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August 29, 1994

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Dear Peter:

This letter concerns the Brown/Austin mediation agreement which was established on June 21. Specifically, this letter concerns the "revision of endnote #40" which is the first item mentioned in the Mediation Agreement.

Less than 800 copies of *Grand Canyon: Monument to Catastrophe* remain in our warehouse. Although summer sales have been slow, we believe that orders will soon increase. Thus, we need to prepare for the second printing of the book almost immediately.

This brings us to the purpose of endnote #40. The most important first question you can ask is, "What is the purpose of endnote #40?" The reason I wrote endnote #40 was to provide a short historical survey of the various workers who have contributed to our understanding of breached dam models. The endnote's purpose is to survey *workers* in historical order, not to provide detail concerning their *explanations*. Providing detail of explanations is for other text and endnotes (such as endnote #62). Because Walter has no claim from the June 21 mediation to revise endnote #62, he wants to include detail of his theory in endnote #40. This endnote is already the longest endnote in the book. If the reader needs more detail concerning evidence and interpretation, the endnote gives the bibliographic citation so the reader can go to these sources. Including such detail, I maintain, is improper for endnote #40.

Attachment A is my suggested revision to endnote #40 (page 109). It involves changes to the one sentence which was mentioned at the table on June 21. I think you will remember that our conversation on June 21 involved just one sentence of endnote #40. My suggestion is that this sentence be revised.

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Later, after reading Austin's 1988 field guidebook, Walter T. Brown, Jr., offered specific details to the theory (In the Beginning [Phoenix, Arizona, Center for Scientific Creation, fifth edition, 1989], p. 83).

I suggest this sentence be revised to read:

A theory concerning the breaching event, including names and locations of lakes, was offered by Walter T. Brown, Jr. (In the Beginning [Phoenix, Arizona, Center for Scientific Creation, fifth edition, 1989], p. 83).

I believe that this revised sentence should not be offensive to Walt Brown.

Attachment A shows my suggested revision of endnote #40 typeset with proportional typeface and the same margin spacing as the endnote in the book. You will notice that the endnote remains 65 lines long, and will not cause a new page to need to be added to the book. If endnote #40 is more than 65 lines long, the book from page 111 to 284 will have to be repaged. That is why endnote #40 must remain 65 lines long.

On August 22 I telephoned Walt and responded to his proposed revision to endnote 40. We spent over one hour discussing the content of endnote #40, and I commented on his claimed inaccuracies in the endnote (see my comments in Attachment C). It seems that getting the name "Grand Lake" into endnote #40 is a top priority for Walt.

Attachment B is Walt Brown's suggested revision to endnote #40, from his August 11 letter. His suggested revision has been typeset using proportional typeface and the same margin spacing as the book's first printing endnote. You will notice that Walt's revision is a total of 88 lines. That would cause 23 lines of text from page 110 to be displaced to page 111. All pages of the book beginning at Chapter 6 (pages 111 to 284) would have to be bumped up two page numbers. The business office at ICR tells me that repaging more than half of the book (and especially repositioning color figures in the last half of the book) would cost several thousands of dollars. Is this a wise use of the resources the Lord has entrusted to us? Are twenty three added lines of an endnote that important?

In my letter to Walt dated July 25, I requested that his revision to the endnote be very short not requiring repaging of all the book after page 109. Unfortunately, Walt's revision of August 11 added 23 lines to endnote #40. I believe his revision should contain no extra lines.

Why I no longer use the name "Grand Lake" for an Ancient Lake in Utah, Colorado, Arizona and New Mexico is Attachment D. This manuscript could be useful as we draft the document which both Walt and I coauthor, as called for in the Mediation Agreement.

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I wrote the manuscript so you can understand my position on Walt's "Grand Lake". It will help you see why I want to keep the name "Grand Lake" out of endnote #40. Endnote #62 deals with "Grand Lake".

It appears that Walt and I have reached a deadlock concerning endnote #40. It is up to you to decide. Should ICR add 23 lines to endnote #40 and repage over half the book? Or, should a revision be sought which abides by the space limitations that the first printing of the book allows? It is your choice. Does ICR spend several thousand dollars to accommodate the short endnote revision of Walt Brown?

Sincerely yours, in Christ,



Steven A. Austin
Chairman, Geology Department

SAA:mt

- Attachment A--Austin's recommended endnote #40 revision (July 25, 1994)
- Attachment B--Brown's recommended endnote #40 revision (August 11, 1994)
- Attachment C--Brown's "Problems and Inaccuracies" (July 6, 1994) with Austin's (August 22) notes
- Attachment D--"Why I no Longer Use the Name Grand Lake" (Austin, first draft manuscript, August 29, 1994)

ATTACHMENT A AUSTIN'S RECOMMENDED ENDNOTE #40 REVISION
(JULY 25, 1994)

The concept of rapid breaching of the Kaibab Upwarp by drainage from lakes has a long history. The concept was expressed by J.S. Newberry in 1861 ("Geological Report," in J.C. Ives, Report Upon the Colorado River of the West [U.S. 36th Cong., 1st session, House Executive Doc. 90, pt. 3, 1861], 154 p.), and hints followed in the work of Eliot Blackwelder in 1934 ("Origin of Colorado River," *Geological Society of America Bulletin* 45 [1934]: 551-566). Geologic evidence of a large lake in northeastern Arizona ("Hopi Lake") was provided by Howell Williams ("Pliocene Volcanoes of the Navajo-Hopi Country," *Geological Society of America Bulletin* 47 [1936]: 111-172). Tectonic activity is thought to have interrupted the flow of the Colorado River creating a large lake behind the Kaibab Plateau followed by piping failure (G. C. Bowles, "Reinterpretation of Grand Canyon Geomorphology," *United States Geological Survey Professional Paper* 1100 [1978]: 72). Creationists were suggesting catastrophic drainage models in the 1960's and 1970's. One of the most noteworthy early creationist statements of the breached dam theory appeared in the writings of Clifford L. Burdick (*The Canyon of Canyons* [Caldwell, Idaho, Bible-Science Association, 1974], p. 27). Bernard E. Northrup proposed in 1968 that erosion of Grand Canyon was caused by release of trapped glacial melt waters in the post-Flood period centuries after Noah's Flood. Post-Flood ponding of water east of Grand Canyon behind a tectonic upwarp was suggested as the cause leading to cutting the Canyon by Steven A. Austin and John H. Whitmore (*Grand Canyon Field Study Tour Guidebook*, March 23-30, 1986 [Santee, California, Institute for Creation Research, 1986], p. 48). Edmond W. Holroyd, III, recognized that a lake bigger than one of the Great Lakes could be contained upstream of Grand Canyon if the Canyon was blocked approximately at the 5,600-foot elevation ("Missing Talus," *Creation Research Society Quarterly* 24 [1987]: 15, 16). The breached dam theory was described in 1988 in a field guidebook (Steven A. Austin, *Grand Canyon Field Study Tour Guidebook*, April 9-16, 1988 [Santee, California, Institute for Creation Research, 1988], pp. 50--54). A theory concerning the breaching event, including names and locations of lakes, was offered by Walter T. Brown, Jr. (*In the Beginning* [Phoenix,

Arizona, Center for Scientific Creation, fifth edition, 1989], p. 83). Interesting field evidences for catastrophic drainage of lakes and dialog concerning the history of discussions is found in Edmond W. Holroyd, III ("Missing Talus on the Colorado Plateau," *Proceedings of the Second International Conference on Creationism*, 2 [1990]: 115-128). A summary of some of these theories was published by E. L. Williams, J. R. Meyer and G. W. Wolfrom ("Erosion of the Grand Canyon of the Colorado River: Part III--Review of the Possible Formation of Basin and Lakes on Colorado Plateau and Different Climatic Conditions in the Past," *Creation Research Society Quarterly* 29 [1992]: 18-24). Further comments were provided by Michael J. Oard. ("Comments on the Breached Dam Theory for the Formation of the Grand Canyon," *Creation Research Society Quarterly* 30 [1993]: 39--46).

**ATTACHMENT B BROWN'S RECOMMENDED ENDNOTE #40 REVISION
(AUGUST 11, 1994)**

The concept that some ancient lake breached somewhere and dumped enough water to carve the Grand Canyon has an interesting history. In 1861, John Strong Newberry proposed that smaller canyons below the Grand Canyon formed by dam breaching. Newberry was the geologist on the Ives expedition of 1857-58, sponsored by the U.S. War Department to study the lower Colorado River. ("Geological Report," in J.C. Ives, Report Upon the Colorado River of the West [U.S. 36th Cong., 1st session, House Executive Doc. 90, pt. 3, 1861], 154 p.)

In 1936, Howel Williams provided evidence of a former large lake east of the Grand Canyon, in what is now the valley of the Little Colorado River. He called it "Hopi Lake." ("Pliocene Volcanoes of the Navajo-Hopi Country," *Geological Society of America Bulletin* 47 [1936]: 111-172).

During the early 1980's, Stephen A. Austin wondered whether Hopi Lake could have breached the Kaibab Plateau and formed the Grand Canyon. He favored this because of some similarities the Grand Canyon had with the smaller eroded region that resulted from a dam breaching at Mount St. Helens in 1982.

In 1986, Bernard E. Northrup proposed in two paragraphs that a large ice age lake somewhere behind the Colorado Plateau played an important role in the formation of the Grand Canyon. ("There Really Was an Ice Age," *Proceedings of the Second International Conference of Creationism*, Vol. 1 [Pittsburgh, Pennsylvania: Creation Science Fellowship, Inc., 1986]), 93-100.) Northrup wrote that this lake, which he called Lake Kapaiowitz, was east of the Grand Canyon at 9000-foot elevation. The specific location of the lake or breach was unstated.

Edmond W. Holroyd, III, recognized that a lake bigger than one of the Great Lakes could be contained upstream of Grand Canyon if the Canyon was blocked approximately at the 5600-foot elevation at the Grand Canyon Visitor's Center. ("Missing Talus," *Creation Research Society Quarterly* 24 [1987]: 15, 16).

In 1989, Walter T. Brown, Jr. in proposing the Hydroplate Theory, also proposed mechanisms on how several related events led to the formation of the Grand Canyon: the global flood, the formation of buckled mountains, plateaus, and the removal of the flood waters. (*In the Beginning* [Phoenix, Arizona, Center for Scientific Creation, fifth edition, 1989], 58-83). The rapid drainage of the flood waters from the continents left all continental basins filled with water forming many post-flood lakes, some at high elevation. Brown discovered where a very large lake, at an elevation of 5700 feet, once occupied much of southeastern Utah and parts of Colorado, Arizona, and New Mexico. Brown named it Grand Lake. It, together with Hopi Lake and others at higher elevation breached in sequence like "falling dominoes," forming many canyons, including the Grand Canyon. Brown claims the breach of Grand Lake occurred between what is now Vermilion Cliffs and Echo Cliffs, carving out the large funnel shaped flume separating those two cliffs.

In 1990, Austin proposed that the Grand Canyon formed when Hopi Lake breached through the Kaibab Plateau. (*Grand Canyon Field Study Tour Guidebook*, April 28-May 6, 1990 [Santee, California, Institute for Creation Research, 1990], 75-78). From 1990-1993, Austin acknowledged the former existence of Grand Lake, but in 1994 suggested that it was 100 feet higher and should be renamed Canyonlands Lake.

In 1990, Northrup clarified his thoughts written four years earlier. While he once felt the breach occurred at the Kaibab Plateau, he now agreed "that Walter Brown is correct in proposing that the Vermilion Cliff/Echo Cliff uplift was the barrier behind which the ice waters impounded." ("Discussion," *Proceedings of the Second International Conference of Creationism*, 2 [1990]: 125-126.)

In 1993, Michael J. Oard raised five objections to Austin's proposal. ("Comments on the Breached Dam Theory for the Formation of the Grand Canyon," *Creation Research Society Quarterly* 30 [1993]: 39-46). Oard, at that time, was unaware of Brown's Grand Lake Explanation," which answered the five objections.

ATTACHMENT C

BROWN'S "PROBLEMS AND INACCURACIES" (JULY 6, 1994) WITH AUSTIN'S (AUGUST 22) NOTES

Paragraphs appearing in italic font style are those of Steven A. Austin in response to Walter T. Brown's comments on endnote #40.

PROBLEMS and INACCURACIES

Endnote 40, page 109.

40. The concept of rapid breaching of the Kaibab Upwarp by drainage from lakes has a long history. The concept was expressed by J. S. Newberry in 1861 ("Geological Report," in J. C. Ives, Report Upon the Colorado River of the West [U.S. 36th Cong., 1st session, House Executive Doc. 90, pt. 3, 1861], 154 p.),

A specific page number, rather than giving the length of the document (154 pages) would be helpful. Newberry did not specifically mention the Kaibab Upwarp or even refer to that geographical region. Besides, he was trying to explain the much smaller canyons below the Grand Canyon, not the Grand Canyon itself. My report I sent you on July 6, 1993 explains this in more detail.

and hints followed in the work of Eliot Blackwelder in 1934 ("Origin of Colorado River," *Geological Society of America Bulletin* 45 [1934]: 551-566).

"hints followed" is vague. The reader has no idea of what you might mean. Blackwelder added little beyond Newberry's contribution.

Walt will have a problem relating to the works of Newberry and Blackwelder because he does not accept the fundamental notion upon which their conclusions are based-- that the geologic structure of the Kaibab Upwarp and/or the southern Colorado Plateau were in place before major erosion occurred. Walt believes that the upwarp structure didn't begin to form until after sheet erosion of the plateau began. Blackwelder's work is an impressive statement of the superposed drainage theory and is unique among the geologic literature. All that Blackwelder would need to do is add a piping or overtopping mechanism to his proposal. He does not speculate on the mechanism for superimposing the drainage. Did he need to speculate?

Geological evidence of a large lake in northeastern Arizona ("Hopi Lake") was provided by Howel Williams ("Pliocene Volcanoes of the Navajo-Hopi Country," *Geological Society of America Bulletin* 47 [1936]: 111-172). Tectonic activity is thought to have interrupted the flow of the Colorado River creating a large lake behind the Kaibab Plateau followed by piping failure (G. C. Bowles, "Reinterpretation of Grand Canyon Geomorphology," *United States Geological Survey Professional Paper* 1100 [1978]: 72).

Bowles thought tectonic activity interrupted (The meaning is clearer if you use the active voice.) You don't say why Bowles reached his conclusions. Thus, you are appealing to authority. Using the passive voice, makes it a *vague* authority. Only a careful reader would realize you are only selecting vague opinion that supports your purpose. You are not giving evidence.

Walt is right, I am not giving evidence. The purpose of endnote #40 is to review in summary fashion the workers that have contributed to discussions concerning the breached dam concept, not to provide details of their explanations or evidence for their conclusions. The reader is invited by the endnote to consult these authors for the details. This endnote does not need to explain why Bowles reached his conclusions. Bowles did propose a piping failure model that is noteworthy among uniformitarian literature. I thought it was significant enough to make short mention in this historical summary.

Creationists were suggesting catastrophic drainage models in the 1960's and 1970's.

What creationists were doing this in the 1960's and 1970's besides Burdick?

I am aware of four creationist who were suggesting catastrophic drainage models in the 1960's and 1970's: Clifford Burdick (conversations in 1968), Bernard Northrup (conversations and lectures in 1968), Edward Nafziger (conversations in 1970), and Steven Austin (did first lecture on Grand Canyon erosion in summer of 1970).

One of the most noteworthy early creationist statements of the breached dam theory appeared in the writings of Clifford L. Burdick (*The Canyon of Canyons* [Caldwell, Idaho, Bible-Science Association, 1974], p. 27).

Burdick's one paragraph statement was not "most noteworthy" as you say. Burdick visualized an east-west tension crack forming at the top of the Kaibab Upwarp as it rose. He did not say why the Kaibab Plateau rose or why the crack was east-west. Actually, such a crack would not have formed in the east-west direction, but rather along the Kaibab Plateau's ridge line where the tensile stresses were the greatest. Burdick then said flood waters flowed westward off the rising Rocky Mountains, through that east-west crack. Before water could be high enough to flow through even a 1000-foot-deep crack at the top of the Kaibab Upwarp, it would breach (overtop) much further to the southeast, such as near Show Low, Arizona. Even if water spilled through Burdick's east-

west crack, the westward drainage would hardly bend north toward the elevated flanks of the Kaibab Upwarp. That is the direction of the Colorado River today.

We both know from our diggings into the ground that Hopi Lake once existed. A lake could not have existed there without a dam at its west end. Burdick's scenario removes any hope for such a dam, since he has the most erosion occurring as the flood waters flowed off the Rockies. Therefore, Burdick's scenario is wrong.

I realize you are not intending to analyze Burdick's explanation, but it hardly deserves the description "most noteworthy." Some problems I listed above pertain to any explanation in which the Kaibab Upwarp was in place before Hopi Lake emptied. Your explanation falls in that category.

Nor did Burdick explain why the Rockies rose—a very important question. You have not explained or addressed it either, Steve. If you think about it, you will see that the sudden formation of the Rockies is critical to the formation of the Colorado Plateau which, in turn, is critical to the formation of the Grand Canyon. If you disagree, tell me how plateaus form.

Several times you refer to the *Laramide Orogeny*, but that is a name, not an explanation. It's a fancy name, which impresses and intimidates the uninitiated but hides the fact that geologists don't have the foggiest idea why the Rockies rose. The simplistic statements in the textbooks on how plate tectonics caused the Rockies are "full of holes" which some experts on mountain building have readily (and sheepishly) admitted to me in face-to-face conversations. I suspect that most geologists, in using the term *Laramide Orogeny* or any orogeny, are unaware that the mechanism for buckling up mountains is a mystery to the experts.

I explained on pages 58-83 of my book the mechanisms for mountain buckling, and plateau formation. Then I explained the immediate events that formed the Grand Canyon. I also explained where the water went after the flood. Burdick did not touch that question either, and creationists who do usually say the oceans suddenly got deeper or a wind blew the water away (Northrup, for example). Obviously, such "explanations" raise more questions and problems than they answer. I probably would not have come up with the "Grand Lake Explanation" had I not had a clear picture of how and why the water drained off the continents after the flood. Then I realized there would have been thousands of very large post-flood lakes, some at very high elevations. Large, high lakes are another prerequisite for forming the Grand Canyon. All of this bears directly on your false claim, a few lines below, that in 1988 I read your theory on how the Grand Canyon formed and added some details.

Burdick's work deserves mention in the historical survey in endnote #40. To leave this man's name out of the historical survey would be a serious error. Burdick's work is noteworthy not necessarily because he had all the details correctly stated (an issue ignored in the historical survey of the endnote), but because of his influence on other workers. Ed Holroyd, for example, read an abstract of Burdick's work and was motivated to conduct his study. Ed told me this personally.

Bernard E. Northrup proposed in 1968 that erosion of Grand Canyon was caused by release of trapped glacial melt waters in the post-Flood period centuries after Noah's Flood.

Northrup's proposal was in 1986, not 1968. You copied an error in Bernard E. Northrup, "Discussion," *Proceedings of the Second International Conference of Creationism, 1990*, Vol. 2 (Pittsburgh, Pennsylvania: Creation Science Fellowship, Inc., 1990), pp. 125-126. In that 1990 reference, Northrup says he originally proposed that the Kaibab Upwarp was the temporary dam. (You speculated earlier on such an event.) Northrup now feels that my explanation is correct.

"I originally had proposed that the Kaibab/Coconino uplift itself had been that temporary dam. However, presently I think that Walter Brown is correct in proposing that the Vermilion Cliff/Echo Cliff uplift was the barrier behind which the ice waters impounded."

The correct reference for Northrup's 1986 work is: "There Really Was an Ice Age," *Proceedings of the Second International Conference of Creationism*, Vol. 1 (Pittsburgh, Pennsylvania: Creation Science Fellowship, Inc., 1986), pp. 93-100. In 1988, after spending hours trying to understand some of the geography he mentioned in that paper, I called Northrup and concluded (along with him) that he had used several incorrect names and details. He admitted to me that his "lake" could not have held water. Then I told him some of my thoughts on Grand Lake and offered to take him there to see the evidence.

Here Walt Brown is in serious error about the date and content. Walt says I copied an error, but he is incorrect. With my own ears I heard Bernard Northrup describe in a public lecture a catastrophic, post-Flood breaching theory for the Grand Canyon in the summer of 1968 at Lucerne, California. The year is certainly 1968, not 1986, as Walt states. I confirmed the truth of the written statement by telephone conversation (July 1994) with Bernard Northrup. I read the endnote to Northrup. He said that the statement as written in the endnote is correct.

Post-Flood ponding of water east of Grand Canyon behind a tectonic upwarp was suggested as the cause leading to cutting the Canyon by Steven A. Austin and John H. Whitmore (*Grand Canyon Field Study Tour Guidebook*, March 23-30, 1986 [Santee, California, Institute for Creation Research, 1986], p. 48).

"Was suggested" is too strong. You simply wondered. You knew that researchers decades earlier had concluded that Hopi Lake (east of the Grand Canyon) had been there, but before the fall of 1988 you only questioned whether a breaching (of the Kaibab Upwarp) formed the Grand Canyon.

When you wrote "tectonic upwarp" (above), you meant "an upwarp caused by tectonics." Both phrases lack meaning. To see what I mean, let's loosely define "tectonics" as "deformations of the earth's crust." Therefore, saying that "an upwarp caused by the deformations of the earth's crust" is vacuous and circular. The question you must answer is "what caused the upwarp?" I gave you my answer in our discussion after the mediation session two weeks ago.

You may not like mechanical engineers dabbling in geology. However, until clear cause-and-effect mechanisms (all of which happen to be engineering mechanisms) are provided, geologists are avoiding the meaty aspects of their science.

Austin and Whitmore (1986) made a legitimate suggestion that Grand Canyon was eroded after post-Flood ponding of water occurred behind the Kaibab Upwarp. There was no wondering or musing over some possibility, just a simple proposal. This 1986 statement occurs with a map. The map is perhaps the first creationist map circulated on the subject of erosion of Grand Canyon. Maps are a significant addition to creationist explanations of Grand Canyon.

Edmond W. Holroyd, III, recognized that a lake bigger than one of the Great Lakes could be contained upstream of Grand Canyon if the Canyon was blocked approximately at the 5,600-foot elevation ("Missing Talus," *Creation Research Society Quarterly* 24 [1987]: 15,16). The breached dam theory was described in 1988 in a field guidebook (Steven A. Austin, *Grand Canyon Field Study Tour Guidebook*, April 9-16, 1988 [Santee, California, Institute for Creation Research, 1988], pp. 50-54).

You described no breached dam theory of yours for the formation of the Grand Canyon in that book. You only explained that some dams have breached. If you disagree, please reproduce the pages that contain "your theory" and highlight your specific words giving the mechanistic details. You said you favored catastrophic drainage and then ask some questions, such as:

"Could the large dam created by the Kaibab Upwarp have been breached allowing the 'lake' behind it to drain over the plateau through northern Arizona initiating the erosion of the Grand Canyon?" (p. 51) "Lately, I've been supposing . . ." (p. 41)

You admitted, "There will need to be more investigations of how the Grand Canyon was eroded." (p. 54)

A theory is a *cause-and-effect framework, supported by much evidence, that answers many questions and gives broad new insights.* "Supposings" do not make a theory. Your "supposings" raised many questions such as: How did the Kaibab Upwarp form? How do upwarps in general occur? How did the Colorado Plateau, which contains the Grand Canyon, form? How do all plateaus form? Where did the energy and force come from for these gigantic events? Were these processes

slow or fast, and why? If "the Kaibab Upwarp was established before the Colorado River was positioned across northern Arizona," as you have written, what repositioned the Colorado River and where was it before? Where and how was the natural dam breached? If it breached by overtopping, how does water flow 1400 feet uphill? If it breached by piping, how does water flow rapidly enough through 30 miles of limestone having less porosity than concrete (piping)? Circumstantial evidence is fine, but can you show that a lake's water was sufficient to carry the huge volume of Mesozoic and Paleozoic sediments off northern Arizona? Why didn't it breach at the lower elevations further to the south? Because of the many questions—actually problems—raised by your "supposings," it hardly constitutes a theory. Without these answers, few would dare announce "I have a theory . . .," and you never did.

Whether Walt Brown likes it or not, Austin's 1988 writing does contain five pages dedicated specifically to catastrophic drainage explanations for erosion of Grand Canyon. That's a longer statement than in any other previous creationist publication. The 1988 writing has a proposal and discussion of evidence favoring the breached dam. Because of its length and content, the 1988 writing by Austin is a contribution worthy of mention in the historical survey of endnote #40. The 1988 writing has a lengthy bibliography on erosion theories with annotations. This may be the first creationist bibliography on erosion of Grand Canyon to be circulated among creationists. Walt has a problem with the use of the word "theory". Geologists often use the word in a less rigorous fashion. It may be offensive to engineers or physicists. The tendency is especially evident in geologists' theories for the origin of landscapes.

Later, after reading Austin's 1988 field guidebook, Walter T. Brown, Jr., offered specific details to the theory (*In the Beginning* [Phoenix, Arizona, Center for Scientific Creation, fifth edition, 1989], p. 83).

"the theory"?? Again, you laid out no theory. You also make it sound as if I got my basic ideas from you then added a few details. Wrong. Incidentally, my answers to the questions I raised in my last paragraph are contained not just on page 83, but on pages 58-83, most of which is necessary background reading. I also wrote about the Grand Canyon on pages 58, and 75-76.

Austin has a statement written in 1993 by Walter Brown. The statement says that Brown read the 1988 field guidebook of Austin before Brown conducted field work in the summer of 1988. That field work was important as it allowed Brown to draw conclusions. The steps in Brown's theorizing about Grand Canyon erosion appear to be in this order: (1) reading, (2) observing, (3) interpreting, and (4) writing.

Interesting field evidences for catastrophic drainage of lakes and dialog concerning the history of discussions is found in Edmond W. Holyrod, III ("Missing Talus on the Colorado Plateau," *Proceedings of the Second International Conference on Creationist*, 2 [1990]: 115-128).

Holroyd's name is misspelled. What is ". . . dialog concerning the history of discussions"? It would be more accurate to say as Holroyd did that "one of the explanations . . . for the missing talus was wave destruction of previous talus at the shorelines of recently extinct lakes." (See page 121 of the above reference.)

You overstate when you write that the missing talus, which many researchers have commented on, is "Interesting field evidences for catastrophic drainage of lakes . . ." A former wave-battered shoreline is one possible explanation for the missing talus. There are many others, as Holroyd acknowledged. Catastrophic drainage is a completely different phenomena.

The "dialog concerning history of discussions" is the reviewers' responses to Holroyd's paper. The reviewers' comments are published just after Holroyd's paper with Holroyd's reply. That is dialog. Remember, the purpose of endnote #40 is to provide a short historical survey of the various workers who have contributed to our understanding of breached dam models. The purpose of the endnote is to survey workers in historical order, not to provide detail concerning their explanations. Holroyd's 1990 work is significant and deserves mention. Also, the dialog after the paper is significant. The details of Holroyd's evidence are discussed elsewhere, not in endnote #40.

A summary of some of these theories was published by E. L. Williams, J. R. Meyer and G. W. Wolfrom ("Erosion of the Grand Canyon of the Colorado River: Part III—Review of the Possible Formation of Basin and Lakes on Colorado Plateau and Different Climatic Conditions in the Past," *Creation Research Society Quarterly* 29 [1992]: 18-24).

Their primary and positive discussion concerned what I published in 1989. They knew of nothing of that nature that you had written previously.

Further comments were provided by Michael J. Oard. ("Comments on the Breached Dam Theory for the Formation of the Grand Canyon," *Creation Research Society Quarterly* 30 [1993]: 39-46).

It would be more accurate to say that "Michael J. Oard provided five criticisms of Austin's views on the Grand Canyon's formation." I have talked by phone to Mike Oard and Emmett Williams (who reviewed Mike's paper) and explained to each how all five problems Mike raised with your variation are answered by what I have written.

The purpose of endnote #40 is to provide the historical survey of workers. Those interested in comments on the breached dam theory could read the paper by Michael Oard. The purpose of the endnote has been achieved if the reader knows where to go to get more information. Also, the endnote gives credit to various authors who have contributed to scholarship and science.

WHY I NO LONGER USE THE NAME "GRAND LAKE" FOR AN ANCIENT LAKE IN UTAH, COLORADO, ARIZONA AND NEW MEXICO

By Steven A. Austin, Ph.D.
first draft, August 29, 1994

Since the late 1970's I have been fascinated with what have been called "superposed theories" for the erosion of Grand Canyon. These explanations seek to answer how Grand Canyon has been eroded by significant geologic processes and be superimposed across preexisting geologic structure. I have been especially interested in catastrophic drainage models and breached dam explanations. The purpose of this short paper is to discuss the name of a lake which may have been involved in erosion of Grand Canyon. In particular, this paper will address nomenclature suggested by Walter T. Brown, Jr.

In August 1986, after a conversation with Edmond W. Holroyd, III, I was interested in knowing exactly where an ancient lake would plot, if Grand Canyon were blocked by a very large obstruction. Ed Holroyd supplied me an excellent answer in January 1987, in the form of a Kodak color print. The color print was a computer-database plot of a four-state area showing the shoreline of a large lake at an elevation of 1,700 meters on the Colorado Plateau. Ed needed the color print returned to him, so I made a very rough tracing of the shoreline (Figure 1), on an acetate physiographic base map. I next made a sketch on paper and retained both in my personal records. The paper sketch (Figure 2) bears the name "Lake Kaibab", as it suggests the highest evaluation lake which could form today behind the Kaibab Upwarp if Grand Canyon were blocked. This sketch was distributed with Ed's permission in redrafted form in March 1989 as *Grand Canyon Field Study Tour Guidebook, April 8-16, 1989* (Institute for Creation Research, Santee, CA, p. 54). This redrafted version is shown as Figure 3.

A BIG LAKE IN UTAH

From studies of the possible locations of ancient lakes north and east of Grand Canyon, I have been impressed by how lakes seem to fit into three basins: (1) the Little Colorado River Basin in Northeastern Arizona, (2) the Canyonlands basin of southeastern Utah, and the Vernal basin in northeastern Utah. Figures 1, 2, & 3 suggest three natural basins which might be locations of ancient lakes. The computer plot is *not* the former lakes; it only *suggests* their location. The only basin with demonstrated lake sediments is in northeastern Arizona. Those deposits of a Pliocene lake have been called the Bidahochi Formation and the associated body of water was called "Hopi Lake" by Howel Williams ("Pliocene Volcanoes of the Navajo-Hopi Country," *Geological Society of America Bulletin*, Vol. 47, 1936, pp. 111-172).

Demonstrated Pliocene lake sediments have *not* yet been found in the other two basins, and before 1989 only informal names were proposed by creationists for possible lakes which may have existed in these two basins. Bernard E. Northrup had proposed that these two northern basins were actually occupied by one higher-elevation water body, what he had been calling "Lake Kapirowitz" (*Proceedings of the Second International Conference on Creationism*, Vol 2, 1990, p. 126; see also, *Proceedings of the First International Conference on Creationism*, Vol. 1, 1986, p. 95). You will notice that Northrup used a variation from the correct spelling, "Kaiparowits". Clifford L. Burdick (*The Canyon of Canyons* Caldwell, Idaho, Bible-Science Association, 1974, p. 27) was aware of these basins, but left the name of the lake or lakes unspecified. Some of Burdick's writings or summary of Burdick's writings, in *Bible-Science Newsletter* influenced Ed Holroyd in his search for evidence of ancient lakes.

THE NAME "GRAND LAKE"

Walter T. Brown, Jr., suggested the name "Grand Lake" for an ancient body of water which occupied a large area of southeastern Utah, including also, some of Colorado, Arizona and New Mexico. His definition of the lake first appeared in his book *In the Beginning* (Phoenix, Arizona, Center for Scientific Creation, Fifth Edition, 1989, p. 83). A map was also included, and is shown as Figure 4. I first encountered the fifth edition of Brown's book in August 1989, evidently only a few weeks after it had been published. I had no earlier contact with Walter Brown's lake theory. The name "Grand Lake" suggested by Brown seemed superior to Northrup's "Lake Kapirowitz", so I used the name "Grand Lake" in the *Grand Canyon Field Study Tour Guidebook* (years 1990 to 1993). Unfortunately, I did not reference Brown as the source of the name "Grand Lake" until the 1993 issue of *Grand Canyon Field Study Tour Guidebook*. That lack of citation of Brown in the earlier issues of the Field Guidebook may have led some to believe that I was the source for the name "Grand Lake". That supposition is, of course, incorrect. Walter Brown is the source of the name.

THE POOR DEFINITION

I have always been unsettled by use of the name "Grand Lake", and I now believe use of the name should be discontinued. The primary problem is the poor definition in Walter Brown's publication (*In the Beginning*, fifth edition, 1989, p. 83). The lake is described by Brown as existing within the topographic basin north of Hopi Lake. (There is no elevation given in the publication for Grand Lake) but personal communication with Brown (1993) indicated his assignment to the lake of 5,700 feet elevation. Perhaps Brown should clear up the uncertainty concerning the elevation of "Grand Lake" by including the elevation in his next publication. I did not know of the lake's elevation until I had this communication with Brown in 1993.

I was aware of this definition problem when I compared the computer-plotted lake derived by Ed Holroyd (elevation 1700 meters) which is suggested by Figure 3 with Brown's

Wrong.
p. 75,

proposed lake at 5,700 feet (Figure 4). I became perplexed by the plotting of Brown's "Grand Lake" when I prepared an acetate sheet photocopy of Brown's "Grand Lake" map (Figure 4) and projected that outline on to the large topographic map of the state of Utah. I paid special attention to obtaining the "best fit" between Brown's map and the slightly different base of the state topographic map. The results are most extraordinary and are summarized in Figure 5. *Brown's "Grand Lake" covers some of the highest mountains in Utah and extends westward out of the Colorado River drainage basin!* The city of Kanab (point A in Figure 5) is at 5,000 feet elevation on Kanab Creek, a direct tributary to Grand Canyon, *not* behind a barrier or dam. The Aquarius Plateau (point B in Figure 5) includes more than 500 square miles of very elevated topography, a large area over 9,000 feet above sea level, including Boulder Mountain (11,062 feet). The western shore of the lake (point C in Figure 5) is at or near Signal Peak (elevation 11,223 feet) within the Sevier River drainage basin (a tributary of Sevier Lake in western Utah). The Henry Mountains occupy an area of 200 square miles (point D in Figure 5) and are more than 10,000 feet elevation, as is the large area known as the Wasatch Plateau (point E in Figure 5). The Roan Cliffs (point F in Figure 5) are submerged to above 8,000 feet. Within the waters of "Grand Lake" are the LaSal Mountains (point G in Figure 5) including summits over 12,000 feet elevation, and the 400-square-mile area called the Abajo Mountains (point H in Figure 5), including a summit 11,300 feet elevation.

One gets the impression that "Grand Lake" of Brown does not conform to modern topographic features if its elevation is supposed to be 5,700 feet. The plotting by Ed Holroyd is much superior to Brown's. The definition problem is my main reason for discontinuing use of the name "Grand Lake".

THE PRIOR USE OF "GRAND LAKE"

A second important reason exists for discontinuing use of the name "Grand Lake". Brown's original description is that the lake occupied a very large area of the Upper Colorado River drainage basin including western Colorado. The problem is that there is already a "Grand Lake" in the Upper Colorado River drainage basin! Grand Lake is a modern lake next to the Colorado River in north-central Colorado at an elevation 8,367 feet (USGS map of Rocky Mountain National Park, 1961). The body of water called "Grand Lake" is situated south of the town of "Grand Lake" which can be found on almost every road map of the State of Colorado. The "Grand Lake Entrance Station" is one of two public entry roads into Rocky Mountain National Park. Thus, the modern Grand Lake and its name, are not inconspicuous geographic features within the Upper Colorado River drainage basin. That name has priority over Brown's by a hundred years.

Imagine how you would feel if you lived next to the Colorado River in the town of Grand Lake, Colorado. Let's suppose you were looking out your living room window at the clear-blue waters of Grand Lake as you were reading Walter Brown's description of the lake in Colorado called "Grand Lake". You might be confused, even upset! I know of a very large unnamed canyon in the Trigo Mountains of western Arizona. Should we call

it Grand Canyon? Of course not! The proposed name is unsatisfactory because of prior use.

In a recent telephone conversation with Roger L. Payne (Director, Branch of Geographic Names, U.S. Geological Survey), he said, "We discourage the use of duplicate names". He mentioned specifically the problem with having so many bodies of water called "Mud Lake" in Arkansas. Have you been fishing in Mud Lake lately? If so, *which* Mud Lake?

A SOLUTION TO THE NAMING PROBLEM

In 1994, I proposed a solution to the naming problem (Steven A. Austin, ed., *Grand Canyon: Monument to Catastrophe*, Institute for Creation Research, Santee, CA., 1994, pp. 92-110). I proposed the name "Canyonlands Lake" for the large body of water which appears to have occupied the major portion of the extraordinary canyon country of southeastern Utah. Figure 6 is a sketch map suggesting the location of Canyonlands Lake. There is geologic evidence that this lake had an elevation above 5,800 feet in some areas, making it somewhat higher than the computer plot outline suggested by Ed Holroyd, and the level proposed by Walter Brown.

"Canyonlands Lake" has three distinct advantages over "Grand Lake". First, the outline of "Canyonlands Lake" conforms more closely to the recent topography of the Colorado Plateau, and, we may suppose, conforms better to the ancient land surface. The main assumption is that a high topographic barrier existed just east of Kanab, Utah, allowing the lake to exist above 5,800 feet elevation. A second assumption is that Canyonlands Lake was separated from Hopi Lake by a topographic barrier. The present topography of the Kaibito Plateau would allow Canyonlands Lake to remain distinct from Hopi Lake if either or both had elevations of up to 6,100 feet. Above 6,100 feet they become one lake.

Second, the name "Canyonlands Lake" is more descriptive of the major area occupied by the lake. This includes the extraordinary topography of the Canyonlands area, the Goosenecks of the San Juan River, Monument Valley, and countless spectacular sapping structures of Utah, Arizona and Colorado.

Third, the name does not have usage conflict with other established geographic names. A review of the more than two million names in the "National Geographic Names Data Base" (a CD ROM produced by the U.S. Geological Survey) showed no conflict for the four state area where "Canyonlands Lake" was located. Therefore, I am using the name "Canyonlands Lake" and recommend that others do so as well.

A WORD OF CAUTION

The purpose of this short paper was to discuss the name of the lake which may have existed north of Hopi Lake. It is important to recognize that Hopi Lake, which is well documented by Pliocene sedimentary deposits, was the primary agent responsible for initiating the breach through the Kaibab Upwarp and establishing the location of Grand Canyon, (see *Grand Canyon: Monument to Catastrophe*). I believe that the focus of our attention should be on Hopi Lake, not on Canyonlands Lake, as this short paper might suggest.

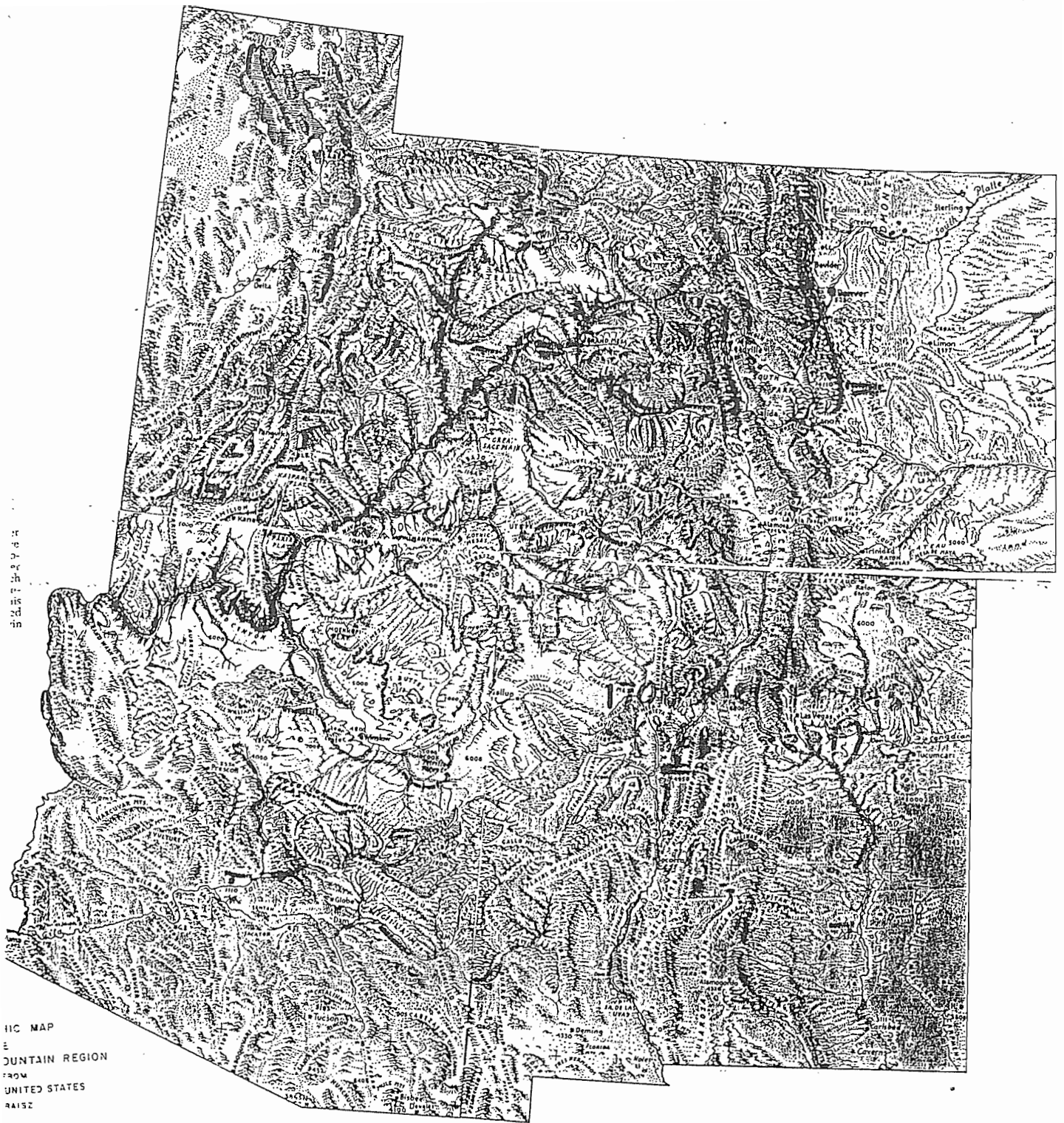
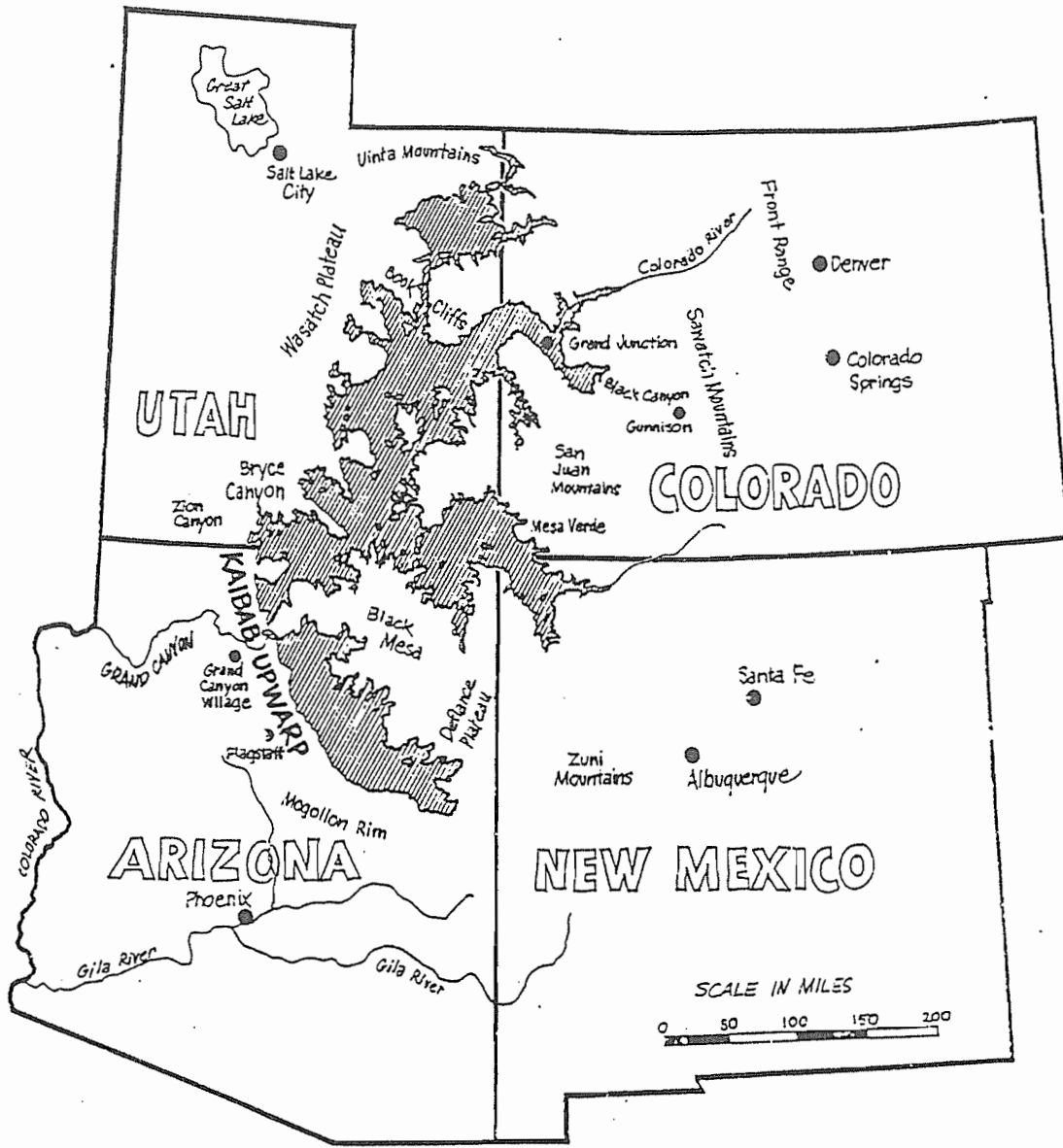


Figure 1. Physiographic map on acetate sheet with very rough tracing from photographic print supplied by Edmond W. Holroyd. The tracing was made by Steven A. Austin in January 1987 and indicates how a large lake could conform to the topography of the Colorado Plateau. This tracing on acetate was the first step in preparing the paper copy map (Figure 2). The reproduction above is a 50% reduction from the size of the original.



Figure 2. Sketch map hand-drawn on paper by Steven A. Austin from the acetate tracing (Figure 1). Note "Lake Kaibab" suggestive of the highest-level lake which could form today if Grand Canyon were blocked. This sketch map is very rough and needed to be replotted before distribution. With further input from Edmond Holroyd, Figure 3 was prepared for distribution.



A computer was asked to draw the shoreline of the lake which would form behind the Kaibab Upward if the Grand Canyon were blocked at the 5,700-foot elevation. The lake which would form is shown above. It would contain the water of three Great Lakes. This computer-generated lake approximates the outline of the ancient lake which breached its dam to form Grand Canyon.

Figure 3. Map and caption of the map distributed in March 1989 to one hundred participants in the Institute for Creation Research Field Study Tour as *Grand Canyon Field Study Tour Guidebook, April 8-16, 1989* (Institute for Creation Research, Santee, CA., 1989, p. 54). The map was drafted by Steven A. Austin. Edmond Holroyd requested that he not be credited as source on this first distribution of the lake map. Holroyd later published his own drafted version of the map ("Missing Talus on the Colorado Plateau," *Proceedings of the Second International Conference on Creationism*, Vol. 2, 1990, p. 122).

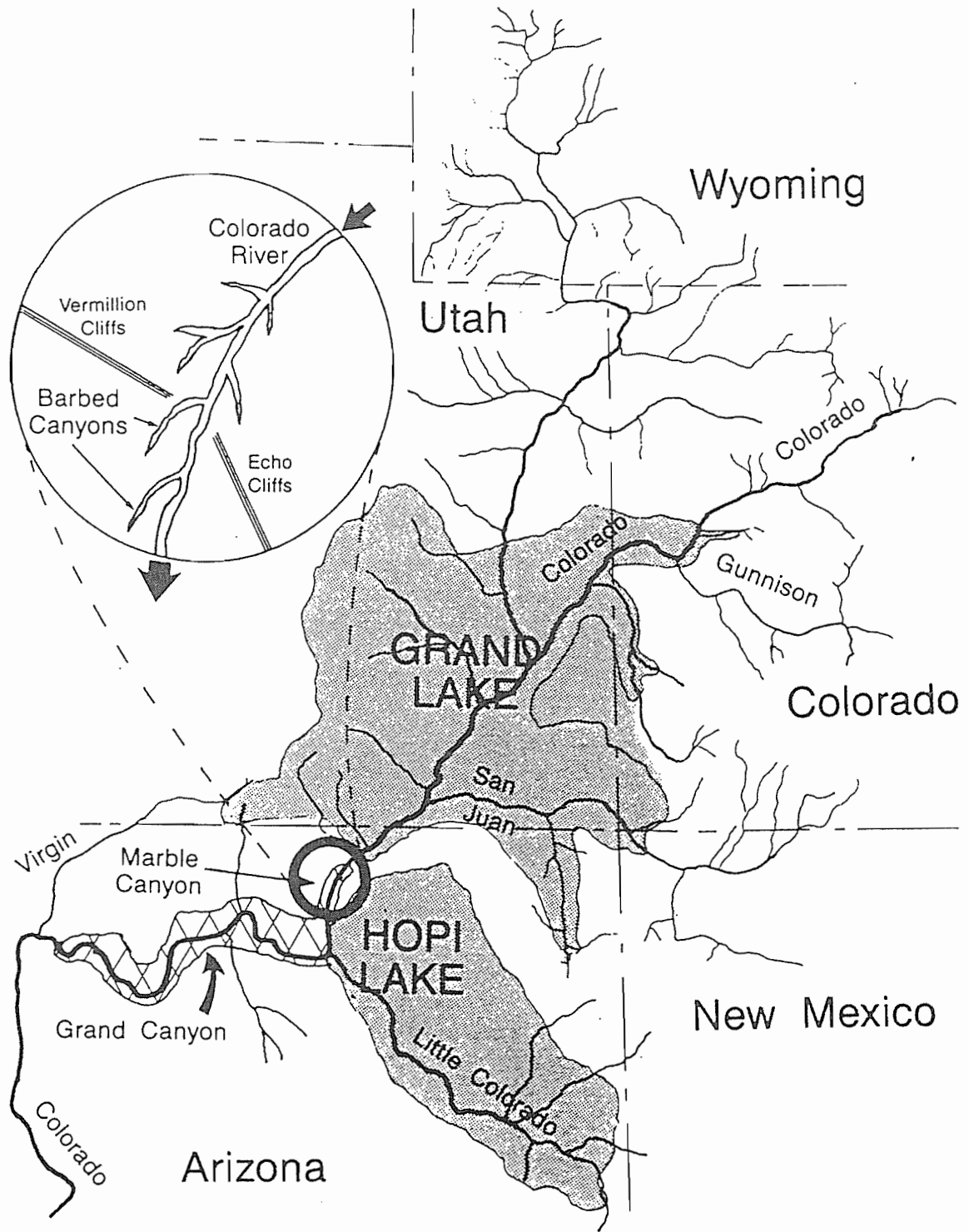


Figure 4. Lake map first published by Walter T. Brown, Jr., in the summer of 1989. This map appears without a caption and is shown here at 200% enlargement of the original (*In the Beginning*, Center for Scientific Creation, Phoenix, AZ, fifth edition, 1989, p. 83).



Figure 5. Lake map of Walter Brown with letters superimposed by Steven A. Austin. The letters indicate locations of important physiographic features.

- A. Town of Kanab (elevation 5,000 feet).
- B. Aquarius Plateau (highest elevation 11,062 feet).
- C. Signal Peak (elevation 11,223 feet).
- D. Henry Mountains (highest elevation 11,522 feet).
- E. Wasatch Plateau (over 10,000 feet elevation).
- F. Roan Cliffs (over 8,000 feet elevation).
- G. La Sal Mountains (highest elevation 12,721 feet).
- H. Abajo Mountains (highest elevation 11,360 feet).

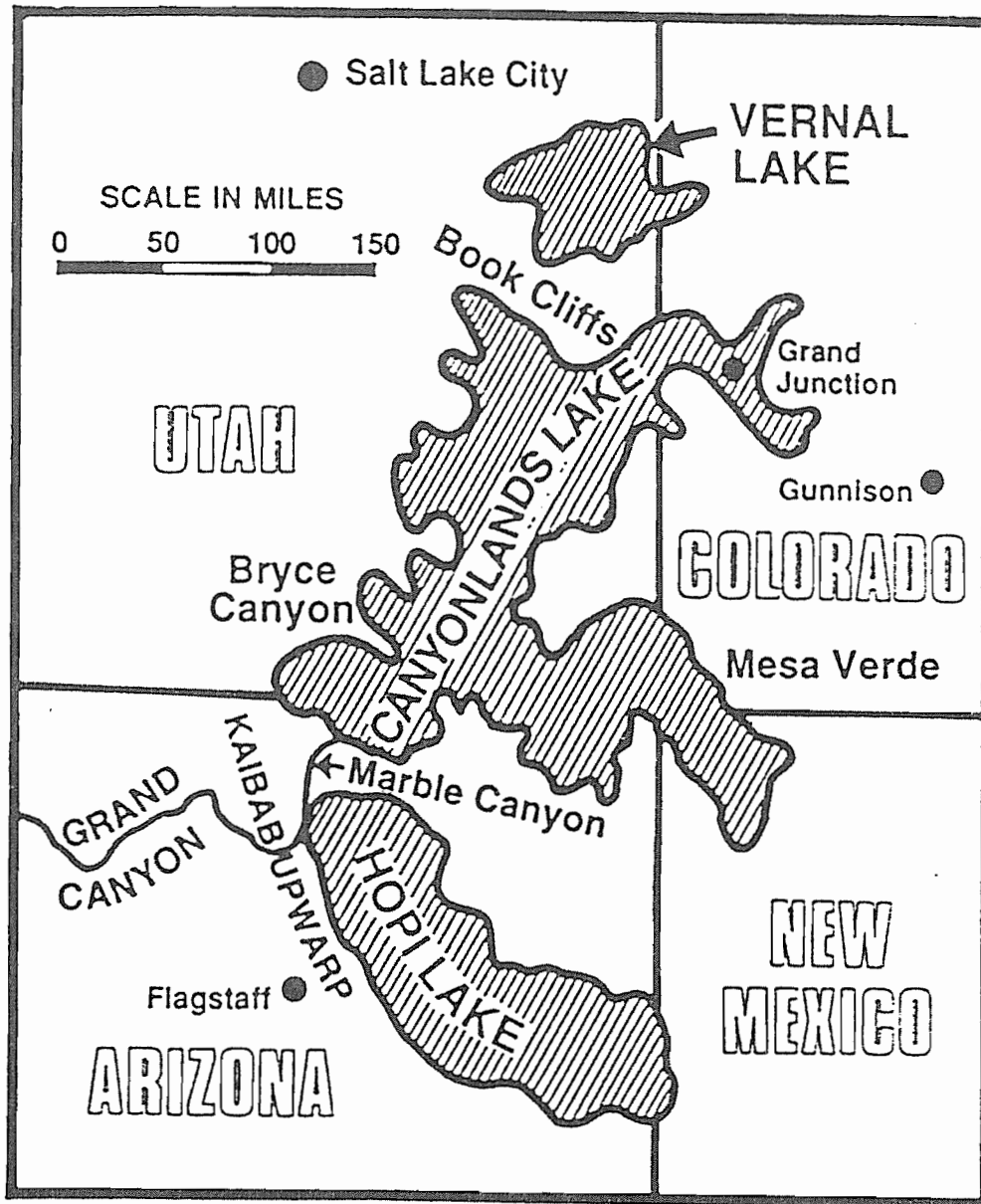


Figure 6. Lake location map published by Steven A. Austin in March 1994. Note "Canyonlands Lake" and see definition in original publication. (Steven A. Austin, ed., *Grand Canyon: Monument to Catastrophe*, Institute for Creation Research, Santee, CA, 1994, p. 103).