UNITED STATES OF AMERICA

Source: esri

General

The United States of America (USA) is a federal republic composed of 50 states, a federal district, five major self-governing territories, and various possessions. The United States is the world's third- or fourth-largest country by total area and the third-most populous. Forty-eight states and the capital's federal district are contiguous and located in North America between Canada and Mexico. The state of Alaska is in the northwest corner of North America, bordered by Canada in the East and across the Bering Strait from Russia in the West. The state of Hawaii is an archipelago in the mid-Pacific Ocean. The U.S. territories are scattered about the Pacific Ocean and the Caribbean Sea. The USA has a total area of 983 Mha (million hectares) with, in 2022 a population of 338 million, or 0.34 persons per ha (Wikipedia and United Nations, 2022).

Climate and geography

The extremely diverse geography, climate, and wildlife of the United States make it one of the world's 17 megadiverse countries. The USA, with its large size and geographic variety, includes most climate types. To the East of the 100th meridian, the climate ranges from humid continental in the North to humid subtropical in the South. The Great Plains west of the 100th meridian are semi-arid. The climate is arid in the Great Basin, desert in the Southwest, Mediterranean in coastal California, and oceanic in coastal Oregon, and Washington and southern Alaska. Most of Alaska is subarctic or polar. Hawaii and the southern tip of Florida are tropical, as are the populated territories in the Caribbean and the Pacific. Extreme weather is not uncommon - the states bordering the Gulf of Mexico are prone to hurricanes, and most of the world's tornadoes occur within the country, mainly in Tornado Alley areas in the Midwest and South (source: Wikipedia).

The coastal plain of the Atlantic seaboard gives way further inland to deciduous forests and the rolling hills of the Piedmont. The Appalachian Mountains and the Adirondack massif divide the eastern seaboard from the Great Lakes and the grasslands of the Midwest. The Mississippi–Missouri River, the world's fourth longest river system, runs mainly North–South through the heart of the country. The flat, fertile prairie of the Great Plains stretches to the West, interrupted by a highland region in the Southeast. The Rocky Mountains, west of the Great Plains, extend North to South across the country, peaking in Colorado. Farther West are the rocky Great Basin and deserts such as the Chihuahua, Sonoran, and Mojave. The Sierra Nevada and Cascade mountain ranges run close to the Pacific coast. The lowest and highest points in the contiguous United States are in the state of California. Active volcanoes are common throughout Alaska's Alexander and Aleutian Islands, and Hawaii consists of volcanic islands (source: Wikipedia).

Nesbit (1885) refers to successful impoldered lands in the tidal reach along Maurice River. In addition he mentions that around 1685 in Delaware tidal marshes were impoldered by Swedes. From Cape Henry to the Florida Keys there were polders with rice fields of the Carolinas and Georgia. These polders were not directly on the coast, but bordering the rivers far enough from the ocean to be exempt from high storm tides, and so situated that they could be flooded with fresh water from tributary streams. The upper limit was where the tidal action became insufficient for drainage through discharge sluices. He also refers to the successful polders along Puget Sound. Finally he mentions that the most important area of impoldered tidal marshes in the USA is in the Golden Gate area in California. He mentions several other tidal marshes where polders have been made, but doesn't specify very well where these areas are located. Therefore they could not be included in this overview.

The Centre for Civil Engineering Research and Codes (CUR) and Ministry of Transport, Public Works and Water Management (1993) state that the first low dikes along the Mississippi River were built along one bank around 1840. After 1880 the dike system was extended to both banks, and the dikes

were heightened. The result was a rise in the order of 2 m in the flood level. During the severe flood of 1927 dikes breached. In the period 1932-1942 the rise was compensated by the construction of cut-offs.

Roos and De Vries (2011) mention that in the Sacramento–San Joaquin delta in California about 120,000 ha is below mean sea level, protected by dikes, many on weak peat soil. The continuing sea level rise coupled with continued subsidence, will make it more difficult to protect low-lying delta lands from inundation. The biggest threat is during high water storm events, but also a few summer dry season breaks have affected endiked areas.

Olson and Morton (2016) describe that in the USA river floodplains, swamps, and forested bottomlands have been drained under the US Swamp Land Acts of 1849 to 1860.

In many of the polders in the USA there is significant subsidence. An example is shown by Nienhuis *et al*. (2017) in the subsidence map for coastal Louisiana (Figure 1).

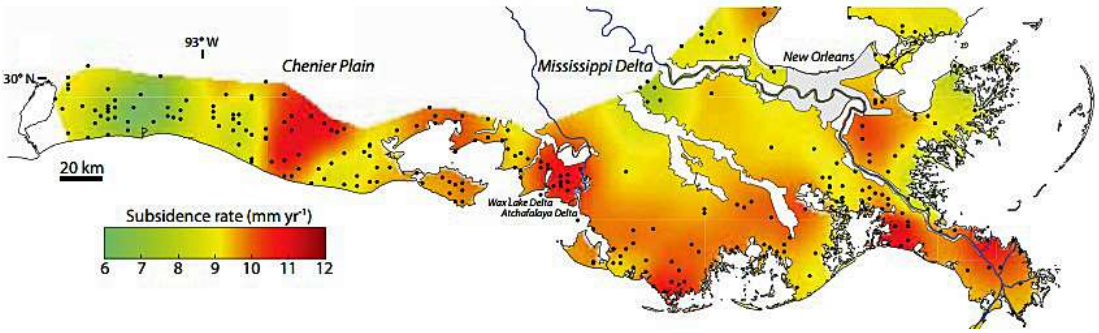

Figure 1. Subsidence map for coastal Louisiana (Nienhuis et al., 2017)

Existing polders

The Group Polder Development (1982) states that millions of hectares have been endiked and drained for agriculture and settlement. This includes reclamation of bays and river beds. There are several hundred thousand hectares of agricultural land in polders below mean sea level, for example in the Sacramento Delta and the coastal lowlands of North Carolina. All the three types of polders – reclaimed low lying lands, lands gained on the sea and drained lakes - can be found in the USA:

- *reclaimed low lying lands*:
  - *Florida*:
    - areas in the Everglades;
    - Gumbo Island (40 ha);
  - *Louisiana and some other states*. Considerable areas have been endiked and managed for rice production;
  - *Lower Mississippi Valley*. Probably more than 400,000 ha of river bottom land has been endiked and reclaimed;
  - *Massachusetts and Washington*:
    - extensive bays have been endiked and managed for cranberry culture;
    - Wikipedia refers to new parts of Boston that would have been reclaimed between 1820 and 1900. It also refers to Back Bay in Boston (243 ha) that would have been reclaimed between 1857 and 1894. It is difficult to find out to what extend these are indeed polders;
  - *Minnesota*. Peat bays;
  - *New Orleans and surrounding area, Louisiana*. New Orleans consists to a large extent of polders. At the North and West side the area has to be protected against flooding by the Mississippi River. At the East and South side it has to be protected against flooding from the Carribean (Figure 2). The US Army Corps of Engineers publishes Polder Vertical Datum Reports. For the New Orleans District the Map is shown in Figure 3. To protect the city from flooding by the Mississippi River, among others, in 1931 the Bonnet Carré Spillway was constructed (Figure 4).

In 2005 a large area was flooded due to the hurricane Katrina through Lake Borgue and Lake Pontchartrain. Kok *et al*. (2006) show the polders in New Orleans that were flooded (Figure 5).

Kok *et al*. (2006) also show the dike (here called levees, as usual in the USA) system of New Orleans (Figure 6). A distinction is made in Mississippi dikes, hurricane dikes and secondary dikes.

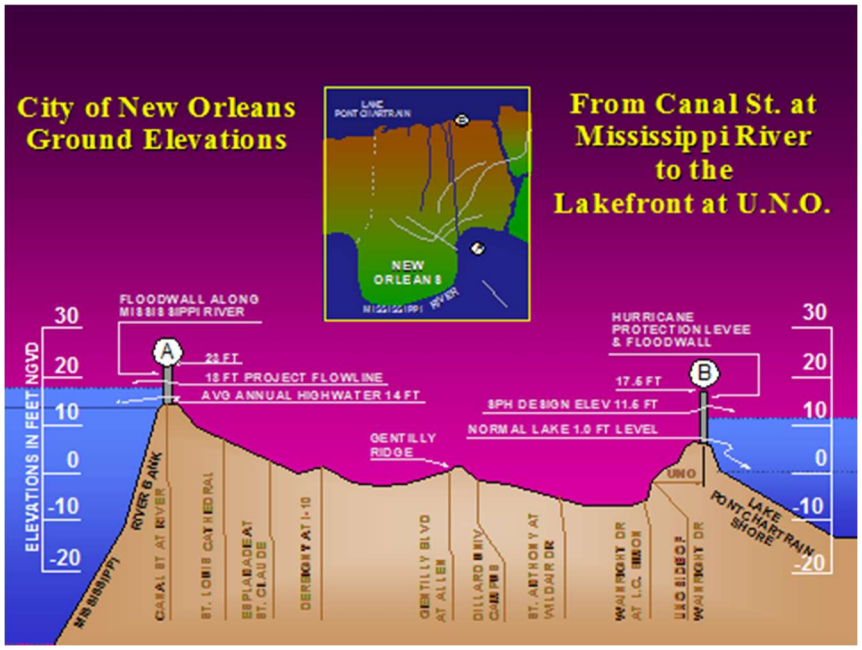

Figure 2. New Orleans at the mouth of Mississippi River (source: Army Corps of Engineers)

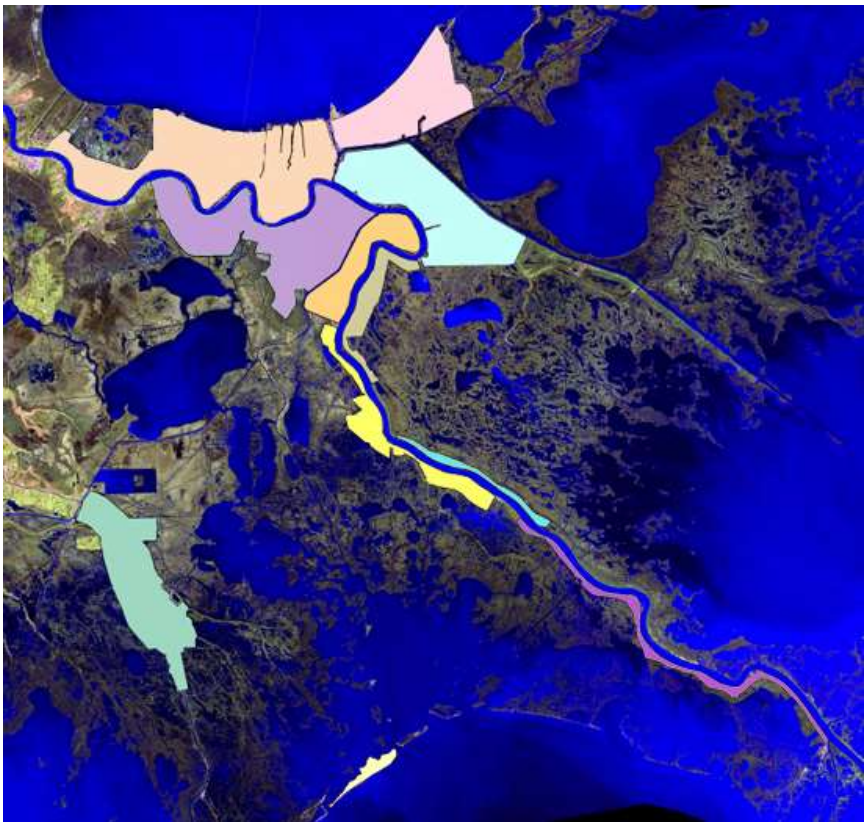

Figure 3. Polder areas in the New Orleans District (source: Army Corps of Engineers)

Figure 4. The Bonnet Carré Spillway 19 km upstream of New Orleans to divert flood water from Mississippi River to Lake Pontchartrain

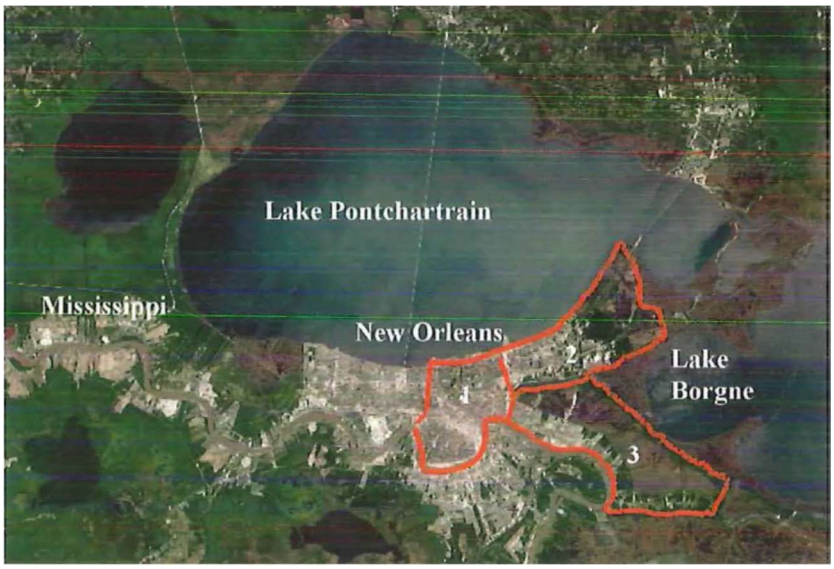

Figure 5. Polders (red encircled) – Orleans (1), Orleans East (2) and St. Bernard (3) - in New Orleans that were flooded due to the hurricane Katrina in 2005 (Kok et al., 2006)

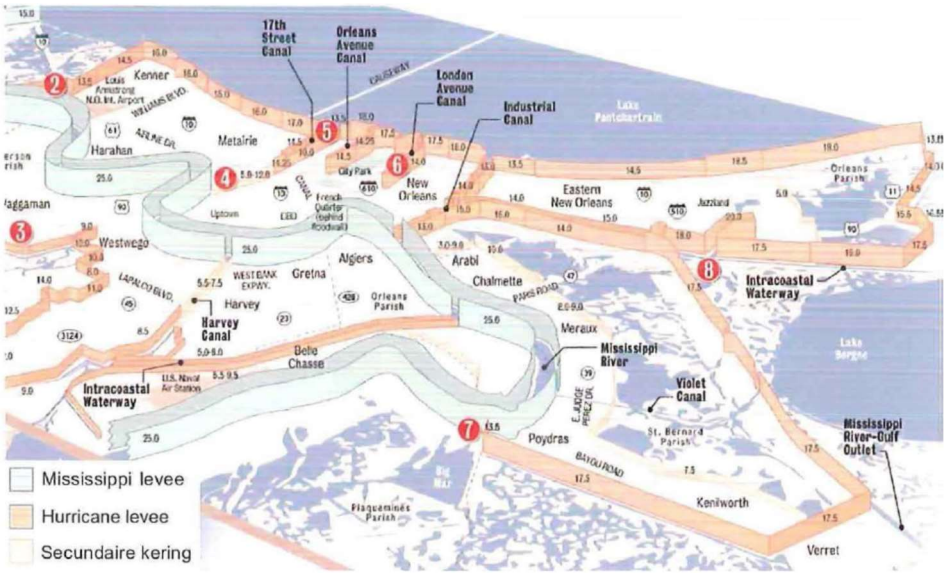

Figure 6. Dike system of New Orleans (Kok et al., 2006)

* *North Carolina*. More than 40,000 ha lowland peat areas around Albemarle and Pamlico Sounds;
* *Sacramento – San Joaquin Delta*. Reclamation of islands was initiated at about 1850. By 1870 6,100 ha had been reclaimed. In 1960 the agricultural lands in the delta had a total area of 245,000 ha (Group Polder Development, 1982). Wikipedia refers to a reclamation period from 1900 till 1950 and a total reclaimed area of 202,100 ha. The Centre for Civil Engineering Research and Codes (CUR) and Ministry of Transport, Public Works and Water Management (1993) mention that these polders can be upto 4.5 m-MSL;
* *Texas.* Much of the land surrounding Houston, including residential areas and small towns;
* *Washington.* Samish flats 1,704 ha (4,210 acre) (Nesbit, 1885);

- *lands gained on the sea*:
  * *California.* Endiking and filling in San Fransisco Bay have reduced the area of the bay by about 50,000 ha (30%). This area has been reclaimed from open water, or marsh. Farm tracts bordered by the dikes are increasingly vulnerable to large-scale flooding as the land subsides and the dikes age and crumble (Group Polder Development, 1982). Wikipedia mentions that reclamation took place in the period 1900 – 1950 and that 86,670 ha has been reclaimed;
  * *Virginia*. The Group Polder Development (1982) mentions that in the 19th century many areas in the Chesapeake Bay have been reclaimed. However, many areas have been lost again due to erosion;
- *drained lakes:*
  - *North Carolina*. Lake Mattamuskeet (20,000 ha) was drained around 1915. Around 1930 the pumping was stopped and the area became a lake again. Now there are only some small polders at the borders of the lake (Group Polder Development, 1982).

General characteristics of the polders in the United States of America are shown in Table I. Table II shows the characteristics of the water management and flood protection systems of the existing polders.

Proposed polders

The Group Polder Development (1982) mentions that the Hackensack meadows in New Jersey can be reclaimed by means of closing the Hackensack River.

Location of the polders in United States of America as shown on the World polder map

The locations of the polders in United States of America are shown in Figure 7.

Figure 7. Location of the polders in United States of America (source: esri – Batavialand)

The pictures by Prof. Adriaan Volker are shown in Table III. The pictures by Prof. Bart Schultz are shown in Table IV.

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Bart Schultz

Lelystad, May 2023

Table I. General characteristics of existing polders in USA

Name	Reclamation	Area in ha	Type *)	Latitudes	Longitudes	Elevation in m+MSL	Land use
Existing polders							
Reclaimed low lying lands							
California							
Polders in Sacramento-San Joaquin Delta	1850-1960	245,000	RLL	38° 04' N	121° 43' W	-5	Agriculture
Florida							
• Areas in the Everglades			RLL	25° 46' N	80° 34' W		
• Gumbo Island		40	RLL	26° 27' N	82° 04' W		
Louisiana and some other states							
Endiked areas			RLL				Rice
Lower Mississippi Valley							
River bottom land		400,000	RLL				
Massachusetts and Washington							
• Extensive bays			RLL				Granberry
• New parts of Boston			RLL	42° 22' N	71° 04' W		
Minnesota							
Peat bays			RLL				
New Orleans District							
• Belle Chasse Polder			RLL	29° 52' N	89° 58' W	-6	Urban
• Caernarvon to Phoenix Polder			RLL	29° 48' N	89° 58' W	-9	Agriculture
• Grande Isle Polder			RLL	29° 14' N	89° 59' W	0	Rural
• Larose - Golden Meadow Polder			RLL	29° 27' N	90° 18' W	0	Rural
• New Orleans East Polder			RLL	30° 03' N	89° 50' W	-9	Urban
• Oakville to City Price Polder			RLL	29° 40' N	89° 58' W	0	Agriculture
• Phoenix to Bohemia Polder			RLL	29° 35' N	89° 49' W	0	
• Saint Charles - Jefferson - Orleans Metro Polder			RLL	30° 00' N	90° 11' W	-9	Urban
• St. Bernard Polder			RLL	29° 55' N	89° 52' W	-9	Urban
• St. Jude to Venice Polder			RLL	29° 23' N	89° 36' W	1	
• Westwego - Harvey – Algiers Polder			RLL	29° 54' N	90° 12' W	-8	Urban
North Carolina							
• Areas around Albemarle			RLL	35° 21' N	80° 20' W		
• Areas around Pamlico Sounds			RLL	35° 34' N	76° 03' W		
Sub-total		645,040					

*) RLL = reclaimed low-lying land; LGS = land gained on the sea; DL = drained lake

Table I. General characteristics of existing polders in USA (continued)

Name	Reclamation	Area in ha	Type *)	Latitudes	Longitudes	Elevation in m+MSL	Land use
Reclaimed low lying lands							
Sub-total previous page		645,040					
Texas							
Surroundings of Houston			RLL	29° 46' N	95° 22' W		Urban and rural
Washington							
• Puget Sound		10,500	RLL				
• Samish Flats		1,704	RLL	48° 22' N	122° 21' W	16	Agriculture
Sub-total		657,244					
Land gained on the sea							
California							
San Fransisco Bay	1900-1950	86,670	LGS	37° 41' N	122° 09' W		
Virginia							
Chesapeake Bay	1915-1930		LGS	38° 16' N	76° 07' W		
Sub-total		743,914					
Drained Lake							
North Carolina							
Lake Mattamuskeet		20,000	DL	35° 34' N	76° 05' W	1 m	
Total		763,914					
Proposed polders							
New Jersey							
Hackensack meadows							

*) RLL = reclaimed low-lying land; LGS = land gained on the sea; DL = drained lake

Table II. Characteristics of the water management and flood protection system in USA

Name	Design criteria in chance of occurrence/year							
	Water management						Flood protection	
	Drainage					Irrigation	Rural	Urban
	Type	Design criterion	Percentage of open water	Discharge capacity m^3/s	Discharge capacity mm/day			
California								
Polders in Sacramento-San Joaquin Delta	RLL							
Florida								
• Areas in the Everglades	RLL							
• Gumbo Island	RLL							
Louisiana and some other states								
Endiked areas	RLL							
Lower Mississippi Valley								
River bottom land	RLL							
Massachusetts and Washington								
• Extensive bays	RLL							
• New parts of Boston	RLL							
Minnesota								
Peat bays	RLL							
New Orleans District								
• Caernarvon to Phoenix Polder	RLL							
• New Orleans East Polder	RLL							
• St. Bernard Polder	RLL							
• Saint Charles - Jefferson - Orleans Metro Polder	RLL							
• Westwego - Harvey – Algiers Polder	RLL						<100	
• Belle Chasse Polder	RLL							
• Oakville to City Price Polder	RLL							
• Larose - Golden Meadow Polder	RLL							
• Grande Isle Polder	RLL							
• St. Jude to Venice Polder	RLL							
• Phoenix to Bohemia Polder	RLL						<100	

Table II. Characteristics of the water management and flood protection system in USA (continued)

Name	Design criteria in chance of occurrence/year							
	Water management						Flood protection	
	Drainage					Irrigation	Rural	Urban
	Type	Design criterion	Percentage of open water	Discharge capacity				
				m^3/s	mm/day			
North Carolina								
• Areas around Albemarle	RLL							
• Areas around Pamlico Sounds	RLL							
Texas								
Surroundings of Houston	RLL							
Washington								
• Puget Sound								
• Samish Flats	RLL							
California								
San Fransisco Bay	LGS							
Virginia								
Chesapeake Bay	LGS							
North Carolina								
Lake Mattamuskeet	DL							

Table III. Pictures and slides by Prof. Adriaan Volker on polders in United States of America

			
D4 2 043/D.4.2.43*) Presumably bank of the Mississippi in New Orleans, May 1986	D4 2 044/D.4.2.44 Dike in New Orleans, May 1986	D4 2 045/D.4.2.45 Dike in New Orleans, May 1986	D4 2 046/D.4.2.46 Great New Orleans bridge, May 1986
			
D4 2 047/D.4.2.47 Dike in New Orleans, May 1986	D4 2 048/D.4.2.48 Radar boat at the bank of Mississippi River in New Orleans, May 1986	D4 2 049/D.4.2.49 Presumably bank of the Mississippi River in New Orleans, May 1986	D4 2 050/D.4.2.50 Dike in New Orleans, May 1986
			
D4 2 051/D.4.2.51 Probably Mississippi River at New Orleans, May 1986	D4 2 052/D.4.2.52 Dike in New Orleans, May 1986	D4 2 053/D.4.2.53 Dike in a bad state in New Orleans, May 1986	D4 2 054/D.4.2.54 Gate in dike in New Orleans, May 1986

*) Batavialand/original

Table III. Pictures and slides by Prof. Adriaan Volker on polders in United States of America (continued)

			
D4 2 055/D.4.2.55 Dike in New Orleans, May 1986	D4 2 056/D.4.2.56 Radar boat at the Mississippi River in New Orleans, May 1986	D4 2 057/D.4.2.57 Great New Orleans bridge, May 1986	D4 2 058/D.4.2.58 Pusher at New Orleans, May 1986
			
D4 2 059/D.4.2.59 Old building at the water in New Orleans, May 1986	D4 2 060/D.4.2.60 Dike in New Orleans, May 1986	D4 2 061/D.4.2.61 Great New Orleans bridge, May 1986	D4 2 062/D.4.2.62 Lowland area near New Orleans, May 1986
			
D4 2 063/D.4.2.63 Shiplock near New Orleans, May 1986	D4 2 064/D.4.2.64 Pusher near New Orleans, May 1986	A6 001/V.6.1 US Army Corps of Engineers, Beach Erosion Board	A6 002/V.6.2 US Army Corps of Engineers, Beach Erosion Board

Table III. Pictures and slides by Prof. Adriaan Volker on polders in United States of America (continued)

			
A6 003/V.6.3 US Army Corps of Engineers, Beach Erosion Board	A6 003 A Group picture, Volker middle in front	A6 004/V.6.4 Volker during study tour	D4 1 001/D.4.1.1 Bank in lowland area
			
D4 1 002/D.4.1.2 Turbulence in water	D4 1 003/D.4.1.3 Bank in lowland area	D4 1 004/D.4.1.4 Bridge, presumably over sea arm	D4 1 005/D.4.1.5 Bridge, presumably over sea arm
			
D4 1 006/D.4.1.6 Bank in lowland area	D4 1 007/D.4.1.7 Nice signboard	D4 1 008/D.4.1.8 Viewpoint at the coast	D4 1 009/D.4.1.9 Waterfall

Table III. Pictures and slides by Prof. Adriaan Volker on polders in United States of America (continued)

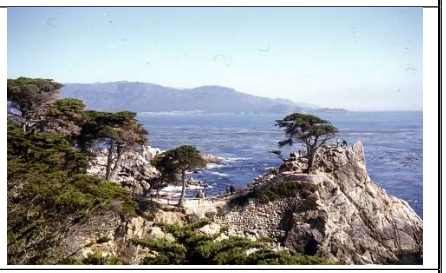
			
D4 1 010/D.4.1.10 Waterfall	D4 1 011/D.4.1.11 Waterfall	D4 1 012/D.4.1.12 Waterfall	D4 1 013/D.4.1.13 Waterfall
			
D4 1 014/D.4.1.14 Waterfall	D4 1 015/D.4.1.15 Waterfall	D4 1 016/D.4.1.16 Bank landscape	D4 1 017/D.4.1.17 Viewpoint at a rock along the coast
			
D4 1 018/D.4.1.18 Marina for pleasure boats	D4 1 019/D.4.1.19 Shiplock	D4 1 020/D.4.1.20 Overflow	D4 1 021/D.4.1.21 Overflow

Table III. Pictures and slides by Prof. Adriaan Volker on polders in United States of America (continued)

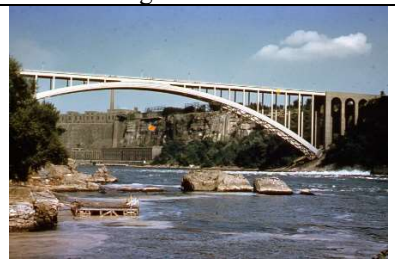
			
D4 1 022/D.4.1.22 Niagara waterfalls	D4 1 023/D.4.1.23 Niagara waterfalls	D4 1 024/D.4.1.24 Niagara waterfalls	D4 1 025/D.4.1.25 Niagara waterfalls
			
D4 1 026/D.4.1.26 Gondola above the Niagara waterfalls	D4 1 027/D.4.1.27 Bridge above the Niagara waterfalls	D4 1 028/D.4.1.28 Niagara waterfalls	D4 1 029/D.4.1.29 Manhattan, New York

Table III. Pictures and slides by Prof. Adriaan Volker on polders in United States of America (continued)

			
D4 1 030/D.4.1.30 Brooklyn bridge with Manhattan, New York	D4 1 031/D.4.1.31 Brooklyn bridge with Manhattan, New York	D4 1 032/D.4.1.32 Coastal area in New York	D4 1 033/D.4.1.33 Manhattan, New York
			
D4 1 034/D.4.1.34 Brooklyn bridge with Manhattan, New York	D4 1 035/D.4.1.35 Manhattan, New York	D4 1 036/D.4.1.36 Bridge in New York	D4 1 037/D.4.1.37 Manhattan, New York
			
D4 1 038/D.4.1.38 Brooklyn bridge with Manhattan, New York	D4 1 039/D.4.1.39 Bridge in New York		

Table IV. Pictures and slides by Prof. Bart Schultz on polders in United States of America

			
Rij 6 001/XX/6-1*) Canal near New Orleans, February 2003	Rij 6 003/XX/6-3 Canal near New Orleans, February 2003	Rij 6 004/XX/6-4 Dike and concrete wall at the east side of New Orleans, February 2003	Rij 7 001/XX/7-1 Dike and concrete wall at the east side of New Orleans, February 2003
			
Rij 7 002/XX/7-2 Canal near New Orleans, February 2003	Rij 7 003/XX/7-3 Connection of canal in New Orleans with Lake Pontchartrain, February 2003	Rij 7 004/XX/7-4 Connection of canal in New Orleans with Lake Pontchartrain, February 2003	Rij 1 001/XXI/1-1 Canal for the discharge of excess water from New Orleans, February 2003
			
Rij 1 002/XXI/1-2 Dike, concrete wall and movable gate for flood protection of New Orleans, February 2003	Rij 1 003/XXI/1-3 Dike with concrete wall for flood protection of New Orleans, February 2003	Rij 1 004/XXI/1-4 Dike with concrete wall for flood protection of New Orleans, February 2003	Rij 2 002/XXI/2-2 Bonnet Carré Spillway for the diversion of water during high discharges of Mississippi River near Lake Pontchartrain upstream of New Orleans, February 2003

*) Batavialand/original

Table IV. Pictures and slides by Prof. Bart Schultz on polders in United States of America (continued)

			
Rij 2 003/XXI/2-3 Bonnet Carré Spillway for the diversion of water during high discharges of Mississippi River near Lake Pontchartrain upstream of New Orleans, February 2003	Rij 2 004/XXI/2-4 Bonnet Carré Spillway for the diversion of water during high discharges of Mississippi River near Lake Pontchartrain upstream of New Orleans, February 2003	Row 3 001/XXI/3-1 View at activities at and along the Mississippi River near New Orleans, February 2003	Row 3 002/XXI/3-2 View at activities at and along the Mississippi River near New Orleans, February 2003
			
Row 3 003/XXI/3-3 Inner slope of a dike near New Orleans, February 2003	Row 3 004/XXI/3-4 Bonnet Carré Spillway for the diversion of water during high discharges of Mississippi River near Lake Pontchartrain upstream of New Orleans, February 2003	Row 4 001/XXI/4-1 Bonnet Carré Spillway for the diversion of water during high discharges of Mississippi River near Lake Pontchartrain upstream of New Orleans, February 2003	Row 4 002/XXI/4-2 Bonnet Carré Spillway for the diversion of water during high discharges of Mississippi River near Lake Pontchartrain upstream of New Orleans, February 2003

Table IV. Pictures and slides by Prof. Bart Schultz on polders in United States of America (continued)

			
Row 4 003/XXI/4-3 Bonnet Carré Spillway for the diversion of water during high discharges of Mississippi River near Lake Pontchartrain upstream of New Orleans, February 2003	Row 5 001/XXI/5-1 Bonnet Carré Spillway for the diversion of water during high discharges of Mississippi River near Lake Pontchartrain upstream of New Orleans, February 2003	Rij 6 001/XXI/6-1 Name plate of the Bonnet Carré Spillway for the diversion of water during high discharges of Mississippi River near Lake Pontchartrain upstream of New Orleans, February 2003	Rij 6 002/XXI/6-2 Bonnet Carré Spillway for the diversion of water during high discharges of Mississippi River near Lake Pontchartrain upstream of New Orleans, February 2003
			
108_0821**) Announcement at CNN of evacuations from New Orleans because of the expected arrival of Hurricane Rita, 22 September 2005	108_0822 Announcement at CNN of the expected course of Hurricane Rita, 22 September 2005	108_0832 Satellite picture at CNN of Hurricane Rita near New Orleans, 22 September 2005	108_0834 Announcement at CNN of the expected course of Hurricane Rita, 22 September 2005

**) Original number

Table IV. Pictures and slides by Prof. Bart Schultz on polders in United States of America (continued)

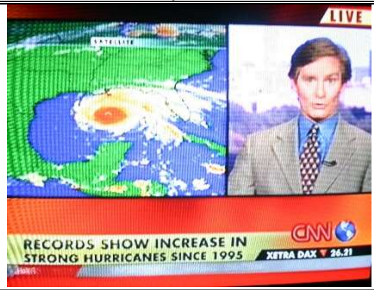
			
108_0835 Announcement at CNN of the expected course of Hurricane Rita, 22 September 2005	108_0836 Announcement at CNN of the expected course of Hurricane Rita, 22 September 2005	108_0845 Announcement at CNN of the expected course of Hurricane Rita as class 3 storm, 24 September 2005	108_0847 Announcement at CNN of the expected course of Hurricane Rita as class 3 storm. 24 September 2005
			
108_0849 Announcement at CNN of the expected course of Hurricane Rita as class 3 storm. 24 September 2005	108_0850 Announcement at CNN that Hurricane Rita has reached peak speeds of 120 miles per/hour, 24 September 2005	108_0851 Announcement at CNN that Hurricane Rita has reached peak speeds of 120 miles per/hour, 24 September 2005	108_0854 Announcement at CNN that Hurricane Rita has reached peak speeds of 120 miles per/hour, 24 September 2005

Table IV. Pictures and slides by Prof. Bart Schultz on polders in United States of America (continued)

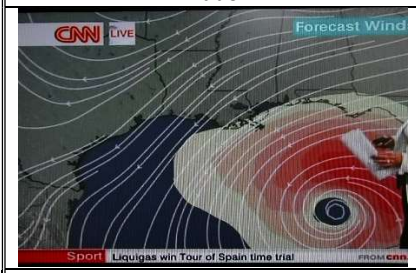
			
IMG_3241 Announcement by the mayor of New Orleans, Ray Nagin, of the expected arrival of Hurrricane Gustav in New Orleans, 31 August 2008	IMG_3242 Announcement by the mayor of New Orleans, Ray Nagin, of the expected arrival of Hurrricane Gustav in New Orleans, 31 August 2008	IMG_3243 Announcement by the mayor of New Orleans, Ray Nagin, of the expected arrival of Hurrricane Gustav in New Orleans, 31 August 2008	IMG_3244 Announcement at CNN of the expected course of Hurrricane Gustav, 31 August 2008
			
IMG_3245 Picture at CNN of the magnitude of Hurrricane Gustav, 31 August 2008	IMG_3246 Picture at CNN of the magnitude of Hurrricane Gustav, 31 August 2008	IMG_3248 Warning by President Bush at CNN for the arrival of Hurrricane Gustav, 31 August 2008	IMG_3249 Warning by President Bush at CNN for the arrival of Hurrricane Gustav, 31 August 2008

Table IV. Pictures and slides by Prof. Bart Schultz on polders in United States of America (continued)

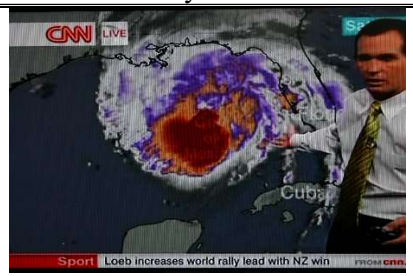
			
IMG_3250 Warning by President Bush at CNN for the arrival of Hurrricane Gustav, 31 August 2008	IMG_3251 Picture at CNN of the magnitude of Hurrricane Gustav, 31 August 2008	IMG_3252 Announcement at CNN of the expected course of Hurrricane Gustav, 31 August 2008	IMG_3253 Announcement at CNN of the expected course of Hurrricane Gustav, 31 August 2008
			
IMG_3254 Announcement at CNN of the expected course of Hurrricane Gustav, 31 August 2008	IMG_3255 Announcement at CNN of the expected course of Hurrricane Gustav, 31 August 2008	IMG_3256 Picture at CNN of the magnitude of Hurrricane Gustav, 31 August 2008	IMG_3257 Picture at CNN of the magnitude of Hurrricane Gustav, 31 August 2008
			
IMG_3258 Picture at CNN of the magnitude of Hurrricane Gustav, 31 August 2008	IMG_3259 Picture at CNN of the magnitude of Hurrricane Gustav, 31 August 2008	IMG_3260 Picture at CNN of the magnitude of Hurrricane Gustav, 31 August 2008	IMG_3261 Picture at CNN of the magnitude of Hurrricane Gustav, 31 August 2008

Table IV. Pictures and slides by Prof. Bart Schultz on polders in United States of America (continued)

			
IMG_3262 Picture at CNN of the magnitude of Hurrricane Gustav, 31 August 2008	Outlet in treatment area	Bonnet Carre Bypass upstream of New Orleans 1	Bonnet Carre Bypass upstream of New Orleans 2
			
Bonnet Carre Bypass upstream of New Orleans 3	Flood protection New Orleans 1	Flood protection New Orleans 2	Pumping station to treatment area
			
Inlet Mississippi	Supply canal to a nature conservation area	Outlet in the Everglades	