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BEFORE THE ARIZONA NAVIGABLE STREAM ADJUDICATION COMMISSION

IN RE THE DETERMINATION OF NAVIGABILITY OF THE GILA RIVER	No.: 03-006-NAV **CITY OF SAFFORD'S OPENING MEMORANDUM**

I. Introduction

The Arizona Navigable Stream Adjudication Commission ("Commission") should find an Arizona streambed navigable only if "[o]n February 14, 1912, the watercourse, in its natural and ordinary condition, either was used or was susceptible to being used for travel or trade in any customary mode used on water."[1] At statehood in 1912, the Gila River's sandy, braided, constantly shifting course and naturally low flows prevented navigation. Further, long before 1912, people diverted the Gila River's entire flow to irrigate crops, thereby rendering navigation impossible. Thus, the Commission should declare the Gila River non-navigable at statehood.

[1] *Defenders of Wildlife v. Hull*, 199 Ariz. 411, 426, 18 P.3d 722, 737 (App. Div. I, 2001) (*citing The Daniel Ball*, 77 U.S. at 563).

II. Low Flow and Channel Conditions Prevented Navigation.

During the statehood era and before, people did not navigate the Gila River for two reasons. First, due to natural conditions and diversions by farmers, the amount of water normally in the river proved insufficient to support navigation. While there may have been sufficient water in the stream on rare occasions when flooding occurred, the swift current made navigation dangerous. Second, navigation requires a reliable and sufficiently deep, hazard-free streambed channel to prevent boats from running aground and damaging the hull. The Gila's shifting, shallow, braided[2] channel – or, more accurately, channels – did not form a reliable, sufficiently deep stream to sustain trade or travel navigation.

A. Reliable Gila River Flows Could Not Support Navigation.

Except during flood events, the Gila River naturally carries little water. Typically, the Gila River's tributaries are not perennial and they lose their waters in the broad, open valleys before reaching the Gila River.[3] As early as 1775, Spanish explorers described Gila River stretches as "dry" or reaching only half-way up a man's leg at its deepest.[4] In 1853-54, the United States Army noted the Gila River's dry streambed in mid-February.[5] In 1868, people described the Gila just below its confluence with the Salt River as wide, shallow, and normally

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[2] "Braided stream" is defined as (1) A stream [that] divides into a network of channels branching and reuniting, separated by islands. (2) A complex tangle of converting and diverging stream channels separated by sand bars or islands. Nevada Division of Water Planning, WATER WORDS DICTIONARY, at 36 (1999).

[3] Littlefield, Douglas, ASSESSMENT OF THE NAVIGABILITY OF THE GILA RIVER FROM ITS CONFLUENCE WITH THE SALT RIVER TO ITS MOUTH ON THE COLORADO RIVER PRIOR TO AND ON THE DATE OF ARIZONA'S STATEHOOD, FEBRUARY 14, 1912, at 102 (Apr. 24, 1998).

[4] Arizona State Land Department, GILA RIVER NAVIGABILITY STUDY, at IV-1 (1996) ("LAND DEPARTMENT STUDY").

[5] *Id.* at IV-4.

dry except when great rains or thaws occurred.[6] At statehood, the Upper Gila's median flow was only about 275,000 acre-feet per year.[7]

Compounding the low flow impediment to navigation, people settling along the Gila River chose to divert river water for irrigation rather than leaving it in the stream to support boat transportation.[8] Prior to statehood, and even today, the river is primarily used for agriculture.[9] To determine who has the right to take surface water and when that right can be exercised, the State of Arizona adopted the doctrine of prior appropriation.[10] Prior appropriation is often described as the first in time, first in right doctrine. Because this system follows the first come, first serve principle, Arizona's courts responsible for enforcing these rules meticulously recorded when people first began diverting water throughout the State.

The Globe Equity Decree is such a record for the Upper Gila River. The Decree's Table of Rights lists 58 pages of water rights, approximately 80% of which were initiated before statehood. The right to irrigate certain lands on the Gila River Indian Reservation with 210,000 acre-feet of water dates back to time immemorial.[11] Prior to and during the statehood era, farmers irrigated more than 34,000 acres in the Upper Valleys near Duncan and Safford.[12] The Decree authorizes agricultural diversions of six acre-feet per acre from the Gila River. Consequently, those Upper Valley irrigation rights alone can take more than 200,000 acre-feet of water for lands irrigated prior to statehood. Downstream, the San Carlos Irrigation and

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[6] *Id.* at IV-35.

[7] Arizona Department of Water Resources, PRELIMINARY HYDROGRAPHIC SURVEY REPORT FOR THE GILA RIVER INDIAN RESERVATION, at 3-5 (Feb. 1999). Moreover, the trend-line analysis probably overestimates water volumes.

[8] *Id.*, at X-2.

[9] *Id.*, at III-25.

[10] *See* A.R.S. § § 45-141(A).

[11] *See United States v. Gila Valley Irr. Dist. et al.*, Globe Equity Decree No. 59, at 14, 86 (June 29, 1935) ("Decree").

[12] *See id.*, at 14-61; see also *In re The General Adjudication of the Gila River System and Source*, BRIEFING REPORT ON HSR INVESTIGATIONS OF GLOBE-EQUITY NO. 59 RIGHTS, Arizona Department of Water Resources, at 14-25 (April, 1993) ("GLOBE EQUITY HSR").

Drainage District irrigated approximately 9,000 acres by 1912.[13] This means downstream farmers diverted another 54,000 acre-feet of water when available prior to statehood.[14] By documenting rights to divert more than 464,000 acre-feet from the Gila River established prior to statehood, the Decree confirms that farmers diverted Gila River's entire reliable flow for irrigation purposes prior to statehood.

The Land Department Study acknowledges that pre-statehood settlers used the Gila River for irrigation rather than navigation. The Land Department Study recites that by 1869, "[t]here is barely enough in the Gila for the use of the Settlements."[15] By 1890, those settlements near Safford, Florence, Buckeye, Gillespie Dam, and Gila Bend built even more substantial irrigation diversions for diverting Gila River water.[16] The Land Department Study also states that the Gila River's middle stretch often ran dry due to diversions by numerous canals irrigating 6,619 acres in that area.[17] According to the Bureau of Land Management, had there been more water in the stream, the farmers would have irrigated even more land.[18] In other words, the farmers were using all of the water at that time. By 1889, 49 irrigation canals diverted water to serve at least 221,440 acres of land.[19] Additionally, Gila Bend Irrigation Company was then building a 75-mile long canal to irrigate even more land. [20]

Plainly, the Gila River rarely carries enough water to allow navigation. Prior to statehood, people settling along the Gila River chose to divert what little river water there was

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[13] *See* Decree, at 14-61, *see* also GLOBE EQUITY HSR at 32.
[14] *See id.*
[15] *See* LAND DEPARTMENT STUDY, at IV-37.
[16] *Id.* at VI-1.
[17] *Id.* at IV-47.
[18] *Id.* at IV-37 (stating "[a] great portion of the land would produce good crops if water could be brought upon it. This is almost an impossibility. There is barely enough in the Gila River for the use of the Settlments as they are.").
[19] *Id.* at IV-8.
[20] *Id.* at IV-47.

for irrigation rather than preserving flows to enable travel or commercial boating. In the Upper Valley near Safford and Duncan, farmers established the right to divert most of the Gila River to grow crops prior to statehood. Throughout the Upper Gila watershed, more than 14.3 square miles were being irrigated.[21] In the 19th Century, Gila River water irrigated at least 221,440 acres of land.[22] If settlers took six acre-feet per acre, then that means they diverted 1,328,640 acre-feet of water from the river, which would leave virtually no water in the Gila for navigation. Simply put, farmers diverted every reasonably available drop of Gila River except during uncontrollable flood events.

As documented in 1911, the year before statehood, the Gila was "a comparatively small and irregular stream, due to its arid watershed and uncertain rainfall, although occasionally it carries enormous floods. Since the appropriation of its upstream waters for irrigation its lower courses are often dry for months in succession."[23] In other words, as a result of naturally low flows and irrigation diversions, the Gila River usually carried little or no water and could hardly provide a reliable course for water-borne commerce or travel. Thus, based on these facts alone, the Commission should find the Gila River is non-navigable at statehood.

B. Flooding Prevented Navigation.

The exception to the low flow and dry conditions came by flood. While floods produced enough water to float boats, the flow velocity, channel failure, and debris made the waters non-navigable. The waters were so erratic and treacherous that not even canals could be sustained along the riverbanks. During prehistoric times, early Native Americans had to rely

[21] *Id.*
[22] *Id.* at IV-8.
[23] Littlefield, at 106.

on rainfall to water crops rather than irrigation because the river continually washed out canals.[24] In 1889-90, the United States Geologic Service ("USGS") reported:

> [D]ue to annual floods, which are of the most destructive and violent character, the rate at which the water rises and increases in amount is astonishingly rapid, although the volume is not always very great. Coming without warning, it catches logs and boulders, undermines the banks, tears out trees, and cuts sand-bars, loaded with mass of sand, gravel and driftwood – most formidable weapons for destruction.... [D]uring a freshet the river rises from 8 to 12 feet and increases in width from 3000 feet to a mile and a half – it is sometimes impassable for weeks and in places has the appearance of a vast sea of muddy water.[25]

The following year, the USGS reported, "streams fluctuate greatly, being at times subject to sudden floods when they often sweep out bridges, dams, and canal head works, while at other times they may diminish until the water almost disappears."[26] Thus, even when the Gila watershed produced enough water, the water's velocity and destructive nature prohibited navigation.

C. The Normally Shallow, Sandy, and Constantly Shifting Braids Could Not Support Navigation.

The river's sandy streambed constantly shifts, creating shallow, braided channels for what water does flow in the river. In 1853-54, the United States Army reported that the riverbed changed locations in several places.[27] Four years later, the Army described the river near Florence as a "sinuous course, with a swift current and turbid waters".[28] In 1899, the USGS reported that the river's bed near San Carlos is "sandy and shifting".[29] At the Buttes, the streambed was described as "quicksand" and the river's path changed "daily with any

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[24] LAND DEPARTMENT STUDY, at III-25.
[25] *Id.* at IV- 41-42.
[26] *Id.* at IV-42.
[27] *Id.* at IV-4.
[28] *Id.* at IV-4.
[29] *Id.* at IV-10.

considerable amount of water in the river."[30] In 1904, the channel near the Gila City station likewise carried swift flows that continually changed the silt and sand streambed.[31] A year later, USGS recorded that "[a]t times the waves of sand traveling along the streambed are so large, the current is so swift, and the stream is so shallow, that the water is broken into a uniform succession of waves 2 feet high. At every flood the channel shifts."[32] Between1905-1917, due to flooding, the channel increased its width over 600% and became a wide, braided channel.[33]

Based on these facts, among others, the Land Department Study concluded, "[m]ost of the Gila River streambed is a complex tangle of converting and diverging stream channels separated by shallow sand bars. Travel on the river seems to have been interrupted due to hazards such as sand bars or snags."[34] This statement accurately describes the Gila River's channel conditions. Under these conditions, even if there were enough water in the Gila River to float a small boat, boats would run aground due to the constantly changing channel, snags, or debris. In sum, the Gila River's sandy channel constantly shifts creating shallow, braided channels and thereby prevented the Gila River from becoming a watercourse suitable for trade and travel.

III. Sustained Successful Travel and Commercial Navigation Never Occurred.

Due to the streambed's inhospitable characteristics and the insatiable demand for irrigation water, nobody used the Gila River as a highway for travel or trade in any customary mode. As evidenced by trail sites on desert pavement, Prehistoric Native Americans traveled by

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[30] *Id.* at IV-10.
[31] *Id.* at IV-12.
[32] *Id.* at IV-12.
[33] *Id.* at VII-3.
[34] *Id.* at X-2.

foot, not boat.[35] Likewise, settlers traveling to California followed the Gila Trail, also known as the "Devil's Turnpike", rather than float down the Gila River.[36] The Anglo settlements of Safford, Thatcher, Winkelman, Florence, Coolidge, Gila Bend and Wellton corresponded directly to the railroad construction during the late 1870s as opposed to people using the Gila River as a highway for travel and commerce.[37] This fact is consistent with Daniel Colvin's boyhood recollection. Colvin remembered floating down the river on a log when the river held enough water to do so, but he never saw any boating for travel or commerce.[38] Colvin attributed this fact to a lack of river water, which was exasperated by the diversion dams for irrigation.[39] In fact, nowhere in the record is there evidence of commercial navigation enterprises on the Gila River prior to statehood.[40]

A few ill-fated attempts at navigating the Gila River occurred but failed. In 1846-7, Lt. George Stoneman attempted to float supplies down the Gila from Gila Bend to Yuma on a raft, but the raft went aground on numerous occasions causing Stoneman to jettison cargo.[41] In 1881, Bucky O'Neill and two other men tried to boat from Phoenix to Yuma in a small craft, but they were found wading in the water "pushing their craft ahead of them" soon after leaving Phoenix.[42] Similar to Stoneman's experience, Bucky O'Neill's "Yuma or Bust" boat busted before reaching Gila Bend.[43] J.W. Evans made a harrowing attempt to travel by boat from Clifton to Yuma. This trip required the adventurers to haul the boat over land from Sacaton to

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[35] *Id.* at III-15.
[36] *Id.* at IV 2.
[37] *Id.* at VIII-1.
[38] *Id.* at V-3.
[39] *Id.* at V-3.
[40] *Id.* at X-3.
[41] *Id.* at IV-2.
[42] *Id.* at IV-7.
[43] CHM Hill, revised by JE Fuller, *Arizona Stream Navigability Study for the Salt River: Granite Reef Dam to the Gila River Confluence*, Report at p. 3-20 (Sept. 1996).

Tempe, run rapids, disembark equipment, and lower the boat past falls "between boulders in a torturous route, by means of a long (200 ft.) rope which suddenly slackened plunging [Evans] into the icy waters and [where he] was partly carried away by the current downstream, with one end of the boat being entirely submerged." Afterwards, the adventurous Evans remarked, "I would not engage to make the trip down the (Gila's) hazardous waters again".[44]

Thus, there is very little evidence that people even attempted to navigate the Gila River. For those that did, their efforts consistently met failure. Even arguably "successful" trips were too hazardous to repeat. Plainly, travel or commercial navigation on the Gila River did not occur prior to statehood.

VI. Conclusion

Rivers that can transport people and goods are navigable in fact; and rivers navigable in fact at statehood are navigable in law.[45] The river's natural flow could not, and did not, support navigation. Settlers' insatiable demand for irrigation water reduced flows even further rendering the stream dry in many places. Even during flood events, the river's braiding, velocity, and turbulence prevented navigation. Consequently, the Commission should find that the river was not navigable in fact or in law.

DATED this 14th day of October, 2003

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[44] LAND DEPARTMENT STUDY, at IV-8.
[45] *The Daniel Ball*, 77 U.S. 557, 563 (10 Wall.1870).

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