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14 **BEFORE THE ARIZONA NAVIGABLE STREAM**
15 **ADJUDICATION COMMISSION**

16 IN THE MATTER OF THE
NAVIGABILITY OF THE VERDE
17 RIVER FROM ITS HEADWATERS
AT SULLIVAN LAKE TO THE
18 CONFLUENCE WITH THE SALT
RIVER, YAVAPAI, GILA AND
19 MARICOPA COUNTIES, ARIZONA

No. 04-009-NAV (Verde)

**FREEPORT MINERALS
CORPORATION'S
RESPONSIVE POST-HEARING
MEMORANDUM CONCERNING
THE NON-NAVIGABILITY OF
THE VERDE RIVER**

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1 INTRODUCTION

2 Freeport Minerals Corporation (Freeport) respectfully submits its Responsive Post-
3 Hearing Memorandum Concerning the Non-Navigability of the Verde River. This
4 memorandum is submitted in response to the memoranda submitted by the Arizona State
5 Land Department (ASLD), Maricopa County and the Maricopa County Flood Control
6 District (Maricopa County), and the Arizona Center for Law in the Public Interest (Center).

7 The navigability proponents' position is fundamentally flawed because they do not
8 address the appropriate standard for navigability. As was the case in the proceedings
9 concerning the San Pedro, the Santa Cruz, and the Gila rivers, the navigability proponents
10 attempt to rewrite *The Daniel Ball* test by striking out the "highway for commerce"
11 component of the test. In its most recent and definitive treatment of the federal test for
12 navigability for title, the United States Supreme Court expressly reaffirmed that it is
13 evidence of susceptibility to commercial use that must be considered in evaluating
14 navigability. *PPL Montana v. Montana*, 132 S.Ct. 1215, 1233 (2012) (holding that
15 "evidence must be confined to that which shows the river could sustain the kinds of
16 commercial use that, as a realistic matter, might have occurred at the time of statehood.").

17 The proponents variously downplay or outright ignore *PPL Montana* while arguing
18 that any stream with enough water to float a modern recreational canoe meets *The Daniel*
19 *Ball* test. They rest their positions almost exclusively on modern recreational boating
20 criteria, modern recreational craft made from light and durable materials that were
21 unavailable in 1912, and instances of modern recreational boating, all while failing to
22 address the fact that the Verde River was never used as a highway for commerce in its
23 ordinary and natural condition despite significant needs.

24 These parties' reliance on water depths sufficient to float a modern recreational canoe
25 is inconsistent with *PPL Montana*, and the evidence and testimony presented by Rich
26 Burtell, Freeport's designated expert witness, and others demonstrate convincingly that the
27 Verde River was not susceptible to navigation in its ordinary and natural condition at or
28 before statehood.

1 **I. BASED ON EVIDENCE OF ITS NATURAL AND ORDINARY CONDITION,**
2 **THE COMMISSION PROPERLY DETERMINED IN 2009 THAT THE**
3 **VERDE RIVER WAS NON-NAVIGABLE.**

4 As described in detail in Section I.B. of Freeport's Opening Post-Hearing
5 Memorandum Concerning the Non-Navigability of the Verde River (Freeport's Opening
6 Memorandum), the Commission already applied the appropriate legal standard in
7 determining that the Verde River was not navigable in its ordinary and natural condition at
8 statehood. In its Report, Findings and Determination Regarding the Navigability of the
9 Verde River from its Headwaters to the Confluence with the Salt River dated March 24,
10 2008 (Report, Findings and Determination), the Commission expressly evaluated the Verde
11 River in its natural condition.¹ Accordingly, while the Arizona Court of Appeals remanded
12 the Commission's 2005 determination concerning the Lower Salt for purposes of assessing
13 the Lower Salt in its natural condition, *State ex rel. Winkleman v. Arizona Navigable Stream*
14 *Adjudication Comm'n ("Winkleman")*, 224 Ariz. 230, 242 (App. 2010), the Commission's
15 2008 Report, Findings and Determination properly determined that the Verde River was
16 non-navigable in its ordinary and natural condition. The Commission has already properly
17 applied *The Daniel Ball* test in finding the Verde River non-navigable.

18 While they cite heavily to *Winkleman*, a decision that dealt solely with the Lower
19 Salt, it is telling that the proponents of navigability largely ignore the Commission's 2008
20 Report, Findings and Determination and its elaborate descriptions of the reasons why the
21 Commission has already determined that the Verde River is non-navigable in its natural and
22 ordinary condition. The testimony and evidence presented to the Commission in 2014 and
23 2015 reinforce the Commission's prior finding of non-navigability.

24 **II. THE NAVIGABILITY PROPONENTS' EVIDENCE IS INSUFFICIENT TO**
25 **MEET THEIR BURDEN TO PROVE THAT THE COMMISSION SHOULD**
26 **REACH A DIFFERENT CONCLUSION THAN IT DID IN 2008 WHEN IT**
27 **APPROPRIATELY FOUND THE VERDE RIVER TO BE NON-**
28 **NAVIGABLE.**

Seven years and several weeks of hearings later, the navigability proponents have

¹ Report, Findings and Determination at p. 28.

1 failed to meet their burden to demonstrate why the Commission should reach a different
2 conclusion than it did in 2008. Indeed, the proponents' case before the Commission is
3 remarkably similar to the case made by the State of Montana that was rejected by the United
4 States Supreme Court in *PPL Montana*. The Supreme Court expressly held that the
5 Montana Supreme Court "erred as a matter of law in its reliance upon the evidence of
6 present-day, primarily recreational use of the Madison River," *PPL Montana*, 132 S.Ct. at
7 1233, and instructed that "evidence must be confined to that which shows the river could
8 sustain the kinds of commercial use that, as a realistic matter, might have occurred at the
9 time of statehood." *Id.*

10 The modern recreational craft that are used today on the Verde River are *not*
11 "meaningfully similar to those in customary use for trade and travel at the time of
12 statehood." To the contrary, modern plastic canoes and plastic and/or inflatable kayaks
13 draw less water and therefore require less depth, offer significantly greater durability, and,
14 unlike wooden boats, are able to bounce off of rocks without damage. *Id.* at 1234.²
15 Moreover, use of these modern crafts for recreational purposes bears no resemblance to the
16 commercial activities to which navigable waterways were put to use circa 1912. Here, as in
17 *PPL Montana*, the navigability proponents' reliance on modern recreational boating in
18 modern recreational craft is misdirected and fails to establish navigability for title under *The*
19 *Daniel Ball* test.

20 **A. Mr. Fuller's Recreational Standard For Navigability Is Inconsistent With**
21 **Binding Precedent Including *The Daniel Ball* And *PPL Montana*.**

22 The ASLD's lead witness was Jon E. Fuller, who was initially retained several years
23 ago by the ASLD to prepare navigability studies concerning water courses throughout
24 Arizona. Mr. Fuller testified in the hearings concerning the Verde River that were held in
25 2005 and 2006, presenting the findings that he and his team memorialized in a series of
26 reports on behalf of the ASLD.³ Mr. Fuller did not offer any opinions concerning

27 ² See, e.g., 12/16/14 Trans. 314:4 – 315:9 (Lynch).

28 ³ These reports include (1) JE Fuller Hydrology & Geomorphology, Inc., Arizona Stream

1 navigability at that time. In 2014, Mr. Fuller prepared a PowerPoint presentation that he
2 deemed an update of his Verde River reports. Now, Mr. Fuller contends that the Verde
3 River is navigable.

4 Mr. Fuller's analysis and opinions suffer from a fundamental and fatal flaw –
5 application of an erroneous legal standard for navigability that cannot be reconciled with
6 *PPL Montana* and other binding authority. Mr. Fuller approaches navigability from the
7 perspective of recreational boating in modern watercraft, not from the perspective of
8 determining whether a stream is susceptible to use as a highway of commerce.⁴

9 Specifically, Mr. Fuller's view is that if a stream is deep enough to float a boat, it is
10 navigable.⁵ The "boat" that Mr. Fuller has in mind is a modern recreational craft, such as a
11 Kevlar canoe or an inflatable kayak, not the watercraft that were "in customary use for trade
12 and travel at the time of statehood...." *PPL Montana*, 132 S.Ct. at 1234. Mr. Fuller relied
13 upon his personal recreational experience as well as the modern recreational boating
14 standards known as the Hyra Method.⁶

15 Mr. Fuller testified that he employs a six inch depth standard for determining whether
16 a stream is navigable.⁷ Mr. Fuller testified that he would only lean towards concluding that
17 a stream is non-navigable if the stream is *uniformly* less than 6 inches in depth.⁸ Mr. Fuller
18 bases this on his experience and avocation as a recreational canoeist.

19
20 Navigability Study for the Verde River: Salt River Confluence to Sullivan Lake (revised
21 June 2003), Exh. 31, (Fuller's 2003 Verde Report); and (2) 1998 Final Report, Criteria for
22 Assessing Characteristics of Navigability for Small Watercourses in Arizona, Item No.
23 X023, Freeport 6 ("Criteria for Assessing Characteristics of Navigability Report").

24 ⁴ 12/17/14 Trans. 738:11-17 and 745:5-24 (Fuller).

25 ⁵ 12/17/14 Trans. 738:11-17 and 745:5-24 (Fuller).

26 ⁶ *See, e.g.*, 12/17/14 Trans. 738:11-17 (Fuller); Fuller PowerPoint at Slide 76, Item No.
27 X017 at Tab 107.

28 ⁷ 12/17/14 Trans. 738:11-17 (Fuller).

⁸ 12/17/14 Trans. 745:5-24 (Fuller). Nevertheless, Mr. Fuller recommended against
asserting that the San Pedro or Black rivers were navigable, despite Mr. Fuller's recognition
in his reports that the San Pedro and Black rivers typically had depths of 6 inches or greater.
12/17/14 Trans. 745:5 – 752:8 (Fuller).

1 In *PPL Montana*, the United States Supreme Court put to rest any lingering doubt
2 that *The Daniel Ball* test requires as showing of commercial navigation, not recreational
3 boating. Navigability must be founded on the kind of trade and travel on water that
4 constitutes “a *commercial* reality.” *Id.* Accordingly, evidence of modern recreational
5 boating must not be considered unless “the watercraft are meaningfully similar to those in
6 customary use for trade and travel at the time of statehood....” *Id.* This requirement is
7 critical because “[m]odern recreational fishing boats, including inflatable rafts and
8 lightweight canoes or kayaks, may be able to navigate water much more shallow or with
9 rockier beds than the boats customarily used for trade and travel at statehood.” *Id.*

10 In its Closing Brief (p. 14), the ASLD argues that “[t]he only experts to testify about
11 meaningfully similar boats – Mr. Fuller and Mr. Dimock – have said that all of the types of
12 boats available today, except for inflatable rafts, were available at statehood and are
13 meaningfully similar to historical boats.” The ASLD relies upon Mr. Fuller’s effort to
14 correlate modern canoes and kayaks – made from plastics and other modern materials – with
15 the wooden canoes available at statehood. Mr. Fuller contended that their draw is the same
16 despite the significant differences in materials:

17 The principles of physics are the same now as before. And the
18 design and the shape of the boat and the water it displaces is
responsible for how much water it draws.

19 And the basic shape of a canoe ... hasn’t changed much at all.⁹

20 This contention is erroneous because it focuses on shape at the exclusion of weight.
21 The weight of a boat’s materials dictates the boat’s draw. As described by Dr. Robert A.
22 Mussetter, Ph.D., P.E., the laws of physics dictate that if a material is lighter, it will result in
23 a lower draw:

24 Archimedes principle basically states that a solid object will
25 displace an equivalent weight of water if it's placed in the water.

26 ⁹ Item No. X035-160 (Gila River 6/16/14 Trans. 43:13 – 44:6 (Fuller)); *see also* ASLD
27 Closing Brief at p. 13 (arguing, based upon Mr. Fuller’s attempted correlations, “that
28 historic canoes and flatboats were similar to modern canoes and flatboats in their design and
depth requirements.”).

1 So if you have a 100-pound boat, it will displace 100 pounds of
2 water.

3 So what that means with respect to navigability is, of course, the
4 heavier a boat is, in general, the deeper it will sink into the
5 water, or the same boat loaded with heavier and heavier will
6 sink deeper and deeper into the water.

7 Q. Okay. So when attempts are made to draw comparisons
8 between modern recreational canoes, for instance, versus a
9 similar canoe that might have been available around the time of
10 statehood, you don't just look at the design of the boat; isn't that
11 right; you also have to look at the weight?

12 A. Correct.¹⁰

13 Of course, one of the great benefits of modern boating materials is their lighter weight,¹¹
14 which, in accordance with the Archimedes Principle, results in a lower draw. Modern crafts
15 made from light plastics require less draw than a heavier wooden boat.

16 At least as important as the reduction in draw is the significant increase in durability
17 that modern materials provide. This important distinction between modern recreational craft
18 and craft available at statehood is undisputed among the parties. For instance, the ASLD
19 acknowledges in its Closing Brief (p. 15)

20 Both Mr. Dimock and Mr. Fuller addressed how advances in
21 technology have made some modern boats more durable than
22 historic boats. Tr. 3/31/15 at 2835 (Dimock) (modern rafts more
23 durable than wood boats); X035-160, Gila Tr. 6/16/14, at 86-87
24 (Fuller) (plastics and modern materials are more durable); Tr.
25 12/15/14 at 57-58 (Fuller) (canoes more durable today).

26 Mr. Fuller specifically testified that "durability has improved significantly" with the
27 introduction of modern materials:

28 So am I saying that boats haven't changed at all in the last 102
years? No, of course not. **The durability has improved significantly. We now have plastics, Hypalon, other sorts of modern materials that are more durable.** So basically the difference is you need a little less skill because **you can bounce**

¹⁰ 2/24/15 Trans. 2284:1 – 2285:5 (Mussetter).

¹¹ See, e.g., Criteria for Assessing Characteristics of Navigability Report= at p. 28 ("More recently the development of one-person lightweight kayaks and 'rubber duckies' has made it possible to boat shallow rivers previously thought unboatable."); Item No. X054 at Freeport 45 (Gila River 6/18/14 Trans. 635:16-20 (Farmer)).

1 off things you couldn't bounce off before.¹²

2 It is telling that the ASLD asserts that Mr. Fuller and Mr. Dimock are "[t]he only
3 experts to testify about meaningfully similar boats," given the testimony elicited from
4 Mr. Lynch, called to testify by the ASLD about his outfitting business on the Verde River.
5 As Mr. Lynch testified concerning his inflatable kayaks, "[y]ou can hit things, you can
6 bounce off things, you can get stuck on things, and they do – they just – they're just a
7 superior craft for any kind of boater."¹³ He candidly acknowledged that a boater would be
8 better off in one of his modern kayaks than in a wooden canoe, which can be heard clanking
9 against the many rocks that comprise the Verde River's shallow riverbed.¹⁴ Mr. Lynch also
10 acknowledged that wooden canoes draw more water than the modern recreational kayaks
11 that he uses in his outfitter business.¹⁵

12 The navigability proponents err further by essentially ignoring the crafts that were
13 actually put to commercial use circa 1912. These commercial crafts are described by
14 Dr. Richard E. Lingenfelter, who prepared an affidavit on behalf of Freeport concerning his
15 research on boating in the region. As Mr. Fuller recognized in one of his reports presented
16 to the Commission, Dr. Lingenfelter is responsible for one of the two seminal works on
17 historic boating in Arizona, *Steamboats on the Colorado River, 1852-1916*.¹⁶
18 Dr. Lingenfelter is "very familiar with the types of crafts that were 'in customary use for
19 trade and travel at the time of statehood,'" and he confirms that "[t]he craft customarily used
20 for trade and travel at the time of statehood included large steamboats and gasoline powered
21 paddle wheelers...."¹⁷ Modern recreational canoes and kayaks provide no basis for

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23 ¹² Item No. X035-160 (Gila 6/16/14 Trans. 86:17-87:1 (Fuller)). Unless otherwise stated,
all emphases are added.

24 ¹³ 12/16/14 Trans. 306:17 – 307:10 (Lynch).

25 ¹⁴ 12/16/14 Trans. 314:4 – 315:9 (Lynch).

26 ¹⁵ 12/16/14 Trans. 314:4 – 315:9 (Lynch).

27 ¹⁶ Criteria for Assessing Characteristics of Navigability Report at B-1 p. 1. *Steamboats on*
28 *the Colorado River, 1852-1916* is Item No. X054, Freeport 48.

¹⁷ Affidavit of Dr. Lingenfelter, Item No. X054, Freeport 47, at ¶¶ 28-29 (quoting *PPL*
Montana, 132 S.Ct. at 1233).

1 comparison to the commercial craft used for trade and travel at statehood.

2 In sum, modern recreational canoes and kayaks require less water to float and are
3 much more durable, and they are therefore “able to navigate **water much more shallow**”
4 and “**with rockier beds** than the boats customarily used for trade and travel at statehood.”
5 *PPL Montana*, 132 S.Ct. at 1234. Modern canoes and kayaks made of Kevlar, Hypalon,
6 fiberglass, and other modern materials are not equivalent to the boats customarily used for
7 trade and travel at statehood, and Mr. Fuller’s evidence therefore may not be relied upon to
8 support a finding of navigability. *Id.* (holding that “present day recreational use of the
9 river did not bear on navigability,” and that “reliance upon the State’s evidence of present-
10 day, recreational use, at least without further inquiry, was wrong as a matter of law.”).

11 Not only have the navigability proponents failed to provide any evidence concerning
12 the watercraft that were “in customary use for trade and travel at the time of statehood,”
13 they have failed to establish that modern recreational boating has any functional equivalence
14 to utilizing a watercourse as a highway of commerce. *Id.* Recreational boating is a modern
15 phenomenon that occurred in response to the increased availability of modern materials.¹⁸
16 The federal test requires susceptibility to trade and travel as a highway of commerce, *id.*, not
17 merely the ability to float a very limited class of modern low-draft durable craft for the
18 purpose of personal enjoyment.

19 Mr. Fuller’s arguments and opinions are irreconcilable with other seminal United
20 States Supreme Court decisions, including *United States v. Utah*, 283 U.S. 64, 82, 51 S. Ct.
21 438, 443 (1931). The navigability proponents cannot reconcile their claim that a small
22 desert stream like the Verde River was navigable when the United States Supreme Court
23 determined that San Juan River was non-navigable despite having depths between one and
24 three feet “for 219 days” each year, and for the other “146 days a depth of over three feet.”¹⁹

25 ¹⁸ See, e.g., Report, Findings and Determination at p. 37.

26 ¹⁹ 1930 Special Master’s Report, Item No. X017, Tab 92 (“Special Master’s Report”) at pp.
27 167; see also *id.* at 169 (“there is a depth of no more than 2 feet” five months per year and
28 “at other times there are places where the depth is less than 2 feet...”), and 180 (“The
evidence as to depth makes it clear that boats with a draft of two feet could navigate not

1 See also *United States v. Rio Grande Dam & Irrigation Co.*, 174 U.S. 690, 698-99 (1898)
2 and *State of Oklahoma v. State of Texas*, 258 U.S. 574, 591 (1922), respectively determining
3 that the entire lengths of the Rio Grande River in New Mexico and the Red River in
4 Oklahoma are not navigable under the federal test. The San Juan, Rio Grande, and Red
5 River are much larger rivers than the Verde River,²⁰ and Mr. Burtell specifically described
6 the extensive modern recreational use of the San Juan, Rio Grande, Red River, and other
7 streams that have been deemed non-navigable under *The Daniel Ball* test.²¹ These rivers are
8 non-navigable for purposes of title because the ability to float a modern canoe for
9 recreational purposes is not the test.

10 **B. Mr. Farmer's Sub-Six Inch Standard For Navigability Is Also**
11 **Inconsistent With The Federal Navigability Test.**

12 While Mr. Fuller used six inches as his standard for navigability because lower
13 depths are less fun for him in the context of recreational boating, Mr. Farmer enjoys
14 recreating in extreme low flows.²² Mr. Farmer's favorite stream for extreme low flow
15 boating is the Verde River where there might only be an inch of depth at the riffles.²³
16 Mr. Farmer would "without hesitation" engage in recreational boating in a modern craft,
17 such as his 16-foot polyethylene Discovery canoe, in streams with depths less than six
18 inches, and he deems such streams navigable under his standard.²⁴ Mr. Farmer's threshold
19 for navigability is somewhere between two and six inches of depth.²⁵

20 Mr. Farmer's standard for navigability is irreconcilable with the federal test for all of

21 more than half the year...").

22 ²⁰ 3/30/15 Trans. 2669:23 – 2672:9 (Burtell); Special Master's Report at pp. 167; see also
23 *id.* at 169; Information Regarding Navigability of Selected U.S. Watercourses (April 2003),
Item No. 022, at Tabs 16 (Red River) and 17 (Rio Grande).

24 ²¹ 3/30/15 Trans. 2607:10 – 2611:10 (Burtell).

25 ²² Item No. X054 at Freeport 45 (Gila 6/18/14 Trans. 589:17-23 and 594:7 – 595:6
26 (Farmer)).

26 ²³ Item No. X054 at Freeport 45 (Gila 6/18/14 Trans. 591:11-24 (Farmer)).

27 ²⁴ Item No. X054 at Freeport 45 (Gila 6/18/14 Trans. 594:7 – 595:6 (Farmer)).

28 ²⁵ 12/16/14 Trans. 536:11-14 (Farmer).

1 the same reasons as Mr. Fuller's standard. It is focused on recreation, not on the use of a
2 river as a highway for commerce. It relies upon experiences with modern plastic canoes that
3 are lighter, require less depth, and are more durable. Mr. Farmer's evidence cannot support
4 a finding of navigability under the federal test. *PPL Montana*, 132 S.Ct. at 1234 (holding
5 that "present day recreational use of the river did not bear on navigability," and that
6 "reliance upon the State's evidence of present-day, recreational use, at least without further
7 inquiry, was wrong as a matter of law.").

8 **C. Mr. Hjalmarson Relies On An Erroneous Recreational Standard And**
9 **Flawed Methodologies.**

10 In its Closing Brief (pp. 11-15), the Center argues that the Verde River is a navigable
11 stream based upon the opinions of its designated witness, Hjalmar W. Hjalmarson.
12 Mr. Hjalmarson based his opinions on the application of recreational guidelines published
13 by the U.S. Fish & Wildlife Service in 1978.²⁶ This publication, commonly referred to as
14 the Hyra Method, describes the shallowest depths of water needed to recreate in modern
15 recreational crafts. Despite being a standard involving recreational crafts and recreational
16 activities, as opposed to commercial crafts used to conduct commerce circa 1912,
17 Mr. Hjalmarson explained that "my decision is based on that standard."²⁷

18 This is the same standard that Mr. Hjalmarson relied upon in developing his opinions
19 that the San Pedro, the Santa Cruz, and the lower Gila rivers were all navigable, opinions
20 that have each been rejected by the Commission.²⁸ In prior testimony before the
21 Commission, Mr. Hjalmarson conceded that he has not studied how these depths would
22 change if the activity involved were commercial instead of recreational.²⁹ The navigability
23 proponents' failure again boils down to their reliance on an erroneous standard.

24 Mr. Hjalmarson's reconstructed depths also suffer from serious methodological

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26 ²⁶ 12/18/14 Trans. 1038:21 – 1039:23 (Hjalmarson).

27 ²⁷ 12/18/14 Trans. 1038:21 – 1039:23 (Hjalmarson).

28 ²⁸ 12/19/14 Trans. 1169:11 – 1170:18 (Hjalmarson).

²⁹ Item No. X023 at Freeport 7 (San Pedro 6/7/13 Trans. 50:1-25 (Hjalmarson)).

1 errors. Mr. Hjalmarson focused on impacts to the upper portion of the Verde River based on
2 water needs for agriculture in the headwaters portion of the watershed. Mr. Hjalmarson
3 developed an opinion about the amount of irrigated acreage that needed to be accounted for
4 in order to return the Verde River to its natural condition, and he then applied a consumptive
5 use factor to that acreage and added that water back into the river.³⁰

6 Unfortunately, Mr. Hjalmarson vastly overstates the number of acres that were in
7 production in the headwaters area above Sullivan Lake Dam.³¹ He originally tabulated
8 approximately 8,000 acres in cultivation in the headwaters area based on fields depicted on
9 surveyor maps. Mr. Hjalmarson reduced his tabulated acreage to approximately 7,000 acres
10 during the hearing. Even this reduced figure vastly overstates the amount of irrigated
11 acreage that existed in the headwaters. As a threshold matter, while the surveyors noted the
12 existence of fields, they were not charged with surveying their associated acreage,
13 determining whether fields were active or fallow, or determining whether the fields, if
14 active, were dryland farmed rather than irrigated. Mr. Hjalmarson did not verify the fields'
15 actual acreages, did not verify what fields were active versus fallow, and he did not account
16 for the fields that were dryland farmed without any diversions of water that could possibly
17 impact the upper Verde River's flows.³²

18 The record is replete with undisputed evidence demonstrating that there were
19 nowhere near 7,000 acres being irrigated in the headwaters area. Contemporaneous studies
20 of the irrigated acreage establish that in 1889 there were only 3,762 acres being irrigated –
21 *throughout the entirety of Yavapai County*. 3,000 acres were being irrigated in the Verde
22 Valley alone during this period, and lands were also being irrigated along the Agua Fria,
23 meaning that, at most, a few hundred acres were being irrigated in the headwaters area.³³

24 The reason why the survey maps seem to indicate that additional acreage may have

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26 ³⁰ 3/30/15 Trans. 2674:1-12 (Burtell).

27 ³¹ 3/30/15 Trans. 2727:23 – 2744 (Burtell).

28 ³² 3/30/15 Trans. 2727:23 – 2744:4 (Burtell).

³³ 3/30/15 Trans. 2728:9 – 2732:11 (Burtell).

1 been under cultivation in the headwaters area is that there was a significant amount of
2 dryland farming in that region.³⁴

3 Consistent with each of these other lines of evidence, the maps relied upon by
4 Mr. Hjalmarson reveal numerous instances where fields tabulated by Mr. Hjalmarson in his
5 irrigated acreage are nowhere near any waterbody or any ditch or other means of delivering
6 irrigation water. Nor are any ditches or similar improvements described in the
7 homesteaders' testimony. That is because these lands were dryland farmed, not irrigated,
8 and cultivation of these lands had no impact on the Verde River's natural condition.³⁵

9 Mr. Hjalmarson also focused on the deepest portion of the channel rather than
10 average channel depth. By focusing on *maximum* channel depth, Mr. Hjalmarson
11 overstates the amount of depth that will be accounted for laterally across a channel cross-
12 section.³⁶

13 Mr. Hjalmarson also relied on channel cross-sections that were the product of
14 significant flood events on the Verde River. These floods scoured out the channels,
15 resulting in deeper channels, which resulted in greater calculated maximum depths under
16 Mr. Hjalmarson's approach to reconstructing stream flows.³⁷

17 Mr. Hjalmarson also relied upon a USGS report for median predevelopment flow.
18 On cross-examination, Mr. Hjalmarson could not identify from where in the report he
19 derived the median predevelopment flow figure that he used as a foundation component of
20 his calculations. That is because the USGS report did not include any median
21 predevelopment flow data or calculations, which Mr. Burtell was able to confirm with the
22 report's lead author, Don Pool, after Mr. Hjalmarson was unable to explain where his
23 figures came from.³⁸

24 ³⁴ 3/30/15 Trans. 2727:23 – 2744:4 (Burtell); 12/19/14 Trans. 1113:12 – 1131:20
25 (Hjalmarson).

26 ³⁵ 3/30/15 Trans. 2727:23 – 2744:4 (Burtell).

27 ³⁶ 3/30/15 Trans. 2690:10 – 2691:15 (Burtell).

28 ³⁷ 3/30/15 Trans. 2744:20 – 2746:16 (Burtell).

³⁸ 3/30/15 Trans. 2746:17 – 2748:5 (Burtell).

1 In addition to these problems specific to Mr. Hjalmarson's Verde River
2 reconstruction, his overarching approach is the same that the Commission has rejected in
3 rendering its determinations on the San Pedro, Santa Cruz, and Gila rivers. The Hyra
4 Method is an inapplicable recreational standard, and Mr. Hjalmarson's reconstruction of
5 flows using Manning's Equation through selective use of unrepresentative cross-sections
6 and the use of unsupported assumptions is unpersuasive.

7 **III. MR. BURTELL'S ANALYSIS DEMONSTRATES THAT THE VERDE**
8 **RIVER WAS NOT NAVIGABLE IN ITS NATURAL AND ORDINARY**
9 **CONDITION.**

10 Taking his extremely conservative depth figures and applying them to Supreme
11 Court precedent, Mr. Burtell concluded that, consistent with the other lines of evidence, the
12 Verde River was not susceptible to navigation as a highway for commerce. In the United
13 States Supreme Court's seminal decision in the *Utah* case, the San Juan River was
14 determined to be *non-navigable* with depths between one and three feet "for 219 days" each
15 year, and for the other "146 days a depth of over three feet."³⁹ Even in the context of
16 extremely conservative flow reconstructions, the Verde River was a minor stream in its
17 ordinary and natural condition, particularly in comparison to the much larger San Juan that
18 was deemed non-navigable by the United States Supreme Court.

19 None of the proponents' criticisms of Mr. Burtell's work has any merit. As an initial
20 matter, it is noteworthy that, just as on the Gila River, there is a large degree of acceptance
21 of Mr. Burtell's streamflow and depth reconstructions. Mr. Fuller had no criticisms of
22 Mr. Burtell's reconstructions, 12/17/14 Trans. 736:1-19 (Fuller), and the ASLD relies upon
23 Mr. Burtell's reconstructions in its Opening Brief (e.g., pp. 17, 24). Mr. Hjalmarson agreed
24 that Mr. Burtell's reconstructions are generally conservative and, indeed, significantly
25 overestimate the Verde River's natural flow in some locations.⁴⁰

26 ³⁹ 1930 Special Master's Report, Item No. X017, Tab 92, at p. 167; *see also id.* at 169
27 ("[T]here is a depth of no more than 2 feet" five months per year and "at other times there
28 are places where the depth is less than 2 feet..."), and 180 ("The evidence as to depth makes
it clear that boats with a draft of two feet could navigate not more than half the year...").

⁴⁰ 2/18/15 Trans. 1388:22 – 1389:21 (Hjalmarson).

1 Nor does any party have any specific criticism of Mr. Burtell's identification of the
2 few sparse historic accounts in Table 1 to his Declaration.⁴¹ Several of the accounts involve
3 the use of rafts, not for travel up or down the river, but as ferries serving the functional
4 equivalent of a bridge.⁴² Others were recreational excursions, not for the purpose of
5 conducting trade or travel, and they often occurred during periods of high water.⁴³ Some of
6 these boating events ended badly, and some may not have even actually taken place.⁴⁴

7 The proponents also take little issue with Mr. Burtell's well-supported analysis of the
8 significant needs for use of the Verde River as a highway of commerce during times when it
9 remained in its natural condition. Despite thousands of years of inhabitation of the region,
10 and the central role that the Verde River played in the cultural aspects of the inhabitants'
11 lives, there is no evidence to suggest that any prehistoric peoples ever used the Verde River
12 for boating of any kind.⁴⁵ As Mr. Fuller conceded at the hearing, "we have no accounts of
13 boats or boating from the archaeological period. We have no preserved records that say the
14 Native Americans were using boats. So I'll say it again, Native Americans, we have no
15 evidence that they were using boats."⁴⁶

16 Nor were the military or settlers able to put the Verde River to commercial use to
17 meet their various significant needs for a highway of commerce. The military needed to
18 supply the four installations along the Verde River and to transport troops.⁴⁷ However, they
19 were unable to do so using the Verde River, and had to resort, instead, to construction of
20 arduous wagon roads at great expense, and with a delay of several years. Even once they
21 were constructed, these roads were not nearly as direct a transportation route as the Verde

22 ⁴¹ Declaration at Table 1.

23 ⁴² Declaration at Table 1; 3/30/15 Trans. 2593:9 – 2605:23 (Burtell).

24 ⁴³ Declaration at Table 1; 3/30/15 Trans. 2593:9 – 2605:23 (Burtell).

25 ⁴⁴ Declaration at Table 1; 3/30/15 Trans. 2593:9 – 2605:23 (Burtell).

26 ⁴⁵ 3/30/15 Trans. 2593:9 – 2597:8 (Burtell); Fuller's 2003 Verde Report at 2-14; 12/17/14
27 Trans. 752:9 – 754:11 (Fuller).

28 ⁴⁶ 12/15/14 Trans. 119 (Fuller).

⁴⁷ Declaration at ¶¶ 41-45 and Figure 3; 3/30/15 Trans. 2627:10 – 2629:9 and 2632:11 –
2633:21 (Burtell).

1 River would have been if it had been viable as a means to transport supplies and troops.⁴⁸

2 As described in Freeport's Opening Brief, early settlers also would have used the
3 Verde River as a highway for commerce had it been susceptible for that use. For instance,
4 the Verde River would have provided a direct connection between Camp Verde and Phoenix
5 had it been a viable conduit for trade and travel. Instead, early settlers were forced to wait
6 for the construction of an expensive stage line.⁴⁹ These early settlers also would have used
7 the Verde River for the transport of food to communities where the food was needed.⁵⁰
8 They did not so use the Verde River because it was not susceptible to use for trade and
9 travel.

10 While apparently conceding the extremely limited nature of the historical instances
11 of attempted boating of the Verde River, and that significant needs did, in fact, exist during
12 a time when the Verde River was entirely ignored as a highway for commerce, Maricopa
13 County asserts that Mr. Burtell erred in "rel[ying] on the existence of non-boat land
14 transportation, at least in part, to form his opinion that the Verde was not navigable."
15 Maricopa Closing Brief p. 9. Maricopa County asserts further that, when the Chairman
16 asked Mr. Burtell if there is any case that stands for the proposition that it is impermissible
17 to consider roads as a factor in determining navigability, "[c]learly, the Chairman
18 recognized that Mr. Burtell applied the wrong standard when he asked this question." *Id.* at
19 p. 10 (citing *Defenders of Wildlife v. Hull*, 199 Ariz. 411, 424-25 (App. 2001)).

20 Maricopa County's argument relies on a mischaracterization of *Defenders of*
21 *Wildlife*. It is of course relevant to the historical analysis of a stream's use, or nonuse, for
22 navigation that the stream was ignored as a highway for commerce despite significant needs
23 for such a highway that were satisfied, not by stream, but overland. *See, e.g., Lykes Bros.,*
24 *Inc. v. Army Corps of Eng'rs*, 821 F. Supp. 1457, 1459 (M.D. Fla. 1993), *aff'd*, 64 F.3d 630

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26 ⁴⁸ Declaration at ¶¶ 41-45 and Figure 3; 3/30/15 Trans. 2627:10 – 2629:9 and 2632:11 –
2633:21 (Burtell).

27 ⁴⁹ Declaration ¶ 50.

28 ⁵⁰ Report, Findings and Determination at p. 37.

1 (11th Cir. 1995) (“It seems probable that if [the creek] had been navigable, the military
2 would have used FEC to transport men and supplies from the Palmdale area to Fort Center
3 rather than carrying these supplies overland.”).

4 The Court of Appeals did not rule in *Defenders of Wildlife* that it is erroneous as a
5 matter of law to evaluate such evidence. To the contrary, the court overturned the statutory
6 presumption that clear and convincing evidence is required in order to reach a finding of
7 navigability “if ‘[t]ransportation in proximity to the watercourse was customarily
8 accomplished by methods other than by boat.’” 199 Ariz. at 424-25 (quoting former A.R.S.
9 section 37-1128(D)(8)). The Chairman was correct that there is no case that stands for the
10 proposition that it is impermissible to consider roads as a factor in determining navigability.
11 To the contrary, case law recognizes an obvious truth: the use of costly and time-consuming
12 alternative modes of transportation is probative evidence that the stream was not susceptible
13 to use as a mode of transportation. *Lykes Bros.*, 821 F. Supp. at 1459.

14 The ASLD mischaracterizes Mr. Burtell’s testimony concerning the extremely
15 limited history of pre-statehood boating on the Verde River, asserting that “[e]ven
16 Opponent’s expert Mr. Burtell candidly admitted that canoes used for trapping in a repeated
17 fashion support a determination of navigability. Tr. 4/1/15, at 3161.” On its face, this is a
18 misleading and incomplete description of this portion of Mr. Burtell’s testimony.
19 Mr. Burtell’s actual testimony is as follows:

20 Q. Sure. If you have canoes that are reliably and consistently
21 used, traveling down the Verde for the purpose –

22 A. Use -- oh, I'm sorry. I'll let you finish.

23 Q. -- for the purpose of trapping, canoes or a small boat for the
24 purpose of trapping, are they using the river as a highway for
commerce?

25 A. In that circumstance, that would support a determination.
26 However, I would again say that *there are other factors that
should be considered*. But under your hypothetical, *that would
be something that the Commission should look at*.

27 The hypothetical question did not involve merely “repeated” trapping; the question was in
28 regards to the hypothetical ability to use the Verde River “reliably and consistently” for

1 trapping purposes. Moreover, Mr. Burtell's response was that the ability to reliably and
2 consistently use the Verde River for trapping would be something that the Commission
3 should consider, but that there are other factors that would need to be considered (which
4 were not provided as part of counsel's incomplete hypothetical). The ASLD's implication
5 that Mr. Burtell agreed that the mere occurrence of multiple trips on a stream related to
6 trapping means that the stream is navigable for purposes of title is simply false.

7 The navigability proponents' other criticism is that, unlike Messrs. Fuller and
8 Farmer, Mr. Burtell does not have experience boating the Verde River. *See, e.g.,* Maricopa
9 County Closing Brief p. 12-13. Mr. Burtell does, however, have experience with
10 recreational boating in Utah and can confirm the *Utah* Special Master's findings that the San
11 Juan is a much more significant river than the Verde River.⁵¹ Moreover, as discussed above,
12 the recreational boating that Messrs. Fuller and Farmer have enjoyed on the Verde River in
13 canoes and kayaks made of Kevlar, Hypalon, fiberglass, and other modern materials does
14 not bear on navigability for title. *PPL Montana*, 132 S.Ct. at 1234. Their avocation for
15 recreational boating on the Verde River and other Arizona streams does, however, shed light
16 on their motivation for advocating for a liberal standard for navigability.

17 No party otherwise criticizes Mr. Burtell's work in this case. Mr. Burtell analyzed
18 several lines of evidence in order to assess whether the Verde River was navigable in its
19 ordinary and natural condition: geomorphology, historic accounts of stream flow conditions,
20 documented needs for commercial navigation prior to significant diversions, reconstruction
21 of stream flow to assess predevelopment stream depth and velocity, and prehistoric, historic,
22 and recent efforts to boat the Verde. As described in Mr. Burtell's Declaration, his hearing
23 testimony, and Freeport's Opening Memorandum, the totality of the evidence reviewed and
24 the work performed by Mr. Burtell demonstrates clearly that the Verde River was not
25 navigable in its ordinary and natural condition at statehood. To conclude otherwise would
26 require the acceptance of the navigability proponents' erroneous view that recreational

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28 ⁵¹ 3/30/15 Trans. 2669:23 – 2672:9 (Burtell); Declaration ¶ 90.

1 boating in modern recreational craft satisfies *The Daniel Ball* test.

2 **IV. THE PROPONENTS CANNOT CREDIBLY EXPLAIN THE ABSENCE OF**
3 **COMMERCIAL NAVIGATION WHEN THE VERDE RIVER WAS IN ITS**
4 **NATURAL CONDITION, DESPITE A CLEAR NEED FOR SUCH**
5 **TRANSPORTATION.**

6 Perhaps the clearest demonstration that the Verde River was not susceptible to
7 navigation is the fact that it was never used as a highway for commerce in its ordinary and
8 natural condition despite strong needs for such a highway. While the absence of
9 commercial navigation is not dispositive “where conditions of exploration and settlement
10 explain the infrequency or limited nature of such use,” *United States v. Utah*, 283 U.S. 64,
11 82, 51 S. Ct. 438, 443 (1931), there were clear needs to use the Verde River as a highway
12 for commerce – if it had been viable for such purposes – in the early years of settlement
13 before diversions had any meaningful impact on the river.

14 These needs to navigate the Gila River are described in Section III of Freeport’s
15 Opening Memorandum, and include Native Americans’ need to use the Verde River to
16 transport goods and people, the need to transport supplies, people, and ore in connection
17 with several different mining operations, the need to transport supplies and people to
18 support military operations in the region, and the need to use the Verde River as a highway
19 of commerce to support early settlements.

20 Because the Verde River was not capable of meeting *any* of these needs, travel and
21 transportation therefore occurred by wagon, by mule, or on foot.

22 The ASLD’s explanation for the non-use of the river is that the Verde River was not
23 suitable for upstream travel or carrying major tonnage. Closing Brief p. 19. This, of course,
24 is not an excuse for non-use of a navigable river. Instead, this is a concession that the Verde
25 River is a stream that is not susceptible to use as a highway for commerce by virtue of its
26 shallow depths and rocky streambed. There is simply no plausible comparison between the
27 Verde River and any river that has ever been deemed navigable for purposes of title under
28

1 *The Daniel Ball* test.⁵²

2 The navigability proponents' inability to credibly explain the absence of commercial
3 navigation despite these varied and significant needs underscores that the Verde River was
4 not susceptible to use as a highway of commerce in its ordinary and natural condition.

5 CONCLUSION

6 Not only have the navigability proponents failed to satisfy their burden of proof, but
7 the overwhelming weight of the evidence clearly demonstrates that the Verde River was
8 neither navigable nor susceptible to navigation in its ordinary and natural condition at or
9 before statehood. As described by Mr. Burtell in his Declaration and in his testimony, the
10 Verde River is a small desert stream with shallow depths and numerous riffles and rapids
11 that render the Verde River unsusceptible to use as a highway for commerce. These rapids
12 and riffles, while desirable to many recreational boaters using modern plastic and inflatable
13 crafts, are the same types of rapids that supported a decision of non-navigability for the San
14 Juan River. Like the Verde River, the San Juan is currently used for recreational boating,
15 but it is a non-navigable waterway under *The Daniel Ball* test, which concerns commercial
16 transportation rather recreation.

17 Perhaps most telling, the Verde River was never used as a highway for commerce in
18 its ordinary and natural condition despite the need for such a highway to supply military
19 installations and to support early settlement. There were significant needs to use the river,
20 and the fact that difficult and inefficient overland travel was used instead confirms the other
21 lines of evidence that demonstrate that the Verde River was a shallow stream not susceptible
22 to commercial navigation in its ordinary and natural condition.

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27 _____
28 ⁵² See, e.g., Information Regarding Navigability of Selected U.S. Watercourses (April
2003), Item No. 022.


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RESPECTFULLY SUBMITTED this 9th day of November, 2015.

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1 MAILING CERTIFICATE

2 ORIGINAL AND SIX COPIES of the foregoing
3 sent via U.S. mail for filing this 9th day of November, 2015 to:

4 Arizona Navigable Stream Adjudication Commission
5 1700 West Washington, Room B-54
6 Phoenix, AZ 85007

7 COPY sent via e-mail this 9th day of November, 2015 to:

8 George Mehnert
9 Director
10 nav.streams@ansac.az.gov

11 COPY sent via e-mail this 9th day of November, 2015 to each
12 party on the mailing list (see http://www.ansac.az.gov/parties.asp)
13 for *In re Determination of Navigability of the Verde River*

14 By: Kathryn Power
15 11025272.2/028851.0283