The Intergovernmental Relations of Water Policy and Management: Florida-Holland Parallels

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About a year ago, environmental law professors were chatting incessantly on their listservs about the "hot topic" in environmental law and policy: global climate change.[1] Separately, somebody brought up the fact that the federal government was defaulting on its obligations to fund Everglades restoration, forcing the state of Florida to achieve results, if at all, on its own.[2] Then, a professor (whose identity should remain anonymous in this context) suggested that the entire Everglades restoration effort should be abandoned, in light of the coming apocalypse in which all of South Florida will be inundated in the projected sea-level

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1. This interchange appeared on the envlawprofessors listserv administered by the University of Oregon, http://lawprofessors.typead.com/environmental_law/ (last visited Jan. 28, 2010).

2. *See generally* Alfred R. Light, *Spark Plugs of Policy Implementation: Intergovernmental Relations and Public Participation in Florida's Acceler8 Initiative To Speed Everglades Restoration*, 30 VT. L. REV. 939 (2006).

rise.[3] A former chairman of the Everglades Coalition felt compelled to marshal evidence that Everglades restoration would be compatible, and possibly could even be ameliorative of sea-level rise.[4] Others demurred.[5] My great-great grandfather, a South Florida pioneer, would have been annoyed.[6] The Dutch would understand why.[7]

Most of Florida is barely above sea level. While North and Central Florida away from the coastline feature rolling hills of 15-30 meters above sea level, the areas south of Lake Okeechobee are more low-lying and fairly level. The Everglades are extremely flat, only sloping about two inches per mile on average from Lake Okeechobee to tidal waters.[8] South Florida's settlements along the Atlantic coastal ridge scarcely rise about 20 feet.[9] In the Everglades Agricultural Area (EAA), moreover, there has been subsidence of the peat soils.[10] Today, the vast majority of South Florida's residents live in floodplains formerly part of the

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3. *Cf.* Coastal Florida and Everglades—Sea Level Rise Map, http://geology.com/sea-level-rise/florida.shtml (last visited Jan. 28, 2010); Robert E. Deyle, Katherine C. Bailey & Anthony Matheny, Dep't of Urban & Reg'l Planning, Fla. State Univ., Adaptive Response Planning to Sea-Level Rise in Florida and Implications for Comprehensive and Public Facilities Planning, Presentation at the 48th Annual Conference of the Associate of Collegiate Schools of Planning, Milwaukee, Wis. (Sept. 1, 2007), http://www.dca.state.fl.us/fdcp/dcp/publications/Files/adaptiveresponseplanningsealevelrise.pdf.

4. *Cf.* Press Release, Nat'l Parks Conservation Ass'n, The Everglades Coalition Announces Its 2009 Action Agenda (Jan. 9, 2009), http://www.npca.org/media_center/press_releases/2009/evergladescoalition_010909.html ("A healthy, functioning Everglades will assist in offsetting sea-level rise and climate change impacts in South Florida."); Glenn Landers, U.S. Army Corps of Eng'rs, Climate Change Concerns for Everglades Restoration Planning, PowerPoint Presentation at the Planning Community of Practice Conference (2008), http://www.usace.army.mil/CECW/PlanningCOP/Documents/plan_conf/2008/pres08/2PCOP2008_040_landers.pdf ("Everglades Restoration will help delay climate change impacts in natural and developed areas.").

5. *Cf.* H.R. Wanless, Dep't of Geological Sci., Univ. of Miami, Implications of Rising Sea Level on Everglades Restoration, American Geophysical Union (Spring Meeting 2008), http://adsabs.harvard.edu/abs/2008AGUFM.U31B..01M ("This anticipated rise will diminish the value of CERP unless (a) the design thoroughly incorporates a realistic sea level rise scenario and (b) there is a refocus of CERP's design to optimize water flow for wetland-community peat growth with the purpose of retarding saline encroachment.").

6. My mother's mother's father's father, CPT Thomas J. Hardee, Dade County's first tax collector, came to Florida after the "late unpleasantness" made migration south (or west) preferable to living in the aftermath of Sherman's March-to-the-Sea. The Budget and Building Manager's Office at St. Thomas University School of Law is named for CPT Hardee. Hardee served in Lee's Army of Northern Virginia. *See infra* note 173 and accompanying text.

7. So also might the residents of New Orleans after Hurricane Katrina. *See* Yahoo! Answers, Why Don't We Just Abandon New Orleans?, http://answers.yahoo.com/question/index?qid=20080829072238AAfcrEB (last visited Jan. 18, 2010).

8. THOMAS E. LODGE, THE EVERGLADES HANDBOOK: UNDERSTANDING THE ECOSYSTEM 20 (2005).

9. *Id.*

10. *Id.* at 38.

Everglades, where blasting of limestone allows residential areas a few feet above sea level surrounded by lakes thus created.[11] In 2004, South Florida's population reached 5.9 million—up from 5.5 million in 2000—and is projected to reach 8.4 million by 2030.[12]

Much of the Netherlands is actually below sea level.[13] This percentage is even higher in Holland, the region in the west of the country that has been most important in economic terms for many centuries.[14] Hilly landscapes are found only in the southeastern tip of the country called Zuid-Limburg, where mountains of ancient glaciation still exist in the form of several hilly ridges.[15] Holland's first migrants built mounds upon which they took refuge at high water.[16] Monasteries were among the first to build dikes, which created excess water that needed to be drained.[17] The tracts of low land protected by dikes are called "polders."[18] To start with, sluices were built so that water could be released from the polders at ebb tide.[19] The windmill, invented six hundred years ago, made it possible to drain many more polders.[20] Soil subsidence of peat soils in the western Netherlands is well-documented.[21]

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11. Much of the inland South Florida landscape consists of residential areas built up to several feet above sea level using fill borrowed from nearby areas, which constitute lakes or "rock pits." The elevation requirement for residential structures is driven by the national flood insurance program. *See generally* Saul Jay Singer, *Flooding the Fifth Amendment: The National Flood Insurance Program and the "Takings" Clause*, 17 B.C. ENVTL. AFF. L. REV. 323, 331-32 (1990); Christine M. McMillan, Comment, *Federal Flood Insurance Policy: Making Matters Worse*, 44 HOUS. L. REV. 471, 501-02 (2007).

12. These numbers consider South Florida to be seven counties (Monroe, Miami-Dade, Broward, Palm Beach, Martin, St. Lucie, and Indian River). *See* JAMES MURLEY ET AL., CHARTING THE COURSE: WHERE IS SOUTH FLORIDA HEADING? 7 (2006), http://www.soflo.org/course/report.pdf.

13. Stijn Reinhard & Henk Folmer, *Introduction* to WATER POLICY IN THE NETHERLANDS: INTEGRATED MANAGEMENT IN A DENSELY-POPULATED DELTA 1 (Stijn Reinhard & Henk Folmer eds., 2009) ("About a quarter of the Netherlands is below mean sea level, where 9 million inhabitants live and two-thirds of the GDP is earned.").

14. *Id.* at 2.

15. *Id.* at 4.

16. Victor N. de Jonge, *From a Defensive to an Integrative Approach*, *in* WATER POLICY IN THE NETHERLANDS: INTEGRATED MANAGEMENT IN A DENSELY-POPULATED DELTA, *supra* note 13, at 20.

17. Ministerle van Verkeeren Waterstaat, The Delta Project for Safety, Wildlife, Space, and Water 4 (2001), http://www.safecoast.org/editor/databank/File/NL%20The%20Delta%20Project.pdf; *see also* De Jonge, *supra* note 16, at 24.

18. 2 WORLD BOOK DICTIONARY 1812 (1990).

19. Ministerle van Verkeeren Waterstaat, *supra* note 17, at 4.

20. *Id.*

21. C.J. Schothorst, Inst. for Land & Water Mgmt. Research, *Subsidence of Low Moore Peat Soils in the Western Netherlands*, 17 GEODERMA 265 (1977).

Today, the country is densely populated, with more than 16.4 million inhabitants, or 484 people per square kilometer of land.[22]

The Dutch have become "increasingly fascinated by Florida and its complicated water issues."[23] There are many logical reasons for this "Florida-Holland Connection."[24] Comparison of water management technologies in Florida and Holland yields important insights that will prove invaluable in key projects throughout Florida, such as the Central and South Florida Flood Control Project (C&SF), the Herbert Hoover Dike, and the Comprehensive Everglades Restoration Plan (CERP).[25] This mutual fascination, however, goes beyond the technical.

In this Article, we look for insights primarily in one area of comparison critical to effective implementation of public policy: intergovernmental relations. To understand Florida, one must venture outside my ancestor's cottage in Coconut Grove[26] to the state's "liquid heart," Lake Okeechobee.[27] To understand the Netherlands, one must venture outside Amsterdam. Perhaps a Dutch native would travel to Zeeland.[28] Below, after a short introduction to the natural history that forges unconscious bonds between Florida and Holland and South Florida and Zeeland,[29] we look for parallels in the recent history of water management in the two jurisdictions.[30] We then turn to a comparison of the formal institutional and informal intergovernmental structures that shape water management.[31] We then show how these processes work in practice by comparing similar innovations linking water management

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22. Reinhard & Folmer, *supra* note 13, at 2.

23. Stan Bronson, What the Netherlands Can Teach Florida (July 29, 2009), http://www.miamiherald.com/opinion/other-views/story/1161672.html.

24. *Id.*

25. *Id.*

26. CPT Hardee lived in Coconut Grove, near the coast, though the major highway that bears his name appears only to the west of that city, in Miami, Coral Gables, and unincorporated Miami-Dade County. The name "Hardee Road" changes to "Hardie Road" in Coconut Grove. *See Action Line*, MIAMI HERALD, Mar. 31, 1988, at A10 ("The Hardie family were blacksmiths who had a shop in Coconut Grove."); Mark 6:4 (King James).

27. GAIL M. HOLLANDER, RAISING CANE IN THE 'GLADES: THE GLOBAL SUGAR TRADE AND THE TRANSFORMATION 72 (2008) (quoting a 1914 U.S. Senate Report of the Florida Everglades Engineering Commission).

28. Zeeland is one of Netherland's twelve provinces, situated on the North Sea coast in the extreme southwest of the country. Literally, the name "Zeeland" means sea and land. Approximately one third of the province consists of water and two thirds of land. Province of Zeeland, Zeeland at a Glance (2007), http://www.zeeland.nl/topics/portall_zeeland_nl/index/zeeland_glance.pdf.

29. *See infra* notes 34-48 and accompanying text.

30. *See infra* notes 49-85 and accompanying text.

31. *See infra* notes 86-134 and accompanying text.

and spatial planning.[32] Finally, we return to a central theme: the overwhelming imperative in both jurisdictions to defend the public safety.[33]

I. THE DILUVIAN

Etched in the memory of old-time Floridians is the Hurricane of September 1928, also called the Okeechobee Hurricane and Hurricane San Felipe Segundo.[34] Inland, the hurricane wreaked widespread destruction along the heavily populated coast of Lake Okeechobee. Residents had been warned to evacuate the low ground earlier in the day, but after the hurricane did not arrive on schedule, many residents thought it had missed them and returned to their homes. When the worst of the storm crossed the lake—with winds measured on the ground at around 140 mph—the south-blowing wind caused a storm surge to overflow the small dike that had been built at the south end of the lake. The resulting flood covered an area of hundreds of square miles with water that in some places was over 20 feet deep. Around seventy-five percent of the fatalities were migrant farm workers, making identification of both dead and missing bodies very difficult; as a result of this, the count of the dead is not very accurate. The Red Cross estimated the number of fatalities as 1836, which was accepted as the official count by the National Weather Service for many years (and exactly equal to the official count for Hurricane Katrina). In 2003, the U.S. death count was revised to "at least" 2500. A mass grave at the Port Mayaca Cemetery east of Port Mayaca contains the bodies of 1600 victims of the hurricane.[35] After the subsequent flooding of the entire South Florida peninsula in 1947, the U.S. Army Corps of Engineers (Corps) constructed the C&SF.[36] In modern times, while by no means as deadly, the hurricane etched in memory is Andrew, which devastated Homestead and much of the area south of Miami in 1991.[37] The five hurricanes that struck South Florida in 2005 kept the matter of flood control in the public eye.[38]

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32. *See infra* notes 135-169 and accompanying text.

33. *See infra* notes 170-173 and accompanying text.

34. Liz Doup, 1928—Okeechobee: The Night 2,000 Died (Sept. 11, 1988), http://www.sun-sentinel.com/news/nationworld/search/sfl-1928-hurricane,0,3210460.story.

35. *See generally* ELIOT KLEINBERG, THE BLACK CLOUD: THE GREAT HURRICANE OF 1928 (2004).

36. See LODGE, *supra* note 8, at 222.

37. *See* Coastal Servs. Ctr., Nat'l Oceanic & Atmospheric Admin., Hurricane Andrew Overview (Aug. 16-28, 1992), http://www.csc.noaa.gov/crs/cohab/hurricane/andrew/andrew.htm.

38. One of these was Hurricane Katrina. Three others were Dennis, Rita, and Wilma. *See* Nat'l Hurricane Ctr., Nat'l Weather Serv., Nat'l Oceanic & Atmospheric Admin., 2005 Atlantic Hurricane Season, http://www.nhc.noaa.gov/2005atlan.shtml (last visited Mar. 16, 2010).

The Netherlands is popularly known for its windmills, cheese, wooden shoes, dikes, tulips, bicycles, and social tolerance.[39] The American folklore of the Netherlands begins with the story of Hans Brinker, the child who put his finger in the dike and prevented disaster.[40] Between 1000 and 1953, there were 111 serious or very serious floods in the West Netherlands, many named after the saints' days upon which they occurred.[41] The All Saints' flood of 1570 engulfed half of northern Holland, took 5000 lives, and claimed large tracts of land.[42] In 1944, Allied forces bombed dikes in Nazi-occupied Holland.[43]

For the Dutch, though, the twentieth-century date that lives in infamy is not December 7, 1941, but instead January 31 through February 1, 1953, the worst flood in living memory.[44] In the middle of the night, while most people slept, the sea poured over the dikes, destroying them completely in 67 places, and breaching them in 400 others.[45] The sea engulfed 200,000 hectares of fertile land and many towns and villages in the southwest Netherlands, especially the province of Zeeland.[46] Over 1800 people and over 200,000 head of cattle drowned, some 72,000 people had to be evacuated, and more than 47,000 homes, factories, and offices were damaged.[47] Immediately after this disaster, the

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Wilma actually did more damage in Florida than Katrina. *See* JAY BARNES, FLORIDA'S HURRICANE HISTORY 365-66 (2d ed. 2007). For example, practically all the houses in my neighborhood in Weston, west of Ft. Lauderdale, have had their roofs replaced as a result of Wilma.

39. Reinhard & Folmer, *supra* note 13, at 2.

40. The story is found in the novel by MARY MAPES DODGE, HANS BRINKER, OR THE SILVER SKATES: A STORY OF LIFE IN HOLLAND (Charles Scribner's Sons 1917) (1865). Hans Brinker, the protagonist of the novel, did not, however, put his finger in the dike. The story is actually a story within the novel read in an English schoolroom—called "Lesson 62—The Hero of Haarlem." *Id.* at 150-55.

41. Ministerle van Verkeeren Waterstaat, *supra* note 17, at 5.

42. *Id.*

43. DELTAPARK NEELTJE JANS & FLORAD MKTG. GROUP, THE DELTA PROJECT: PRESERVING THE ENVIRONMENT AND SECURING ZEELAND AGAINST FLOODING 3 (2008) (describing experience they had gained in pumping the island of Walceren dry after the bombing of its dikes in 1944); *see* Allexperts, The Netherlands in World War II: Encyclopedia, http://en.allexperts.com/e/t/th/the_netherlands_in_world_war_ii.htm (last visited Jan. 28, 2010) (finding that 180 inhabitants of Westkappell died in spite of the warning of the people with pamphlets).

44. Ministerle van Verkeeren Waterstaat, *supra* note 17, at 4 ("the worst flood in living memory"); DELTAPARK NEELTJE JANS & FLORAD MKTG. GROUP, *supra* note 43, at 3 (the "greatest flood disaster in the country's history"); Suburban Emergency Mgmt. Project, The Catastrophic 1953 North Sea Flood of the Netherlands (Jan. 11, 2006), http://www.semp.us/publications/biot_reader.php?BiotID=317.

45. Ministerle van Verkeeren Waterstaat, *supra* note 17, at 4.

46. *Id.*

47. Suburban Emergency Mgmt. Project, The Catastrophic 1953 North Sea Flood of the Netherlands (Jan. 11, 2006), http://www.semp.us/publications/biot_reader.php?BiotID=317.

Netherlands adopted the Delta Project, with its focus being to ensure safety under the motto "never such a flood again."[48]

II. "NEVER AGAIN"

To prevent a recurrence of disasters like those that occurred as a result of the Okeechobee Hurricane of 1928, the Florida State Legislature created the Okeechobee Flood Control District, which was authorized to cooperate with the Corps in flood-control undertakings. After a personal inspection of the area by President Herbert Hoover, the Corps drafted a new plan that provided for the construction of floodway channels, control gates, and major levees along Lake Okeechobee's shores. A long-term system was designed for the purpose of flood control, water conservation, prevention of saltwater intrusion, and preservation of fish and wildlife populations. One of the solutions was the construction of the Herbert Hoover Dike.[49] After flooding of the entire South Florida peninsula associated with two consecutive hurricanes in 1947, the Corps constructed C&SF.[50] Lake Okeechobee, the second-largest freshwater lake in the United States (second only to Lake Michigan), spans 730 miles but is relatively shallow, averaging only a depth of nine feet.[51] The Herbert Hoover Dike is a 140-mile-long earthen dam completely surrounding the Lake. It is very important that the Corps manage lake levels. A recent Corps analysis indicates that the levee leaks, that numerous areas of the dike have seepage and piping problems when the

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48. Marija Bockarjova, Albert E. Steenge & Arjen Y. Hoekstra, *Management of Flood Catastrophes: An Emerging Paradigm Shift?*, *in* WATER POLICY IN THE NETHERLANDS: INTEGRATED MANAGEMENT IN A DENSELY-POPULATED DELTA, *supra* note 13, at 70, 72.

49. Today, concerns related to the dike's stability have grown in response to studies indicating long term problems with "piping" and erosion. Leaks have been reported after several heavy rain events. Proposed solutions to the dike's problems have included the construction of a seepageberm on the landward side of the dike, with the first stage costing approximately $67 million. EXTERNAL PEER REVIEW PANEL, HERBERT HOOVER DIKE CONSENSUS REPORT: U.S. ARMY CORPS OF ENGINEERS EXTERNAL PEER REVIEW OF DSAC-1 PROJECTS (Oct. 30, 2007), http://www.saj.usace.army.mil/Divisions/Everglades/Branches/HHDProject/DOCS/HHD/reports/HHD_ConsensusReport_10-30-07.pdf.

50. After the second hurricane, the entire greater Everglades area was inundated. Downtown Ft. Lauderdale's streets and businesses were in deep water for weeks. *See* Everglades Restoration, Development of the Central & South Florida (C&SF) Project, http://evergladesplan.org/about/restudy_csf_devel.aspx (last visited Jan. 29, 2010).

51. U.S. Army Corps of Eng'rs, Lake Okeechobee and the Herbert Hoover Dike: A Summary of the Stability Problems, Engineering Evaluation and Construction Solution for the Herbert Hoover Dike 2 (2009), http://www.saj.usace.army.mil/Divisions/Everglades/Branches/HHDProject/DOCS/HHD/HHDBrochure_2009_web.pdf.

lake level reaches 18.5 feet, and that dike failure would be "likely" if the lake level reaches 21 feet.[52]

In addition to the Herbert Hoover Dike, the Corps maintains and operates project works on the St. Lucie Canal; Caloosahatchee River; and other levees, channels, locks, and spillways connected to the Lake. The South Florida Water Management District (District) operates and maintains other levees, canals, and pumping stations throughout the South Florida region, including the main outlets from the Lake to Water Conservation Areas 1, 2A, and 3A to the east and south of the Lake.[53] C&SF protects both urban and agricultural interests during extreme rainfall events by quickly discharging runoff into the Atlantic or the Gulf. An average of 1.7 billion gallons of water per day that once flowed south is now discharged to tide.[54]

The history of water management in the Netherlands is, of course, longer and more storied. After the first engineering works of the Romans about 2000 years ago, the monasteries started to play a major role in local dike building and related land draining around 1200 A.D.[55] The twentieth-century history contains some striking parallels to Florida's. During a period in the early twentieth century when many were discussing how to obtain more land for agriculture and flood protection, a major storm called Zuider Zee hit the northern Netherlands on January 14, 1916.[56] This spurred the national Dutch government to build a 32-kilometer-long closure dam called Afsluitdijk from 1929 to 1932.[57] Studies by the national Department of Waterways and Public Works (*Rijkswaterstaat*) led to the heightening of dikes with insufficient water capacity.[58] Between 1906 and 1935, more than 120 kilometers of dikes were heightened.[59] Then came the calamity of 1953, when the dikes protecting the southwestern part of the country were breached by the joint onslaught of hurricane-force winds and high spring tides.[60]

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52. *Id.* at 6. Piping is the erosion of soil that erodes beneath the dike. The erosion of soil creates a path by which water flows and erodes more soil. *Id.* at 3.

53. *See* Comprehensive Everglades Restoration Plan, Development of the Central & South Florida (C&SF) Project, http://www.evergladesplan.org/about/restudy_csf_devel.aspx (last visited Jan. 14, 2010).

54. 1 SOUTH FLORIDA RESTORATION TASK FORCE 4 (2004), http://www.sfrestore.org/documents/2004_2006_strategic_plan_volume%201.pdf.

55. De Jonge, *supra* note 16, at 24.

56. *Id.* at 26.

57. *Id.*

58. *Id.*

59. *Id.* at 26-27.

60. Climatic Circumstances, http://www.deltawerken.com/climatic-circumstances/483.html (last visited Mar. 16, 2010).

Immediately thereafter, the first Delta Commission was created and charged with the task of safeguarding the southwestern part of the country from future flooding.[61] In 1958, the government agreed on the Delta Law, which enabled the first Dutch Delta Plan to reinforce all the national dikes and to close off nearly all the former sea arms and estuarine areas in the southwestern part of the country.[62] The Delta Project was supposed to take many years to complete.[63]

III. PROBLEMS WITH THE SOLUTIONS

Florida's C&SF Project, whose implementation began in the 1950s and was essentially complete by 1973, had four main components. First, it established a perimeter levee through the eastern part of the Everglades, protecting areas to the east of the levee from direct Everglades flooding. Second, it designated a large area south of Lake Okeechobee, the Everglades Agricultural Area (EAA), to be managed for agriculture. Third, water conservation became the primary designated use for most of the remaining Everglades between the EAA and Everglades National Park. Finally, the project enlarged the overall canal system into a more interconnecting network with pumps and control gates to regulate the waters of the system completely, including rivers and the Lake.[64] "There was no intent to ruin an ecosystem."[65]

By the 1970s, though, many recognized that the Everglades were seriously deteriorating. Recognized problems included: declining wading bird populations; melaleuca infestations; deteriorating health of Lake Okeechobee, the region's estuaries, and Florida Bay; and damaging nutrient-related changes in the Everglades water conservation areas.[66] For example, during periods of water shortage, blue-green algae developed in the Lake. After discharges necessitated by coming storm events, this algae found its way to estuaries such as Indian River Lagoon

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61. *Id.* at 28-29.

62. *Id.* at 29-30.

63. Construction of the Delta Project was essentially finished when the Maesland storm surge barrier rose from the New Waterway near the Hook of Holland between 1991 and 1997. The two gates each have a ball-and-socket joint with a diameter of 10 meters and a weight of 680 tons. This joint is embedded in a colossal foundation block weight 52,000 tons. The trusses are 237 meters long and are made of three linked metal pipes. The barrier gates are 22 meters high and each one is 210 meters long. Each gate, including the ball-and-socket joint, is almost as high as the Eiffel Tower (300 meters). DELTAPARK NEELTJE JANS & FLORAD MKTG. GROUP, *supra* note 43, at 30.

64. LODGE, *supra* note 8, at 223-24.

65. *Id.* at 224.

66. *Id.* at 248.

via the Port St. Lucie canal.[67] Receiving the most attention was eutrophication and the spread of cattails associated with nutrient-enrichment from the EAA.[68] This led to key initiatives such as Modified Deliveries for Everglades National Park, projects under the 1994 Everglades Forever Act, and the joint state/federal CERP.[69]

Similarly, in the Netherlands during this same period in the late twentieth century, there were many changes to the Delta Project as unanticipated consequences emerged. While closures of the sea arms provided safety against floods, they also caused problems associated with the elimination of tides. The Haringvlient-Holland Diep area, upstream of the Haringvlietdam and Volkerakdam, became a sink for contaminated riverborne sediments and associated phosphorus.[70] The Greveligen area, between the Brouwersdam and Grevelingendam, showed exponential increase in eelgrass beds, but then an unexplained collapse. The Oosterschedle area, between the storm surge barrier known as Oosterscheldedam and the Oesterdam, exhibited large-scale erosion of intertidal flats, with deterioration of the eelgrass there. The navigation route between Westerschelde and the Rhine, east of the Oesterdam, developed extensive blooms of blue-green algae. The area between Veersegatdam and Zandkeerkdam (Veerse Meer) had excessive growth of sea lettuce and deterioration of eelgrass beds, in combination with strong eutrophication-related problems such as low oxygen values.[71]

In Florida, special attention to water quality issues in the Everglades ecosystem first began partly as a result of a lawsuit brought in 1988 by the United States against the State of Florida complaining about the poor quality of water entering federally managed lands, the Loxahatchee

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67. *See* Rivers Coal. Legal Task Force, The White Paper: Killing the St. Lucie River (2005), http://www.riverscoalition.org/whitepaper.php. *See generally* Karen A. Steidinger, Fla. Fish & Wildlife Conservation Comm'n, *Florida's Harmful Algae Bloom Task Force: History and Focus*, *in* FLA. DEP'T OF HEALTH ET AL., PROCEEDINGS OF HEALTH EFFECTS OF EXPOSURE TO CYANOBACTERIA TOXINS: STATE OF SCIENCE 6-36 (2002), http://www.doh.state.fl.us/Environment/community/aquatic/pdfs/Cyanobacteria_200208.

68. U.S. ENVTL. PROT. AGENCY, SOUTH FLORIDA ECOSYSTEM ASSESSMENT: EVERGLADES WATER MANAGEMENT, SOIL LOSS, EUTROPHICATION AND HABITAT, EPA-904-R-00-003 (2000), http://www.epa.gov/Region4/sesd/reports/epa904r00003.html; WATER QUALITY DIV., DEP'T OF RESOURCE PLANNING, S. FLA. WATER MGMT. DIST., OVERVIEW OF COOPERATIVE WATER QUALITY STUDIES IN THE EVERGLADES AGRICULTURAL AREA AND LAKE OKEECHOBEE—SOUTH FLORIDA WATER MANAGEMENT DISTRICT AND THE FLORIDA SUGAR CANE LEAGUE (1978), http://www.sfwmd.gov/portal/page/portal/pg_grp_tech_pubs/Portlet_tech_pubs/dre-82.pdf.

69. U.S. ENVTL. PROT. AGENCY, *supra* note 68; *see* Alfred R. Light, *The Waiter at the Party: Ecosystem Management in the Everglades*, 36 ENVTL. L. REP. 10771 (2006).

70. De Jonge, *supra* note 16, at 30.

71. *Id.*

Wildlife Refuge and Everglades National Park.[72] The consent decree settling the case, approved in 1994, contemplated a numerical state water quality standard for phosphorus and led to the District's construction of stormwater treatment areas and promulgation of best management practices to improve water quality.[73] Unfortunately, it was clear by 2005 that the agreed-upon goals were not being achieved.[74]

In the early 1980s, "outside" forces also compelled action in the Netherlands. By that time, nutrient loads in the Rhine River reached their maximum, deteriorating water quality both in freshwater and the North Sea and Baltic areas.[75] This led to a series of political conferences of the littoral North Sea states, which agreed on a fifty percent load reduction for nutrients and harmful substances by 1995.[76] Subsequent conferences in 1993, 1995, 1997, and 2002 showed that the "reduction was not achieved well for phosphorus and not at all for nitrogen."[77] Outside the Rhine and other water bodies of international interest, however, there was little interest in the quality of the Netherlands freshwater systems until the Second National Policy Memorandum on Water Management, promulgated by the Ministry of Transport, Public Works, and Water Management in 1984.[78] It was not until the Third National Policy Memorandum on Water Management, promulgated in 1989, that attention was "paid to all the country's water bodies, with the aim of improving the water quality of its aquatic ecosystems."[79]

Since the late 1990s, Florida's water management system has had an additional overlay: the CERP, which is based on the ecosystem concept. The Water Resources Development Act of 1996 required the Secretary of the Army to develop "a proposed comprehensive plan for the purpose of restoring, preserving, and protecting the South Florida ecosystem."[80] The Water Resources Development Act of 2000 required that the Corps establish a process to ensure that new information resulting from changed or unforeseen circumstances, new scientific or technical information, or information developed through adaptive

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72. *See* Alfred R. Light, *Beyond the Myth of Everglades Settlement: The Need for a Sustainability Jurisprudence*, 44 TULSA L. REV. 253, 258-59 (2008).

73. *Id.* at 259.

74. *Id.*

75. De Jonge, *supra* note 16, at 34.

76. *Id.*

77. *Id.*

78. *Id.* at 32.

79. *Id.* at 33.

80. Water Resources Development Act of 1996, Pub. L. No. 104-303, § 528(b)(1)(A)(r), 110 Stat. 3658, 3767.

management be integrated into implementation of the Plan. The Senate Committee on Environment and Public Works described the expectation:

> The committee does not expect rigid adherence to the Plan as it was submitted to Congress. This result would be inconsistent with the adaptive assessment principles in the Plan. Restoration of the Everglades is the goal, not adherence to the modeling on which the April, 1999 Plan was based. Instead, the committee expects that the agencies responsible for project implementation report formulation and Plan implementation will seek continuous improvement of the Plan based upon new information, improved modeling, new technology and changed circumstances.[81]

CERP's Adaptive Management Strategy, released in April 2006, provides the following definition:

> Adaptive management is a science- and performance-based approach to ecosystem management in situations where predicted outcomes have high level of uncertainty. Under such conditions, management anticipates actions to be taken as testable explanations, or propositions so the best course of action can be discerned through rigorous monitoring, integrative assessment, and synthesis. Adaptive management advances desired goals by reducing uncertainty, incorporating robustness into project design, and incorporating new information about ecosystem interactions and processes as our understanding of these relationships is augmented and refined. Overall system performance is enhanced as AM reconciles project-level actions within the context of ecosystem-level responses.[82]

The Netherlands similarly has had to react to similar directives from the European Union (EU) meant to protect and stimulate an integrated ecosystem approach to water management.[83] At the end of 2000, about the same time Congress adopted CERP, the EU's Water Framework Directive (WFD) required member states to analyze the ecological characteristics of the different water types, to review the impact of human activity on the status of surface waters and groundwater, and to conduct an economic analysis of water use.[84] The strategy has been interpreted to require the introduction of an "ecosystem approach," which follows the

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81. S. REP. NO. 106-362, at 41 (2000).

82. COMPREHENSIVE EVERGLADES RESTORATION PLAN ADAPTIVE MANAGEMENT STRATEGY: THE JOURNEY TO RESTORE AMERICA'S EVERGLADES 1 (2006), http://www.everglades plan.org/pm/recover/recover_docs/am/rec_am_stategy_brochure.pdf.

83. De Jonge, *supra* note 16, at 36; *see also* BRYAN G. NORTON, SUSTAINABILITY: A PHILOSOPHY OF ADAPTIVE ECOSYSTEM MANAGEMENT 484-94 (2005) (describing a Dutch "consensus-based" system for developing environmental policy and transforming its society toward sustainability).

84. De Jonge, *supra* note 16, at 37.

Driver-Pressure-State-Impact-Response (DPSIR) approach discussed at length in the UN's 2007 GEO-4 Report.[85]

IV. COMPARING WATER MANAGEMENT STRUCTURES

A. Water Management Districts and the Water Boards

Florida is divided into five water management districts (WMDs), which are considered state agencies for state sovereign immunity purposes. As noted above, the District operates the C&SF Project, originally designed mainly to prevent flooding. The WMDs issue permits for consumptive water uses, regulation of wells, and for the management and storage of surface waters. WMDs also administer the Surface Water Improvement and Management Act (SWIM), which is a program aimed at restoring and protecting "priority" water bodies.[86] Several WMDs, including the WMD governing South Florida, regulate construction activities in isolated wetlands.[87] The WMDs' jurisdiction embraces regulated activities in "waters in the state,"[88] which include virtually every type of surface and groundwater.[89] Consumptive water uses, except household uses, require general or individual permits. WMD permits are also required for the management and storage of surface waters (MSSW) involving activities relating to dams, impoundments, reservoirs or discrete conveyances (such as ditches, canals, channels, or pipes) that consume or drain water or traverse open waters or wetlands.

Though Florida's system of regional water management districts may look strange to citizens of other states, it would be recognizable to the Dutch. The Netherlands is divided into 26 *waterschappen* or water boards. Like Florida's WMDs, these water boards serve as regional water management authorities. The *waterschap* is a government entity of functional decentralized administration with its own governing body and

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85. *Id.*; *see* U.N. Env't Programme, Global Environmental Outlook-4, Chapter 10—From the Periphery to the Core of Decision-Making: Options for Action (2007), http://www.unep.org/geo/geo4/report/10_Placing_Environment_at_the_Core.pdf.

86. FLA. STAT. §§ 373.451-.4595 (2008); FLA. ADMIN. CODE ch. 62-43 (1990).

87. FLA. ADMIN. CODE ch. 40E-4 (2009) (South Florida), ch. 40D-4 (Southwest Florida), ch. 40C-4 (St. Johns); *see also id.* ch. 40A-4 (Northwest Florida), ch. 40B-4 (Suwannee).

88. *E.g.*, Florida Water Resources Act of 1972, FLA. STAT. § 373.019(17) (2005); Resource Extraction Reclamation Act § 373.403 (1996).

89. *Compare* Florida Air and Water Pollution Control Act, FLA. STAT. § 403.031(13) (2008), *with* Florida Water Resources Act of 1972, FLA. STAT. § 373.019(17) (2008), *and* Resource Extraction Reclamation Act, FLA. STAT. § 373.403 (1996).

financing structure, solely concerned with water governance.[90] Just as the WMDs are considered state agencies within Florida, a water board is considered an arm of the province, in the sense that the provinces set up, lay down rules for, and supervise the *waterschappen*.[91] Since 1970, the *waterschappen* have been responsible for water quality control, including wastewater treatment, in addition to their "core task" of protecting the Netherlands from flooding.[92]

As in Florida, the precise division of responsibility between the water boards and the national and provincial general governments has evolved and continues to evolve. Just as the U.S. government became involved in the serious flooding of South Florida in 1947, the national Dutch government assumed responsibilities for flood protection along the coast after the disaster of 1953. Just as the Corps continues to manage Lake Okeechobee, the Netherlands central government has continuing responsibility to take care of the Dutch coast (maintenance of the coastline) and the management of the dams that close off the big arms of the sea in the west of the country.[93] Outside of these specific components, the *waterschappen* (like the WMDs) have principal responsibility for the management of infrastructure works.[94] Just as the Corps manages discharges through Florida's main navigable rivers connected to Lake Okeechobee (the Kissimmee, the St. Lucie, and the Caloosahatchee), so the Dutch national government manages the so-called "main water systems" (the big rivers, the Ijsselmeer, the Amsterdam-Rinjkannal, the Noordzeekanaal, the Waaden Sea, the Eems-Dollard estuary, the Delta waters, and the territorial part of the North Sea).[95] Until recently, the regulation of groundwater had not been a priority for the Netherlands, and no specific agency had responsibility for maintenance of any particular groundwater level, a key matter for Florida's WMDs through their consumptive use permitting.[96] Under the future Dutch Act, though, the *waterschappen* will largely be taking over that responsibility, at least outside urban areas where the responsibility is entrusted to the municipalities.[97]

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90. HERMAN HAVEKES ET AL., UNIE VAN WATERSCHAPPEN, WATER GOVERNANCE: THE DUTCH WATERSCHAP MODEL 17 (2008), http://www.riool.net/riool/binary/retrieveFile?style=default&itemid=3764&instanceid=129.

91. *Id.*

92. *Id.* at 18, 20.

93. *Id.* at 20.

94. *Id.*

95. *Id.*

96. *Id.*

97. *Id.*

A key contrast between Florida's and Holland's water boards, however, is found in the area of water quality. In Holland, under recent legislation the *waterschappen* operate approximately 339 wastewater treatment plants with pressure pipelines.[98] Sewerage, however, is a responsibility of municipalities, and drinking water a responsibility of water companies, private companies owned by municipalities and/or provinces.[99] In Florida, wastewater treatment and drinking water are responsibilities of local governments and local special districts, usually the same entity for both tasks, which are regulated by the state's main environmental agency, the Department of Environmental Protection (DEP).

One of the reasons that both the WMDs in Florida and the water boards in Holland remain important are the independent financing mechanism available to each. The WMDs pay for their activities through an ad valorem tax on property in the areas they serve, based on the assessed value of land and buildings owned by the taxpayer.[100] The water board financing system is similar but somewhat more complex. Citizens and companies pay a tax for quantitative water management through (1) an inhabitant's tax, paid by every main tenant within the working area of the water board, and (2) a property tax, paid by owners of land and estates, and calculated on the basis of the land's surface area and the economic value of any buildings.[101] The tax for qualitative water management is paid by households, farms, and businesses that contribute to wastewater pollution. This pollution fee covers about two-thirds of the total expenditures of the water boards, while the inhabitant's fee and property taxes only constitute about one-third.

B. Rijkswaterstatt and the Corps

In the Netherlands, the national agency responsible for water management is the Directorate-General for Public Works and Water Management (*Rijkswaterstaat*).[102] *Rijkswaterstaat* is part of the Dutch Ministry of Transport, Public Works, and Water Management.[103] The

98. *Id.*

99. *Id.* at 22.

100. *See* Fla. Dep't of Revenue, Property Taxpayer's Bill of Rights (2009), http://dor.myflorida.com/dor/forms/2009/gt800039.pdf.

101. Wim van Leussen & Kris Lulofs, *Governance of Water Resources*, *in* WATER POLICY IN THE NETHERLANDS: INTEGRATED MANAGEMENT IN A DENSELY-POPULATED DELTA, *supra* note 13, at 171, 181.

102. Ministry of Transp., Pub. Works & Water Mgmt., Organization, http://www.verkeerenwaterstaat.nl/english/topics/organization/ (last visited Jan. 28, 2010).

103. *Id.*

agency's motto, roughly translated, is "Moving smoothly. Living safely. Transport, Public Works and Water Management."[104] It promises water works for your dry feet, adequate and clean water, smooth and safe movement of road and water, and reliable and useful information. Dutch citizens usually think of traffic when they think of this national department rather than water management.[105] Notably, this is not the department of the Dutch national government which contains environmental regulatory functions, which since 1982 have been located in the Dutch Ministry of Housing, Spatial Planning, and the Environment.[106] This latter department also has charge over drinking water policy and land use policy.[107] Parks and conservation-type functions are located in the Ministry of Agriculture, Nature, and Food Quality.[108]

If a Dutch *waterschappen* finds a counterpart in the District, then the *Rijkswaterstaat* probably finds its closest counterpart in the Corps. Surely, locating a water management agency in a Department of Transportation is no stranger than locating it in the Department of Defense. From a functional point of view, if anything the U.S. system seems more haphazard in that the same water management functions performed by the Corps in Florida and the Eastern United States are the responsibility of agencies within the Department of the Interior in the western United States.[109] While the Dutch keep their "Environment" and "Nature" departments separate from Water Management throughout their nation, we only do so in the east. In both countries, though, revenues for the national agencies mostly come from the general budget—neither nation has a national guaranteed revenue stream for water infrastructure and management.

From an institutional culture standpoint, *Rijkswaterstaat* and the Corps suffer something of the same perception, that they have a

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104. *Id.*

105. Ministry of Transp., Pub. Works & Water Mgmt., General Introduction slide 8 (May 19, 2009), http://www.trustedpartner.com/docs/library/000049/IHE%2025mei2009.pdf.

106. Ministry of Housing, Spatial Planning and the Environment, http://international.vrom.nl (last visited Mar.16, 2010). Before 1982, the environment was a function of the Ministry of Health, Welfare, and Sport.

107. *See* Erik Mostert, *Integrated Water Resources Management in the Netherlands: How Concepts Function*, 135 J. CONTEMP. WATER RESOURCES & EDUC. 19-26 (2006).

108. Dutch Ministry of Agric., Nature, & Food Quality, http://www.minlnv.nl/portal/page?_pageid=116,1640354&_dad=portal&_schema=PORTAL (last visited Jan. 29, 2010).

109. *E.g.*, NIC LANE, CONG. RESEARCH SERV., CRS REPORT FOR CONGRESS, THE BUREAU OF RECLAMATION'S AGING INFRASTRUCTURE 2 (2008), https://www.policyarchive.org/bitstream/handle/10207/19332/RL34466_20080430.pdf?sequence=2 ("The Bureau of Reclamation (Reclamation) is responsible for the construction of most of the large irrigation and water resources infrastructure in the West.").

"classical water engineering approach."[110] Both agencies built and maintain the engineered structures for holding and moving water. During essentially the same time period in which the Corps was completing the CS&F by straightening the Kissimmee River (subsequently being reversed as part of Everglades Restoration) and managing Lake Okeechobee for EAA agriculture, *Rijkswaterstaat* was implementing a quantity-oriented policy plan focused on flood protection and drainage with elements focused on balancing the competing demands of water supply, agriculture, and navigation.[111] In both systems, these national agencies "enabled a huge expansion of water drainage infrastructure by restructuring and canalization of many watercourses that had previously been quite natural."[112] But water policy changed as the environmental movement began in the late 60s and early 70s.

V. GOVERNANCE BY NETWORKS

While this comparison of the organizational frameworks for water management in Florida and in the Netherlands yields important insights, after the emergence of the environmental movement, water policy in both jurisdictions has been more complex, which is a product of intergovernmental relations rather than the dominance of a single agency. Today, much policy implementation is accomplished not by individual government agencies, but by "a web of partnerships, contracts, and alliances."[113] In the United States, for example, since the 1970s, the Environmental Protection Agency has set the regulatory standards for water quality under the Clean Water Act.[114] That legislation permitted federal delegation of responsibility to the states, which quickly occurred.[115] This made the DEP a new key player. Other water management issues, however, remain within the jurisdiction of the Corps. In the Netherlands, things began to change after international agreements, the emergence of the EU, and an emerging focus on surface

110. Stefan M.M. Kuks, *Institutional Evolution of the Dutch Water Model*, *in* WATER POLICY IN THE NETHERLANDS: INTEGRATED MANAGEMENT IN A DENSELY-POPULATED DELTA, *supra* note 13, at 155, 168 ("In the 1970's, public protests against the classical water engineering approach by Rijkswaterstaat politicized water management and initiated a debate in society over various water values.").

111. *See id.* at 160.

112. *Id.*

113. STEPHEN GOLDSMITH & WILLIAM D. EGGERS, GOVERNING BY NETWORK 6 (2004).

114. 33 U.S.C. § 1251 (2006) (vesting Clean Water Act authority generally in the Administrator of the Environmental Protection Agency).

115. *See* U.S. Envtl. Prot. Agency, National Pollutant Discharge Elimination System (NPDES): State Program Status, http://cfpub.epa.gov/npdes/statestats.cfm (last visited Apr. 14, 2010) (showing status of various states as to delegation of EPA authority under Clean Water Act).

water quality.[116] A 1969 transition in the Netherlands permitted operational water quality management to be delegated to the regional water boards, which happened in most provinces.[117] In the Netherlands, since the 1970s the Ministry for the Environment has coordinated water quality issues.[118] Other water issues remain with the Ministry for Transport, Public Works, and Water Management. As shown, water policy in both nations frequently is a product of intergovernmental relations.

During the last two decades of the twentieth century, the United States and the Netherlands struggled to integrate decision making for water management. In the Netherlands, the idea of integrated decision making emerged around 1985, when the Dutch National Water Ministry published its policy vision of integrated water management following the Second National Policy Memorandum on Water Management.[119] This memorandum acknowledged water depletion due to overdrainage and advocated integration of surface and groundwater management.[120] The Third National Policy Memorandum on Water Management, released in 1989, formalized the concept.[121] The new approach indicated "the need for cooperation among those responsible for water, environmental, nature conservation, and agricultural policies."[122] Similarly, in the United States, water managers focused in the 1980s and 1990s on integrating decision making for watershed management, with new federal support for priority watershed management needs.[123]

In the year 2000, the U.S. Congress approved CERP based on a philosophy of adaptive ecosystem management.[124] The same year, a Netherlands state commission on twenty-first-century water management made recommendations on how to institutionalize integrated river management.[125] The EU WFD, also released that year, mandated a systems approach throughout Europe, requiring an analysis of the

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116. Kuks, *supra* note 110, at 161 ("[A]round 1970, many European countries, on the basis of international agreements, adopted legislation to protect surface water quality.").

117. *Id.* In 1992, a constitutional act finally vested regional water quality management to water boards rather than retained by provinces or municipalities. *Id.*

118. *Id.* at 162.

119. *Id.* at 162-63.

120. *Id.* at 163.

121. *Id.*

122. *Id.* at 164.

123. Clayton W. Ogg & Gary A. Keith, *New Federal Support for Priority Watershed Needs*, 28 J. AM. WATER RES. ASS'N 577 (2002).

124. Water Resources Act of 2000, Pub. L. No. 106-541, § 601(k)(2)(B), 114 Stat. 2572, 2692.

125. Kuks, *supra* note 110, at 166-67.

ecological characteristics of the different water types, a review of the impacts of human activity on the status of surface waters and groundwater, and an economic analysis of water use.[126] The theoretical framework for water governance has moved from hierarchical governance or governance through a formal institutional structure, characterized by command and control, to cogovernance or informal collaborative governance, involving cooperation, coordination, and communication of various actors.[127]

The institutions for collaborative governance exist alongside the formal institutional structures that we have compared above. In Florida, there are a number of these informal intergovernmental structures. A good example is the South Florida Ecosystem Restoration Task Force (Task Force), which consists of representatives from federal, state, and local governments.[128] The Task Force meets every couple of months, and its Working Group, comprised of specialists in the area, meets in the interim.[129] The Corps has used the Task Force to organize the negotiation of solutions to Everglades Restoration problems that otherwise might become mired in litigation or political maneuvering. For example, the Task Force comprised an advisory committee on the Combined Structural and Operating Plan (CSOP) to deal with controversial aspects of the Modified Water Deliveries to Everglades National Park project.[130] The Task Force is supported by a team of scientists and engineers called the Science Coordination Group.[131]

After the EU promulgated its WFD, which went into force in December 2000, the Netherlands set up a collaborative governance structure to implement the directive. This includes both a national Committee of Governors, which negotiates agreements on national policy and guidelines, and regional committees of governors, which negotiate agreements on regional management plans for river basin districts.[132] The national committee and regional committee both report to the minister of Transport, Public Works and Water Management.[133]

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126. De Jonge, *supra* note 16, at 37.

127. *See generally* Van Leussen & Lulofs, *supra* note 101, at 171, 173, 183.

128. *See* South Florida Ecosystem Restoration Task Force, http://www.sfrestore.org/ (last visited Jan. 29, 2010).

129. *Id.*

130. S. Fla. Ecosystem Restoration Task Force, Combined Structural and Operating Plan (CSOP) Advisory Team, http://www.sfrestore.org/issueteams/csop_advisory_team/index_.html (last visited Jan. 29, 2010).

131. S. Fla. Ecosystem Restoration Task Force, Science Coordination Group, http://www.sfrestore.org/scg/index.htm (last visited Jan. 29, 2010).

132. Leussen & Lulofs, *supra* note 101, at 179.

133. *Id.*

They are supported by professionals and working groups that frame the plans and develop determinations of pressures, characteristics of water bodies, economic analysis, and monitoring.[134]

VI. COGOVERNANCE CASE STUDIES: ROOM FOR THE RIVER

To explore how governance by network functions, let us focus on an ongoing initiative that seems to be emerging in both the Netherlands and Florida's Everglades—what the Dutch call "Room for the River."[135] One of the national committees in the Netherlands, *Commissie* WB21, published a report in 2000 entitled *Water Policy for the 21st Century: Give Water the Space and Attention It Deserves*.[136] As the title attests, this national report suggested a shift toward allowing water to occupy more space.[137] In the report, "in anticipation of the changing climate and rising sea level, the committee recommended retaining water rather than draining it away."[138] This key guiding principle involved holding water in aquifers and higher parts of the water system, storing it in the lower parts of the water system, designed for emergencies, and finally discharging it into a downstream water system.[139] The strategy was soon elaborated in new water policy documents such as *A Different Approach to Water* and was subsequently adopted in regulatory spatial plans in 2005's *Spatial Planning Memorandum*.[140]

The conditions for implementing this new approach on portions of the Rhine River were set in February 1995, when large areas around the Rhine and Meuse rivers were inundated, forcing large-scale evacuation.[141] After several years of planning and considering a number of alternatives, in 2004, the national government promulgated its report, *Room for the River*, which recommended creating overflow capacity near the rivers, such as by linking retention areas to clay and gravel extraction and

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134. *Id.* at 180.

135. *See generally* Caren Hoekstra, Senior Advisor, River Basin Mgmt., & Rick Kuggeleijn, Head Safety, PowerPoint Presentation, National Programme Room for the River (May 2009), http://www.trustedpartner.com/docs/library/000049/Hoekstra.pdf.

136. *See* Henk Voogd & Johan Woltjer, *Water Policy and Spatial Planning: Linkages Between Water and Land Use*, *in* WATER POLICY IN THE NETHERLANDS: INTEGRATED MANAGEMENT IN A DENSELY-POPULATED DELTA, *supra* note 13, at 185, 190, 201 (citing Commissie WB21 (Commissie Waterbeheer 21e eeuw), Water Policy for the 21st Century: Give Water the Space and Attention It Deserves (The Hague Commission WB21, 2000)).

137. *See id.* at 190.

138. *Id.*

139. *Id.*

140. *Id.*

141. *Id.* at 191.

repositioning dikes.[142] For example, the plan calls for "depoldering" of certain areas, which consists of moving structures protected by dikes outside of the protected zone. The new structures are then relocated on mounds against the new dike.[143] Agriculture can continue in the region, but obviously farmers can expect periodic flooding because they will no longer be on the protected side of the dikes.[144]

Florida has embarked on a much smaller-scale "room for the river" exercise. In 1954, Congress approved the Kissimmee canal project as part of C & SF.[145] Channelization of the river and the loss of floodplain connectivity led to severe changes of the river's hydrology, ecological structure, function, and biological communities, including loss of up to seventy-five percent of the area's historic floodplain and a ninety percent observed decline in waterfowl populations.[146]

The movement to "put the river back" had already started when the project reached completion in 1972.[147] By 2010, the restoration project was well on its way to affecting forty square miles of river/floodplain habitat and restoring the flow to over forty miles of meandering river channel.[148] In connection with this and other projects, Florida has participated with the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), through which landowners agree with the government to restrict use of farm and ranchland using "conservation easements."[149] For example, the South Florida Water Management District has acquired 360 acres of "permanent flowage easements" for the Kissimmee River Restoration.[150] In a cooperative venture with

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142. *Id.* at 192 (citing Ministerie van Verkeer en Waterstaat, Ruimte voor de Rivier, planologische kernbeslissng, deel 1 [Room for the River: Key Planning Decision, Part 1] (2004).

143. Ministerle van Verkeer en Waterstaat, Spatial Planning Key Decision 'Room for the River': Investing in the Safety and Vitality of the Dutch River Basis Region 5 (Sept. 2006), http://www.ruimtevoorderivier.nl/files/Files/brochures/EMAB%20PBK%20Engels.pdf.

144. *Id.*

145. Steve Light & Kristen Blann, Adaptive Management and Kissimmee River Restoration Project 1 (July 2000) (unpublished manuscript, on file with author).

146. *Id.*

147. *Id.*

148. S. FLA. WATER MGMT. DIST., 2010 SOUTH FLORIDA ENVIRONMENTAL REPORT, EXECUTIVE SUMMARY 30 (Mar. 1, 2010), http://my.sfwmd.gov/portal/page/portal/pg_grp_sfwmd_sfer/portlet_sfer/tab2236037/es%202010%20sfer_final_low.pdf.

149. *E.g.*, Natural Res. Conservation Serv., USDA, Emergency Watershed Protection—Floodplain Easements, http://www.nrcs.usda.gov/programs/ewp/Floodplain/index.html (last visited Jan. 29, 2010); Natural Res. Conservation Serv., USDA, Wetlands Reserve Program, http://www.nrcs.usda.gov/programs/wrp/ (last visited Jan. 29, 2010).

150. S. Fla. Ecosystem Restoration Task Force, South Florida Ecosystem Restoration Land Acquisition Strategy (Aug. 29, 2007) (draft).

NRCS, Florida acquired a 1308-acre conservation easement on Henscratch Ranch.[151]

Partly out of this experience came an October 2005 proposal for the "Northern Everglades" north of Lake Okeechobee, under which local landowners could sell environmental services related to water retention, phosphorus load reduction, and wetland habitat expansion to state agencies and other willing buyers. A pilot project called the "Florida Ranchlands Environmental Services Project" is sponsored by World Wildlife Fund, eight participating ranchers, NRCS, and state agencies—the Florida Department of Agriculture and Consumer Services (FDACS), the District, and DEP.[152] Technical support is being provided by the MacArthur Agro-Ecology Research Center and the University of Florida.[153] Ongoing research is intended to develop procedures to compare protocols for documenting environmental services from ranchlands.[154] This involves the testing of different methodologies for monitoring and modeling hydrology, water and soil chemistry, and vegetation change to document the level of environmental services provided by ranch water management projects.[155] Funding from federal, state, and private sources exceeds $6 million for Phase One (pilot project implementation and program design).[156] "Data collection started in 2007 and is planned to continue through the end of the pilot project in 2011."[157]

Both the Dutch and Floridian "Room for the River" projects are in the early stages. It is far too early to say whether either of these innovative approaches will work outside the favorable circumstances which led to the pioneering efforts in the Rhine and Kissimmee river basins described above.[158] There are signs of controversy to come. For example, In June 2006, the three Delta provinces in the Netherlands South-Western Delta (Zeeland, Zuie-Holland, and Noord-Brabant) published *The Power of the Delta: Agenda for a Delta Programme*—

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151. S. Fla. Water Mgmt. Dist., Land Acquisition Executive Summary: Henscratch Ranch/Florida Forever Plan, http://my.sfwmd.gov/govboard/docs/F657153277/da_lr_107_sd.pdf (last visited Jan. 29, 2010).

152. *See* Natural Res. Conservation Serv., USDA, Florida NRCS Leadership Participates in CIG Project Field Tour, http://www.nrcs.usda.gov/news/thisweek/2008/111908/cigfresp.html (last visited Jan. 29, 2010); J.B. Ruhl, *Agriculture and Ecosystem Services: Strategies for State and Local Governments*, 17 N.Y.U. ENVTL. L.J. 424, 446-47 (2008).

153. S. Fla. Water Mgmt. Dist., Florida Ranchlands Environmental Services Project (FRES), https://my.sfwmd.gov/portal/page?_pageid=2294,22192133,2294_22192134&_dad=portal&_schema=PORTAL&project=1791&ou=440 (last visited Jan. 29, 2010).

154. *Id.*

155. *Id.*

156. *Id.*

157. *Id.*

158. *See supra* notes 141-157 and accompanying text.

THE AMBITION, in response to the central government's *Spatial Memorandum*.[159]

The Delta Council, composed of representatives of these three provinces, proposed an ambitious agenda for the region to improve the unique, safe, industrious, and attractive Delta. In the few places where the Netherlands national government's Space for the Rivers Core Planning Decision is discussed, the atmosphere is skeptical, perhaps somewhat hostile. The Report indicates, for example, that in light of the predicted level of sea-level rise and the forecast increase in river drainage, "the desired safety will decline over the longer term if nothing extra is done."[160] The Council thus requests "that attention be paid to the consequences of high water levels" in drainage systems associated with a designated "room for the river" project in the Vokerak-Zoommeer.[161] This discussion appears in the context of the provinces' advocacy of their collective goal "to demonstrate in an innovative and sustainable way how the Delta can continue to protect our nation against flooding."[162] The provinces' joint vision on the development of the South-Western Delta speaks of "resolving problems from a basis of strength," emphasizing the essential defense from "[t]he power of the water . . . threatening to life in the Delta."[163] There is no indication that these provinces, "reclaimed" over the centuries, intend to cede back acreage to rivers or the ocean through "depoldering."

The Delta Council instead focuses its agenda on innovative improvements in coastal defenses and integrating necessary safety with more favorable circumstances for nature.[164] It points with seeming envy at the international ComCoast project along the southern area of the North Sea intended to demonstrate innovative methods of high-tide protection.[165] Project Perkpolder, sponsored by the Netherlands, Denmark, Germany, Belgium, and the United Kingdom, is intended to develop a coastal defense zone offering opportunities for multiple types of use (living, hotel, marina, and nature), and it incorporates dikes as an integral part of the set-up.[166] ComCoast opts for a broad damming zone where land and sea merge more gradually, creating favorable circum-

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159. *See* PROVINCES OF ZEELAND, ZUID-HOLLAND & NOORD-BRABANT, THE POWER OF THE DELTA: AGENDA FOR A DELTA PROGRAMME: THE AMBITION 1 (2006).

160. *Id.* at 25.

161. *Id.*

162. *Id.*

163. *Id.* at 13.

164. *Id.* at 26.

165. *Id.*

166. *Id.*

stances for nature—sort of a "defense in depth."[167] "Enjoying the elements" is the motto formulated by Project Perkpolder's sponsoring parties.[168] Undoubtedly, the project will consider such technological innovations as Deltares' Diverse Dike, which is designed to serve as a possible living area for marine flora and fauna that are dependent on hard substrates for attachment, shelter, and food, while at the same time improving the original hydraulic dike function.[169]

VII. CONCLUSION: THE INCARNATION OF ALL OUR MEMORIES

The intergovernmental relations of water management in both Florida and the Netherlands have been moving from quantitative water management to adaptive ecosystem management: an integrated water management system that also examines qualitative water management and is linked to land-use control.[170] Looming above, however, are disasters etched into the regions' subconscious: the Hurricane of 1928 (and its modern analogue Hurricane Andrew) for Florida and the Flood of 1953 for the Netherlands. The *sine qua non* of water management in both locales is "never again." South Florida, like New Orleans, may accommodate nature. But inhabitants are not emigrating voluntarily and must be protected, nonresident professors of environmental law to the contrary notwithstanding.

Consider the Province of Zeeland's introduction to its brochure describing The Delta Project:

> The Netherlands is locked in a permanent struggle for survival. The country's name is self-explanatory: large areas of the Netherlands lie below sea level. Stronger dikes, dams and dunes are continually being constructed to keep the sea at bay and to ensure that this densely-populated country remains habitable. Half of the Netherlands would be flooded if it were not for the line of defenses that has been built over the centuries and

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167. *Id.*

168. ComCoast, Project Perkpolder (NL) 2 (Aug. 2007), http://www.comcoast.org/pdfs/pilots/Perkpolder_EN.pdf.

169. Deltares, Diverse Dike (pamphlet, 2008). Deltares is an interesting innovation itself. Delta Hydraulics, GeoDelft, the Subsurface and Groundwater unit of TNO and parts of Rijkswaterstaat joined forces in this new independent institute for delta technology. Deltares combines the expertise of Delft Hydraulics about worldwide water issues with GeoDelft expertise about dikes, roads and underground structure. The new institute also brings together TNO know-how about the subsurface and groundwater, and the competences of Rijkswaterstaat in the fields of integral water management, spatial development and administrative. Deltares, Enabling Delta Life (undated folder).

170. *See supra* notes 86-134 and accompanying text.

> the equipment to pump ground water and river water out of the low-lying polders.[171]

Neither would South Florida tolerate the flooding that would occur if the Central and South Florida Flood Control Project were dismantled. "Decompartmentalization" is a tricky business.[172] As the Netherlands must accommodate Zeeland, so must Florida accommodate South Florida. As the European Union must accommodate the Netherlands, so must the United States accommodate Florida. This is, after all, a matter of survival.

Consider Robert Duvall, an actual descendant of Robert E. Lee playing that historical figure, looking down on Fredericksburg, Virginia, before the battle about to take place there. Lee's aide explains that Fredericksburg is where Washington was rumored to have cut down the cherry tree and thrown the silver dollar across the river. Lee responds:

> That may be so, Mr. Taylor, but it has an even greater significance for me. It's where I met my wife. That's something these Yankees do not understand, will never understand. You see these rivers and valleys and streams . . . fields, even towns[.] They're just markings on a map to those people in the war office in Washington. To us, my goodness they're . . . birthplaces and burial grounds. They're battlefields where our ancestors fought. [P]laces where you and I we learned to walk, to talk and to pray. Places where we made friendships and, oh, yes, fell in love. And they're the incarnation of all our memories, Mr. Taylor[,] and all that we are. All that we are.[173]

Zeelanders would understand.

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171. DELTAPARK NEELTJE JANS & FLORAD MKTG. GROUP, *supra* note 43, at 2.

172. *See* Alfred R. Light, *Tales of the Tamiami Trail: Implementing Adaptive Management in Everglades Restoration*, 22 J. LAND USE & ENVTL. L. 59, 81-83 (2006) (describing decompartmentalization as the "heart of Everglades restoration" at the intersection of three goals-environmental restoration, water supply, and flood control).

173. GODS AND GENERALS (Ted Turner Productions 2003).