



1-1-2016

Bridge over Troubled Waters: Resolving the Ri Grande (Rio Bravo) Water Dispute.

Ruben R. Barrera

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Recommended Citation

Ruben R. Barrera & Dan A. Naranjo, *Bridge over Troubled Waters: Resolving the Ri Grande (Rio Bravo) Water Dispute.*, 47 ST. MARY'S L.J. (2016).

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ARTICLE

BRIDGE OVER TROUBLED WATERS: RESOLVING THE RIO GRANDE (RIO BRAVO) WATER DISPUTE

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* Ruben R. Barrera would like to acknowledge the assistance of Lori Jones during the research and writing of this Article. Mr. Barrera would also like to acknowledge the love, patience, understanding, and moral support of his wife, Raquel J. Barrera, during the preparation of this Article. Finally, Mr. Barrera would like to acknowledge that the inspiration for this Article was partially drawn from the literary and writing interests and pursuits of his son, Aaron Ruben Barrera.

** Dan A. Naranjo would like to thank the following colleagues and scholars who provided expertise that greatly assisted his research: Judge Reynolds Cate, Rob Barnett, Mary Kelly; as well as Gustavo Guerra, the research specialist on Mexico, and the extraordinary staff at the Library of Congress in Washington, D.C. Mr. Naranjo would like to dedicate this Article to his uncle, Emilio A. Naranjo, deceased, a true son of the Rio Grande Valley, who as the eldest of twelve siblings built bridges from the family ranch on the Rio Grande (Rio Bravo) to San Antonio—and who encouraged the author to diligently work for the resolution of the U.S.–Mexico water dispute.

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I. INTRODUCTION

In 2010, the world's population exceeded seven billion and is expected to reach more than nine billion by 2050.¹ The population continues to grow as the world becomes increasingly interconnected by technology and the need to extend the availability of traditional finite energy resources. Christopher C. Joyner wrote, "Globalization makes the world ever more interconnected and interdependent and, in doing so, transforms foreign affairs."² There is no resource more valuable and necessary for human survival than water. For this reason, water will continue to become more and more valuable as our population increases over time.³ Historically, nations motivated by their own interests have fought over land and water rights, driven by their own needs and following their own international rules.⁴ Regrettably, this technique has often led to confusion and stalemated agreements.⁵

Currently, the United States and Mexico share the waters of the Rio Grande. Two agreements govern the sharing of water along this river: the Convention of May 21, 1906 and the Treaty of February 3, 1944. Section II provides a brief discussion of the history between Mexico, Texas, and the United States. Section III discusses the origin and characteristics of the Rio Grande. A detailed discussion of relevant treaties and conventions between Mexico and the United States is presented in Section IV. Section V chronicles Mexico's water deficits. Section VI analyzes the climatic history within the geographic region. Sections VII and VIII explore the economic impact to agricultural and municipal interests along the south Texas border due to a lack of water. Section IX presents actions taken by American water users and related governmental agencies to address Mexico's deficits. Section X offers recommendations for future actions, which include involvement of the International Court of Justice⁶ or the

1. See *International Data Base World Population: 1950-2050*, U.S. CENSUS BUREAU, <http://www.census.gov/population/international/data/idb/worldpopgraph.php> (last updated July 2015) (indicating the world population is expected to reach nine billion by 2044).

2. CHRISTOPHER C. JOYNER, *INTERNATIONAL LAW IN THE 21ST CENTURY: RULES FOR GLOBAL GOVERNANCE* 288 (Deborah J. Gerner et al. eds., 2005).

3. See Matthew Brodahl & William A. Shutkin, *Exactly the Right Amount: Municipal Water Efficiency, Population Growth, and Climate Change*, 14 U. DENV. WATER L. REV. 337, 337-38 (2011) (discussing the increase in societal demand for water resources for agricultural, municipal, recreational, and non-economic uses as the population continues to grow).

4. Dan A. Naranjo, *It's a Small World After All: Why It Is So Important for Texans to Understand the International Court of Justice*, 77 TEX. B. J. 322, 322 (2014).

5. *Id.*

6. See *The Court*, INT'L CT. JUST., <http://www.icj-cij.org/court> (last visited Mar. 17, 2016) ("The Court's role is to settle, in accordance with international law, legal disputes submitted to it by the

Permanent Court of Arbitration.⁷ Intergovernmental organizations, along with international agreements, are often best situated to handle such immense legal disputes of such magnitude.⁸ Section XI presents a brief conclusion.

II. GENERAL HISTORY

On February 3, 1944, the United States of America and Mexico entered into the controversial Treaty of 1944.⁹ This treaty designated the rights and limitations of the two countries with respect to the waters of the Colorado River, the Tijuana River, and portions of the Rio Grande. The intent of the treaty was to better use these waters.¹⁰

To effectively understand the purpose and intent behind the 1944 treaty, it is necessary to briefly review the history of Mexico, Texas, and the United States.¹¹

The Mexico that we know today was first inhabited in about 8000 BCE by a native population from unknown tribes that migrated from the north.¹² The native population was essentially hunters and gathers.¹³ It

States and to give advisory opinions on legal questions referred to it by authorized United Nations organs and specialized agencies.”).

7. See *Arbitration Services*, PERMANENT CT. ARB., <https://pca-cpa.org/en/services/arbitration-services> (last visited Mar. 21, 2016) (articulating the arbitration and other dispute resolution services provided by the PCA).

8. Naranjo, *supra* note 4, at 322.

9. Treaty Between the United States of America and Mexico Respecting Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, Mex.-U.S., Feb. 3, 1944, 59 Stat. 1219 [hereinafter Treaty of 1944].

10. See *generally id.* (outlining the provisions of the treaty that regulate the rights of each country regarding the Colorado River, the Tijuana River, and part of the Rio Grande).

11. The intent of this Article is to focus on the Treaty of 1944 between the United States and Mexico. However, the authors believe that the only way to fully understand the current conflict between the United States and Mexico is to briefly review the history of this region. The discussion begins with the Pre-Columbian period, covers the conquest, exploration, and settlement by Spain of the area known as New Spain—which evolved into Mexico and, in turn, spawned Texas and ultimately became part of the United States. For additional print sources that may be beneficial for the reader to consult, see JOSEPH L. CLARK, *A HISTORY OF TEXAS: LAND OF PROMISE* (1939); LYNN V. FOSTER, *A BRIEF HISTORY OF MEXICO* (4th ed. 1997); BRIAN R. HAMNETT, *A CONCISE HISTORY OF MEXICO* (2d ed. 2006); FREDERICK A. PETERSON, *ANCIENT MEXICO: AN INTRODUCTION TO THE PRE-HISPANIC CULTURES* (1959); WILLIAM H. PRESCOTT, *HISTORY OF THE CONQUEST OF MEXICO & HISTORY OF THE CONQUEST OF PERU* (Cooper Square Press reprint ed. 2000) (1847); RUPERT N. RICHARDSON ET AL., *TEXAS: THE LONE STAR STATE* (10th ed. 2009) (1943); FRANK X. TOLBERT, *AN INFORMAL HISTORY OF TEXAS: FROM CABEZA DE VACA TO TEMPLE HOUSTON* (1961).

12. Roderic A. Camp & James D. Riley, *Mexico*, in 13 *WORLD BOOK ENCYCLOPEDIA* 452, 468 (World Book, Inc. 1993).

13. *Id.*

was not until 7000 BCE that these hunters learned to cultivate plants for their food.¹⁴ This brought about the transformation from a society of hunters and gatherers to a farming community.¹⁵ With this transformation came the establishment of permanent settlements.¹⁶ By 2000 BCE, these farmers were using water irrigation systems to better cultivate crops.¹⁷ Consequently, the settlements evolved into villages and then towns.¹⁸ Historian and scholar Abba Eban essentially states that civilization was born out of agriculture that itself was born out of irrigation.¹⁹ Because of irrigation, farmers were able “to turn chance vegetation into crops they could depend on.”²⁰ Civilization—by definition—means an advanced state of cultural and material development in human society marked by political and social complexity, progress in the arts and sciences, refinement, and conveniences.²¹ Great civilizations occupied Mexico for the next 2,719 years.²² This epoch began in 1200 BCE when the Olmec tribe became Mexico’s first great civilization.²³ Between roughly 1200 BCE and 400 BCE, the Olmecs created a system of counting and a calendar.²⁴ Mexico’s classic period occurred between 250 CE and 900 CE.²⁵ During this time, the Mayan and Zapotec tribes perpetuated the great civilizations.²⁶ These tribes built homes, pyramids and temples, and developed a form of picture writing.²⁷ Why these civilizations fell remains unclear, but there is some speculation that the climate may have become significantly drier by 900 CE, reducing food production and negatively impacting the population.²⁸ The Toltec tribe

14. *Id.*

15. *Id.*

16. *Id.*

17. *Id.*

18. *Id.*

19. See DVD: Heritage: Civilization and the Jews (Home Vision Entertainment 1984) (on file with author) (“Civilization developed out of agriculture, out of irrigation, which earlier people had devised as a way to temper the droughts and flats of the river.”).

20. *Id.*

21. *Civilization*, WEBSTER’S NEW WORLD DICTIONARY 257 (3d Coll. ed. 1988).

22. See Camp & Riley, *supra* note 12, at 468 (including when villagers began building pyramids with temples around 1000 BCE to the start of the conquest of the Aztec empire by Hernando Cortés in 1519).

23. *Id.*

24. *Id.*

25. *Id.*

26. *Id.*

27. *Id.*

28. *Id.*

was the next civilization within Mexico from 900 CE to 1200 CE.²⁹ The Toltec tribe also fell and was superseded by the Aztecs whose empire was discovered in 1519 by the Spanish (i.e., Hernando Cortés).³⁰

The tumultuous relationship between New Spain that evolved into Mexico—and that spawned Texas, which ultimately became part of the United States—began in 1519 when the Texas shores (that were not yet conquered by New Spain) were seen by the Spaniards.³¹

In 1521, the Spanish conquered the Aztecs, established Spanish rule, and imposed Spanish law, which included judicial procedure, family relations law, land law, and water law.³² Spanish law allowed the native population the right to retain the lands they owned before the conquest.³³ During the next 300 years of the Spanish Empire, the populous grew increasingly diverse—from an exclusively native population to a society comprised of peninsulares (white people born in Spain), creoles (European white people born in Mexico), mestizos (mixed white and native ancestry), and the native population.³⁴

In the portion of the Spanish Empire that would later become Texas, the period from 1519 to 1682 was known as the Spanish exploration period.³⁵ This is because Spain asserted its claim to this land based on the exploration of the Spanish explorers, such as Alonso Álvarez de Pineda, Álvar Núñez Cabeza de Vaca, Francisco Vásquez de Coronado, Hernando de Soto, and Luis de Moscoso Alvarado.³⁶ In 1682, the explorations culminated in the establishment of a mission in the area now known as El Paso.³⁷ While the French briefly flirted with both exploration and colonization from 1685 to 1687, their efforts were unsuccessful.³⁸ By 1690, Spain established missions in the east Texas area now known as

29. *Id.*

30. *Id.* at 468–69.

31. *Id.* at 469–70; Donald E. Chipman, *The Handbook of Texas: Spanish Texas*, TEX. ST. HIST. ASS'N (June 15, 2010), <http://www.tshaonline.org/handbook/online/articles/nps01>.

32. *See* Camp & Riley, *supra* note 12, at 470 (indicating the laws enforced in Mexico were created in Spain); Chipman, *supra* note 31 (mentioning Spanish law left a lasting impact on the legal system of Texas).

33. Camp & Riley, *supra* note 12, at 470.

34. *Id.*

35. John Edwin Coffman & Clifford L. Egan, *Texas*, in 19 WORLD BOOK ENCYCLOPEDIA 203, 204 (World Book, Inc. 1993); Chipman, *supra* note 31.

36. Coffman & Egan, *supra* note 35, at 204.

37. *Id.*

38. *See id.* (describing the unfortunate events that occurred once the French landed and established a colony in Texas).

Weches.³⁹ Between 1682 and 1793, Spain continued to establish additional missions and forts to protect the missions, which included the fort of San Antonio de Béjar (in 1718) to protect the mission of San Antonio de Valero.⁴⁰ Notwithstanding Spain's efforts to colonize the Texas area, only a few thousand white settlers lived in this area by 1793.⁴¹ While the United States claimed in 1803 the Rio Grande was the boundary between the United States and the Spanish Empire, Spain did not recognize this position and continued its occupation of Texas until 1821.⁴² During the occupation of Texas, the Spaniards introduced a number of legacies, such as European crops, livestock and livestock handling, and improved farming and irrigation (via *acequias*) in San Antonio.⁴³

Mexico's march toward independence began in 1810.⁴⁴ It was the creoles who—after achieving some degree of wealth (attributable to mining silver)—revolted against the Spaniards in 1810 and achieved independence from Spanish rule in 1821.⁴⁵

In 1820, just before the Spanish Empire ended, Moses Austin requested and was granted permission by Spain to establish a colony of American settlers in Texas.⁴⁶ Since Moses Austin died, the colony (comprised of 300 families) did not move into Texas (led by Stephen F. Austin) until 1822.⁴⁷ By 1823, Mexico issued new land grants to Austin and his colonies expanded.⁴⁸ Land grants were also issued by Mexico to other American settlers, allowing them to establish colonies.⁴⁹

While the creoles were united in their revolt against Spain, there was disagreement between conservative creoles (who favored a monarch and alternatively a strong central government) and liberal creoles (who favored a republic characterized by a stronger state government).⁵⁰ Ultimately, a compromise was reached.⁵¹ The result was a drafted constitution that

39. *Id.* (noting that in 1690, a Franciscan friar established the first mission in east Texas).

40. *Id.* at 206.

41. *Id.*

42. *See id.* (establishing the borders of the Louisiana Territory were set at the Sabine and Red Rivers, despite the French purporting to own land as far south as the Rio Grande).

43. Chipman, *supra* note 31.

44. Camp & Riley, *supra* note 12, at 470–71.

45. *Id.*

46. Coffman & Egan, *supra* note 35, at 206.

47. *Id.*

48. *Id.*

49. *Id.*

50. Camp & Riley, *supra* note 12, at 471.

51. *Id.*

allowed Mexico to become a republic in 1824.⁵²

Due to the land grants by both Spain and then Mexico, the number of American settlers in Texas expanded exponentially between 1821 and 1836.⁵³ Mexico became so concerned with the number of settlers from the United States that by 1830, it halted all immigration to Texas.⁵⁴ It is fair to say these actions worsened the relationship between Mexican officials and American settlers.⁵⁵

In addition to the worsening relationship between the American settlers and Mexican officials, there was the added issue that many of the conservative creoles did not support the Mexican Constitution of 1824.⁵⁶ This political instability was exploited by military leaders, such as General Antonio López de Santa Anna who revolted, was elected president in 1833, overthrew the constitutional government, and became the first Mexican dictator in 1834.⁵⁷

By 1835, Texas and Mexican troops were battling each other.⁵⁸ This attracted General Santa Anna's attention.⁵⁹ General Santa Anna assembled a large army and marched to San Antonio,⁶⁰ where his troops defeated Texan troops at the Alamo (between February 23 to March 6, 1836) and then proceeded to attack, defeat, and execute Texan troops at Goliad on March 27, 1836.⁶¹ Ultimately, Texan troops (inspired by the Alamo and Goliad) continued the fight and, in a surprise attack, defeated General Santa Anna at the battle of San Jacinto in the area now known as Houston on April 21, 1836.⁶²

As a result, General Santa Anna signed a treaty granting Texas its independence from Mexico on April 22, 1836.⁶³ The new Republic of Texas included what is now Texas, as well as parts of New Mexico, Colorado, Oklahoma, Kansas, and Wyoming.⁶⁴ Mexico, however, refused to recognize the treaty.⁶⁵ Even after Texas ceased being a republic and

52. *Id.*

53. Coffman & Egan, *supra* note 35, at 206.

54. *Id.*

55. *Id.*

56. Camp & Riley, *supra* note 12, at 471-72.

57. *Id.*

58. Coffman & Egan, *supra* note 35, at 206-07.

59. *Id.*

60. *Id.*

61. *Id.*

62. *Id.*

63. *Id.*

64. Camp & Riley, *supra* note 12, at 471-72.

65. *Id.*

became a state by joining the United States in 1845, Mexico continued to claim Texas.⁶⁶ Not surprisingly, border disputes began to develop between Mexico and the United States.⁶⁷ Ultimately, these border disputes led to the Mexican–American War in 1846.⁶⁸ The Mexican–American War ended in 1848 with the signing of the Treaty of Guadalupe Hidalgo.⁶⁹

Under the Treaty of Guadalupe Hidalgo, Mexico agreed to give California, Utah, Nevada, most of Arizona, and portions of New Mexico, Colorado, and Wyoming to the United States.⁷⁰ Mexico also agreed to recognize Texas and further recognize the Rio Grande (Rio Bravo del Norte) as the boundary between Mexico and Texas.⁷¹

Between 1848 and 1914, Mexico continued to experience political instability.⁷² The disagreements between liberals and conservatives, adoption of a new constitution in 1857 based on a federal system of government, failed attempts by the French to establish an emperor, and two dictatorships—Porfirio Díaz (1876–1880 and 1884–1911) and Victoriano Huerta (1913–1914)—all contributed to this instability.⁷³ In 1914 and 1915, the United States decided to support President Venustiano Carranza by invading and seizing Veracruz and working to halt the export of weapons to Carranza’s enemies.⁷⁴ The United States’ intervention and support of Carranza did not sit well with Pancho Villa and Emiliano Zapata, two of Carranza’s rivals.⁷⁵ Ultimately, Carranza survived politically and was responsible for the adoption of yet another new Constitution in 1917.⁷⁶ From 1920 to 1970, relations between Mexico and the United States improved.⁷⁷ However, the early 1970s brought about challenges that once again strained the relationship between the two

66. *Id.*

67. *Id.*

68. *Id.*

69. *Id.*

70. *Id.*

71. *Id.*

72. *Id.* at 472.

73. *Id.*

74. See Camp & Riley, *supra* note 12, at 472 (“President Woodrow Wilson . . . openly sided with Carranza’s revolutionaries.”).

75. See *id.* (reporting Pancho Villa and his men retaliated by entering the United States and killing eighteen Americans in the town of Columbus, New Mexico in 1916). Americans killed about five times as many of Pancho Villa’s men during the raid. *Id.* at 473.

76. *Id.* at 472–73.

77. *Id.* at 473–74.

countries.⁷⁸ Mexico improved relations with Cuba and Chile despite opposition from the United States.⁷⁹ Additionally, illegal immigration and drug smuggling into the United States strained the relationship.⁸⁰ The latter two issues have continued into 2016.

Thus, it is fair to conclude that since 1803, Spain, Mexico, Texas, and the United States have had and continue to have their share of periodic conflict.

III. THE RIO GRANDE (RIO BRAVO DEL NORTE)

The Rio Grande (also known as the Rio Bravo del Norte) begins in Colorado, flows through New Mexico, and then into Texas, creating the fertile delta known as the lower Rio Grande Valley, and ending at the Gulf of Mexico.⁸¹ The river's length from its headwaters in Colorado to its termination into the Gulf of Mexico is 1,900 miles.⁸² It "is the second-longest river entirely within or bordering the United States" and the longest river in Texas.⁸³ From its source to its mouth, the Rio Grande falls 12,000 feet to sea level.⁸⁴ The Rio Grande "drains 49,387 square miles of Texas and has an average annual flow of 645,500 acre-feet."⁸⁵

The following map⁸⁶ illustrates the Rio Grande basin:

78. *Id.* at 474.

79. *Id.*

80. *Id.*

81. *Rivers*, TEXAS ALMANAC, <http://texasalmanac.com/topics/environment/rivers> (last visited Mar. 17, 2016).

82. *Id.*

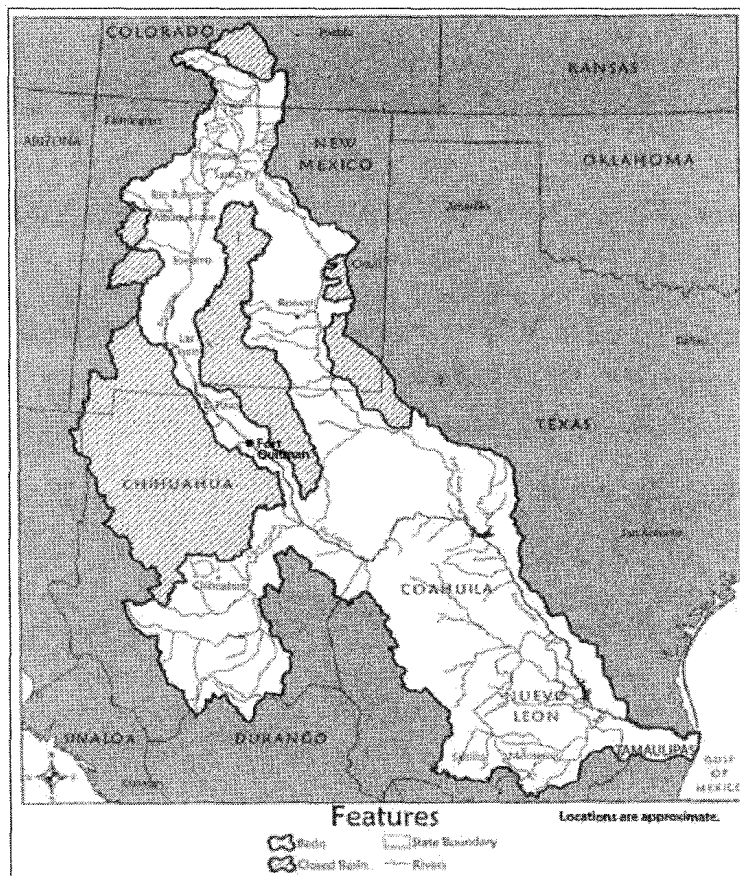
83. *Id.*

84. *Id.*

85. *Id.*

86. NICOLE T. CARTER ET AL., CONG. RESEARCH SERV., R43312, U.S.-MEXICO WATER SHARING: BACKGROUND AND RECENT DEVELOPMENTS 3 (2015), <http://www.fas.org/sgp/crs/row/R43312.pdf> (modifying a map found in Lisa Ellis, *Bosque Background: The Middle Rio Grande Bosque*, in BOSQUE EDUCATION GUIDE 45, 48 (Letitia Morris, et al. eds., 2d ed. 2003)).

Figure 2. Rio Grande Basin



IV. TREATIES AND CONVENTIONS BETWEEN THE UNITED STATES AND MEXICO

There are thirteen relevant treaties and conventions between Mexico and the United States:

1. Treaty of February 2, 1848 (known as the Treaty of Guadalupe Hidalgo);
2. Treaty of December 30, 1853 (modifying the 1848 treaty);
3. Convention of July 29, 1882;
4. Convention of November 12, 1884;
5. Additional Article to Convention of July 29, 1882 (concluded on December 5, 1885);
6. Convention of February 18, 1889;
7. Convention of March 1, 1889;
8. Convention of December 2, 1898;

9. Convention of May 21, 1906;
10. Convention of February 1, 1933;
11. Treaty of February 3, 1944;
12. Chamizal Convention of August 29, 1963; and
13. Treaty of November 23, 1970.

A. *Treaty of February 2, 1848 (Known as the Treaty of Guadalupe Hidalgo)*

The 1848 Treaty of Peace, Friendship, Limits, and Settlement Between the United States of America and the Mexican Republic officially ended the Mexican–American War in February 2, 1848. In the proclamation portion of the treaty, the two countries state:

The United States of America and the United Mexican States, animated by a sincere desire to put an end to the calamities of the war which unhappily exists between the two republics, and to establish upon a solid basis relations of peace and friendship, which shall confer reciprocal benefits upon the citizens of both, and assure the concord, harmony and mutual confidence, wherein the two people should live, as good neighbors, have for that purpose . . . arranged, agreed upon, and signed the following . . .⁸⁷

Article 5 of the 1848 Treaty discusses the boundaries between the United States and Mexico:

The boundary line between the two republics shall commence in the Gulf of Mexico . . . opposite the mouth of the Rio Grande, otherwise called Rio Bravo del Norte . . . up the middle of that river, following the deepest channel, where it has more than one, to the point where it strikes the southern boundary of New Mexico; thence, westwardly, along the whole southern boundary of New Mexico . . . to its western termination; thence, northward, along the western line of New Mexico, until it intersects the first branch of the River Gila . . . thence down the middle of the said branch and of the said river, until it empties into the Rio Colorado; thence, across the Rio Colorado, following the division line between Upper and Lower California, to the Pacific Ocean. . . . The boundary line established by this article shall be religiously respected by each of the two republics, and no change shall ever be made therein, except by the express and free consent of both nations, lawfully given by the general government of each, in conformity with its own constitution.⁸⁸

87. Treaty of Peace, Friendship, Limits, and Settlement with the Republic of Mexico, Mex.-U.S., Proclamation, Feb. 2, 1848, 9 Stat. 922.

88. *Id.* art. 5.

B. *Treaty of December 30, 1853*

The 1853 U.S.–Mexico treaty officially modified the 1848 Treaty. In the proclamation portion of the Treaty, the two countries state:

The Republic of Mexico and the United States of America, desiring to remove every cause of disagreement which might interfere in any manner with the better friendship and intercourse between the two countries, and especially in respect to the true limits which should be established, when, notwithstanding what was covenanted in the [T]reaty of Guadalupe Hidalgo in the year 1848, opposite interpretations have been urged, which might give occasion to questions of serious moment: to avoid these, and to strengthen and more firmly maintain the peace which happily prevails between the two republics . . . have agreed upon the articles following . . .⁸⁹

Article 1 of the 1853 Treaty discusses the amended boundaries between the United States and Mexico:

The Mexican Republic agrees to designate the following as her true limits with the United States for the future: Retaining the same dividing line between the two Californias, as already defined and established, according to the 5th Article of the [T]reaty of Guadalupe Hidalgo, the limits between the two republics shall be as follows: Beginning in the Gulf of Mexico, . . . opposite the mouth of the Rio Grande as provided in the fifth article of the [T]reaty of Guadalupe Hidalgo; thence, as defined in the said article, up the middle of that river to the point where the parallel of 31 [degrees] 47 [feet] north latitude crosses the same; thence due west one hundred miles; thence south to the parallel of 31 [degrees] 20 [feet] north latitude; thence along the said parallel of 31 [degrees] 20 [feet] to the 111th meridian of longitude west of Greenwich; thence in a straight line to a point on the Colorado river twenty English miles below the junction of the Gila and Colorado rivers; thence up the middle of the said river Colorado until it intersects the present line between the United States and Mexico.

The dividing line thus established shall, in all time, be faithfully respected by the two Governments, without any variations therein, unless of the express and free consent of the two, given in conformity to the principles of the law of nations, and in accordance with the constitution of each country, respectively.

In consequence, the stipulation in the 5th Article of the [T]reaty of Guadalupe upon the boundary line therein described is no longer of any force, wherein it may conflict with that here established, the said line being considered annulled and abolished whenever it may not coincide with the

89. Treaty with Mexico, Mex.-U.S., Proclamation, Dec. 30, 1853, 10 Stat. 1031.

present, and in the same manner remaining in full force where in accordance with the same.⁹⁰

C. *Convention of July 29, 1882*

This purpose of this convention was to define the method in which the monuments designating the boundary between the United States and Mexico (from the Pacific Ocean to the Rio Grande) were to be restored. It was this convention that created a temporary commission known as the International Boundary Commission.⁹¹

D. *Convention of November 12, 1884*

This convention was for the purpose of reinforcing the dividing line of the boundary between the United States and Mexico. Specifically,

[w]hereas, in virtue of the 5th article of the Treaty of Guadalupe Hidalgo between the United States of America and the United States of Mexico, concluded February 2, 1848, and of the first article of that of December 30, 1853, certain parts of the dividing line between the two countries follow the middle of the channel of the Rio Grande and the Rio Colorado, to avoid difficulties which may arise through the changes of channel to which those rivers are subject to through the operation of natural forces, the Government of the United States of America and the Government of the United States of Mexico have resolved to conclude a convention which shall lay down rules for the determination of such questions, and . . . have agreed upon the following articles:⁹²

The dividing line shall forever be that described in the aforesaid Treaty and follow the [center] of the normal channel of the rivers named, notwithstanding any alternations in the banks or in the course of those rivers, provided that such alterations be effected by natural causes through the slow and gradual erosion and deposit of alluvium and not by the abandonment of an existing river bed and the opening of a new one.⁹³

Any other change, wrought by the force of the current, whether by the cutting of a new bed, or when there is more than one channel by the

90. *Id.* art. 1.

91. Convention Between the United States of America and the United States of Mexico Providing for an International Boundary Survey to Relocate the Existing Frontier Line Between the Two Countries West of the Rio Grande, Mex.-U.S., art. 2, July 29, 1882, T.S. No. 220.

92. Convention Between the United States of America and the United States of Mexico Touching the International Boundary Line Where It Follows the Bed of the Rio Grande and the Rio Colorado, Mex.-U.S., Proclamation, Nov. 12, 1884, 24 Stat. 1011.

93. *Id.* art. 1.

deepening of another channel than that which marked the boundary at the time of the survey made under the aforesaid Treaty, shall produce no change in the dividing line as fixed by the surveys of the International Boundary Commissions in 1852; but the line then fixed shall continue to follow the middle of the original channel bed, even though this should become wholly dry or be obstructed by deposits.⁹⁴

E. *Additional Article to Convention of July 29, 1882 (Concluded on December 5, 1885)*

The purpose of this convention was to extend the time to appoint the International Boundary Commission and allow it to carry out its work involving the resurveying and relocating the existing boundary line between the United States and Mexico.⁹⁵

F. *Convention of February 18, 1889*

The purpose of this convention between the United States and Mexico was “to revive the provisions of the Convention of July 29, 1882, to survey and relocate the existing boundary line between the two countries west of the Rio Grande, and to extend the time fixed in Article VIII of the said Convention for the completion of the work in question.”⁹⁶ According to Article 1,

[t]he fact that the original Convention of July 29, 1882, between the United States and Mexico, providing for the resurvey of their boundary line, has lapsed by reason of the failure of the two governments to provide for its further extension before the 3d of January, 1889, as contemplated by the Additional Article to that Convention, of December 5, 1885, it is hereby mutually agreed and expressly understood by and between the contracting parties hereto, that the said Convention of July 29, 1882, and every article and clause thereof, are hereby revived and renewed as they stood prior to January 3, 1889.⁹⁷

Moreover,

94. *Id.* art. 2.

95. Additional Article to the Convention of July 29, 1882, Between the United States of America and the United States of Mexico, Providing for an Extension of Time Fixed in Article VIII of Said Convention for Re-surveying and Re-locating the Existing Frontier Line Between the Two Countries West of the Rio Grande, Mex.-U.S., Proclamation, Dec. 5, 1885, 25 Stat. 1390.

96. Convention Between the United States of America and the United States of Mexico to Revive the Provisions of the Convention of July 29, 1882, to Survey and Relocate the Boundary Line West of the Rio Grande and to Extend the Time Fixed in Article VIII of Said Convention, Mex.-U.S., Proclamation, Feb. 18, 1889, 26 Stat. 1493.

97. *Id.* art. 1.

[t]he time fixed in Article VIII of the Convention concluded at Washington, July 29, 1882, between the United States of America and the United States of Mexico, to establish an international boundary commission for the purpose of resurveying and relocating the existing boundary line between the two countries west of the Rio Grande, as provided for in said Convention, and which was extended for eighteen months from the expiration of the term fixed in Article VIII of the said Convention of July 29, 1882, is hereby further extended for a period of five years from the date of the exchange of ratifications hereof.⁹⁸

G. *Convention of March 1, 1889*

The purpose of this convention between the United States and Mexico was

[t]o facilitate the carrying out of the principles contained in the treaty of November 12, 1884 . . . and to avoid the difficulties occasioned by reason of the changes which take place in the bed of the Rio Grande and that of the Colorado River, in that portion thereof where they serve as a boundary between the two Republics.⁹⁹

According to Article 1,

[a]ll differences or questions that may arise on that portion of the frontier between the United States of America and the United States of Mexico where the Rio Grande and the Colorado Rivers form the boundary line, whether such differences or questions grow out of alterations or changes in the bed of the aforesaid Rio Grande and that of the aforesaid Colorado River, or of works that may be constructed in said rivers, or of any other cause affecting the boundary line, shall be submitted for examination and decision to an International Boundary Commission, which shall have exclusive jurisdiction in the case of said differences or questions.¹⁰⁰

Under Article 4,

[w]hen, owing to natural causes, any change shall take place in the bed of the Rio Grande or in that of the Colorado River, in that portion thereof wherein those rivers form the boundary line between the two countries, which may affect the boundary line, notice of that fact shall be given by the

98. *Id.* art. 2.

99. Convention Between the United States of America and the United States of Mexico to Facilitate the Carrying out of the Principles Contained in the Treaty of November 12, 1884, and to Avoid the Difficulties Occasioned by Reason of the Changes Which Take Place in the Bed of the Rio Grande and that of the Colorado River, Mex.-U.S., Proclamation, Mar. 1, 1889, 26 Stat. 1512.

100. *Id.* art. 1.

proper local authorities on both sides to their respective Commissioners of the International Boundary Commission, on receiving which notice it shall be the duty of the said Commission to repair to the place where the change has taken place or the question has arisen, to make a personal examination of such change, to compare it with the bed of the river as it was before the change took place, as shown by the surveys, and to decide whether it has occurred through avulsion or erosion, for the effects of Articles I and II of the convention of November 12th, 1884; having done this, it shall make suitable annotations on the surveys of the boundary line.¹⁰¹

This convention was to “be in force from the date of the exchange of ratification for a period of five years.”¹⁰²

H. *Convention of December 2, 1898*

This convention between the United States and Mexico further extended the agreement reached during the Convention of March 1, 1889. According to Article 1,

[t]he duration of the Convention of March 1, 1889 . . . was to remain in force for five years, counting from the date of the exchange of its ratifications, which period was extended by the Convention of October 1, 1895, to December 24, 1896, by the Convention of November 6, 1896, to December 24, 1897, and by the Convention of October 29, 1897 to December 24, 1898, is extended by the present Convention for the period of one year counting from this last date.¹⁰³

I. *Convention of May 21, 1906*

The 1906 convention is one of two agreements that govern the Rio Grande and its basin,¹⁰⁴ and it involves the delivery of 60,000 acre-feet of water by the United States to Mexico from the northwestern portion of the Rio Grande basin near El Paso.¹⁰⁵ The 60,000 acre-feet can be reduced proportionately as a result of drought conditions, and “[t]he United States is not required to make up for reductions.”¹⁰⁶ Specifically, this convention between the United States and Mexico provides “for the

101. *Id.* art. 4.

102. *Id.* art. 9.

103. Convention Between the United States of America and the United States of Mexico. Extending for a Period of One Year from December 24, 1898, the Duration of the Convention of March 1, 1889, Between the Two High Contracting Parties Concerning the Water Boundary Between the Two Countries, Mex.-U.S., art. 1, Dec. 2, 1898, 30 Stat. 1744.

104. The other agreement is the Treaty of 1944, *supra* note 9.

105. CARTER ET AL., *supra* note 86, at Summary.

106. *Id.*

equitable distribution of the waters of the Rio Grande for irrigation purposes.”¹⁰⁷ Under Article 1,

[a]fter the completion of the proposed storage dam near Engle, New Mexico, and the distributing system auxiliary thereto, and as soon as water shall be available in said system for the purpose, the United States shall deliver to Mexico a total of 60,000 acre-feet of water annually, in the bed of the Rio Grande at the point where the head works of the Acequia Madre, known as the Old Mexican Canal, now exist above the city of Juarez, Mexico.¹⁰⁸

Under Article 2,

[t]he delivery of the said amount of water shall be assured by the United States and shall be distributed through the year in the same proportions as the water supply proposed to be furnished from the said irrigation system to lands in the United States in the vicinity of El Paso, Texas, according to the following schedule,¹⁰⁹ as nearly as may be possible:

	Acre-Feet Per Month	Corresponding Cubic Feet of Water
January	0	0
February	1,090	47,480,400
March	5,460	237,837,000
April	12,000	522,720,000
May	12,000	522,720,000
June	12,000	522,720,000
July	8,180	356,320,800
August	4,370	190,357,200
September	3,270	142,441,200
October	1,090	47,480,400
November	540	23,522,400
December	0	0
Total for the Year	60,000 Acre-Feet	2,613,600,000 Cubic Feet

107. Convention Between the United States and Mexico Providing for the Equitable Distribution of the Waters of the Rio Grande for Irrigation Purposes, Mex.-U.S., Proclamation, May 21, 1906, 34 Stat. 2953 [hereinafter Convention of 1906].

108. *Id.* art. 1.

109. *Id.* art. 2.

In case, however, of extraordinary drought or serious accident to the irrigation system in the United States, the amount delivered to the Mexican Canal shall be diminished in the same proportion as the water delivered to lands under said irrigation system in the United States.¹¹⁰

Under Article 3,

[t]he said delivery shall be made without cost to Mexico, and the United States agrees to pay the whole cost of storing the said quantity of water to be delivered to Mexico, of conveying the same to the international line, of measuring the said water, and of delivering it in the river bed above the head of the Mexican Canal. It is understood that the United States assumes no obligation beyond the delivering of the water in the bed of the river above the head of the Mexican Canal.¹¹¹

In Article 4,

[t]he delivery of water as herein provided is not to be construed as a recognition by the United States of any claim on the part of Mexico to the said waters; and it is agreed that in consideration of such delivery of water, Mexico waives any and all claims to the waters of the Rio Grande for any purpose whatever between the head of the present Mexican Canal and Fort Quitman, Texas, and also declares fully settled and disposed of, and hereby waives, all claims heretofore asserted or existing, or that may hereafter arise, or be asserted, against the United States on account of any damages alleged to have been sustained by the owners of land in Mexico, by reason of the diversion by citizens of the United States of waters of the Rio Grande.¹¹²

Finally, under Article 5,

[t]he United States, in entering into this treaty, does not thereby concede, expressly or by implication, any legal basis for any claims heretofore asserted or which may be hereafter asserted by reason of any losses incurred by the owners of land in Mexico due or alleged to be due to the diversion of the waters of the Rio Grande within the United States; nor does the United States in any way concede the establishment of any general principle or precedent by the concluding of this treaty. The understanding of both parties is that the arrangement contemplated by this treaty extends only to the portion of the Rio Grande which forms the international boundary, from the head of the Mexican Canal down to Fort Quitman, Texas, and in no other case.¹¹³

110. *Id.*

111. *Id.* art. 3.

112. *Id.* art. 4.

113. *Id.* art. 5.

J. *Convention of February 1, 1933*

This convention between the United States and Mexico sought to “relieve the towns and agricultural lands located within the El Paso–Juarez Valley from flood dangers[] and secur[e]... the stabilization of the international boundary line, which owing to the present meandering nature of the river it has not been possible to hold within the mean line of its channel,” and both countries “have resolved to undertake... the necessary works.”¹¹⁴

The works are known as “the Rio Grande rectification works provided for in Minute 129 of the International Boundary Commission.”¹¹⁵ According to Minute 129, the plan for the Rio Grande rectification

consists of straightening the present river channel, effecting decrease in length from one hundred fifty-five (155) miles . . . and confining this channel between two parallel levees. In addition to this channel the plan includes the construction of a flood retention dam at the only available site, twenty-two (22) miles below Elephant Butte on the Rio Grande, creating reservoir storage of one hundred thousand (100,000) acre feet.¹¹⁶

The construction of the storage reservoir is at Caballo, and “[t]he proposed artificial channel will follow and rectify, in a general way, the present river from Land Monument Number One to the Box Canyon below Fort Quitman, and is so located as to segregate the same area from each county.”¹¹⁷

Except for the Convention of May 21, 1906, and despite the specificity of the remaining conventions between the United States and Mexico, none of the remaining conventions cover in any way the division of the water and the contribution of water to the Rio Grande until 1944.

K. *Treaty of February 3, 1944 (Treaty of 1944)*

The Treaty of 1944 is the second of two agreements that govern the Rio Grande and its basin¹¹⁸ and involves the delivery of at least an average of 350,000 acre-feet of water annually by Mexico to the United States, which is delivered to the southeastern portion of the Rio Grande basin below Fort

114. Convention Between the United States of America and the United Mexican States for the Rectification of the Rio Grande, Mex.-U.S., Proclamation, Feb. 1, 1933, 48 Stat. 1621.

115. *Id.* art. 1.

116. INT'L BOUNDARY COMM'N, MINUTE 129: REPORT ON RIO GRANDE RECTIFICATION ¶ 2, at 1 (1930), <http://www.ibwc.state.gov/Files/Minutes/Min129.pdf>.

117. INT'L BOUNDARY COMM'N, JOINT REPORT OF CONSULTING ENGINEERS, RIO GRANDE RECTIFICATION: EL PASO–JUAREZ VALLEY ¶ 1(a), at 1 (1930).

118. The other agreement is the Convention of 1906, *supra* note 107.

Quitman, Texas.¹¹⁹ The water deliveries should come over a five-year cycle from six Mexican tributaries flowing into the main channel of the Rio Grande.¹²⁰ In the proclamation, the Treaty states that the United States and Mexico,

animated by the sincere spirit of cordiality and friendly cooperation which happily governs the relations between them; taking into account the fact that Articles VI and VII of the Treaty of . . . February 2, 1848, and Article IV of the boundary [T]reaty . . . [of] December 30, 1853 regulate the use of the waters of the Rio Grande (Rio Bravo) . . . for purposes of navigation only; considering that the utilization of these waters for other proposes is desirable in the interest of both countries, and desiring, moreover, to fix and delimit the rights of the two countries with respect to the waters of the . . . Rio Grande (Rio Bravo) from Fort Quitman, Texas, United States of America, to the Gulf of Mexico, in order to obtain the most complete and satisfactory utilization thereof, have resolved to conclude a treaty.¹²¹

Given that this Treaty delves into the allotment of water between the United States and Mexico along the Rio Grande between Fort Quitman, Texas to the Gulf of Mexico, the Treaty incorporates the following definitions:

- (c) “The Commission” means the International Boundary and Water Commission, United States, and Mexico, as described in Article 2 of this Treaty.
- (d) “To divert” means the deliberate act of taking water from any channel in order to convey it elsewhere for storage, or to utilize it for domestic, agricultural, stock-raising or industrial purposes whether this be done by means of dams across the channel, partition weirs, lateral intakes, pumps or any other methods.
- (e) “Point of diversion” means the place where the act of diverting the water is effected.
- (f) “Conservation capacity of storage reservoirs” means that part of their total capacity devoted to holding and conserving the water for disposal thereof as and when required, that is, capacity additional to that provided for silt retention and flood control.
- (g) “Flood discharges spills” means the voluntary or involuntary discharge of water for flood control as distinguished from releases for other purposes.
- (h) “Return flow” means that portion of diverted water that eventually finds its way back to the source from which it was diverted.
- (i) “Release” means the deliberate discharge of stored water for

119. CARTER ET AL., *supra* note 86, at Summary.

120. *Id.*

121. Treaty of 1944, *supra* note 9, at Proclamation.

conveyance elsewhere or for direct utilization.

(j) "Consumptive use" means the use of water by evaporation, plant transpiration or other manner whereby the water is consumed and does not return to its source of supply. In general it is measured by the amount of water diverted less the part thereof which returns to the stream.

(k) "Lowest major international dam or reservoir" means the major international dam or reservoir situated farthest downstream.

(l) "Highest major international dam or reservoir" means the major international dam or reservoir situated farthest upstream.¹²²

Article 2 creates the International Boundary and Water Commission out of the International Boundary Commission (established in the Convention of March 1, 1889) "to facilitate the carrying out of the principles contained in the Treaty of November 12, 1884 and to avoid difficulties occasioned by reason of the changes which take place in the beds of the Rio Grande (Rio Bravo)."¹²³ Article 2 further lays out the purpose, duties and powers of the Commission. Article 2 is quite specific:

[T]he term of the Convention of March 1, 1889 shall be considered to be indefinitely extended, and the Convention of November 21, 1900 . . . shall be considered completely terminated.

The application of the present Treaty, the regulation and exercise of the rights and obligations which the two Governments assume thereunder, and the settlement of all disputes to which its observance and execution may give rise are hereby entrusted to the . . . Commission, which shall function in conformity with the powers and limitations set forth in this Treaty.

The Commission shall in all respects have the status of an international body, and shall consist of a United States Section and a Mexican Section.¹²⁴

The United States Section of the Commission is overseen by the U.S. Department of State, while the Mexico Section of the Commission is overseen by Mexico's Ministry of Foreign Relations.¹²⁵

To the extent that the Commission has to provide for the joint use of the international water, Article 3 provides "the following order of preferences as a guide."¹²⁶

1. Domestic and municipal uses.
2. Agriculture and stock-raising.
3. Electric power.

122. *Id.* art. 1.

123. *Id.* art. 2.

124. *Id.*

125. CARTER ET AL., *supra* note 86, at 3.

126. Treaty of 1944, *supra* note 9, art. 3.

4. Other industrial uses.
5. Navigation.
6. Fishing and hunting.
7. Any other beneficial uses which may be determined by the Commission.”¹²⁷

“All of the foregoing uses shall be subject to any sanitary measures or works which may be mutually agreed upon by the two Governments, which hereby agree to give preferential attention to the solution of all border sanitation problems.”¹²⁸

For purposes of this Article, the most important portion of the Treaty of November 14, 1944 is in Article 4. Article 4 sets out how the waters of the Rio Grande between Fort Quitman, Texas and the Gulf of Mexico are to be allocated between the United States and Mexico in the following manner:

1. To Mexico

(a) All of the waters reaching the main channel of the Rio Grande (Rio Bravo) from the San Juan and Alamo Rivers, including the return flow from the lands irrigated from the latter two rivers.

(b) One-half of the flow in the main channel of the Rio Grande (Rio Bravo) below the lowest major international storage dam, so far as said flow is not specifically allotted under this Treaty to either of the two countries.

(c) Two-thirds of the flow reaching the main channel of the Rio Grande (Rio Bravo) from the Conchos, San Diego, San Rodrigo, Escondido and Salado Rivers and the Las Vacas Arroyo, subject to the provisions of subparagraph (c) of Paragraph B of this Article.

(d) One-half of all other flows not otherwise allotted by this Article occurring in the main channel of the Rio Grande (Rio Bravo), including the contributions from all the unmeasured tributaries, which are those not named in this Article, between Fort Quitman and the lowest major international storage dam.

2. To the United States

(a) All of the waters reaching the main channel of the Rio Grande (Rio Bravo) from the Pecos and Devils Rivers, Good-enough Spring, and Alamito, Terlingua, San Felipe and Pinto Creeks.

(b) One-half of the flow in the main channel of the Rio Grande (Rio Bravo) below the lowest major international storage dam, so far as said flow is not specifically allotted under this Treaty to either of the two countries.

127. *Id.*

128. *Id.*

(c) One-third of the flow reaching the main channel of the Rio Grande (Rio Bravo) from the Conchos, San Diego, San Rodrigo, Escondido and Salado Rivers and the Las Vacas Arroyo, provided that this third shall not be less, as an average amount in cycles of five consecutive years, than 350,000 acre-feet (431,721,000 cubic meters) annually. The United States shall not acquire any right by the use of the waters of the tributaries named in this subparagraph, in excess of the said 350,000 acre-feet (431,721,000 cubic meters) annually, except the right to use one-third of the flow reaching the Rio Grande (Rio Bravo) from said tributaries, although such one-third may be in excess of that amount.

(d) One-half of all other flows not otherwise allotted by this Article occurring in the main channel of the Rio Grande (Rio Bravo), including the contributions from all the unmeasured tributaries, which are those not named in this Article, between Fort Quitman and the lowest major international storage dam.

In the event of extraordinary drought or serious accident to the hydraulic systems on the measured Mexican tributaries, making it difficult for Mexico to make available the run-off of 350,000 acre-feet (431,721,000 cubic meters) annually, allotted in subparagraph (c) of paragraph B of this Article to the United States as the minimum contribution from the aforesaid Mexican tributaries, any deficiencies existing at the end of the aforesaid five-year cycle shall be made up in the following five-year cycle with water from the said measured tributaries.

Whenever the conservation capacities assigned to the United States in at least two of the major international reservoirs, including the highest major reservoir, are filled with waters belonging to the United States, a cycle of five years shall be considered as terminated and all debits fully paid, whereupon a new five-year cycle shall commence.¹²⁹

Article 5 goes into detail about

[t]he dams and other joint works required for the diversion of the flow of the Rio Grande

One of the storage dams shall be constructed in the section between Santa Helena Canyon and the mouth of the Pecos River; one in the section between Eagle Pass and Laredo, Texas (Piedras Negras and Nuevo Laredo in Mexico); and a third in the section between Laredo and Roma, Texas (Nuevo Laredo and San Pedro de Roma in Mexico). One or more of the stipulated dams may be omitted, and others than those enumerated may be built, in either case as may be determined by the Commission, subject to the approval of the two Governments.¹³⁰

129. *Id.* art. 4.

130. *Id.* art. 5.

Article 8 focuses on the storage, conveyance and delivery of the water of the Rio Grande from Fort Quitman, Texas to the Gulf of Mexico.¹³¹ Specifically, the following rules apply:

(a) Storage in all major international reservoirs above the lowest shall be maintained at the maximum possible water level, consistent with flood control, irrigation use and power requirements.

(b) Inflows to each reservoir shall be credited to each country in accordance with the ownership of such inflows.

(c) In any reservoir the ownership of water belonging to the country whose conservation capacity therein is filled, and in excess of that needed to keep it filled, shall pass to the other country to the extent that such country may have unfilled conservation capacity, except that one country may at its option temporarily use the conservation capacity of the other country not currently being used in any of the upper reservoirs; provided that in the event of flood discharge or spill occurring while one country is using the conservation capacity of the other, all of such flood discharge or spill shall be charged to the country using the other's capacity, and all inflow shall be credited to the other country until the flood discharge or spill ceases or until the capacity of the other country becomes filled with its own water.

(d) Reservoir losses shall be charged in proportion to the ownership of water in storage. Releases from any reservoir shall be charged to the country requesting them, except that releases for the generation of electrical energy, or other common purpose, shall be charged in proportion to the ownership of water in storage.

(e) Flood discharges and spills from the upper reservoirs shall be divided in the same proportion as the ownership of the inflows occurring at the time of such flood discharges and spills, except as provided in subparagraph (c) of this Article. Flood discharges and spills from the lowest reservoir shall be divided equally, except that one country, with the consent of the Commission, may use such part of the share of the other country as is not used by the latter country.

(f) Either of the two countries may avail itself, whenever it so desires, of any water belonging to it and stored in the international reservoirs, provided that the water so taken is for direct beneficial use or for storage in other reservoirs. For this purpose the Commissioner of the respective country shall give appropriate notice to the Commission, which shall prescribe the proper measures for the opportune furnishing of the water.¹³²

Article 9 covers diversion and consumption of the Rio Grande water from Fort Quitman, Texas to the Gulf of Mexico:

131. *Id.* art. 8.

132. *Id.*

(a) The channel of the Rio Grande (Rio Bravo) may be used by either of the two countries to convey water belonging to it.

(b) Either of the two countries may, at any point on the main channel of the river from Fort Quitman, Texas to the Gulf of Mexico, divert and use the water belonging to it and may for this purpose construct any necessary works. However, no such diversion or use, not existing on the date this Treaty enters into force, shall be permitted in either country, nor shall works be constructed for such purpose, until the Section of the Commission in whose country the diversion or use is proposed has made a finding that the water necessary for such diversion or use is available from the share of that country, unless the Commission has agreed to a greater diversion or use as provided by paragraph (d) of this Article. The proposed use and the plans for the diversion works to be constructed in connection therewith shall be previously made known to the Commission for its information.

(c) Consumptive uses from the main stream and from the unmeasured tributaries below Fort Quitman shall be charged against the share of the country making them.

(d) The Commission shall have the power to authorize either country to divert and use water not belonging entirely to such country, when the water belonging to the other country can be diverted and used without injury to the latter and can be replaced at some other point on the river.

(e) The Commission shall have the power to authorize temporary diversion and use by one country of water belonging to the other, when the latter does not need it or is unable to use it, provided that such authorization or the use of such water shall not establish any right to continue to divert it.

(f) In case of the occurrence of an extraordinary drought in one country with an abundant supply of water in the other country, water stored in the international storage reservoirs and belonging to the country enjoying such abundant water supply may be withdrawn, with the consent of the Commission, for the use of the country undergoing the drought.

(g) Each country shall have the right to divert from the main channel of the river any amount of water, including the water belonging to the other country, for the purpose of generating hydro-electric power, provided that such diversion causes no injury to the other country and does not interfere with the international generation of power and that the quantities not returning directly to the river are charged against the share of the country making the diversion. The feasibility of such diversions not existing on the date this Treaty enters into force shall be determined by the Commission, which shall also determine the amount of water consumed, such water to be charged against the country making the diversion.

(h) In case either of the two countries shall construct works for diverting into the main channel of the Rio Grande (Rio Bravo) or its tributaries waters that do not at the time this Treaty enters into force contribute to the flow of the Rio Grande (Rio Bravo) such water shall

belong to the country making such diversion.

(i) Main stream channel losses shall be charged in proportion to the ownership of water being conveyed in the channel at the times and places of the losses.

(j) The Commission shall keep a record of the waters belonging to each country and of those that may be available at a given moment, taking into account the measurement of the allotments, the regulation of the waters in storage, the consumptive uses, the withdrawals, the diversions, and the losses. For this purpose the Commission shall construct, operate and maintain on the main channel of the Rio Grande (Rio Bravo), and each Section shall construct, operate and maintain on the measured tributaries in its own country, all the gaging stations and mechanical apparatus necessary for the purpose of making computations and of obtaining the necessary data for such record. The information with respect to the diversions and consumptive uses on the unmeasured tributaries shall be furnished to the Commission by the appropriate Section. The cost of construction of any new gaging stations located on the main channel of the Rio Grande (Rio Bravo) shall be borne equally by the two Governments. The operation and maintenance of all gaging stations or the cost of such operation and maintenance shall be apportioned between the two Sections in accordance with determinations to be made by the Commission.¹³³

Article 17 provides “[t]he use of the channels of the international rivers for the discharge of flood or other excess waters shall be free and not subject to limitation by either country, and neither country shall have any claim against the other in respect of any damage caused by such use.”¹³⁴

Article 24 of the Treaty focuses on the powers and duties of the Commission. Specifically, the relevant powers and duties of the Commission are as follows:

(a) To initiate and carry on investigations and develop plans for the works which are to be constructed or established in accordance with the provisions of this and other treaties or agreements in force between the two Governments dealing with boundaries and international waters

. . . .

(c) In general to exercise and discharge the specific powers and duties entrusted to the Commission by this and other treaties and agreements in force between the two countries, and to carry into execution and prevent the violation of the provisions of those treaties and agreements. The authorities of each country shall aid and support the exercise and discharge of these powers and duties, and each Commissioner shall invoke when necessary the

133. *Id.* art. 9.

134. *Id.* art. 17.

jurisdiction of the courts or other appropriate agencies of his country to aid in the execution and enforcement of these powers and duties.

(d) To settle all differences that may arise between the two Governments with respect to the interpretation or application of this Treaty, subject to the approval of the two Governments. In any case to which the Commissioners do not reach an agreement, they shall so inform their respective governments reporting their respective opinions and the grounds therefor and the points upon which they differ, for discussion and adjustment of the difference through diplomatic channels and for application where proper of the general or special agreements which the two Governments have concluded for the settlement of controversies.

(e) To furnish the information requested of the Commissioners jointly by the two Governments on matters within their jurisdiction. In the event that the request is made by one Government alone, the Commissioner of the other Government must have the express authorization of his Government in order to comply with such request.

(f) The Commission shall construct, operate and maintain upon the limitrophe parts of the international streams, and each Section shall severally construct, operate and maintain upon the parts of the international streams and their tributaries within the boundaries of its own country, such stream gaging stations as may be needed to provide the hydrographic data necessary or convenient for the proper functioning of this Treaty. The data so obtained shall be compiled and periodically exchanged between the two Sections.

(g) The Commission shall submit annually a joint report to the two Governments on the matters in its charge. The Commission shall also submit to the two Governments joint reports on general or any particular matters at such other times as it may deem necessary or as may be requested by the two Governments.¹³⁵

Finally, Article 25 of the Treaty covers the Commission's procedure and decisions:

Except as otherwise specifically provided in this Treaty, Articles III and VII of the Convention of March 1, 1889 shall govern the proceedings of the Commission in carrying out the provisions of this Treaty. Supplementary thereto the Commission shall establish a body of rules and regulations to govern its procedure, consistent with the provisions of this Treaty and of Articles III and VII of the Convention of March 1, 1889 and subject to the approval of both Governments.

Decisions of the Commission shall be recorded in the form of Minutes done in duplicate in the English and Spanish languages, signed by each Commissioner and attested by the Secretaries, and copies thereof forwarded

135. *Id.* art. 24.

to each Government within three days after being signed. Except where the specific approval of the two Governments is required by any provision of this Treaty, if one of the Governments fails to communicate to the Commission its approval or disapproval of a decision of the Commission within thirty days reckoned from the date of the Minute in which it shall have been pronounced, the Minute in question and the decisions which it contains shall be considered to be approved by that Government. The Commissioners, within the limits of their respective jurisdictions, shall execute the decisions of the Commission that are approved by both Governments.

If either Government disapproves a decision of the Commission the two Governments shall take cognizance of the matter, and if an agreement regarding such matter is reached between the two Governments, the agreement shall be communicated to the Commissioners, who shall take such further proceedings as may be necessary to carry out such agreement.¹³⁶

L. *Commission Minutes*

The International Boundary and Water Commission (IBWC or Commission) has issued numerous decisions over the years. The decisions as described in Article 25 of the treaty are called “Minutes.” The Minutes cover specific projects and non-project matters, including treaties. The Minute process has been used to settle disputes under the Treaty of 1944, and minutes (essentially agreements) effectively amend the Treaty.¹³⁷ Currently, the Minutes now exceed 300.¹³⁸

Minute 234, issued in 1969, provides the means that Mexico can use to make up a water deficit at the conclusion of a five-year water cycle.¹³⁹ Under Minute 234, Mexico agrees to allot to the United States (a) water in excess of the minimum guaranteed (i.e., 350,000 acre-feet of water annually) under the Treaty of 1944; and (b) a portion of Mexico’s two-third share of the waters in the six tributaries.¹⁴⁰ Mexico further agrees to transfer Mexican water from the Falcon and Amistad Reservoirs to the

136. Treaty of 1944, *supra* note 9, art. 25.

137. CARTER ET AL., *supra* note 86, at 4.

138. See generally *Minutes Between the United States and Mexican Sections of the IBWC*, INT’L BOUNDARY & WATER COMMISSION, http://www.ibwc.state.gov/Treaties_Minutes/Minutes.html (last visited Mar. 17, 2016) (collecting Minutes 1–320).

139. INT’L BOUNDARY & WATER COMM’N, MINUTE 234: WATERS OF THE RIO GRANDE ALLOTTED TO THE U.S. FROM THE CONCHOS, SAN DIEGO, SAN RODRIGO, ESCONDIDO, AND SALADO RIVERS AND THE LAS VACAS ARROYO 1 (1969), <http://www.ibwc.gov/Files/Minutes/Min234.pdf> [hereinafter MINUTE 234: WATERS OF THE RIO GRANDE ALLOTTED TO THE U.S.].

140. *Id.* at 2.

United States.¹⁴¹

Minute 309, issued in 2003, provides the volumes of water saved (estimated at 321,043 acre-feet) by the modernization and improved technology of projects undertaken by Mexico for the irrigation districts in the Rio Concho basin are to be conveyed to the Rio Grande, "taking into account the attainment of the annual average deliveries in accordance with the [Treaty of 1944] . . . , as well as any volume that could be applied to cover shortages in a previous cycle."¹⁴² Minute 309 also provided for an accounting of the water saved, as well as the water delivered to the Rio Grande.¹⁴³

M. *Chamizal Convention of August 29, 1963*

This convention resolved the boundary dispute in what is known as the El Chamizal, north of the Rio Grande in the area of El Paso, Texas and Ciudad Juárez, Chihuahua, Mexico. Under the convention the IBWC relocated portions of the Rio Grande channel, allowing the transfer of 823.50 acres to Mexico.¹⁴⁴

N. *Treaty of November 23, 1970*

This Treaty resolved all remaining boundary disputes between the United States and Mexico and provided for the continuation of the Rio Grande and the Colorado River as the international boundary between the two countries.¹⁴⁵ The Treaty also included procedures to avoid territorial gains and losses due to future river changes.¹⁴⁶

V. HISTORY OF MEXICO'S WATER DEFICITS

By way of review, the Treaty of 1944 states that Mexico is to provide the United States

[o]ne-third of the flow reaching the main channel of the Rio Grande

141. *Id.*

142. INT'L BOUNDARY & WATER COMM'N, MINUTE 309: VOLUMES OF WATER SAVED WITH THE MODERNIZATION AND IMPROVED TECHNOLOGY PROJECTS FOR THE IRRIGATION DISTRICTS IN THE RIO CONCHOS BASIN AND MEASURES FOR THEIR CONVEYANCE TO THE RIO GRANDE 4 (2003), <http://www.ibwc.gov/Files/Minutes/Min309.pdf>.

143. *Id.*

144. Convention Between the United States of America and the United Mexican States for the Solution of the Problem of the Chamizal, Mex.-U.S., art. 2, Aug. 29, 1963, 15 U.S.T. 21.

145. Treaty to Resolve Pending Boundary Differences and Maintain the Rio Grande and Colorado River as the International Boundary, Mex.-U.S., Nov. 23, 1970, 23 U.S.T. 371.

146. *See id.* art. 1 (discussing territorial adjustments).

from the Conchos, San Diego, San Rodrigo, Escondido and Salado Rivers and the Las Vacas Arroyo [(i.e., 6 tributaries)] *provided that th[e] [one-]third shall not be less, as an average amount in cycles of five consecutive years, than 350,000 acre-feet . . . annually.*¹⁴⁷

However,

[i]n the event of extraordinary drought or serious accident to the hydraulic systems on the measured Mexican tributaries, making it difficult for Mexico to make available the run-off of 350,000 acre-feet . . . annually, . . . any deficiencies existing at the end of the . . . five-year cycle shall be made up in the following five-year cycle with water from the . . . measured tributaries.¹⁴⁸

Any five-year cycle can be shortened

[w]henver the conservation capacities assigned to the United States in at least two of the major international reservoirs, including the highest major reservoir, are filled with waters belonging to the United States, a cycle of five years shall be considered as terminated and all debits fully paid, whereupon a new five-year cycle shall commence.¹⁴⁹

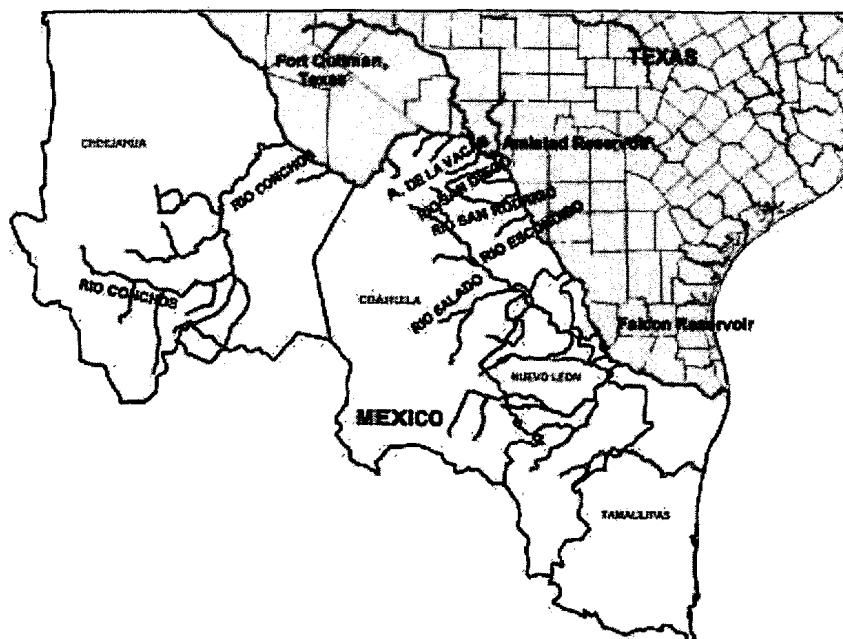
The following map¹⁵⁰ illustrates the six tributaries covered by the Treaty of 1944:

147. Treaty of 1944, *supra* note 9, art. 4 (emphasis added).

148. *Id.*

149. *Id.*

150. Travis Phillips, *Behind the U.S.–Mexico Water Treaty Dispute*, INTERIM NEWS (House Res. Org., Tex. House of Representatives, Austin, Tex.), Apr. 30, 2002, at 3, <http://www.hro.house.state.tx.us/interim/int77-7.pdf>.



The six tributaries have dams as follows:¹⁵¹

1. Rio Conchos—La Boquilla Reservoir and Dam; Francisco Madero Reservoir and Dam; Chihuahua Reservoir and Dam; Luis L. León Reservoir and Dam; El Rejón Reservoir and Dam; Pico de Aguilón Reservoir and Dam;
2. Rio San Diego—Centenario Reservoir and Dam; San Miguel Reservoir and Dam;
3. Rio San Rodrigo—La Fragua Reservoir and Dam;
4. Rio Escondido—none;
5. Rio Salado—Venustiano Carranza Reservoir and Dam; and
6. Arroyo Las Vacas—none.

The naturalized flow (NF) for each of the six tributaries by basin is as follows:¹⁵²

151. See MARY E. KELLY, TEX. CTR. FOR POLICY STUDIES, THE RIO CONCHOS: A PRELIMINARY OVERVIEW 7–8 (2001), <http://www.texascenter.org/publications/rioconchos.pdf> (discussing the Rio Conchos Basin, information gaps, and providing a framework for water resource management); JOHN METZ, NAT. WEATHER SERV., OVERVIEW OF THE RIO GRANDE BASIN (2011) (analyzing the tributaries and reservoirs of the Rio Grande); see also SALLY SPENER, INT'L BOUNDARY & WATER COMM'N, RIO GRANDE WATER DELIVERIES UNDER THE 1944 TREATY (2013), http://www.ibwc.state.gov/Files/CF_LRG_5yr_Cycle_041013.pdf (discussing the implications of the Treaty of 1944 on the Rio Grande).

152. INT'L BOUNDARY & WATER COMM'N, STATUS UPDATE ON MEXICO'S FIVE-YEAR CYCLE

1. Rio Conchos—Median Annual NF Volume: 1,344 kaf, Percentage of Total NF: 61.7%;
2. Rio San Diego—Median Annual NF Volume: 150 kaf, Percentage of Total NF: 6.9%;
3. Rio San Rodrigo—Median Annual NF Volume: 63 kaf, Percentage of Total NF: 2.8%;
4. Rio Escondido—Median Annual NF Volume: 36 kaf, Percentage of Total NF: 1.7%;
5. Rio Salado—Median Annual NF Volume: 522 kaf, Percentage of Total NF: 23.9%; and
6. Arroyo de las Vacas—Median Annual NF Volume: 9 kaf, Percentage of Total NF: 0.4%.

Estimates in the early 1950s were that Texas rivers contributed one-fourth of the water volume entering the Rio Grande between El Paso and Brownsville, while Mexico contributed three-fourths.¹⁵³ This proportional division in the contribution of water volume by Mexico and Texas continues today.¹⁵⁴ Moreover, noted Texas historian Walter Prescott Webb's 1954 book *More Water for Texas* stated Mexico's reservoirs on its tributaries are reducing run-off into the Rio Grande, thus creating a shortage of water for the lower Rio Grande Valley that likely still holds true today.¹⁵⁵

Since 1944, Mexico has accumulated a water deficit at the end of a five-year cycle on three occasions. From 1992 to 2002, Mexico failed to deliver the minimum annual allocation of water—350,000 acre-feet—under the Treaty of 1944.¹⁵⁶ According to the report (based on data from the IBWC), Mexico ran a 1.5 million acre-feet deficit from 1992 to 2002.¹⁵⁷ The following chart¹⁵⁸ beginning in 1950 illustrates this point:

RIO GRANDE WATER DELIVERIES TO THE UNITED STATES (2015), http://www.ibwc.state.gov/Files/CF_LRG_Mx_5yr_Cycle_051315.pdf [STATUS UPDATE ON MEXICO'S FIVE-YEAR CYCLE WATER DELIVERIES].

153. WALTER PRESCOTT WEBB, *MORE WATER FOR TEXAS* 6 (1954).

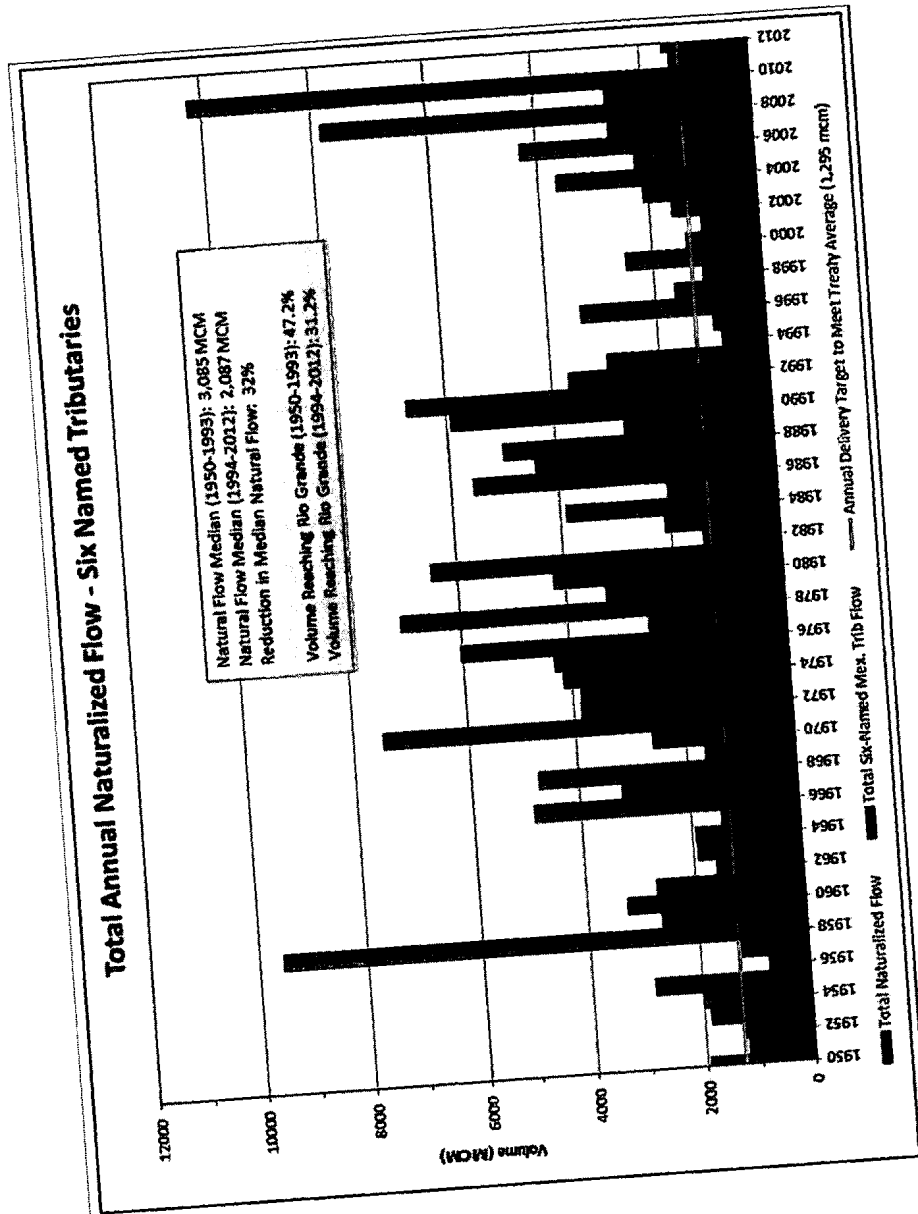
154. *Rivers*, *supra* note 81.

155. WEBB, *supra* note 153, at 6; *see also* CARTER ET AL., *supra* note 86, at 12 (discussing Mexican water shortages in lower Rio Grande Valley).

156. *See* TODD STAPLES & CARLOS RUBINSTEIN, TEX. DEP'T OF AGRIC., ADDRESSING MEXICO'S WATER DEFICIT TO THE UNITED STATES 1 (2013), <http://www.texasagriculture.gov/Portals/0/forms/COMM/Water%20Debt.pdf> ("Between 1992–2002, Mexico accumulated a 1.5 million acre-feet debt, which primarily impacted agricultural water users because irrigation use is usually the first to be interrupted when water becomes scarce.").

157. *Id.*

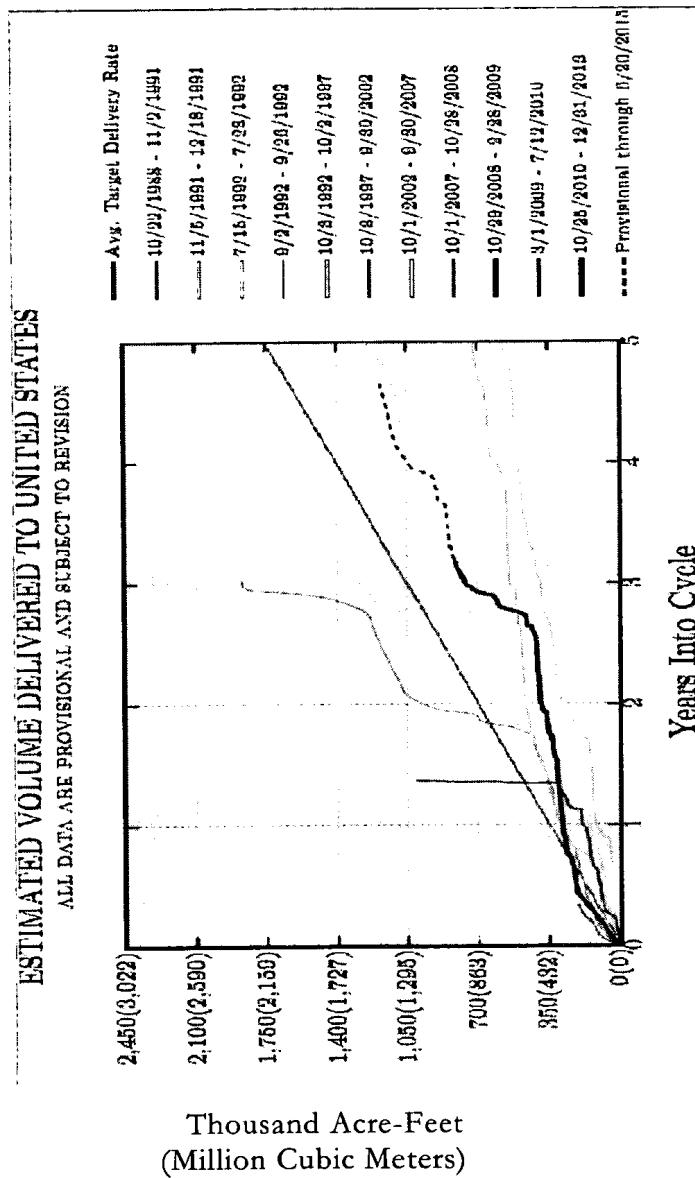
158. *See* STATUS UPDATE ON MEXICO'S FIVE-YEAR CYCLE WATER DELIVERIES, *supra* note



From December 22, 1988 to September 26, 1992, there were no five-year cycles. The following chart¹⁵⁹ beginning in 1988 illustrates this point:

152 for this chart in full color.

159. *Estimated Volume Delivered to the United States*, INT'L BOUNDARY & WATER COMMISSION,



The cycles ranged from eight days to three years.¹⁶⁰ Despite an officially recognized drought between 1988 to 1990,¹⁶¹ the cycles from October 22,

http://www.ibwc.gov/Water_Data/mexico_deliveries.html (follow "View Graph of Estimated Deliveries for Previous 5-Year Cycles") (last visited Mar. 17, 2016). For this chart in full color, see *id.*

160. See *id.* (articulating various cycle lengths).

161. *Timeline of Droughts in Texas, TXH₂O*, Fall 2011, at 21–22, <http://twri.tamu.edu/>

1988 to September 26, 1992 were shortened because the conservation capacities assigned to the United States in the Amistad Dam and Reservoir and the International Falcon Reservoir¹⁶² were filled with waters belonging to the United States (likely due to many non-extraordinary drought years from 1971 to 1988).¹⁶³

The period from October 3, 1992 to September 30, 2002 involved two (2) five-year cycles.¹⁶⁴ In the five-year cycle from October 3, 1992 to October 2, 1997, Mexico failed to deliver the annual 350,000 acre-feet amounts in 1994 and 1995, resulting in a deficit in the five-year water cycle.¹⁶⁵ From October 3, 1997 to September 30, 2002, Mexico again failed to deliver the annual 350,000 acre-feet amounts in 1998 and 2001, once again resulting in a deficit in the five-year cycle. This deficit may have been due to an officially recognized drought between 1999 and 2002.¹⁶⁶ Under the Treaty of 1944, the 1992 to 1997 deficits should have been made up¹⁶⁷ in the 1997 to 2002 cycle but were not; the 1997 to 2002 cycle also resulted in a deficit.¹⁶⁸ Mexico's deficit of 1.5 million acre-feet from 1992 to 2002 was finally made up in 2005.¹⁶⁹ It should be noted that elimination of the deficit came about "through presidential intervention, negotiation of new minutes . . . investments in improved water efficiency," and "[h]urricane-induced wet conditions."¹⁷⁰

The period from October 1, 2002 to July 12, 2010 involved one five-year

newsletters/txh2o/txh2o-v7n1.pdf.

162. These two reservoirs are discussed further below.

163. See *Timeline of Droughts in Texas*, *supra* note 161, at 18–22 (providing a visual timeline of droughts).

164. *Estimated Volume Delivered to the United States*, *supra* note 159.

165. See *id.* (reporting acre-feet of water delivered to the United States).

166. See *Timeline of Droughts in Texas*, *supra* note 161, at 24 (emphasizing that during the 1999 to 2002 drought, a ten-day average temperature of 103.3 degrees Fahrenheit was recorded at the Dallas–Fort Worth airport and the Rio Grande stopped flowing into the Gulf of Mexico).

167. See *Treaty of 1944*, *supra* note 9, art. 4 (discussing when Mexico is deficient, due to "extraordinary drought," in making 350,000 acre-feet of water available annually to the United States, Mexico "shall" make up "any deficiency existing at the end of the aforesaid five-year cycle . . . in the following five-year cycle"); see also STAPLES & RUBENSTEIN, *supra* note 156, at 1 ("Should Mexico fail to deliver the annual allocation, it is required to catch-up and correct the accumulated deficit by the end of the five-year term at the latest. The Treaty [of 1944] provides Mexico with an exemption to the delivery schedule if the country is in extraordinary drought. However, the agreement directs Mexico and the United States to attempt to ensure compliance.").

168. See *Estimated Volume Delivered to the United States*, *supra* note 159 (illustrating Mexico failed to deliver the required volumes of water during the cycle between 1999 and 2002).

169. See STAPLES & RUBENSTEIN, *supra* note 156, at 3 ("Resolution of that debt required . . . direct, meaningful[,] and active participation of the Department of State, the White House[,] and Texas officials.").

170. CARTER ET AL., *supra* note 86, at 12.

cycle from October 1, 2002 to September 30, 2007 and three shorter cycles ranging from four months to one year and five months.¹⁷¹ Despite an officially recognized drought period from 2005 to 2006,¹⁷² the five-year cycle from October 1, 2002 to September 30, 2007 did not result in a deficit.

Once again, despite an officially recognized drought period from 2007 to 2009,¹⁷³ the period from October 1, 2007 to July 12, 2010 resulted in shorter cycles because the conservation capacities assigned to the United States in the Amistad Dam and Reservoir and the International Falcon Reservoir were filled with waters belonging to the United States pursuant to the Treaty of 1944.¹⁷⁴

In the last five-year cycle that began on October 25, 2010 and ended on October 24, 2015,¹⁷⁵ Mexico began deliveries at a good rate in 2010, quickly fell behind in 2011 and 2012 (due to drought), increased its water deliveries during 2013 and 2014 but still had a 519,362 acre-feet deficit by October 17, 2015, just a few days before the end of the five-year cycle.¹⁷⁶ As illustrated by the following chart, Mexico delivered only 1,230,638 acre-feet to Texas as of October 17, 2015.¹⁷⁷ By the time the cycle officially ended on October 24, 2015, the final water deficit was 263,250 acre-feet, which represents 15% of Mexico's obligation.¹⁷⁸ Some of the water delivered by Mexico during 2015 (i.e., roughly 100,000 acre-feet of water)

171. *Estimated Volume Delivered to United States*, *supra* note 159.

172. See *Timeline of Droughts in Texas*, *supra* note 161, at 25 ("Texas Cooperative Extension estimates statewide drought losses at \$4.1 billion, with \$1.9 billion in North Texas alone.").

173. *Id.*; see also *infra* App. Figs. 10–15 (depicting Texas drought areas from 2007 to 2009).

174. See Treaty of 1944, *supra* note 9, art. 4 ("Whenever the conservation capacities assigned to the United States in at least two of the major international reservoirs . . . are filled with waters belonging to the United States, a cycle of five years shall be considered as terminated and all debits fully paid, whereupon a new five-year cycle shall commence.").

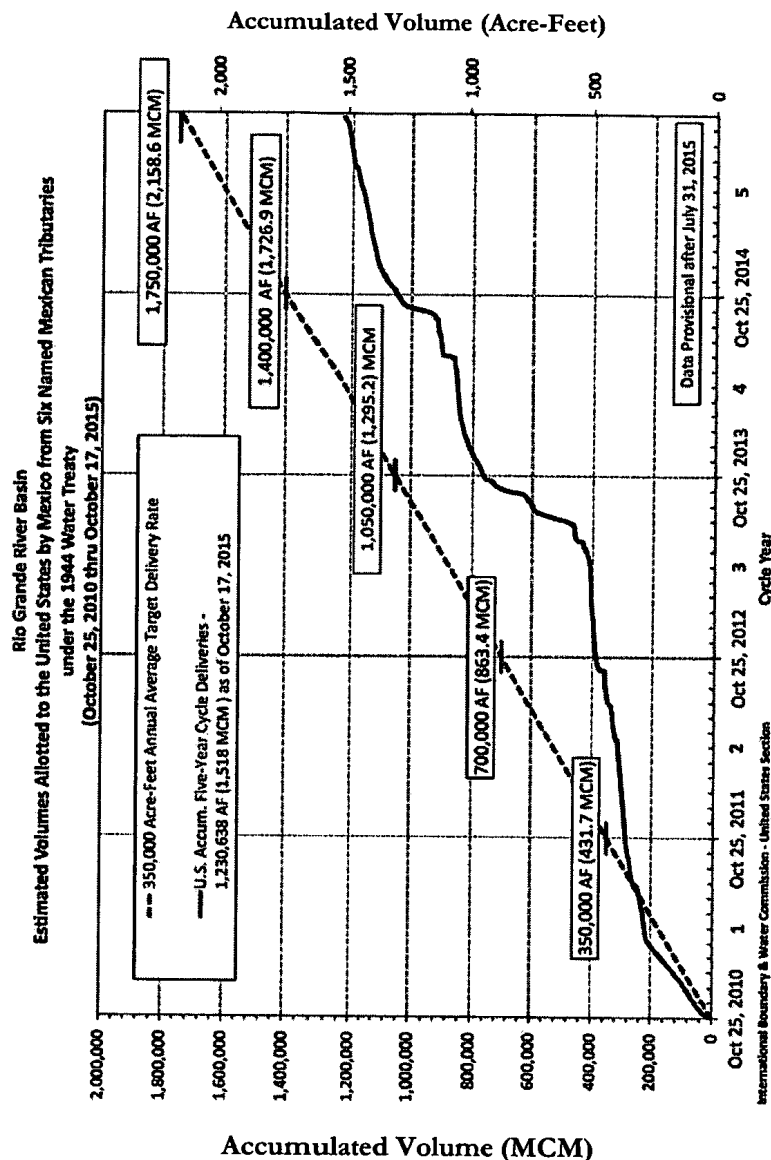
175. Telephone Interview with Sally Spener, Foreign Affairs Officer, U.S. Section of the Int'l Boundary & Water Comm'n (Feb. 25, 2016).

176. See *Rio Grande River Basin: Estimated Volumes Allotted to the United States by Mexico from Six Named Mexican Tributaries Under the 1944 Water Treaty (October 5, 2010 thru October 17, 2015)*, INT'L BOUNDARY & WATER COMMISSION, http://www.ibwc.gov/Water_Data/mexico_deliveries.html (follow "View Graph of Estimated Deliveries During Current 5-Year Cycle") (last visited Mar. 17, 2016) (graphing Mexico's five-year obligation of 1,750,00 acre-feet alongside Mexico's total deliveries of 1,230,638 acre-feet).

177. See *id.* (contrasting Mexico's five-year delivery obligation of 1,750,000 acre-feet with Mexico's total deliveries of 1,230,638 acre-feet).

178. *Water Shortage Issue Related to the Mexican Water Deficit*, TEX. COMMISSION ON ENVTL. QUALITY, <http://www.tceq.state.tx.us/border/water-deficit.html/#rgwreport> (last visited Mar. 17, 2016); see also Steve Clark, *Mexico No Longer Owes Rio Grande Water*, BROWNSVILLE HERALD (Feb. 24, 2016, 10:00 PM), http://www.brownsvilleherald.com/news/local/article_2b611efa-db74-11e5-9aec-47a11d2fe7c5.html ("The 2010–2015 cycle ended with Mexico still owing 263,250 acre-feet, and the [T]reaty stipulates that any remaining debt be paid within the subsequent five-year cycle.").

came from sources that were not part of the Treaty of 1944.¹⁷⁹



The current five-year cycle began on October 25, 2015 and will end in on October 24, 2020,¹⁸⁰ unless the cycle ends early.¹⁸¹ According to the United States Section of the IBWC, Mexico's 2010 to 2015 deficit (of

179. CARTER ET AL., *supra* note 86, at Summary.

180. Telephone Interview with Sally Spener, *supra* note 175.

181. In accordance with the Treaty of 1944, this occurs when the U.S. conservation capacity fills at the international reservoirs. Treaty of 1944, *supra* note 9, art. 4.

263,250 acre-feet) was made up starting in late 2015 and completed on January 25, 2016, which was during the new 2015 to 2020 five-year cycle.¹⁸² Juxtaposed against Mexico's recurring deficits is the fact that the United States has not failed to fulfill its 1.5 million acre-feet of water obligation to Mexico from the Colorado River under the Treaty of 1944.¹⁸³

Looking at the language of the Treaty of 1944 comprising Mexico's obligations, it is the authors' observation that the 350,000 acre-feet annual obligation language in the first sentence of Article 4, paragraph B, subparagraph (c) of the Treaty is not sufficiently clear.¹⁸⁴ It is arguable the entirety of the phrase "[o]ne-third of the flow reaching the main channel of the Rio Grande [from the six tributaries] provided that this third *shall be less, as an average amount in cycles of five consecutive years, than 350,000 acre-feet . . . annually*"¹⁸⁵ can only logically lead to the conclusion that the annual obligation language requires the minimum delivery of 350,000 acre-feet annually, with no allowance for one year's deficit to be made up by delivering additional water the following year or by the end of the five-year cycle. The United States—and by implication, Texas—has taken this position and concluded Mexico has not complied with the Treaty.¹⁸⁶ However, it is equally arguable that under the language of the treaty, the required 350,000 acre-feet is not an annual requirement but rather an annual average that is calculated at the end of the five-year cycle.¹⁸⁷ Under this interpretation, the

182. Press Release, U.S. Diplomatic Mission to Mex., Mex. Pays Rio Grande Water Debt in Full (Feb. 24, 2016), <http://mexico.usembassy.gov/news-events/press/mexico-pays-rio-grande-water-debt-in-full2.html> ("The United States Section of the International Boundary and Water Commission, United States and Mexico . . . announces that Mexico has delivered sufficient water to the United States to cover its Rio Grande water debt."); cf. Treaty of 1944, *supra* note 9, art. 4 (requiring Mexico to make up any failures to deliver water within the following 5-year cycle).

183. See *Water Shortage Issue Related to the Mexican Water Deficit*, *supra* note 178 ("The United States has never failed to meet its obligation on the Colorado to deliver 1.5 million acre-feet to Mexico under [the Treaty of 1944]. Texas is simply requesting that Mexico treat its obligation to the Rio Grande in the same manner.").

184. See Tiffany Dowell, *Texas Water Wars: United States v. Mexico*, TEX. A&M AGRILIFE EXTENSION (Aug. 4, 2013), <http://agrillife.org/texasaglaw/2013/08/04/texas-water-wars-united-states-v-mexico> (indicating each party to the Treaty of 1944 interprets obligations under the treaty differently).

185. Treaty of 1944, *supra* note 9, art. 4 (emphasis added).

186. See Dowell, *supra* note 184 ("For the current 5 year cycle . . . Mexico has not provided 350,000 acre feet/year. As of July 20, 2013, Mexico had only diverted 487,208 acre feet of water. This means that Mexico is 469,778 acre feet behind the required average of 350,000 acre feet per year.").

187. U.S. DEP'T OF STATE, REPORT TO THE CONGRESS ON WATER DELIVERIES FROM MEXICO TO THE RIO GRANDE UNDER EXISTING TREATY OBLIGATIONS 2 (2015), <http://www.circleofblue.org/wp-content/uploads/2015/03/IBWC-Report-FY15-Omni.pdf> [hereinafter REPORT TO CONGRESS ON WATER DELIVERIES FROM MEXICO].

Treaty would allow continuous multi-year deficits to be made up by delivering additional water to provide the required cumulative amount of 1,750,000 acre-feet by the end of the five-year cycle, and deficits at the end of any five-year cycle would be made up in the subsequent five-year cycle. Mexico took the position that it had until the very last day of the 2010 to 2015 cycle to repay water it failed to deliver as far back as 2011.¹⁸⁸ It is possible the drafters of the Treaty of 1944 were intentionally ambiguous because they were taking into consideration unpredictable climate conditions—such as extraordinary drought—precluding Mexico from complying with the suggested annual requirements, thus protecting Mexico from having to comply.

Regardless of the lack of more specific language in the first sentence of Article 4, paragraph B, subparagraph (c) of the Treaty, the intent of a 350,000 acre-feet annual obligation seems to be supported by the language in the second sentence of the same subsection:

The United States shall not acquire any right by the use of the waters of the tributaries named in this subparagraph, in excess of *the said 350,000 acre-feet (431,721,000 cubic meters) annually*, except the right to use one-third of the flow reaching the Rio Grande (Rio Bravo) from said tributaries, although such one-third may be in excess of that amount.¹⁸⁹

The intent of a 350,000 acre-feet annual obligation seems to be further supported by the language in the second paragraph of Article 4, paragraph B, subparagraph (d) of the Treaty:

In the event of extraordinary drought or serious accident to the hydraulic systems on the measured Mexican tributaries, making it difficult for Mexico to make available the run-off of *350,000 acre-feet (431,721,000 cubic meters) annually*, allotted in subparagraph (c) of paragraph B of this Article to the United States *as the minimum contribution from the aforesaid Mexican tributaries*, any deficiencies existing at the end of the aforesaid five-year cycle shall be made up in the following five-year cycle with water from the said measured tributaries.¹⁹⁰

Moreover, the drafters of the Treaty of 1944 could have easily inserted a total amount of water due (i.e., 1,750,000 acre-feet) to be delivered by Mexico to the United States every five years, just like the 1.5 million acre-feet of water the United States is required to deliver to Mexico annually

188. See Dowell, *supra* note 184 (“Thus, Mexico’s position is, so long as Mexico provides the sum total of 1.75 million acre-feet by October 2015, the [T]reaty has not been violated.”).

189. Treaty of 1944, *supra* note 9, art. 4 (emphasis added).

190. *Id.* (emphasis added).

under Article 10 of the Treaty, without articulating minimum monthly increments.¹⁹¹ Presumably, the drafters realized the annual 350,000 acre-feet of water would be needed and relied on by the Texas agricultural community and municipal entities all along the Rio Grande on an annual basis, not on a five-year basis. No south Texas farmer or municipality can rely on a set amount of water every five years.

Therefore, notwithstanding the ambiguity in the language of Article 4, paragraph B, subparagraph (c) of the Treaty, it is reasonably arguable that under a cumulative and logical reading of the Article, Mexico breached the Treaty of 1944 and Minute 309 during the 2010 to 2015 cycle.

The language is clear that “[i]n the event of extraordinary drought or serious accident to the hydraulic systems on the measured Mexican tributaries,” the only way to make up “any deficiencies existing at the end of the . . . five-year cycle shall be” to make them up “in the following five-year cycle with water from the said [six] measured tributaries.”¹⁹²

Regrettably, neither the term “extraordinary drought” nor the term “serious accident” was defined in the Treaty of 1944. Even more regrettable is that Mexico is arguably not viewing the United States’ water needs under the Treaty of 1944 on equal footing with its own water needs.¹⁹³ It has been reported that Mexico treats water deliveries to the United States as a secondary priority, and “high storage levels in some Mexican reservoirs [(i.e., hoarding water)]” are support for this position.¹⁹⁴ Just as the United States sets aside its 1.5 million acre-feet of water from the Colorado River to deliver to Mexico, Mexico should—on an annual basis—set aside 350,000 acre-feet of water from its six tributaries to deliver to the United States.¹⁹⁵ At least one report succinctly states that “Mexico’s compliance with Treaty delivery requirements often has been accomplished through wet-weather flows (i.e., excess flows) rather than through purposeful releases from Mexican reservoirs to provide for reliable delivery to the United States.”¹⁹⁶ In 2013,

191. *See id.* art. 10 (outlining the United States’ obligation to deliver to Mexico “[a] guaranteed annual quantity of 1,500,000 acre-feet”).

192. *Id.* art. 4.

193. *See* STAPLES & RUBENSTEIN, *supra* note 156, at 3 (“The data shows Mexico is not experiencing extraordinary drought conditions and has no justification for withholding water.”); *see also* *Water Shortage Issue Related to the Mexican Water Deficit*, *supra* note 178 (“Despite countless meetings between U.S., Texas, and Mexico water officials, Mexico has yet to provide a concrete proposal and further productive and earnest discussions and commitment to honor the Treaty [of 1944] and deliver the minimum annual amount of water.”).

194. CARTER ET AL., *supra* note 86, at 15.

195. STAPLES & RUBENSTEIN, *supra* note 156, at 3.

196. CARTER ET AL., *supra* note 86, at 12.

the Luis L. León Reservoir—situated on the Rio Conchos—was reported to be above conservation capacity.¹⁹⁷ That water should have been released for delivery to the United States.¹⁹⁸

Under Article 4 of the Treaty of 1944 and Minute 309, any make-up water should primarily come from the six tributaries. However, there is authority under and through the Treaty allowing some of the deficit to be made up from other sources.

The IBWC adopted Minute 234 in 1969 pursuant to Articles 24 and 25 of the Treaty of 1944. Minute 234 provides the means that Mexico shall employ to make up a water deficit at the conclusion of any five-year cycle.¹⁹⁹ Under Minute 234, Mexico agrees by one or a combination of the following: (1) to use water in excess of the minimum guaranteed (i.e., 350,000 acre-feet annually) to the United States under the Treaty; (2) to use a portion of its two-thirds share of the waters in the six tributaries; and (3) to transfer Mexican water from the Amistad and Falcon reservoirs and dams to the United States.²⁰⁰ Despite the fact that Minute 234 is an agreement between the United States and Mexico, both of the countries have differed in the “interpretation and implementation of Minute 234.”²⁰¹

The Treaty of 1944 provides for the construction of dams required for the diversion of the flow of the Rio Grande.²⁰² The storage dams were to be constructed between Santa Helena Canyon and the mouth of the Pecos River; Eagle Pass and Laredo, Texas (Piedras Negras and Nuevo Laredo in Mexico); and Laredo and Roma, Texas (Nuevo Laredo and San Pedro de Roma in Mexico).²⁰³ However, the Treaty expressly states that “[o]ne or more of the stipulated dams may be omitted, and others than those enumerated may be built,” as determined by the IBWC and approved by the United States and Mexico.²⁰⁴ The two governments ultimately approved only two of the three originally contemplated storage dams.

The dam and reservoir between Eagle Pass, Texas and Laredo, Texas is known as the Amistad Dam and Reservoir. The dam and reservoir were

197. STAPLES & RUBENSTEIN, *supra* note 156, at 3.

198. *See id.* (“A portion of this water coupled with the utilization of water from other sources . . . could help address the deficit and Mexico’s annual average water obligation.”).

199. *See* MINUTE 234: WATERS OF THE RIO GRANDE ALLOTTED TO THE U.S., *supra* note 139, at 2–3 (discussing Mexico’s three options for making up a deficiency).

200. *Id.*

201. CARTER ET AL., *supra* note 86, at 12 n.50.

202. Treaty of 1944, *supra* note 9, art. 5.

203. *Id.*

204. *Id.*

completed in November 1969.²⁰⁵ The Amistad Reservoir has a capacity of 5,658,600 acre-feet of water.²⁰⁶ As of May 23, 2015, the Amistad Reservoir was at 63% of the normal capacity level for the United States, which translates to about 1,770,000 acre-feet of water.²⁰⁷ The United States was allocated 1,157,000 acre-feet of this water, while Mexico was allocated 613,000 acre-feet.²⁰⁸ By August 22, 2015, both the United States' and Mexico's conservation water share had increased to 1,156,883 acre-feet and 640,461 acre-feet, respectively.²⁰⁹

The dam and reservoir between Laredo, Texas and Roma, Texas is known as the International Falcon Reservoir. The dam was completed in April 8, 1954.²¹⁰ Falcon Reservoir has a capacity of 4,085,000 acre-feet of water and a summer storage capacity of 2,371,000 acre-feet of water.²¹¹ Under the allocation provided for in the Treaty of 1944, 58.6% is allocated to the United States while 41.4% is apportioned to Mexico.²¹² The reservoir level as of May 23, 2015 was 43% of the normal capacity for the United States. This percentage translates into approximately 1,300,000 acre-feet of water. The United States was allocated 681,000 acre-feet, while Mexico was allocated 619,000 acre-feet of water.²¹³ By August 22, 2015, both the United States' and Mexico's conservation water share had increased to 711,803 acre-feet and 643,704 acre-feet, respectively.²¹⁴ As of May 23, 2015, the Mexican reservoirs were at 85% of normal capacity.²¹⁵

The Amistad Dam and Reservoir and the International Falcon Reservoir "store much of the water that Mexico delivers to the United States."²¹⁶ These reservoirs then release water to be delivered to U.S.

205. *The Handbook of Texas: Amistad Reservoir*, TEX. ST. HIST. ASS'N (June 9, 2010), <http://www.tshaonline.org/handbook/online/articles/roa10>.

206. *Id.*

207. *Mexico's Water Debt: 2010 to 2015*, TEX. COMMISSION ON ENVTL. QUALITY (May 23, 2015), <https://www.tceq.texas.gov/assets/public/border/water-debt-transcript-06-15.pdf> (on file with the *St. Mary's Law Journal*).

208. *Id.*

209. LOWER RIO GRANDE VALLEY DEV. COUNCIL, RIO GRANDE WATERMASTER REPORT (2015), <http://www.lrgvdc.org/downloads/water/RGWM%20Report%2008-22-2015.pdf> [hereinafter RIO GRANDE WATERMASTER REPORT].

210. Dick D. Heller, Jr., *The Handbook of Texas: International Falcon Reservoir*, TEX. ST. HIST. ASS'N (June 15, 2010), <http://www.tshaonline.org/handbook/online/articles/roi02>.

211. *Id.*; VIRGIL N. LOTT & MERCURIO MARTINEZ, *THE KINGDOM OF ZAPATA* 17 (1953).

212. LOTT & MARTINEZ, *supra* note 211, at 17; Heller, *supra* note 210.

213. *Mexico's Water Debt: 2010 to 2015*, *supra* note 207.

214. RIO GRANDE WATERMASTER REPORT, *supra* note 209.

215. *Mexico's Water Debt: 2010 to 2015*, *supra* note 207.

216. CARTER ET AL., *supra* note 86, at 13.

interests (i.e., farmers, municipalities, and other water users on the United States side of the Rio Grande).²¹⁷ Obviously, if Mexico's delivery of water is inconsistent and unpredictable (because Mexico does not believe the Treaty of 1944 requires an annual water delivery requirement of 350,000 acre-feet), it will have an effect on the water delivered, stored, and released from these two reservoirs.²¹⁸

Two diversion (i.e., non-storage) dams are located on the lower Rio Grande.²¹⁹ Anzalduas Dam is located eleven river miles upstream from Hidalgo, Texas (completed April 1960) and the Retamal Dam is located sixteen miles southeast from McAllen, Texas (completed May 1975).²²⁰

The Treaty of 1944 by itself does not factor in storage capacity when making up deficits from one five-year cycle to another five-year cycle. However, since Mexico had 640,461 acre-feet of water in the Amistad Reservoir and an allocation of 643,704 acre-feet in the International Falcon Reservoir, totaling 1,284,164 acre-feet of water, Mexico could have voluntarily petitioned the IBWC prior to the end of the 2010 to 2015 five-year cycle pursuant to Article 9 of the Treaty to authorize the United States to divert some of this reserve to make up the 263,250 acre-feet deficit during this period.²²¹ Thankfully, Mexico made up its 2010 to 2015 water-cycle deficit in early 2016, using waters from the Rio Conchos, Rio Salado, Rio San Rodrigo, and via international reservoir transfer in accordance with Minute 234.²²²

Notwithstanding the fact that the make-up water partially came from three of the six tributaries, relying on water from the six tributaries is not always sufficient. In 2013, Mexico agreed to release one-third of the water in the San Rodrigo tributary, but the actual water released was miniscule.²²³ Being creative is not without precedent. Mexico has used portions of the Rio San Juan (normally allocated 100% to Mexico) to be

217. *Id.*

218. *Id.*

219. See *Diversion Dams and Related Structures*, INT'L BOUNDARY & WATER COMMISSION, http://www.ibwc.state.gov/mission_operations/diversion_dams.html (last visited Mar. 17, 2016) (describing the areas where the Anzalududas and Retamal Dams are located).

220. *Id.*

221. Cf. MINUTE 234: WATERS OF THE RIO GRANDE ALLOTTED TO THE U.S., *supra* note 139, at 2 (“[I]n the event of a deficiency in a cycle of five consecutive years in the minimum amount of water allotted to the United States from the said tributaries, the deficiency shall be made up in the following five-year cycle . . .”).

222. Telephone Interview with Sally Spener, *supra* note 175.

223. Dowell, *supra* note 184 (reporting Mexico released “only 7,500 acre-feet of the 472,085 [acre-feet] deficit”).

allocated to the United States in satisfaction of a prior water debt.²²⁴

If Mexico fails to deliver 350,000 acre-feet of water in any future year, Minute 234 should be invoked to require Mexico to share a portion of its two-thirds share of the water in the six tributaries and a portion of its waters stored at the Amistad and Falcon reservoirs. Additionally, the United States should request, relying on Article 9 of the Treaty of 1944, that Mexico allow portions of the Rio San Juan and Rio Alamo (normally allocated 100% to Mexico) to be transferred to the United States in satisfaction of any future water debts.

Bottom line—given that the lower Rio Grande basin is over-allocated (i.e., demand exceeds supply)²²⁵—the United States, working through the United States Section of the IBWC, should continue to advocate the following for five-year cycles: (1) increased releases from Mexican Dams; (2) allow the United States to use excess flows from Mexico when the United States can put the water to beneficial use; (3) obtain water from the Rio San Juan, and (4) implement the Naturalized Flow Concept (i.e., flow that naturally reaches the Rio Grande without man-made influences within the Rio Grande basin).²²⁶ Under the Treaty of 1944, the United States is obligated to set aside 1.5 million acre-feet of water annually out of the Colorado River for delivery to Mexico.²²⁷ Perhaps the United States should consider reducing its delivery obligations of Colorado River water equal to the percentage of water delivered by Mexico from the six tributaries into the Rio Grande (even if such reductions exceed the permitted reductions of up to 0.5 million acre-feet pursuant to Minute 319).²²⁸ Clearly, this would be a breach by the United States of the Treaty,²²⁹ but this may be a practical and effective way to get Mexico's attention and put pressure on the nation to comply with its future obligations involving the delivery of Rio Grande water consistently and

224. STAPLES & RUBENSTEIN, *supra* note 156, at 3.

225. CARTER ET AL., *supra* note 86, at 13.

226. *Cf.* SPENER, *supra* note 151 (advocating for Mexico to comply with its obligations under the Treaty of 1944 and suggesting specific remedies); STATUS UPDATE ON MEXICO'S FIVE-YEAR CYCLE WATER DELIVERIES, *supra* note 152 (asserting additional concepts of treaty compliance).

227. Treaty of 1944, *supra* note 9, art. 10.

228. INT'L BOUNDARY & WATER COMM'N, MINUTE 319: INTERIM INTERNATIONAL COOPERATIVE MEASURES IN THE COLORADO RIVER BASIN THROUGH 2017 AND EXTENSION OF MINUTE 318 COOPERATIVE MEASURES TO ADDRESS THE CONTINUED EFFECTS OF THE APRIL 2010 EARTHQUAKE IN THE MEXICALI VALLEY, BAJA CALIFORNIA 14 (2012), http://www.ibwc.state.gov/Files/Minutes/Minute_319.pdf [hereinafter MINUTE 319: INTERIM INTERNATIONAL COOPERATIVE MEASURES].

229. *See* Treaty of 1944, *supra* note 9, art. 10 (outlining the United States' obligations to deliver water to Mexico).

predictably on an annual basis throughout a five-year cycle.

In the interest of transparency, it should be noted that the United States is obligated to deliver another 60,000 acre-feet annually out of the Elephant Butte Reservoir in New Mexico to the Juarez Valley pursuant to the Convention of 1906.²³⁰ Reductions by the United States to Mexico have occurred 31% of the time from 1939 to 2013,²³¹ but under the Convention of 1906, the United States does not have to make up any annual deficits to Mexico.²³²

VI. CLIMATIC AND RELATED HISTORY

Article 4, paragraph B, subparagraph (d) of the Treaty of 1944 states as follows:

In the event of extraordinary drought or serious accident to the hydraulic systems on the measured Mexican tributaries, making it difficult for Mexico to make available the run-off of 350,000 acre-feet (431,721,000 cubic meters) annually, allotted in subparagraph (c) of paragraph B of this Article to the United States as the minimum contribution from the aforesaid Mexican tributaries, any deficiencies existing at the end of the aforesaid five-year cycle shall be made up in the following five-year cycle with water from the said measured tributaries.²³³

As stated earlier, the term “extraordinary drought” was not defined in the treaty. Therefore, it is useful to explore the definition of drought. The Congressional Research Service defines “drought” as “a deficiency of precipitation over an extended time period, usually a season or more.”²³⁴ The report goes on to state that “[h]igher demand for water for human activities and vegetation in areas of limited water supply increases the severity of drought.”²³⁵ Unfortunately, predicting the severity and persistence of drought is not possible at the present time.²³⁶ There are a number of informational sources for drought conditions:

1. The U.S. National Weather Service (NWS);

230. See SPENER, *supra* note 151 (detailing the United States' obligations under the Convention of 1906).

231. *Id.*

232. See *id.* (stating the “Treaty [of 1944] does not require the US to pay back any deficit”).

233. Treaty of 1944, *supra* note 9, art. 4.

234. PETER FOLGER & BETSY CODY, CONG. RES. SERV., R43407, DROUGHT IN THE UNITED STATES: CAUSES AND CURRENT UNDERSTANDING 3 (2014), <https://www.fas.org/sgp/crs/misc/R43407.pdf>.

235. *Id.*

236. See *id.* at Summary (stating drought predictions are not yet feasible, due to “the many factors that influence drought”).

2. National Oceanic & Atmospheric Administration Climate Prediction Center (CPC);
3. North American Drought Monitor (NADM);
4. United States Drought Monitor (USDM);
5. U.S. Geological Survey (USGS);
6. Texas Water Resources Institute;
7. Climate.gov;
8. Drought.gov (NIDIS);
9. Comisión Nacional del Agua (CONAGUA);
10. Servicio Meteorológico Nacional (SMN);
11. Mexican Drought Monitor (MDM); and
12. Instituto Nacional de Investigaciones Forestales, Agrícolas, y Pecuarías (INIFAP).

Texas has a history of recorded droughts since the first settlers arrived in 1822.²³⁷ According to the Texas Water Resources Institute, the first crop of these settlers in 1822 failed for “lack of moisture.”²³⁸ Since then, eighteen drought events have been recorded: in 1870, from 1885–1887, 1915–1918, from 1924–1925, from 1908–1912, from 1915–1918, from 1924–1925, from 1933–1934, from 1938–1940, from 1950–1957 (drought of record),²³⁹ from 1961–1967, from 1970–1971, from 1988–1990, from 1995–1996, from 1999–2002, from 2005–2006, from 2007–2009, and from 2010–2011.²⁴⁰

A similar timeline of recorded droughts in Mexico has not been located. However, North American Drought Monitor maps from December 2002 to January 31, 2016 have been attached to this Article in the Appendix.²⁴¹ These maps, although limited in time, focus on the drought conditions in Mexico, the United States, and Canada. The maps generally confirm the drought events in Texas since 2002 as outlined above.

The four Mexican states that abut the Rio Grande (along the Texas border) while extending southward into Mexico are Chihuahua, Coahuila, Nuevo León, and Tamaulipas.²⁴² The Texas counties that abut the Rio

237. *Timeline of Droughts in Texas*, *supra* note 161, at 2.

238. *Id.*

239. *See id.* at 14 (“Drought of record begins; 7.7 million people live in Texas.”); *see also Water for Texas 2012*, TXH₂O, Fall 2011, at 28, <http://twri.tamu.edu/newsletters/txh2o/txh2o-v7n1.pdf> (discussing the Texas Water Development Board’s state water plan, which uses the drought of record as a basis for “identifying water needs and recommending water management strategies to meet these needs”).

240. *See Timeline of Droughts in Texas*, *supra* note 161, at 3–26 (providing a visual timeline of droughts).

241. *See generally infra* App. Figs. 1–28 (depicting North American droughts from 2002 to 2016).

242. *Political Map of Mexico*, U. TEX. LIBR., <http://www.lib.utexas.edu/maps/americas/>

Grande are El Paso, Hudspeth, Jeff Davis, Presidio (all bordering Chihuahua), Brewster (bordering Chihuahua and Coahuila), Terrell, Val Verde, Kinney, Maverick (all bordering Coahuila), Webb (bordering Coahuila, Nuevo Leon, and Tamaulipas), Zapata, Starr, Hidalgo, and Cameron (all bordering Tamaulipas).²⁴³

When focusing on the last five-year water cycle from 2010 to 2015, this period is clearly included in the list of Texas droughts.²⁴⁴ The North American Drought Monitor maps from January 31, 2011 to July 31, 2013 depict areas of severe, extreme, and exceptional drought in Texas.²⁴⁵ The most severe, extreme, and exceptional drought conditions both in Texas and Mexico occurred in 2011 and 2012.²⁴⁶ By July 31, 2012, the areas of exceptional drought in Texas and Mexico along the border were diminished, but both still experienced severe and extreme droughts.²⁴⁷ Texas again experienced severe, extreme, and exceptional drought conditions in 2013, but Mexico generally only experienced moderate to severe drought conditions.²⁴⁸ The North American Drought Monitor map dated July 31, 2014 shows there were no areas of exceptional drought in Mexico.²⁴⁹ With the exception of (1) an extreme drought area within a portion of Val Verde County (and crossing into Sutton and possibly Edwards Counties) in Texas, and slightly crossing into the northern portion of the State of Coahuila; and (2) small severe and moderate drought areas south of the boundary between New Mexico and the State of Chihuahua, Mexico and northwest of the Rio Conchos, all remaining areas within the four Mexican states and the remaining border counties in Texas along the Rio Grande were declared as either no drought, abnormally dry, or moderate drought.²⁵⁰

According to state-level statistics produced by the Comisión Nacional

mexico_pol97.pdf (last visited Mar. 17, 2016).

243. *Map of Texas County Boundaries*, U. TEX. LIBR., http://www.lib.utexas.edu/maps/texas/texas-county_outline-2010.pdf (last visited Mar. 17, 2016).

244. *See infra* App. Figs. 16–26 (depicting Texas drought areas from 2010 to 2015).

245. *See id.* Figs. 16–23 (showing areas of drought in Texas from 2010 to 2013).

246. *See id.* Figs. 18–20 (delineating large areas of exceptional, extreme, and severe drought in North America from January 31, 2011 through January 31, 2012).

247. *Compare id.* Fig. 20 (depicting large areas of severe, extreme, and exceptional drought in January of 2012), *with id.* Fig. 21 (illustrating smaller masses of severe and extreme drought in Mexico and Texas in July of 2012).

248. *See id.* Figs. 22–23 (portraying the drought conditions in Texas and Mexico in January and July of 2013).

249. *See id.* Fig. 25 (showing Mexico experienced abnormally dry, moderate, and severe drought conditions, with “extreme” conditions in small areas of the country).

250. *See id.* Fig. 25 (indicating drought levels in North America in July 2014).

del Agua (CONAGUA) for May 2014, only 1.65% of the Mexican state of Chihuahua experienced extreme drought, which was along the Texas–Mexico border, and the extreme drought in the Mexican state of Coahuila constituted only 1.11% of the state area, which was also along this same border.²⁵¹ According to the CONAGUA report, Mexico “slowly” passed the drought conditions in 2011–2012 due to nearby rains that were “slightly above normal by the end of 2012 and [into] 2013.”²⁵² Therefore, it is fair to conclude the worst drought conditions occurred between 2010 and 2013, the early part of the five-year cycle from 2010 to 2015.²⁵³ Consequently, if the term “extraordinary drought,”²⁵⁴ as referenced in the Treaty of 1944, reasonably included exceptional and extreme drought conditions²⁵⁵—and arguably might even have included severe drought conditions that Mexico could have relied on to curtail water deliveries to the United States between 2010 to 2013—no such extraordinary drought conditions existed after July of 2014 to the end of the five-year cycle ending in 2015. Therefore, Mexico should have completely or at least

251. See REYNALDO PASCUAL & ADELINA ALBANIL, NAT’L METEOROLOGICAL SERV. OF MEX. (SMN) DROUGHT PROJECT, UPDATE ON MONITORING DROUGHT IN MEXICO (2014), http://conagua.gob.mx/pronacose2014/contenido/documentos/SMN_DM_Canada2014.pdf (providing statistics and maps that describe the North American drought for May 31, 2014).

252. *Id.*

253. Compare *infra* App. Figs. 16–17 (showing there was very little drought in January and July of 2010), *id.* Figs. 18–19 (illustrating small areas of extreme drought, a large area of severe and moderate drought in Mexico and Texas for January 31, 2011—which increased in July 31, 2011—and showing all of Texas endured exceptional and extreme drought conditions, with small areas of severe drought and three bordering Mexican states experienced extreme, exceptional, and severe drought, while the other bordering state had only abnormally dry and moderate conditions), *id.* Figs. 20–21 (detailing drought conditions in January and July of 2012, which show in the early part of the year Texas and Mexico both suffered from exceptional, extreme, and severe drought conditions, but six months later in July, drought conditions decreased to severe and moderate, with small patches of extreme), and *id.* Figs. 22–24 (indicating drought improvements for Mexico in January 2013, with only moderate and abnormally dry conditions and small areas of severe and extreme drought, while Texas conditions worsened to exceptional, extreme, and severe—by July 31, 2013, the Mexican border states were generally drought free with minimal areas of drought, and Texas conditions improved to generally severe and moderate drought, with small areas of extreme and exceptional drought), *with id.* Figs. 24–25 (illustrating south Texas drought conditions remained abnormally dry and moderate throughout 2014, with small areas of severe and extreme drought, but the Mexican states along the border went from being almost entirely drought free in January 2014 to drought free, abnormally dry, and moderately dry in July 2014, with patches of severe and extreme drought along the border), and *id.* Figs. 26–28 (detailing 2015 drought conditions, which show Mexico has primarily spent 2015 drought free, while Texas started the year with moderate, severe, and extreme drought, which was almost entirely eliminated in July 2015 but returned in September 2015 when the state experienced moderate, severe, and extreme conditions, with some abnormally dry or drought free regions).

254. Treaty of 1944, *supra* note 9, art. 4.

255. Arguably, if the term “extraordinary drought” includes severe drought conditions, Mexico may have been able to rely on it to curtail water deliveries to the United States between 2010 to 2013.

substantially complied with the terms of the Treaty of 1944 and Minute 309 by the end of the five-year cycle in 2015.

The exceptional, extreme, and severe drought conditions have impacted both Mexico and Texas. By February 2012, the exceptional, extreme, and severe drought conditions had “wiped out [7.5 million] acres of farmland[,] caused 15 billion pesos (\$1.18 billion) in lost harvests, killed 60,000 head of cattle[,] and weakened 2 million more livestock, pushing food prices higher in Mexico.”²⁵⁶ CONAGUA has estimated that over 300 billion pesos (\$23.68 billion) will need to be invested “by 2030 to safeguard and modernize infrastructure,” expand reservoirs, and recycle household wastewater.²⁵⁷ Furthermore, “experts say the northern half of Mexico is in a persistent dry cycle.”²⁵⁸ Given these conditions, it is no wonder Mexico is failing to comply with the requirements imposed by the Treaty of 1944 and Minute 309 and choosing to hold onto its water supplies. However, the Treaty of 1944 is still a binding agreement between Mexico and the United States.²⁵⁹

Climate change, combined with Mexico’s failure to deliver the quantities of water required under the Treaty of 1944 and Minute 309 during the 2010 to 2015 water cycle, caused tremendous suffering to Texas farmers—especially those along the border counties abutting the Rio Grande.²⁶⁰ Texas is ranked third in the nation with respect to agricultural and livestock production,²⁶¹ thus, water is understandably of vital importance to south Texas (Rio Grande Valley) farmers.²⁶² Given that Texas experienced its own drought between 2010 and 2015, the United States has delivered all required 1.5 million acre-feet of Colorado River water each year to Mexico as required by the Treaty. Mexico should have completely or at least substantially complied with its obligations under the

256. Mica Rosenberg & Noe Torres, *Stubborn Drought Expected to Tax Mexico for Years*, REUTERS (Mar. 21, 2012, 5:00 PM), <http://www.reuters.com/article/us-mexico-drought-idusbre82k1e520120321>.

257. *Id.*

258. *Id.*

259. *See* Treaty of 1944, *supra* note 9, art. 4 (explaining Mexico’s duties); *see also* Priscila Mosqueda, *On the Border, a Struggle over Water*, TEX. OBSERVER (June 10, 2013, 12:37 PM), <http://www.texasobserver.org/on-the-border-a-struggle-over-water> (noting Mexico’s obligation to deliver water pursuant to the Treaty of 1944).

260. *See* Mosqueda, *supra* note 259 (“Global climate change and prolonged drought, coupled with Mexico’s failure to deliver the water [it is] supposed to under an international treaty[,] have taken a toll on the region’s water supply.”).

261. *Id.*

262. *See id.* (discussing Texas farmers fear barren fields as drought conditions continue).

Treaty of 1944 and Minute 309.²⁶³

VII. AGRICULTURAL ECONOMIC IMPACT

The Texas A&M AgriLife Extension Service (AgriLife) studied the economic “impact of the water deficits that occurred from 1992 to 2002.”²⁶⁴ AgriLife concluded that Cameron, Hidalgo, Starr, and Willacy Counties suffered “a loss of 4,130 jobs and \$135 million in business activity per year” during this period of time.²⁶⁵

A decade later, AgriLife updated this economic analysis, projecting that in 2013, due to lack of irrigation water, the lower Rio Grande Valley would suffer losses of 4,840 jobs, \$217,612,170 in value added measured by “net business income and employee compensation” and \$394,896,481 in economic output, which “represents gross business activity (spending) associated with irrigated crop production.”²⁶⁶ According to the report, the projections “are on the conservative side as they do not include the impacts (losses) that occur beyond the farm-level sale of the crops, such as transportation, storage, processing, packaging, and marketing.”²⁶⁷

VIII. MUNICIPAL IMPACT

By mid-2013, four Texas irrigation districts (Delta Lake Irrigation District, Cameron County Irrigation District No. Two, Donna Irrigation District, and Hidalgo and Cameron County Irrigation District No. 9) notified the cities and water supply corporations they serve, stating “they may no longer be able to depend on irrigation water from the Rio Grande to convey their municipal allocations.”²⁶⁸

Reductions of irrigation water by the Delta Lake Irrigation District would impact the cities of Lyford and Raymondville, as well as the North Alamo

263. *Cf. id.* (stating the United States sets aside water for Mexico before allocating its own and discussing the United States’ obligations under the 1944 Treaty “to release 1.5 million acre-feet of Colorado River water to Mexico each year”).

264. STAPLES & RUBENSTEIN, *supra* note 156, at 1–2.

265. *Id.* at 2 (citation omitted).

266. LUIS A. RIBERA & DEAN MCCORKLE, TEX. A&M AGRILIFE EXTENSION SERV., ECONOMIC IMPACT ESTIMATE OF IRRIGATION WATER SHORTAGES ON THE LOWER RIO GRANDE VALLEY AGRICULTURE 4 (2013), <http://agecoext.tamu.edu/files/2013/08/EconImpactIrrigWaterShortLRGV.pdf>.

267. *Id.* at 5.

268. *See* STAPLES & RUBENSTEIN, *supra* note 158, at 2 (contending this will force the affected local governments to buy extra irrigation water that will “push their water down the channel” and “keep the taps flowing”).

Water Supply Corporation.²⁶⁹ Similarly, reductions by Cameron County Irrigation District No. Two would impact the cities of Rio Hondo and San Benito and the East Rio Hondo Water Supply Corporation. Reductions of irrigation water by Hidalgo and Cameron County Irrigation District No. 9 would impact the cities of Mercedes, Weslaco, Edcouch, Elsa, and La Villa.²⁷⁰ Finally, reductions by the Donna Irrigation District would impact the city of Donna.²⁷¹

IX. ACTIONS TAKEN DURING THE 2010 TO 2015 WATER CYCLE

Given the impact on numerous lower Rio Grande Valley counties, cities, irrigation districts and water supply corporations, a number of these entities adopted resolutions. In 2013, Cameron County,²⁷² Cameron County Irrigation District No. Two,²⁷³ Hidalgo County Irrigation District No. 2,²⁷⁴ East Rio Hondo Water Supply Corporation,²⁷⁵ North Alamo Water Supply Corporation,²⁷⁶ Rio Grande Regional Water Authority,²⁷⁷ the cities of Alton,²⁷⁸ Hidalgo,²⁷⁹ Los Fresnos,²⁸⁰ McAllen,²⁸¹ Palm Valley,²⁸² Pharr,²⁸³ Primera,²⁸⁴ San Benito,²⁸⁵ South Padre Island,²⁸⁶ Weslaco,²⁸⁷

269. *Id.*

270. *Id.*

271. *Id.*

272. Cameron County, Tex., Res. No. 2013R03025 (Mar. 14, 2013), <http://www.tceq.state.tx.us/assets/public/border/cameron-county-resolution.pdf>.

273. Cameron County, Irrigation District No. Two, Tex., Resolution 2013 (Mar. 21, 2013), <http://www.tceq.state.tx.us/assets/public/border/CCID2-resolution.pdf>.

274. Hidalgo County Irrigation District No. 2, Tex., Res. 2013 (Mar. 21, 2013), <http://rgywa.org/wp-content/uploads/2015/09/HCID2Resolution.pdf>.

275. East Rio Hondo Water Supply Corporation, Tex., Resolution (Mar. 11, 2013), <https://www.tceq.texas.gov/assets/public/border/East-Rio-Hondo-resolution.pdf>.

276. North Alamo Water Supply Corporation, Tex., Resolution 2013 (Mar. 12, 2013), <https://www.tceq.texas.gov/assets/public/border/North-Alamo-resolution.pdf>.

277. Rio Grande Regional Water Authority, Tex., Res. 2013-02 (Mar. 13, 2013), <http://www.tceq.state.tx.us/assets/public/border/RGRWA-resolution.pdf>.

278. Alton, Tex., Res. 2013-04-0312R (Mar. 12, 2013), <http://www.tceq.state.tx.us/assets/public/border/Alton-resolution.pdf>.

279. Hidalgo, Tex., Resolution Regarding 1944 Water Treaty (Feb. 26, 2013), <https://www.tceq.texas.gov/assets/public/border/Hidalgo-City-resolution.pdf>.

280. Los Fresnos, Tex., Res. No. 04-2013 (Mar. 12, 2013), <http://www.tceq.state.tx.us/assets/public/border/Los-Fresnos-resolution.pdf>.

281. McAllen, Tex., Res. No. 2013-14 (Mar. 11, 2013), <http://www.tceq.state.tx.us/assets/public/border/McAllen-resolution.pdf>.

282. Palm Valley, Tex., Res. No. 2013-2 (Mar. 25, 2013), <https://www.tceq.texas.gov/assets/public/border/Palm-Valley-resolution.pdf>.

283. Pharr, Tex., Res. R-2013-11 (Mar. 5, 2013), <http://www.tceq.state.tx.us/assets/public/border/Pharr-resolution.pdf>.

284. Primera, Tex., Res. No. 2013-14 (Mar. 19, 2013), <https://www.tceq.texas.gov/assets/>

and the Lower Rio Grande Valley Development Council²⁸⁸ filed resolutions “request[ing] the United States Section of the International Boundary and Water Commission and the United States Department of State to pursue[,] through appropriate Minute Orders and formal agreements,”²⁸⁹ a requirement that Mexico comply with the Treaty of 1944, both in the short and long term.

The resolutions included recitals (i.e., whereas clauses) along the following lines:

WHEREAS, the 1944 Treaty between the United States and Mexico provides that the United States is entitled to one-third (1/3) of the flow reaching the main channel of the Rio Grande River from the Conchos, San Diego, San Rodrigo, Escondido[,] and Salado Rivers and the Las Vacas Arroyo, provided that this third shall not be less, as an average amount in cycles of five consecutive years, than 350,000 acre-feet (431,721,000 cubic meters) annually; and,

WHEREAS, Texas water right holders are the sole beneficiaries of the United States’ one-third (1/3) portion of such flow in the Rio Grande River; and,

WHEREAS, the 1944 Treaty further states that any deficits during a five (5) cycle caused by “extraordinary drought” which is a year in a five (5) year cycle in which there are insufficient surface water runoff in the Rio Grande Basin in Mexico to provide for the required Treaty flows to the Rio Grande River or a serious accident to the hydraulic systems on the measured Mexican tributaries must be made up within the five (5) year period/cycle; and,

WHEREAS, the current five (5) year cycle began on October 25, 2010 and will end on October 25, 2015; as of February 9, 2013, Mexico has delivered 403,082 acre-feet. Based on an average annual delivery of 350,000 acre-feet, Mexico is approximately 392,000 acre-feet behind in their deliveries as of February 9, 2013; and,

public/border/Primera-resolution.pdf.

285. San Benito, Tex., Res. No. 2013-6 (Mar. 19, 2013), <http://www.tceq.state.tx.us/assets/public/border/San-Benito-resolution.pdf>.

286. South Padre Island, Tex., Res. No. 2013-10 (Mar. 20, 2013), <http://www.tceq.state.tx.us/assets/public/border/SPI-resolution.pdf>.

287. Weslaco, Tex., Res. No. 2013-42 (Mar. 19, 2013), <http://www.tceq.state.tx.us/assets/public/border/Welsaco-resolution.pdf>.

288. Lower Rio Grande Development Council, Tex., Res. 2013-02 (Feb. 28, 2013), <https://www.tceq.texas.gov/assets/public/border/LRGVDC-resolution.pdf>.

289. *See, e.g.*, Cameron County, Tex., Res. No. 2013R03025 (Mar. 14, 2013), <http://www.tceq.state.tx.us/assets/public/border/cameron-county-resolution.pdf> (setting forth an example of declaration language used by a number of entities).

WHEREAS, the Rio Grande Watermaster has reported that our water right holders have 60% less water starting off in 2013 as compared to this time last year, and this situation is due in part to the lingering drought conditions in Texas and to the continued lack of inflows from Mexico during this five (5) year cycle; and,

WHEREAS, the State of Chihuahua, Mexico has plans in place to undertake infrastructure projects which include the construction of at least fifteen (15) storage reservoirs of which seven (7) to nine (9) could potentially reduce the inflows into the Rio Grande River and our reservoir system; and,

WHEREAS, the Rio Grande Regional Water Planning Group (Region M, Texas Water Development Board) has determined that water requirements will exceed supply for the next [thirty] and [fifty] year planning horizons in the Region on the Rio Grande River dependent upon the Treaty water from Mexico; and,

WHEREAS, the Rio Grande Valley is expected to be in a water shortage for irrigation and is headed toward a serious water shortage for municipalities in the near future; and,

WHEREAS, the United States gives priority to its obligations under the 1944 Treaty to assure required flows of the Colorado River in the Colorado River Watershed in the western United States reach Mexico and takes actions to ensure that Mexico receives required flows of water from the Colorado River Watershed in the United States to which it is entitled under the Treaty; and,

WHEREAS, over the past few years, additional concerns have been expressed to the International Boundary and Water Commission regarding, as examples, the improper accounting of water spilling at Ft. Quitman, Texas, said water belonging 100% to the United States; as well as the year to be credited 78,000 acre-feet of Texas water that had to be used to mitigate increased salinity in the lower Rio Grande due to poor operations of the Morillo Drain; and,

WHEREAS, in contrast to actions taken by the United States in the form of emergency deliveries of water and additional storage agreements that have benefitted Mexico as it relates to binational sharing of water, Mexico has yet to reciprocate.²⁹⁰

290. Cameron County, Tex., Res. No. 2013R03025 (Mar. 14, 2013), <http://www.tceq.state.tx.us/assets/public/border/cameron-county-resolution.pdf>. For additional resolutions setting forth nearly identical language, see Alton, Tex., Res. 2013-04-0312R (Mar. 12, 2013), <http://www.tceq.state.tx.us/assets/public/border/Alton-resolution.pdf>; Cameron County Irrigation District No. Two, Tex., Res. 2013 (Mar. 21, 2013), <http://www.tceq.state.tx.us/assets/public/border/CCID2-resolution.pdf>; East Rio Hondo Water Supply Corporation, Tex., Resolution

Some resolutions included declarations (i.e., “be it resolved” clauses), setting forth a statement similar to the following:

NOW THEREFORE BE IT RESOLVED, that the [governing body of the entity] request the United States Section of the International Boundary and Water Commission and the United States Department of State to pursue through appropriate Minute Orders and formal agreements whereby Mexico (1) in the short term agrees to make up current five (5) year cycle annual deficits, restore to the United States 78,000 acre-feet used to mitigate salinity in the lower Rio Grande and institute correct accounting of water at Fort Quitman, Texas, as 100% United States water and (2) in the long term that Mexico formalizes a compliance program under the 1944 Treaty to annually set aside water in sufficient amounts, as a priority allocation to the United States from the named tributaries in Mexico to ensure Mexico’s full compliance with the 1944 Treaty.²⁹¹

However, the declarations in the resolutions vary and, at times, include the following language:

NOW, THEREFORE, BE IT RESOLVED that the [the governing

(Mar. 11, 2013), <https://www.tceq.texas.gov/assets/public/border/East-Rio-Hondo-resolution.pdf>; Hidalgo County, Irrigation District No. 2, Tex., Resolution 2013 (Mar. 21, 2013), <http://tgrwa.org/wp-content/uploads/2015/09/HCID2Resolution.pdf>; Hidalgo, Tex., Res. Regarding 1944 Water Treaty (Feb. 26, 2013), <https://www.tceq.texas.gov/assets/public/border/Hidalgo-City-resolution.pdf>; Los Fresnos, Tex., Res. No. 04-2013 (Mar. 12, 2013), <http://www.tceq.state.tx.us/assets/public/border/Los-Fresnos-resolution.pdf>; Lower Rio Grande Development Council, Tex., Res. 2013-02 (Feb. 28, 2013), <https://www.tceq.texas.gov/assets/public/border/LRGVDC-resolution.pdf>; McAllen, Tex., Res. No. 2013-14 (Mar. 11, 2013), <http://www.tceq.state.tx.us/assets/public/border/McAllen-resolution.pdf>; North Alamo Water Supply Corporation, Tex., Resolution 2013 (Mar. 12, 2013), <https://www.tceq.texas.gov/assets/public/border/North-Alamo-resolution.pdf>; Palm Valley, Tex., Res. No. 2013-2 (Mar. 25, 2013), <https://www.tceq.texas.gov/assets/public/border/Palm-Valley-resolution.pdf>; Pharr, Tex., Res. R-2013-11 (Mar. 5, 2013), <http://www.tceq.state.tx.us/assets/public/border/Pharr-resolution.pdf>; Primera, Tex., Res. No. 2013-14 (Mar. 19, 2013), <https://www.tceq.texas.gov/assets/public/border/Primera-resolution.pdf>; Rio Grande Regional Water Authority, Tex., Res. 2013-02 (Mar. 13, 2013), <http://www.tceq.state.tx.us/assets/public/border/RGRWA-resolution.pdf>; San Benito, Tex., Res. No. 2013-6 (Mar. 19, 2013), <http://www.tceq.state.tx.us/assets/public/border/San-Benito-resolution.pdf>; South Padre Island, Tex., Res. No. 2013-10 (Mar. 20, 2013), <http://www.tceq.state.tx.us/assets/public/border/SPI-resolution.pdf>; and Weslaco, Tex., Res. No. 2013-42 (Mar. 19, 2013), <http://www.tceq.state.tx.us/assets/public/border/Welsaco-resolution.pdf>.

291. Cameron County Irrigation District No. Two, Tex., Res. 2013 (Mar. 21, 2013), <http://www.tceq.state.tx.us/assets/public/border/CCID2-resolution.pdf>. For resolutions that adopt similar language, see Cameron County, Tex., Res. No. 2013R03025 (Mar. 14, 2013), <http://www.tceq.state.tx.us/assets/public/border/cameron-county-resolution.pdf>; Hidalgo Cty. Irrigation District No. 2, Tex., Resolution 2013 (Mar. 21, 2013), <http://tgrwa.org/wp-content/uploads/2015/09/HCID2Resolution.pdf>; and Rio Grande Regional Water Authority, Tex., Res. 2013-02 (Mar. 13, 2013), <http://www.tceq.state.tx.us/assets/public/border/RGRWA-resolution.pdf>.

body of the entity] supports the efforts of the Rio Grande Regional Water Authority (RGRWA) to request that the United States Section of the International Boundary and Water Commission (IBWC) and the United States Department of State to pursue Mexico's formal compliance with the 1944 Treaty to annually set aside water in sufficient amounts, as a priority allocation to the United States and to ensure Mexico's full compliance with the 1944 Treaty.²⁹²

The following language is another commonly used variation:

NOW THEREFORE BE IT RESOLVED, that the [the governing body of the entity] request the United States Section of the International Boundary and Water Commission and the United States Department of State to pursue through appropriate Minute Orders and formal agreements whereby Mexico formalizes a compliance program under the 1944 Treaty to annually set aside water in sufficient amounts, as a priority allocation to the United States from the named tributaries in Mexico to ensure Mexico's full compliance with the 1944 Treaty.²⁹³

The Lower Rio Grande Valley Water District Manager's Association,²⁹⁴ the Texas Commission on Environmental Quality,²⁹⁵ and the United States Section of the IBWC also engaged in correspondence involving Mexico's deficient deliveries of water to the United States.²⁹⁶ The correspondence

292. Hidalgo, Tex., Resolution Regarding 1944 Water Treaty (Feb. 26, 2013), <https://www.tceq.texas.gov/assets/public/border/Hidalgo-City-resolution.pdf>.

293. Alton, Tex., Res. 2013-04-0312R (Mar. 12, 2013), <http://www.tceq.state.tx.us/assets/public/border/Alton-resolution.pdf>. For resolutions that adopt similar language, see East Rio Hondo Water Supply Corporation, Tex., Resolution (Mar. 11, 2013), <https://www.tceq.texas.gov/assets/public/border/East-Rio-Hondo-resolution.pdf>; McAllen, Tex., Res. No. 2013-14 (Mar. 11, 2013), <http://www.tceq.state.tx.us/assets/public/border/McAllen-resolution.pdf>; North Alamo Water Supply Corporation, Tex., Resolution 2013 (Mar. 12, 2013), <https://www.tceq.texas.gov/assets/public/border/North-Alamo-resolution.pdf>; Pharr, Tex., Res. R-2013-11 (Mar. 5, 2013), <http://www.tceq.state.tx.us/assets/public/border/Pharr-resolution.pdf>; Weslaco, Tex., Res. No. 2013-42 (Mar. 19, 2013), <http://www.tceq.state.tx.us/assets/public/border/Weslaco-resolution.pdf>.

294. Letter from Wayne Halbert, President, Lower Rio Grande Valley Water Dist. Manager's Ass'n, to Carlos Rubinstein, Comm'r, Tex. Comm'n on Envtl. Quality (Apr. 18, 2013), <http://www.tceq.state.tx.us/assets/public/border/minute-309-LRGVIDMA.pdf>.

295. Letter from Carlos Rubinstein, Comm'r, Tex. Comm'n on Envtl. Quality, to Edward Drusina, Comm'r, Int'l Boundary & Water Comm'n, U.S. & Mex., U.S. Section (Apr. 22, 2013), <http://www.tceq.state.tx.us/assets/public/border/minute-309-TCEQ-IBWC.pdf> [hereinafter Letter from Carlos Rubinstein to Edward Drusina, Apr. 2013]; Letter from Carlos Rubinstein, Comm'r, Tex. Comm'n on Envtl. Quality, to Edward Drusina, Comm'r, Int'l Boundary & Water Comm'n U.S. & Mex., U.S. Section (June 10, 2013), <http://www.tceq.state.tx.us/assets/public/border/minute-309-061013.pdf> [hereinafter Letter from Carlos Rubinstein to Edward Drusina, June 2013].

296. See Letter from Edward Drusina, Comm'r, Int'l Boundary & Water Comm'n U.S. & Mex., U.S. Section, to Carlos Rubinstein, Comm'r, Tex. Comm'n on Envtl. Quality (Apr. 26, 2013), <http://www.tceq.state.tx.us/assets/public/border/minute-309-IBWC-TCEQ.pdf> (expressing

involved IBWC Minute 309, as discussed above.²⁹⁷ The sum and substance of the correspondence was Mexico had not provided the required annual accounting report nor delivered the waters belonging to the United States under Minute 309.²⁹⁸

Additional letters involving the Mexican water deficit have been sent from the United States Section of the IBWC,²⁹⁹ the Cameron County Irrigation District No. Two,³⁰⁰ the Delta Irrigation District,³⁰¹ the Rio Grande Valley Regional Water Authority,³⁰² the Texas Citrus Mutual,³⁰³ the Congressional

concern over “Mexico’s failure to deliver volumes of water as required by Minute No. 309”).

297. See *supra* Part I; see also Letter from Carlos Rubinstein to Edward Drusina, Apr. 2013, *supra* note 295 (questioning Mexico’s noncompliance with the delivery and annual report requirements set forth in Minute 309).

298. See, e.g., Letter from Wayne Halbert to Carlos Rubinstein, *supra* note 294 (urging the Texas Commission on Environmental Quality to undertake efforts in pursuance of Mexico’s compliance with Minute 309).

299. Letter from Edward Drusina, Comm’r, Int’l Boundary & Water Comm’n U.S. & Mex., U.S. Section, to Rep. Henry Cuellar, U.S. House of Reps., Rep. Pete Gallego, U.S. House of Reps., Rep. Ruben Hinojosa, U.S. House of Reps., & Rep. Filemon Vela, U.S. House of Reps. (Apr. 5, 2013), <http://www.tceq.state.tx.us/assets/public/border/IBWC-letter-04-05-13.pdf> [hereinafter Letter from Edward Drusina to House of Reps.]; Letter from Edward Drusina to Carlos Rubinstein, *supra* note 296.

300. Letter from Sonia Lambert, Gen. Manager, Cameron Cty. Irrigation Dist. No. Two, to Sen. John Cornyn (Apr. 9, 2013), <https://www.tceq.texas.gov/assets/public/border/cameron-county-letter.pdf>; Letter from Sonia Lambert, Gen. Manager, Cameron Cty. Irrigation Dist. No. Two, to Sen. Ted Cruz (Apr. 9, 2013), <https://www.tceq.texas.gov/assets/public/border/cameron-county-letter.pdf>; Letter from Sonia Lambert, Gen. Manager, Cameron Cty. Irrigation Dist. No. Two, to Rep. Henry Cuellar, U.S. House of Reps. (Apr. 9, 2013), <https://www.tceq.texas.gov/assets/public/border/cameron-county-letter.pdf>; Letter from Sonia Lambert, Gen. Manager, Cameron Cty. Irrigation Dist. No. Two, to Rep. Filemon Vela, U.S. House of Reps. (Apr. 9, 2013), <https://www.tceq.texas.gov/assets/public/border/cameron-county-letter.pdf>.

301. Letter from Troy Allen, Gen. Manager, Delta Lake Irrigation Dist., to Sen. John Cornyn (Apr. 9, 2013), <http://www.tceq.state.tx.us/assets/public/border/delta-letters.pdf>; Letter from Troy Allen, Gen. Manager, Delta Lake Irrigation Dist., to Sen. Ted Cruz (Apr. 9, 2013), <http://www.tceq.state.tx.us/assets/public/border/delta-letters.pdf>; Letter from Troy Allen, Gen. Manager, Delta Lake Irrigation Dist., to Rep. Henry Cuellar, U.S. House of Reps. (Apr. 9, 2013), <http://www.tceq.state.tx.us/assets/public/border/delta-letters.pdf>; Letter from Troy Allen, Gen. Manager, Delta Lake Irrigation Dist., to Edward Drusina, Comm’r, Int’l Boundary & Water Comm’n U.S. & Mex., U.S. Section (Apr. 9, 2013), <http://www.tceq.state.tx.us/assets/public/border/delta-letters.pdf>; Letter from Troy Allen, Gen. Manager, Delta Lake Irrigation Dist., to Carlos Rubinstein, Comm’r, Tex. Comm’n on Env’tl. Quality (Apr. 9, 2013), <http://www.tceq.state.tx.us/assets/public/border/delta-letters.pdf>; Letter from Troy Allen, Gen. Manager, Delta Lake Irrigation Dist., to Rep. Filemon Vela, U.S. House of Reps. (Apr. 9, 2013), <http://www.tceq.state.tx.us/assets/public/border/delta-letters.pdf>.

302. Letter from Joe Barrera III, Exec. Dir., Rio Grande Reg’l Water Auth., to Rep. Filemon Vela, U.S. House of Reps (Apr. 9, 2013), <https://www.tceq.texas.gov/assets/public/border/RGRWA-letter.pdf>.

303. Letter from Ray Prewett, President, Tex. Citrus Mut., to Sec’y John Kerry, U.S. Dep’t of State (Apr. 15, 2013), <https://www.tceq.texas.gov/assets/public/border/TCM-letter.pdf>.

Delegation,³⁰⁴ the Texas Delegation,³⁰⁵ the Texas Commission on Environmental Quality,³⁰⁶ the Texas Water Development Board,³⁰⁷ the Texas Department of Agriculture,³⁰⁸ the U.S. Department of State,³⁰⁹ Representative Eddie Lucio III,³¹⁰ and the Texas Governor.³¹¹ Notable recipients of these letters include the Congressional Delegation,³¹² the U.S. Department of State,³¹³ the Ambassador to Mexico,³¹⁴ and the President of

304. Letter from Rep. Henry Cuellar, U.S. House of Reps., Rep. Rubén Hinojosa, U.S. House of Reps., Rep. Pete Gallego, U.S. House of Reps., Rep. Beto O'Rourke, U.S. House of Reps., & Rep. Filemon Vela, U.S. House of Reps., to President Barack Obama (Apr. 11, 2013), <https://www.tceq.texas.gov/assets/public/border/letter-to-Obama-4-11-13.pdf> [hereinafter Letter from House Reps. to President Obama].

305. Letter from the Tex. Delegation, to President Barack Obama (Sept. 17, 2014), <https://www.tceq.texas.gov/assets/public/border/letter-from-Texas-delegation-to-Obama.pdf>.

306. Letter from Carlos Rubinstein, Comm'r, Tex. Comm'n on Envtl. Quality, to Roberta S. Jacobson, Assistant Sec'y, U.S. Dep't of State, Bureau of W. Hemisphere Affairs (May 22, 2013), <https://www.tceq.texas.gov/assets/public/border/TCEQ-letter-to-Roberta-Jacobson.pdf>.

307. Letter from Carlos Rubinstein, Chairman, Tex. Water Dev. Bd., to Edward Drusina, Comm'r, Int'l Boundary & Water Comm'n U.S. & Mex., U.S. Section (Sept. 3, 2014), <https://www.tceq.texas.gov/assets/public/border/letter-from-Rubinstein-to-Drusina.pdf>; Letter from Carlos Rubinstein, Chairman, Tex. Water Dev. Bd., to Edward Drusina, Comm'r, Int'l Boundary & Water Comm'n U.S. & Mex., U.S. Section (June 17, 2014), <https://www.tceq.texas.gov/assets/public/border/letter-from-TWDB-to-Edward-Drusina-061714.pdf>; Letter from Carlos Rubinstein, Chairman, Tex. Water Dev. Bd., & Bryan W. Shaw, Chairman, Tex. Comm'n on Envtl. Quality, to Rep. Eddie Lucio, III, Tex. House of Reps. (Aug. 26, 2014), <https://www.tceq.texas.gov/assets/public/border/TWDB-TCEQ-Letter-to-Lucio-082614.pdf>.

308. Letter from Todd Staples, Comm'r, Tex. Dep't of Agric., & Carlos Rubinstein, Chairman, Tex. Water Dev. Bd., to Ambassador E. Anthony Wayne, U.S. Ambassador to Mex. (Sept. 10, 2013), <https://www.tceq.texas.gov/assets/public/border/letter-to-ambassador-Wayne.pdf>.

309. Letter from Roberta S. Jacobson, Assistant Sec'y, U.S. Dep't of State, to Carlos Rubinstein, Comm'r, Tex. Comm'n on Envtl. Quality (June 11, 2013), <https://www.tceq.texas.gov/assets/public/border/letter-from-state-to-TCEQ.pdf>.

310. Letter from Eddie Lucio III, Tex. House of Reps., to Carlos Rubinstein, Chairman, Tex. Water Dev. Bd., & Bryan W. Shaw, Chairman, Tex. Comm'n on Envtl. Quality (Aug. 1, 2014), <https://www.tceq.texas.gov/assets/public/border/TWDB-TCEQ-Letter-from-Lucio-080114.pdf>.

311. Letter from Governor Rick Perry, Tex., to President Barack Obama (Apr. 9, 2013), <https://www.tceq.texas.gov/assets/public/border/perry-letter-to-obama.pdf>.

312. See Letter from Edward Drusina to House Reps., *supra* note 299 (identifying efforts by the United States Section of the International Boundary and Water Commission to bring about Mexico's compliance).

313. See, e.g., Letter from Ray Prewett, President, Tex. Citrus Mut., to Sec'y John Kerry, U.S. Dep't of State (Apr. 15, 2013), <https://www.tceq.texas.gov/assets/public/border/TCM-letter.pdf> (requesting the federal government to permit Texas' participation in discussions with Mexico since the state understands its stakeholders' needs and the need to promulgate drought contingency plans and urging the U.S. Department of State, U.S. President, and the U.S. Section of the International Boundary and Water Commission "to elevate the discussions with Mexico to the highest level of our respective governments").

314. See Letter from Todd Staples & Carlos Rubinstein to Ambassador E. Anthony Wayne, *supra* note 308 (contending Mexico's noncompliance with the 1944 Treaty is exacerbating consequences of the drought).

the United States.³¹⁵

On June 10, 2013, U.S. Senators John Cornyn (R-Texas) and Ted Cruz (R-Texas) introduced legislation (Senate Bill 1125) titled, “Working to Address Treaty Enforcement Rapidly for Texas” or the WATER Act.³¹⁶ The Act would require Mexico to submit quarterly reports to the U.S. Secretary of State, enabling the Secretary to outline Mexico’s efforts to meet its Treaty of 1944 obligations.³¹⁷ Senate Bill 1125 is identical to House Bill 2307 and related to House Bill 1863, which was filed by U.S. House Representatives Filemon Vela (D-Brownsville) and Mike Conaway (R-Midland).³¹⁸ Senate Bill 1125 was read twice before the Senate and was referred to the Committee on Foreign Relations, which has not taken further action.³¹⁹ If Mexico failed to submit the required reports, the United States could withhold funds to Mexico needed to repair infrastructure damaged by the 2010 earthquake in the Baja California area.³²⁰

On December 16, 2014, the Consolidated and Further Continuing Appropriations Act³²¹ became law.³²² This Act requires the United States Section of the IBWC to “report to the Committees on Appropriations on various water delivery and accounting issues within [forty-five] days of enactment.”³²³ The U.S. Department of State itself submitted reports to Congress in 2014 and 2015 regarding the status of water delivered by Mexico.³²⁴

Clearly, the IBWC is responsible for resolving most water disputes

315. *See, e.g.*, Letter from House Reps. to President Obama, *supra* note 304 (urging President Obama to “take immediate action to ensure deliveries of Rio Grande water that will give Texas border communities the water they need and that they are owed” under the Treaty of 1944).

316. Working to Address Treaty Enforcement Rapidly for Texas Act, S. 1125, 113th Cong., § 1 (2013).

317. *See id.* § 2 (“The Secretary of State shall submit to Congress a report . . . describing efforts by Mexico to meet the treaty obligations of Mexico to deliver water to the Rio Grande . . .”).

318. *See All Bill Information (Except Text) for S.1125 – Working to Address Treaty Enforcement Rapidly for Texas Act*, CONGRESS.GOV, <http://www.congress.gov/bill/113th-congress/senate-bill/1125/all-info> (last visited Mar. 17, 2016) (dedicating a section to bills identical or related to Senate Bill 1125).

319. *Id.*

320. *See* Working to Address Treaty Enforcement Rapidly for Texas Act, S. 1125, 113th Cong., § 2 (2013) (asserting failure to comply with Senate Bill 1125 would result in the Secretary of State not extending Minute 319); *see also* MINUTE 319: INTERIM INTERNATIONAL COOPERATIVE MEASURES, *supra* note 228, at 13 (discussing the \$21 million the United States will contribute to Mexico for infrastructure projects under the pilot program).

321. Consolidated and Further Continuing Appropriations Act, 2015, Pub. L. No. 113-235, 128 Stat. 2130 (2014) (codified in scattered sections of U.S.C.).

322. CARTER ET AL., *supra* note 86, at Summary.

323. *Id.*

324. *Id.*

between the United States and Mexico since 1994, using technical expertise and diplomacy.³²⁵ The United States Section of the IBWC, with diplomatic support from the U.S. Department of State, has also been attempting to resolve the recurring water deficit problem with a long-term solution.³²⁶ In May 2010, IBWC Commissioners of both the United States and Mexico Sections, the United States Bureau of Reclamation Commissioners, the Commissioner of the Texas Commission on Environmental Quality, and the Director General of Mexico's National Water Commission met and "committed to exchange data that would enhance each country's understanding of the other's water management practices to help determine a water delivery schedule for the Rio Grande basin."³²⁷

Given the decreased water deliveries by Mexico in 2011, 2012, and 2013, the United States Section of the IBWC instigated an intense engagement with the IBWC's Mexican Section and has since maintained these efforts.³²⁸ The purpose of these engagements was to craft an innovative way for Mexican water deliveries to be more predictable.³²⁹ "The focus is designing a proactive Rio Grande basin water management model that would use historic data to better predict natural water flows throughout the basin and thereby provide a reliable basis for Mexico to set its future domestic and international water allocations."³³⁰

According to the United States Section of the IBWC, it continues to develop different models and tools to manage and account for water in the Rio Grande basin.³³¹

During 2013 and 2014, officials from the U.S. Embassy in Mexico and the U.S. Department of State raised the issue of increased water deliveries with Mexican officials.³³² Mexican President Enrique Peña Nieto reportedly instructed Mexico's Foreign Ministry to work with Mexico's Water Commission, the IBWC, the U.S. Department of State, and with authorities from Texas to resolve this dispute.³³³ These conversations

325. *Id.* at 15.

326. REPORT TO CONGRESS ON WATER DELIVERIES FROM MEXICO, *supra* note 187, at 2.

327. *Id.*

328. *Id.* at 3.

329. *Id.*

330. *Id.*

331. Telephone Interview with Sally Spener, *supra* note 175.

332. *See* REPORT TO CONGRESS ON WATER DELIVERIES FROM MEXICO, *supra* note 187, at 4 (explaining the diplomatic efforts in 2013 and the issues raised in 2014).

333. CARTER ET AL., *supra* note 86, at 15–16.

resulted in increased water deliveries by Mexico in 2013 and 2014.³³⁴ In 2015, the U.S. Department of State met with Mexican officials to discuss water issues.³³⁵ The IBWC organized a July 2015 meeting “in Texas with representatives from the state of Texas and Mexico’s national water agency” to discuss “covered basin water modeling efforts and various means to improve the predictability and compliance of Mexico’s water deliveries.”³³⁶

Mexican officials assured the United States Section of the IBWC and the U.S. Embassy that the Mexican government “intend[ed] to institute new basin-wide regulations in 2015 that would include water allocations for the United States.”³³⁷ These regulations, however, would not take effect until the 2015 to 2020 water cycle.³³⁸ The United States Section of the IBWC has provided no update on the completion and implementation, if any, of these regulations.³³⁹ These regulations are currently being developed and consulted domestically in Mexico.

So, despite all of these resolutions, letters, proposed and adopted legislation, and the continuing positive efforts by the United States Section of the IBWC—as well as numerous meetings between officials of the United States, Mexico, and Texas—Mexico failed to deliver the required amounts of water both under the Treaty of 1944 and Minute 309 on time, by October 24, 2015.³⁴⁰

X. FUTURE ACTIONS

The United States and Mexico have a basic and fundamental disagreement about the interpretation of the Treaty of 1944. The United States believes that Mexico is required to deliver 350,000 acre-feet of water annually over the course of a five-year cycle (unless Mexico is experiencing an extraordinary drought or has a serious accident to the hydraulic systems on the six measured tributaries). Conversely, Mexico believes it is only

334. See REPORT TO CONGRESS ON WATER DELIVERIES FROM MEXICO, *supra* note 187, at 4 (relating the increase in water deliveries in 2013 and the almost complete performance of Mexico’s obligations in 2014 to the U.S. Department of State’s efforts).

335. CARTER ET AL., *supra* note 86, at Summary.

336. *Id.*

337. REPORT TO CONGRESS ON WATER DELIVERIES FROM MEXICO, *supra* note 187, at 5.

338. *Id.* But see Clark, *supra* note 178 (reporting in January 2016. Mexico repaid its water debt during the 2010 to 2015 cycle). Edward Drusina, the Commissioner of the United States Section of the IBWC, announced, “This success exemplifies the cooperation that now exists between the United States and Mexico to address the water needs of both countries.” *Id.*

339. Telephone Interview with Sally Spener, *supra* note 175.

340. See *supra* note 178 and accompanying text.

required to deliver the cumulative amount of 1,750,000 acre-feet of water by the end of the five-year cycle.

Since Mexico has and likely will continue to experience recurring water deficits both under the Treaty of 1944 and Minute 309 based on its interpretation of the Treaty of 1994, what available options are left?

A. *Exhaust All Remedies with the International Boundary and Water Commission*

Clearly working within the framework of the IBWC is important because under Article 2 of the Treaty of 1944, “the regulation and exercise of the rights and obligations which the two Governments assume thereunder, and the settlement of all disputes to which its observance and execution may give rise are hereby entrusted to the International Boundary and Water Commission.”³⁴¹ However, if the Minute dispute resolution process does not resolve the fundamental difference in the interpretation of the Treaty of 1944 between the United States and Mexico, Article 24 of the Treaty of 1944 further provides the IBWC shall have the power and duty “to carry into execution and prevent the violation of [the Treaty of 1944], and each commissioner shall invoke[,] when necessary[,] the jurisdiction of the courts” in his country in carrying out its powers and duties.³⁴²

Thus, if Mexico continues to accumulate water deficits in the future, the United States needs to petition the IBWC to settle any differences or enforce the terms of the Treaty of 1944 and Minute 309 through the use of all remedies available to it under the Treaty, or both. If the IBWC is unable to successfully settle any differences or enforce the Treaty of 1944 and Minute 309, or both, the United States, led by Texas, can either attempt to settle the differences through diplomatic channels, pursue a new treaty with Mexico or pursue international litigation.

B. *Diplomatic Discussions Between the United States and Mexico*

When the dispute resolution process does not resolve the differences between the United States and Mexico, the Commissioner of the United States Section of the IBWC, the United States Secretary of State—and, if necessary—the Vice President or the President of the United States, or both, should continue discussions with the Commissioner of the Mexican Section of the IBWC and other senior level government officials in Mexico, including the Vice President or President of Mexico, or both, with

341. Treaty of 1944, *supra* note 9, art. 4.

342. *Id.* art. 24.

the goal of entering in an Article 24(d) (of the Treaty of 1944) special agreement specifically providing for consistent and predictable delivery of 350,000 acre-feet of water annually over the course of a five-year cycle in accordance with the terms of the Treaty of 1944 and Minute 309 for all current and future five-year cycles. This type of special agreement would avoid the need to renegotiate the terms of the Treaty of 1944. Without the intervention of senior level government officials from both the United States and Mexico, it is unlikely that future compliance with the terms of the Treaty of 1944 and Minute 309 will occur voluntarily or expeditiously.

It is important to point out this option is based on an absolutist view of the Treaty of 1944 and Minute 309 (i.e., compliance with the terms of the Treaty of 1944 and Minute 309) without taking into consideration any other factors.

It may also be possible to utilize the North American Free Trade Agreement as a vehicle to file claims against Mexico.³⁴³ Any claims, however, would only occur before an arbitration panel that follows the rules of either the International Centre for the Settlement of Investment Disputes (ICSID) or the United Nations Commission on International Trade Law (UNCITRAL).³⁴⁴

It has become apparent to the authors that the issue of climate change must be factored into the discussion. Existing research suggests climate change is causing an increase in the average temperature and a decrease in average precipitation, which is impacting agriculture in Mexico and causing migration to the United States.³⁴⁵ Other experts believe that “[c]limate change impacts in the United States have big implications for

343. Robert M. Barnett, of the law firm of Cacheaux, Cavazos & Newton, LLP in San Antonio, Texas, is a well-known legal authority on the North American Free Trade Agreement (NAFTA). Mr. Barnett peer-reviewed this Article. In Mr. Barnett’s view, “Chapter 11 of NAFTA allows private parties (companies, trade groups, individuals, etc.) to file legal claims against the governments of the contracting states (Mexico, U.S.[,] and Canada).” Email from Robert M. Barnett to Dan Naranjo (Dec. 2, 2015, 15:13 CST) (on file with the *St. Mary’s Law Journal*). Mr. Barnett states he “could conceive of the agricultural groups banding together to fund such a Chapter 11 claim under the NAFTA against Mexico based on discrimination and failure to provide national treatment (i.e., Mexican companies, especially dairies in the Concho River valley in Mexico, get their water while U.S. producers are left out).” *Id.* Mr. Barnett further believes “Chapter 11 provides that the defense of sovereign immunity is not available in Chapter 11 cases.” *Id.*

344. North American Free Trade Agreement, Can.-Mex.-U.S., Dec. 17, 1992, 32 I.L.M. 289 (1993). Discussion of NAFTA, however, is beyond the scope of this Article.

345. See Ashley Murray, *Climate Change Forces Mexican Workers to Migrate*, ALLEGHENY FRONT (Mar. 28, 2014), <http://www.alleghenyfront.org/story/climate-change-forces-mexican-farmers-migrate> (“Some estimates say that tens or even hundreds of millions of people might have to move across borders or internally because of severe climate changes.”).

economics, . . . agriculture[,] [and] . . . jobs.”³⁴⁶ Consequently, the discussions may ultimately have to concede that the threshold levels in the Treaty of 1944 are no longer sustainable and must be revised.

As noted Texas historian Walter Prescott Webb has stated, “The unhappy fact is that in some of the areas the situation is such that neither engineering skill nor reasonable expenditures of money can make any fundamental change Man must continue to adapt his life and institutions to a scarcity rather than an abundance of water.”³⁴⁷

C. *Attempt to Negotiate a New Treaty with Mexico*

Negotiating a new treaty is strongly recommended, as it would allow both countries to (a) clarify the annual 350,000 acre-feet requirement; (b) clarify the definition of extraordinary drought; (c) factor conservation storage capacity in meeting the annual 350,000 acre-feet requirement; (d) incorporate the conveyance of saved water from the Rio Concho basin pursuant to Minute 309 and clarify that conveyance of saved water is in addition to the annual 350,000 acre-feet requirement; (e) clarify that the United States can use excess flows from Mexico when the United States can put the water to beneficial use; (f) clarify that Mexico shall deliver to the United States water from the Rio San Juan and Rio Alamo when necessary; (g) incorporate the naturalized flow concept; (h) incorporate groundwater and surface water interaction; (i) incorporate water quality; (j) incorporate management of the upper and lower basins of the Rio Grande so that the Treaty of 1944 is consistent with the 1938 Rio Grande Compact between Texas, New Mexico, and Colorado;³⁴⁸ (k) incorporate Mexican reservoir management; (l) incorporate environmental and species protection; and (m) strengthen the enforcement powers of the IBWC and rights and remedies of each of the parties in the event the IBWC is unable

346. *Id.*

347. WEBB, *supra* note 153, at 4.

348. *See generally* J. PHILLIP KING & JULIE MAITLAND, WORLD WILDLIFE FUND, WATER FOR RIVER RESTORATION: POTENTIAL FOR COLLABORATION BETWEEN AGRICULTURAL AND ENVIRONMENTAL WATER USERS IN THE RIO GRANDE PROJECT AREA (2003), http://www.globalrestorationnetwork.org/uploads/files/LiteratureAttachments/470_water-for-river-restoration---rio-grande-project-area.pdf (providing background and extensive discussion of the Rio Grande Compact). The Rio Grande Compact between the States of Colorado, New Mexico, and Texas addresses the use of the waters of the Rio Grande above Fort Quitman, Texas. *Id.* at 16. The compact was signed by the three states in 1938. *Id.* It was ratified by Colorado's legislature on February 21, 1939. *Id.* at 148. The legislatures of New Mexico and Texas ratified the compact on March 1, 1939. *Id.* The compact was then adopted by the U.S. Congress on December 19, 1939 and subsequently amended on February 25, 1952. *Id.* Discussion of the compact, however, is beyond the scope of this Article.

to ensure each country complies with the new treaty.

It is unlikely Mexico would entertain any such renegotiation discussions of the Treaty of 1944, especially given all of the other current issues between the United States and Mexico.³⁴⁹

D. Consider Litigation with the International Court of Justice

If Mexico continues to accumulate future water deficits that impact agricultural and municipal sectors in south Texas, the United States may need to consider litigation against Mexico. The litigation, if pursued, should be filed with the International Court of Justice. The action should be both in the form of a declaratory action and an action for specific performance by Mexico. The United States, and more specifically the lower Rio Grande Valley, critically needs water.³⁵⁰ The act of pursuing litigation against Mexico may ultimately lead to mediation, which could incorporate the renegotiation of a new treaty as part of the dispute resolution.³⁵¹ It should be noted that in 1973, Mexico threatened to take a Colorado River dispute to the International Court of Justice.³⁵² This dispute was resolved by Minute 242.³⁵³ Thus, the use of the International Court of Justice has certainly been contemplated before in connection with a water dispute between the United States and Mexico.

1. The International Court of Justice (ICJ)

The United Nations (UN) created the world's most recognized, authoritative intergovernmental organization dealing with international legal issues: the International Court of Justice.³⁵⁴ The main purpose of the ICJ is to settle civil disputes between UN member states, though the court will under certain circumstances issue advisory opinions to the UN

349. See Mosqueda, *supra* note 259 ("As the Rio Grande runs dry, Texas and Mexico fight for a diminishing resource.").

350. See *id.* (outlining how concerned Texans are in regard to the lack of water); see also Luis A. Ribera & Dean McCorkle, *Economic Impact Estimate of Irrigation Water Shortages on the Lower Rio Grande Valley Agriculture*, TEX. A&M AGRILIFE EXTENSION SERV. 4 (2013), <http://agecoext.tamu.edu/files/2013/08/EconImpactIrrigWaterShortLRGV.pdf> (highlighting the significant negative implications of Mexico's failure to deliver water needed by Texas farmers).

351. The United States may want to explore the use of the Permanent Court of Arbitration to resolve the water deficit dispute. See discussion *infra* Section X.E.

352. CARTER ET AL., *supra* note 86, at 8.

353. *Id.*; INT'L BOUNDARY & WATER COMM'N, MINUTE 242: PERMANENT AND DEFINITIVE SOLUTION TO THE INTERNATIONAL PROBLEM OF THE SALINITY OF THE COLORADO RIVER (1973), <http://www.ibwc.gov/Files/Minutes/Min 242.pdf>.

354. See *The Court*, *supra* note 6 (providing a brief history of the ICJ).

and its selected agencies.³⁵⁵ The ICJ does not try criminals of any sort; instead, the ICJ addresses international grievances,³⁵⁶ as the highest authority on international law in the world.³⁵⁷

As the judicial heart of the UN, the ICJ is an ideal venue for countries to bring international cases to be resolved to prevent tense, volatile escalations. “The ICJ is one of the UN’s six principal organs” and is the “only international court of a universal character with general jurisdiction.”³⁵⁸ The court “is composed of fifteen judges, elected for terms of nine years in separate but simultaneous elections by the General Assembly and the Council.”³⁵⁹ Additionally, “All UN member states are parties to the ICJ Statute, which is an annex to the UN Charter.”³⁶⁰

The court’s appointment of arbitrators is important for two important reasons. First, international arbitrators may well be able to assist the court uphold international law as appointees. Second, the selection process has, at its core, neutrality—the process of determining the arbitrator—that ensures justice is upheld.³⁶¹ This desire to work neutrally within the confines of international law exemplifies the value of the ICJ, to attorneys and the parties they represent in the United States and abroad.

More than likely, the ICJ will become increasingly involved in environmental law—with the evolution and increase of issues such as pollution, climate change, natural resources, and protection of endangered species. The ICJ has a history of dealing with both natural resource issues and treaty interpretation; for that reason, important international issues like the U.S.–Mexico water dispute could be resolved by the ICJ.

2. ICJ Water Disputes

One example of the ICJ’s ability to successfully facilitate an agreement in a water dispute occurred in 1997, when Hungary accused Slovakia of

355. *See id.* (“The Court’s role is to settle, in accordance with international law, legal disputes submitted to it by States and to give advisory opinions on legal questions referred to it by authorized United Nations organs and specialized agencies.”).

356. *See The Court: How the Court Works*, INT’L CT. JUST., <http://www.icj-cij.org/court/index.php?p1=1&p2=6> (last visited Mar. 17, 2016) (limiting the types of cases the court oversees to contentious cases and advisory proceedings).

357. *See id.* (asserting the court applies international law to settle its cases).

358. UNITED NATIONS SEC. COUNCIL, SECURITY COUNCIL REPORT: JUNE 2010 MONTHLY FORECAST 21 (2010), <http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/June%202010%20Forecast.pdf>.

359. *Id.*

360. *Id.*

361. *See id.* (describing the process of electing a justice to fill the vacancy of another justice’s seat).

violating Hungary's water rights by unilaterally diverting a portion of the river to a newly constructed Slovakian-controlled dam on the Danube River.³⁶² Slovakia claimed it had the right, under a prior cooperative treaty with Hungary, to construct the dam for production of flood control as part of the requirements for hydroelectricity generation.³⁶³ The court held Slovakia was partially entitled to build the provisional dam and divert the Danube, but both countries had to engage in good faith negotiations to ensure that both of their rights and objectives would be met under the agreement.³⁶⁴ This creative solution highlights why the ICJ would be an excellent forum to resolve the dispute between the United States and Mexico.

The ICJ's resolution of the dispute between Hungary and Slovakia is only one example that supports using the ICJ to resolve international conflicts regarding water.³⁶⁵ Another example of the ICJ providing resolution in an international water case occurred between Great Britain and Germany and their spheres of influence in Africa, after prolonged unsuccessful attempts to resolve the interpretation of an 1890 treaty.³⁶⁶ Namibia and Botswana took their dispute to the ICJ in the mid-nineties,³⁶⁷ and after considering the different theories, provisions of the treaty, and the parties' interpretations of the law and facts, the court issued its decision in 1999—concluding the deep points of navigation across the river constitute the boundary between the two countries.³⁶⁸

In 2002, the ICJ ruled on a similar case between Cameroon and Nigeria.³⁶⁹ This dispute was over the sovereignty and maritime boundaries of the Bakassi, the specific border extending between Lake Chad and the Gulf of Guinea, the maritime boundaries of Lake Chad.³⁷⁰

362. Gabsikovo-Nagymaros Project (Hung. v. Slov.), Judgment, 1997 I.C.J. Rep. 7, ¶ 13 (Sept. 25).

363. *Id.* ¶¶ 13–15, 22–23.

364. *Id.* ¶¶ 132–139, 141–43, 155.

365. *See, e.g., id.* (adjudicating an international dispute between Hungary and Slovakia that involved the use of the Danube River, which constitutes a portion of the border between the two countries).

366. *See* Salman M. A. Salman, *International Rivers As Boundaries: The Dispute over Kasikili–Sedudu Island and the Decision of the International Court of Justice*, 25 WATER INT'L 580, 582 (2000) (detailing the ICJ's adjudication of a century-old dispute based on the differences in translations between the German and English version of the 1890 Treaty).

367. *Id.*

368. *Id.*

369. The Land and Maritime Boundary Between Cameroon and Nigeria (Nigeria v. Cameroon: Equatorial Guinea Intervening), Judgment, 2002 I.C.J. Rep. 303 (Oct. 10).

370. *Id.* ¶¶ 1, 3.

The court's ruling in this case was based on a series of agreements between the parties, or governing authorities at the time, and the use of the Lake Chad Basin Commission's demarcation, among others, as an interpretive tool for those agreements.³⁷¹

Another international water dispute resolved by the ICJ arose between Benin and Niger over their shared border, which included the Mekrou River, the Niger River sectors, and numerous islands within the Niger River.³⁷² In this case, Niger based its claim to the Niger River sector on the theory that the deepest soundings in the Niger River, "as determined at the date of independence," constituted the appropriate set of boundaries.³⁷³ Benin, however, claimed the proper boundary for the disputed portion was the eastern bank, which extended its sovereignty over all of the disputed islands.³⁷⁴ This dispute was eventually referred by the two parties to the ICJ, and the court ruled in favor of Niger in 2005.³⁷⁵ Here, the court acknowledged the Lake Chad Basin Commission is authorized by the riparian states to delineate the boundaries in areas not covered by agreements and advised the Commission to embark on that task.³⁷⁶

In September 2005, the ICJ registered another similar water dispute, which occurred in Central America.³⁷⁷ This dispute arose between Costa Rica and Nicaragua over the San Juan River.³⁷⁸ Both countries agreed that under an 1858 treaty, Nicaragua was recognized as the owner of the entire San Juan River, while Costa Rica was afforded navigational rights on the lower course of the river.³⁷⁹ However, Costa Rica, when objecting to Nicaraguan-imposed restrictions and regulations, asserted it was entitled to the rights of boats and passengers—including tourists—to navigate freely and without impediment for commercial purposes without charge.³⁸⁰ The court found that while Nicaragua was entitled to reasonable regulation over its sovereign territory, it could not impose any substantially detrimental burdens on Costa Rica's right to navigate freely in the lower

371. *Id.* ¶¶ 33–38, 52–60, 73–191, 261–68.

372. Frontier Dispute (Benin v. Niger), Judgment, 2005 I.C.J. Rep. 90, ¶¶ 2, 17 (July 12).

373. *Id.* ¶¶ 15–17.

374. *Id.*

375. *Id.* ¶¶ 103, 107, 109–15, 145–46.

376. *Id.* ¶¶ 41, 103, 107, 109–15, 145–46.

377. Dispute Regarding Navigational and Related Rights (Costa Rica v. Nicaragua), Judgment, 2009 I.C.J. Rep. 213, ¶ 1 (July 13).

378. *Id.* ¶¶ 12–13.

379. *Id.* ¶ 19.

380. *Id.* ¶¶ 13, 19–20, 29.

course of the river for commercial purposes nor interfere with subsistence fishing by local Costa Ricans living on the banks.³⁸¹

With the evolution and increase of issues, such as pollution, climate change, natural resources, and protection of endangered species, it is more than likely that the ICJ will become increasingly involved in environmental law.³⁸² The ICJ has a history of dealing with both natural resource issues and treaty interpretation;³⁸³ for that reason, important international issues like the U.S.–Mexico water dispute could be resolved by the ICJ.³⁸⁴ More international disputes are likely to arise along the longest international border of any of U.S. state, but unless attorneys are aware of the ICJ and other neutral bodies and the processes and powers they hold, it is unlikely these issues will be resolved any time in the near future.

E. *The Permanent Court of Arbitration (PCA)*

Another important alternative dispute resolution resource is the Permanent Court of Arbitration (PCA), also known as the Hague Tribunal.³⁸⁵ The establishment of the PCA, which is based in the Netherlands, was the important and widely lauded result of the 1899 Hague Peace Conference.³⁸⁶ Currently, the PCA has over 117 member states, and this number continues to increase.³⁸⁷ Significantly, both the

381. *Id.* ¶¶ 70–71, 79–80, 83–87, 97, 107, 110, 117–19, 122, 125–29, 133, 156.

382. *See* Salman, *supra* note 366, at 582 (praising Namibia and Botswana for using the International Court of Justice to resolve a riparian dispute in light of the environmental and navigability issues involved and contrasting the final resolution to the armed conflict that similar disputes caused in neighboring countries).

383. *See The Court: History*, INT'L CT. JUST., <http://icj-cij.org/court/index.php?p1=1&p2=1#Hague> (last visited Mar. 17, 2016) (stating the history of the International Court of Justice in adjudicating international disputes and its duties, such as interpreting treaties and contributing to the evolution of international law); *see also* Gabsikovo-Nagymaros Project (Hung. v. Slov.), *supra* note 362 (adjudicating an international dispute centering around a joint treaty between Hungary and Slovakia that involved the use of the Danube River, which constitutes a portion of the border between the two countries).

384. *See* Salman, *supra* note 366, at 585 (discussing international riparian borders and the complex issues that arise in disputes due to the multiple uses of rivers in combination with environmental concerns).

385. *The Court: History*, *supra* note 383.

386. *See* Convention Between the United States and Certain Powers for the Pacific Settlement of International Disputes art. 20, July 29, 1899, 32 Stat. 1779 [hereinafter 1899 Convention for the Pacific Settlement of International Disputes] (establishing the Permanent Court of Arbitration as a means for arbitrating international disputes); *History*, PERMANENT CT. ARB., <https://pca-cpa.org/en/about/introduction/history> (last visited Mar. 17, 2016) (describing the creation of the PCA as “the most concrete achievement of the” 1899 Conference).

387. *See About Us: Member States*, PERMANENT CT. ARB., <https://pca-cpa.org/en/about/introduction/member-states> (last visited Mar. 17, 2016) (listing the 117 members of the PCA).

United States and Mexico are member states.³⁸⁸ The PCA deals with cases submitted by consent of the parties involved and handles cases between countries and cases between countries and private parties.³⁸⁹ Initially, the PCA only heard arbitration cases between states.³⁹⁰ However, in the 1930s, the PCA's activities were "further extended by allowing its facilities to be used in proceedings between international intergovernmental organizations or between such an organization and a private party."³⁹¹ Under its own modern rules of procedure, the PCA administers arbitration, conciliation, and fact-finding in disputes involving various combinations of states, private parties, and intergovernmental organizations.³⁹² States frequently seek recourse through the PCA, and international commercial arbitration can also be conducted under PCA avenues.³⁹³

In 2003, a border dispute between Ethiopia and Eritrea underscored the value of international dispute resolution, again placing the PCA into the international limelight.³⁹⁴ When the conflict turned increasingly more violent, prior hostilities between the two African nation-states catalyzed a two-year war.³⁹⁵ Eventually, a five-person "Claims Commission" was

388. *Members of the Permanent Court of Arbitration*, PERMANENT CT. ARB., <https://pca-cpa.org/wp-content/uploads/sites/175/2016/01/Current-List-Annex-1-MC-updated-20151222.pdf> (last visited Mar. 17, 2016) (stating each member country and their panelists for the tribunal as required in Article 23 of the 1899 Convention).

389. See Johan G. Lammers, *Another Centenary for the Permanent Court of Arbitration*, NEWSLETTER (Permanent Ct. of Arb., The Hague, Neth.), June 2007, at 1, http://archive.pca-cpa.org/LammersEN7940.pdf?fil_id=609 (discussing types of arbitration cases the PCA decides).

390. *Id.*

391. *Id.*

392. *Id.* at 2. Fact-finding, in this context, is done through an International Commission of Inquiry to resolve variance on questions of fact. See 1899 Convention for the Pacific Settlement of International Disputes, *supra* note 387, art. 9 (allowing the parties to "institute an International Commission of Inquiry, to facilitate a solution of . . . differences by elucidating the facts by means of an impartial and conscientious investigation"); see also Convention Between the United States and Certain Powers for the Pacific Settlement of International Disputes art. 9, Oct. 18, 1907, 36 Stat. 2199 [hereinafter 1907 Convention for the Pacific Settlement of International Disputes] (echoing the same language as the 1899 Convention that allows the International Commission of Inquiry to decide disputes through a fact investigation).

393. See Lammers, *supra* note 389, at 1 (highlighting the spike in new cases arbitrated by the PCA since its hundred-year anniversary).

394. See *id.* (discussing the PCA's role in arbitrating the Ethiopia and Eritrea dispute); see also Press Release, Permanent Court of Arbitration, Eri.-Eth. Claims Comm'n Renders Final Awards on Damages (Aug. 17, 2009), http://archive.pca-cpa.org/EECC%20Final%20Awards%20Press%20Release70e7.pdf?fil_id=1258 [hereinafter Press Release, Eri.-Eth. Claims Comm'n Renders Final Awards on Damages] (showing the Claims Commission of the PCA awarded compensation to both Eritrea and Ethiopia for violating international law).

395. Lammers, *supra* note 389, at 4; Press Release, Eri.-Eth. Claims Comm'n Renders Final

established to arbitrate issues on injury and compensation.³⁹⁶ During the arbitration proceedings, both countries made similar claims, asserting the other had mistreated prisoners of war, engaged in improper military operations, mistreated civilians, and negatively impacted the economy.³⁹⁷ The Claims Commission required each country to compensate the other financially for the damages.³⁹⁸

The primary focus of the PCA in the area of international environmental law is the promotion of international arbitration as a dispute avoidance and settlement mechanism for international environmental issues.³⁹⁹ In acknowledgment of the growing importance of environmental affairs in the modern world, the PCA has established an elaborate environmental dispute resolution mechanism by adopting the Permanent Court of Arbitration Optional Rules for Arbitration of Disputes Relating to Natural Resources and/or the Environment.⁴⁰⁰ Notably, “special rules of procedure have . . . been drawn up for arbitration . . . for the particular category of disputes relating to natural resources and/or the environment, with provision being made for the Secretary-General of the PCA to draw up lists of legal and scientific/technical experts whom the parties to a dispute can” rely upon.⁴⁰¹ These rules of procedure are optional.⁴⁰²

Because the PCA and ICJ are perfectly situated at the juncture between public and private international law, they can meet the rapidly evolving needs for international dispute resolution. Thus, the legal community will more than likely make use of these valuable resources in the near future, especially when it comes to the ever-increasing priority of environmental

Awards on Damages, *supra* note 394.

396. Lammers, *supra* note 389, at 1; Press Release, Eri.–Eth. Claims Comm’n Renders Final Awards on Damages, *supra* note 394.

397. Press Release, Eri.–Eth. Claims Comm’n Renders Final Awards on Damages, *supra* note 394.

398. *Cases: Eritrea-Ethiopia Claims Commission*, PERMANENT CT. ARB., http://www.pca-cpa.org/showpaged21e.html?pag_id=1151 (last visited Mar. 17, 2016) (presenting the claims Eritrea and Ethiopia brought against the other).

399. *See* PERMANENT COURT OF ARBITRATION, OPTIONAL RULES FOR ARBITRATION OF DISPUTES RELATING TO NATURAL RESOURCES AND/OR THE ENVIRONMENT 183 (2001), https://pca-cpa.org/wp-content/uploads/sites/175/2016/01/Optional-Rules-for-Conciliation-of-Disputes-Relating-to-the-Environment-and_or-Natural-Resources.pdf [hereinafter OPTIONAL RULES] (declaring one of the objectives of the Optional Rules is to provide a means of resolving environmental disputes between countries).

400. *See id.* (tailoring rules to account for the particularities of disputes over the environment and natural resources).

401. Lammers, *supra* note 389, at 3.

402. OPTIONAL RULES, *supra* note 399.

affairs in our modern world.

Decades of continuous discussions have failed to resolve this water conflict between Mexico and the United States, including the multiple treaties and agreements discussed herein. Having visited the International Court of Justice at The Hague and having seen the process and results that this court has provided with regard to cases of equally or even greater capacity, the ICJ exemplifies the enormous potential for resolution of environmental disputes on an international level. The ICJ and the PCA are clearly options for resolution that, to date, have been overlooked by both countries. However, the duration and enormity of this dispute should be motivating factors for these two neighboring countries to consider the ICJ or the PCA as an option for resolving this long-standing issue.

F. *Comparison of the ICJ and the PCA*

Those unfamiliar with the two courts in the Peace Palace⁴⁰³ may question whether there is a need for something like the PCA alongside the ICJ. After evaluating the two venues, one would most assuredly answer in the affirmative, for reasons explained below.

First, a case heard by the ICJ does not have to be heard by the full court.⁴⁰⁴ “A case can be handled by a Chamber, which must consist of judges from the [c]ourt, possibly with one or two *ad hoc* judges.”⁴⁰⁵ Second, “the ICJ can only hear disputes between states, on the basis of international public law” included in its statute.⁴⁰⁶ Also, the United Nations and its agencies can refer cases to the ICJ but can only do so under certain conditions and only to “request a non-legally-binding

403. *The Court: History*, *supra* note 383 (stating the Peace Palace is a building located in The Hague, which was built by the Carnegie Foundation).

404. *See The Court: Chambers and Committees*, INT'L CT. JUST., <http://www.icj-cij.org/court/index.php?p1=1&p2=4> (last visited Mar. 17, 2016) (describing permanent and temporary chambers that can hear cases in addition to the full court).

405. Lammers, *supra* note 389, at 2.

406. *Id.*; *see* U.N. Charter arts. 92–94, 96 (establishing the ICJ as the “principle judicial organ of the United Nations” and discussing how a State may become party to the Statute of the International Court of Justice); Statute of the International Court of Justice arts. 35–36, June 26, 1945, 59 Stat. 1055 (“Only states may be parties in cases before the Court. . . . The Court shall be open to the states parties to the present Statute. . . . The conditions under which the Court shall be open to other states shall, subject to the special provisions contained in treaties in force, be laid down by the Security Council, but in no case shall such conditions place the parties in a position of inequality before the Court. . . . The jurisdiction of the Court comprises all cases which the parties refer to it and all matters specially provided for in the Charter of the United Nations or in treaties and conventions in force.”).

opinion from the ICJ on an issue of law.”⁴⁰⁷ Lastly, in disputes before the ICJ, the parties base their positions “not only on the relevant provisions of the UN Charter and the Statutes of the ICJ[] but also on the rules of the ICJ.”⁴⁰⁸

The PCA, on the other hand, has “drawn up modern rules of procedure for arbitration, conciliation commissions and commissions of inquiry.”⁴⁰⁹ Disputes seen at the PCA are based on the arbitration rules of the UN Commission on International Trade Law (UNCITRAL).⁴¹⁰ The PCA can be used by states, international organizations, companies and individuals as long as one state or intergovernmental organization is a party to the arbitration.⁴¹¹ Not only are the PCA’s services available for arbitral tribunals, which resolve and settle disputes that are binding on the parties, but the court is also available for commissions of inquiry and can issue non-binding judgments, which “must remain strictly limited to a judgment on facts on which the parties’ opinions differ.”⁴¹²

In the PCA, each member state is entitled to designate up to four members of “known competency in questions of international law, of the highest moral reputation and disposed to accept the duties of arbitrators.”⁴¹³ The PCA also comprises an Administrative Council, made up of diplomatic representatives of the signatory states.⁴¹⁴ However, in the event of a dispute, parties also have the option of having their case settled by an International Bureau, which also makes its registry and other facilities available to an arbitration tribunal constituted on a different basis by the parties.⁴¹⁵

Unlike the ICJ, the PCA is not only an interstate court but is also available to other parties.⁴¹⁶ Litigants may apply for arbitration,

407. Statute of the International Court of Justice, *supra* note 406, art. 65; see *How the Court Works*, *supra* note 356 (“The United Nations General Assembly and Security Council may request advisory opinions on ‘any legal question.’”).

408. Lammers, *supra* note 389, at 2.

409. *Id.*

410. *Id.*

411. *Id.*

412. *Id.*

413. *About Us: Members of the Court*, PERMANENT CT. ARB., <https://pca-cpa.org/en/about/structure/members-of-the-court> (last visited Mar. 17, 2016).

414. *Administrative Council*, PERMANENT CT. OF ARB., <https://pca-cpa.org/en/about/structure/administrative-council> (last visited Mar. 17, 2016).

415. U.N. CONF. ON TRADE AND DEV., COURSE ON DISPUTE SETTLEMENT IN INTERNATIONAL TRADE, INVESTMENT AND INTELLECTUAL PROPERTY: 1.3 PERMANENT COURT OF ARBITRATION ch. 2.2 (2003), http://unctad.org/en/docs/edmmisc232add26_en.pdf.

416. Lammers, *supra* note 389, at 1.

mediation, or an examination of the facts.⁴¹⁷ Organizations, private enterprises, and even private individuals, may request assistance from the PCA to solve a dispute with a state.⁴¹⁸

The PCA also differs from the ICJ because it does not consist of a fixed court of international judges residing in The Hague.⁴¹⁹ The parties involved in a dispute compose their own arbitration tribunal.⁴²⁰

Membership in the PCA requires member states actively support arbitration and other forms of dispute resolution, such as conciliation and an examination of the facts.⁴²¹ At the ICJ, one state may unilaterally summon another state to appear before the court, whereas the parties involved in PCA cases have to give their consent to the proceedings.⁴²²

Another benefit of the PCA is the proceedings heard in this court can remain entirely confidential, should the parties desire to keep their dispute confidential and non-public.⁴²³ This is not possible with the ICJ.⁴²⁴

From 1999 until June 2006, PCA membership rose dramatically, and today there are 117 members.⁴²⁵ “[T]alented staff from other arbitration institutions and leading law firms in both Europe and North America” have contributed to the increase in members of the PCA.⁴²⁶ Since 1999, there has been a remarkable increase in the number of cases as well.⁴²⁷ The impressive growth in the number of cases in the last few years shows the immense trust placed in the quality and expertise of the PCA by the international community.

417. *Id.*

418. *Id.* In cases where private parties or non-state parties are seeking the assistance of the PCA, at least one party to the arbitration must be a state or intergovernmental organization. *Id.*

419. 1907 Convention for the Pacific Settlement of International Disputes, *supra* note 392, arts. 2–8; *Permanent Court of Arbitration*, HAGUE JUST. PORTAL, <http://www.haguejusticeportal.net/index.php?id=311> (last visited Mar. 17, 2016).

420. *Permanent Court of Arbitration*, *supra* note 419.

421. *Id.*

422. See U.N. DEP'T OF PUB. INFO., THE INTERNATIONAL COURT OF JUSTICE: QUESTIONS AND ANSWERS ABOUT THE PRINCIPAL JUDICIAL ORGAN OF THE UNITED NATIONS 4–6 (2000) (describing the compulsory jurisdiction of the ICJ as a departure from the PCIJ and PCA policy of consent to jurisdiction by the parties).

423. Lammers, *supra* note 389, at 3.

424. *Id.*

425. See *About Us: Member States*, *supra* note 387 (stating 117 nations have acceded to at least one of the PCA's founding 1899 or 1907 Conventions); Lammers, *supra* note 389, at 3 (“The PCA's membership amounted to 106 states in June 2006, a rise around 20% compared to the membership at the time of the centenary in 1999.”).

426. *Id.*

427. Lammers, *supra* note 389, at 3.

G. Resolution Bound

Independent, international judicial bodies, such as the ICJ and the PCA, are ideally situated at the juncture between public and private international law to best meet the needs of rapidly evolving international dispute resolutions. Accordingly, both these agencies are undoubtedly qualified and capable of efficiently and effectively ameliorating the stagnant nature of United States' water conflict with Mexico. Because of the high potential and probability of increased international disputes likely to arise along this international border, it is imperative to consider the ICJ and PCA as neutral bodies, with the processes and powers they maintain, and as a valuable alternative for resolution in this significant dispute.

The desire to work neutrally within the confines of international law exemplifies the value of the ICJ, and the PCA to the parties they represent—here in the United States and in Mexico. To resolve this significant dispute, these two countries should strongly consider bringing this issue before the ICJ or the PCA. Otherwise, it is unlikely this water dispute will be resolved any time within the near future.

The authors acknowledge the immediate need for prompt accommodation and resolution of the water quandary between the United States and Mexico. Careful review of the prolonged history of coordinated efforts between these two countries, despite limited success, confirms the significance of this emergency environmental concern.

In the world of Alternative Dispute Resolution, negotiating parties often utilize the word “accommodate.” This term is a Latin-based verb, which, in its infinitive form, translates to the following: “(1) to make fit; adjust; adapt . . . (2) to reconcile . . . (3) to help by supplying . . . , (4) to do a service or favor for. . . .”⁴²⁸ As civil societies, both the United States and Mexico have repeatedly demonstrated their willingness to provide accommodations to one another over time, both understanding that any productive relationship demands such accommodation.⁴²⁹

Key policymakers in both countries should seek an accommodation or compromise for this water dispute, which desperately is in need of resolution. Resorting to the ICJ or the PCA should be a high priority issue for diplomats and Congressional officials of both countries, as these venues provide a viable potential resolution for this long-standing,

428. *Accommodate*, WEBSTER'S NEW WORLD DICTIONARY 8 (3d Coll. ed. 1988).

429. *See, e.g.*, Treaty to Resolve Pending Boundary Differences and Maintain the Rio Grande and Colorado River as the International Boundary, *supra* note 145 (resolving boundary disputes between the United States and Mexico with regard to the riparian boundary of the Rio Grande and the maritime boundaries in the Gulf of Mexico and Pacific Ocean).

international water dispute.

XI. CONCLUSION

Mexico has on several occasions delivered water to the United States under the Treaty of 1944 in quantities less than required by the Treaty. The International Court of Justice at The Hague would be the ideal venue where this complex dispute should be resolved. However, if the parties so choose, the Permanent Court of Arbitration, a distinct entity from the International Court of Justice, should be considered as an alternative.

The period from October 3, 1992 to September 30, 2002 involved two (2) five-year cycles. In the five-year cycle from October 3, 1992 to October 2, 1997, Mexico failed to deliver the annual 350,000 acre-feet amounts in 1994 and 1995, resulting in a deficit in the five-year water cycle. From October 3, 1997 to September 30, 2002, Mexico again failed to deliver the annual 350,000 acre-feet amounts in 1998 and 2001, once again resulting in a deficit in the five-year cycle. Under the Treaty of 1944, the 1992 to 1997 deficits should have been made up in the 1997 to 2002 cycle, but they were not because the 1997 to 2002 cycle also resulted in a deficit. Mexico's deficit of 1.5 million acre-feet from 1992 to 2002 was finally made up in 2005.

In the last five-year cycle that began on October 25, 2010 and ended on October 24, 2015, Mexico delivered only 1,486,750 acre-feet to Texas. This means that Mexico's obligation created a 263,250 acre-feet deficit by the end of the five-year cycle. Thankfully, the 2010 to 2015 deficit of 263,250 acre-feet was also made up in the new 2015 to 2020 five-year cycle that began on October 25, 2015 and will end on October 24, 2020.

Nevertheless, even in times of drought conditions that are less than extraordinary, Mexico could have completely or substantially complied with the Treaty of 1944 and Minute 309 and delivered its contractual water obligations consistently throughout the 2010 to 2015 five-year cycle. The fact the 2010 to 2015 water deficit was made up so quickly at the beginning of the new 2015 to 2020 five-year cycle arguably indicates Mexico had the water and could have delivered it when it was due. Because of Mexico's recurring deficient water deliveries—during which time the United States has consistently fulfilled its Treaty obligations, regardless of drought—farmers and municipal residents along the south Texas border have been adversely impacted. The economic impact on the farmers of south Texas has been dire. Texas is one of the leaders in agriculture and livestock production in the United States. Because of the water deficits—due in part to Mexico's failure to fulfill its treaty

obligations—south Texas has experienced regional job losses, millions lost annually in business activity (i.e., in excess of \$600 million in 2012), and water shortage impacting more than 800,000 residents.

Mexico and the United States recently dedicated the Tornillo–Guadalupe international bridge, located in a rural area about thirty miles downstream from El Paso.⁴³⁰ Such a bridge dedication is symbolic of the importance of both countries building their future together with trust, openness, and full integration—rather than with fears, resentments, or false accusations. This critical binational relationship requires continuing collaboration to build the essential water infrastructure—on both sides of the border—so as to facilitate lawful trade along the southwest border. When the 2010 to 2015 deficit was made up early in the 2015 to 2020 five-year cycle, the media reported this exemplified cooperation between the United States and Mexico.⁴³¹

This binational cooperation cannot and should not be diminished. However, the United States and Mexico have independently attempted numerous times to resolve these issues to ensure Mexico’s compliance with the Treaty of 1944 and Minute 309, without total success—because of a fundamental disagreement between the United States and Mexico about the interpretation of the Treaty of 1944, which has and will continue to exist. To reiterate, the United States believes that Mexico is required to deliver an annual amount of 350,000 acre-feet of water over the course of a five-year cycle (unless Mexico is experiencing an extraordinary drought or has a serious accident to the hydraulic system on the six measured Mexican tributaries). Conversely, Mexico believes it is only required to deliver the cumulative amount of 1,750,000 acre-feet of water by the end of the five-year cycle. If you are a south Texas farmer, municipality, or municipal resident, which is more important: consistent and predictable annual amounts of water in the current five-year cycle or erratic amounts of water made up in the next five-year cycle? The answer is simple and obvious. Therefore, the vast and complex issues involving the Treaty of

430. See Press Release, U.S. Dep’t of Homeland Sec., U.S. and Mex. Officials Celebrate the Inauguration of the Port of Entry and Int’l Bridge in Tornillo, Tex. (Feb. 4, 2016), <https://www.dhs.gov/news/2016/02/04/us-and-mexican-officials-celebrate-inauguration-port-entry-and-international-bridge> (“The completion of the Tornillo–Guadalupe Port of Entry and International Bridge demonstrates our shared commitment to promoting the economic growth and prosperity of both of our countries.”).

431. See Mike Ward, *Mexico Pays Off Water Debt to Texas*, SAN ANTONIO-EXPRESS NEWS (Mar. 7, 2016), <http://www.expressnews.com/news/local/article/Mexico-pays-off-water-debt-to-Texas-6876106.php> (reporting Mexico “achiev[ed] compliance with a 1944 treaty on water in the Rio Grande for the first time in five years”).

1944 and Minute 309 must be addressed immediately. The time has come for these two countries to meet and resolve this long-standing dispute in either the International Court of Justice or the Permanent Court of Arbitration.

APPENDIX

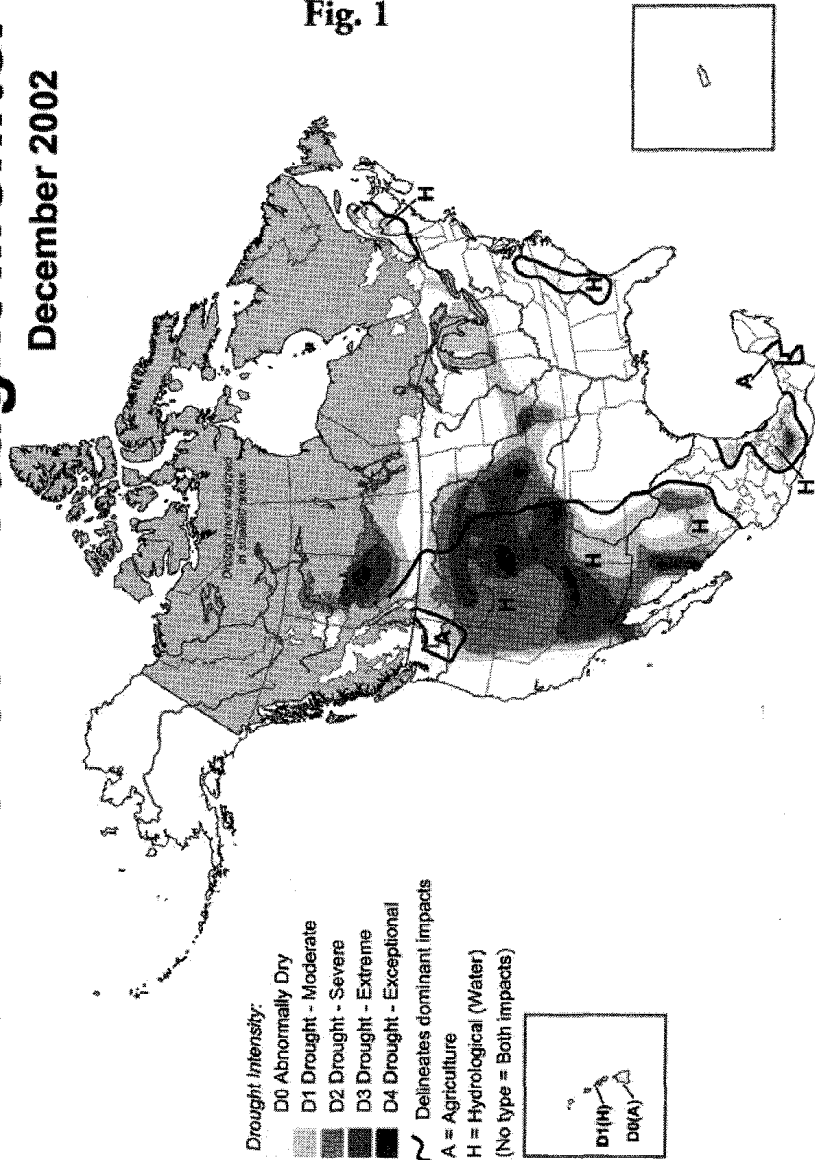
North American Drought Monitor

December 2002	A-1
January 2003	A-2
July 31, 2003	A-3
January 2004	A-4
July 2004	A-5
January 2005	A-6
July 2005	A-7
January 31, 2006	A-8
July 31, 2006	A-9
January 31, 2007	A-10
July 31, 2007	A-11
January 31, 2008	A-12
July 31, 2008	A-13
January 31, 2009	A-14
July 31, 2009	A-15
January 31, 2010	A-16
July 31, 2010	A-17
January 31, 2011	A-18
July 31, 2011	A-19
January 31, 2012	A-20
July 31, 2012	A-21
January 31, 2013	A-22
July 31, 2013	A-23
January 31, 2014	A-24
July 31, 2014	A-25
January 31, 2015	A-26
July 31, 2015	A-27
January 31, 2016	A-28

North American Drought Monitor

December 2002

Fig. 1

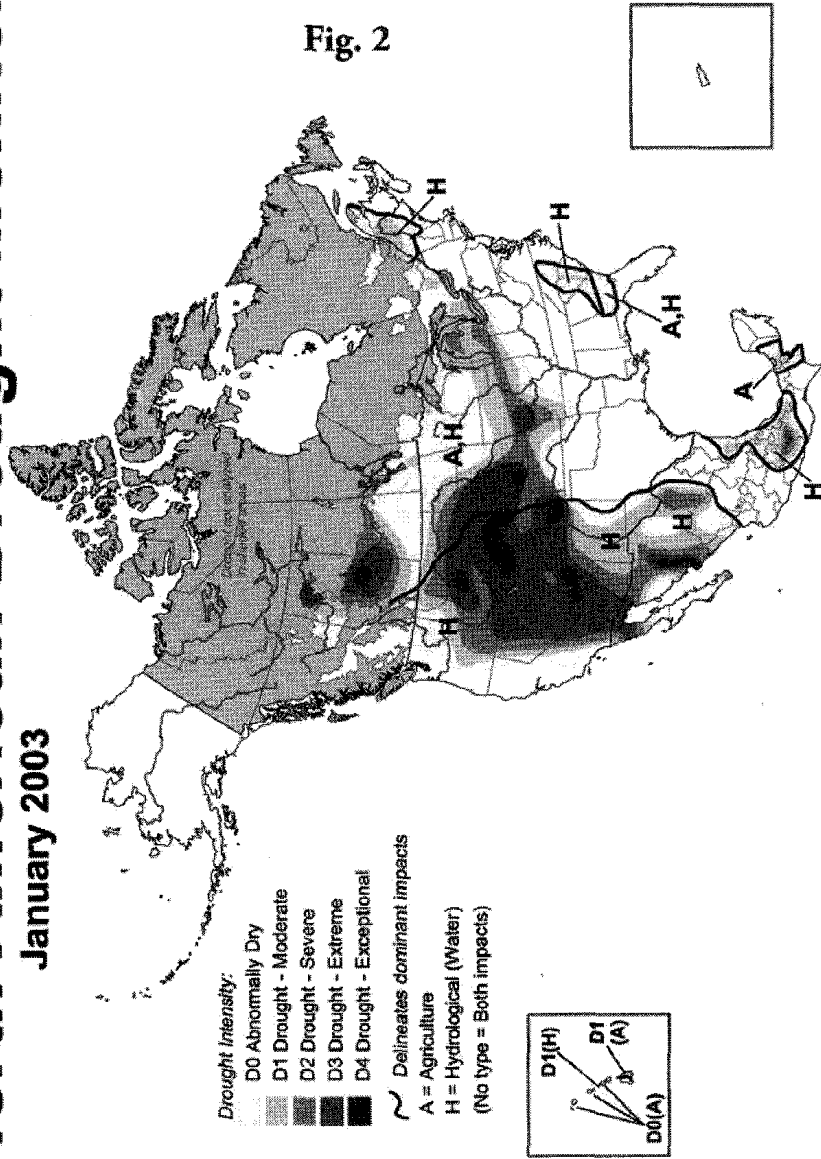


A-1

North American Drought Monitor

January 2003

Fig. 2

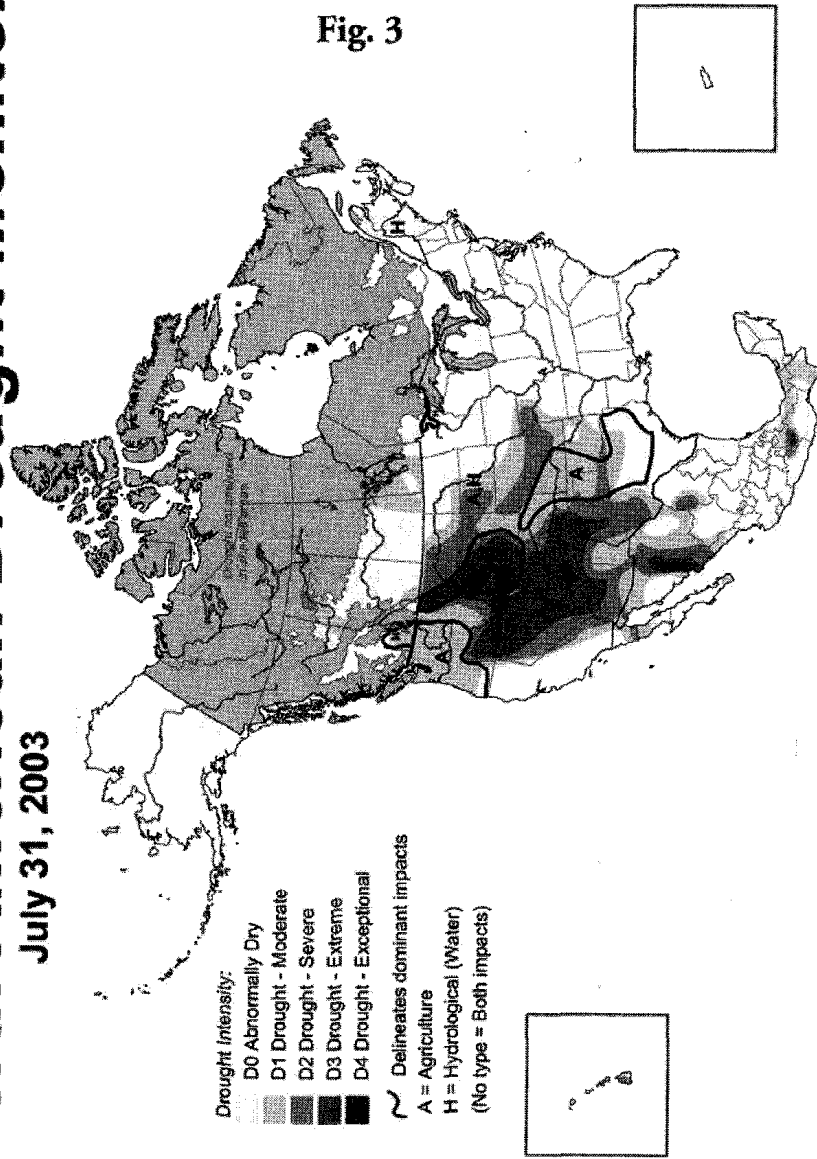


A-2

North American Drought Monitor

July 31, 2003

Fig. 3



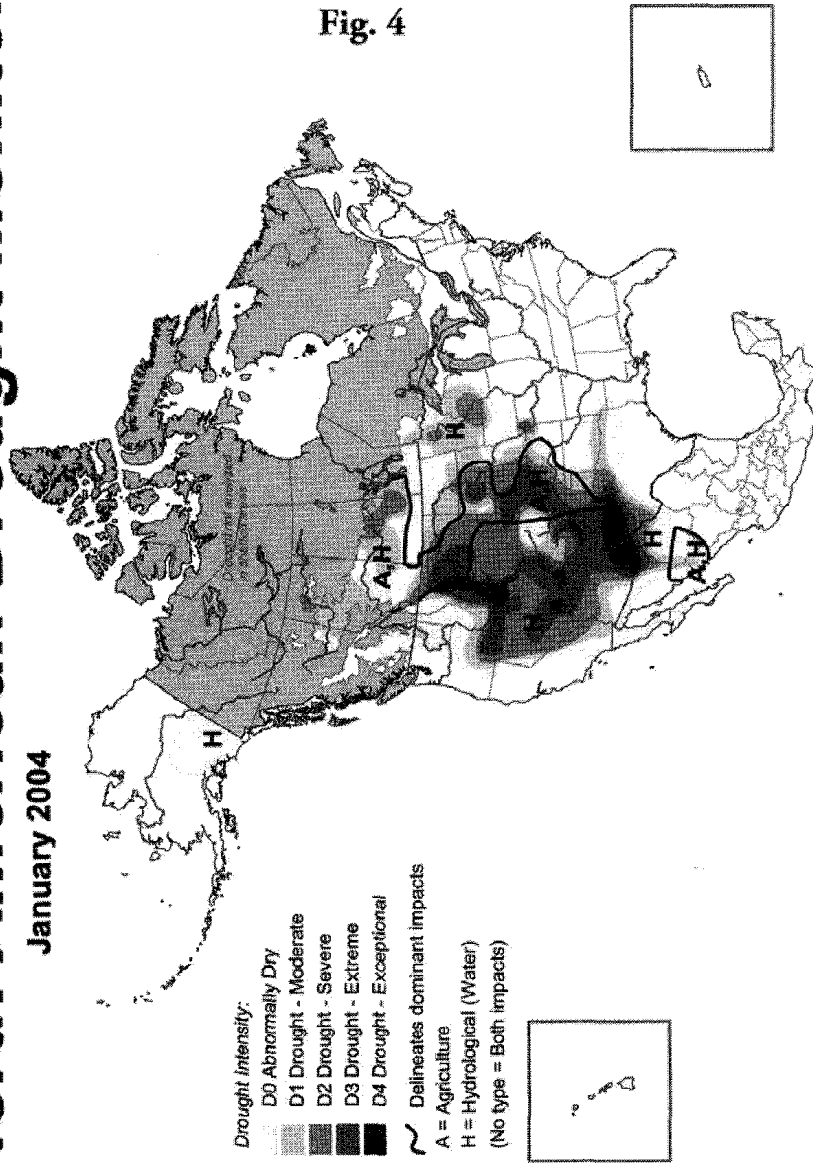
A-3

North American Drought Monitor

January 2004

- Drought intensity:
- D0 Abnormally Dry
 - D1 Drought - Moderate
 - D2 Drought - Severe
 - D3 Drought - Extreme
 - D4 Drought - Exceptional
- Delimits dominant impacts
- A = Agriculture
 - H = Hydrological (Water)
 - (No type = Both impacts)

Fig. 4

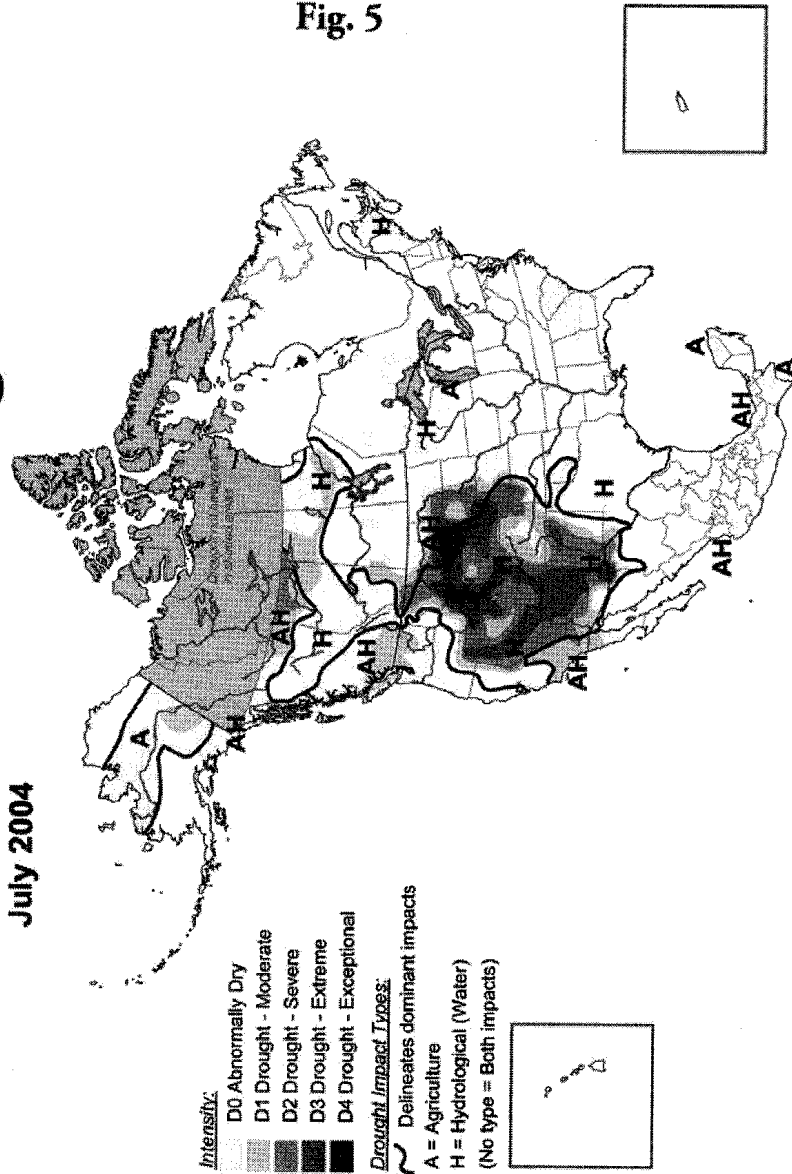


A-4

North American Drought Monitor

July 2004

Fig. 5

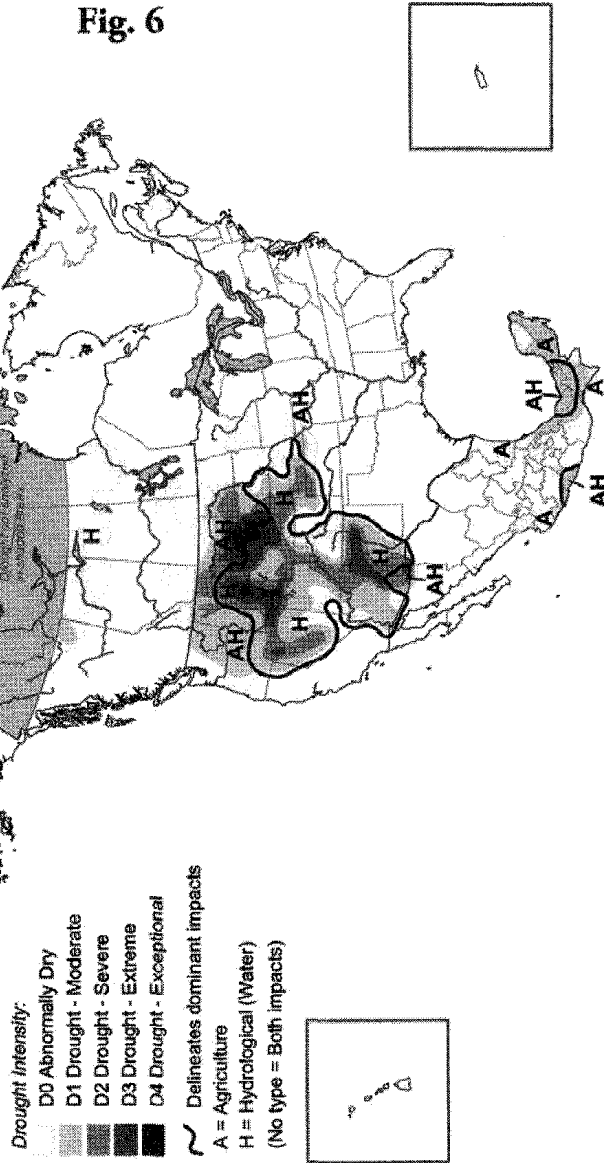


A-5

North American Drought Monitor

January 2005

Fig. 6



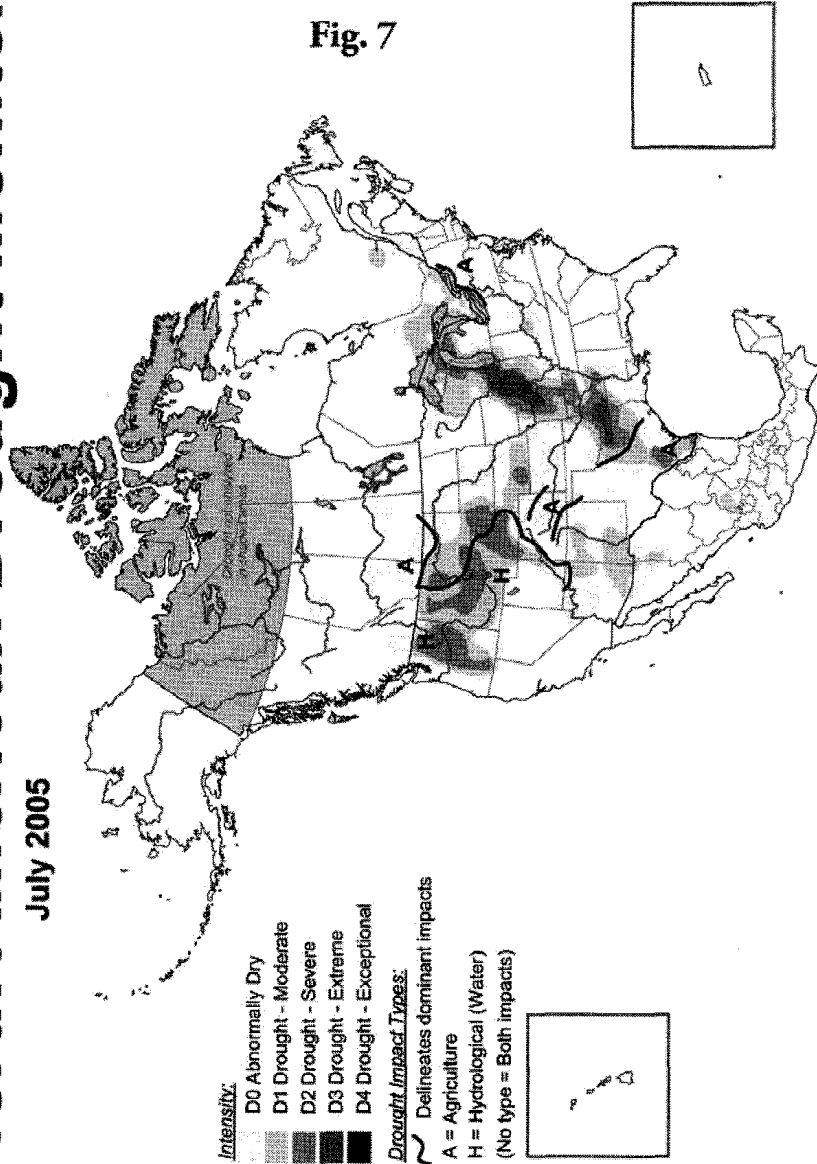
A-6

North American Drought Monitor

July 2005

- Intensity:**
- D0 Abnormally Dry
 - D1 Drought - Moderate
 - D2 Drought - Severe
 - D3 Drought - Extreme
 - D4 Drought - Exceptional
- Drought Impact Types:**
- Delineates dominant impacts
 - A = Agriculture
 - H = Hydrological (Water)
 - (No type = Both impacts)

Fig. 7



A-7

North American Drought Monitor

January 31, 2006

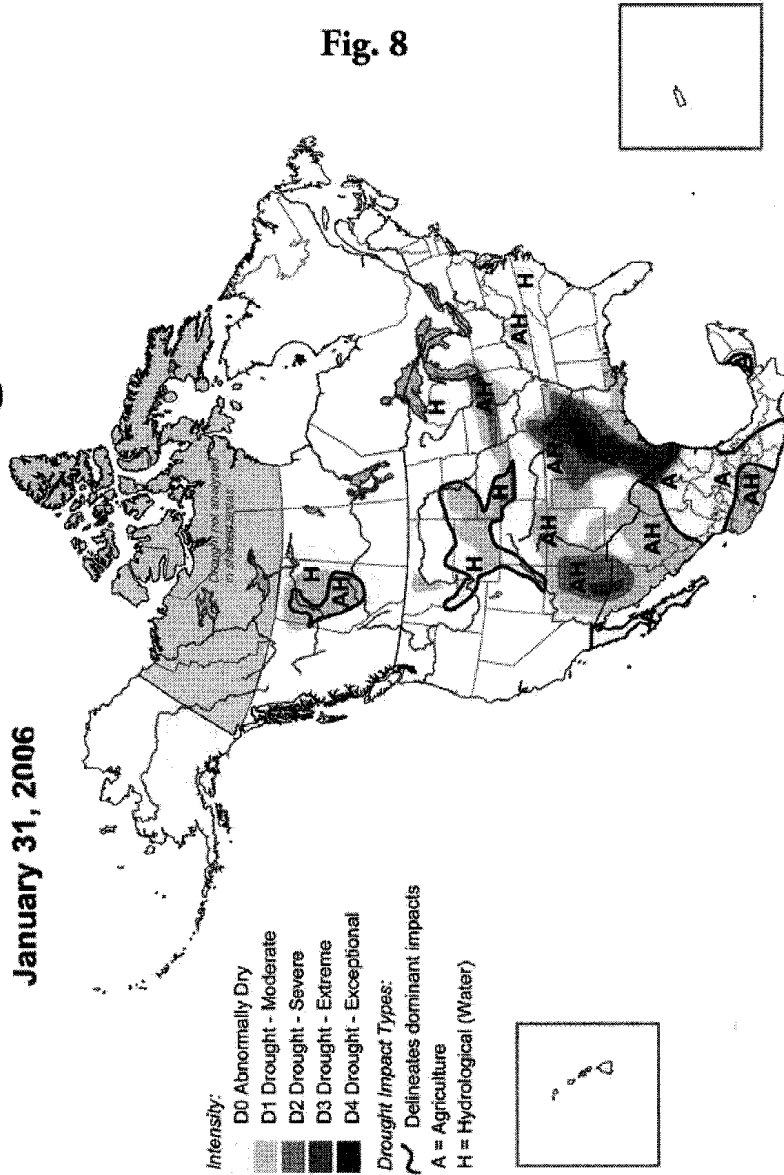


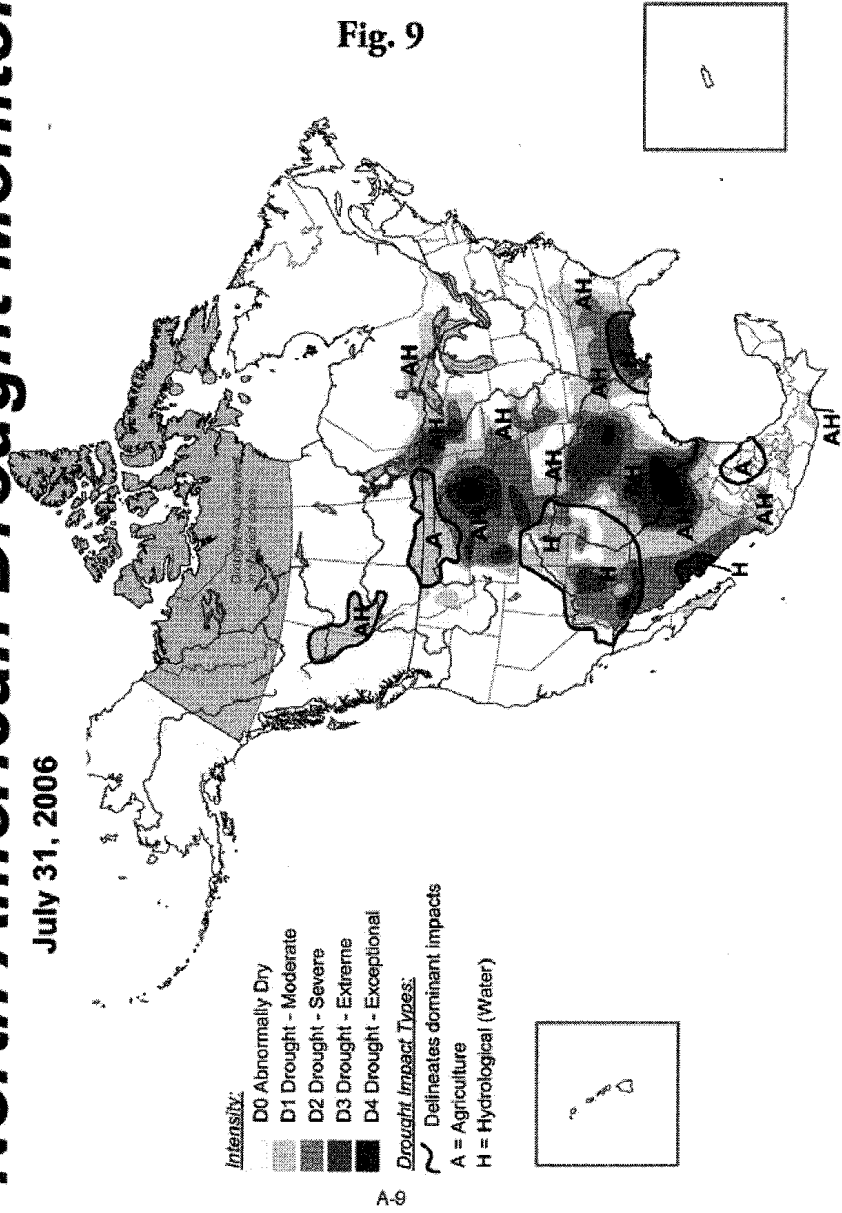
Fig. 8

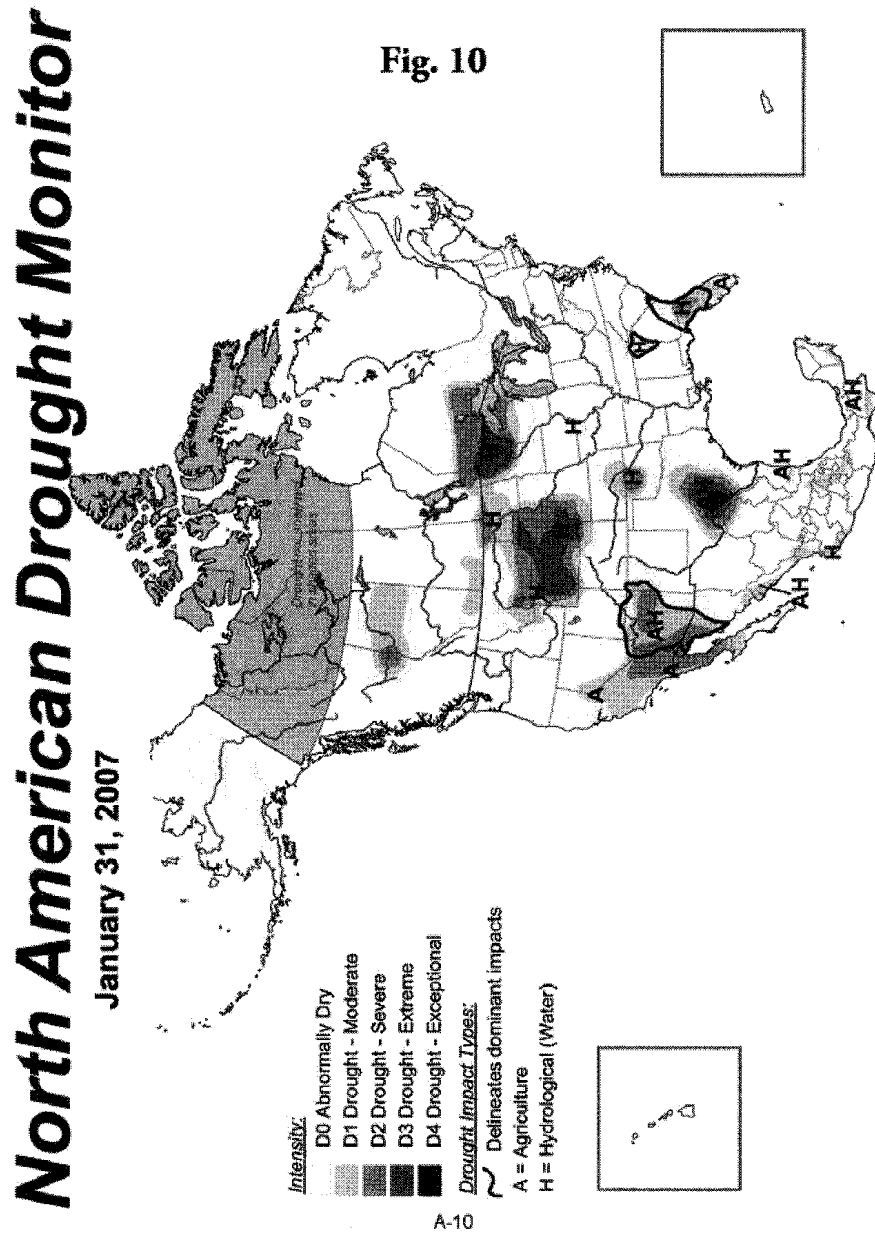
A-8

North American Drought Monitor

July 31, 2006

Fig. 9

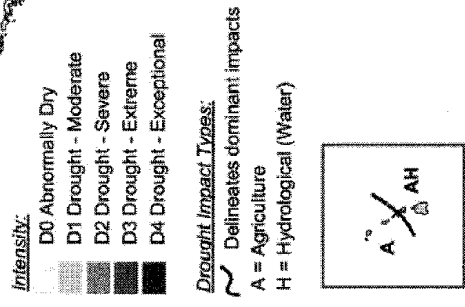




North American Drought Monitor

July 31, 2007

Fig. 11

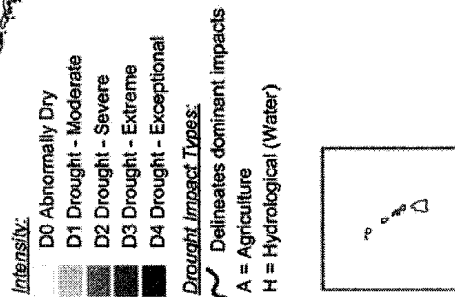


A-11

North American Drought Monitor

January 31, 2008

Fig. 12

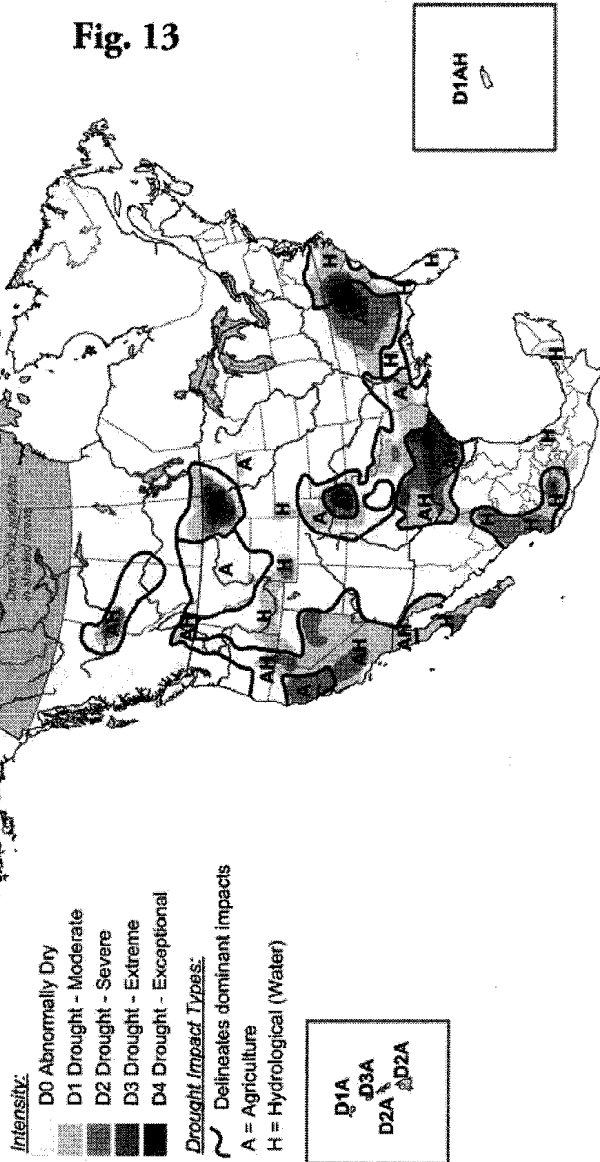


A-12

North American Drought Monitor

July 31, 2008

Fig. 13

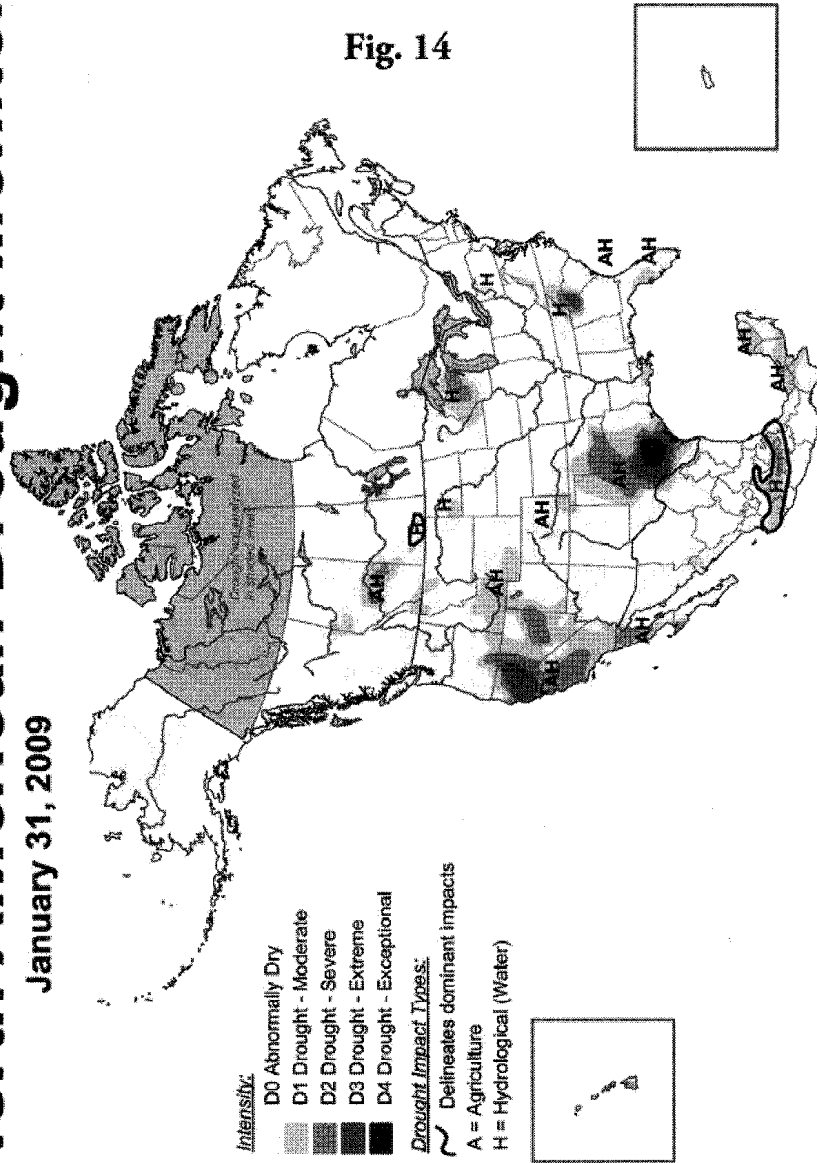


A-13

North American Drought Monitor

January 31, 2009

Fig. 14

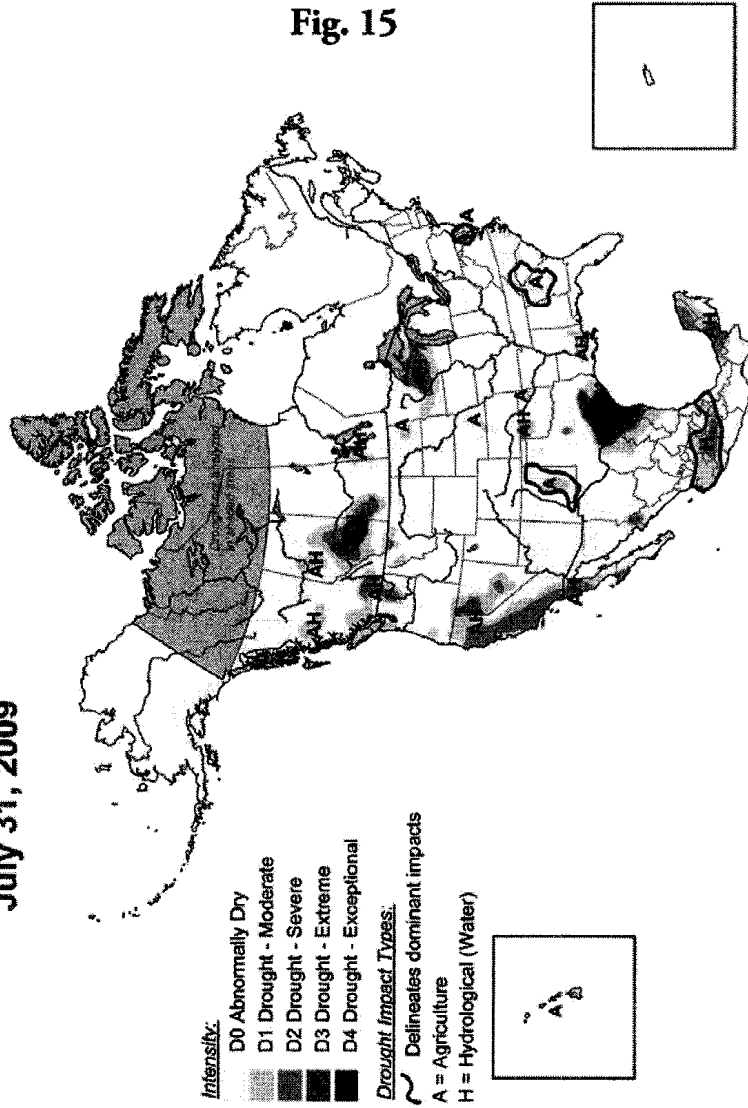


A-14

North American Drought Monitor

July 31, 2009

Fig. 15

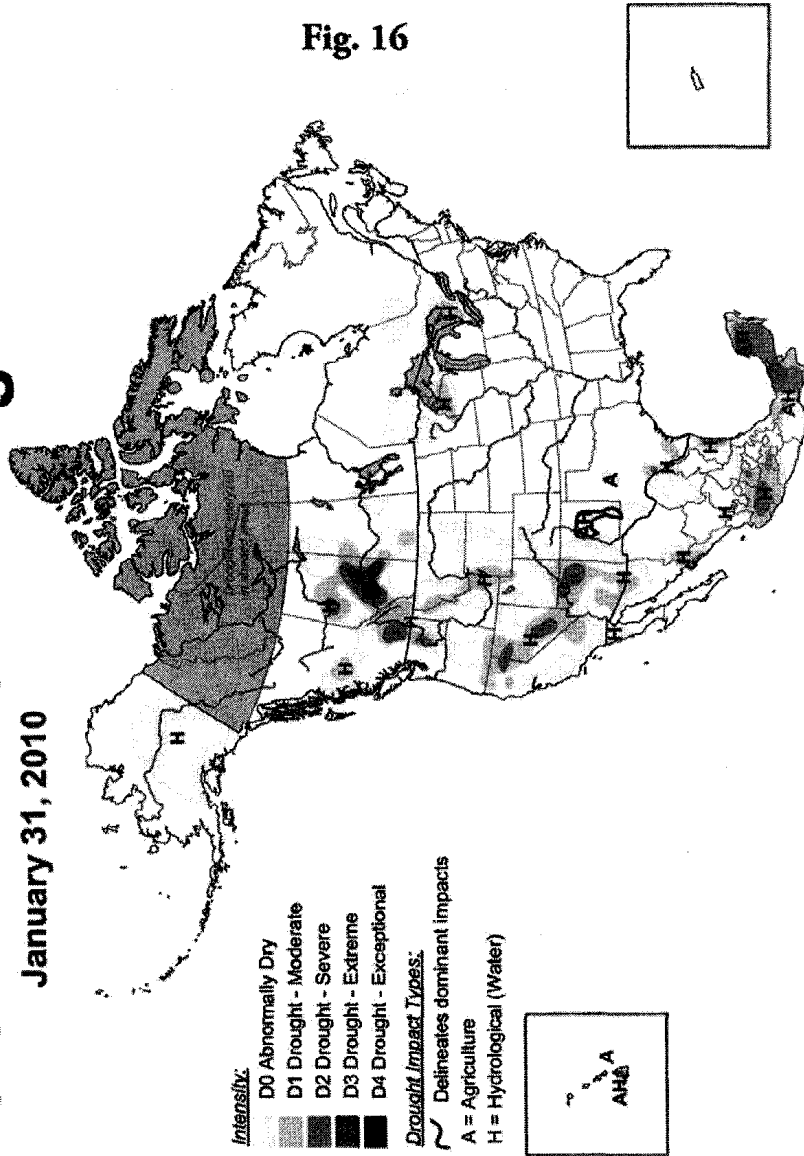


A-15

North American Drought Monitor

January 31, 2010

Fig. 16

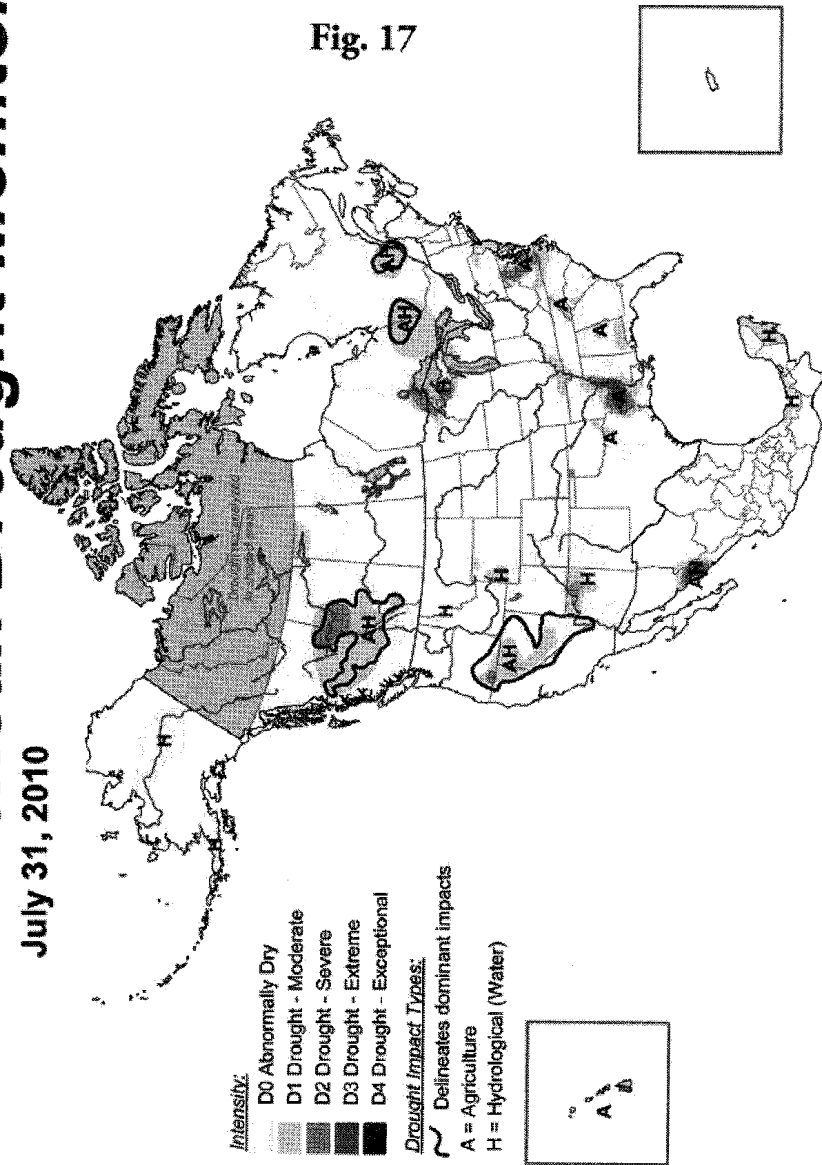


A-16

North American Drought Monitor

July 31, 2010

Fig. 17

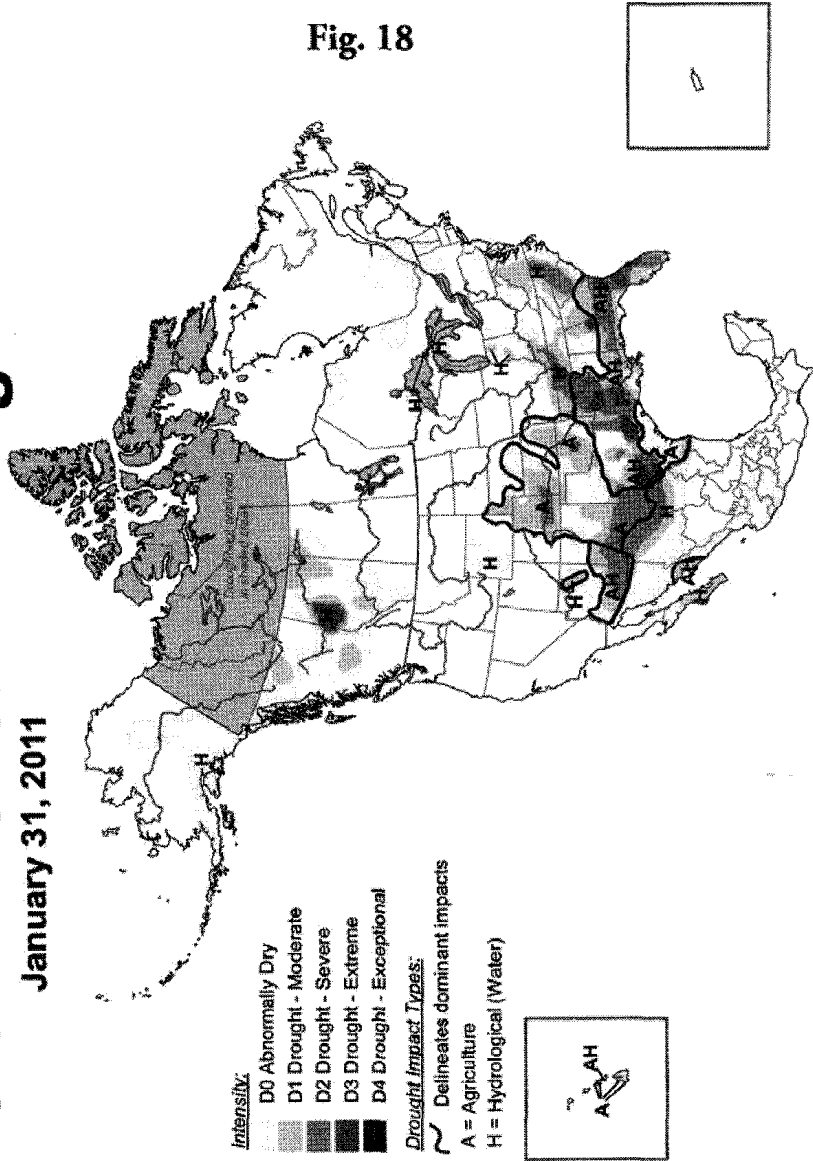


A-17

North American Drought Monitor

January 31, 2011

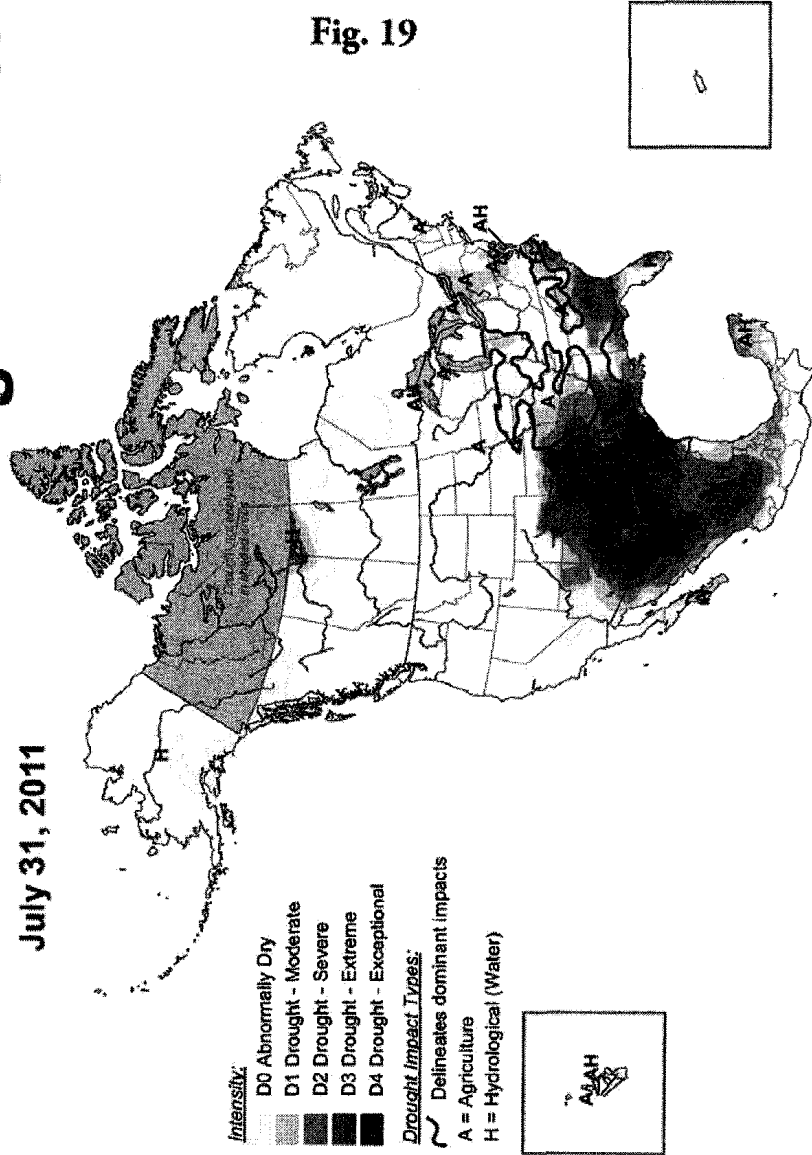
Fig. 18



North American Drought Monitor

July 31, 2011

Fig. 19

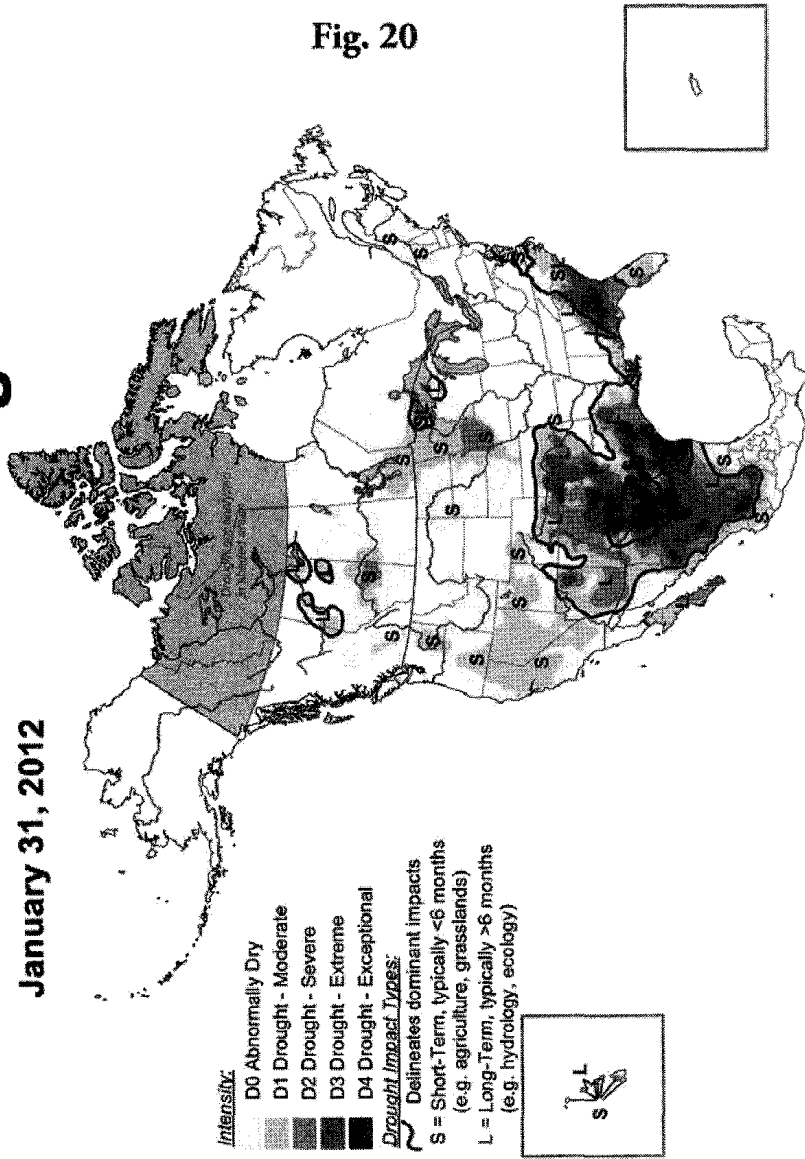


A-19

North American Drought Monitor

January 31, 2012

Fig. 20

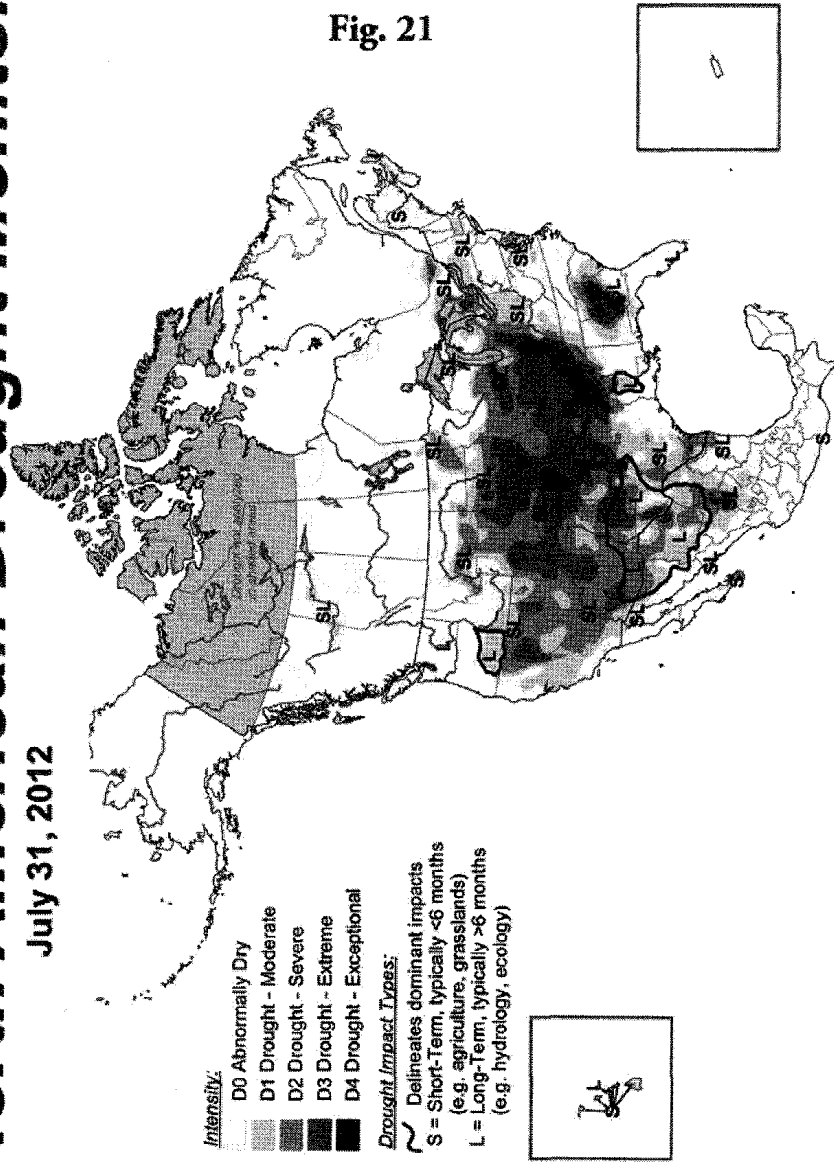


A-20

North American Drought Monitor

July 31, 2012

Fig. 21

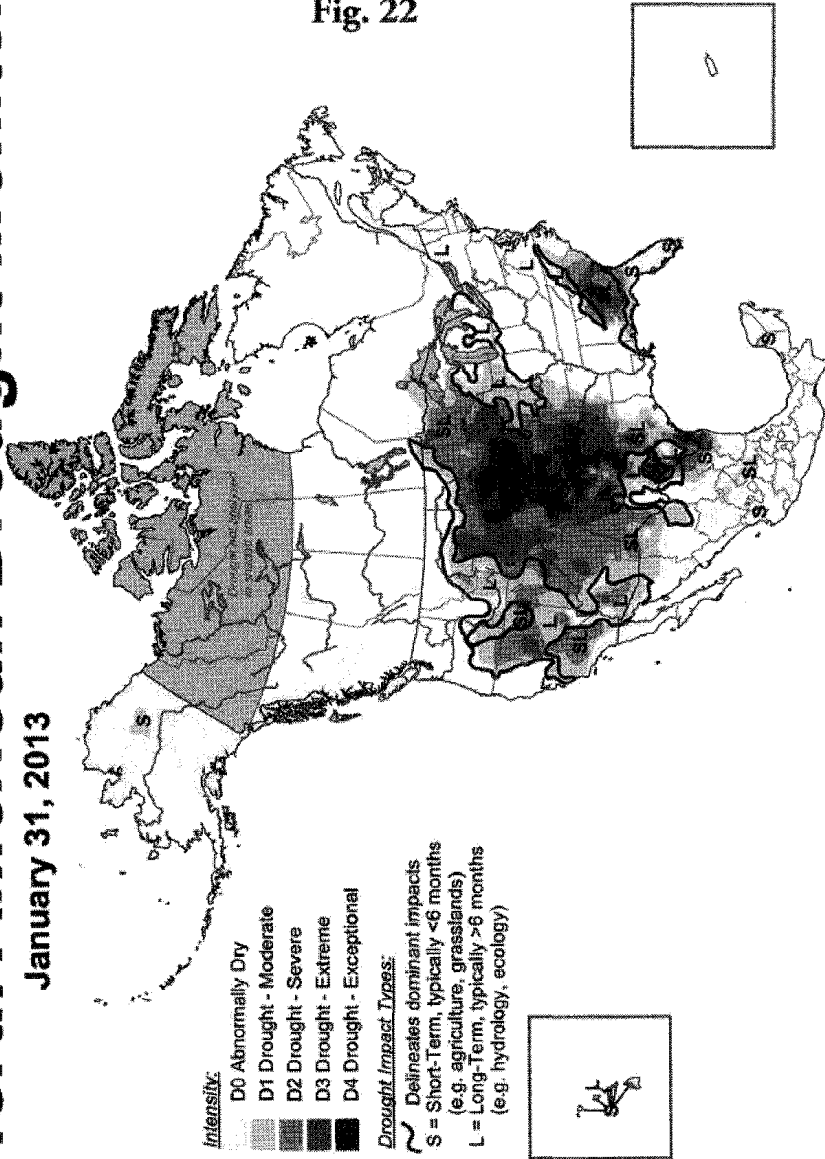


A-21

North American Drought Monitor

January 31, 2013

Fig. 22

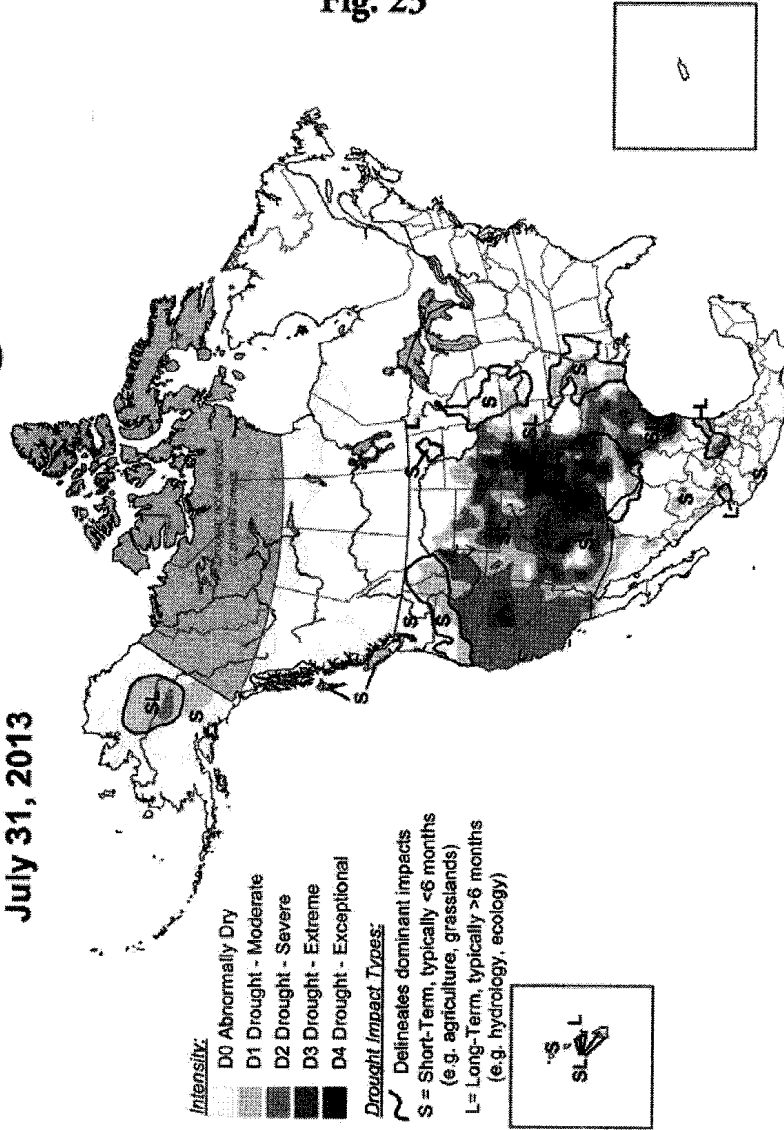


A-22

North American Drought Monitor

July 31, 2013

Fig. 23

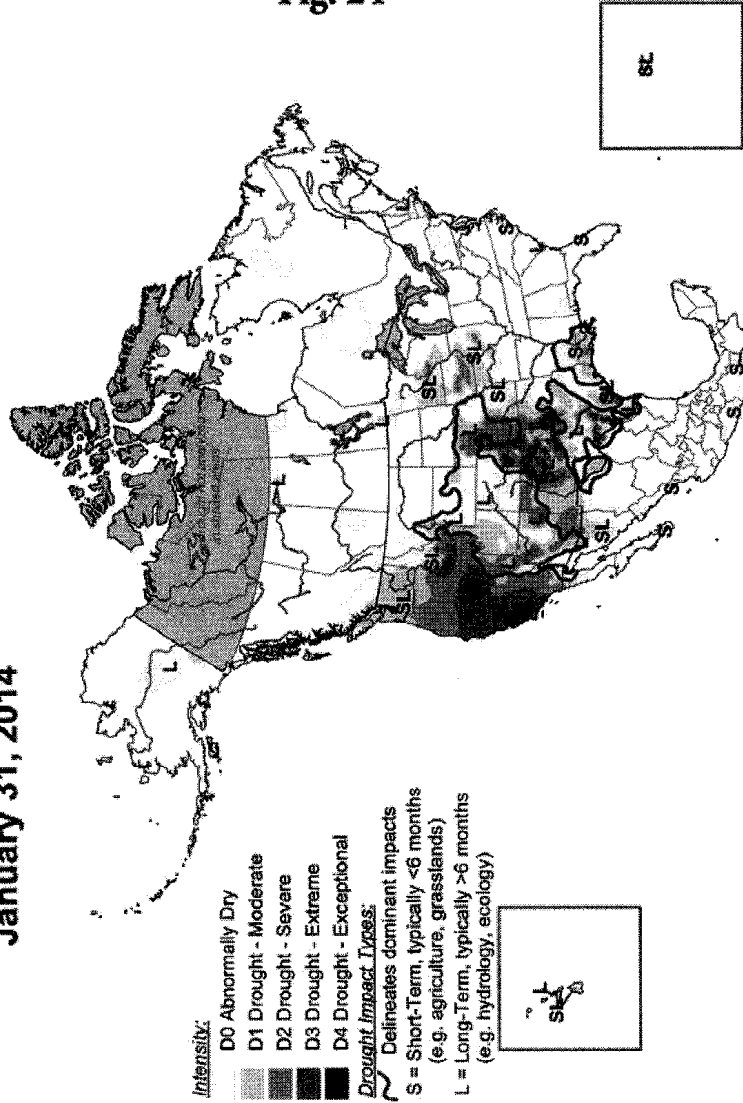


A-23

North American Drought Monitor

January 31, 2014

Fig. 24

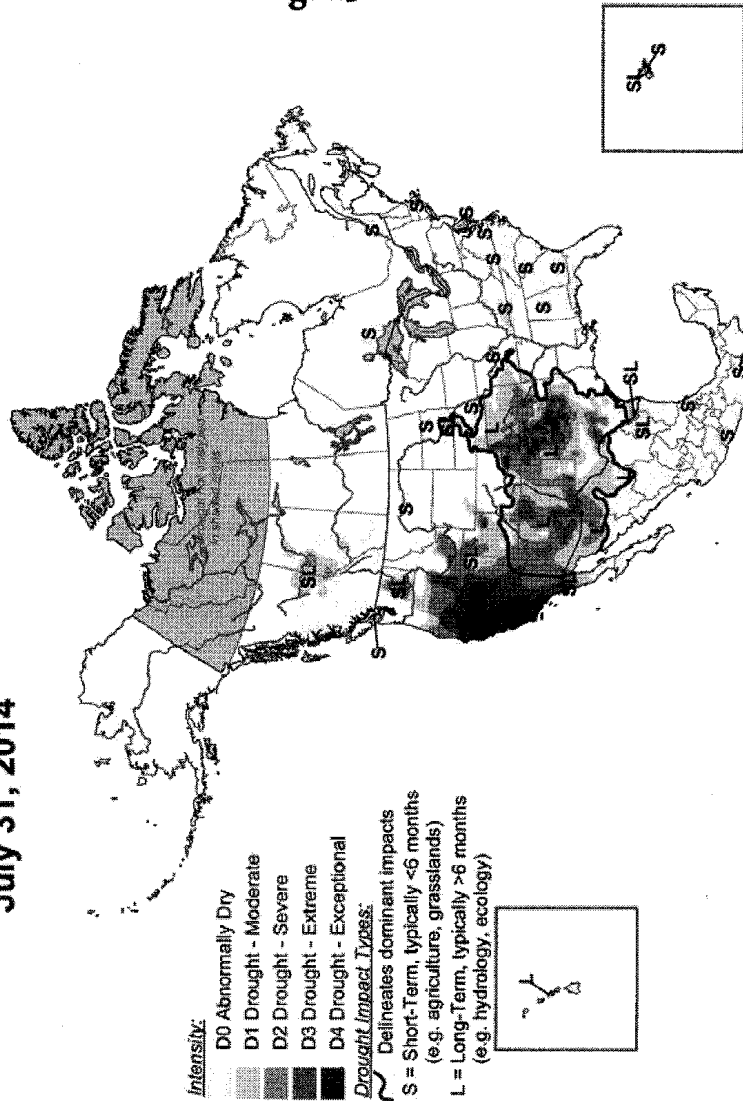


A-24

North American Drought Monitor

July 31, 2014

Fig. 25

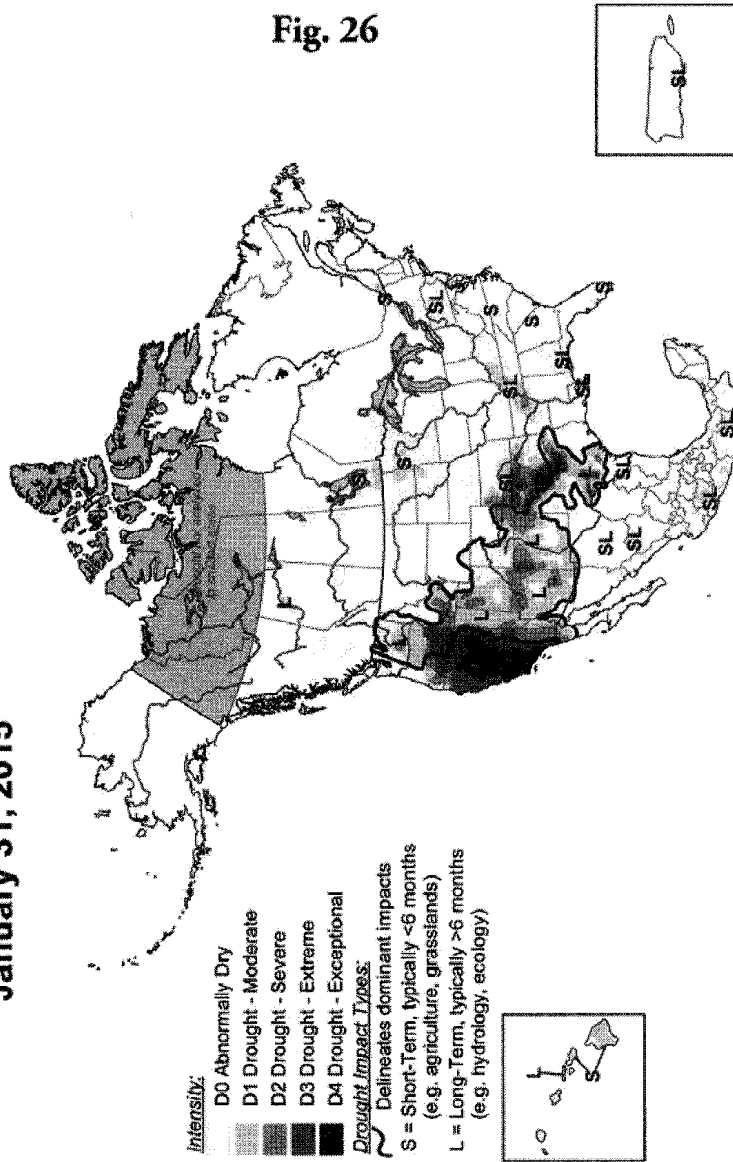


A-25

North American Drought Monitor

January 31, 2015

Fig. 26

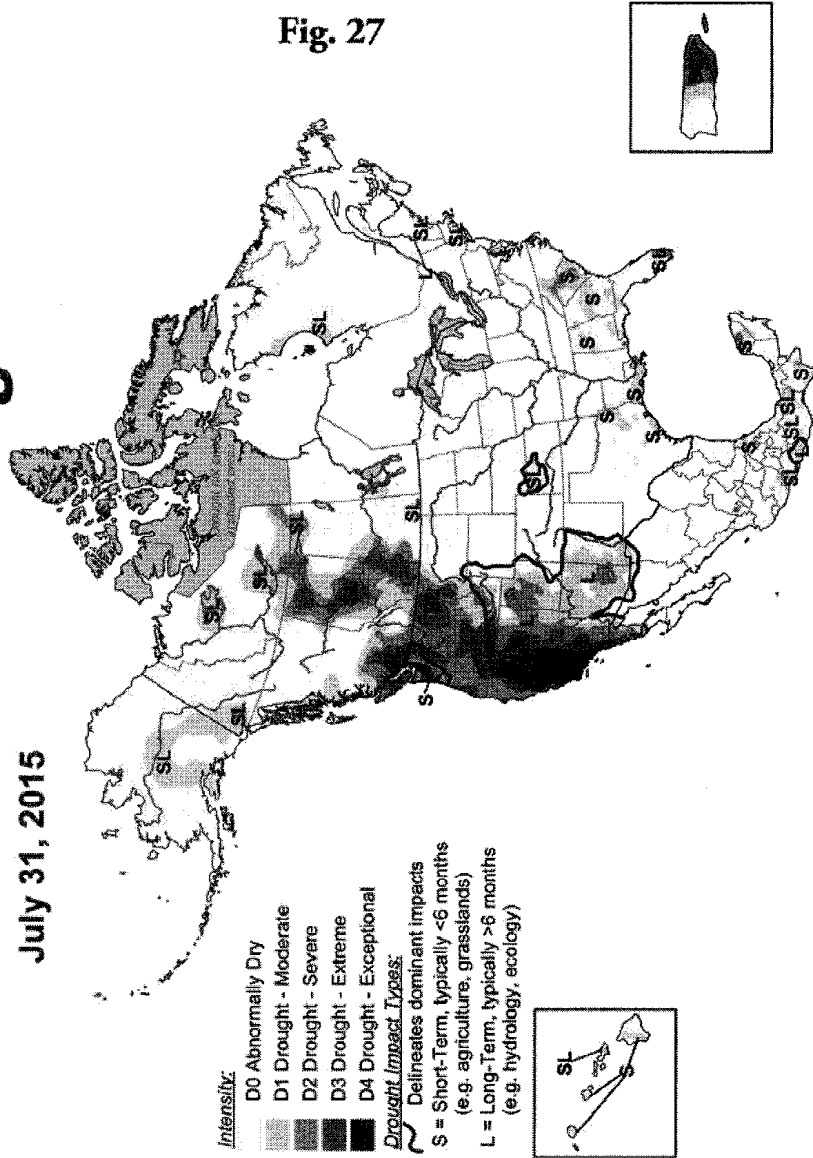


A-26

North American Drought Monitor

July 31, 2015

Fig. 27



A-27

North American Drought Monitor

January 31, 2016

Fig. 28

