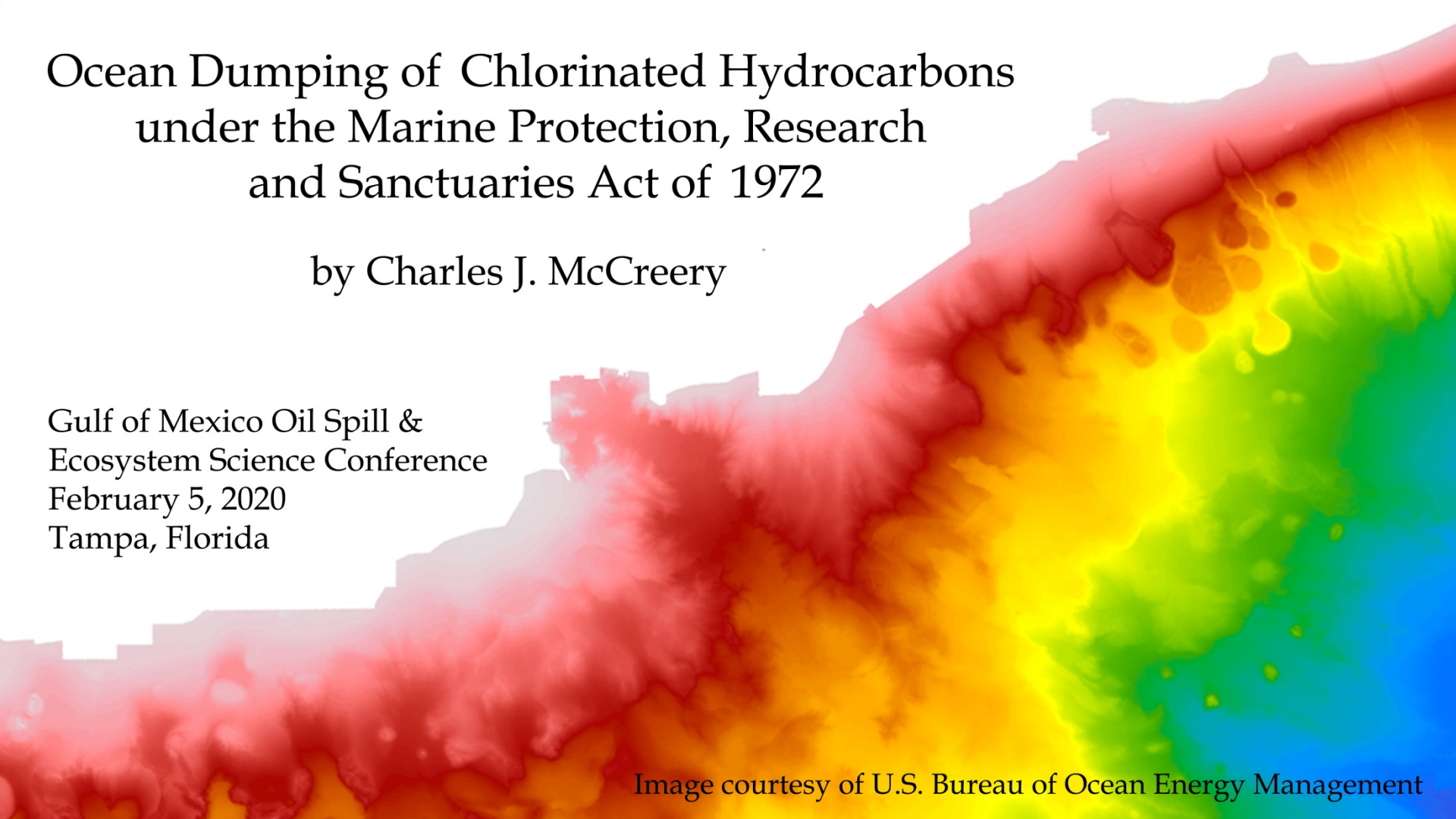


Ocean Dumping of Chlorinated Hydrocarbons under the Marine Protection, Research and Sanctuaries Act of 1972

by Charles J. McCreery

Gulf of Mexico Oil Spill &
Ecosystem Science Conference
February 5, 2020
Tampa, Florida

Image courtesy of U.S. Bureau of Ocean Energy Management



Charles J. McCreery

Bureau of Ocean Energy Management (retired), New Orleans

- Water Quality Subject Matter Expert and NEPA contributor.
- Reviewed exploration and development plans from industry for water quality issues.
- Conducted independent research to understand water quality impacts from operational discharges and cumulative effects.

Independent Research

- Deepwater Horizon marine health assessments may be incomplete if cumulative effects from other stressors are not considered. How do you know the oil spill is the primary risk driver?
- Ocean-dumped chemicals may be a stressor on marine life that constitutes a cumulative effect.

BOEM Notice to Lessees for Lease Sale 231 (BOEM, 2014)

“inactive commercial waste disposal site...in the Mississippi Canyon Area.”

“established in the 1970s...EPA permitting...thousands of steel barrels containing chemical wastes.”

“chemical wastes consist mostly of chlorinated hydrocarbons and liquid metal salts.”

National Academy of Sciences Assessing Potential Ocean Pollutants (NAS, 1975)

Identifies two EPA Interim Chemical Disposal Sites

- Site A ~125 miles southeast of Galveston
- Site B ~60 miles south of Mississippi Delta.

Permit #730D008 issued to Shell Chemical Company

- 55,000 drums of chlorinated hydrocarbons.

Marine Protection, Research and Sanctuaries Act of 1972 (MPRSA)

MPRSA provided that:

- only certain waste types would be dumped,
- dumping of chemical or biological warfare agents was prohibited,
- scientific research of dumped materials would be performed, and
- marine sanctuaries would be established.
- Section 102 of the MPRSA allowed EPA to issue permits for ocean disposal.

Marine Protection, Research and Sanctuaries Act of 1972 (MPRSA)

Ocean disposal of chlorinated hydrocarbons should not have been permitted under Section 102 because they are toxic and persistent, in violation of the MPRSA. **Red flag.**

Freedom of Information Act Request (HQ-RIN-004592)

- Submitted FOIA request to EPA, Washington, D.C. in February, 2016. All research was individual from this point on.
- Received EPA Region 6 MPRSA permits and barging reports in May 2016.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VI

1600 PATTERSON, SUITE 1100

DALLAS, TEXAS 75201

PERMIT

Permit No. 730D008A

Name of Permittee Shell Chemical Company

Effective Date June 13, 1973

Expiration Date November 1, 1973

MARINE PROTECTION, RESEARCH AND
SANCTUARIES ACT (OCEAN DUMPING) PERMIT

Plotting of Barging Tracks

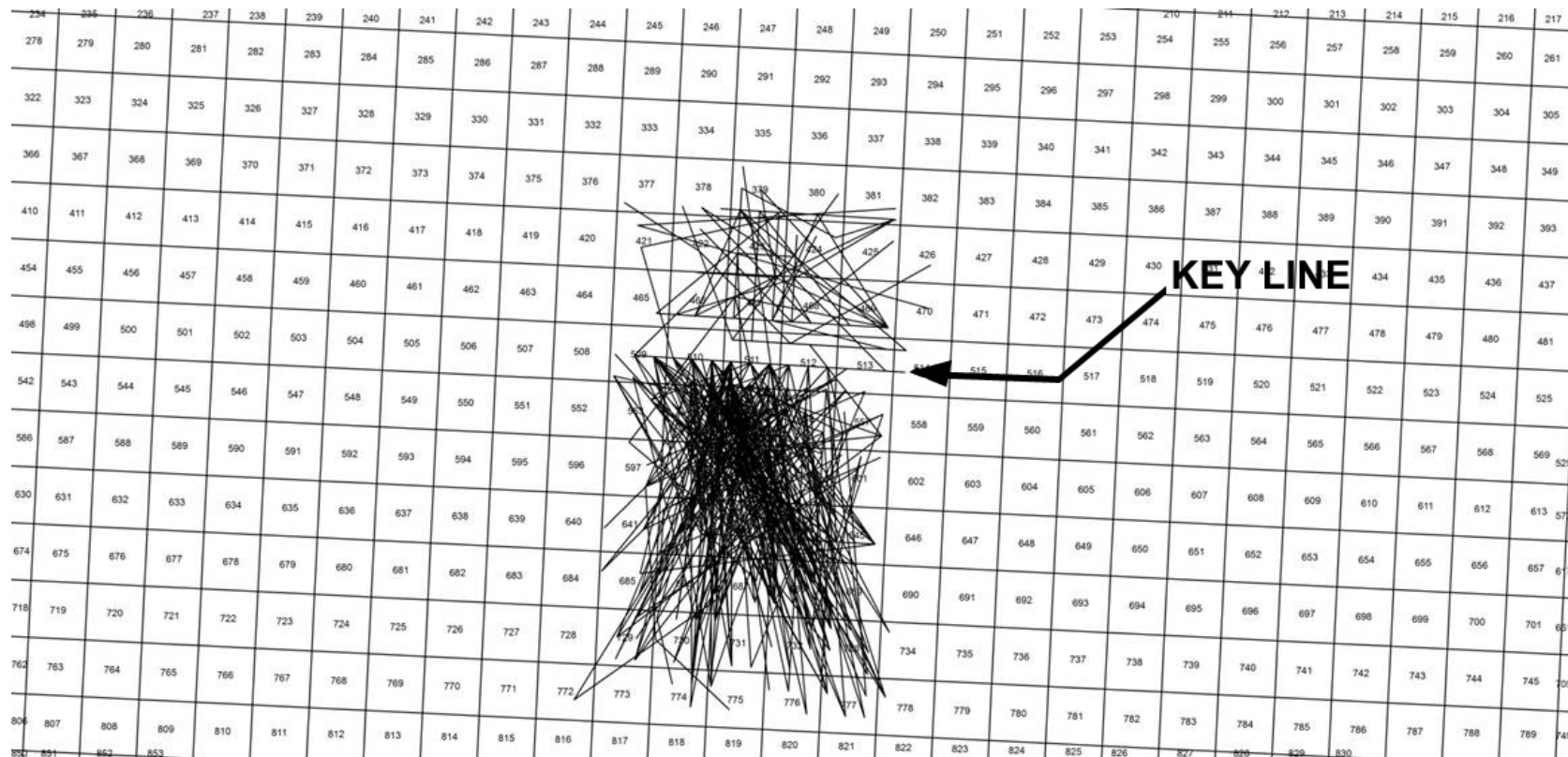
- Permit #730D008 plotted at Site A, which was unexpected. Drums of chlorinated hydrocarbons were expected to plot in Mississippi Canyon (Site B) because of Notice to Lessees (BOEM, 2014). **Red flag.**

- **Red flags** required consideration that barging coordinates were encoded.

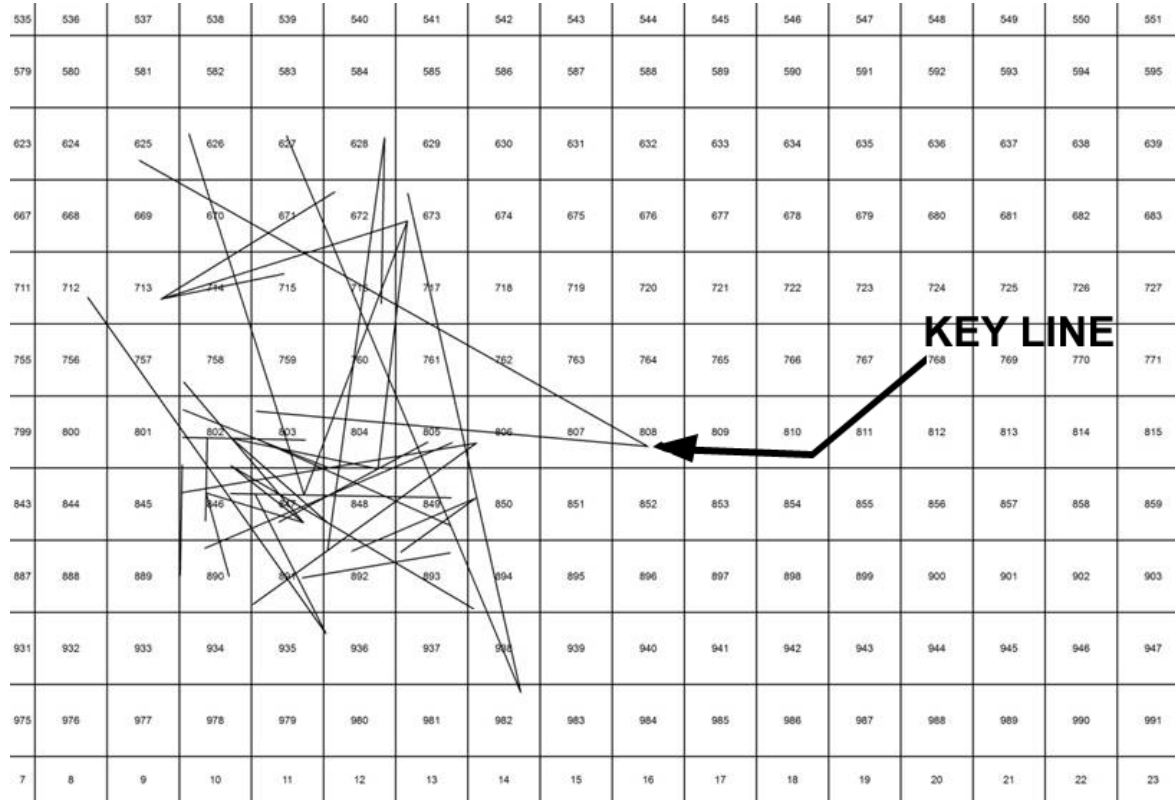
Encoding of Coordinates

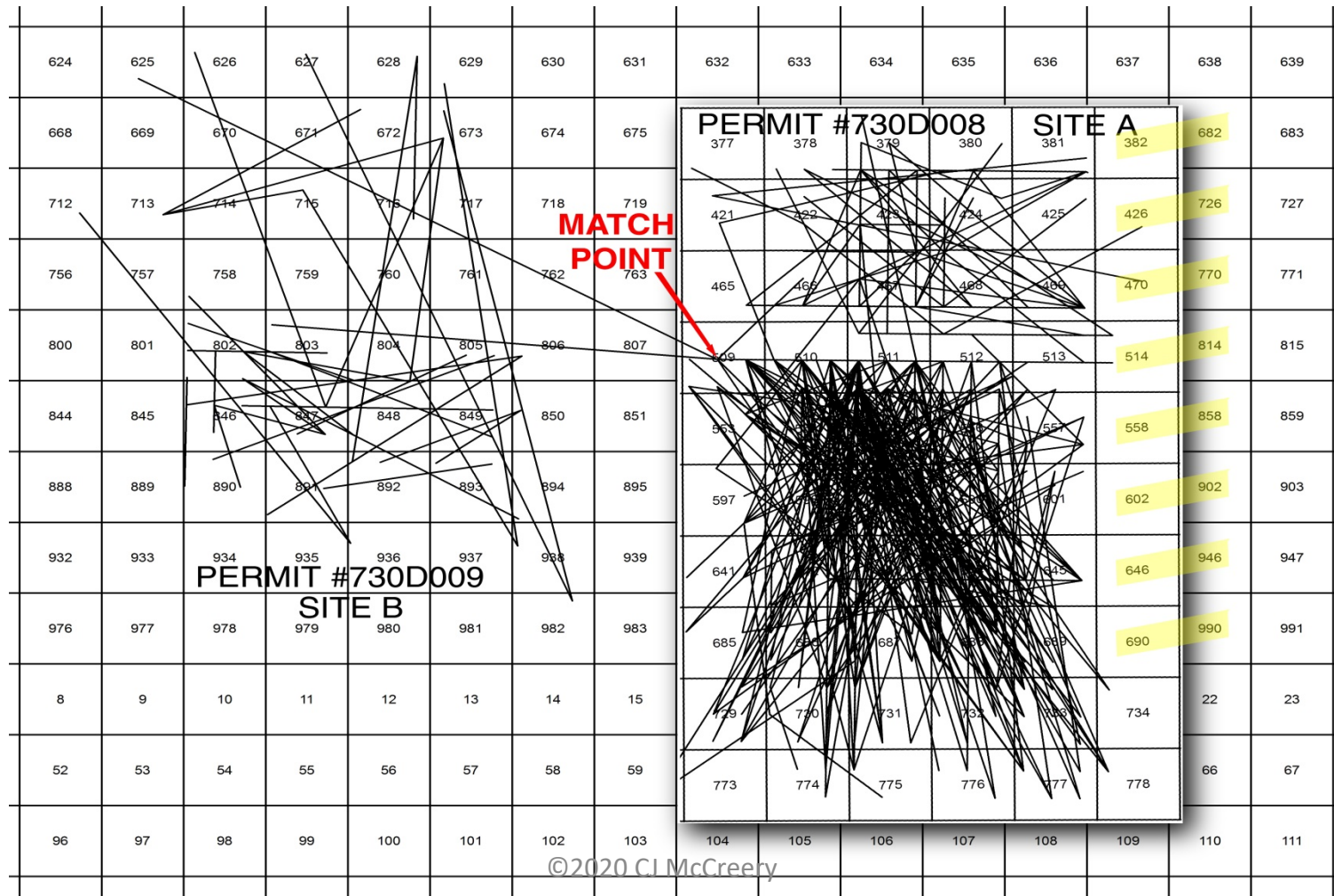
- To test coordinate encoding theory, cut out barging tracks at Site A and looked for a match point in Mississippi Canyon (Site B).
- Assumed barging track lines should connect to a location reference.

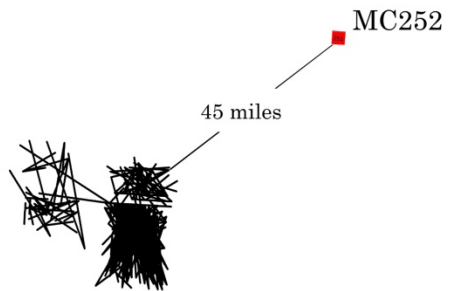
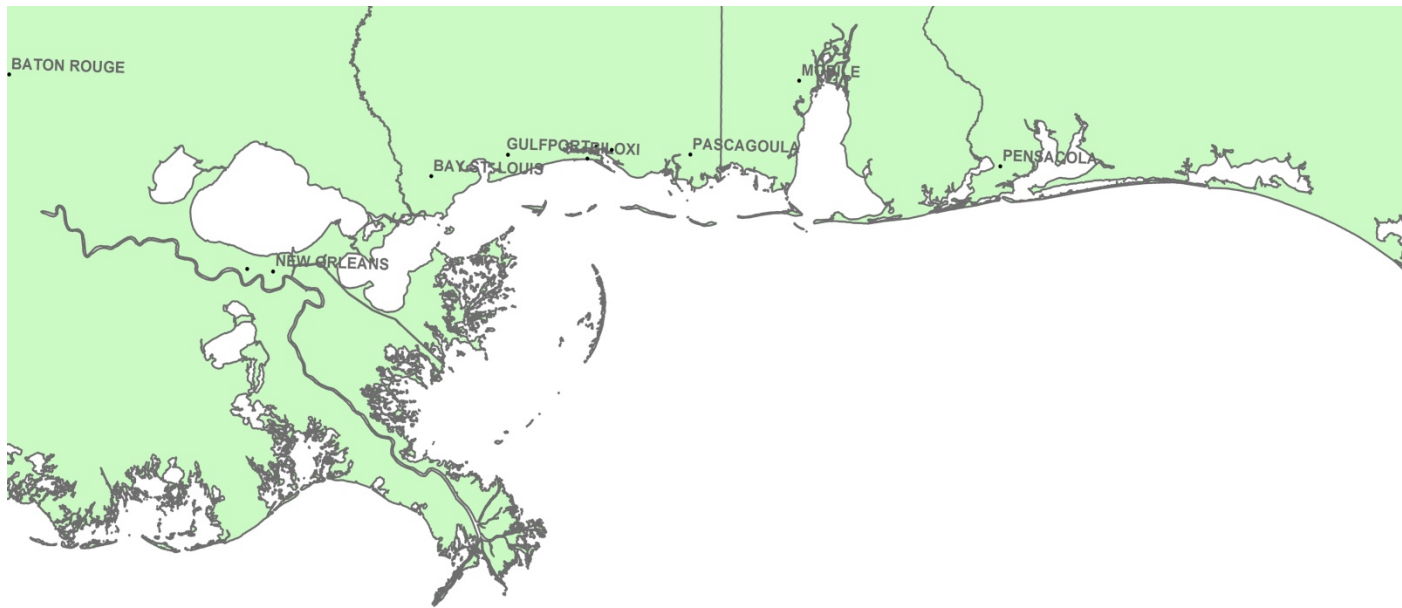
Permit 730D008 at Site A



Permit 730D009 at Site B







Rocky Mountain Arsenal, Commerce City, CO

VA Determination of Service Connection (2015)

- Veteran called to Shell Chemical Company plant at RMA in 1953 to aid in cleaning of an Agent Orange spill. Veteran granted service connection.

Rocky Mountain Arsenal, Commerce City, CO

RMA Archives, Chemical Agent Program History (1996)

- “Still bottoms” from production of chlorinated pesticides and herbicides were stored at the facility.
- In 1967, a mixture of still bottoms and fuel oil was stockpiled, and later drummed and shipped offsite.

Naval Construction Battalion Center (NCBC), Gulfport, MS

- In 1968, approximately 15,400 drums arrived at NCBC via rail and were stockpiled on the base.
- As a result of spills and leaks during storage, dioxin migrated off the base.
- Interpreted to be still bottoms from RMA disposed under Permit #730D008C (Feb 1974 to Feb 1975).

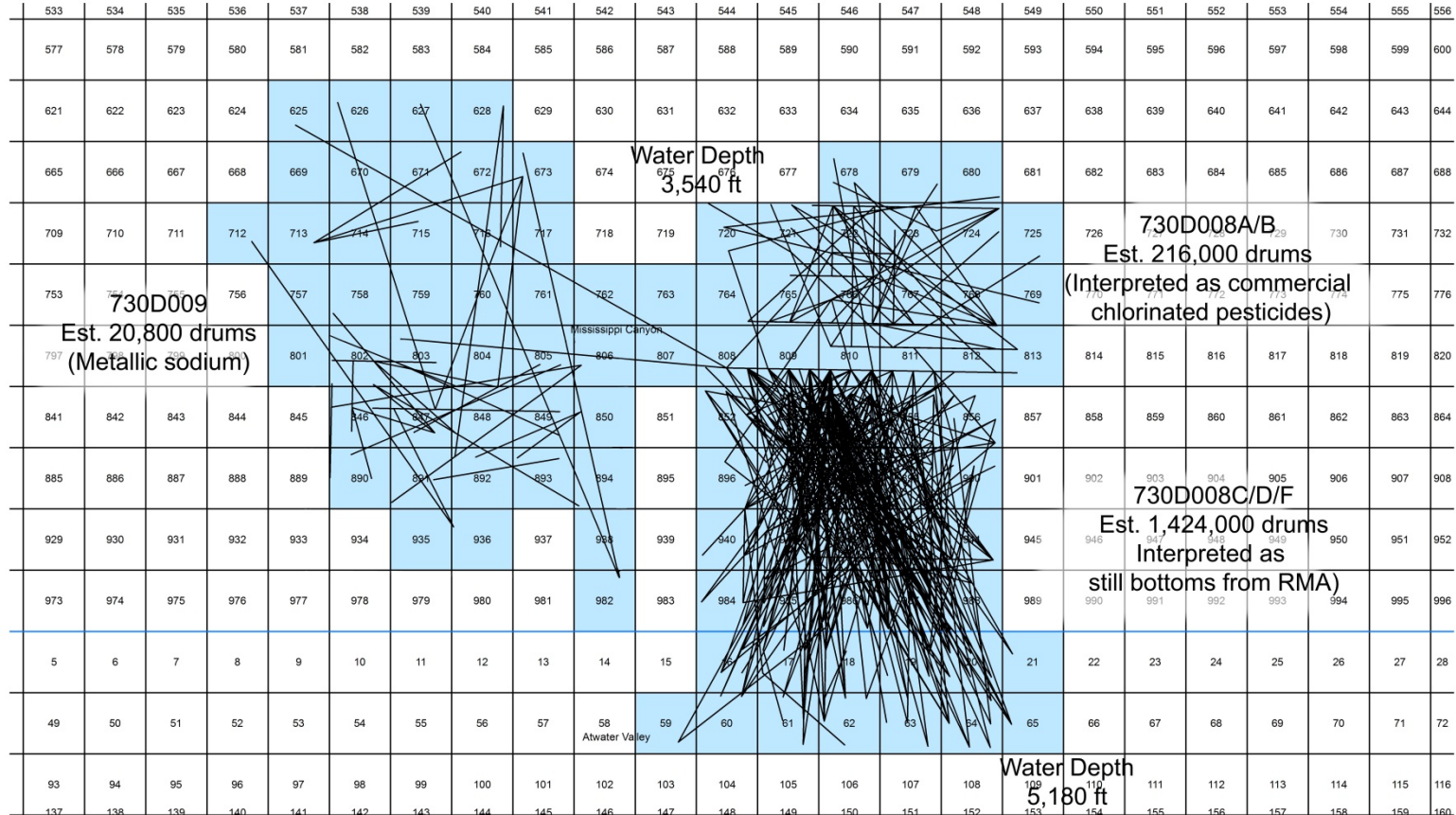
Rocky Mountain Arsenal, Commerce City, Colorado (cont.)

In 1975, Army and Shell implemented early Interim Response Actions at the most highly contaminated areas (EPA, 1997).

Naval Construction Battalion Center, Gulfport, MS (cont.)

- Rail shipments of drums to NCBC continued into 1977.
- Interpreted to be still bottoms from RMA disposed under Permits #730D008D and #730D008F (Feb 1975 to Nov 1977).

Final Interpretation

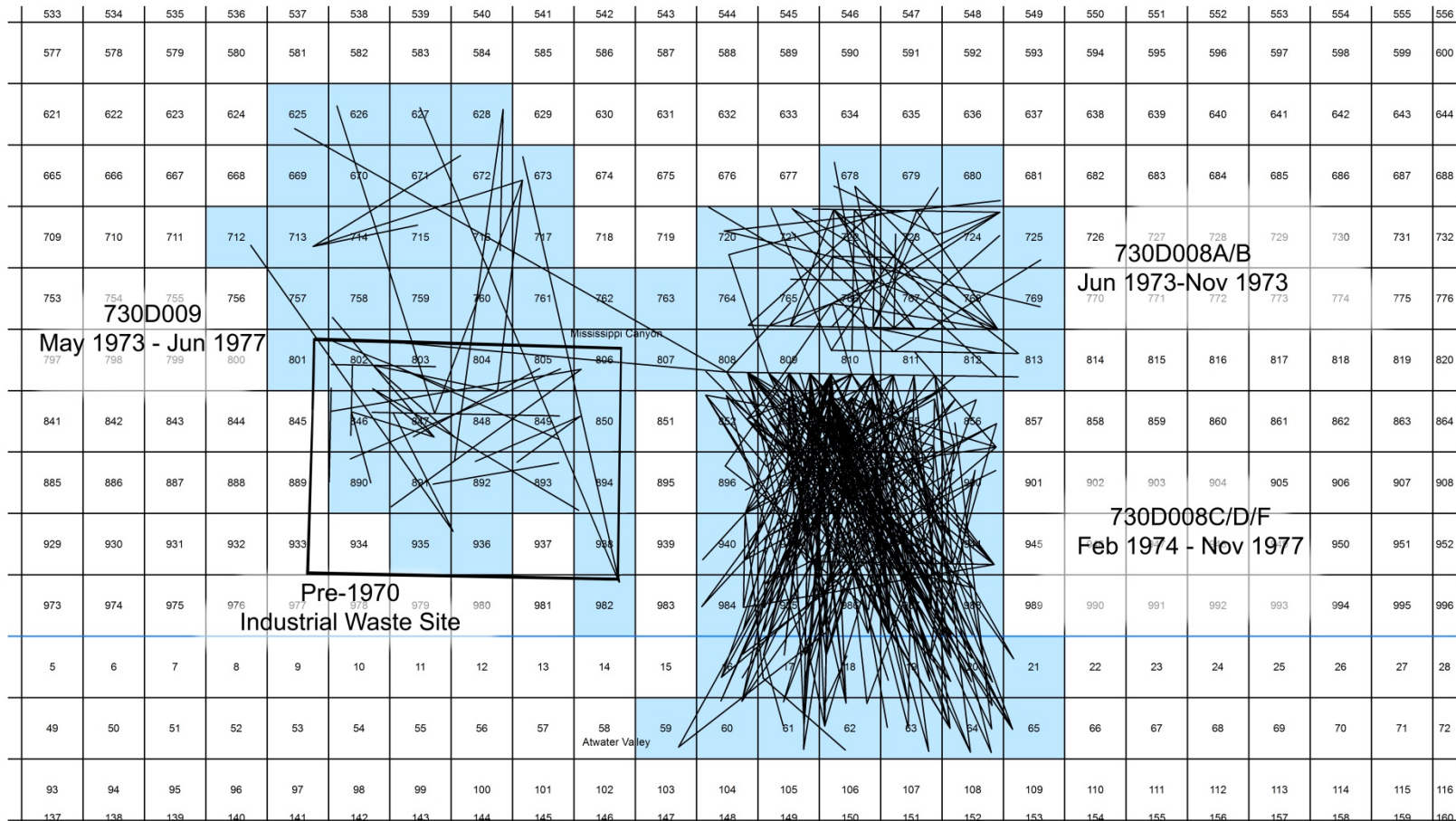


Other MPRSA Section 102 Sites

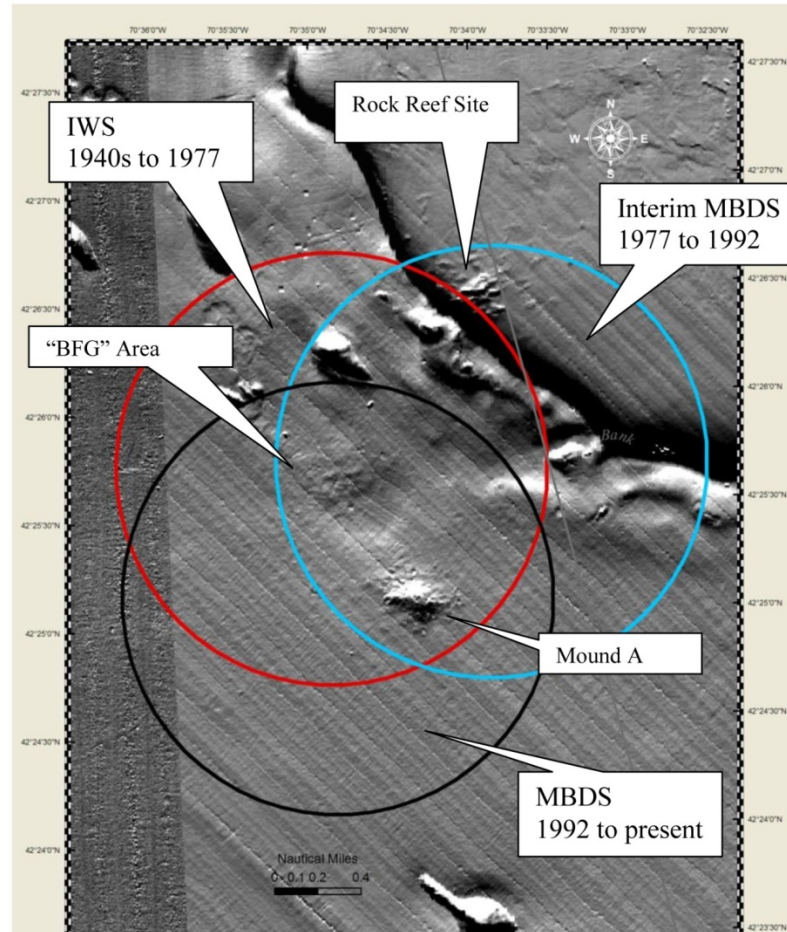
- Massachusetts Industrial Waste Site (IWS)
(confirmed MPRSA site emplaced 1973-77).
Likely PCB waste.

Other MPRSA Section 102 Sites

- San Pedro Basin, California (Kivenson, et al., 2019). Confirmed DDT waste in drums, possible MPRSA site.



Massachusetts IWS

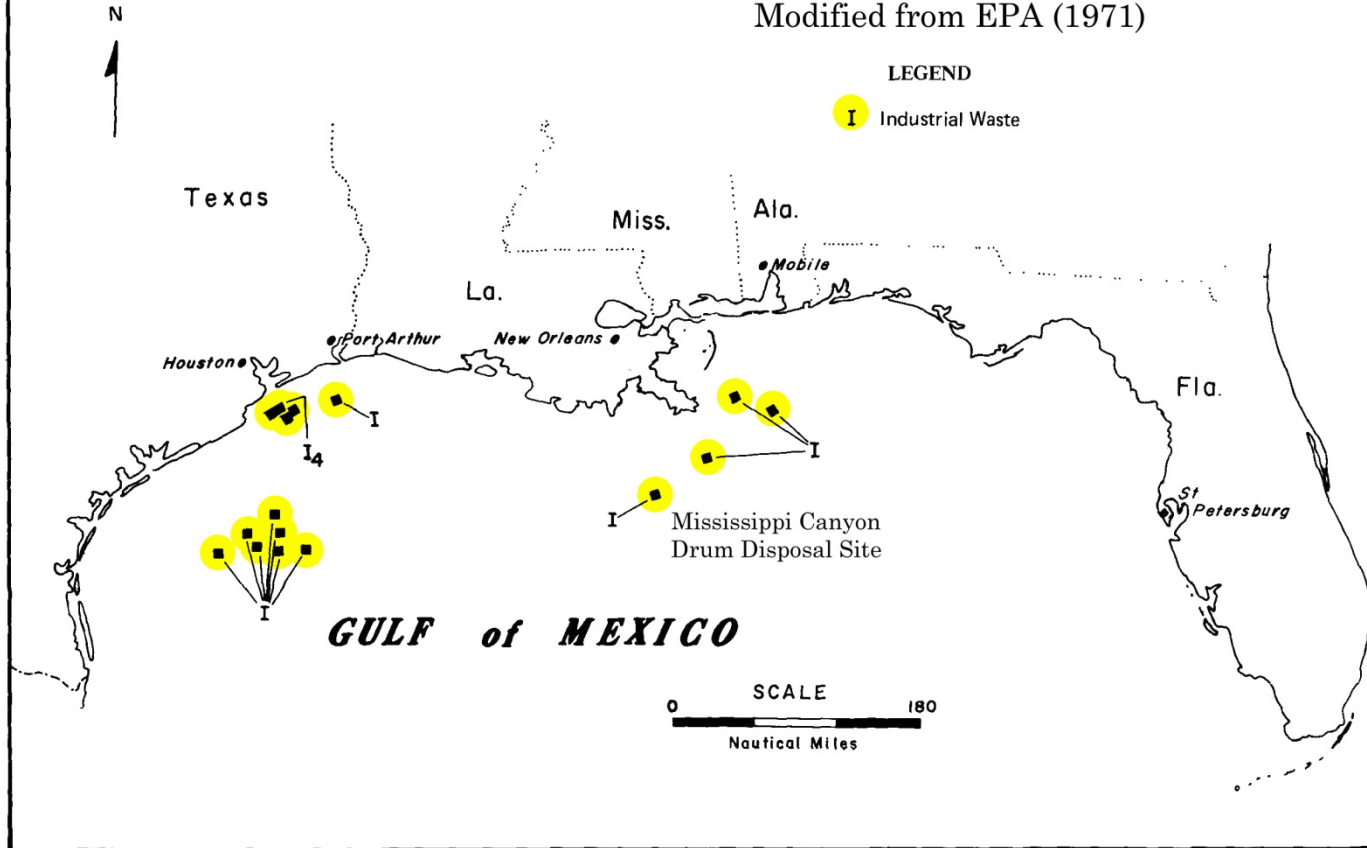


Other MPRSA Section 102 Sites

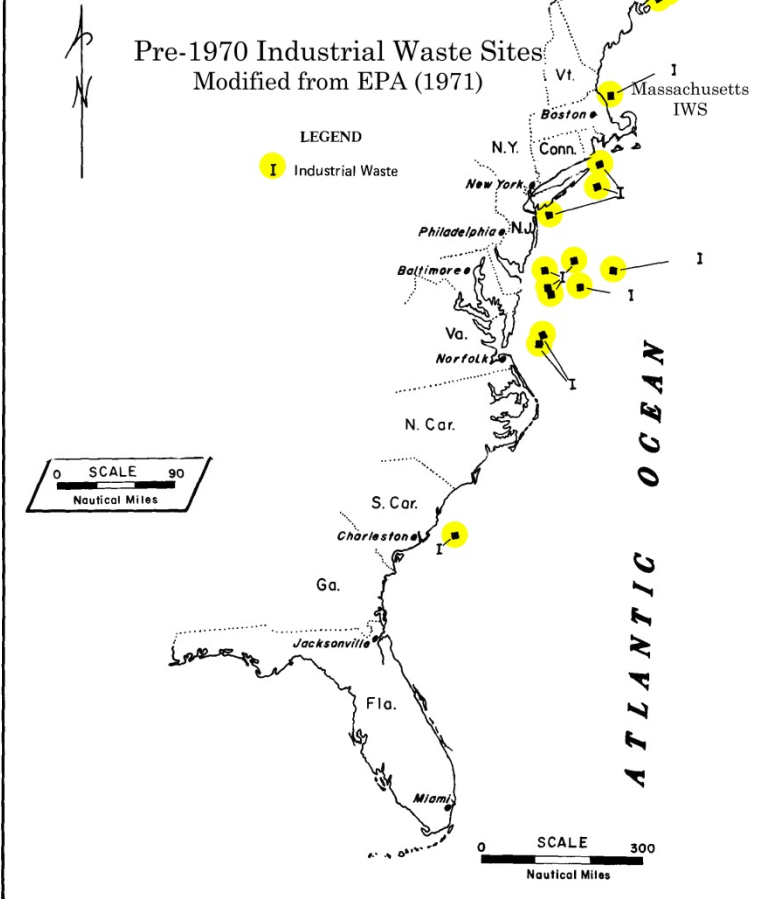
- Other MPRSA sites may be co-located at pre-1970 industrial waste sites, identified in “Ocean Disposal of Barge-Delivered Liquid and Solid Wastes from U.S. Coastal Cities” (EPA, 1971).

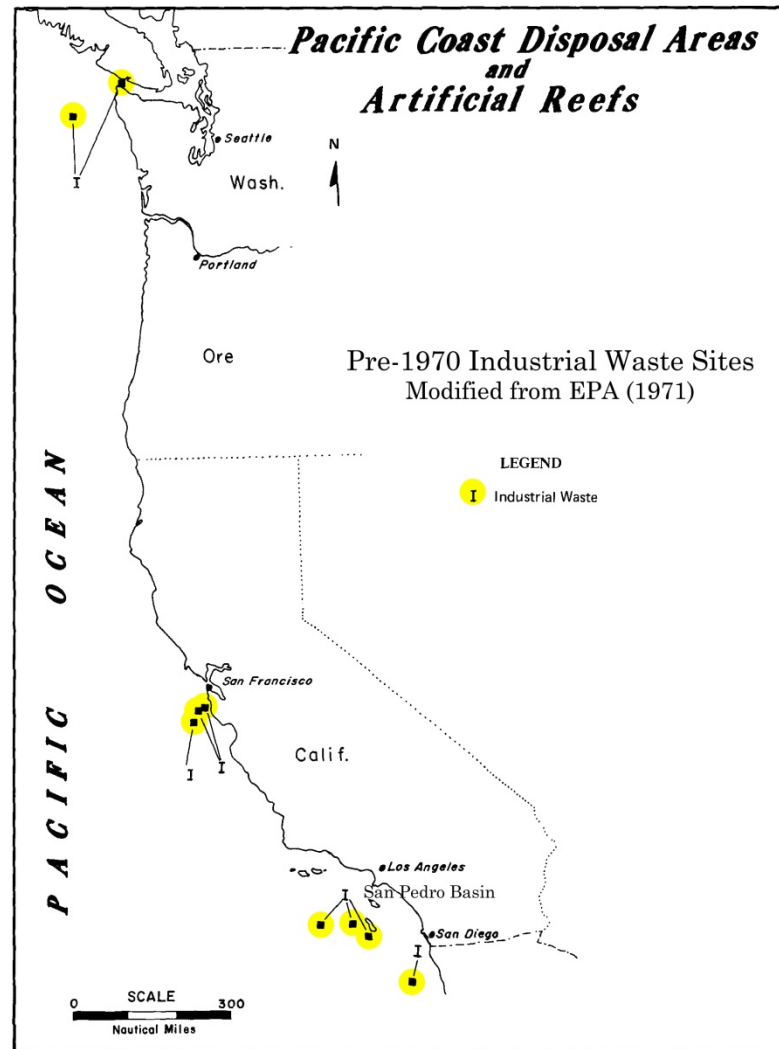
Gulf of Mexico Disposal Areas and Artificial Reefs

Pre-1970 Industrial Waste Sites
Modified from EPA (1971)



Atlantic Coast Disposal Areas and Artificial Reefs





Legacy Issues vs. Current Issues

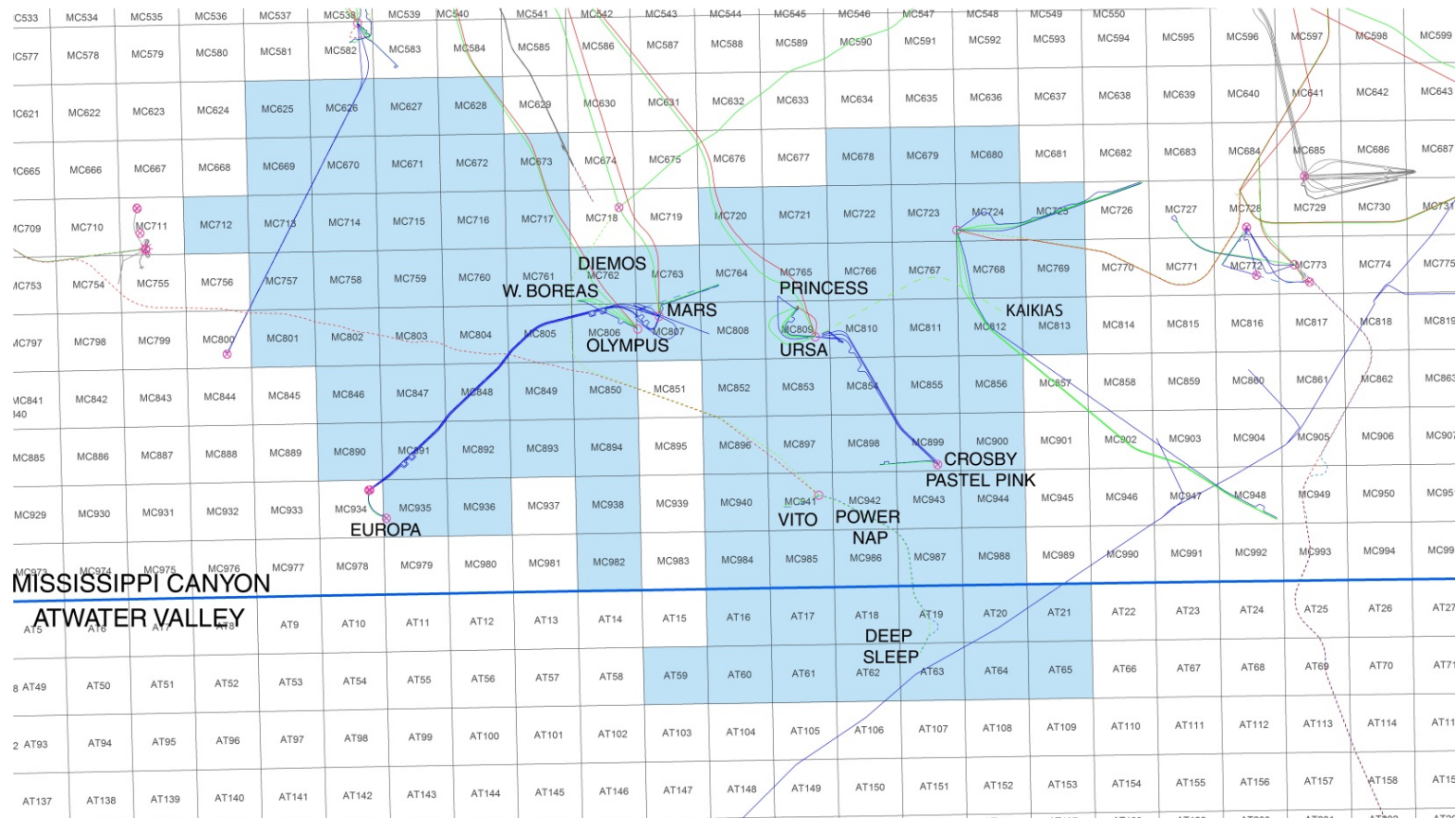
Space-Use Conflict

- The Mississippi Canyon site is in space-use conflict with drilling activities.

Space-Use Conflict

- Shell Chemical Company drums were dumped on top of what is now the most productive reservoirs in the northern Gulf of Mexico, as if to stake a claim.

SHELL OFFSHORE, INC. INSTALLATIONS





Shell Exploration & Production

OLYMPUS Host – MARS “B” Development

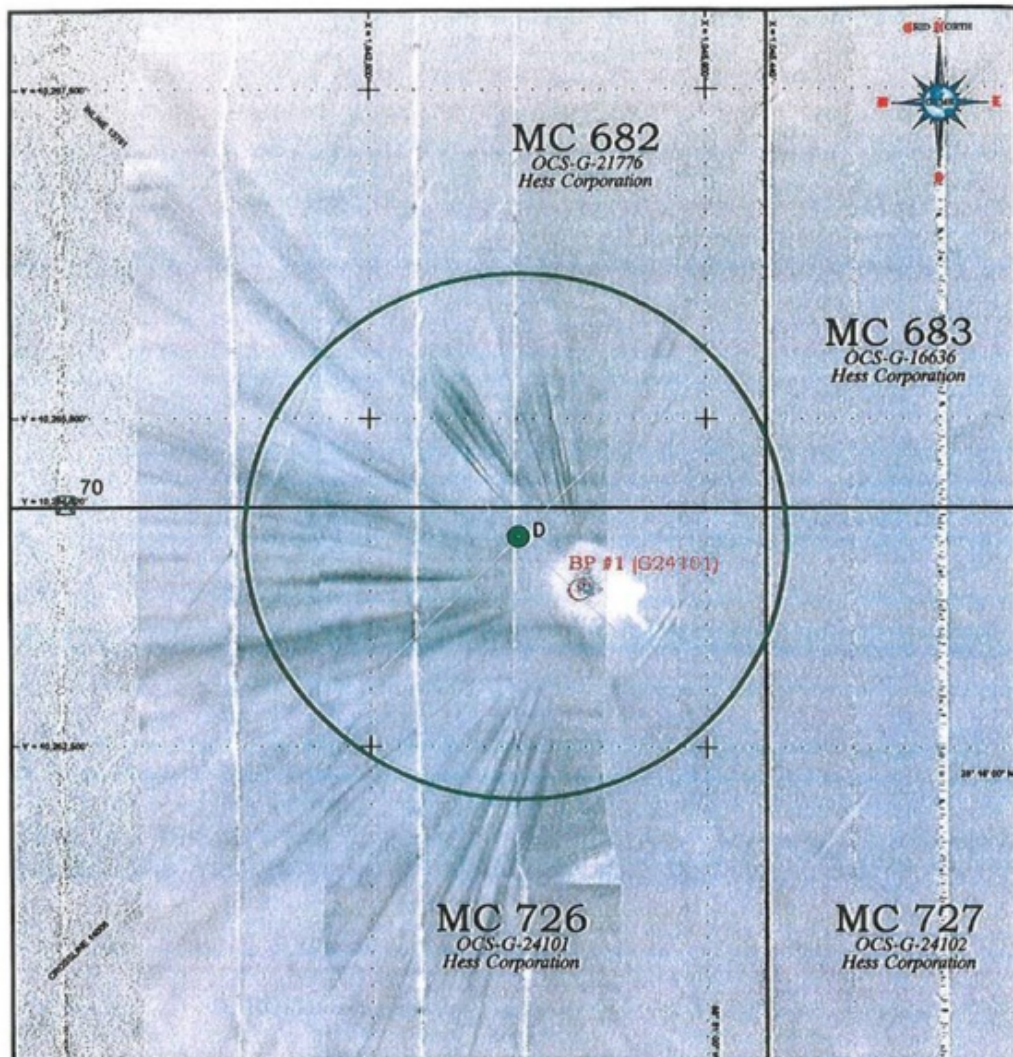
MISSISSIPPI CANYON BLOCK 807

Waste Barrel Avoidance and Release Response in the Mississippi Canyon Area

Barrel Avoidance Plan

- Barrel contents include “wastes produced from the manufacture of fungicides and herbicides.”
- “many of the barrels may have released their contents over time.”
- Allows a standoff distance of 33 feet.

- However, riser-less drilling when spudding a well disturbs sediments to a radius $>2,000$ feet, shown in the next slide as a “splay.”



Hess (2015)

Whistleblower Complaint

- Unsafe drilling practice, may mobilize contaminants.
- Shell's Barrel Avoidance Plan has no apparent regulatory authority.
- The Outer Continental Shelf Lands Act (OCSLA) requires explorations must “not be unduly harmful to aquatic life in the area, result in pollution, or create hazardous or unsafe conditions...”



Complaint to BOEM/BSEE, November 2017.

Whistleblower Complaint

- No evidence that the Mississippi Canyon site was ever regulated by EPA after it was permitted.

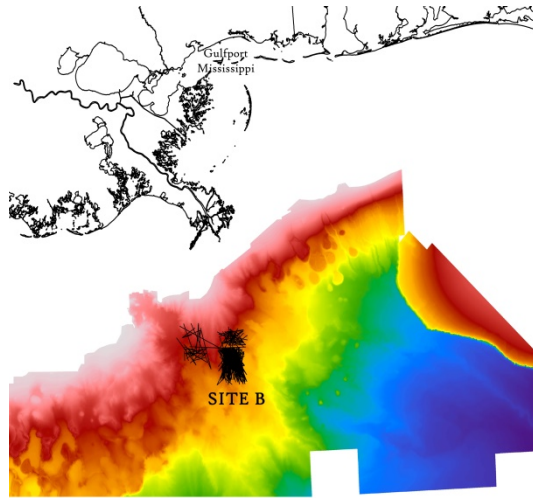


Complaint to EPA, February 2018.

Scientific Recommendations

- Target species should be analyzed for a broad range of chlorinated hydrocarbons, including PCBs, DDT, and dioxins, to evaluate background conditions.
- These background conditions should be considered when evaluating residual health effects related to the Deepwater Horizon release.
- Please use appropriate health & safety precautions to investigate MPRSA disposal sites.

Publications

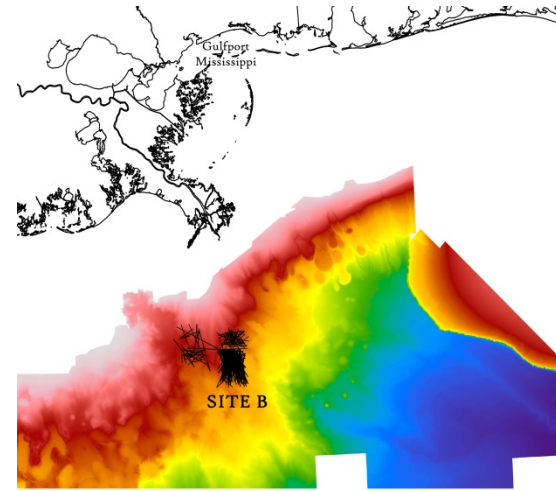


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