

Managed Retreat through Community Relocation

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Managed Retreat

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Home KS3 Geography Physical geography Coastal landscapes



Bitesize Coastal management

Coasts can be protected from erosion through hard engineering, like sea walls, and soft engineering, like beach nourishment. These have both positive and negative effects.

Hard engineering

Defence type	Advantages	Disadvantages
 Sea wall	<ul style="list-style-type: none">Protects the area behind the wallHelps prevent flooding	<ul style="list-style-type: none">Very expensiveWaves bounce off the wall and scour the beach, removing materialCan look ugly
 Groynes	<ul style="list-style-type: none">Helps to stop longshore drift moving material along the coastTraps sediment and builds up beaches	<ul style="list-style-type: none">May create problems elsewhere because they starve other beaches of sediment
 Rip rap or rock armour	<ul style="list-style-type: none">Large boulders absorb wave energy and reduce the power of the waves	<ul style="list-style-type: none">Strong waves can move or undermine the bouldersCan look ugly

Soft engineering

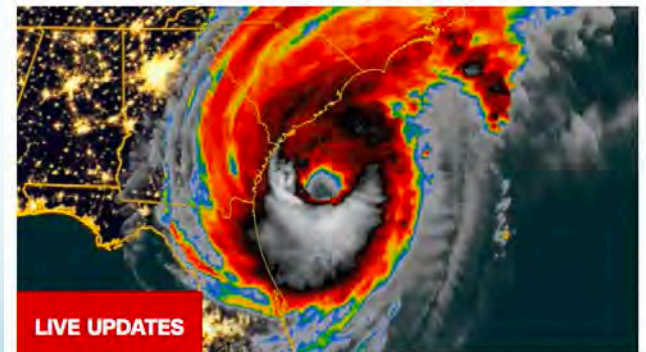
Management type	Advantages	Disadvantages
 Beach nourishment	<ul style="list-style-type: none">Adding more sand or shingle widens the beach and waves lose power travelling across itLooks natural	<ul style="list-style-type: none">Doesn't last very long
 Managed retreat	<ul style="list-style-type: none">Land becomes marsh, slowing waves and reducing erosionCreates new habitats	<ul style="list-style-type: none">Land is lost

Applies to
Floodplain Management
as well

CNN US World Politics Business Opinion Health

LIVE UPDATES: Dorian | Brexit | Climate town hall

Dorian is now a Category 3 storm as it starts impacting the Carolinas



The hurricane is expected to bring life-threatening storm surge and flooding to a large part of the US east coast

One option: **Managed Retreat** through **Community Relocation**



Valmeyer, IL
1993

Population
900

Valmeyer, IL
today

Population
1250



Managed Retreat through Community Relocation.

Advantages

- Permanent elimination of flood risk
- Can be cost-effective
- Avoids piecemeal erosion of community (as with buyouts)
- Can maintain social fabric
- Can be combined with other synergistic benefits, e.g. to environment

Challenges

- **Many, and large**
- **but ...** 20-30 US towns have completed partial or complete moves

Niobrara, Nebraska

Missouri River, 1881

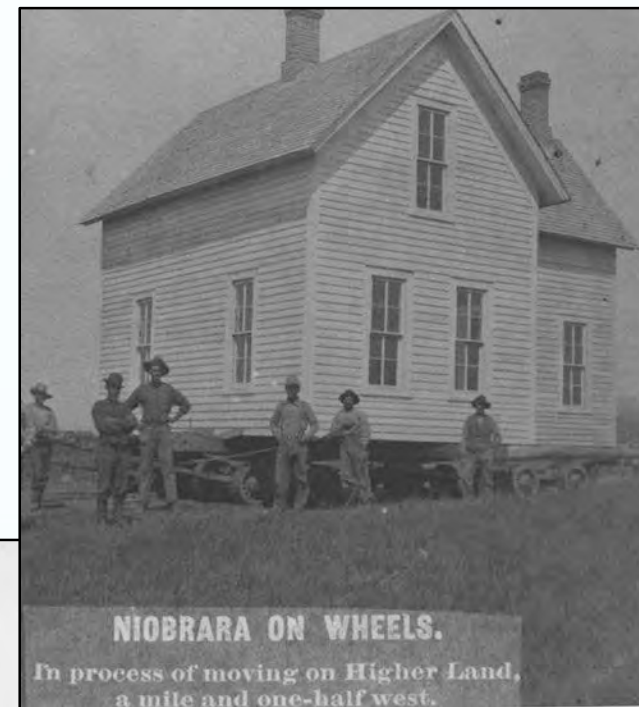


475 inhabitants (1880):

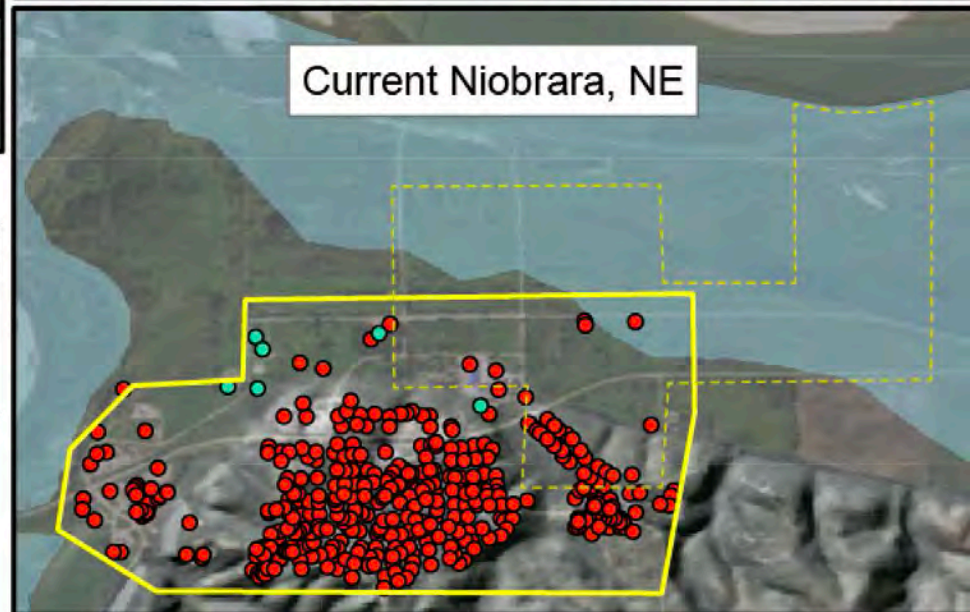
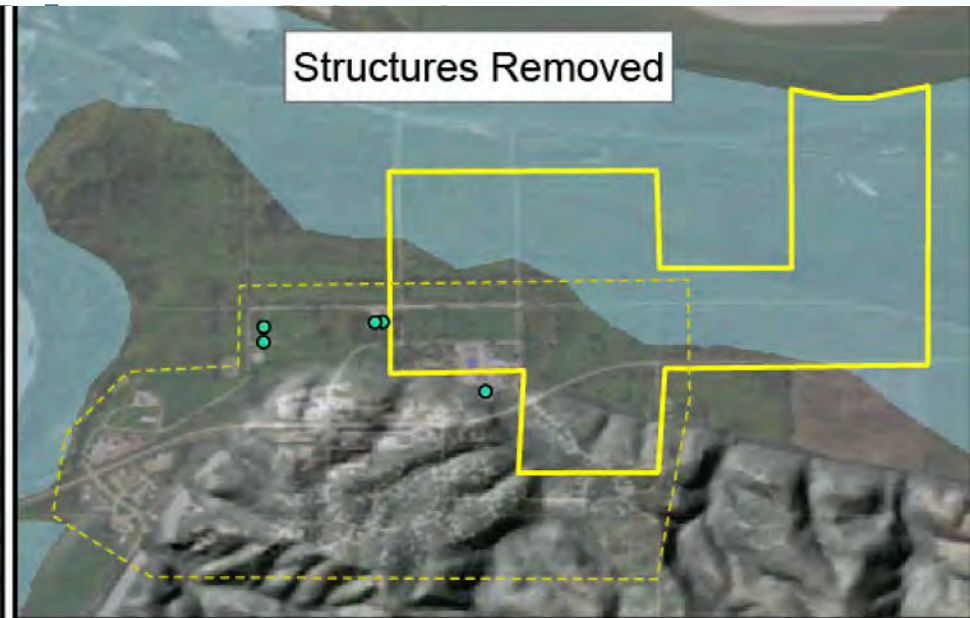
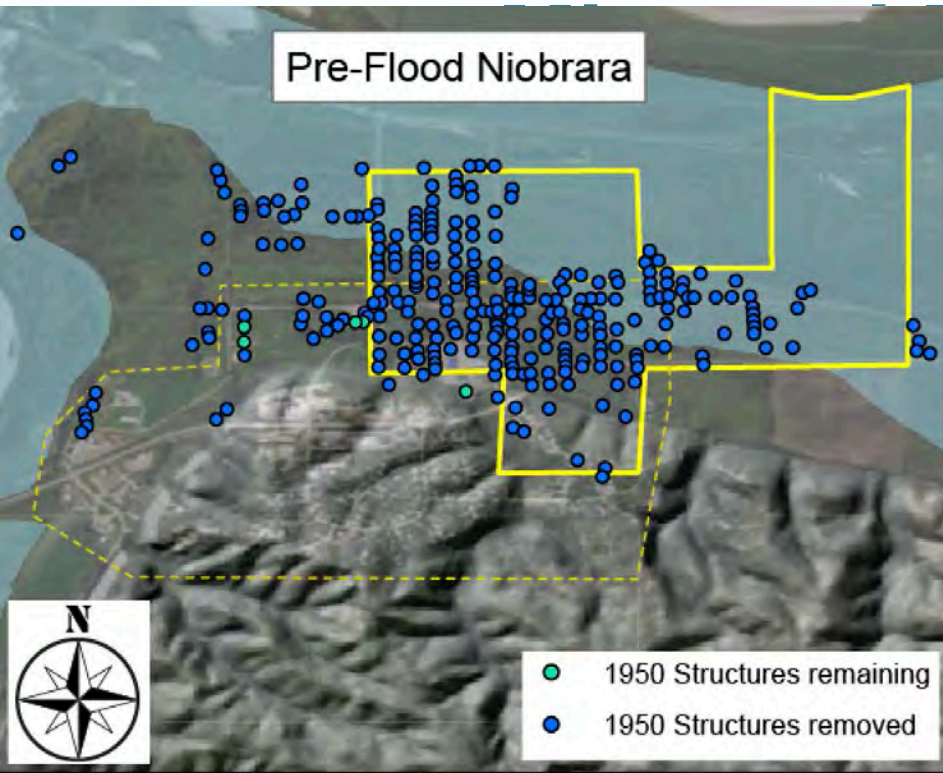
3 general stores
2 drug stores,
2 hardware stores,
1 harness shop,
2 blacksmiths,
5 hotels,
3 physicians,
1 school,
1 church,
2 newspapers

Niobrara, Nebraska

Missouri River, 1881



Niobrara, Nebraska



The Great Ohio River Flood, 1937: Shawneetown, IL & Leavenworth, IN

Shawneetown, IL

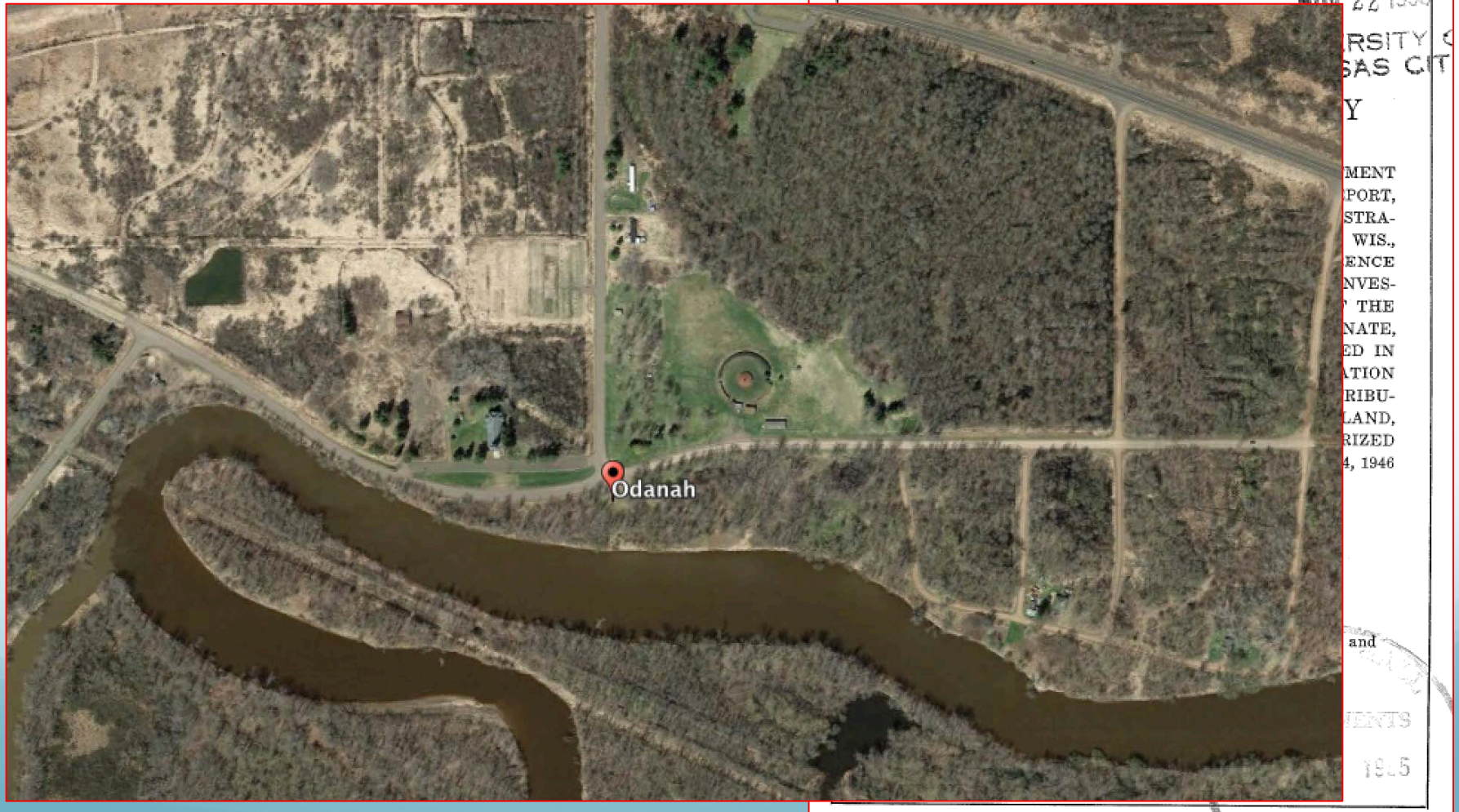


1937 Flood of Leavenworth, IN



SHAWNEETOWN, ILL.
WATER HAD FALLEN 3 INCHES APRIL 10TH 1937.
BY F. VERMILION
SHAWNEETOWN, ILL.

Odanah, WI: ~1974





5:39

+ QUEUE

DOWNLOAD

EMBED

TRANSCRIPT

ENVIRONMENT

Wisconsin Reservation Offers A Climate Success Story And A Warning

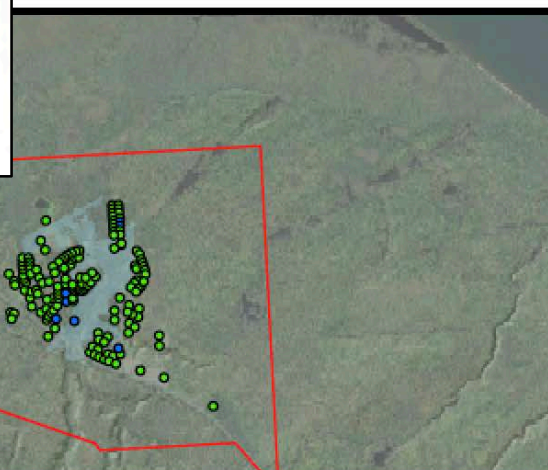
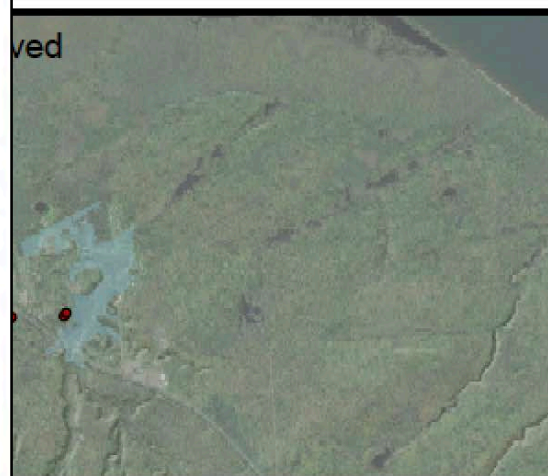
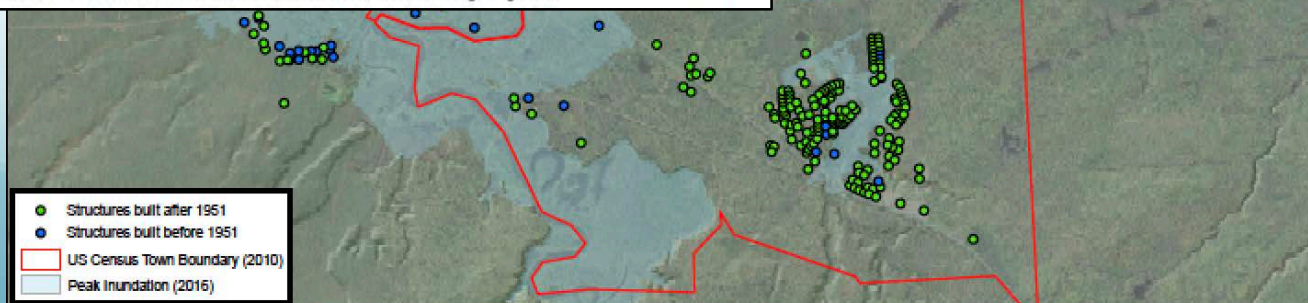
August 15, 2018 · 11:07 AM ET
Heard on [All Things Considered](#)



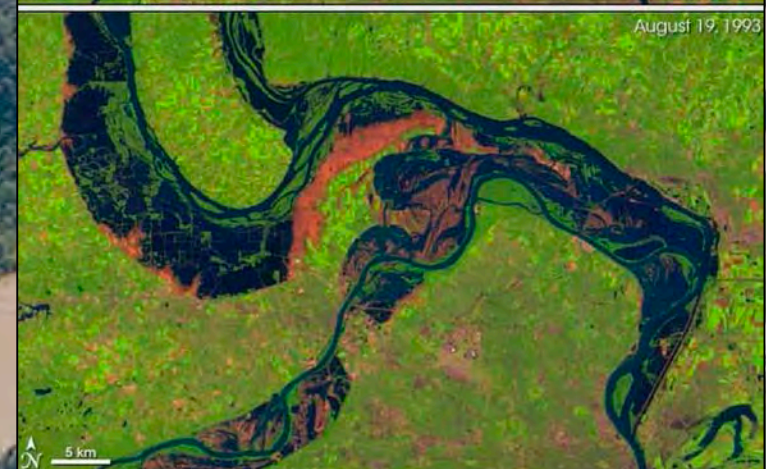
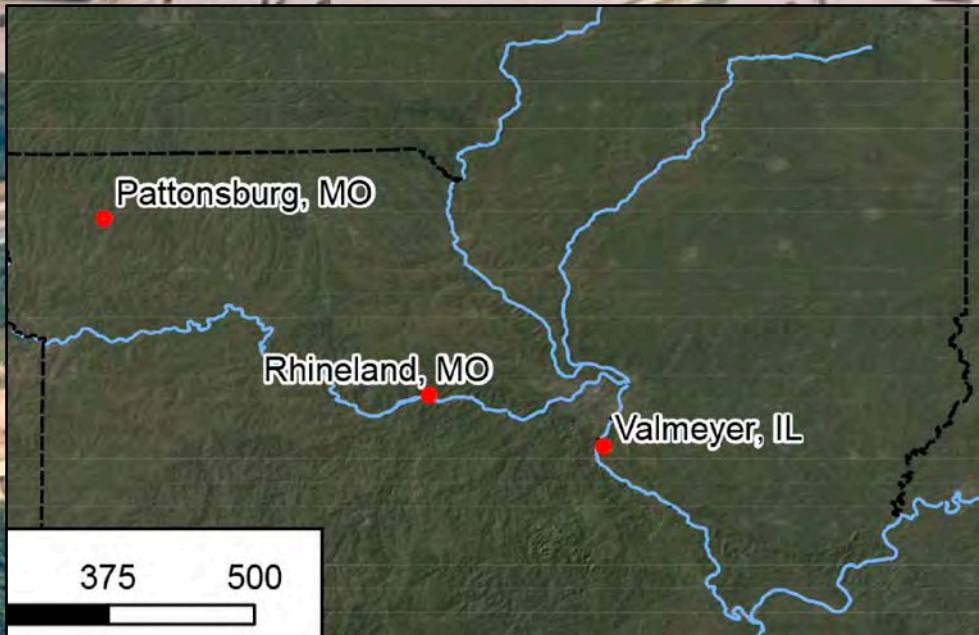
REBECCA HERSHER



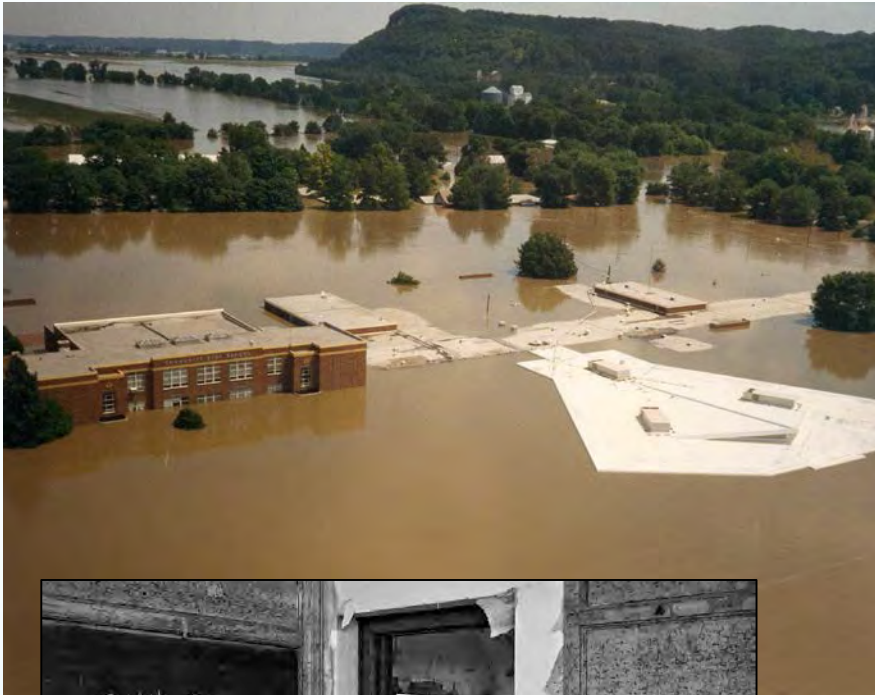
This road was lined with homes before the town of Odanah, Wis. moved to higher ground.



Great Midwestern US Flood of 1993



Valmeyer, IL: 1993



University Council on Water Resources
Journal of Contemporary Water Research & Education
Issue 136, Pages 41-46, March 2007

Moving a Community in the Aftermath of the Great 1993 Midwest Flood

Deerens M. Krotzsch
Former Mayor, Valmeyer, Illinois

During my high school tenure in the second half of the 1950's, many homes were gone in World History class studying the battles of World War II. Even though many of these battles had taken place less than 20 years earlier, they, like most of the information in our school textbooks, seemed like "ancient" history because they occurred prior to my existence on this earth.

My perception of Valmeyer, Illinois' persistent encounters with the Mississippi River was much the same. Valmeyer was incorporated in 1890. The St. Louis Valley Railroad had built a line through the area at the turn of the century. Homeowners had been springing up in support of and as a result of the railroad's presence. At that time, farming also provided a good livelihood for many individuals. Doubtful crop yields were a by-product of the rich, river bottom soil. Valmeyer's location at the base of the towering Mississippi River bluff to the east provided its residents with breathtaking scenery every season of the year. What a wonderful place to live!

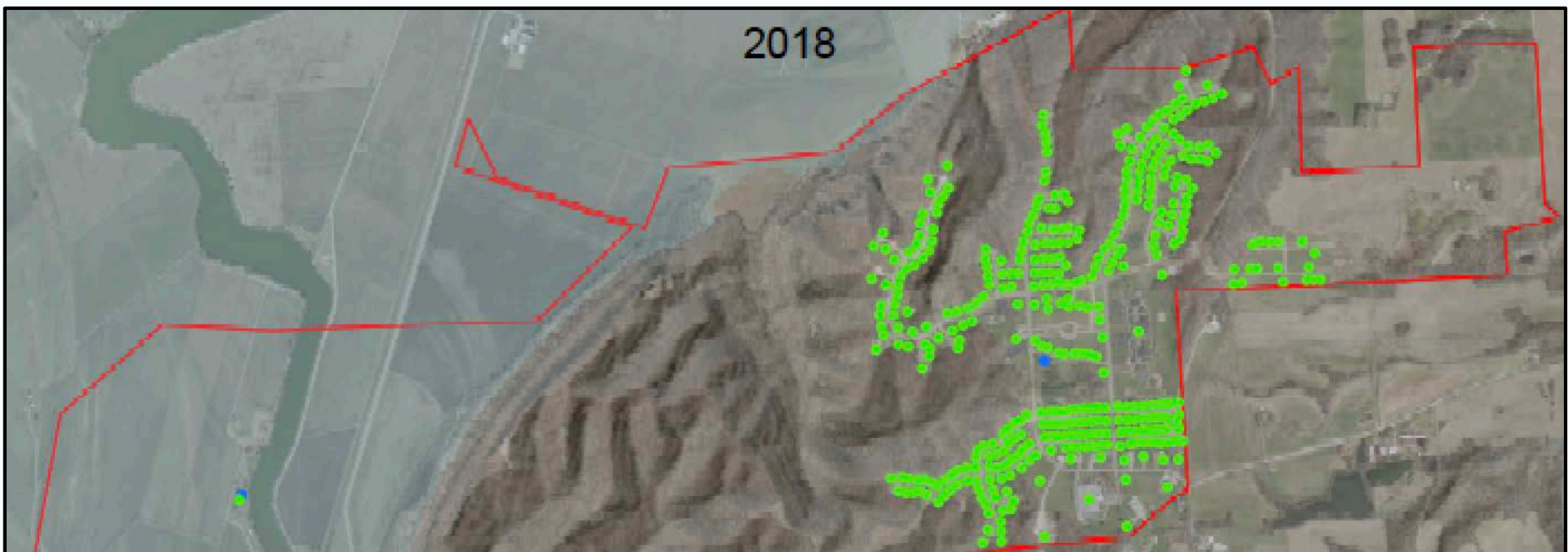
Valmeyer lies about three miles from the main channel of the Mississippi—out of sight, out of mind. Flooding was not a concern for anyone in the community until 1943. In late spring of that year, floodwaters overtopped a small agricultural levee and spread across the community, bringing life in Valmeyer to a screeching halt. Graduation ceremonies for the Valmeyer High School Class of 1943 had to be postponed because the school grounds were covered with nearly three feet of water. Cars had to be abandoned, and boats were used to travel the Village Main Street. As floodwaters receded, residents quickly shivered at the mud, washed down all their belongings, and moved back into their homes.

Residents of Valmeyer had endured the Mississippi River and suffered a major setback, but they still felt victorious because they were all settled comfortably back in their homes. However, less than twelve months later, the River was once again knocking on the door of Valmeyer's homes. Not only did these floods erode the worth of the Mississippi in 1943 and 1944, but also in 1947, when the streets of Valmeyer were flooded once again. This series of floods—three in five years—had not produced major devastation, but it definitely had Valmeyer's citizens looking over their shoulders for the muddy Mississippi's next visit.

This series of floods caused such severe damage to crops and farmland that local Seniors lobbied the U. S. Army Corps of Engineers (USACE) to "fix" their problem. Legislators secured the necessary funding, and construction began on a new levee system along the entire western boundary of Monroe County in 1947. This levee, which would protect approximately 60,000 acres of farmland plus the Village of Valmeyer, was completed in 1950 and was touted as one of the best ever built by the USACE.

In 1973, high river levels caused some sewage problems, but the 21-year-old levee was strong enough to withstand the Mississippi, and no flood waters reached the community. The levee was doing its job, and with every dry day that passed, Valmeyer residents gained more confidence in the effectiveness of this nation structure. Valmeyer's battles with floods were relegated to the pages of "ancient history."

Journal of Contemporary Water Research & Education



2018

Funding sources for Valmeyer, Illinois relocation, 1993-1996 (Information from D. Knobloch, written communication)

	1994 dollars	2018 dollars
Federal Emergency Management Agency	\$12,500,000	\$21,753,000
Illinois Emergency Management Agency	\$1,000,000	\$1,740,240
Department of Commerce and Consumer Affairs	\$12,000,000	\$20,882,880
Federal Housing Administration	\$500,000	\$870,120
Local funding sources	\$2,000,000	\$3,480,480
Cost of acquiring land for new town	\$3,000,000	\$5,220,720
TOTAL	\$31,000,000	\$53,947,440

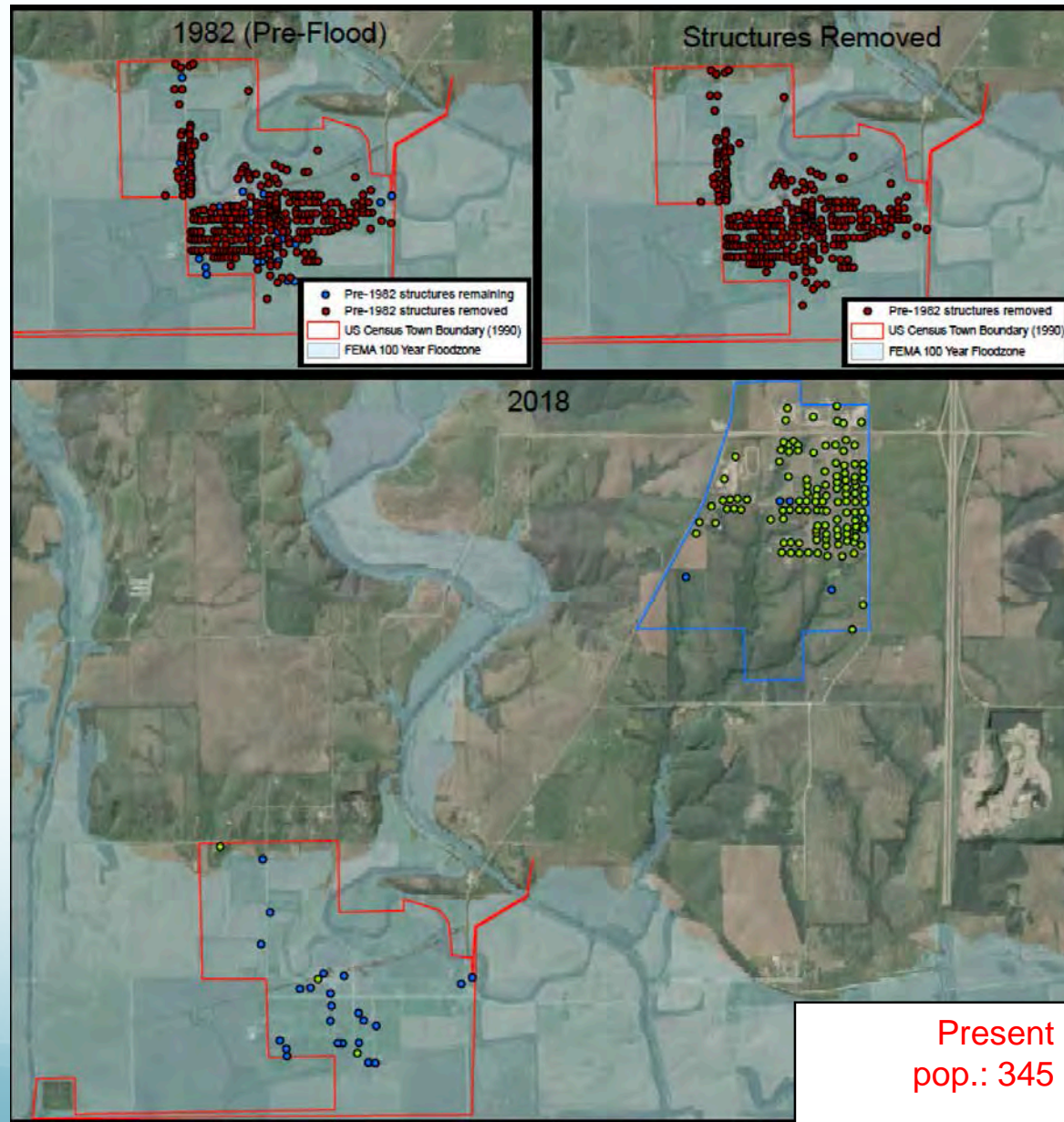
Rhineland, MO: 1993



Pattonsburg, MO: 1993

Moved after
town was
flooded 33
times

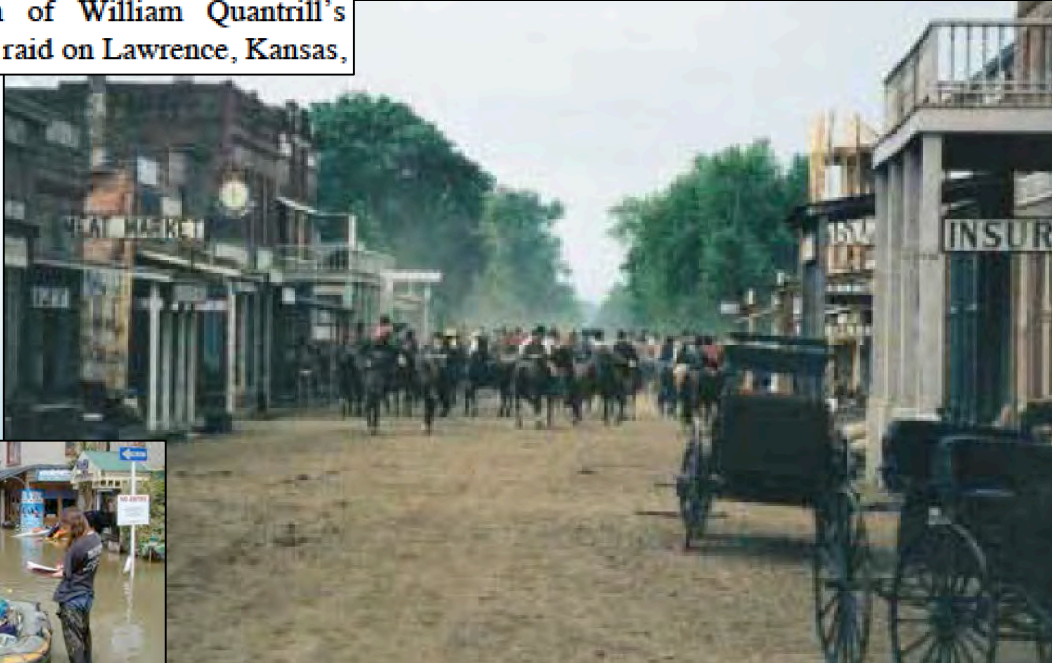
Pre-flood (1990)
population: 416



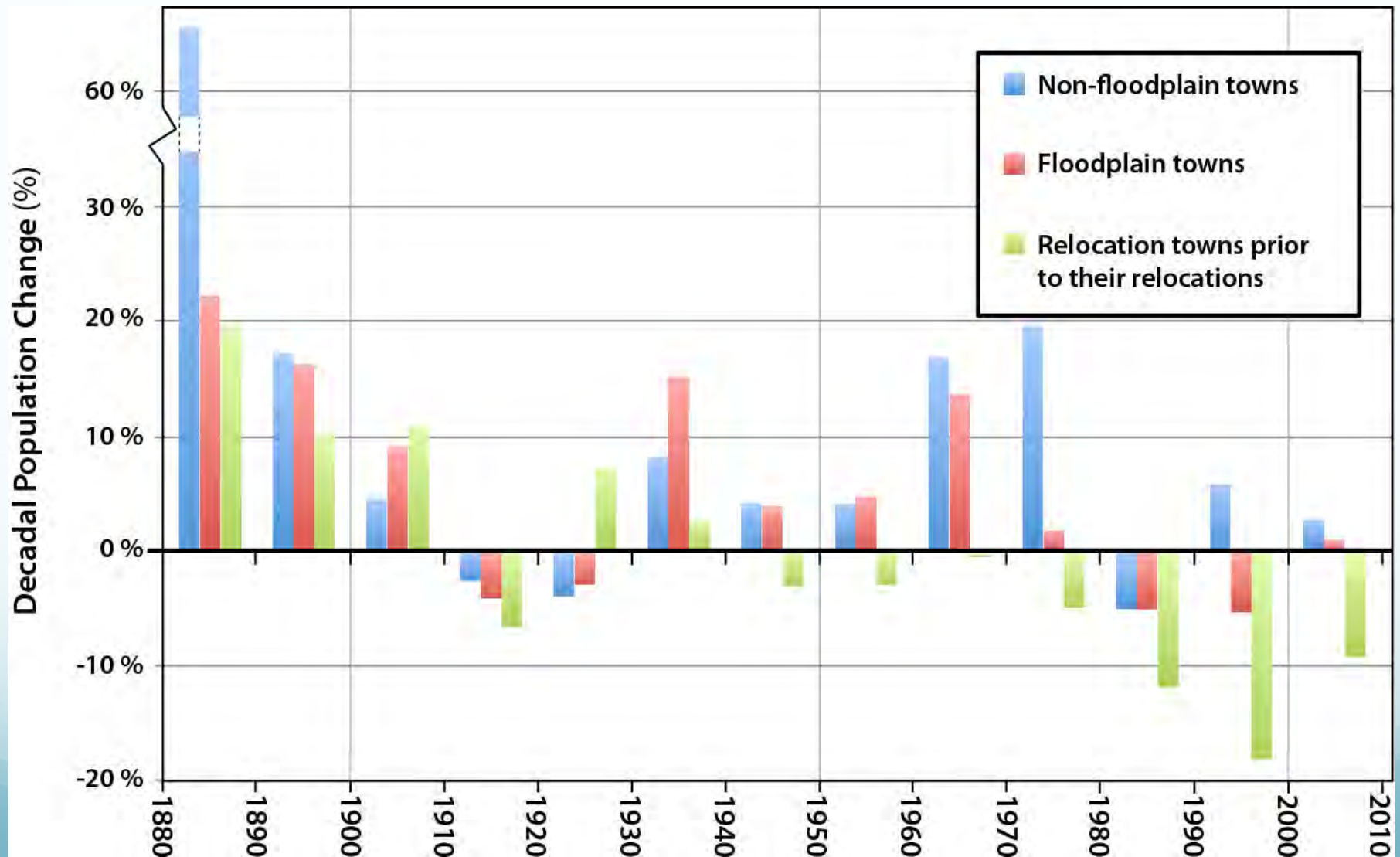
Present
pop.: 345

Pattonsburg, MO: 1993

There is a final chapter in the history of old Pattonsburg. During the summer of 1998, a Hollywood film crew used the abandoned buildings as a movie set in filming "Ride With The Devil," a dramatic recreation of William Quantrill's infamous raid on Lawrence, Kansas,



Analyses & Discussion ... Lots, e.g.:



Other Key Case Studies

Including: other full relocations, partial relocations, extensive buyouts, town *removals*, and **relevant lessons**

Other Key Case Studies

Isle de Jean Charles

In 2016, **Isle de Jean Charles, LA** was awarded \$52 million from the NDRC for resettlement

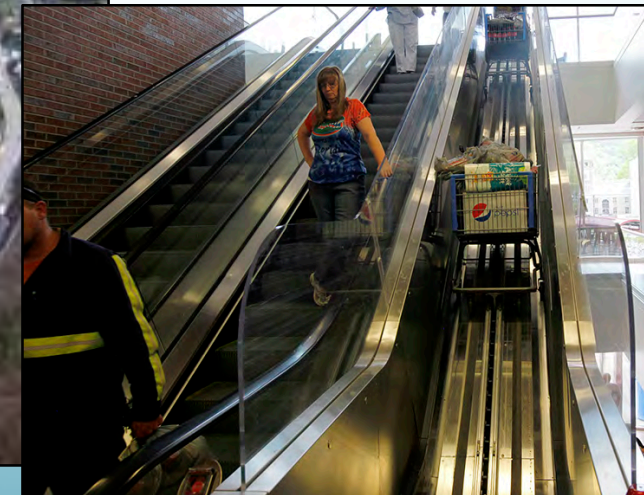


ISLE DE JEAN CHARLES – NEW COMMUNITY MASTER PLAN (HOUMA, LA)



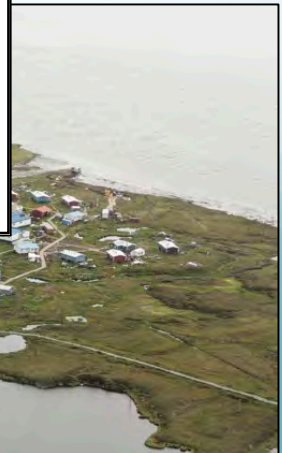
Other Key Case Studies

Grundy, Virginia



Looking forward:

At least 12 Alaskan Native villages exploring relocation



Looking beyond the US:



Rising from the Floodwater – The Relocation of the Town of Grantham

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Looking beyond the US:



Fiji's Relocation Guideline (Draft)



Looking beyond the US:

Onagawa, Tohoku Prefecture, June 2006



Looking beyond the US:

Onagawa, Tohoku Prefecture, Mar. 25, 2011



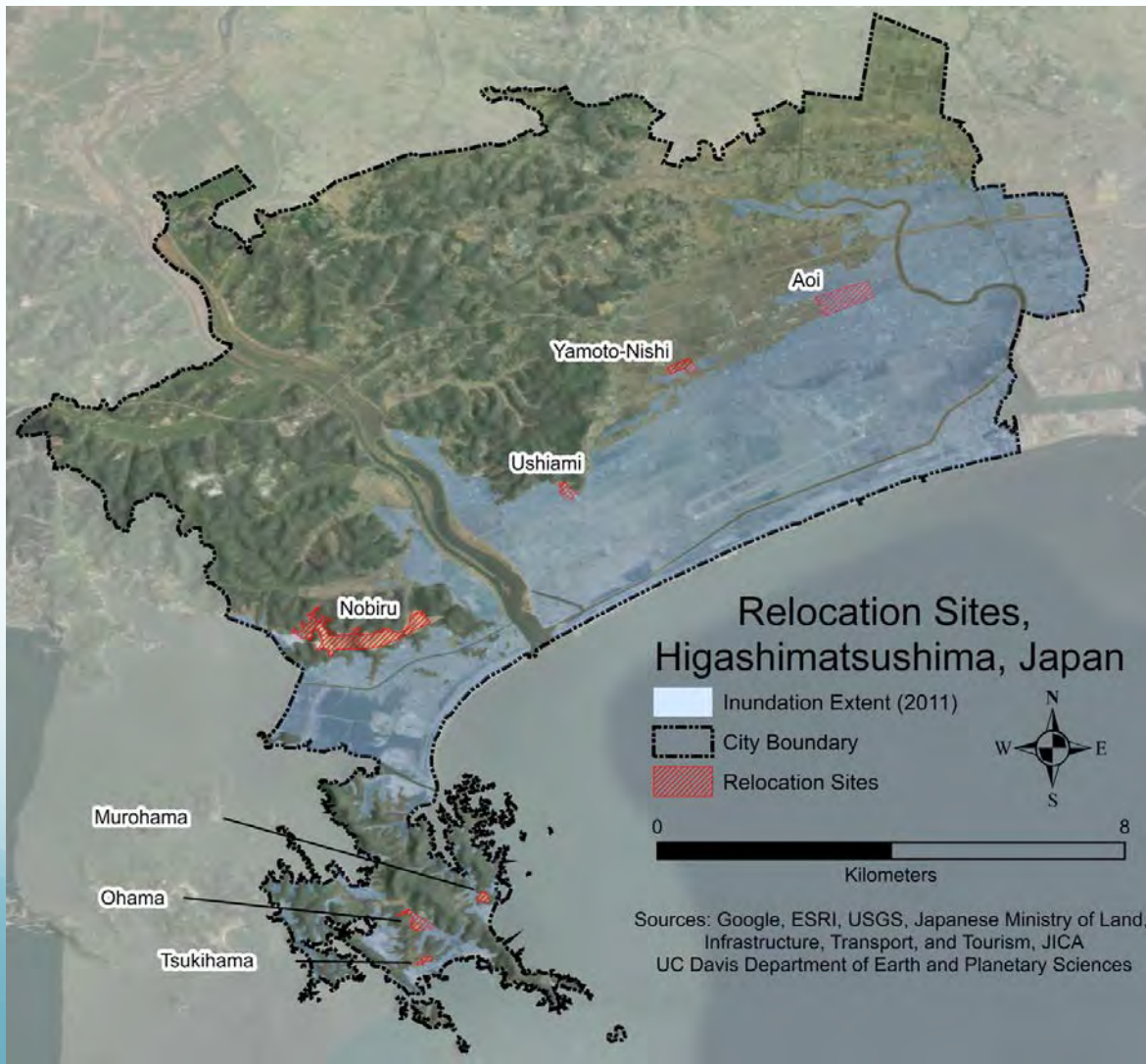
Looking beyond the US:

Onagawa, Tohoku Prefecture, February 2016



Looking beyond the US:

Higashimatsushima, Tohoku Prefecture

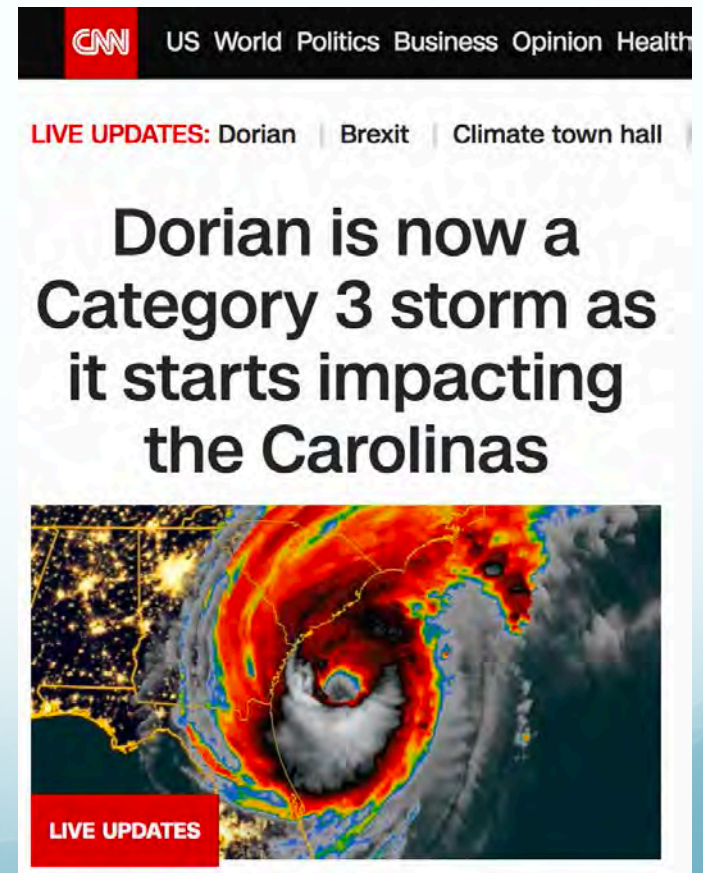


Region-wide:

- No residential reoccupation of high-hazard zone
- 145,000 new homes built
- Including at least 9 new towns
- Managed retreat + 400-km long coastal barrier together costing \$265 Billion

Take-Aways

- **Relocation can be** a cost-effective and holistic solution for select communities
- There are **past examples** *(both successes and failures)* to learn from
- And climate change and spiraling flood damages call for a broad portfolio of solutions for the future



And...

And...Sherrie told me to make the “ask”

And...Sherrie told me to make the “ask”

In partnership with the Japan Center for Global Partnership, the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO; tentative), and likely others ...

Managed Retreat: Global Lessons for Success

The proposed event in Washington in 2020 would emphasize **practical lessons learned for future managed retreat and community relocation efforts in the US and worldwide.**

Potential Format: We suggest the following event format,

2-3 hours total:

- Wine and cheese reception
- **Moderated panel discussion**
 - Distinguished moderator, TBD
- Audience discussion

Potential Audience: We imagine that the invitees to this event will include **100-150 total participants:**

- **International development agencies (e.g., USAID, World Bank)**
- **Diplomatic community (especially, Pacific Island and southern and southeast Asian countries)**
- **Selective NGOs focuses on sustainability**
- **Selective academic researchers**

