

# Study Questions

## for *The Lake Affect* presentation

### A. GREAT SALT LAKE FEATURES

1. What causes the size of Great Salt Lake to change over the years?
2. What causes the size of Great Salt Lake to change from season to season in the same year?
3. Where do the salt and other minerals in Great Salt Lake come from?
4. What are at least three major sources of water for Great Salt Lake?
5. Great Salt Lake is a type of “terminal lake.” What does that mean?
6. What causes the salinity in Great Salt Lake to differ in places around the lake?
7. What is a way that Great Salt Lake affects regional weather?
8. What happened to Great Salt Lake that causes the salinity to be different between the north and the south parts?
9. What do miners use to get minerals out of Great Salt Lake?
10. Why do different companies want to collect brine shrimp eggs from the lake each year? What are the eggs used for?
11. Why are some islands at Great Salt Lake so important?
12. What causes the smell we sometimes notice at Great Salt Lake?
13. List five ways that people benefit from Great Salt Lake.
14. What makes Great Salt Lake so special for living things?
15. What is a major problem facing Great Salt Lake today?

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SCORING : 14–15 correct	You are practically a Great Salt Lake genius! A true friend to the Great Salt Lake Ecosystem.
12–13 correct	You are on your way to becoming an expert. You could be a guide!
10–11 correct	Good try, but those brine shrimp are a little worried about you.
6–9 correct	Well, maybe you weren't paying attention.
3–5 correct	Our lake is in trouble!
0–2 correct	You're all wet.

## Study Questions (with answers) for *The Lake Affect* presentation

### A. GREAT SALT LAKE FEATURES

1. What causes the size of Great Salt Lake to change over the years?  
*Variations in climate & weather (rainfall, snowfall, sunlight, temperatures, etc.)*
2. What causes the size of Great Salt Lake to change from season to season in the same year?  
*Seasonal changes in sunshine, precipitation, temperature and runoff affect both inflow and evaporation rates.*
3. Where do the salt and other minerals in Great Salt Lake come from?  
*From eroding rocks and soils in the land surrounding Great Salt Lake, transported by rivers and streams of the Great Salt Lake Watershed.*
4. What are at least three major sources of water for Great Salt Lake?  
*Bear River, Weber River, Jordan River and direct precipitation. Minor sources are various other streams and springs.*
5. Great Salt Lake is a type of “terminal lake.” What does that mean?  
*It has no outlet—water can only leave through evaporation.*
6. What causes the salinity in Great Salt Lake to differ in places around the lake?  
*The effects of dilution that occur where springs and streams enter.*
7. What is a way that Great Salt Lake affects regional weather?  
*It contributes huge amounts of moisture to passing storms, and the warm water of the lake modifies the local climate, such as by causing spring conditions to come to the eastern shores as much as three weeks earlier than places much farther south of the lake.*
8. What happened to Great Salt Lake that causes the salinity to be different between the north and the south parts?  
*A rockfill causeway was constructed as a railroad shortcut across the lake’s midsection in 1959, which now prevents most water entering the lake from reaching the northern section (Gunnison Bay).*
9. What do miners use to get minerals out of Great Salt Lake?  
*Evaporation ponds plus solar energy, which evaporate water away and leave minerals behind.*

## Study Questions

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### B. LIFE AT GREAT SALT LAKE

1. What is one kind of special place for wildlife at Great Salt Lake?
2. Give three reasons for Great Salt Lake being referred to as a “bird magnet.”
3. Give an example of an adaptation that allows some plants to grow in salty soils that would kill most other plants.
4. What is it about parts of the lake that allows so many different fish to live there?
5. Approximately how many years ago did people first live around Great Salt Lake?
6. What two tiny animals are Great Salt Lake’s biggest “heroes”?
7. What does each of Great Salt Lake’s “heroes” do that is so important to the lake?
8. Explain how Great Salt Lake would be different without its brine flies.
9. What are some possible reasons that the number of brine shrimp in the lake changes from one year to the next?
10. What are two things that would happen if brine shrimp were to disappear from Great Salt Lake?
11. What is a major difference between Great Salt Lake brine shrimp found in the spring and those found in mid-summer?
12. Why do pelicans continue to live and nest in the middle of Great Salt Lake, when it means they have to travel up to a hundred miles a day to go find fish?
13. Name a reptile, a mammal and two birds that need Great Salt Lake.
14. Why should people care about Great Salt Lake?
15. List three ways that you and other people can help to keep Great Salt Lake healthy.

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SCORING : 14–15 correct	You are practically a Great Salt Lake genius! A true friend to the Great Salt Lake Ecosystem.
12–13 correct	You are on your way to becoming an expert. You could be a guide!
10–11 correct	Good try, but those brine shrimp are a little worried about you.
6–9 correct	Well, maybe you weren’t paying attention.
3–5 correct	Our lake is in trouble!
0–2 correct	You’re all wet.

## Study Questions (with answers)

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### B. LIFE AT GREAT SALT LAKE

1. What is one kind of special place for wildlife at Great Salt Lake?  
*Wetlands, Islands, Upland zones of grasses and shrubs, and Salt flats and playas each provide unique habitats for many bird, mammal, fish and insect species. Of these, wetlands are perhaps the most critical because of their rarity in Utah and the millions of birds that depend on them.*
2. Give three reasons for Great Salt Lake being referred to as a “bird magnet.”  
*Possible responses include the lake’s (a) location along a major bird migration flyway, (b) huge size, (c) safety from disturbance, (d) excellent nesting sites, and (e) abundant food.*
3. Give an example of an adaptation that allows some plants to grow in salty soils that would kill most other plants.  
*Two key adaptive strategies are (a) salt storage, such as within spongy, succulent tissue or in leaves that fall off and are replaced; and (b) salt removal, by excretion to the outside through special glands.*
4. What is it about parts of the lake that allows so many different fish to live there?  
*The salinity of the lake is reduced to the tolerance level of fish (generally less than 4%), where freshwater enters the lake, such as where there are streams or springs entering.*
5. Approximately how many years ago did people first live around Great Salt Lake?  
*Evidence has been found that Desert Archaic People resided on the lake’s shores at least 12,000 years ago.*
6. What two tiny animals are Great Salt Lake’s biggest “heroes”?  
*Brine shrimp and brine flies.*
7. What does each of Great Salt Lake’s “heroes” do that is so important to the lake?  
*Both species provide abundant and critical food for animals of all kinds, most notably migratory birds. Brine shrimp also support our local economy and worldwide aquaculture, and brine flies consume organic waste in the lake and control algal growth.*
8. Explain how Great Salt Lake would be different without its brine flies.  
*Brine flies keep the lake healthy by consuming huge amounts of algae and other materials, and they are themselves food for millions of birds and other animals. Without them the lake would be far less productive, and its food resources would be drastically reduced.*
9. What are some possible reasons that the number of brine shrimp in the lake changes from one year to the next?  
*A combination of impacts might affect brine shrimp health from year to year, including availability of the algae the shrimp require for food; lake salinity (which impacts algae and the presence of corixid beetles, a predator); weather conditions (which can influence the previous*

*two conditions); pollution (about which little is presently known); and over-harvesting (about which little is known).*

10. What are two things that would happen if brine shrimp were to disappear from Great Salt Lake?

*Correct responses include: (a) a major food source for wildlife would be gone; (b) the effect that shrimp have on helping to control algal growth would be gone; and (c) two major industries would suffer (cyst harvesting and aquaculture).*

11. What is a major difference between Great Salt Lake brine shrimp found in the spring and those found in mid-summer?

*Most brine shrimp found early in the season have hatched from overwintering eggs; most found during the summer were born alive.*

12. Why do pelicans continue to live and nest in the middle of Great Salt Lake, when it means they have to travel up to a hundred miles a day to go find fish?

*It seems to be worth the effort: the uncommon safety of Great Salt Lake evidently outweighs the cost of travel.*

13. Name a reptile, a mammal and two birds that need Great Salt Lake.

*Reptiles mentioned in the video include lizards, snakes and turtles; Mammals include bison, pronghorn, coyote, fox, weasel, badger and Great Basin pocket mouse; Birds include the American avocet, Wilson's phalarope, red-necked phalarope, eared grebe, black-necked stilt, snowy plover, white-faced ibis, California gull, white pelican and northern pintail ducks. Many other species reside at Great Salt Lake and could be named.*

14. Why should people care about Great Salt Lake?

*Many responses would be appropriate, and may be economic, ecological, scientific, educational, recreational, patriotic, aesthetic or humane in nature.*

15. List three ways that you and other people can help to keep Great Salt Lake healthy.

*Many responses are possible, such as educating others about the importance of the Great Salt Lake Ecosystem, staying informed about Great Salt Lake topics through the news media, taking family and friends to visit and enjoy the lake, or joining and working on volunteer projects with organizations that focus on the lake.*

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10. Why do different companies want to collect brine shrimp eggs from the lake each year? What are the eggs used for?  
*The brine shrimp eggs (or cysts) are dried, canned and sold worldwide for feeding fish and prawns for human consumption.*
11. Why are some islands at Great Salt Lake so important?  
*Because they are isolated from most predators, they offer critical safety to thousands of birds for feeding, nesting and raising young.*
12. What causes the smell we sometimes notice at Great Salt Lake?  
*Hydrogen sulfide—rotten egg gas—during the decomposition of dead plants and animals by bacteria and other decomposers as they transform these materials back into soil.*
13. List five ways that people benefit from Great Salt Lake.  
*Benefits include various jobs in tourism and industry; minerals from mining; brine shrimp eggs for worldwide aquaculture; recreation such as hunting, boating, swimming and photography; solitude and open space; educational opportunities; scientific research.*
14. What makes Great Salt Lake so special for living things?  
*It offers vast expanses of a variety of habitats, with abundant food, safe shelter and space.*
15. What is a major problem facing Great Salt Lake today?  
*Among the major challenges facing Great Salt Lake are loss of habitat, especially wetlands; construction of causeways and dikes, which restrict flow of water and nutrients and increase various forms of disturbance and predation; and a lack of knowledge—ignorance—among human residents surrounding the lake, which inhibits people's ability to make informed decisions that affect it.*

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