Legal Aspects of SEA LEVEL RISE

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<td><strong>There Are A LOT of Legal Issues!</strong></td>
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<td><strong>PROPERTY USE</strong></td>
<td><strong>TAKINGS</strong></td>
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<td>Can you build a sea wall? What happens when you have to retreat?</td>
<td>If you CAN’T build that seawall or are ordered to retreat.</td>
<td>Private insurance departures, bankrupt government alternatives.</td>
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<td><strong>WATER SUPPLIES</strong></td>
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<td>Salt water can intrude into both coastal aquifers and coastal rivers.</td>
<td>How do you design for incoming saltwater and worsening storms?</td>
<td>Toxic hot spots and new diseases require public health law interventions.</td>
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01. PROPERTY USE

Probably the first thing you thought of.
The California Court of Appeal upheld a Coastal Commission cease-and-desist order requiring demolition of a seawall and payment of a $1 million penalty by homeowners who performed major reconstruction on their coastal home without notifying the California Coastal Commission. 11 Lagunita, LLC v. California Coastal Commission, (4th Dist., Dec. 18, 2020). In March 2021, the California Supreme Court refused to review the case.
02. CONSTITUTIONAL TAKINGS

What makes the news and instills fear in local governments.
Borough of Harvey Cedars v. Karan (N.J. 2013)

Loss of View from Beach Renourishment = Storm Protection for Harvey & Phyllis Karan
03.

INSURANCE ISSUES

Insuring an increasingly inundated and storm-ridden coast makes NO fiscal sense.
In recent years, properties in low-lying coastal states have experienced increasing damage from storms and severe flooding. Almost three million people—and their homes—reside within three feet of mean sea level. With rising seas projected to exceed this level, the risks are overwhelming.

Repetitive Loss is a Coastal Problem

Hurricanes Bankrupt the NFIP

So, maybe turn flood insurance into a government buyout program?
04. WATER SUPPLY

Probably NOT the first thing you thought of.
Inundated Drinking Water
A Pervasive Problem in the U.S.

Jasechko et al., 11 Nature Communications 3229 (2020), https://doi.org/10.1038/s41467-020-17038-2
One Approach
05. BUILDING CODES

Good building codes can prevent a lot of damage and loss of life.
Legal Strategy: Enact Building Codes that Allow for Structural Survival

Anatomy of a High Wind & Hurricane Resistant Home

All aspects of a Deltec home are ingeniously designed to work as a system, making it the smartest home you can build for high wind areas.

A. SHAPE
Aerodynamic circular building envelope works with nature, not against it
1. Wind can't build up enough pressure on any side to cause a structural failure
2. Reinforced clear span roof is at optimum pitch (6/12) for wind deflection and reduced RK
3. Circular structure transfers environmental loads most efficiently, with a high degree of redundancy providing extra resilience and performance during critical events

B. ENGINEERING
Creating a building envelope to resist high wind and provide safety to its occupants
4. Radial truss system in roof and floors work like spokes on a wheel
5. Potential energy from sustained winds is dispersed throughout the structure instead of building up in a single area

C. MATERIAL EXCELLENCE
Merging superior materials with a superior design results in a stronger and more durable structure
6. Machine rated 2400 psi framing lumber used in trusses and walls is twice as strong as typical framing material
7. Five Ply S/F plywood sheathing used instead of OSB on exterior walls, roof and floors strengthens the home and prevents flying debris from penetrating the structural envelope of the home
8. Reinforced windows with impact glass prevents wind and water from entering the home

D. CONNECTIONS
Emphasis on maintaining continuous load paths and strong connections between the roof, exterior walls, floor system and foundation
9. Oversized truss hangers keep roof system anchored to walls
10. Walls have multiple construction ties to the floor system for structural stability and to transfer shear forces
11. Continuous metal strapping from roof trusses to foundation helps maintain structural stability

E. SUSTAINABILITY
Utilizing products and construction techniques that enhance livability in the event of a prolonged power outage
12. Solar water heater provides uninterrupted hot water
13. Enhanced insulation maintains a more balanced temperature inside the home
14. High wind rated reflective metal roofs help reduce radiant heat gain in the home
15. Passive solar design helps heat and cool the building through appropriate shading and window placement
Engineers Are Getting Creative!

FLOOD PROOF
floating buildings
to survive rising tides
New diseases, plus saltwater and toxic contamination is a bad mix!
August-September 2017: What Did Hurricane Harvey Encounter?

BLUE DOTS: Wastewater Treatment Facilities
YELLOW SQUARES: TRI Sites
ORANGE SQUARES: Petroleum Refineries
ORANGE DOTS: Petroleum Product Terminals
GREEN SQUARES: Natural Gas Processing Plants
GREEN DOTS: LNG Terminals

Map courtesy of the Union for Concerned Scientists
The nation's largest oil refinery, owned by Motiva and located in Port Arthur, Texas, was forced to shut down due to flooding from Hurricane Harvey.

Photograph courtesy of Alex Glostrum, Louisiana Bucket Brigade
Also, Sea Level Rise and Storm Surge Mean More Sewage Contamination of the Coast

Hurricane Michael Makes Landfall in Florida, October 2018
Photograph courtesy of CNN

Norovirus
Hepatitis A
Cryptosporidium
Giardia
Shigella
E. coli
And Inundated Coasts Tend to Increase Mosquito Habitat
Dengue in Florida

Dengue Cases in Florida, 2013
Graphic courtesy of Health News Florida
Legal Strategy #1: Clean Up Existing Problems

Superfund, RCRA, and Brownfields Sites
(FY2015)

Map courtesy of the U.S. EPA.
Legal Strategy #2: Toxic-Aware Land Use Planning Along the Coast
THANK YOU!