Award from the Utah Water Quality Board for outstanding contributions in the water quality field.

Emily Gaines, hired in 2009 as Education & Outreach Director, is working to refine the Project SLICE curriculum and expand education outreach into the Great Salt Lake community.

On the Cover

Being Still by Charles Uibel

A seagull focuses the stillness and behold you have become still too. Far-to-near, edge-to-edge there is no movement, and your thoughts rest. By looking at it, try to penetrate its birdness. Get your shoe out of the mud without scaring it off. How long can you stand motionless? Soon, urgency will return and you will climb back into your life and drive off.

Visit <http://GreatSaltLakePhotography.com> for more images and information about Charles.





Watery Sunset at Great Salt Lake by Charles Uibel

2012 GREAT SALT LAKE ISSUES FORUM

UNIVERSITY OF UTAH, SALT LAKE CITY
MAY 10 + 11TH

POST-CONFERENCE FIELD TRIP MAY 12 + 13

Focus of the Forum – Saline Lakes in Times of Change

“Salt lakes are widespread throughout the arid and sub-arid regions of the world and include a diverse array of aquatic ecosystems of considerable ecological value. Economic development and population increases are causing ever-increasing demands for fresh water, and salt lakes remain among the most imperiled natural habitats. Their fates will largely be decided by this generation.” - Robert Jellison, International Society for Salt Lake Research

More details will be coming soon at www.fogsl.org

THE GREAT SALT LAKE WETLANDS:

AN ANCIENT HUMAN WILDERNESS

"Friends" are the kind of people who find satisfaction through collaboration with our Great Salt Lake. Some skim along in boats on the open waters. Some walk deep into the marshes. Some sit for hours at a spotting scope for that best-ever glimpse of the Yellow-Headed Blackbird. Occasionally when the water is low, we can stand on the mud flats half-way to Promontory Point at sunset and look back at the towering, sun-fired cliffs above Willard. The crest of the Lakeside Mountains at dawn treats us to a thin silhouette of the Wasatch Range floating above the haze of the urban front. The utter quiet of being "out on" the lake provides a welcome contrast to those distant cities and all their trappings. The silence might be punctuated by a flight of birds overhead, a swirl of wind in the rushes, or the relentless lap of wavelets. But these are welcome interruptions to that grand silence. Much of what we love about the lake is the solitude – the sense of wilderness.

Long ago before the wilderness of Great Salt Lake became juxtaposed to the trappings of the white man, our landscape was occupied. The Wasatch Front was in prehistoric times, one of the most populous parts of Utah, just as it is today. The vast wetlands along the eastern shores of Great Salt Lake were home to over 400 generations of native peoples beginning over 13,000 years ago. During a prehistoric heyday from in the A.D. 1000 – 1100s the 10th known to archaeologists as the Fremont, the eastern fringe of Great Salt Lake was perhaps home to several thousand people.

Hike to the cliffs above Willard and step into a time machine. Pick a year. Perhaps a summer day in A.D. 1066. The first thing to catch our gaze below would be a walled town of dozens of homes covering more than 20 acres. The houses are built on the remnants of earlier homes in a relentless cycle that accumulated into a mound several meters high. The Big Mound at Willard is gone – homes, household goods, and even human burials scraped away to be used as fill to build the Willard Bay dikes. Only the place remains, used now by picnickers and boaters who lounge around the campground at Willard Bay State Park.

If we linger just a bit longer and lift our gaze toward the mouth of the Bear River, or southwest toward Plain City, Syracuse, and on to Layton, we would see dozens of fires from other villages, as well as farmsteads, hamlets, and isolated campsites used by people who lived where we seek solitude today. Our beloved Great Salt Lake landscape was occupied, lived in, loved, home. This rich past is so easy to overlook

in our modern world that makes so much of the distinction between culture and nature.

An awareness of the human past around Great Salt Lake is more than a passing mystery. The prehistoric inhabitants left many clues of their lives. The archaeology in some areas along the eastern shores of the lake is so rich that it is better characterized as an archaeological landscape rather than as discreet sites. Prehistoric occupation was so steady and dense that the entire area from the lower Bear River, south across the Harold Crane Wildlife Refuge and on to the mouth of the Weber River is one enormous human cemetery. After Great Salt Lake flooded during the late 1980s, the Utah legislature funded the emergency recovery of thousands of prehistoric human bones on behalf of the local tribes. Dozens of skeletons were exposed at the surface, only to be torn apart by ice, waves, and wind, and illegally collected by curio-seekers. Each time there is a cycle of lake transgression and regression, more bones appear. It will always be this way.

An awareness of the prehistoric human past is very much a part of the contemporary environmental management of the lake. Known as cultural resources, the archaeological remains are nonrenewable. They are the only tangible connection we have with the deep human heritage of Great Salt Lake.

PreColumbian America was more cosmopolitan than we thought. What happened in our region was shaped by the lives of Native Americans in other parts of the continent. The ancients were not isolated Robinson Crusoes, nor mere campers. They did not wander aimlessly in search of food. They saw no distinction between culture and nature, nor between human and animal. The ancients of the Great Salt Lake created a humanized landscape enveloped by a social tapestry. I invite you to consider the human dimension of our mutual admiration of the Great Salt Lake and its environs. We have much to learn from a scale of human experience that transcends the lives of individuals.

Steven R. Simms, Professor of Anthropology
Utah State University

For a fictional vignette and artist conceptions of ancient life along the Great Salt Lake visit www.fogsl.org under Resources/About the Lake/Archaeology and Cultural Heritage



SAVING FOR THE FUTURE

MAKING A COMMITMENT NOW TO PRESERVE GREAT SALT LAKE

It should surprise no one that our economy is in a tailspin. Much of what used to be made in the U. S. is now made in other countries. To make matters worse, some of our economic activities have left great swaths of damage across the landscape. What is left? What can be salvaged that will drive our economy in a sustainable manner, and provide us with an acceptable quality of life? In a word: beauty.

The one asset that can never be off-shored or exported to other countries is America's natural beauty. Our landscapes, especially the rivers and lakes that are still in a fairly natural state, are among our greatest national assets. Unfortunately, there is a dramatic disjuncture between what we want from our lakes and rivers, and what we have done to our lakes and rivers. According to the U. S. Army Corps of Engineers, there 79,000 dams in the U. S. that are over 25 feet in height. There are an additional 2.5 million small dams. According to the Census Bureau, 85 percent of the nation's inland water surface is artificially controlled. About half of all wetlands have been destroyed in the U. S.

As a result of all this development and abuse, all but about 2 percent of our rivers and streams have been diverted, damaged, polluted, dammed, or destroyed. What is at stake now is that remaining remnant of intact lakes, wetlands, and waterways; we can choose to sacrifice that too, or make a commitment to preserve that last vestige of what is most beautiful. This should not be a difficult choice; Americans love their rivers and lakes. Indeed, intact, clean, healthy rivers and lakes are a major contributor to our economy.

Part of the allure of lakes and rivers is that they tend to have high concentrations of animal life, much of it rare. About half of the animals that have been declared endangered or threatened under the Endangered Species Act live in, on, or near water. Some people are attracted to this wildlife because they like to fish; the American Sportfishing Association says sportfishing generates \$45 billion in retail sales and has a \$125 billion impact on the national economy. Others simply want to recreate on or near water, and are part of the surging trend in eco-tourism, which generates an estimated \$77 billion a year in the U. S. According to the 2004 National Survey of Recreation and the Environment, 33 million people like to go rafting, 15 million kayak, and 27 million canoe. According to a recent report, "clean water recreation" supports a \$50 billion a year water-based recreation industry. Among the biggest spenders are birders, who spend about \$25 billion a year, according to a 2001 survey by the U. S.

Fish and Wildlife Service; most of that bird-watching takes place along America's lakes and rivers.

These trends are reflected in the economy of Utah. According to the 2011 Economic Report to the Governor, spending by travelers and tourists will total about \$6.52 billion this year, and generate \$842 million in state and local taxes. Utah's national parks attracted nearly 3.7 million people this past year. All of this fun in the outdoors, in natural settings, generates a lot of economic activity. It is estimated that outdoor recreation in Utah generates \$5.8 billion annually.

What does all this mean for the future of the Great Salt Lake? First, these statistics make it clear that the lake is an irreplaceable asset that adds immeasurably to our well-being. An intact, healthy lake is not only a money-maker, it also provides us with recreational opportunities that enrich our quality of life and make living in Utah more enjoyable. Second, they emphasize the sustainability of lake-based recreation and tourism. Extractive industries, especially those based on hard-rock mining and fossil fuels, have a finite life; they will end some day in a final convulsion of the boom/bust cycle. But the serenity of the Great Salt Lake, its austere beauty, and its ability to attract eco-tourists, are forever—if we choose to protect it.

Protecting the Great Salt Lake will require a fundamental change in attitude for some people—a much stronger focus on future generations and the ability to envision an economy and a society that do not yet exist. When U. S. Army Captain J. H. Simpson visited the lake in 1859, he described it as a "somber, dreary waste" and claimed that "neither man nor beast" could live near the lake. He was wrong, very wrong, because he could not envision a future that was substantially different from the past—a future where people embrace wilderness, treasure solitude, and pay good money just to get away from "civilization." We must not make the same mistake that Captain Simpson made; we must see the future and the tremendous role that the Great Salt Lake will play in that astounding vision.

Dan McCool
Professor of Political Science
Director, Environmental and Sustainability Studies Program
University of Utah



IT'S IMPORTANT FOR CITIZENS TO HAVE A SAY

IN THE FUTURE OF GREAT SALT LAKE - LET'S PRESERVE THE LAKE TOGETHER

Facts

The Great Salt Lake is a magnificent body of water. It is a unique asset to Utah but many people who have the Great Salt Lake in their backyard do not realize its hemispheric impact.

Yes, it provides scenic and recreation opportunities to our citizens and visitors. Yet, it is also the fourth largest terminal lake on our planet, providing a "bird hotel" for millions of migratory shorebirds and waterfowl within the Western Hemisphere. It also represents approximately 80% of Utah wetlands, improving water quality and helping to control flooding – an especially important component with our wet Spring this year.

Unfortunately, we have neglected or simply ignored the Great Salt Lake over the last several decades. That is starting to change.

Great Salt Lake Advisory Council

Through the Great Salt Lake Advisory Council, Salt Lake County is fortunate to have a seat at the table in discussing the future of the Great Salt Lake.

The Legislature created the Great Salt Lake Advisory Council in 2010 and the first meeting of the group was held on June 30, 2010. Salt Lake County Government has one seat on the Board whose duties include advising and assisting the State in balancing sustainable use, environmental health and reasonable access for existing and future development. It has been enlightening to hear the reports from our representative, which have varied from interesting factoids about the Lake (such as those mentioned above) to detailed information on the Great Salt Lake's water budgeting process. This group will continue to be at the forefront of decisions affecting the Lake. I encourage all of us to dialogue with them about our concerns.

Comprehensive Management Plan

While this group has been looking at the future of the GSL, I believe our citizens should have a say in its future. Fortunately, there will be an opportunity through the current revision of the Great Salt Lake Comprehensive Management Plan that will consider Lake elevation to address impacts on the Lake from many different perspectives, including ecosystems, commercial uses, invasive species, minerals, and recreation. Public meetings have been held in the 5 counties surround-



Mayor Corroon at Lee Creek Dedication by Haylie Cox



ing the Lake to get citizen input. The public will be invited to comment on the final draft of the Plan which will be released sometime in January 2012.

Jordan River – On its Way to the GSL

As a major water source to the Great Salt Lake, the Jordan River was for years a neglected asset of County residents.

That changed significantly in 2008: Salt Lake County was a leader for its transformation by funding the Blueprint Jordan River. This process involved interested citizens in the visioning process for what an improved Jordan River might look like. The newly formed Jordan River Commission is a unique inter-local cooperation among three counties, seven cities, state agencies, special service districts and the community that will focus on completing the Utah Lake-to-Great Salt Lake parkway.

During my time as Mayor, I've also made sure that the Jordan River has become a focal point for water quality stewardship. Since the publication of the Water Quality Stewardship Plan in 2009, our County staff has worked vigilantly to improve riparian habitat, restore banks, and reduce non-source point pollution. This all impacts what comes downstream to the Great Salt Lake.

Economic Perspective – An Impressive Model

The Great Salt Lake is also a source of economic livelihood for many industries, which sometimes leaves the health of the Lake challenged. Brine shrimp and mineral extraction are invested greatly in the resources of the Lake. There are also 24 facilities that treat water along the Wasatch Front that discharge into the Lake. Several business and industrial users have permits to discharge as well. All of these demands need to be balanced to ensure the health of this extraordinary Lake for future generations to enjoy.

And balance is a possibility - one need look no further for an impressive model than the brine shrimp industry. As they tell the story, boat captains competing for the best spots on the Lake to find artemia cysts were in the habit of pulling out guns to protect their space. Sounds a little like the Wild West.

But as an industry they determined that it was in their best interest to set certain standards in regards to the length of the harvest season and the quantities harvested. Why? They agreed to licensing fees to help regulate and provide Lake research, in order to protect the long-term viability of their

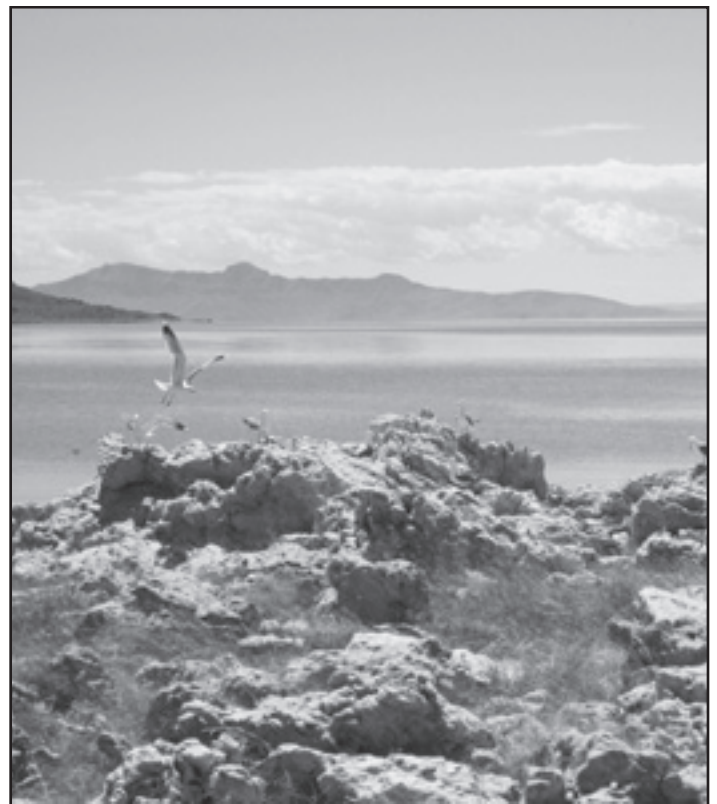
industry. The brine shrimpers realized that they depended upon a healthy Lake to ensure their future.

Is this a model for all users and extractors of the Lake? Most certainly, yes! Their willingness to come together as an industry and agree to meet minimum sustainability levels, show that businesses on the Lake can be visionary and willing to support regulation for the broader good of the ecosystem.

Conclusion

I recently attended a dedication of land preserved along the Great Salt Lake through the leadership of the Salt Lake Audubon Society. It reminded me that at the end of the day, we are all responsible for protecting the Great Salt Lake. If we want to preserve this international wonder, we need to remain vigilant and each of us must our part. Otherwise, we will wake up one day to see it devastated by our neglect. Let's preserve this great lake together.

Salt Lake County Mayor Peter Corroon



California Gulls by L. de Freitas



FLUCTUATING LAKE LEVELS

AND THE GREAT SALT LAKE COMPREHENSIVE MANAGEMENT PLAN REVISION

As the planning process for the Great Salt Lake Comprehensive Management Plan Revision (GSL CMP) enters into its final stages, we reflect upon the evolution of the document that will provide Utah Department of Natural Resources Division of Forestry, Fire, and State Lands (FFSL) with management guidance for the coming decade. Tasked with incorporating a wealth of new GSL research into the existing GSL CMP and addressing current lake management issues, FFSL began the revision process in a style that closely resembled the 2000 GSL CMP.

As with the 2000 GSL CMP, FFSL and the GSL CMP Planning Team began looking at a range of alternatives that could be considered as future management strategies. However, numerous factors including; FFSL management jurisdiction, multiple agencies responsible for GSL resources, lake level fluctuations, and stakeholder comments, prompted us to modify our course. The adaptation allowed us to more accurately address the needs of FFSL and the GSL resources. Specifically, the CMP revision process focused on developing strategies to deal with a fluctuating lake level, as required by UTAH CODE § 65A-10-8.

Most importantly, the 2012 GSL CMP is responsive to FFSL's mandate to manage GSL for the benefit of the public. As trustee of public trust lands, FFSL must continually strive for an appropriate balance among compatible and competing uses specified in statute (UTAH CODE § 65A-10-1 and 65A-2-2).

To understand how GSL resources are impacted at a range of lake levels, FFSL developed the GSL Lake Level Matrix. The matrix is a visual depiction of how lake levels affect an array of resources and uses. By understanding at what elevations specific resources become impaired, FFSL can adapt their management strategies to avoid impairment to the public trust.

FFSL is required to "prepare and maintain a comprehensive plan for the lake that ... develop[s] strategies to deal with a fluctuating lake level." FFSL is not responsible for managing the GSL to a specific level, rather we are required to adapt our management strategies in response to changes in lake level. The development of lake-level specific management strategies, outlined in the GSL CMP, will allow us to meet resource issue objectives at a variety of lake levels.

As part of the GSL CMP revision process, the GSL CMP Planning Team (consisting of representatives from the Utah Department of Natural Resources, the Department of Environmental Quality representatives and other state agencies) met on a bi-monthly basis. Not only were these meetings useful to discuss the issues surrounding the CMP revision, they were helpful in providing updates on GSL-related projects and initiatives.

It became clear that coordination between state (and federal) agencies could be improved. It also became clear throughout the process that there are three primary spheres where coordination needs to take place: permitting, management, and research. All of these spheres should be in coordination with each other to ensure that decisions made with regard to any one GSL resource will not adversely impact other resources.

As outlined in the GSL CMP, FFSL will initiate a Coordination Committee that will be responsible for communication and coordination efforts for projects and issues related to GSL. FFSL is optimistic that Coordinating Committee will provide sufficient feedback for the division to make informed decisions regarding GSL and its resources.

When the GSL CMP revision began in February of 2010, it could not have been envisioned as the document we have now; however, it makes sense. It makes sense for the unique features of GSL and it makes sense for FFSL. The Draft Final GSL CMP, anticipated for public review in mid December or early January, reflects FFSL's commitment to the public trust and provides a comprehensive look at GSL resources at fluctuating lake levels.

We look forward to your comments during the final comment period (45 day comment period beginning in mid-December or early January) and seeing you at the final round of public meetings (anticipated to occur in mid-January 2012).

Laura Ault, Utah Department of Natural Resources Division of Forestry, Fire, and State Lands

Laura Vernon, SWCA Environmental Consultants



LISTEN UP FOLKS

UTAH DUCK HUNTERS HAVE SPOKEN

This fall the most extensive survey ever was completed on one aspect of recreational use of Great Salt Lake and its effect on the economy of Utah and the Salt Lake region. An executive summary of "Utah Waterfowl Hunting: 2011, Hunter Survey, Hunting Attitudes and Economic Benefits" by Dr. John Duffield can be found on FRIENDS website (www.fogsl.org). Dr. Duffield is a world-class economist/ statistician and Professor at University of Montana.

The strong participation by hunters (61% returned of 940 surveys mailed) would not have happened without the financial assistance of local conservation groups and enthusiastic support by duck clubs leaders. Funding support came from Bridgerland Audubon, The Community Foundation of Utah/Kingfisher Fund, FRIENDS of Great Salt Lake, The Nature Conservancy, Utah Airboat Association and The Utah Wetlands Foundation.

Participants were randomly selected from lists of public hunters and duck club members. The US Fish and Wildlife Service and the Utah Division of Wildlife Resources provided information on numbers of Utah duck hunters (15,000) and total days hunted during the 2010-11 season (210,000). Details of statistical methods and formulas are available in the 95 page full report.

The total impact of waterfowl hunting to Utah's economy is \$97,000,000 annually including 1600 full time jobs. That is impressive but there is a lot more interesting data here which includes hunter attitudes that affect economic values.

My observations relate to two questions that came to mind while reading the complete document. Why would 556 duck hunters bother to spend 25 minutes filling out the survey? Who should listen up to the findings in this survey?

The first answer relates to a survey population composed of enthusiastic individuals with a high level of participation in this activity and interested in protecting their investment in this resource. Duck hunters probably spend more hours in Great Salt Lake wetlands than any other recreational group. And they hope that results of this survey could have an impact on future resource management.

Waterfowl hunting around the lake has a long and rich tradition with several clubs in existence since the 1800's. Duck clubs protect thousands of acres of wetlands and uplands around the Lake and are important managers of water flows.

Almost all responders agreed that duck hunting was one of their most important outdoor activities. The average hunter had been duck hunting for 30 years and spent 15-20 days in the wetlands during the 2010-2011 season. Overall, waterfowl hunters spent \$26 million in direct hunting expenditures and \$35 million in other hunting equipment expenditures.

Remember that since 1937, an 11% self-imposed excise tax on hunting equipment and ammunition comes back to the states to support waterfowl management areas and wetland protection. That's another reason why these economic values are so important to sustain our resource. We cannot afford to lose these dollars.

Who should be concerned with the results of this survey? The decision makers and resource managers of Great Salt Lake would be my suggestion.

Listen up U.S. Army Corps of Engineers, Utah Department of Natural Resources, Division of State Lands, Division of Water Rights, and State Engineer. The economic value of waterfowl hunting to Utah is significant and must be weighed in the balance when decisions are made regarding wetland impacts, water reallocation, mineral extraction and other industrial uses of GSL resources.

Listen up Utah Division of Wildlife Resources, U.S. Fish and Wildlife Service. The biggest threat to duck habitat is invasive phragmites. See page 52 of the Survey which shows highly significant positive correlation of dollars spent to numbers of waterfowl bagged, abundance of natural vegetation, and an available boat launch.

Listen up Utah Division of Water Quality. See page 53 showing the negative economic impact of nutrient related algae mats in impounded wetlands. Beware of converting duck ponds into sewage lagoons.

And listen up GSL Advisory Council. Here is one vital part of the contribution of Great Salt Lake resources to Utah's economy. I encourage you to complete the economics of all other Great Salt Lake ecosystem services.

Maunsel B. Pearce
Vice President, Utah Wetlands Foundation
Chair, GSL Alliance



SCIENCE FAIR WINNER FEELS LUCKY AND APPRECIATIVE

TO WIN AIRBOAT RIDE ON GREAT SALT LAKE

My name is David Carr. I am a 13 year-old who is going into 8th grade at Summit Junior High School. I have always loved nature and spend as much time as I can fishing, hiking, bird watching, and hunting. I also love the Great Salt Lake and have worked with my Boy Scout Troop 129, Lone Peak District of the Great Salt Lake Council in conservation efforts for this lake and other areas of our state. Through scouting, I have earned environmental awards like the "Leave no Trace," "Historic Trails," "Environmental Science", and "World Conservation Award". Currently, I am working towards the "National Medal for Outdoor Achievement", and the "William T. Hornaday Natural Conservation Award." For my Eagle Scout project this past year, I assisted the Division of Wildlife Resources at Farmington Bay with a study on Mourning Doves.

Because of my interest in the outdoors, I chose a project that involves the environment for my school science fair which was a part of the Central Utah Science and Engineering Fair (CUSEF) I conducted an experiment that examined the effect of dust on snow melt. I learned that when there is more dust in the air, for example when the Great Salt Lake levels are low, this dust drifts and can land in our mountain snowpack. Dusty snow melts more quickly which can cause spring flooding and late summer droughts. A more sustainable and consistent snow melt occurs when the snowpack is pristine and relatively dust-free. I think this topic is relevant locally because the Great Salt Lake levels have been so low this year and there are companies that wish to intentionally lower the levels further to obtain the minerals.

I was grateful that my science project won awards at my school, district, and regional levels. I felt extremely lucky and appreciative to have won an award and an educational airboat ride from the FRIENDS of Great Salt Lake. I love the Salt Lake and airboats. So, needless to say, I do not think that I could have won a more perfect award for me. I was very excited.

Emily Gaines, the Educator and Outreach Director for the Friends of Great Salt Lake, kindly drove my father and me to the Farmington Bird Refuge. While there, she let me borrow a pair of binoculars to spot pelicans, red and yellow-winged black birds, Canada geese, teal, gadwalls, and Mallards. Afterwards, we were introduced to the president of the Utah Airboat Association, R. Jefre Hicks. It was clear that he is passionate about airboats, waterfowl, and the Great Salt Lake. We then fired up his airboat and were off on our adventure. I felt like I was riding in a "hot rod", but over the water. We were amazed at how his powerful airboat scooted right over the mud flats and lake grasses without becoming stuck.



Emily Gaines and David Carr by R. Jefre Hicks

Mr. Hicks taught us about Farmington Bay. He knows a lot about this area since this is where he grew up. He explained how the fresh water inlets have been dried up due to subdivisions using the water. He also showed us the invasive phragmites which has taken over great expanses of the wetlands. This plant grows thickly, dams up the fresh water inlets, uses a great deal of water and kills off the natural plants that provide food for the birds.

We continued in our airboat ride and spied huge carp swimming through the flats and several nesting birds. My favorite site was the floating nests of the coots. I discovered that they make reed nests which look like floating volcanoes with small, blue eggs perched in the top.

This experience deepened my knowledge and appreciation for the Great Salt Lake. I would like to sincerely thank Emily Gaines, R. Jefre Hicks, and FRIENDS of Great Salt Lake for this generous award and amazing opportunity. I hope that through educating the public and working together, the beauty and habitat of the Great Salt Lake can be preserved.

David Carr



GREAT SALT LAKE AT A GLANCE

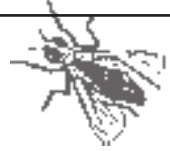


Courtesy USGS





E•phy'•dra, a noun; a genus of two species of brine flies that live on the bottom of the Great Salt Lake as larvae and pupae, and along the shores of the Lake as adults.



2011-2012 Fall Waterfowl Flight Forecast: Great Salt Lake is a Jewel that Most Migrating Waterfowl in the Pacific Flyway Depend on

Although the 2011-12 waterfowl (duck, goose and swan) season is well underway, I thought you might enjoy some background information as to what appears to be one of those years that may go down in the history books. Habitat, water and food resources are the ingredients responsible for a healthy waterfowl population. How are these things measured and why is Great Salt Lake so important in this equation? If you live in Utah and enjoy Great Salt Lake you will want to read on.

Each spring duck habitat across the prairie pothole region of North America is assessed through established aerial transects. Pilots and biologists fly these transects and count the number of wetlands (ponds) holding water. This survey is

known as the May pond count. In 2011 the number of May ponds in prairie Canada increased 31% from 2010 and was 43% above the long-term average (LTA). In the prairie pothole region of the United States ponds were up 10% from 2010 and a whopping 110% above LTA. Full ponds mean good breeding habitat which equates to improved duck production and an improved fall flight.

The second component of this survey is counting the number of breeding ducks along this same set of transects. As you can see in Table 1, the number of breeding ducks in 2011 increased for all species with the exception of green-winged teal and wigeon. Northern pintail, the species that relies heavily on Great Salt Lake, increased 26% from 2010.



King of the Marsh by Steve Earley



The Rocky Mountain population of Canada geese are assessed in two ways. Locally, here in Utah, both breeding pairs and brood counts are used. This year breeding pairs were down 53% from last year and production was down 50%. A couple of factors, in my opinion, contributed to this reduction. First, the wet spring and heavy runoff created new wetland habitat outside of traditional survey routes. This may have displaced geese beyond our survey area and therefore they were not counted. Second, heavy runoff may have flooded nests reducing the number of goslings produced. From a Pacific Flyway (Utah, Arizona, New Mexico, California, Oregon, Washington, Idaho, Wyoming, Colorado and Montana) standpoint, Canada geese pairs were also down 25% compared to 2010 but still well above the LTA. Although we experienced a one year setback, Canada geese continue to thrive throughout the Pacific Flyway.

The last group of waterfowl are tundra swans. Utah issues 2,000 tundra swan hunting permits to successful applicants through a drawing. The tundra swan population status is also assessed in two ways. The first is the midwinter waterfowl survey conducted by all the states located in the Pacific Flyway. This survey occurs during the second week in January and is a way to count all wintering tundra swans to obtain a post-season population estimate. The other is a pair survey that occurs in Alaska. In 2011, pairs were up 6% from 2010 and 33% above the LTA. Tundra swans are doing very well in the Pacific Flyway as evidenced by the 40,000 to 50,000 thousand birds staging at Great Salt Lake in November.

Given the background for what appears to be a fantastic waterfowl season in Utah, what are local conditions like at Great Salt Lake? First of all Great Salt Lake received a well deserved drink of water this spring. Under a normal year Great Salt Lake rises 18 inches in the spring and drops about 18 inches during the summer and early fall. The LTA elevation is 4,200 feet above mean sea level. This year Great Salt Lake rose almost four feet and only dropped about 6 inches. Although still below LTA, Great Salt Lake is currently resting at an elevation of 4,197.6 feet above mean sea level. This is good news, as evaporation has subsided and water continues to flow into the Lake.

Bear River is currently flowing 2,000 cubic feet per second, enough to produce about 4,000 acre feet of water per day. The Jordan and Weber Rivers are also contributing water to the Great Salt Lake and will probably do so throughout the winter. It's a great time for our waterfowl resource because they rely on the tremendous amount of food produced by Great Salt Lake and the associated fresh water marshes. Great Salt Lake is a resource that resounds within every waterfowl hunter that has experienced its bounty and beauty. It is truly a jewel that most migrating waterfowl in the Pacific Flyway depend on.

Enjoy the waterfowl season and all it has to offer. Also count your blessings that you can access a public resource as spectacular as our Great Salt Lake.

Justin Dolling
Waterfowl and Upland Game Bird Coordinator

Species	2011 versus 2010	2011 versus LTA
Mallard	+ 9%	+22%
Gadwall	+9%	+80%
American Wigeon	-14%	-20%
Green-winged Teal	-17%	+47%
Northern Shoveler	+14%	+98%
Northern Pintail	+26%	+10%
Canvasback	+18%	+21%
Scaup	+2%	-15%
Redhead	+27%	+106%
Total	+11%	+35%

Table 1. 2011 breeding ducks observed on aerial transects in the prairie pothole region of North America



DISCOVERING OUR LAKE

A DRIVE TO SPIRAL JETTY BECOMES A PRIMER OF ALTERATIONS



Doing the Spiral Jetty Walk by P. de Freitas

The first day of October was awash in fall's glory: watercolor stains of golden yellow, sage green, and rusted reds and browns melted into each other as we drove through Utah's northern landscape. The year's abundant rains had made the hills around Promontory Range consistently green, even in October. The marshy fields around Great Salt Lake had lost enough water to appear as flat white alkaline canvases dotted with flame red *Salicornia*, aka pickleweed.

Driving through Utah's northern landscape around Great Salt Lake, we are reminded of the various ways we have used the land. Between I-15 at Brigham City and the Spiral Jetty at Rozel Point, a rich history unfolds. We first pass through Corinne, once the "Gentile" town established during the building of the transcontinental railroad in 1869. As the Union Pacific RR's tracks were laid west from the Missouri River, and Central Pacific RR's tracks were laid east from California, tent towns were set up to house the railroad workers. Corinne grew to a town of 1,000 residents, offering early settlers saloons and liquor stores, a sharp contrast to the predominantly religious pioneer communities around it. Today Corinne has less than 700 residents, some stores and provi-

sions for the farming communities around it, and a gas station, the last before Spiral Jetty.

Not too far west of town caves and pictographs provide evidence of the Native Americans who lived around Great Salt Lake. Rivers and freshwater springs provided them water, while the marshes provided edible plants and animals. Several rock shelters can be seen north of Highway 83: it boggles the mind to see how far up the shelters and caves are located. It makes one wonder if the Native Americans who used them had a view of a much larger Lake Bonneville, instead of Great Salt Lake. Lake Bonneville left its mark on the sides of the surrounding hills and mountains, from terraces to etched marks on the sides of the land.

The next major development on the highway is ATK Aerospace Systems, where missiles and rocket boosters are created and tested. ATK's property on the north end of the lake is extensive, with multiple buildings and a massive office complex. At one point, over 9,000 people worked for ATK in Utah but with the end of the space shuttle program there have been significant layoffs.ⁱ



The large number of people involved in Utah's current technological endeavors is comparable to the number involved in creating Northern Utah's first major technological advance – the joining of two railroad lines to make the transcontinental railroad. Golden Spike National Historic Site is just a few miles west of ATK, and reminds us of a time when different lines were created on the land. At ATK, the land is scarred so fire can't jump from one section to another. The massive railroad grades are altogether different lines: they symbolize our country's industrial revolution, advancement towards settlement by Euro-Americans, and quest for changing the shape of time. The transcontinental railroad afforded coast-to-coast travel in a few days, as opposed to weeks or months.

Publishers quickly created travel guides to accompany the journey. One guide, Crofutt's Trans-continental Tourist Guide, offered this description of the Promontory stop:

"Behind the station at Promontory the hills rise into the dignity of mountains...After an hour's toilsome walking through sage-brush and bunch grass...until we had attained a height to which that persistent shrub could not attain; then among more rocks, stunted cedars, tiny, delicate flowers and blooming mosses, until we stood on the summit of the peak, on a narrow ridge of granite...and there, almost at our feet – so steep was the mountain – lay the Great Salt Lake..."ⁱⁱ

The views of Promontory haven't changed much since. There are a few more buildings, the railroad now crosses Great Salt Lake via the Lucin Cut-off, but the region around Promontory – the final 16 miles of the trip to the Spiral Jetty – remains ranch land.

Much has been written about Robert Smithson's interest in landscapes altered by human intervention and industry; the drive to Spiral Jetty becomes a primer of alterations before reaching Rozel Point and the abandoned oil jetty right before Spiral Jetty another quarter mile along the road. Captain

Stansbury's 1850 expedition journal noted the Rozel Point oil seeps, calling them "bitumen". Such oil as has since been extracted there, a mere 10,000 barrels, was so sulfurous and thick it was used mainly as asphalt to tar roads.

On the day of our FRIENDS of Great Salt Lake trip, the Salt Lake Tribune featured a front-page article on the year's unexpectedly high precipitation: "Utah water year ends – fourth wettest on record." From 2010-11, we received 23.67" of water. Not surprisingly, two years from the 1980s were in the top four: the wettest year was 1981-82 at 25.15" while the third wettest 1983-84 at 23.82". (The second wettest year was 1875-76, with 24.60" of rain.)

If we were sitting in the fourth wettest year on record, how did the Spiral Jetty fare during the rising waters of the lake? Very well actually. It has been a few years since the Jetty has been submerged, and by mid-summer, most of the earthwork's rocks were under water. On October 1st, the skies were clear, the wind gently breezy, and the lake was glorious. Water lapped along the Jetty's rocks, while that peculiar foam – which seems so like soap detergent – wafted along the shoreline. The dynamic nature of the wind and water made for an exciting day, filling the air with sound. As people walked

on the earthwork, often with waders and walking sticks, it was a true adventure to determine how far one could walk along rocks invisible in the murky pink and blue waters. This walk was part of the journey of being at Spiral Jetty, which began hours before, taking travelers through the historic and visually spectacular landscapes of Northern Utah around Great Salt Lake.



Views of Promontory by L. de Freitas

Hikmet Sidney Loe, Art historian

i <http://www.ksl.com/?nid=148&sid=16651525> (accessed October 28, 2011).
ii Crofutt, Trans-continental Tourist Guide (4th edition, 1872), 119.





FRIENDS of Great Salt Lake

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Lake Fact:

What is the size
of a brine shrimp
cyst?

Answer: 200 microns

Submission Deadlines: Sept. 16 (Fall), Dec. 16 (Winter), Mar. 16 (Spring), June 16 (Summer). Submit articles and images for consideration to Lynn de Freitas, ldefreitas@earthlink.net, or call 801-583-5593



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