IN THE

Supreme Court of the United States

No. 31, Original.

October Term, 1967.

STATE OF UTAH,

Plaintiff,

v.

UNITED STATES OF AMERICA,

Defendant.

REPORT OF SPECIAL MASTER.

J. CULLEN GANEY,
Senior Circuit Judge,
Special Master.

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To the Chief Justice and Associate Justices of the Supreme Court of the United States.

Pursuant to the authorization given me in the Per Curiam Opinion of March 3, 1969, 394 U. S. 89, 96, to proceed to the merits in this original action, your Special Master submits the following recommendations based on suggested findings of facts and conclusions of law.

I.

SUMMARY OF RECOMMENDATIONS.

1. Great Salt Lake on the date of the State of Utah's admission into the Union be found to have been navigable under the laws of the United States;

2. The State of Utah be granted a decree by the Court quieting the right, title and interest to the bed of Great Salt Lake in itself as against the United States;

3. A decree be issued by the Court declaring that the State of Utah is not required to pay the United States for the land covered by Great Salt Lake as of January 4, 1896;

4. The request of the United States for a decree quieting the right, title and interest to the bed of Great Salt Lake in itself as against the State of Utah be denied, and

5. The Court adopt the decree proposed by the Special Master or require the parties to submit a decree which in form is acceptable to them.

II.

PREFACE.

Pursuant to an Act authorizing the conveyance of certain lands, Public Law 89-441, 80 Stat. 192, as amended 80 Stat. 349, the United States has given the State of Utah a quitclaim deed conveying all title and interests which the former might have, with some exceptions not relevant here, to land within a surveyed meander line of the Great Salt Lake at a price to be determined if the Court should decide that the former owned the land conveyed; on the other hand, if the Court should conclude that the State of Utah already had title to that same land, the latter need pay nothing to the United States.

The State of Utah claims, as successor in interest to that of the United States, that it acquired title to the land which was covered by the Lake on January 4, 1896, the date of its admission into the Union, and brought the original action here involved for a decree quieting title in itself as against the United States.[1] The latter opposes this claim by asserting that title to the land did not pass to the State of Utah until the quitclaim deed, above mentioned, became effective. Should the United States prevail, this case would be at an end. On the other hand, should the State of Utah substantiate its claim of title, further proceedings will be necessary to determine other issues, one of them being whether the State lost its original title by reason of the common-law doctrine of reliction to certain portions of the former bed as the Lake became exposed after Statehood.

The foundation for the State's claim of title is that as an incident to the transfer of local sovereignty when it be-

1. Private parties were not permitted to intervene inasmuch as a stipulation entered into between the United States and Utah had so limited the issues that the presence of those private parties was neither necessary nor appropriate. 394 U. S. 89 (March 3, 1969).

came a part of the Union, it acquired whatever title to the domain as a territory possessed and not conveyed away by the United States prior to January 4, 1896 (*Shively v. Bowlby,* 1894, 152 U. S. 1, 49-50; *Choctaw Nation v. Oklahoma,* 397 U. S. 620, 633 (1970), by reason of the "equal footing" principle. The operation of that principle, as construed in *Pollard's Lessee v. Hagen,* 44 U. S. (3 How.) 212 (1845), and subsequent decisions of this Court, requires that, in the absence of a Congressional condition to the contrary, a state, upon its admission into the Union, is to be afforded the same property interest in submerged lands as was enjoyed by the thirteen original States as successors to the rights of the British Crown. English law viewed the beds of great navigable rivers, which so happened to be tidal, as belonging to the Crown rather than to the riparian landowners. Therefore when the thirteen Colonies became independent, each one of them succeeded to the ownership of the beds of all navigable rivers and lakes located within its borders. *Martin v. Wadell,* 41 U. S. (16 Pet.) 367 (1842); *Pollard v. Hagen, supra; Shively v. Bowlby, supra; United States v. Holt State Bank,* 270 U. S. 49 (1926); *United States v. Utah,* 283 U. S. 64 (1931).

"But if the waters are not navigable in fact, the title of the United States to land underlying them remains unaffected by the creation of the new State." *United States v. Oregon,* 295 U. S. 1, 14 (1935); *Massachusetts v. New York,* 271 U. S. 65, 69 (1926); *Oklahoma v. Tennessee,* 258 U. S. 574, 583, 591 (1922).

Therefore, the present issue before this Court in this case is whether Great Salt Lake was navigable in fact when the State of Utah was admitted into the Union on January 4, 1896.

The classic definition of navigable rivers and most frequently cited, appears in *The Daniel Ball,* 77 U. S. (10 Wall.) 557 (1870), a case involving the power of Congress to regu-

late under the Commerce Clause. At page 563 of the opinion, this Court stated:

> "Those rivers must be regarded as public navigable rivers in law which are navigable in fact. And they are navigable in fact when they are used, or are susceptible of being used, in their ordinary condition, as highways for commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water . . . ."

Each determination is to be made on its own set of facts. It is to be determined according to the law and usages recognized and applied in the Federal courts. And for purposes of determining a state's claim to title of underwater land the inquiry as to navigability is not the same in every respect, as when admiralty jurisdiction is at issue,[2] or when the question of the Congressional power to regulate under the Commerce Clause arises,[3] but is limited to the time when the state was admitted into the Union.[4]

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2. For this purpose, the time is the present even though trade and travel have been made possible by improvement of the water course by artificial means. See e.g., *The Robert W. Parsons,* 191 U. S. 17, 26 (1903). On the subject of admiralty jurisdiction, the Clerk of the United States District Court for the District of Utah has informed me by letter that he has been unable to locate any admiralty action filed in that Court. See letter dated October 23, 1969, Appendix A.

3. In such a case, the test is more generous, and treats as subject to regulations waters which were (a) once navigable but are no longer (e.g., *Economy Light & Power Co. v. United States,* 256 U. S. 113, 123-124 (1921)); or (b) only recently have become passable (e.g., *Philadelphia Co. v. Stimson,* 223 U. S. 605, 634, 635 (1912)), or (c) are not now, never have been, but may become so by reasonable improvements (e.g., *United States v. Appalachian Electric Power Co.,* 311 U. S. 377, 409 (1940)).

4. The finest example of the application of this rule is the case of *United States v. Holt State Bank,* 270 U. S. 49 (1926), where former Mud Lake in Minnesota was held to have been navigable at statehood even though the Lake had been drained and its bed uncovered at the time evidence was taken.

Also by definition the water course is to be judged in its natural state at the time of statehood, and future artificial improvements to the water course or its feasibility, or the predictability of natural changes for the better, are not to be taken into account. Additionally, the physical condition of the water course must have been such as to accommodate at least the craft customarily used for trade and travel on water at that time. *Oklahoma v. Texas,* 258 U. S. 574 (1922). And the waterway must have a "capacity for practical and beneficial use in commerce." *Id.,* at 591, or more directly, as affording "a channel for useful commerce." *Brewer-Elliott Oil & Gas Co. v. United States,* 260 U. S. 77, 86 (1922). Also see, *United States v. Holt State Bank, supra,* at 56; *United States v. Utah, supra,* at 76. "It does not depend upon . . . the difficulties attending commerce. . . ." *Brewer-Elliott Oil & Gas Co. v. United States, supra,* at 86.

Evidence of actual useful commerce at date of Statehood is the most persuasive kind to establish navigable capacity, but such evidence is not indispensable to show that quality. It may be shown by physical characteristics demonstrating capacity, or it may be inferred from evidence of actual use at an earlier or later date.

The State of Utah has offered evidence to show physical capacity of the Lake to support navigation as of the date of Statehood. It did not stop there. To illustrate this capacity it also has shown the variety of vessels which have sailed on the Lake, both before and after the critical date, and the purposes for which they were put when the need arose.

In opposition to the State of Utah's claim, the United States maintains that from the uncontroverted facts the Lake cannot be found to be navigable because it was not an

artery of interstate commerce.[5] It argues that in the 144 or 145 years since the Lake was discovered, a thriving commerce and trade has not developed upon it, unless pleasure boating is considered as such.[6] The United States therefore argues, despite the obvious physical capacity of the Lake to support large water craft over a large area, that the State of Utah has not met its burden of proof in this case. It points out that the potential of a water course as an artery of commerce may be obviously lacking from the beginning, and that subsequent history will often be relevant in confirming that appraisal.

This argument they continue to support, in addition to other unfavorable physical characteristics of the Lake, by citing excepts from writings describing the shallow shorelands, the sailing difficulties encountered from the high brine concentration of the Lake, the desolateness and inaccessibility of its shores, and by citing population, location and distribution as confirming the useless nature of the Lake so far as commerce is concerned.

The State of Utah counters by saying that the argument of the United States is based on an erroneou interpretation of the definition of navagability. It maintains that speculation as to the relative probabilities or improbabilities of the present or future need for useful commerce is not to be indulged in, when the waterway has conceded physical capacity, and that factors such as geographical setting, accessability, population density and distribution,

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5. However the United States reads the opinions of *United States v. Utah,* 283 U. S. 64, 75 (1931) and *United States v. Oregon,* 295 U. S. 1, 14 (1935), as foreclosing this argument at this juncture and merely preserves the point "in the event it seems appropriate to urge reconsideration of those decisions when the Special Master's report is before the Honorable Court." See Brief of the United States with respect to the Navigability of the Great Salt Lake, p. 9.

6. Brief of United States with respect to the Navigability of the Great Salt Lake, p. 20.

transportation facilities, degree of industrialization and related developments in the neighborhood of the waterway may only be considered to explain limited use or non-use where that body of water has doubtful physical capacity; that if significant commercial needs arise, the Lake will be there with its physical capacity to serve as a useful highway of commerce. Nevertheless, the State of Utah has offered evidence which it believes will demonstrate that a judgment to the effect that there is little or no prospect of any future need of useful commerce on the Lake is furthest from the truth.

III.

FINDINGS OF FACT.

From the evidence presented to him and from his own observations of the Great Salt Lake and its environs, in the company of counsel for both parties, the Special Master respectfully suggests that the following findings of facts may be found:

Part I.

Findings of Fact Previous To and Contemporaneous With Statehood.

1. Great Salt Lake (the "Dead Sea of America"), appropriately named by Colonel John C. Fremont, was discovered in 1824 or 1825, over seventy years before Utah Statehood,[7] in an area which was Spanish colonial territory and later Mexican.

2. On February 7, 1848, the United States acquired this territory by treaty of peace with Mexico. 9 Stat. 922, 926, 929, 932. The locally-authorized State of Deseret existed from March 12, 1849, to the time the Territory was established.

3. On September 9, 1850, the land which was to become the State of Utah was established as the Territory of Utah. The Constitution and laws of the United States were declared to be in force in the Territory "as far as may be applicable." 9 Stat. 453.

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7. It has been written that the famous scout and fur trapper, Major James Bridger, one of the many given credit for discovering the Lake, sailed down the Bear River until he reached Bear River Bay into which the River flows, and tasted the water but immediately spit it out. Ex. P-8, p. 18A; Ex. D-3, pp. 252-254. This is understandable, as the salt concentration in the Bay was nearly thirty times greater than that of his body fluids.

4. On January 4, 1896, by Presidential Proclamation No. 9, 29 Stat. 876, pursuant to the Utah Statehood Enabling Act of June 16, 1894, 28 Stat. 107, setting forth the conditions entitling the people of the Territory to become a State, that Territory was proclaimed a State and admitted into the Union as the forty-fifth "on an equal footing with the original States." Prior to that time, starting in 1850, the United States was the owner in fee of all the land in the Territory with the exception of those portions which it had transferred to private interests by patents.

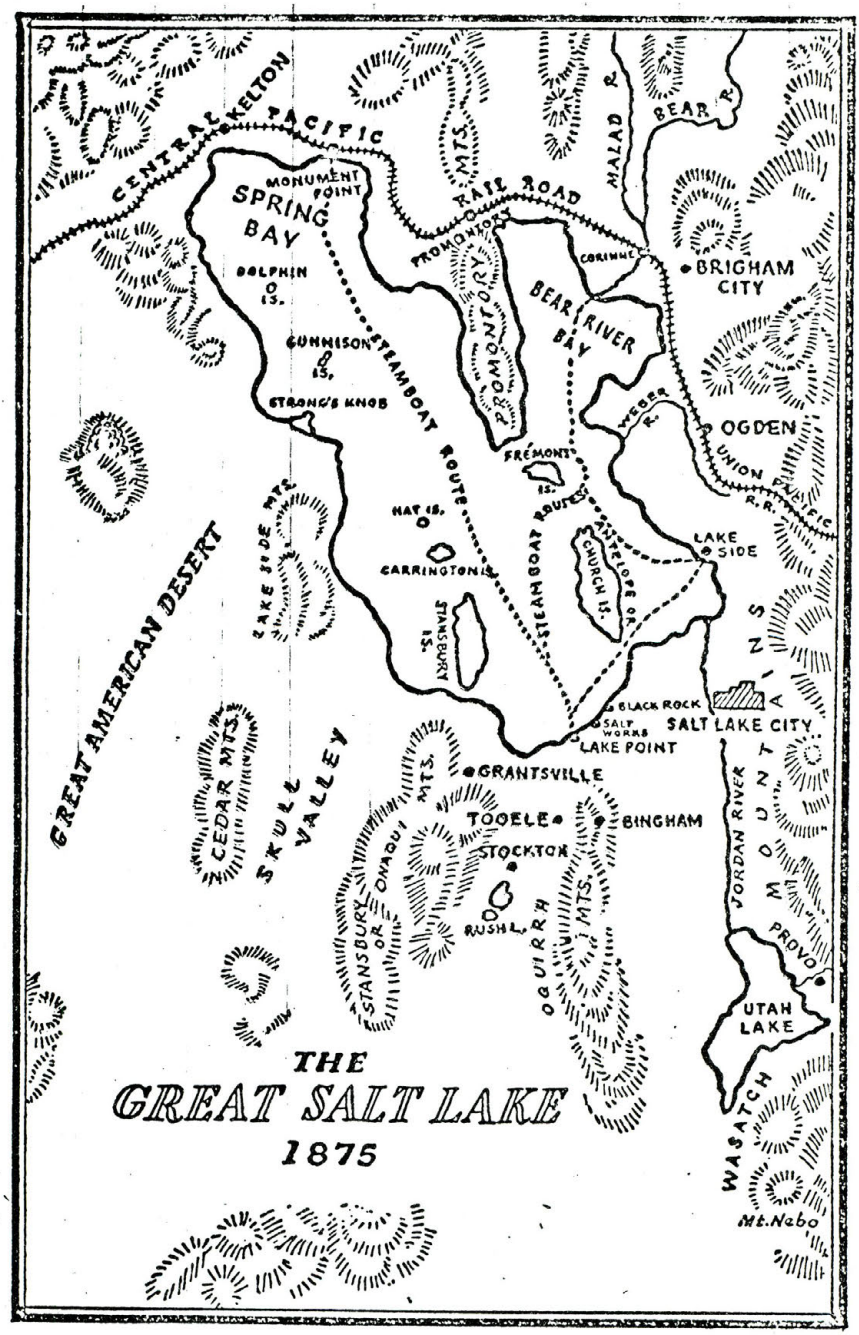
5. Great Salt Lake is a body of water entirely within the State of Utah. It lies between 40° 40′–41° 44′ north latitude[8] and 112′ 10′–113° west longitude in the northern part of that State.

6. At the date of Utah Statehood, the Lake had a maximum length of approximately 77 miles, a maximum width of 32.5 miles, and a maximum depth of about 30 feet. Its shoreline was over 500 miles long, and its waters exposed an area of over 1,500 square miles to the sun. Excluding the Great Lakes, it is the largest lake in the United States. It is also one of the largest in the Western Hemisphere not interconnected with an ocean.

7. *Description of the Lake's border.* The Lake is bordered on the north for the most part by a headland thirty-three miles long, known as Promontory (Prŏm′-ŭn-tō′rĭ), which juts southwardly to almost the center of the Lake and divides the northern half into two unequal arms. The Promontory Mountains, a Lofty but narrow range, running north and south as do most of the moun-

8. Washington, D. C. lies just below 39° north latitude approximately on a line thirty miles south of the south shore of the Great Salt Lake.

[Reproduced from Exhibit D-3, p.193]



The Great Salt Lake at its commercial heyday and its highest recorded level.

tain ranges in this area, occupies a thirty mile long strip of this projecting land area. The southern shore is set with two mountain ranges standing edgewise to the Lake and their valleys. These are the Oquirrh (O Kwer), rich in copper, lead and silver, and Stansbury (formerly known as the Aqui or Onaqui) Mountains. The Tooele (Too el) Valley lies between these two ranges. To the east of the Oquirrh is the Jordon Valley and to the west of the Stansbury Mountains is Skull Valley (formerly Spring). The south edge of the Lake forms a bay area at the mouth of the Tooele Valley directly south of the Promontory tip. A small isolated rock formation piercing the water offshore midway between two small islets, a sentinel at the foot of the Oquirrh, acts as a landmark on the south shore. It is known as Black Rock. The west shore is roughly on a line sloping in a northwesterly direction at a sixty degree angle. A small peninsula with a mountain 700 to 800 feet high is situated on this shore almost directly west of the tip of the Promontory. It is a landmark and known as Strong's Knob, so named by Captain Stansbury, Strong's Knoll or Strongknob. West of this line is the sprawling Great Salt Lake Desert, formerly known as the Great American Desert, which reaches the State's western border fifty-five miles away. The Sierra Nevada, the reputed west wall of the Great Basin, is further to the west. This desert, having a gentle downward slope toward the Lake of four and one-half inches to the mile, is interspersed with several mountain clusters. Two of these, within a few miles of the shorelines, are the Terrace on the west, and Lakeside Mountains to the southwest. The irregular east shore is also roughly on a line which slopes in a northwesterly direction almost parallel to the west shoreline. It consists almost entirely of salt and mud flats. From four to eighteen miles east of this shore lie the peaks of the 8,000 feet high, above the Lake

level, Wastach (Was' sach) Mountains that form the eastern wall of the Great Basin. The southeastern segment of the shore follows a line, which starts at the mouth of Tooele Valley, sloping northeasterly at an angle of forty-five degrees and continuing until it reaches a point a few miles north of the Jordan River estuary.

8. *Shallow Shores.* The Lake has throughout its perimeter, except in a few places, unusually gentle inclining shores, having a slope of less than one foot in 1,000 feet.

9. *Islands in the Lake in 1896.* The Lake has a variety of islands, some of which can be identified as being part of mountain ranges running north and south through the Lake, whose total number and outline vary as the water level varies. A few small islands will merge with their larger neighbor, and some, which are close to the water's edge, will become part of the shore during low water stages. The mountain ranges enclosing the basin and the island heights clearly evidence water marks at different levels, one as high as 800 feet above the Lake level. When the level is high, some are partly inundated while others are entirely covered. These islands may be more easily visualized in the minds eye if the Lake is divided into quadrants.

(a) The largest by far is *Antelope Island* (earlier known as Church Island, because it was taken over by the leaders of the Church of Jesus Christ of Latter Day Saints, commonly called Mormons), named after the antelope that roamed the island. It is in the southeast quadrant. This land mass is about sixteen miles long and six miles wide at its widest point, and has an area of approximately 26,000 acres, not counting relicted land which may almost double its area. The east side is comparatively smooth, and the west is made up of serrated peaks which rise 700 feet above

water level. Its southern end lies a short distance off the southeast shore. It is surrounded on the north by a bed twelve feet deep, on the east by six feet of water, and on the west by a deposit of mud. It is an oasis in a desert of salt water and the land supports the raising of livestock. The island has been continuously inhabited since 1848. A mile west of the northern tip is a small grassless rocky islet called Egg, either for its shape or because Captain Stansbury gathered eggs there. White Rock, as the name indicates, is a huge rock jutting out of White Rock Bay located on the west side of the northern end.

(b) The third largest land mass, also located in the southeast quadrant, is *Fremont Island*,[9] named after Colonel John Charles Fremont who was first to explore the island in 1845. It lies four miles southeast of Promontory Point, five miles east of the Weber River estuary and about seven miles northwest of Antelope. It is semi-lunar in shape, six miles long, three wide, fourteen miles in circumference and has an area of about 3,000 acres. The highest point is a turreted oblong eminence called Castle Peak on the northeast portion, 800 feet above the level of the Lake. The water around it averages six feet in depth. It has the best bay in the Lake and boats can sail up to its beach without difficulty, the depth of the water being eighteen feet deep within a hundred yards of the shore. This island, although timberless, has rich grass and supports the raising of livestock.

(c) The second ranking land mass in size, located in the southwest quadrant, is *Stansbury Island,* named after

9. A Mrs. Zillah Walker Manning, born in 1891 on the Lake's east shore, called as a witness by the State of Utah, referred to this land area as Wenner's Island, because a Judge Wenner had lived there. Transcript, Vol. II, p. 226. Judge Wenner was born in Bethlehem, Pa., in 1849, died September 19, 1891, and was buried on Fremont Island.

Captain Howard Stansbury, commissioned by the Federal government to survey the Lake in 1849-50. This land mass is oval in shape, twelve miles long and four miles wide, and twenty-seven miles in circumference. It has high central rocky ridges, the highest reaching 2,445 feet above the level of the Lake. The eastern side supports the raising of livestock; the western side is arid. Valuable deposits of dolomite sands exist here. Like Antelope and Fremont, the greater part of this island was privately owned.

(d) The fourth largest land area, also in the southwest quadrant, is *Carrington Island,* named after Albert Carrington who surveyed the east shore in 1848. It is about five miles distant from Stansbury Island, almost an equal distance from the west shoreline, and twenty miles from Antelope Island. It is a circular mass eight miles in circumference, covering an area of more than a square mile and has a 600 to 700 foot high peak with a mild slope. It is indented with several open bays and sandy beaches of oolitic sand, and boats can come close to its shore, since the water is from three to six feet deep around it except the south and southwestern shores which are shoals and shallows, and which are more extensive than the island itself. A small islet, Badger Island, is just south of this island.

(e) *Hat Island,* so named because it resembles a colonial hat floating on water, is four miles north of Carrington Island. The water between these islands is "quite shoal, the deepest being only six and one-half feet." It is a rocky mass of some twenty-four acres, and its highest point rises eighty feet above the water. It has a small level beach when the level of the Lake is low. When the gulls, pelicans, herons and cormorants use this island as a nesting sanctuary, it is one of the main tourist attractions by boat.

(f) The remaining three islands are in the northwest quadrant. The largest of these is *Dolphin Island,* so named because of its shape, a rocky elevation of seventy feet and about 1,000 square yards, mainly of conglomerate rock in horizontal strata, surrounded by shallow waters. It lies twenty-two miles south of the northern edge of the Lake and a few miles off the west shore near the Terrace Mountains.

(g) Thirteen miles further south and seven miles from the west shore line lies *Gunnison Island,* named after Captain John W. Gunnison, an efficient Lieutenant in Stansbury's expedition. It is approximately 155 acres with a cliff 400 to 500 feet high, white sand beaches and surrounded by nine to twelve feet of water. *Cub Island* is immediately northeast of Gunnison. These islands, because of their safety from predatory animals, like Hat Island and Carrington, are frequented by a large number of migratory aquatic birds, and thousands of sea gulls have been known to migrate from the Pacific coast for the rearing of their broods of young here on these desolate spots. The islands are valuable for their guano deposits. Six miles south and a little west of Gunnison Island, almost directly west of the top of Promontory is a Knoll, 700 to 800 feet high, close to the west shore. It is a landmark and is known variously as Strong's Knob, the name given to it by Captain Stansbury, Strong's Knoll or Strongsknob Mountain.

(h) These islands are said to form parts of mountain ranges. The Oquirrh Mountains, Antelope, Fremont and Promontory Mountains, forming one of them. The Stansbury Mountains, and the islands of Stansbury, Carrington and Hat make up another, while Strong Knob, Cub, Gunnison are probably lined up with the Lakeside Mountains to the south. There is a ranch house at Antelope Island where the ranchers live, and some herders stay on Fremont Island, but the remaining islands are uninhabited by man.

10. The deepest section of the Lake for the greatest distance is between the Oquirrh and Stansbury Mountains chains and continuing on up into the northwest arm between Promontory and the west shore. The Bear River Bay and the east shore are shallow as are great areas along the west and southwest shore. The average depth was about 13 feet. Shallow parts of the Lake can be easily avoided by keeping boats in the deeper sections.

11. The Lake occupies the bottom portion of a large depression known as the Great Basin. It is what's left of an ancient gigantic fresh water sea known as "Lake Bonniville," which had a surface area ten times the present. The bed at its lowest level was approximately 4,170 feet above mean sea level, exceeding the height of the average Appalachian Mountain, and the water's edge was 4,201 feet 3 inches above mean sea level. The shore for the most part has a slope of less than one foot in 1,000 feet. A rise of a few feet in the water level will inundate great areas of land surrounding it, and a similar drop will leave large areas uncovered.

12. The Lake is a drainage spot for a large area. In addition to it being fed by underground streams and precipitation from the air, a number of tributary rivers flow into it. The principal ones being the Bear, Weber and Jordan Rivers. The Bear and Weber enter the Lake on the northeast. The Jordan, whose source is Utah Lake, twenty miles south, empties from that direction. The Weber and Jordan are entirely within the State of Utah, while the Bear originates in Utah but flows through two northern bordering States, Wyoming and Idaho, before reaching the Lake. The Federal government, since 1875, maintains gauging stations to measure the year-round level of the Lake and keeps records of those readings.

13. The Lake is without an overflow level lower than its rim [10] and therefore waters coming into it do not flow out. Although some water has been pumped out of the Lake by industry, there has been no artificial attempt to maintain an even level by drawing more from it. That has not been necessary because the supply of water from the outside has not been enough to offset evaporation. As a consequence the level has gradually lowered from a recorded high of 40 feet 8 inches (4,211.75 feet above mean sea level) in 1873 to 30 feet 3 inches (4,201.25 feet) at time of Statehood. In 1850, 1857 and 1860 the level of the Lake approximated that in 1896. It has been estimated that the amount of water needed to maintain the level of the Lake is 3,500,000 acre-feet per year.

14. Absent the wind, the Lake is a comparatively smooth calm body of water, being without ebb and flow of the tides and eddies. The hardly noticeable currents that exist are the result of the inflow of fresh waters from the rivers, which remain on the surface at some distance from the mouths of those rivers until they ultimately blend with the brine. From the variable blasts of the wind the smooth surface becomes ruffled and mimic waves develop in unbroken series, their size depending on the speed of the wind.[11] They sometimes reach heights of from five to eight

10. According to Grove Karl Gilbert one must go twenty miles northwest of Preston, Idaho, to Red Rock Pass, which is about 625 feet above the level of the Lake, for a glimpse of the first overflow level to the Great Basin. At one time the pass was a thousand feet high (P-31, p. 27).

11. Concerning the waves that can be churned up by the wind, Captain Stansbury was moved to write about one of his experiences while sailing on the Lake: "The crew were all entirely unaccustomed to the water, and were no little alarmed at the heavy swell caused by the gale, which was much greater than I had anticipated, and made most of them quite sea-sick." (Ex. D-3, p. 8).

feet and break with a slow but powerful motion.[12] The topography of the bed remains relatively constant and is covered with a soft muck. There are no reefs, sandbars, rapids, floating debris or underwater obstructions.

15. The level of the Lake experienced an annual rise and fall seldom exceeding two feet in a year, the average being about 1.7 feet. The high water seasons are in the months of May and June, and the lows in October and November. Wind "tides" cause temporary variations in the level, sometimes reaching three feet and uncovering many square miles of the bed on one side while flooding many square miles on the others.[13]

16. The Lake has a high concentration of soluble solids, or salts, the residue of accumulations over the years, comparable to that of the Dead Sea. The factors of no outlet and evaporation were conducive to that condition. The concentration varies inversely with the volume of the Lake, the saturation point being around 28% by weight. It varied from 13.7% at its "highest" stage in the 1872-1874 period to 22% in 1896. In 1896 a cubic foot of the Lake weighed about 76 pounds in comparison to 62.4 pounds for an equal volume of distilled water. In other words with distilled water being unity, the Lake had a specific gravity of 1.2 or a

12. "The waves are very heavy and roll lazily even in severe storms." (Ex. D-3, p. 127).

13. In his report of 1852 Captain Stansbury notes: "It will be seen that the rise and fall of the water of any particular locality is dependent in great measure upon the force and direction of the wind; making a difference of nearly a foot in a very short time. This of course makes a corresponding difference in the extent of the sandflats [on the west shore], amounting in many cases to miles in width." (Ex. D-3, p. 17). And: "The water, under the influence of the northern blast, rose upon the beach crossed by the line a few days since so as to extend some 6 or 7 miles to the south of it; but this morning it had returned to its old boundaries, upon the subsidence of the gale." (Ex. P-31, p. 29).

20% greater buoyancy than that of the ocean.[14] Thus a vessel on the Lake during that period could carry a 20% greater load than on the ocean.

17. The Lake is not an attraction for the fishing enthusiast nor a source for the cravings of the seafood gourmet. At any depth of consequence it is almost free of oxygen. Fish entering from the rivers soon suffocate and become pickled. However, the Lake is not without aquatic life though the variety of venegtation and marine life is surprisingly small. "There is more life in the water than in any body of its size, fresh or salt, but the species are few. There is an *Alga* (seaweed) about the size and shape of buckshot, looking like a globule of great jelly, which abounds everywhere in countless number. Upon the *Alga* feeds a minute [brine] shrimp, from a quarter to a half-inch long which looks like a very small minnow with a feathery tail."[15] The globular sea-weed, of which there are several kind, float in ragged mats on the surface, sometimes giving it a red tinge. They also support the larvae of two species of flys in their grub stage. The Lake will not support the raising of other crustacea or oysters or clams. Wood piling and other wood products placed under water are "preserved" or "embalmed", and not subject to the attack of teredos (shipworms), barnacles, fungi, and other destructive agents, for they simply do not exist in the brine.

18. The shores, with an occasional sector of grass where springs come to the surface, were as flat, barren, bleak and treeless in 1896 as when Captain Stansbury surveyed the Lake in 1850. "There are no trees on the borders

14. It was inevitable that a sloop sailing upon the Great Salt Lake would be named Eureka! (See Ex. P-8, pp. 20, 23B, 24, 25, 27.)

15. Ex. D-3, p. 94.

of the lake, nor on any of the adjacent plains. It is necessary to ascend almost to the summit of the surrounding mountains to procure firewood, composed of green trees, some maple, willow, poplar and oak. Nothing is to be seen near the shore but a few withered plants, ..."[16] Except for an area at the southeastern shore near the base of the Oquirrh Mountains, where the beaches are located, the Lake is surrounded by stretches of salt flats, marshes or bogs, some of which are in places several miles in width.[17]

19. Settlement in the vicinity of the Lake began about 1847, some twenty-three years after the Lake's discovery, when the Mormon pioneers, attracted by Fremont's report, arrived in the Valley. Ever since 1850, there have been sizable settlements several miles from the Lake. Salt Lake City to the southeast was the first and largest. Ogden and Brigham City on the east are next in size in that order. The mining and smelting town of Grantsville, Tooele and Stockton were established in the Tooele Valley.

20. *Railroads:* It was on the Promontory that the famous "Golden Spike" was driven home on May 10, 1869, as the last act in the completion of the first continental railroad, the joining of the Central Pacific and the Union Pacific railroads. This railroad, after having reached Ogden, continued in a northwesterly direction, crossed the Bear River and skirted the northern shore of the Lake on its way to the Pacific coast. The accomplishment of this railroad feat ushered in the building of new railroads or the extending of railway lines into the Lake's environs. In

16. Jules Remy, *A Journey to Great Salt Lake City,* Vol. I, p. 181 (Ex. D-3, p. 67).

17. "Almost everywhere land and water were divided by mud flats, across which they were forever dragging their boats and packing their baggage." *The Resources and Attractions of Utah* (1888), p. 62 (Ex. D-3, p. 102).

1870 the Utah Central connected Ogden with Salt Lake City. And by 1878 the Salt Lake and Pioche Railroad (Later became Utah Western Railway, and then Utah and Nevada) extended its line westward to Lake Point, and the mining towns of Tooele, Stockton and Tintic, in Utah, and then on to Pioche, Nevada, by way of the Sevier Valley. The Denver & Rio Grande Western Railroad reached Ogden in 1883, and then Lake Side in 1886. Salt Lake City and Saltair resort were connected in 1893 by the Salt Lake, Garfield and Western Railroad.

21. *Summer Resorts on the Lake at Time of Statehood:* There were a number of resorts on the east and southeast shores of the Lake visited annually by over a hundred thousand people.[18] They were important here because they maintained the sole docking facilities, built upon piling extending into the water, on the Lake. There was *Lake Side* (1870) on the east shore one mile below Farmington near a main railroad line, Utah Central, connecting Ogden and Salt Lake City in 1869. A little north of this resort, and west of Syracuse junction, was *Lake Park* (1886), with its long covered pier running into the water, built and operated by the Denver & Rio Grande Western Railroad. On the southeast shore at the base of the Oquirrh Mountains, 22 miles from Salt Lake City, was *Lake Point* (1870) near *Black Rock.* During the existence of this resort it was known as Steamboat Landing, Steamboat Point, Clinton Landing (named after Dr. Jeter Fieldy Clinton, its founder), Short Branch (1876) and Clinton's Beach. The overland stagecoach stopped there. Five years after its beginning, the resort was serviced by the Salt Lake &

18. The bathing season began about June 1 and continued to October 15. Temperature of the water started from 60° and increased until August when it went up to 85° where it remained for some weeks. (See Ex. D-3, p. 94.)

Pioche Railroad, which extended its line to that resort, then farther south to the mining towns of Tooele, Stockton and Tintic, and on to Pioche, Nexada, by way of the Sevier Valley. The railroad became known as the Utah Western Railroad, and still later, the Utah and Nevada. Also a short distance and west of Black Rock and a little east of Lake Point was *Garfield Beach* (1878), named after President James A. Garfield. At first it was called Garfield Landing. In early 1887 the Utah and Nevada took over the resort and added a pavilion of 165 by 65 feet, and a steamboat landing over 400 feet from shore. It was the only resort on the Lake "having a clean, sandy beach, free from mud, rocks and offensive vegetable matter." (Ex. D. 3, p. 207.) At *Saltair* (1893), also on the southeast shore, 17 miles from Salt Lake City, a pile-supported track carried the Salt Lake, Garfield & Western Railroad 4,000 feet out into the Lake. At the end of this piling was a large two-story pavilion, containing for that period an immense ballroom. During the summer season over 100,000 people would visit these resorts. Each of the resorts included boating, as well as bathing, as part of its program. Some of them featured excussion trips into the Lake. For example, the steamer "City of Corinne", in June of 1872, sailed from Lake Side, where she was based until renamed the "General Garfield", to Lake Point, and from there to Monument Point at the north edge of the Lake. This same ship carried ore from various points, including Lake Point, on the shore of the Lake to the smelter at the City of Corinne, 20 miles up the Bear River.

22. The principal industries in the Lake and its environs at time of Statehood were salt extraction, raising and transportation of livestock (horses, cattle, sheep and some buffalo), mining and smelting, operating of summer

resorts which featured bathing and pleasure boating and excursions on the Lake.

23. Although there is evidence of water craft having traveled on the Lake before [19] and after January 4, 1896, there is none at time of Statehood.

24. And even though there is evidence that vessels sailed from the Bear River to the Lake, and up the Jordan River from the Lake, there is no evidence upon which to base a finding that vessels could travel on water between the Lake and its affluents to any place outside of the State of Utah since 1824.

25. *Factors favorable to travel and hauling by water craft on the Lake and in its natural condition at time of Statehood.*

(a) Level of Lake remained relatively constant;

(b) Depths of 5 to 30 feet over a wide area;

(c) Profile of bed did not change abruptly;

(d) No underwater obstructions or floating obstacles;

(e) Calm surface and lack of tides and strong currents;

(f) Availability of Lake's surface for sailing of water craft not intermittent or infrequent, but regular and dependable; and

(g) Salt concentration increased buoyancy of the water and lowered its freezing point which was a deterrent to the formation of thick ice on the surface.

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19. A total of forty boats were identified as having been on the waters of the Great Salt Lake from 1824 until the admission of the State of Utah into the Union.

26. *Natural drawbacks to travel and hauling by water craft at time of statehood.*

(a) *Shallow shores.* The gradual shelving of the basin and the softness of the shore surface make it unusually difficult to get boats from dry land into floatable water.[20] To reach water five feet deep, one must move out a mile or more from the water's edge. Greater sailing stability in deep water and safety of craft are sacrificed for shallowness of draft and flatness of bottom despite the twenty percent "bonus" in buoyancy of the Lake so that the vessel may get closer to shore without running aground.[21]

(b) *Absence of natural harbors.* This condition is not unique. There are very few natural harbors in the world, and most harbors need some type of artificial improvement to make them usable or commercially profitable for loading and unloading of vessels, such as breakwaters, dredging, or building of piers of sufficient length to reach deep water.

(c) *Absence of protective harbors.* Naturally sheltered inlets, bays and havens do not exist along the shores of the Lake. Boats on the Lake, unless they happened to be on the leeward side of one of the large islands or near one of the resorts, were at the mercy of the winds and waves.

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20. This condition caused Captain Howard Stansbury to remark of his experience during the survey of the Lake in 1850: "The loss of the skiff is deeply felt—the nature of the shore being such that large boats, when loaded, cannot, in many places, approach within three miles of the land, and the lighter vessel is therefore indispensable." Ex. D-3, p. 19.

21. "Owing to the shallowness of the water, from the Cambria's time [1870] to the present [?], it has been generally recognized by yachtmen that keel boats are unsuited to Great Salt Lake, and shallow draft boats have come to dominate the lake." The "Cambria" is said "to have been the first boat of the English model of catamaran built in America. She was 20 feet long with a 10-foot beam, and with 5 feet of space between the two slims, pointed boats which formed her divided hull." Ex. D-3, p. 210.

And unless someone stood watch, the only sure way of protecting a boat from the acts of the curious, the prowler and the vandal, was to remove the boat from the Lake. The necessity of having to retract the boats and towing them away has a tendency to limit the size of boats used on the Lake.

(d) *Natural landings.* Convenient locations for launching and landing of boats are not to be found on the Lake. Of course there were some places which were superior to others. These are few, however, and are found on the beaches at the foot of the Oquirrh Mountains and a bay area on the western shore of the Promontory about seven miles north of the tip, and they were not readily accessible to the settled area east and southeast of the Lake.

(e) *No outlets.* For this reason the Lake has been infrequently used as an artery by water or as a link in interstate travel or commerce.

(f) *Salt spray.* Storms break out over the Lake with little advanced warning.[22] This adverse wheather condition and the swells it whips up are not in themselves too formidable a deterrent to sailing upon the water. It is the spray from the waves that is distasteful. When it drys, the spray, by reason of its high salt concentration, leaves a white powderly coating on boat, clothing, and skin.[23]

(g) *Sodium sulphate precipitation and encrustation.* The maximum solubility point of certain salts is dependent

22. See, for example, Ex. P-8, p. 34-B (July 5, 1909).

23. Around 1902, the botanist and geologist, Marcus E. Jones, wrote: "Though the air is very invigorating and healthful on account of the salt spray, there is very little sailing upon the lake because of the unpleasant effect of the salt which crystallizes upon the body and clothes in thick scales from every drop of water which strikes them. Salt water soon destroys leather and rubber and causes disagreeable cracks in the skin, when it is not washed off by fresh water." Ex. D-3, p .127.

upon the volume and temperature of the Lake and other solids in solution. When the volume and temperature go below certain readings, some salts will precipitate from the solution. Sodium sulphate, found in solution in the Lake, is one of these. As adequately explained in *The Mountain Empire Utah* (1940), p. 78: Sodium sulphate, 6.22% of the soluble solids, "is insoluble in a strong brine at low temperature, and every winter it separates spontaneously from the water as soon as a critical point of temperature—near 32 degrees F. or 0 degrees C.—is reached. This material is known commercially as glauber salt [named after the chemist Johann Rudolph Glauber] and mineralogically as mirabilite. As it crystallizes from the brine at winter temperature, the lake is rendered opolescent, and the sulphate settles on the lake bed, or near shore and is thrown up on the ocean brink. As the temperature of the water rises, the glauber salt is taken into solution [again] . . . . The abundance of deposit each year is surprising. Indeed, during the cold months a visitor to the lake shore has to wade through the glauber salt accumulations, sinking at each step to the knees." (See Ex. D-3, p. 146. Also see Ex. P-8, p. 18A.)

27. *Conditions in the Lake's environs.*

(a) *Accessability to the shores by land:* The Lake has desolate shores. It is ringed with great stretches of salt flats, salt marshes and bogs which made difficult an approach to its shores by foot, horseback or horsedrawn vehicle. The building of railroads to the summer resorts decreased this problem at those points. But even these approaches could not always be depended upon because of the caprice of the water's edge.

(b) *Lack of nearby trees:* The absence of handy suitable lumber on the shores restricted boat building to those

able to command labor to ascend the mountain canyons to retrieve the trees, the best being none too good, necessary for such purposes,[24] or who could afford the cost of transporting a vessel by rail from the boat building centers.

28. The population centers of the Lake's environs were in the area between the east and southwest shore and the Wasatch Mountain Range, and include such cities as Salt Lake City, the largest, Ogden and Brigham City. In the Tooele Valley to the south were the towns of Gransville, Tooele and Stockton. When the smelter of Corinne became inaccessible by boat from the Lake, a smelter was built at Grantsville, at the base of the Stansbury Mountains. None of these places were within ten miles of the Lake's shore.

29. *Meander line:* A complete official survey of the Lake's "meander line" has never been made. A partial one was accomplished in 1855, with many gaps, and some parts, particularly on the west side in Box Elder County, were omitted. This incomplete survey line has been "accepted" by the Surveyor General, and has been plotted on the official records of the officers of the county recorders in the counties located along the Lake.

30. Congress has never declared by special act that the Lake is non-navigable.

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24. On this subject, Captain Stansbury reported: "During the winter, a large boat was built for the survey of Salt Lake. This was an achievement of no little difficulty, as almost every stick of timber used in the construction had to be procured from the canons of the mountains, piece by piece; and the planking, although the best material the country afforded, was so 'shaky' and liable to split and crack, that it was totally unfit for the purpose." (Ex. D-3, p. 5). And in another part of his report, the eloquent Captain tells us of the time and labor needed to procure the trees and the amount "must be experienced before it can be appreciated." (*Ibid.*, at 4).

31. *Navigability:* The Great Salt Lake, as of January 4, 1896, was navigable within the meaning given to that word by the Federal courts for the purpose of determining a state's title to the bed of a body of water at statehood. This finding is not based in whole or in part on the doctrine of judicial notice[25] or the fact that the Lake has been meandered, but on the following:

(a) On January 4, 1896, the Lake was 30.2 feet deep or 4200.2 feet above sea level.

(b) As of that date, the Lake was physically capable of being used in its ordinary condition as a highway for floating and affording passage to water craft in the manner over which trade and travel was or might be conducted in the customary modes of travel on water at that time.

(c) If the need should have arisen on January 4, 1896, the Lake could have floated and afforded passage to large boats, barges and similar craft currently in general use on inland navigable bodies of water in the United States.

(d) The areas of the Lake which had a depth sufficient for the purposes in sub-paragraphs (b) and (c) above were not narrow or short channels, but were several miles wide, extending substantially through the length and width of the Lake, and covered an area of more than 1,000 square miles. A vessel could have traveled almost in a straight line from Monument Point located on the northwestern tip of the Lake to a point, where Silver Sand Beach is now located, at the southern edge.

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25. In this regard the Supreme Court of Utah has taken judicial notice that Great Salt Lake is navigable. See *Robinson v. Thomas,* 75 Utah 446, 286 Pac. 625 (1930); *Deseret Livestock Co. v. State of Utah,* 110 Utah 239, 191 P. 2d 401 (1946).

Part II.

Preliminary Statement.

While the State of Utah places its main reliance on the navigability of the Lake at the time of its admission on January 4, 1896, which the Special Master sets forth in Findings of Facts (Part I), nevertheless the Government maintains from the testimony adduced at the hearings that the Lake's susceptibility for use as a highway of trade and commerce, in the light of events since the State's admission into Statehood, is too conjectural and hypothetical to establish its navigability.

In *United States v. Utah, supra,* 283 U. S. at 83, the Court stated, with regard to the consideration of future commerce, ". . . [A]s the title of a State depends upon the issue, the possibilities of growth and future profitable use are not to be ignored. . . .

"The question remains one of fact as to capacity of the rivers in their ordinary condition to meet the needs of commerce as they may arise in connection with the growth of the population, the multiplication of activities and the development of natural resources. . . ."

It is apparent, with this quotation in mind, that the State of Utah has offered a great deal of testimony and many exhibits to forestall a finding for which the Government contends.

The Special Master here sets forth suggested Findings of Facts as developed by the testimony taken at the hearings, some favorable to the United States and some favorable to the State of Utah, in the same manner as the Findings of Facts (Part I) are here set forth, that is solely with the idea of putting in proper focus—and discarding the irrelevant—those facts which are pertinent to the issue. Some have a direct impact, some in the peripheral area,

with probably less pertinency, but all, in the Special Master's opinion, worthy of consideration.

There have been drawbacks and obstacles to commerce and trade by water craft on the Lake added to those that existed in 1896. However, a few of them have been minimized somewhat today. The density of the population centers within miles of the Lake, near which airports have sprung up, has increased; accessibility to its shores has been made easier; major highways have brought the motor vehicle within reach of the water's edge near the resorts; pleasure boats of all types for sailing on the Lake may now be ordered out of a catalog; and the versatile DUKW ("duck"), a former military amphibious truck, has decreased the effort needed to launch a boat and thereafter retract it by means of a trailer; gasoline or diesel engines have been in this era within reach of most boating fans and the radio can give advance warning of storms and summon aid to those in distress on the Lake. Industry has taken a new look at the treasures locked in the Lake, in its bed and environs, with an eye to profiting from them. Nevertheless the whole picture has not changed greatly.

Findings of Fact Subsequent to Statehood.

32. Five Counties in the State of Utah border on the Lake. They are Salt Lake on the southeast, Davis and Weber on the east, Box Elder on the north and northwest, and Tooele on the west and south.

33. *Level of the Lake:* At time of trial in May of 1969, the level of the Lake was 26 feet 3 inches (4,197.25 feet above mean sea level), a drop of 4 feet from the level at Statehood, and a drop of 14 feet 5 inches from the recorded high of 40 feet 8 inches (4,211.75 feet) in 1873. The low

point during the 119 years of its recorded elevation readings was reached in the latter part of 1963, when the water gauge read 20 feet 6 inches (4,191.5 feet). Since Statehood, the high was 34 feet (4,205 feet) in 1923, and although the level fluctuated within the years, the general trend has been downward (See Appendix B). As the level of the Lake decreases, the size and shape changes noticeably in most places. However, the deepest parts of the Lake have never been less than 20 feet, which depth is enough to float the largest vessel fully loaded that was ever used on the Lake.

34. *Climatic conditions:* In the seventy-three years since Statehood the highest temperature reading in the vicinity of the Lake was 107°F. in 1960, and the low was —18° F. in 1963. The highest yearly temperature has gone over the 100° mark 33 times and the lowest yearly temperature has fallen below zero 29 times. The average high is 101.08°F., and the average low, 1.47°F. The highest rain fall was 21.69 inches in 1922, and the lowest was 8.99 inches in 1966.[26] The average is 16 inches. Prevailing winds are westerly. The Lake will not begin to freeze, on the average, until its temperature drops to 18°F. above zero, a point seldom reached by the brine and even then only a scum of ice will form on the surface. There has been evidence of boats being caught in floating ice jams (Ex. D-3, p. 70), and being stuck fast (Ex. P-8, p. 21). These instances have been close to the eastern shore, near the estuaries of incoming streams, where the fresh water will float, especially in the cold season, above the brine for great distances, and where extensive cakes of ice sometimes drift out onto the Lake. (Ex. D-3, p. 152).

35. *Salt precipitation and encrustation:* When the Lake recedes near its low points, as it did in 1935, 1940 and 1960-

26. See Appendix C.

1967, the brine concentration becomes so great that precipitation of sodium chloride begins. It collects on objects in the water, including boats, and ofttimes interferes with moving parts such as the propeller or steering gear. "It is a phenomenon boatmen do not regard with extreme pleasure, for it makes anchoring difficult, slows boats as barnacles would and seals in centerboards. Objects placed in the Lake at such times clothe themselves in a coat of [beautiful white hard cubic] crystalline salt. . . ." (Ex. D-3, p. 211).

36. *Railroads and major highways near the Lake subsequent to 1896:*

(a) *Lucin Cutoff:* In 1902-04, the Southern Pacific Company built a railroad cutoff (shortcut) across the Lake, known as the Lucin Cutoff, dividing it into two northern sectors and one southern half. It starts at a point on the east shore directly west of Ogden and a mile north of the Ogden Bay Bird Refuge and cuts across the mouth of Bear River Bay in a slightly southeasterly direction in a straight line eight and one-half miles long until it reaches Promontory Point on the southeastern tip of the Promontory. Then it circles the tip of that land projection for a distance of about five miles until it reaches a point named Saline on the southwestern shore. From there it cuts straight across the neck of the northwestern arm of the Lake in a westerly direction for 20 miles until it reaches the west shore at Lakeside, at the base of the Lakeside Mountains, and a few miles south of Strong's Knob. The portion of the cutoff which crosses the mouth of Bear River Bay is rock-filed except for a 600 foot long trestle in the middle. The western sector consists of four miles of rock fill, then eleven to twelve miles of trestle, followed by four miles of rock fill. Its construction necessitated the use of 57,000 wooden piles 16 to 129 feet long, the use of seven tug boats, nine gasoline

launches, each capable of carrying from 15 to 35 persons, numerous small boats, and a wooden sternwheel steamer named "The Promontory", built on the Lake for that purpose. Depts of from 0 to 37 feet were encountered. This portion of track shortened the distance by almost 45 miles, eliminated most of the curves and steep grades on the Promontory, and cut off more than two hours of travel time to the Pacific Coast for the trains.

(b) In 1906-1908 the Western Pacific Railroad laid its tracks south of the Lake and across the Great Salt Lake Desert on the way to San Francisco. It can thus be seen that the railroads had somewhat of an effect on present and future capabilities of the Lake.

(c) *Railroad causeway:* Between the early part of 1957 and the first quarter of 1959, the Southern Pacific Company built a solid tapered causeway of rock and gravel across the Lake north of and parallel to the trestle portion of the Lucin Cutoff. It took approximately two years to build at a cost of $49,000,000. The causeway which was six hundred feet wide at its underwater base required 42,000,000 cubic yards of fill weighing 70,000,000 tons. Over ninety percent of the fill was carried by barges, the rest by rail car and truck. Since there were no nearby harbors, the railway company carved one out by dredging at Little Valley, a few miles northwest of Promontory Point. The entire construction required 600 men and 39 water craft. The boats alone cost $7,000,000. Construction went on day and night, six and sometimes seven days a week, in all seasons over the period of two years.

(d) Highways were constructed several miles from the east shore and connecting Brigham City with Ogden and the latter with Salt Lake City. In addition, highway Route U. S. 40 was extended west from Salt Lake City to a

point northwest of Saltair, then it follows the southeast shore of the Lake past the resorts, skirts the base of the Oquirrh Mountains, then southwest to Grantsville, and then goes northwest past the northern end of the Stansbury Mountain range.

37. *Summer resorts:* Today there are three resorts along the shores of the Lake: *Black Rock Beach, Sunset Beach* and *Silver Sands Beach.* Their main season is between Memorial and Labor Days. In 1904, the pavilion, pier and old "General Garfield" at Garfield Beach caught fire and were burned to the ground. Lake Park and Lake Side on the east shore were left in a sea of mud by the receding waters and have been abandoned. The pier at Saltair was extended sometime between 1914 and 1919. After a fire swept that resort in 1925, leaving only the piling, it was rebuilt. A year later the level of the Lake began to drop, and Saltair was "subjected to the humiliation of being left high and dry on its pilings"[27] miles from the water's edge. In 1933 *Black Rock Beach* was rebuilt. *Sunset Beach,* a 3½ acre tract lying immediately east of "New" Black Rock Beach, comprising a rocky island called Fritch Island, opened in July of 1934. *Silver Sands Beach* is a resort having a beach 2,000 feet long and 300 feet wide and a small breakwater. The shore in front has a slope of one to sixteen and the water is fifteen to twenty feet deep before the breakwater. These spots have the only good beaches on the entire shore of the Lake and were convenient for beach goers with automobiles. They also have the deepest channel coming to the shoreline of any place of the Lake.

38. *Boating and the resorts:* As long as their pier facilities and boat ramps remained over water, pleasure

27. Ex. D-3, p. 208.

boating and boating concessions were always a part of the business at the summer resorts. During its time, *Saltair,* above mentioned, had the best pier and collected fees from private owners of boats docking at its facilities. Exclusive of an occasional shipment of livestock from Antelope Island, the pier was used by boats mainly for pleasure. Excursion trips originated there, and some of these went to Hat or Bird Island, some 25 to 30 miles away. The size of boats involved ranged from rowboats to boats holding at least 50 people. Every year from 1934 to 1967 *Sunset Beach* has operated boats for hire, usually on a concession basis whereby the Beach operator received ten percent of the gross income from boat rides and rentals, which percentage rose to approximately $1,000 a year. The average boat used would carry from 12 to 15 passengers. In 1968, the County took over the resort. *Silver Sands Beach* is used as a place for commercial boat rides and sailboat launchings. Starting in 1963 the operator of this beach conducted narrated boating tours, lasting 20 to 45 minutes per trip, which proved to be popular, at a price of one dollar for adults and fifty cents for children. And since that time the operator's gross income has increased from $8,000 to $30,000 per year from boat passengers. For this purpose he had available 8 amphibious boats or converted army DUKW's and a launch having a capacity of from 30 to 35 people at one time. For most of its daylight boat passengers, this resort depended on the Greyline Bus Tours that stopped there with tourists. In the evenings, after the bus tours ceased, special parties would be taken any place they wanted to go on the Lake, depending on the amount of money they were willing to spend. On various occasions during the summer months, as many as 75 to 100 boats could be seen on the Lake at one time.

39. *Artificial harbors:*

(a) *Salt Lake County Boat Harbor:* In 1929, as the level of the Lake rose, the Great Salt Lake Yacht Club was organized. When incorporated in 1932, it opened a clubhouse beneath the south pier at Saltair. However, as stated in Exhibit D-3, p. 211: "The facilities at Saltair became increasingly less satisfactory as the lake shrank upon itself. It was difficult to reach the boats, for the increasing shallowness of the water necessitated anchoring farther and farther out from the pavilion. And even when the water was deep enough to allow the boats to come to the pier, there was no protection from waves and storms.

"The need clearly was for a harbor of some kind, and the yacht club began groping toward plans for building an encirclement of crib work at Saltair . . . . [A]ll plans were overturned by the swiftness with which the lake began sinking, the brine concentration became so great that precipitation of sodium chloride began. It collected on the boats moored near Saltair and substantially added to the difficulties of the club members.

"It was noticed that the water in the vicinity of Garfield and Black Rock did not precipitate salt on the beach because of a small inflow of fresh water from springs along the lake shore. Though the inflow was not great, it was sufficient to prevent salt precipitation over a two mile stretch of beach . . . . A site accordingly was chosen about a mile east of Fritch Island [the Sunset Beach location]."

In 1939, with the cooperative efforts of Salt Lake County, and the work relief administration of the Federal Government, this harbor was built. It is located a mile or so east of Sunset Beach, and 17.8 miles from Salt Lake City on Route U. S. 40. It consists of a solid "T" shaped breakwater with boat shelters along its side in a small dredged

channel. (See Ex. P-11.) The stem of the "T" connects with the highway and permits the passage of automobiles on its top surface. It accommodated up to about 50 boats at one time, including those of the County police. In 1942 from 75 to 100 boats, ranging from rowboats to large cabin cruisers, were using the harbor. However, "[t]here was insufficient space at the harbor for all who desired to operate boats on the lake, nor were the facilities adequate." (Ex. D-3, p. 211.) At time of trial the harbor and its facilities were not in the best of condition and sedimentation in the channel was causing a maintenance problem.

(b) *Little Valley Harbor:* This harbor is located on the west shore of the Promontory, a few miles north of Promontory Point. It was 1,500 feet long and 400 feet wide with a 2½ mile long channel to the deep part of the Lake. The Southern Pacific Railroad excavated this harbor in 1957, with floating dredges mainly to load barges with land fill for use in the construction of the solid causeway across the northwest arm of the Lake. The harbor was not difficult to dredge as the bed consisted of muck and clay with some scattered rock content. Presently the harbor is not in good condition and the entrance channel is also narrowing from sedimentation. (See Ex. P-29.)

40. *Bird Refuges on the shore of the Lake:* The shores of the Lake and some of its islands have long been the habitat, nesting ground and stopping place for a large number of water fowl and marsh related birds. This area is an important link in the Canadian-Mexico migratory bird route. As noted in Ex. P-31, p. 53-54: "As the pioneers expanded their agricultural operation in the valley and began to turn water from natural streams into their farmlands, marshes supporting the majority of the area's water fowl population began to dwindle. Tracts of surveyed land in the Bear

River area which were valuable for waterfowl management purposes were withdrawn from entry by the Federal Government in 1920. In 1923 construction was initiated in the State's public shooting ground utilizing part of the area withdrawn by the Government and private lands purchased for that specific purpose." Started in 1928 and completed in 1932, the Government established the 65,000 acre *Bear River Bird Refuge,* one of the finest in the world, upon the vast marsh lands of the Bear River delta on the east shore, west of Brigham City. Forty percent of this land was below the meander line, and the United States set aside an equal area of the refuge for free public hunting in season. The idea caught on and within a space of five years the State established three more bird refuges: *Locomotive Springs* in 1931, northwest of Monument Point; *Farmington Bay* in 1935, on the east shore, eight miles north of Salt Lake City; and *Ogden Bay* in 1937, also on the east shore, nine miles west of Ogden, on the Weber River delta.[28] In the 1950's, the United States paid the State $20,264.25 for the purchase from it of relicted land as part of the Weber Basin project. In 1964, the 12,000 acre *Willard Bay Waterfowl Management* area, just south of the Bear River Bird Refuge, was established with funds provided by the United States, in mitigation of loss of water fowl habitat caused by the construction of the Willard Reservoir. During peak use periods these marshes play host to over a million ducks. In addition the natural areas provide for 750,000 more. Waterfowl and marsh animal hunting is available to the public in season. Annually over 169,000 ducks and 3,000 geese (42% of the State's total) and 30,00 muskrats are harvested here. These wild life and bird sanctuaries presently and in the future offer a great attraction to the general public to travel on the Lake for viewing.

28. See Behle, *The Bird Life of Great Salt Lake* (1958), pp. 164-192 (Ex. P-30; Ex. P-1).

41. The United States spent at the request of the State, or has reimbursed the State, a total of $1,156,374.25 under the Pittman-Robinson Act. (Wildlife Conservation Act, 16 U. S. C. (1964) § 669 et seq.)

42. The setting aside by the United States of a portion of the Bear River Bird Refuge for free public hunting, and its payment to the State for the purchase of relicted land to be used as part of the Weber Basin project as well as the reimbursements under the Pittman-Robinson Act are relied upon by the State of Utah as a basis for its assertion that the United States should be estopped from denying Utah's title in this action.

43. The State of Utah has not shown any detriment or harm from any of the above acts of the United States.

44. *Antelope Island causeways:* This island has been connected with the shores of the Lake by two solid land-filled causeways. One of them traverses the shallow gap, which could be forded when the level of the Lake was low, between the southern tip of the island and the southeast shore. Construction on the other has been piecemeal, starting in 1954, and bridges the seven and one-half miles between the northeastern part of the island and the town of Syracuse on the eastern shore. This causeway has a surface forty-two feet wide, and its interspersed with culverts, permitting the passage of small boats when the level of the Lake is low.

45. *Harvesting of brine shrimp and brine shrimp eggs:* Since 1953, the Saunders Brine Shrimp Company has been harvesting brine shrimp and brine-shrimp eggs from various shallow sections of the Lake to be used as food for fish, especially tropical fish. Between the first of June and mid-

August the brine shrimp are retrieved by nets in an area off Antelope Island. Three air boats, 18 feet long and 6 feet wide, maneuverable in one to one-half foot of water and capable of carrying about 200 pounds of adult brine shrimp, are used in the gathering process. A 17-foot 50 horsepower outboard motor boat is also employed. Between mid-September and the end of November, the brine-shrimp eggs, which float on the surface and are washed up on the shoreline, are recovered by a four-wheel drive vehicle with scrapers and shovels. The catch is brought ashore and transported inland by truck to the processing plant near Salt Lake City, where the brine shrimps are frozen and placed in plastic bags, while the eggs are vacuum packed. In the best year 90,000 pounds of shrimp and 200,000 pounds of eggs were harvested, for which a royalty of $5,000 was paid to the State of Utah. The degree of the Lake's salt concentration affects the life of the brine shrimp.

46. *Boats on the Lake:* In this proceeding various water craft have been identified either by name, type, size, passenger capacity, use or name of the owner as having sailed upon the Lake during the period beginning 1824-1825 and ending in May of 1969. They total over 141 in number. The largest of these were six dump barges, each of which was 250 feet long, 55 feet wide and 12 feet, 4 inches deep at midship, being 2 feet deeper than that forward and aft, and were used in carrying material for the causeway in the 1957-1959 period and carried loads equivalent to that carried by 70 to 90 railroad cars. This type of vessel was superior to the kind customarily used on water like the Lake on January 4, 1896. Each of the barges was pushed by a tugboat of a thousand horsepower. Also used in this same construction were five deck barges, each 170 by 48 by 10 feet; pile driving barges; two twin-screw tugboats of 600 horsepower each, two dredges, three more tugboats of 200

horsepower; and a number of smaller boats. These boats, 39 in number, operated on the Lake in all seasons during the period of construction when the Lake level was between 26.5 feet (4,197.5 feet) and 24.5 feet (4,195.5 feet) deep, approximately 3.5 to 5.5 feet lower than at Statehood.

47. *Type of boats on the Lake:* The following are the types of water craft mentioned in the evidence as having sailed on the Lake:[29] (a) Rowboat, (b) bull boat, (c) scow, (d) skiff, (e) frigate, (f) sailboat, (g) sloop, (h) yawl, (i) schooner, (j) steamer or steamboat (sternwheel and sidewheel), (k) catamaran, (l) dory, (m) launch, (n) yacht, (o) DUKW or "duck", (p) Chris-Craft, (q) LCI, (r) airboat, (s) tugboat, (t) barge (deck, anchor, dump and pile driving), (u) float boat, (v) dredge, and (w) jet boat.

48. Water craft were identified in the evidence as having been used for transporting or hauling the following over the Lake:

(a) Passengers and workmen;

(b) Livestock such as cattle, sheep, horses and buffalo to and from Antelope and Fremont Islands;

(c) Grain;

(d) Lumber in the form of fence posts, cedar posts, railroad ties and telephone poles;

(e) Household supplies, flagstone, farm machinery, pump-station supplies;

(f) Material for the construction of the railroad trestles and causeways;

(g) Guano from Gunnison and Bird Islands to the mainland;

---

29. For definitions, see Appendix E.

(h) Brine shrimp and brine-shrimp eggs;

(i) Ores, minerals and salt;

(j) Salt crystals and rocks; and

(k) Wild birds for Hogle Zoo.

49. The remaining identified craft were used for the following purposes:

(a) Exploration (3) and survey (2) of the Lake;

(b) Scientific investigation (5) and study of the Lake;

(c) Excursions (15), recreation (11), purely pleasure (3), and musical entertainment;

(d) Railroad maintenance and patrol of the trestle and causeway (4);

(e) Law enforcement patrol;

(f) Rescue operations;

(g) Harvest of brine shrimp and brine-shrimp eggs (4), and

(h) Publicity.

50. A number of the boats involved in the uses set forth above sailed on the Lake when its level was higher than 30 feet at Statehood. Yet these same boats could have sailed for like purposes had the need existed and were the Lake the same level as on January 4, 1896, with a few exceptions.

51. Not counting excursion trips, the boating uses of the Lake have been more of a private nature rather than by independent contractors for hire. Most of the boats on the Lake today are used privately and by the paying public for recreation and pleasure.

52. There was no evidence to show that any regularly scheduled freight or passenger service operated on the Lake.

53. *Antelope Island State Park:* The Utah Division of Parks and Recreation has created and is developing a 2,000 acre area at the north end of Antelope Island as a State Park. The plan envisions the construction of a 9-foot-deep marina estimated to cost $455,000, to accommodate 200 boats ranging in size from canoes to 45-foot crafts. The Division has awarded a concessionaire contract to the former operator of Sunset Beach, as the successful bidder, for the privilege of making boats available to the public for excursion tours and hire at the park.

54. *Great Salt Lake National Monument:* A bill has been introduced in the Senate (S. 25, 91st Cong., 1st Sess., Ex. P-15.) to establish Antelope Island as the Great Salt Lake National Monument and to be administered as a national park in accordance with the Act of August 25, 1916, 39 Stat. 535, 16 U. S. C. §§ 1-4. It is anticipated that this park, when completed, will attract a large number of tourists.

55. *Population centers near the Lake:* The region in the vicinity of the Lake, at least to the east and southeast, is well settled. In 1960, the numbers of persons in Davis County, Ogden and Salt Lake City, all of which are within twenty miles of the Lake, was approximately 325,000. This number comprised almost half the population of the State of Utah.

56. *Communities close to the Lake:* Except for Lakeside (not to be confused with former Lake Side) on the west shore of the Lake, which has a population of about fifty

people who maintain the tracks of the Southern Pacific Railway, there are no communities nearer than four miles of the Lake's waters. On the western and northern shores, except for Lakeside, there are no communities anywhere near the Lake within the State of Utah.

57. *Chemical compounds in the Lake:* The Lake has dissolved in it a number of chemical compounds (salts), which are valuable either in themselves or because certain elements are locked up in them. The soluble solids (99.43%) and their percentage by weight are as follows:

(a) Sodium Chloride (common table salt) ... 79.11%
(b) Magnesium chloride 9.95%
(c) Sodium sulphate (glauber salt) 6.22%
(d) Potassium sulphate 3.58%
(e) Calcium sulphate (lime sulphate) 0.57%

Others are potassium chloride, magnesium sulphate (epsom salt), potassium carbonate, sodium carbonate, and lithium chloride. The secret of profiting by them is to use an economical process of extracting, refining and transporting them to the market place. Common table salt (sodium chloride) was the first and still is the chief of the useful products derived from the brine. Extracting the salts from the brine is easy enough. The southeast shore is dotted with shallow open air ponds enclosed by dikes. The brine is first pumped into the ponds. As the sun and wind cause evaporation, the salts are deposited on the bottom of the ponds. "Ordinarily sodium chloride precipitates first, followed by potassium and magnesium chloride. When the salts that are wanted have reached the bottom, the remaining water is diverted to other ponds for further evaporation. Finally the minerals are harvested from the ponds' bottoms and refined." (*Business Week* (Oct. 15, 1966), pp.

94-96.) Sodium sulphate is used in the paper industry, magnesium in airplane building, chlorine as a bleaching and cleansing agent; magnesium sulphate in pharmaceuticals, dyes and explosives; and potassium for fertilizers. "In recent years, however, a number of business enterprises have shown interest in obtaining rights to produce magnesium, lithium and potash, and other substances of industrial value from the Lake's waters. Large areas of the adjacent upland flats are necessary for the large scale operations contemplated calling for the investment of many millions of dollars." (See Ex. P-34, p. 33.)

58. *Minerals in the Lake's bed:* Many compounds, containing minerals, are either known or their presence is indicated in the bed of the Lake. Calcium carbonate is widespread. Thin layers of sodium sulphate are buried at shallow depths in the sand at some localities. However, extraction of minerals from the bed has been small and intermittent. There is a possibility that oil and gas exist beneath the bed. Oil seeps are found at certain points. During the past fifteen years a total of 600,000 acres have been leased out by the State of Utah on a royalty basis for oil and gas exploration under the bed. A number of the major oil companies, such as Gulf, Humble and Superior, have participated in this venture.

59. *Minerals in the environs of the Lake:* Ooolite sand deposits, used as a flux in the metal refining industry, are found at Lakeside. Dunes of this material, five to ten miles square and five to six feet thick, exist on the west and northwest section of the Stansbury peninsula. The State of Utah has issued leases on a royalty basis for its extraction. Dolomite, lithic sands, and pure limestone deposits, used in refractory material, may be unearthed all through the Lakeside, Newfoundland and Silver Mountains in the Desert.

Lowgrade (i.e., not commercially feasible to extract at present) phostatic beds, ten miles long and six feet deep, exist on the west side of the Terrace Mountains. At the surface of the Cedar and Grassy Mountains to the south and west of the Lake, ragonite, used in some building materials, exists. Copper, lead and silver are mined in the mountains to the south. These materials, when mined or gathered, are transported to the refineries and market place by truck and railroad.

60. *Diversions of water from tributaries of the Lake:* In 1965, 3,339,940 acre-feet of water have been diverted annually from streams flowing into the Lake and stored. In addition, there were substantial volumes of water diverted directly from these tributaries and consumptively used. According to the records of the Utah State engineer during the period 1949-59, the average yearly direct diversion and use was 1,395,351 acre-feet. When this figure is added to the above storage figure, the total direct annual diversion would equal 4,735,292 acre-feet of water. (Ex. P-31, p. 43-44.) There has been no testimony as to what effect this has on the annual level of the Lake.

61. *Artificial drawbacks and obstacles to travel and commerce on the Lake since Statehood:*

(a) Lucin Cutoff and the railroad causeway. These structures prevent the free travel of water craft of certain dimensions between Bear River Bay and the south portion of the Lake, and between the northwest arm with the south. Boats with beams greater than eleven feet have difficulty in passing through the trestle because of lateral clearance, especially when the level of the Lake is low. And when the level is high, boats have trouble in passing through the causeway culverts.

(b) The solid causeways connecting the tips of Antelope Island with the shore of the Lake prevent water craft from circling that island on the east, especially the one running from the northern top to the town of Syracuse. The culvert clearance was not shown.

(c) Unpredictability of the Lake's level and waterline is a factor in man's decision to build harbors and make improvements near the water's edge. Take, for example, Saltair, once a thriving beach resort along the Lake's front, now a desolate spot several miles inland.

(d) Uncertainty of title to the bed and exposed portions of the Lake's bed.

(e) The State of Utah has not made directly any expenditures for the construction and maintenance of a harbor on the Lake's shore, but it does plan to build a large marina on the northern top of Antelope Island. Beyond the assistance it gave in the construction of the Salt Lake County Boat Harbor, the United States has done nothing in the way of building or improving harbors on the Lake.

(f) Draining of sewage into the Lake.

(g) Diversion of water from the Lake's tributaries.

(h) Efforts on the part of both parties to this action to maintain the Lake's shores and some of its islands in their natural state by establishing, at great cost, wild water fowl sanctuaries.

62. While commerce and trade, unless pleasure boating be considered as such, has not flourished on the Lake, this is so not because, as the Government contends, the drawbacks and obstacles are too formidable, but rather, as the State maintains, the need, strong enough to overcome them,

has not arisen and commercial utilization on a large scale still awaits future improvements and demands.

63. *Artificial aids to travel on the Lake which may be implemented in the future:*

(a) Cutting out and maintaining of harbors in accessible locations on the shores of the Lake. The expense of doing this is relatively less than on other inland waterways customarily used for navigation because of the clay bottom with its low rock content, and the slow rate of silting or depositing of sediment by reason of the lack of tides and strong currents.

(b) Modifying of the Lucin Cutoff and solid causeways by the construction of draw or swing bridges of sufficient width.

(c) Increasing the extraction of large quantities of salt without greatly lowering the water volume.

(d) Enjoining the removal of water in large quantities by industry from the Lake.

(e) Enjoining the dumping of sewage into the Lake.

(f) Settlement of title to the Lake's bed and the relicted lands.

64. The lands conveyed to the State of Utah on June 15, 1967, pursuant to the Act of June 3, 1966 (80 Stat. 192), includes all of the lands below the meander line of Great Salt Lake as depicted on the map attached to the Stipulation filed by the parties in this action.

IV.

CONCLUSIONS OF LAW.

1. A state upon its admission into the Union acquires by virtue of its sovereignty whatever title to the beds of all navigable bodies of water within its borders possessed by the United States and not conveyed away by it prior to Statehood. This title, however, is subservient to the right of the Federal government to regulate such waters for the purpose of navigation.

2. The determination of the question of navigability, when asserted by a State as the foundation of its title to lands underlying bodies of water, is to be resolved on the basis of law recognized and applied by the Federal courts.

3. In any proceeding in the Federal courts involving the question of navigability of a body of water, the burden of proof is on the proponent of navigability.

4. The test for determining navigability under the Federal law, when asserted by a State as the basis of its title to land underlying bodies of water, must be determined as of the date of the admission of the State into the Union.

5. That test is one of fact regarding the capacity or susceptibility of the waters in their natural state, or ordinary condition, of being used, as the need may arise, by the then customary modes of trade and travel for useful commerce.

6. This capacity may be shown by (1) the actual use to which the water was put at the critical time, no matter in what mode the commerce may have been conducted;

(2) the physical characteristics of the body of water in question; (3) the actual uses to which the body of water has been put, either before or after the critical date, if it can be said that these uses could have been conducted on the body of water in its natural state or condition, and (4) experimentation demonstrating capacity.

7. The use of boats by their owners to carry livestock back and forth from Antelope and Fremont Islands to the shores of Great Salt Lake in connection with their business operations, as well as the use of such boats to carry supplies to these islands, and the hauling of guano from Gunnison and Bird Islands to the shores of the Lake can be deemed to show the utility of the waters for commerce to the general public.

8. The use of boats for the construction and maintenance of railroad trestles and causeways across Great Salt Lake, for the exploration and scientific study of the Lake, and for police patrol activities and rescue operations constitute trade and travel in the customary modes of trade and travel on water.

9. Boating for purposes of recreation and pleasure when conducted on vessels of the size and character shown in the evidence is useful commerce within the meaning of navigability.

10. The fact that the body of water in question is not capable for use for navigation in interstate or foreign commerce will not defeat a State's claim of title to the bed of that body of water.

11. The fact that the navigability of the body of water in question is beset with difficulties will not defeat a State's claim of title to the bed of that body of water.

12. The State of Utah is not estopped from asserting and offering proof that it had title to the bed of Great Salt Lake as of January 4, 1896.

13. Assuming that Great Salt Lake was not navigable on January 4, 1896, the United States should not be estopped from opposing the State of Utah's claim of title and asserting title in itself.

14. Great Salt Lake on the date of the State of Utah's admission into the Union was navigable under the laws of the United States.

15. On January 4, 1896, title to the bed of Great Salt Lake vested in the State of Utah, and did not remain in the United States.

16. The State of Utah is entitled to a decree by this Court quieting title to the bed of Great Salt Lake in itself as against the United States.

17. The United States is not entitled to a decree quieting title to the bed of Great Salt Lake in itself as against the State of Utah.

18. The State of Utah is not required to pay the United States for the land covered by Great Salt Lake and below the boundary line of the Lake's bed as of January 4, 1896.

19. Unless the parties to this action otherwise stipulate or agree, all issues relating to the exact boundaries of the bed of Great Salt Lake, as of January 4, 1896, are to be reserved for subsequent determination by this Court.

V.

PROPOSED DECREE.

The State of Utah has not submitted a recommended decree for the signing by this Court. In such absence, the Special Master proposes the following decree:

IT IS ORDERED, ADJUDGED AND DECREED THAT:

1. The United States of America, its departments and agencies, are enjoined, subject to any regulations which the Congress may impose in the interest of navigation or pollution control, from asserting against the State of Utah any claim of right, title and interest:

(a) to the bed of the Great Salt Lake lying below the meander line of Great Salt Lake as duly surveyed heretofore or in accordance with Section 1 of the Act of June 3, 1966, 80 Stat. 192, with the exception of any lands within the Bear River Migratory Bird Refuge and the Weber Basin federal reclamation project,

(b) to the natural resources and living organisms in or beneath the bed of the Great Salt Lake as delineated in (a) above, and

(c) to the natural resources and living organisms either within the waters of the Great Salt Lake, or extracted therefrom, lying below the meander line of the Great Salt Lake, as delineated in (a) above, except brine and minerals in solution in the brine or precipitated or extracted therefrom in whatever federal lands there may be below said meander line, together with the right to prospect for, mine, and remove the same, as set forth in Section 3 of the Act of June 3, 1966, 80 Stat. 192.

2. The State of Utah is not required to pay the United States, through the Secretary of the Interior, for the lands, including any minerals, lying below the meander line of the Great Salt Lake, as delineated in 1(a), above, of this decree.

3. The prayer of the United States of America in its Answer to the State of Utah's Complaint that this Court "confirm, declare and establish that the United States is the owner of all right, title and interest in all the lands described in Section 2 of the Act of June 3, 1966, 80 Stat. 192, as amended by the Act of August 23, 1966, 80 Stat. 349, and that the State of Utah is without any right, title or interest in such lands, save for the right to have these lands conveyed to it by the United States, and to pay for them, in accordance with the provisions of the Act of June 3, 1966, as amended," is denied.

Respectfully submitted,

J. CULLEN GANEY,
Senior Circuit Judge,
Special Master.

VI.

APPENDIX.

DOCKET ENTRIES.

Mar. 1, 1967. Motion for leave to file bill of complaint filed.

May 1, 1967. Response to motion for leave to file complaint filed.

May 3, 1967. Motion for leave to file bill of complaint distributed.

May 15, 1967. Motion for leave to file bill of complaint granted and the United States is allowed sixty days to answer.

Jun. 5, 1967. Appointment of Special Master distributed.

Jun. 12, 1967. Ordered that the Honorable J. Cullen Ganey, Senior Judge of the United States Court of Appeals for the Third Circuit be, and he is hereby appointed Special Master in this case. See ORDER. [388 U. S. 902.]

Jun. 15, 1967. Oath of Special Master filed.

Jul. 14, 1967. Answer filed.

Sept. 18, 1967. Motion of Morton International, Inc. to intervene as defendant and file answer filed.

Oct. 11, 1967. Above Motion distributed.

Oct. 23, 1967. Motion of Morton International, Inc., for leave to intervene and file answer is referred to Special Master. Marshall, J., OUT. [389 U. S. 909.] Counsel for Morton International: Martin Jacobs, Myer Feldman, L. M. McBride, Frank A. Wollaeger.

Jan. 25, 1968. Brief of the State of Utah in opposition to motion by Morton International, Inc. for leave to intervene and answer filed.

Jan. 26, 1968. Motion of Great Salt Lake Minerals & Chemicals Corporation to intervene as a plaintiff, and its complaint filed.

Feb. 5, 1968. Reply brief of Morton International, Inc. to brief of State of Utah in opposition to motion of Morton International, Inc. for leave to intervene, filed.

Feb. 7, 1968. Motion of Great Lake Minerals & Chemicals Corporation for leave to intervene distributed.

Feb. 15, 1968. Joint motion for order directing manner of payment of Special Master's expenses filed. (NP).

Feb. 19, 1968. Supplemental motion of Great Salt Lake Minerals & Chemicals Corporation to intervene as a defendant, and its answer and cross claim filed.

Feb. 20, 1968. Memorandum for United States filed.

Feb. 20, 1968. Reply memorandum for United States filed.

Feb. 21, 1968. Supplemental motion of Great Salt Lake Minerals & Chemicals Corporation to intervene as a defendant, and its answer and cross claim distributed. Also joint motion for order directing manner of payment of Special Master's expenses distributed.

Feb. 21, 1968. Memorandum for U. S. in response to motion and amended motion of Great Salt Lake Minerals & Chemicals Corporation filed.

Feb. 24, 1968. Brief of the State of Utah in response to reply brief of United States, etc.

Mar. 5, 1968. Motion of Great Lake Minerals & Chemicals Corp. for leave to intervene distributed. Also supplemental motion of Great Salt Lake Minerals & Chemicals Corp. to intervene as a defendant and its answer and cross claim distributed. Also joint motion for order directing manner of payment of Special Master's expenses distributed.

Mar. 11, 1968. Joint motion for order directing manner of payment of Special Master's expenses *withdrawn.*

Mar. 11, 1968. Motions of the Great Salt Lake Minerals & Chemicals Corp. for leave to intervene as a plaintiff and to intervene, in the alternative, as a defendant, together with its answer and cross claim are referred to the Special Master for a report and recommendation. Such report and recommendation shall also include the motion of the Morton International, Inc., for leave to intervene heretofore referred to the Special Master, Marshall, J., OUT. [390 U. S. 977.]

Apr. 16, 1968. Brief of Morton International, Inc. in response to stipulation and supplemental memorandum for the United States filed.

Apr. 17, 1968. Memorandum of Great Salt Lake Minerals & Chemicals Corp. regarding Stipulation between U. S. and State of Utah filed. Counsel for intervenor: Raymond T. Senior, Claron C. Spencer.

Apr. 22, 1968. Supplemental memorandum for U. S. and stipulation filed.

May 17, 1968. Joint motion for leave to file stipulation filed.

May 20, 1968. Waiver of right to file response to joint motion for leave to file stipulation by Morton International, Inc., filed.

May 21, 1968. Waiver of right to file response to joint motion for leave to file stipulation by Great Salt Lake Minerals & Chemicals Corp. filed.

May 22, 1968. Joint motion for leave to file stipulation distributed.

Jun. 3, 1968. Joint motion for leave to file a stipulation, etc., referred to Special Master. Marshall, J., OUT. [391 U. S. 962.]

Oct. 28, 1968. Report of Special Master filed. Exceptions, if any, may be filed by the parties within 45 days. Reply briefs, if any, may be filed within 30 days thereafter, Marshall, J., OUT.

Dec. 11, 1968. Exceptions of Morton International, Inc. to Report of Special Master and supporting brief filed.

Dec. 13, 1968. Motion of Great Salt Lake Minerals & Chemicals Corporation for leave to file memorandum in lieu of exceptions to Report of Special Master filed.

Dec. 24, 1968. Exceptions of Morton International, Inc. to Report of Special Master distributed. Also motion of Great Salt Lake Minerals and Chemicals Corporation for leave to file memorandum in lieu of exceptions to Report of Special Master distributed.

Jan. 9, 1969. Motion and order extending time to file reply. (Until 1-21-69).

Jan. 13, 1969. Brief of the State of Utah in support of the Special Master's Report filed.

Jan. 21, 1969. Memo of U. S. on report of Special Master and exceptions thereto by Morton International filed.

Jan. 22, 1969. Exceptions of Morton International, Inc. to Report of Special Master distributed. Also motion of Great Salt Lake Minerals & Chemicals Corp. for leave to file memorandum in lieu of exceptions to Report of Special Master.

Feb. 25, 1969. Above redistributed.

Mar. 3, 1969. Determination of the Report of Special Master denying intervention to Morton International, Inc., approved. See ORDER. [394 U. S. 89.]

Appendix A.

UNITED STATES DISTRICT COURT
OFFICE OF THE CLERK
DISTRICT OF UTAH
SALT LAKE CITY, UTAH 84101

October 23, 1969

ANDREW JOHN BRENNAN
Clerk

Honorable J. Cullen Ganey
Senior United States Circuit Judge
United States Court of Appeals
For the Third Circuit
3030 United States Court House
Philadelphia, Pa. 19107

Dear Judge Ganey:

In reply to your letter of October 16, 1969, be advised that I have not been able to locate any admiralty action filed in this Court.

Enclosed are copies of Findings of Fact and Conclusions of Law, Judgment and Decree issued on December 14, 1960, by the Honorable Willis W. Ritter, Chief Judge of this Court, in the case of United States of America vs. State of Utah, et al, (C 137-59). This case involves navigability of a river and is, of course, not in any sense an admiralty action. Judge Ritter's decision was affirmed and is reported as State of Utah vs. United States of America, 304 F. 2d 23.

There are other cases regarding navigability of waters in Utah, including Great Salt Lake, among which are:

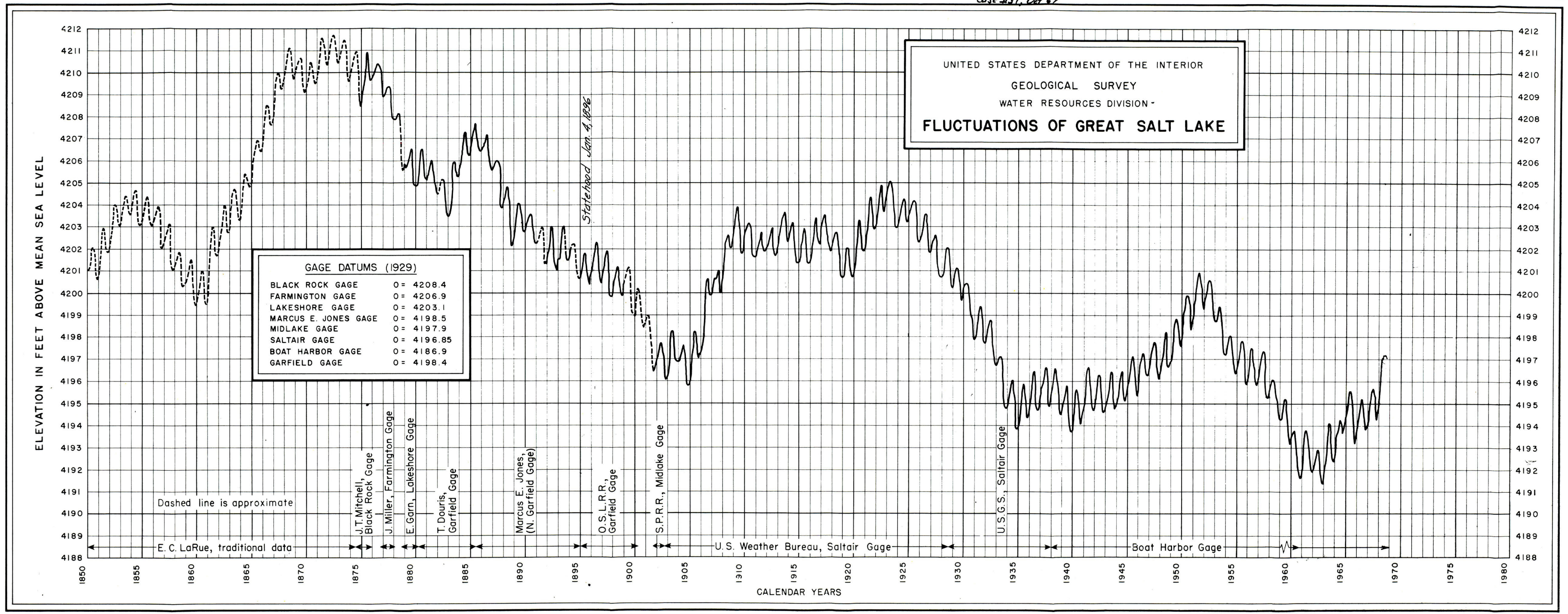
Robinson vs. Thomas, 75 Ut. 446, 286 P. 625
Monroe vs. State, 111 Utah 1, 175 P. 2d 759
United States vs. Utah, 51 S. Ct. 438, 283 U. S. 64, 75 L. Ed. 844.

It is a pleasure to be of service to your Honor. This office acts as the Clerk for both Divisions in the District of Utah.

Respectfully,

ANDREW JOHN BRENNAN
Andrew John Brennan, Clerk
United States District Court

AJB:am
enclosure


UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION -
FLUCTUATIONS OF GREAT SALT LAKE
GAGE DATUMS (1929)
BLACK ROCK GAGE 0 = 4208.4
FARMINGTON GAGE 0 = 4206.9
LAKESHORE GAGE 0 = 4203.1
MARCUS E. JONES GAGE 0 = 4198.5
MIDLAKE GAGE 0 = 4197.9
SALTAIR GAGE 0 = 4196.85
BOAT HARBOR GAGE 0 = 4186.9
GARFIELD GAGE 0 = 4198.4
ELEVATION IN FEET ABOVE MEAN SEA LEVEL
CALENDAR YEARS
Statehood Jan 4, 1896
Dashed line is approximate
E. C. LaRue, traditional data
J.T. Mitchell, Black Rock Gage
J. Miller, Farmington Gage
E. Garn, Lakeshore Gage
T. Douris, Garfield Gage
Marcus E. Jones, (N. Garfield Gage)
O.S.L.R.R. Garfield Gage
S.P.R.R., Midlake Gage
U.S. Weather Bureau, Saltair Gage
U.S.G.S., Saltair Gage
Boat Harbor Gage

Appendix C.

(Letterhead of)
U. S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
WEATHER BUREAU FORECAST OFFICE
175 North 2300 West, Room 118
Salt Lake City, Utah 84116

April 7, 1970

Honorable J. Cullen Ganey
United States Court of Appeals
for the Third Circuit
3030 United States Courthouse
Philadelphia, Pennsylvania 19107

My dear Judge Ganey:

Your letter dated March 19, 1970 went through a number of other offices before reaching the Salt Lake City Weather Bureau. I am very sorry for the delay in answering your request.

It has been difficult to locate early records regarding the temperature of Great Salt Lake. Enclosed is a copy of a study containing some early data which was furnished by R. J. Madison, Hydrologist with the U. S. Geological Survey in Salt Lake City.

We do have official record of data that you requested regarding the temperature and precipitation at Salt Lake City from 1896 to 1969, which has been tabulated and is enclosed with this letter.

Respectfully yours,
WILLIAM T. CHAPMAN
William T. Chapman
Meteorologist in Charge

Enclosures

UNITED STATES DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION

Weather Bureau Forecast Office
Station Salt Lake City, Utah *Date* April 7, 1970

I hereby certify that records of the Environmental Science Services Administration indicate: that the maximum temperature for January 4, 1896 was 34°F, and the minimum temperature was 9°F. The average pressure for the day was 25.977 inches of mercury.

WILLIAM T. CHAPMAN,
Meteorologist in Charge.

UNITED STATES DEPARTMENT OF COMMERCE

ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION

Weather Bureau Forecast Office

Station Salt Lake City, Utah *Date* April 7, 1970

I hereby certify that records of the Environmental Science Services Administration indicate: the annual maximum and minimum temperatures, and precipitation for the years 1896 to 1969 are as follows:

Year	Temperature		Total	Year	Temperature		Total	Year	Temperature		Total
	High	Low	Precip		High	Low	Precip		High	Low	Precip
1896	97	-2	18.42	1921	99	12	14.45	1946	100	11	16.51
1897	98	2	16.74	1922	98	-7	21.69	1947	101	3	17.86
1898	97	-3	16.09	1923	95	4	18.96	1948	99	6	15.43
1899	97	-10	17.57	1924	97	-8	13.86	1949	101	-7	15.75
1900	101	2	11.53	1925	103	12	17.17	1950	99	-3	13.45
1901	101	4	16.08	1926	101	8	15.61	1951	101	-3	17.50
1902	98	-4	11.41	1927	100	8	20.69	1952	100	-1	15.14
1903	98	-4	14.62	1928	100	9	12.10	1953	101	10	12.32
1904	97	6	16.31	1929	99	-1	14.47	1954	102	7	12.43
1905	97	-4	14.23	1930	100	-4	15.73	1955	102	-14	13.63
1906	96	7	21.28	1931	105	5	11.40	1956	101	-3	12.39
1907	95	13	19.22	1932	97	-8	14.88	1957	99	-2	18.44
1908	95	6	20.85	1933	101	-10	11.11	1958	102	6	10.72
1909	101	4	19.68	1934	103	14	14.29	1959	101	-1	13.82
1910	96	1	11.25	1935	99	2	12.96	1960	107	-4	12.37
1911	96	6	15.13	1936	101	2	17.75	1961	104	-10	11.75
1912	94	6	19.19	1937	102	-11	14.54	1962	101	-14	14.90
1913	97	-2	16.69	1938	102	14	16.41	1963	102	-18	14.09
1914	97	11	16.69	1939	103	7	10.68	1964	101	-10	17.87
1915	98	5	14.49	1940	103	9	18.58	1965	98	3	18.43
1916	99	2	16.06	1941	102	14	21.24	1966	102	-3	8.99
1917	97	2	14.17	1942	101	-2	16.12	1967	101	2	16.52
1918	101	4	16.11	1943	103	4	12.81	1968	102	0	21.11
1919	100	0	13.42	1944	100	7	18.87	1969	99	1	16.09
1920	98	8	21.56	1945	98	11	18.82				

WILLIAM T. CHAPMAN,

Meteorologist in Charge.

WESTERN UNITED STATES 1:250,000 — BRIGHAM CITY — NK 12-1

NK 12-TERN UNITED STATES 1:250,000 — OGDEN — NK 12-8

SALT LAKE CITY, UTAH, WYOMING
1954

Appendix E.

DEFINITION OF WATER CRAFT.

Catamaran (Kăt′.a.ma.ran′): Any vessel with twin hulls side by side.

Dory (dō.rĭ): A flat-bottomed boat with flairing sides.

DUKW (or "duck"): The code designation for a 2½-ton 6-wheel-drive truck equipped with a propeller and watertight hull for ferrying, lighter service, or amphibious landing of troops. (See Ex. P-14.)

Frigate (frig′.it): A light vessel propelled by sail and oars.

Launch: An open, or largely undecked, power-driven boat.

LCI: A 50 to 60 foot long military landing craft, for infantry.

Schooner (skōō′.ner): A fore-and-aft rigged vessel, typically having two masts, with the smaller sail on the foremast and the mainmast stepped nearly amidships.

Scow: A large flat-bottomed boat, with broad, square ends, used as a lighter.

Skiff: A boat with centerboard and spiritsail, light enough to be rowed.

Sloop: A fore-and-aft rigged vessel with one mast and a single headsail jib.

Yacht (yŏt): Any one of various types of relatively small vessels, characteristically with sharp prow and graceful lines, and ordinarily used for pleasure.

Yawl: A fore-and-aft rigged vessel carrying a mainsail and one or more jibs, with mizzenmast fore and aft.