



FRIENDS of *Great Salt Lake*

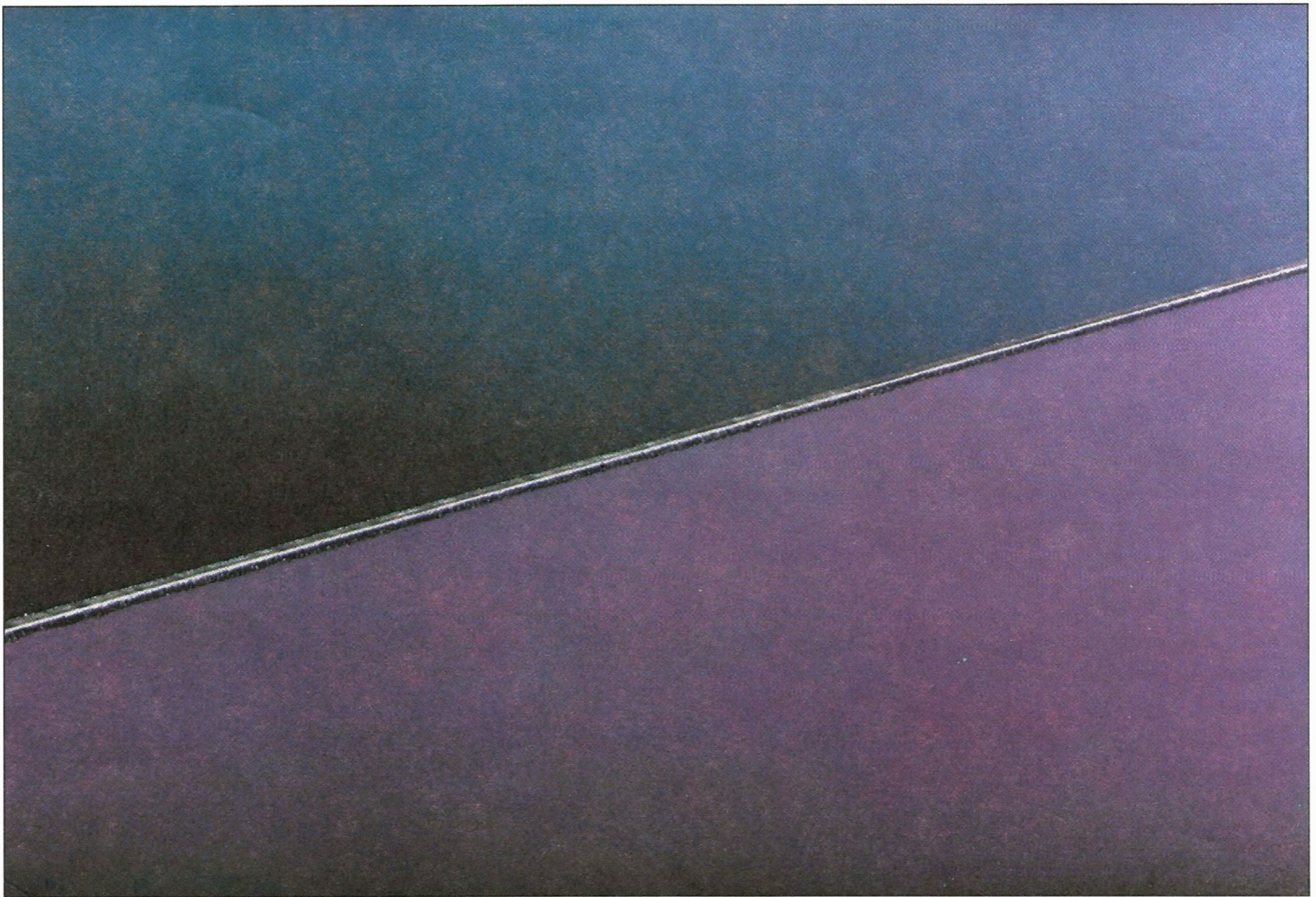
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The mission of Friends of Great Salt Lake is to preserve and protect the Great Salt Lake ecosystem and to increase public awareness and appreciation of the Lake through education, research, and advocacy.

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SPECIAL THANKS TO FUNDERS OF THE THIRD GREAT SALT LAKE ISSUES FORUM

Kennecott Utah Copper Corporation
Laird Norton Family Fund
John Milliken
The Nature Conservancy of Utah
SWCA Environmental Consultants, Inc.
Utah Wetlands Foundation
Utah Society for Environmental Education

Winter 2000 Calendar of Events

January 25, Tuesday	General Meeting 7:00 p.m. John P. George, Images of Great Salt Lake
February 3, Thursday	Board Meeting 7:00 p.m.
February 25-26, Fri. & Sat.	Third Great Salt Lake Issues Forum
February 29, Tuesday	General Meeting 7:00 p.m. Jon Cherry, Kennecott Discharge Permit Update
March 2, Thursday	Board Meeting 7:00 p.m.

Watch the local papers for announcements of speakers and topics at our General Meetings,
or call our hot-line at 801/583-5593, and press 1 for monthly activities.

NOTE: General Meetings are held at the Sugarhouse Garden Center, located in the northeast corner of Sugarhouse Park, 2100 South 1300 East in Salt Lake City. Board Meetings are held at the Salt Lake County Complex on State Street and 2100 South in Salt Lake City.

Cover: Photo showing railroad causeway across Great Salt Lake. The dramatic colors result from the lack of Lake water mixing.

Photo by: Al Hartmann, Salt Lake Tribune.



President's Message

Coming Clean for The Millennium

The other day, I was meeting with some potential funders, sharing details about who Friends is, what our educational programs are, and why we need funding; when it happened. I was asked THE question. "Is Friends political?" My first thought was that it must be a trick question. Then I realized that the need to ask the question came from a basic ignorance about the Lake and the passel of issues that surround it.

Let's face it, Great Salt Lake is a politically charged entity. Economic and political interests often seem to have a high priority in decisions that are made about the Lake. When you're an organization working on behalf of the preservation and protection of the Lake, it's only natural that you're going to find yourself at odds over development and exploitation issues like highways through the wetlands or increased diking and fragmentation of the Lake.

Of necessity, Friends participates in discussions with other Great Salt Lake stakeholders. And, yes, many of those encounters can be seen as "political." But there is a broader underpinning of what we are trying to do. We are developing education programs to teach people about the Lake because it's our firm belief that knowing about the Lake and respecting the Lake leads to protection and preservation of the Lake.

I'm constantly surprised by the number of people who thank me for what Friends is doing. They don't do this just to be nice. I think they do it because they sincerely believe that our efforts and the voice we provide for the Lake are important.

Some parts of our work are political, some parts are educational, sometimes it's hard to tell the difference.

Boy, I wish I had thought to say all of this when the funders asked me! Next time, I will.

On behalf of our Great Salt Lake and its myriad occupants, Happy New Year!

Lynn de Freitas



Speaker Meets Lake

Speaker of the British House of Commons, Rt. Honorable Betty Boothroyd, MP is presented with her very own Friends t-shirt. Lynn made the presentation after a dinner in the Speaker's Private Dining Room, London, Wednesday, November 24, 1999.

Photo by: Patrick de Freitas.



Great Salt Lake 1999: Elevation is Up, Salinity is Down, Shrimp are Way Down

By Doyle Stephens¹

Change is the only thing of which one can be certain when working with Great Salt Lake, and 1999 was no exception. The 1998 peak elevation of the south part of Great Salt Lake (called Gilbert Bay) occurred June 25 at 4203.6 feet. By early October 1998, the elevation had dropped to 4202.3 feet and salinity was about 9 percent. A generally wet winter and spring resulted in a large amount of runoff entering the lake and by June 8, 1999, the elevation reached 4204.6 feet. Between October 1998 and early June 1999, Gilbert Bay rose 2.3 feet which corresponds to an increase of about 3 million acre feet in volume due to runoff and precipitation on the lake. Salinity decreased to about 8 percent in the main body of the lake by June 1999 (fig. 1). As of December 15, 1999, the elevation of Gilbert Bay was 4202.8 feet and the salinity was about 8.7%.

Salinity is not the only factor affecting the artemia population in the lake. Water temperature, food availability, dissolved oxygen, and even the amount of sunlight all interact to determine if there will be few or many shrimp. However, salinity directly affects the buoyancy of shrimp cysts and a significant change in that buoyancy occurred this year. First, some history: During 1991, a dense brine present at lake depths of about 9m or greater and existing since at least 1965 mixed with overlying waters and disappeared. The dense layer, with salinities as large as 25% created a barrier to complete mixing of water and resulted in a semi-permanent stratified condition known as meromixis in Great Salt Lake. This layer was present as early as 1967 and I remember it during my work in the early 1970's. Its effect on brine shrimp was not investigated.

On August 13, 1998, a water sample from 9m (29 ft.) depth at site 2565 (8 miles south of the RR causeway), was pink, had a salinity of 11.6% and temperature of 21 °C. The salinity of water from 1m depth at that site was 9% with a temperature of 25.5 °C. The pink coloration and higher salinity at 9 m was likely due to water from north of the railroad causeway flowing through the breach, culverts, and the more permeable causeway fill that occurs above an elevation of about 4200 feet.

While the pink coloration did not persist in bottom water, the salinity differential between 1m and 9-10m

depths that began about January 1998 continued to widen. By early October 1998, the salinity differential between 1m and 10m was 4.6%. In February of 1999, deep-water salinities at a site 7 miles west of Antelope Island began to diverge from 1m salinities. By late November, the salinity differential between 1m and 10m was greater than 3%. It appears that the dense brine layer that disappeared in 1991 has returned.

Incremental depth sampling at site 2565 on March 15, 1999 showed artemia cysts were distributed throughout the water column, but the largest concentration of cysts was at the water surface. Incremental depth sampling on April 11, 1999 showed the greatest numbers of cysts were now near the bottom of the lake. Salinity at 1m had dropped to 8.5% and was perhaps insufficient to keep a large number of cysts floating near the surface. By May 6, 1999, large numbers of cysts were found near the bottom at another site located mid-lake west of Antelope Island. Cysts collected near the bottom appeared undamaged and contained embryos. Large numbers of cysts continued to be found near the bottom at both sites through November 1999. The ability of the sunken cysts to be re-suspended in the water column and to contribute to the shrimp population is not known.

Brine Shrimp (*Artemia*) Population Changes in 1999

During the summer of 1998, the adult shrimp population declined and numbers of both males and females were near 20 per cubic meter (1,000 liters or 237 gallons) by the end of November 1998. Concentrations of chlorophyll were very high during this period, indicating a large amount of food was available and algal cell sizes were sufficiently small to be ingested by nauplii yet few adults were present relative to the past four years.

The average number of cysts in the water column from May through June 1998 was larger than occurred during the same period in 1996 (a great harvest year). By the end of September 1998 prior to the opening of the harvest, there was an average of 27,145 cysts per cubic meter in the water. The 1998-99 harvest



opened October 1 but closed about 10 days later after 4.6 million pounds were harvested. By February 1999, there was an average of 8,600 cysts per cubic meter in the water of Gilbert Bay.

Water temperatures never fell below 2°C (36°F) at a depth of 1 m during the winter of 1998 and shrimp nauplii were present at low densities throughout the winter (fig. 2). A large number of nauplii hatched early in April but most failed to survive as water temperatures were 8°C (46°F) or less. Adult shrimp did not appear in significant numbers until after May 15 and males out-

numbered females until the end of June. A second generation of nauplii were produced from cysts in late May through June 1999. Few of these nauplii grew into juveniles or adults during the summer. The low number of artemia present in spring and summer of 1999 are believed due to the small number of shrimp cysts present following the harvest in 1998, the relatively warm water temperatures during the winter of 1998-99 that may have caused early hatch of cysts in mid winter, and the cold water temperatures present from April through June that retarded population growth. By early October 1999, there was an average of about 210 female shrimp per cubic meter and about half of these carried cysts. There were about 9,000 cysts/m³ in the water.

Due to the generally low numbers of cysts in the water, the Division of Wildlife Resources (DWR) postponed the opening of shrimp season three times during October in hopes cyst production would increase. As the numbers of shrimp cysts did not increase, on October 25, DWR ruled that there would be no harvest from Gilbert Bay but opened Gunnison Bay for harvest. (Common belief is that Gunnison Bay, being too salty, does not have a reproducing shrimp population. Cysts enter Gunnison Bay in water flowing from Gilbert Bay.) As of December 13, 1.7 million pounds of cysts and biomass had been harvested from Gunnison Bay (includes a small amount from the solar ponds at MagCorp).

What will happen next year? I have a foot of snow at my house and if that trend continues, we will have a wet winter and the lake will rise and the salinity decline. Then again, maybe it won't. Get your requests into Santa, it might make a difference.

¹US Geological Survey, 2329 W. Orton Circle, Salt Lake City, UT 84119

Acknowledgement: This information resulted from long-term cooperative projects between the U.S. Geological Survey and Utah Department of Natural Resources for scientific study of the Great Salt Lake.

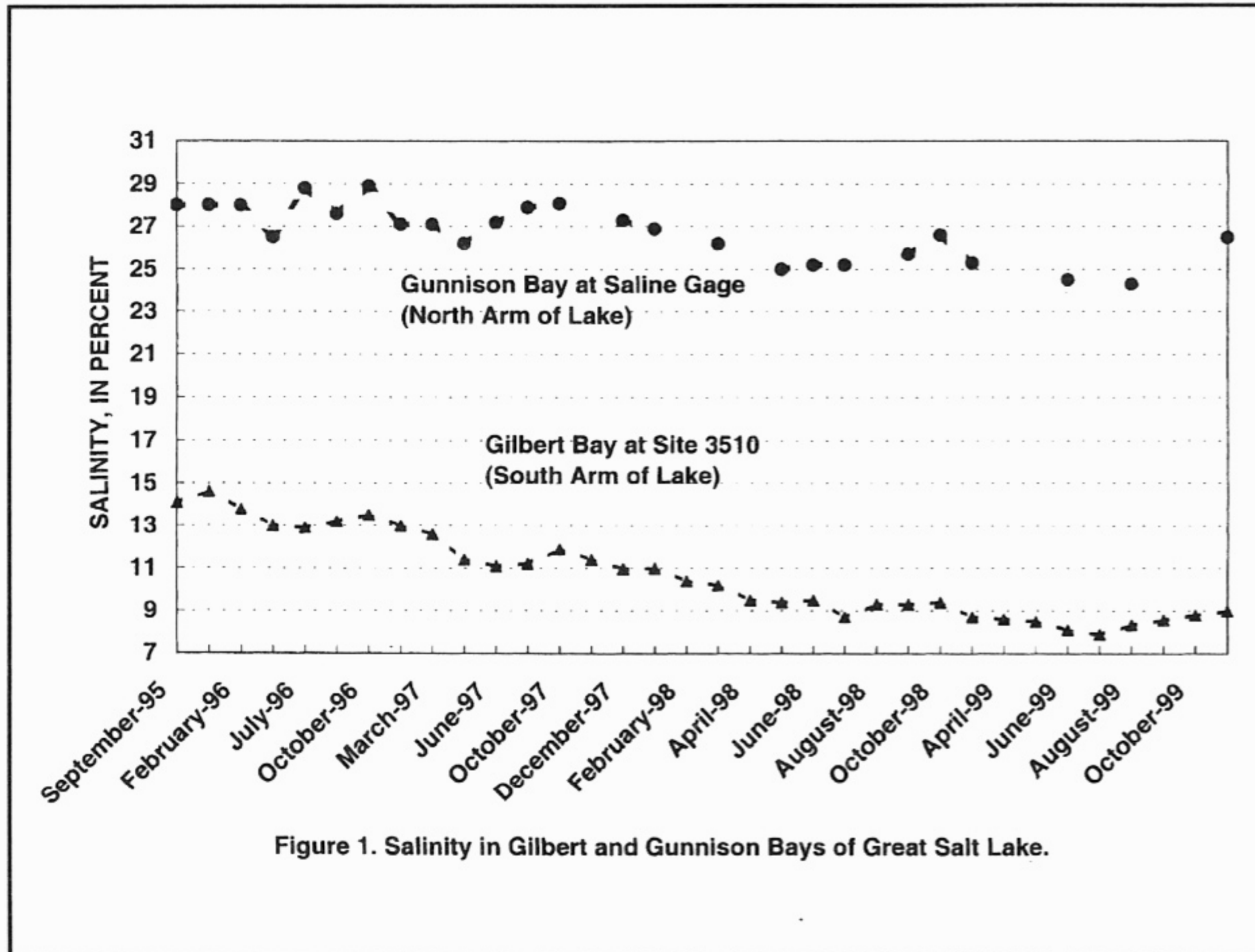


Figure 1. Salinity in Gilbert and Gunnison Bays of Great Salt Lake.

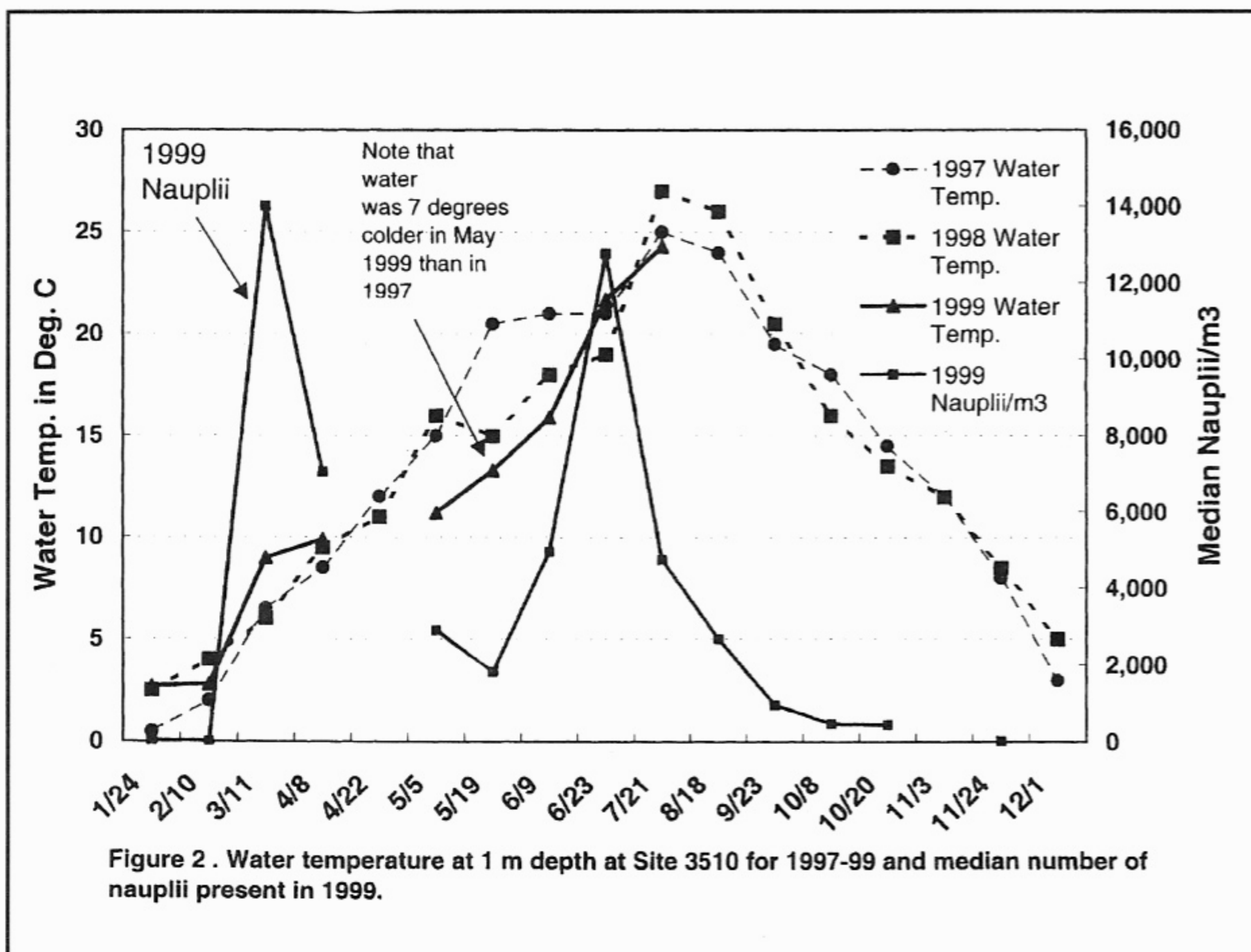


Figure 2. Water temperature at 1 m depth at Site 3510 for 1997-99 and median number of nauplii present in 1999.

The Third Great Salt Lake Issues Forum

Toward a Comprehensive Watershed-Based Restoration and Protection Program for Great Salt Lake

Friday, February 25 and Saturday, February 26, 2000
Quality Inn Downtown 154 West 600 South Salt Lake City, Utah

About The Forum

Join us for two days of inspiration, examples and catalysts on comprehensive watershed-based thinking. The Forum will begin by highlighting the problems and issues affecting Great Salt Lake and its watershed. Then, recognizing its international significance and unique setting in the Great Basin, we'll spotlight selected watershed programs from around the country that provide nuts and bolts examples of collaborative watershed efforts. After reviewing the accomplishments and principle lessons learned in those programs, we'll discuss ways to move from the idea of a Great Salt Lake watershed program to a reality.

Poster Session

A poster session to bring in all relevant information and/or approaches addressing comprehensive watershed thinking related to Great Salt Lake is being planned. If you would like to present a poster, please contact Spencer Martin, 801-322-4307 or <spencerm@swcalc.com> before February 11, 2000.

Cost

\$50 for pre-registration, \$60 after February 11th. Hotel conference rates available. Limited scholarships for students and educators are available on request.

For More Information

Contact Lynn de Freitas
801 583 5593, 801 582 1496
or ldefreitas@earthlink.net

Forum Sponsors

Kennecott Utah Copper Corporation, Laird Norton Family Fund, John Milliken, The Nature Conservancy of Utah, SWCA Environmental Consultants, Inc., Utah Society for Environmental Education, Utah Wetlands Foundation.

Featured Speakers

- ◆ Charles F. Wilkinson, Moses Lasky Professor of Law and Distinguished University Professor at the University of Colorado (keynote speaker)
- ◆ Bob Adler, Professor of Law
University of Utah College of Law
- ◆ Genevieve Atwood, Chief Education Officer
Earth Science Education
- ◆ Ralph Becker, State Legislator
Principal Planner Bear West
- ◆ Gene Carr, Community Development Advisor
University of Utah Adjunct Professor of Urban Planning
- ◆ Jim Corven, Manomet Center for Conservation Sciences
Western Hemispheric Shorebird Reserve Network (WHSRN)
- ◆ Cameron Davis, Executive Director
Lake Michigan Federation
- ◆ Joan Degiorgio, Planning Manager
Utah Reclamation Mitigation and Conservation Commission (URMCC)
- ◆ Art DuFault, State Forester/Director
Division of Forestry, Fire, and State Lands
Department of Natural Resources
- ◆ Mike Hirshfield, Vice President Resource Protection
Chesapeake Bay Foundation
- ◆ David Krosting, BLM Field Office Manager
Salmon Field Office, Salmon, Idaho
- ◆ Joel Peterson, Layton Wetlands Preserve Manager
The Nature Conservancy of Utah
- ◆ Stephen Trimble, Writer, Editor and Photographer



Agenda

Check our website for the final program listing:
www.fogsl.org

Friday February 25, 2000

Raising Consciousness About Great Salt Lake

(poster session 12:30-6:30)

12:30 Registration

1:00 Opening Remarks and Welcome - Friends of Great Salt Lake

Why Comprehensive Watershed-Based Restoration and Protection? - Bob Adler

The Great Salt Lake Watershed - Genevieve Atwood

The Great Salt Lake Planning Document - Art DuFault
Break

The Nature Conservancy of Utah Landscape Scale and Planning Methodology/Analysis and Strategies for Great Salt Lake - Joel Peterson

Great Salt Lake As a Western Hemispheric Shorebird Reserve Network Site - Jim Corven

5:30 Reception: Cash Bar

6:30 Dinner Banquet and Keynote Address - Charles F. Wilkinson

Saturday February 26, 2000

Collaborative Watershed Groups / Lessons Learned / Catalysts to Move Forward

(poster session 8:30-3:00)

7:30 Registration/Continental Breakfast

8:00 Summary and Highlights of Friday's Program - Stephen Trimble

Learning by Example: Collaborative Watershed Planning Salmon/Lemhi Resource Area (Idaho) - David Krosting
Break

Chesapeake Bay Foundation - Mike Hirshfield

Lake Michigan Federation - Cameron Davis

12:15 Lunch - Hawkwatch International Presentation

1:15 Identifying Issues/Concerns/Actions to Move Forward - Facilitated Break Out Groups
Break

Defining the Charge and Carrying It Forward

4:00 Catalysts: Moving From the Idea to the Reality (moderated panel) - Ralph Becker, Gene Carr, Joan Degiorgio

5:00 Wrap Up

Property Acquisition Expands the Layton Wetlands Preserve

The Nature Conservancy of Utah recently completed a complicated transaction and acquired the Hill Property between Layton and Kaysville on the eastern shore of the Great Salt Lake. The total project included three, smaller adjacent parcels which make the total acquisition about 524 acres. In dollar terms, this multi-staged transaction constitutes the second largest ever completed by the Conservancy in Utah.

This was made possible by a unique partnership between The Nature Conservancy, public agencies and numerous contributors. Prominent among these have been: The Utah Reclamation Mitigation and Conservation Commission, The North American Wetlands Conservation Act, as administered by Ducks Unlimited, and Davis County. In addition, generous private gifts and pledges have been received from numerous individual, corporate and foundation supporters including:

The Ezekiel R. & Edna Wattis Dumke Foundation
The Katherine W. & Ezekiel R. Dumke Jr. Foundation
The S.J. & Jessie E. Quinney Foundation
The Lawrence T. & Janet T. Dee Foundation
The Willard L. Eccles Charitable Foundation
The Four Daughters Foundation

The Janet Q. Lawson Foundation
The Cumming Foundation
The La Famiglia Foundation
The Utah Wetlands Foundation
The National Fish & Wildlife Foundation

The Hill Property is significant as a large and strategically located parcel which will help preserve nearly 12 contiguous shoreline miles of protected wetland and upland habitat at the Layton Wetlands Preserve. (The Conservancy and its conservation partners have been working to protect critical wildlife habitat in this area for over 15 years.) In addition, Kays Creek, which runs through the heart of the Hill Property, provides a vital riparian habitat and water source for the Kays Creek delta in Farmington Bay.



Great Salt Lake Student Survey and Results

Each year, students in Professor Kris Koford's undergraduate communications class at the University of Utah participate in community service projects during the semester. This semester, several student volunteers contacted Friends of Great Salt Lake and selected assignments with the help of Board members and Bruce Thompson, Education Director. Two students, Landon Hall and Melody Entrikin decided to conduct a simple survey of attitudes, preferences, and knowledge about the Lake. The following is their report.

Introduction

When it comes to the Great Salt Lake, it seems as though people on the Wasatch Front don't know as much as they probably should. We were surprised time after time at the percentage of people who knew nothing about the issues that were presented in this survey. This report describes the survey and results.

The Survey

The survey was proposed as a project that would assess knowledge of the general public as well as informing them about the issues surrounding Great Salt Lake. Hopefully the information received from the results of the survey will help Friends of Great Salt Lake in their mission.

We began the survey project by meeting several times with Kathlyn Collins, a Friends of Great Salt Lake board member. The first obstacle was the questions themselves. This proved to be harder than it sounds. We did not want any of the questions to seem biased or persuasive. Overall, we think the finalized questions were a success.

We made copies of the survey and administered it to 241 participants between November 29 and December 6, 1999. The majority of the survey was conducted at the two malls in downtown

Salt Lake City. A small sampling of the surveys were given at a light rail stop near the malls.

The Results

Each part of the survey dealt with a specific idea. The following is a description of each segment and results.

The first three questions were used to discover how people might make use of the Lake.

Question 1: Have you ever visited Great Salt Lake?

Results: 153 responded yes and 88 responded no.

Question 2: When did you last visit?

Results: Of those that responded "yes" to question 1, 49% visited within the last year, 24% visited within the last five years, and 27% visited over five years ago.

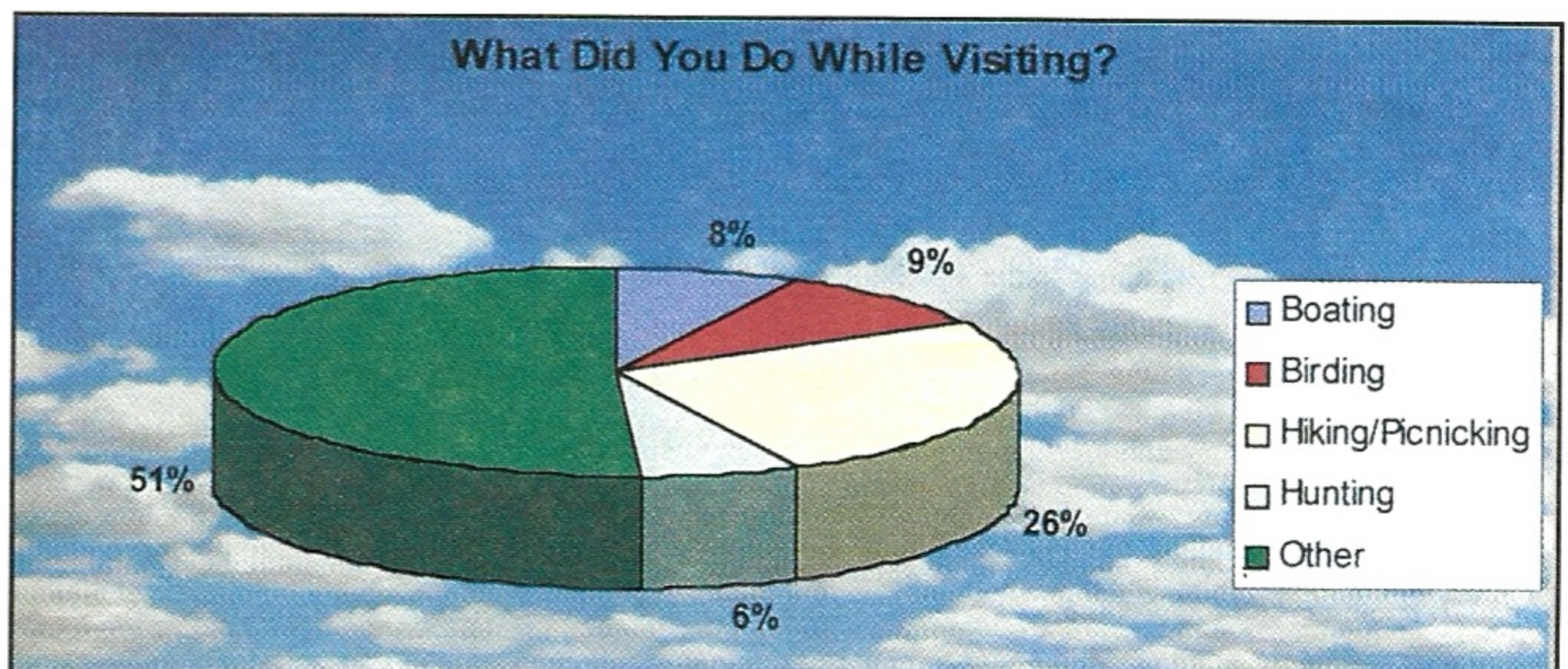
Question 3: What did you do while visiting?

Results: See Graph 1. Several participants responded to more than one activity listed.

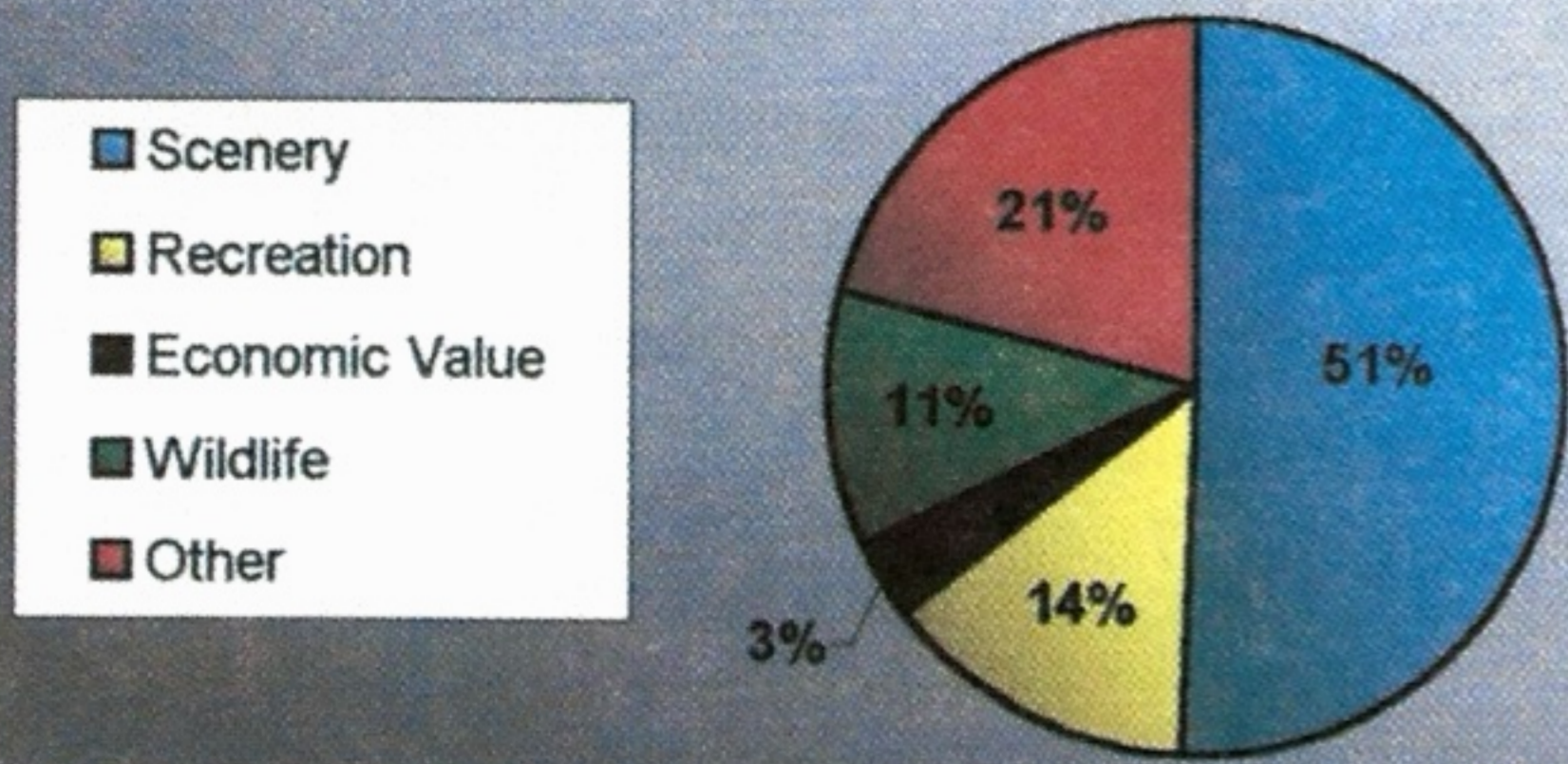
Next, the survey addresses the knowledge and opinions of the Lake itself.

Question 4: What do you consider the best feature of the Lake?

Results: See Graph 2. Several participants responded to more than one category.

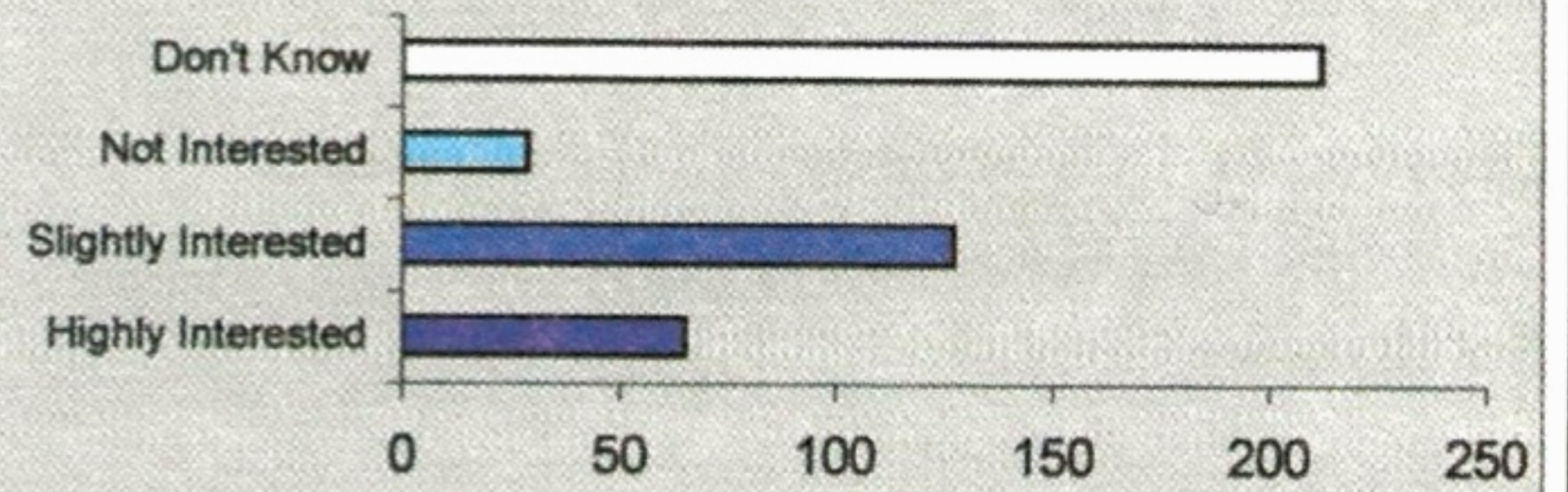


What Do You Consider the Best Feature of the Lake?



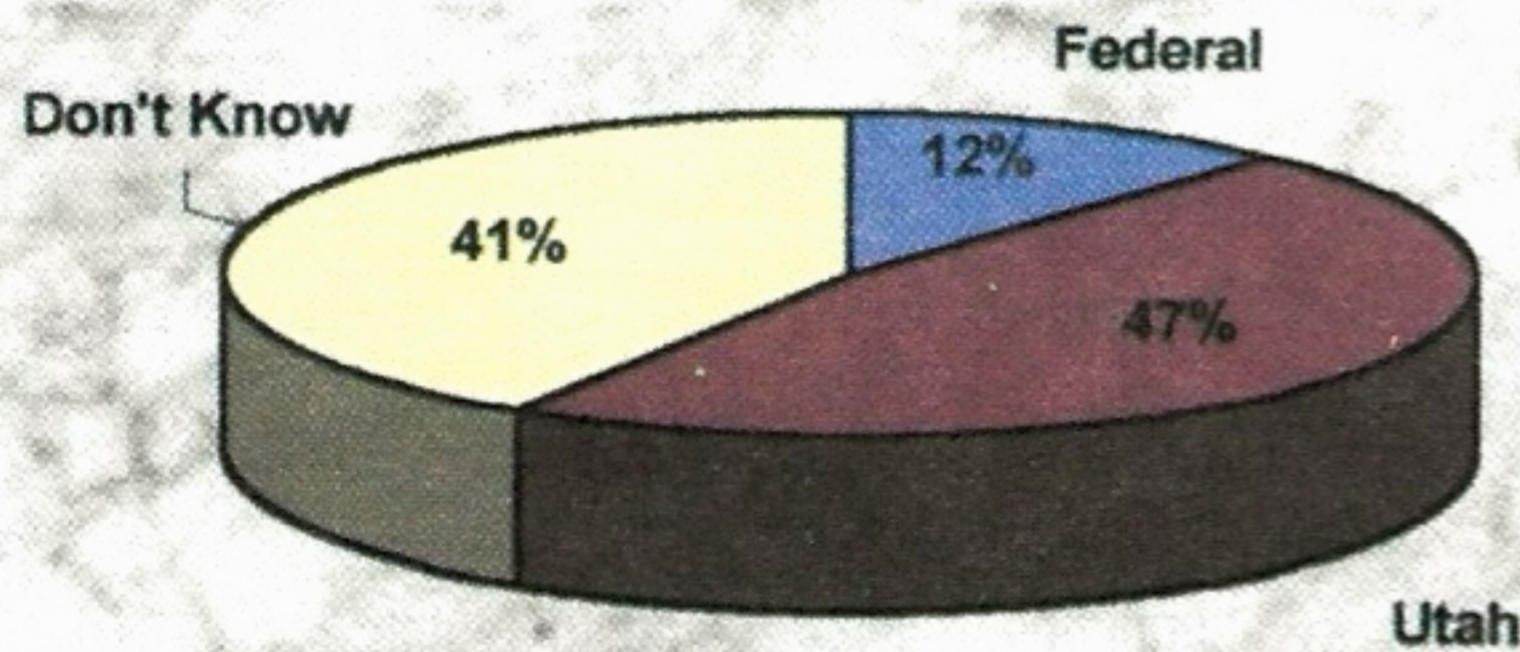
Graph 2

If there was an education center built on the south shore of the Great Salt Lake 15 Minutes From Downtown, How Interested Would You Be In Visiting It?



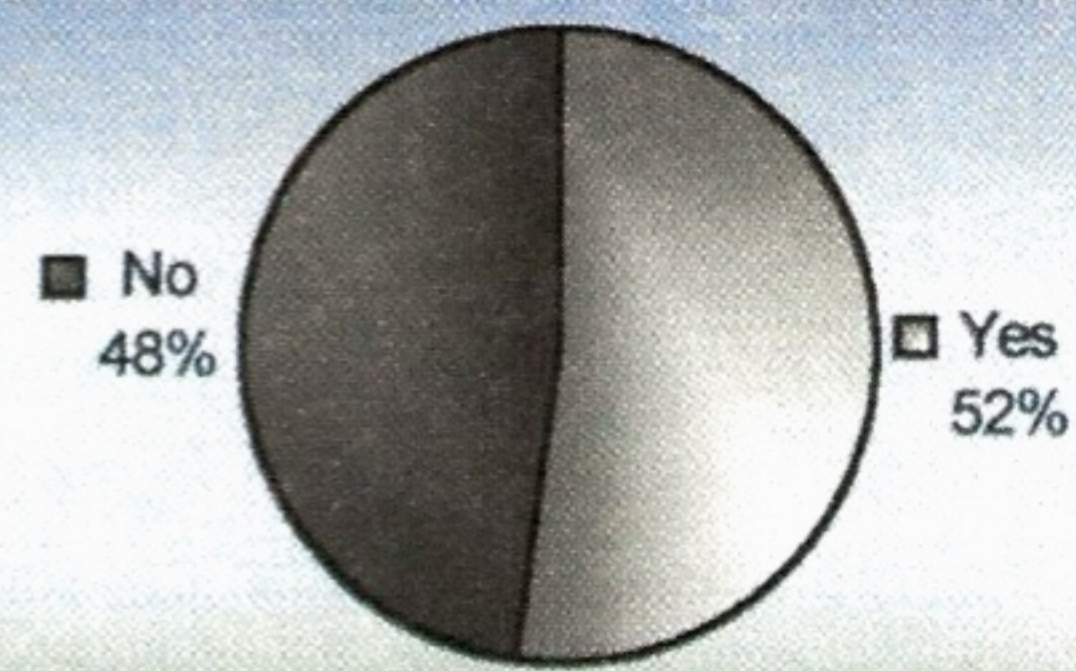
Graph 6

Who Manages the Great Salt Lake as a Public Resource?



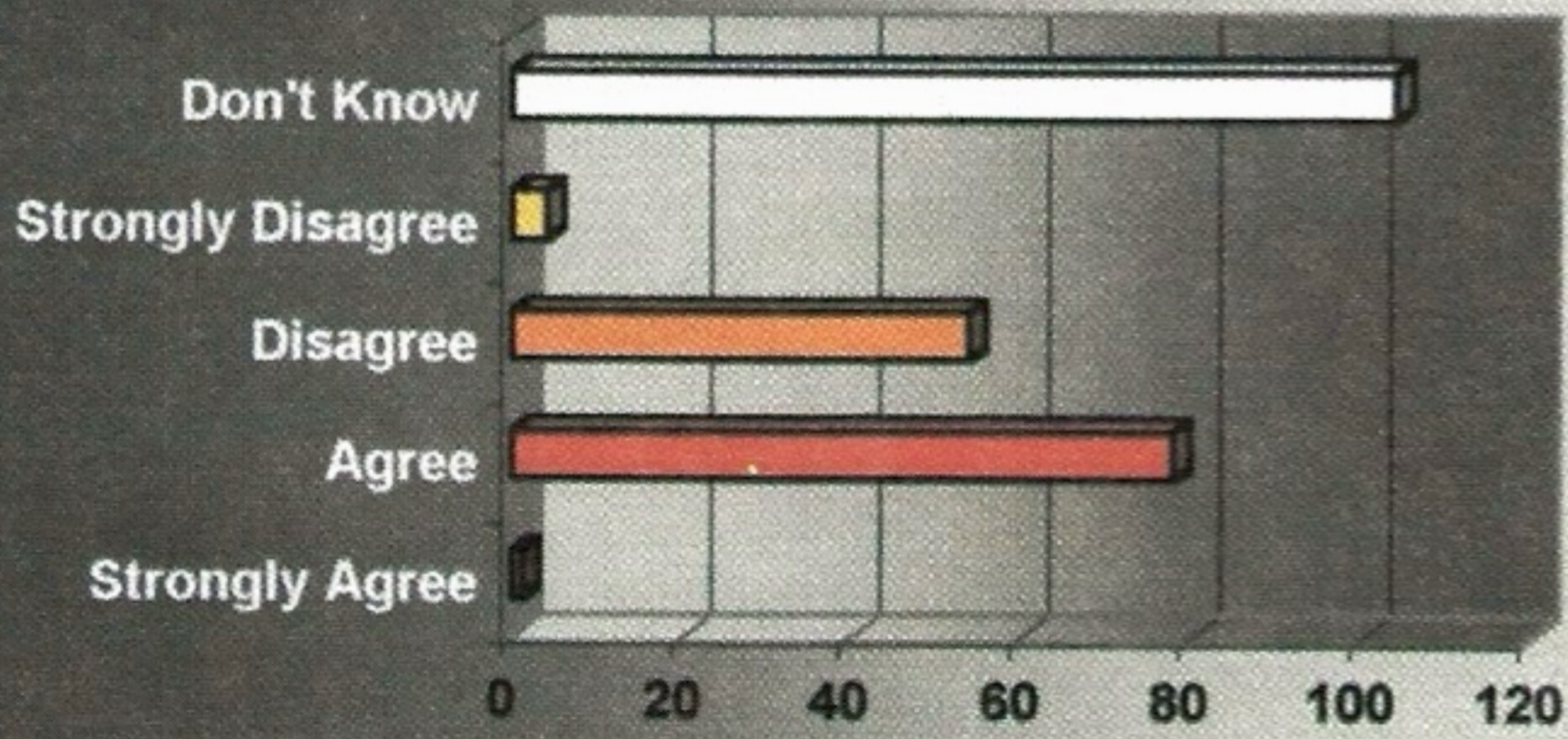
Graph 3

Have You Heard About the Legacy Highway Issue Concerning the Great Salt Lake?



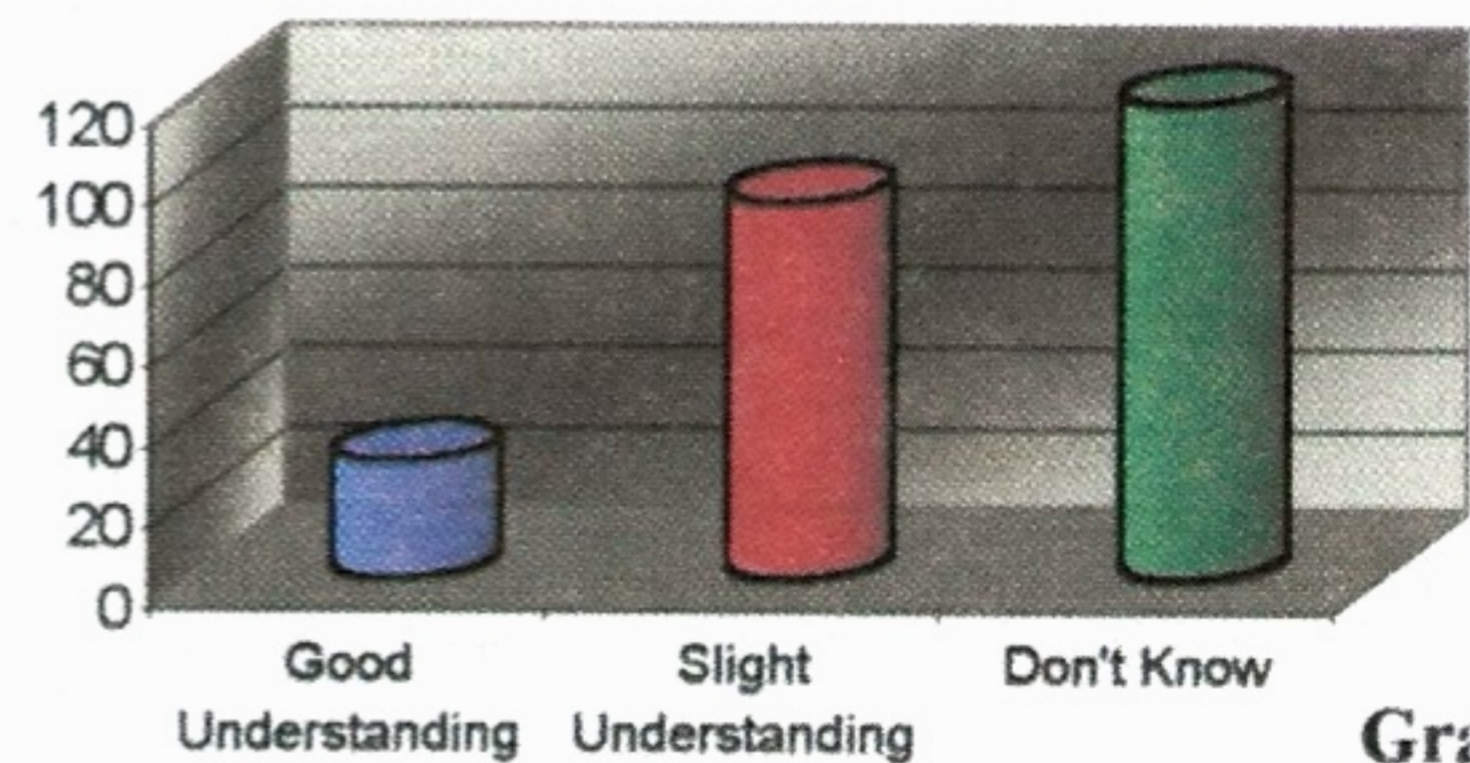
Graph 7

The Great Salt Lake Is Adequately Governed.



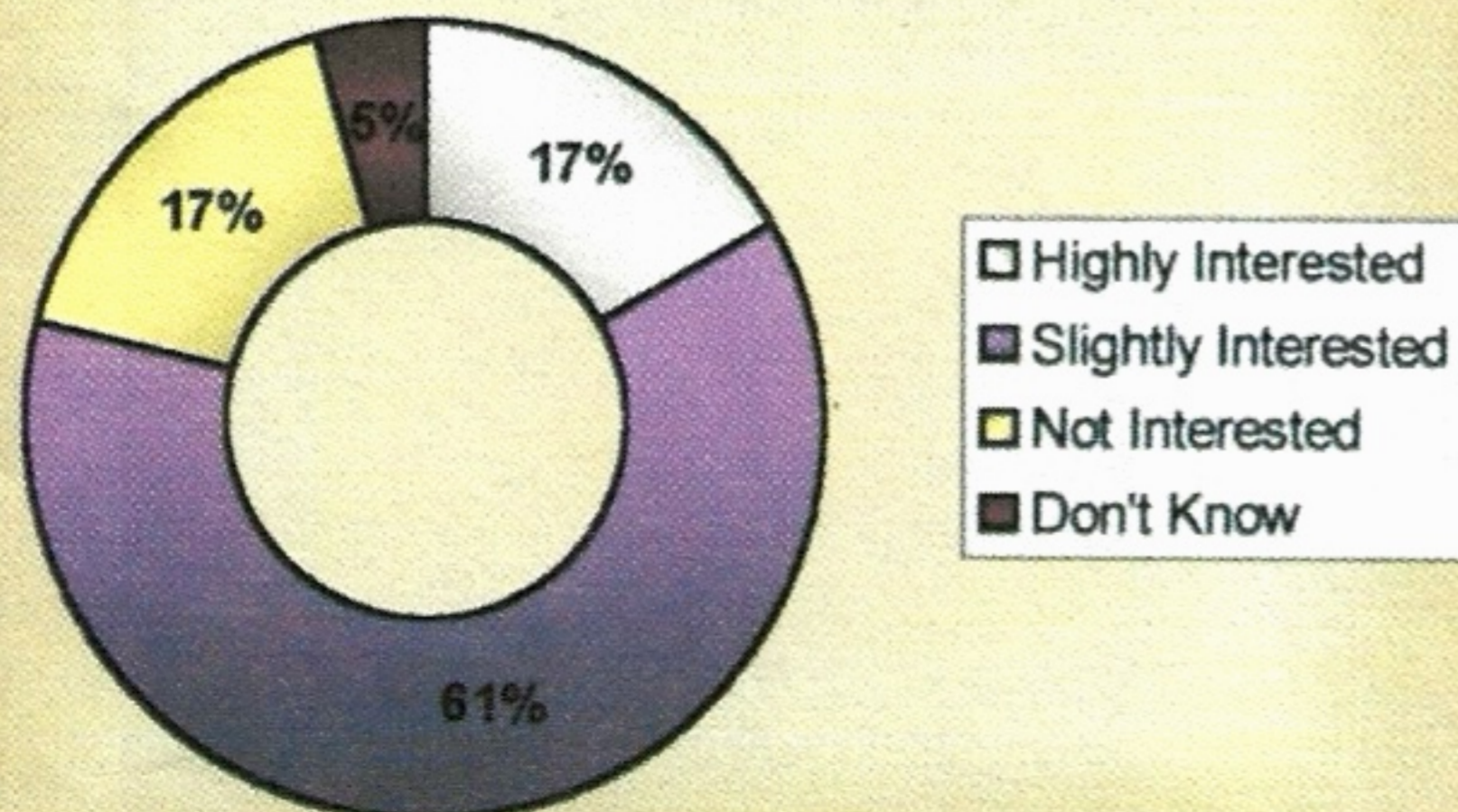
Graph 4

What is Your Understanding of the Potential Impacts to the Great Salt Lake Wetlands Associated With the Building of the Legacy Highway?



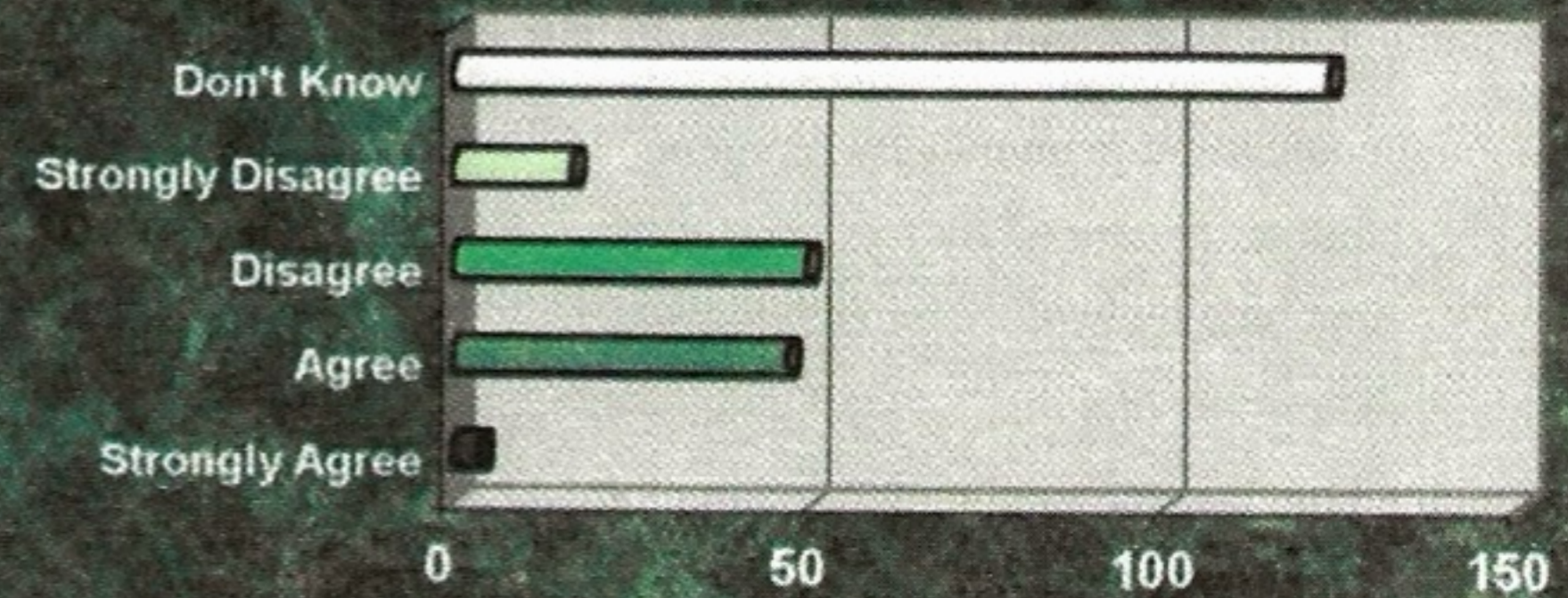
Graph 8

How Interested Are You In Learning More About Great Salt Lake?



Graph 5

The growth projections for northern Utah have brought up transportation needs. Out of the possible alternative solutions available, do you feel the best solution available is the current Legacy Highway proposal?



Graph 9

Question 5: Who manages Great Salt Lake as a public resource?

Results: See Graph 3.

Question 6: Do you agree with the statement: Great Salt Lake is adequately governed?

Results: See Graph 4.

We were thrilled to learn that Friends of Great Salt Lake is interested in building an education center near the Lake. This survey was used to find out what interest level the public might have in learning more about the Lake.

Question 7: How interested are you in learning more about Great Salt Lake?

Results: See Graph 5.

Question 8: If there was an education center built on the south shore of Great Salt Lake, 15 minutes from downtown, how interested would you be in visiting the center?

Results: See Graph 6.

The last three questions were in reference to a current issue concerning the Lake and outside influences affecting it. This issue was the Legacy Highway that has

the potential of being built through some of the precious wetlands. We wanted to determine the understanding of this issue and then discover how people felt about it.

Question 9: Have you heard about the Legacy Highway issue concerning Great Salt Lake?

Results: See Graph 7.

Question 10: What is your understanding of the potential impacts of Great Salt Lake wetlands associated with the building of the Legacy Highway?

Results: See Graph 8.

Question 11: The growth projections for northern Utah have brought up transportation needs. Out of the possible alternative solutions available, do you feel the best solution is the current Legacy Highway proposal?

Results: See Graph 9.

Conclusion

By asking these various questions we were able to find out some interesting and hopefully useful results. We sincerely had fun with this survey and hope that this opportunity might be given to future writing classes.

Saltz-gesprungen is the German word for 'sprung out by salt'. According to Friends of Great Salt Lake's science advisor, Genevieve Atwood, the wood of the post acts like a wick and water evaporates while the salt remains and crystalizes, expanding the wood. It is a form of salt weathering. "The breakdown ... is caused primarily by physical changes produced by salt crystallization, salt hydration, or the thermal expansion of salts."
(The Encyclopedic Dictionary of Physical Geology.)
Photo by: Anna Weller.



Kennecott Utah Copper Corporation's Permitted Discharge to the Great Salt Lake

By Jon Cherry

Located on the southern shore of the Great Salt Lake, Kennecott Utah Copper Corporation is one of the nation's largest copper producers (over 300,000 tons per year). Copper ore containing less than 0.5 percent copper is blasted from the ore body at the Bingham Canyon mine, excavated and transported to one of two concentrators located near Copperton or Magna. At the concentrators, the copper ore is mixed with water and ground into a fine slurry where reagents are added to separate the copper, gold and silver from the host rock. The copper, gold and silver along with sulfur and iron are slurried in a concentrate to the smelter where the iron and sulfur are removed in a pyrometallurgical process to form a copper anode that is approximately 98 percent pure. The anodes are electrolytically refined at the refinery where a 99.99 percent pure copper cathode is produced as Kennecott's final product.

The ground up rock from which the copper, gold and silver has been removed is an environmentally benign material called tailings that resemble fine sand. These tailings remain in a slurry for transport through a pipeline from the concentrators to the tailings impoundment where the solids settle out and the water is recovered and recycled back to the concentrators. A schematic of this process is shown in Figure 1.

During the late fall and winter months precipitation exceeds evaporation. This requires Kennecott to discharge excess water that it cannot recycle in its process water system from its tailings impoundment. Excess water is discharged through Utah Pollutant Discharge Elimination System (UPDES) permitted discharge points 001, 002, 007 and 008 (Figure 2). Outfalls 001, 002 and 007 discharge to the C7 (Ritter) canal that flows into Lee Creek and then the Great Salt Lake. Outfall 008 discharges unused supply water for the smelter, surface water and local springs to the Great Salt Lake via the West C7 ditch. Kennecott's UPDES permit limits the concentration of contaminants that can be discharged. Although selenium is not currently included in permit, the U.S. Army Corps of Engineers imposed a 0.20 mg/L selenium limit on the 008 outfall and a 0.012 mg/L limit on Lee Creek until new selenium limits are incorporated into the UPDES permit that will be renewed in February 2000. Kennecott is continually trying to minimize the volume of water discharged from the

tailings impoundment. However, Kennecott does not currently have sufficient storage capacity to recycle 100 percent of the precipitation that enters the process from late fall through spring. From spring to late fall, Kennecott normally does not discharge any water from the tailings impoundment which happens to coincide with the breeding season of many of the sensitive shorebirds.

As a result of expanding the tailings impoundment, several former Morton Salt evaporation ponds were incorporated into the tailings impoundment. This resulted in increased Total Dissolved Solids (TDS) concentrations in Kennecott's process water system that would be toxic to salt sensitive species if the water were discharged to a fresh water system like Lee Creek. Because the organisms that live in the Great Salt Lake are tolerant of high salt concentrations, it was determined that combining Kennecott's discharges into a single discharge directly to the lake would be the most environmentally sound approach.

In August 1999, Kennecott submitted an application to the Utah Department of Environmental Quality (UDEQ) to modify UPDES permit number UT0000051. The proposed modification requests a new outfall, 012, that discharges directly to the Great Salt Lake through a pipeline. The purposes of the modification are to discharge saline process water directly to the Great Salt Lake and manage a single discharge point rather than multiple discharge points. The modification will minimize the sampling, analysis and reporting that is required for each discharge point. Outfall 012 will be the primary discharge point for water discharged from the tailings impoundments. The water will be conveyed to the Great Salt Lake through a buried 60-inch concrete pipeline that will extend into the lake a few hundred feet depending on the water level of the lake. A chemical comparison of Kennecott's process water to the southern Great Salt Lake is shown in the table below. Neither the quantity nor quality of Kennecott's discharge water will change as a result of the new outfall configuration. Pollutant concentration limits set by UDEQ in the permit remain unchanged. The permit modification went to public comment on September 9, 1999. Approval of the permit modification by UDEQ is pending.



The UPDES permit will be renewed in February 2000 and will include a new selenium limit. Over the past few years, Kennecott has conducted several studies to identify ecological risks to the Great Salt Lake from Kennecott facilities. These ecological risk assessments identified selenium as a potential risk to shorebirds that eat brine shrimp that have bioaccumulated excess selenium. In 1999, Kennecott spent \$250,000 to determine the toxicity of selenium to brine shrimp and the birds that eat brine shrimp. Results of the studies indicate that a selenium concentration of 0.027 mg/L in the Great Salt Lake would be protective of both the shrimp and the birds that eat the shrimp. This selenium concentration has been proposed for the UPDES permit in February 2000 and represents an order of magnitude decrease from the 0.20 mg/L limit required by the U.S. Army Corps of Engineers.

The revised permit will likely be submitted for public comment by UDEQ in January 2000.

Kennecott will provide a brief 30 minute presentation regarding their permitted discharges to the Great Salt Lake at the February FOGSL meeting.

Contact Information:

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Comparison of Kennecott's Process Water to Southern Great Salt Lake Water

Analyte	Water (total) ²	Near Saltair (total) ³
Arsenic	<0.004	0.085
Cadmium	0.002	NA ¹
Copper	0.03	0.25
Cyanide	0.005	NA
Iron	0.439	NA
Lead	<0.005	<0.005
Mercury	<0.0002	NA
Nickel	0.053	0.014
Zinc	0.086	0.028
Selenium	0.015	<0.002
Total Dissolved Solids (TDS)	13100	78500 ⁴
Total Suspended Solids (TSS)	17	74

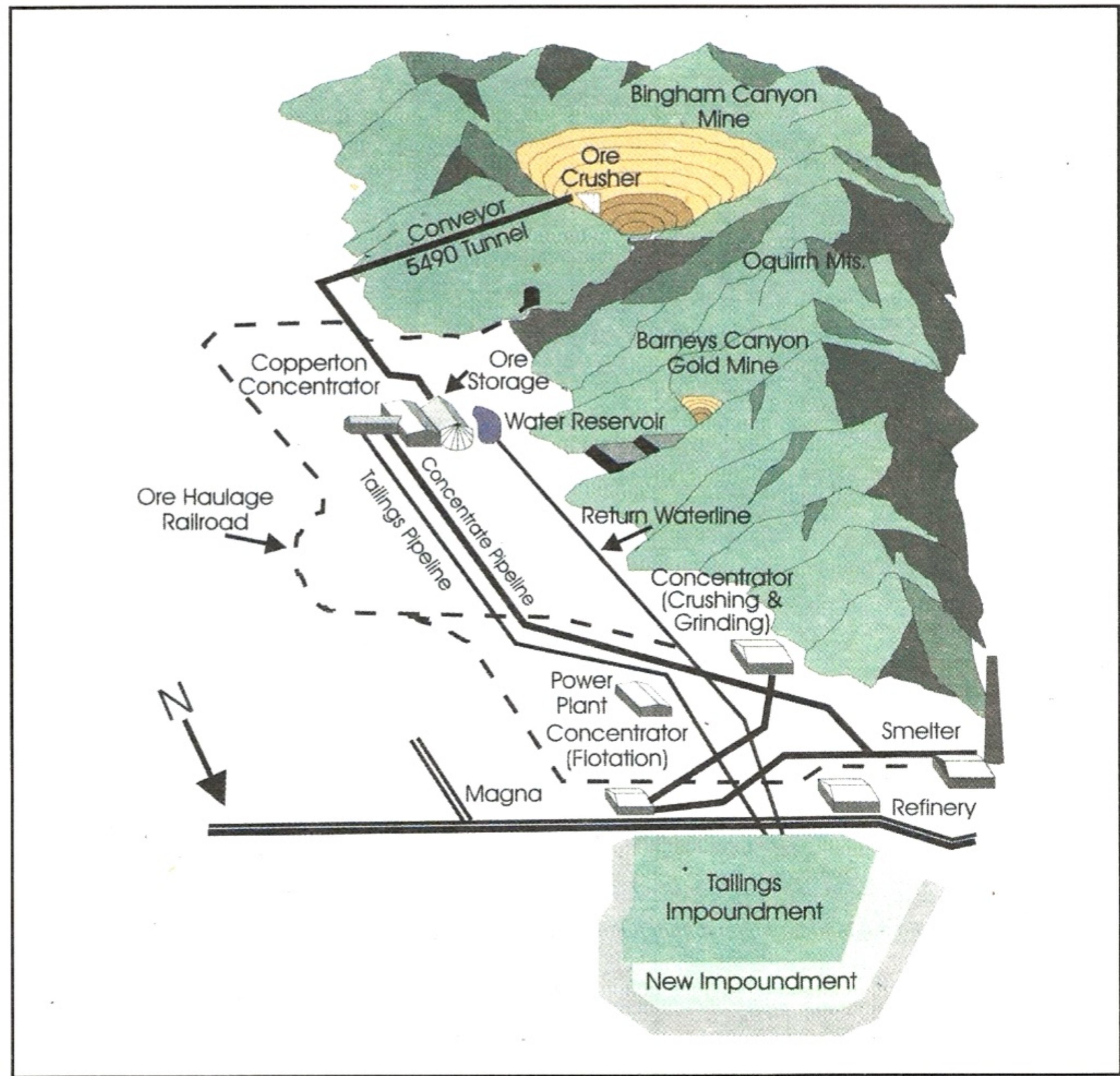
¹NA - not analyzed

²Sample collected from tailings impoundment decant, 11/17/99, represents water to be discharged.

³Sample collected from Great Salt Lake near Saltair, 4/30/98.

⁴Sample collected from Great Salt Lake near Saltair, 9/8/99, TDS concentrations in southern part of lake range from 75,000 to 150,000.





HOW TO REACH US

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RECYCLE ALUMINUM CANS FOR FRIENDS (please note new drop-off location)

Please consider donating aluminum cans to Friends. Can donations will be accepted at 1170 East Warnock Ave (2490 South). All proceeds will go to the FOGSL general fund. Cans must be contained in plastic garbage bags. If you have cans to donate, but can't transport them, please call Lindsey and arrangements will be made for pick-up. If you don't recycle aluminum, please consider starting!! This will greatly benefit Friends. Volunteers are needed for accepting aluminum cans in your neighborhood and/or taking cans to the recycling center.

Questions, please call **Lindsey** at 801/485-7307.

SUBMITTING MATERIAL FOR PUBLICATION

1. **What to submit:** original articles (historical, geological, geographical, biographical, political, fiction, poetry, etc.) or art work (sketches, photographs, etc.) which pertain to Great Salt Lake.
2. **Submitting material:** Mail or deliver to 1117 E. 600 S. Salt Lake City, UT 84102. Or e-mail to: ldefreitas@earthlink.net
3. **Please call 801/583-5593** to confirm receipt of e-mail or with any other questions, suggestions, comments, or ideas.
4. **Deadlines:** The deadlines for submittals are Sept. 16 (Fall), Dec. 16 (Winter), Mar. 16 (Spring), and June 16 (Summer).

Friends of Great Salt Lake wants to thank the following businesses for their generous support: **Xmission.com** for donation of services to support us on the World Wide Web and **Kinko's University Branch**, **Graphic Images**, and **Tooele Transcript Bulletin** for supporting our printing needs.



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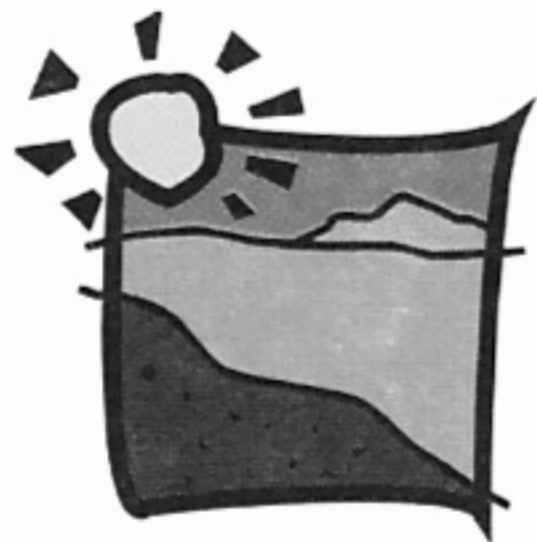
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Yes! I want to join **FRIENDS of Great Salt Lake**

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