Les Trepagniers du Bayou

Bayou Trepagnier: Incorporating Stakeholder Engagement and Multiple Regulatory Processes in Identification of Resolution Options for Contaminated Sites

Mark Davis
Coalition to Restore Coastal Louisiana

Ron Gouguet
NOAA Coastal Resource Coordinator

Michael Macrander
Shell Global Solutions

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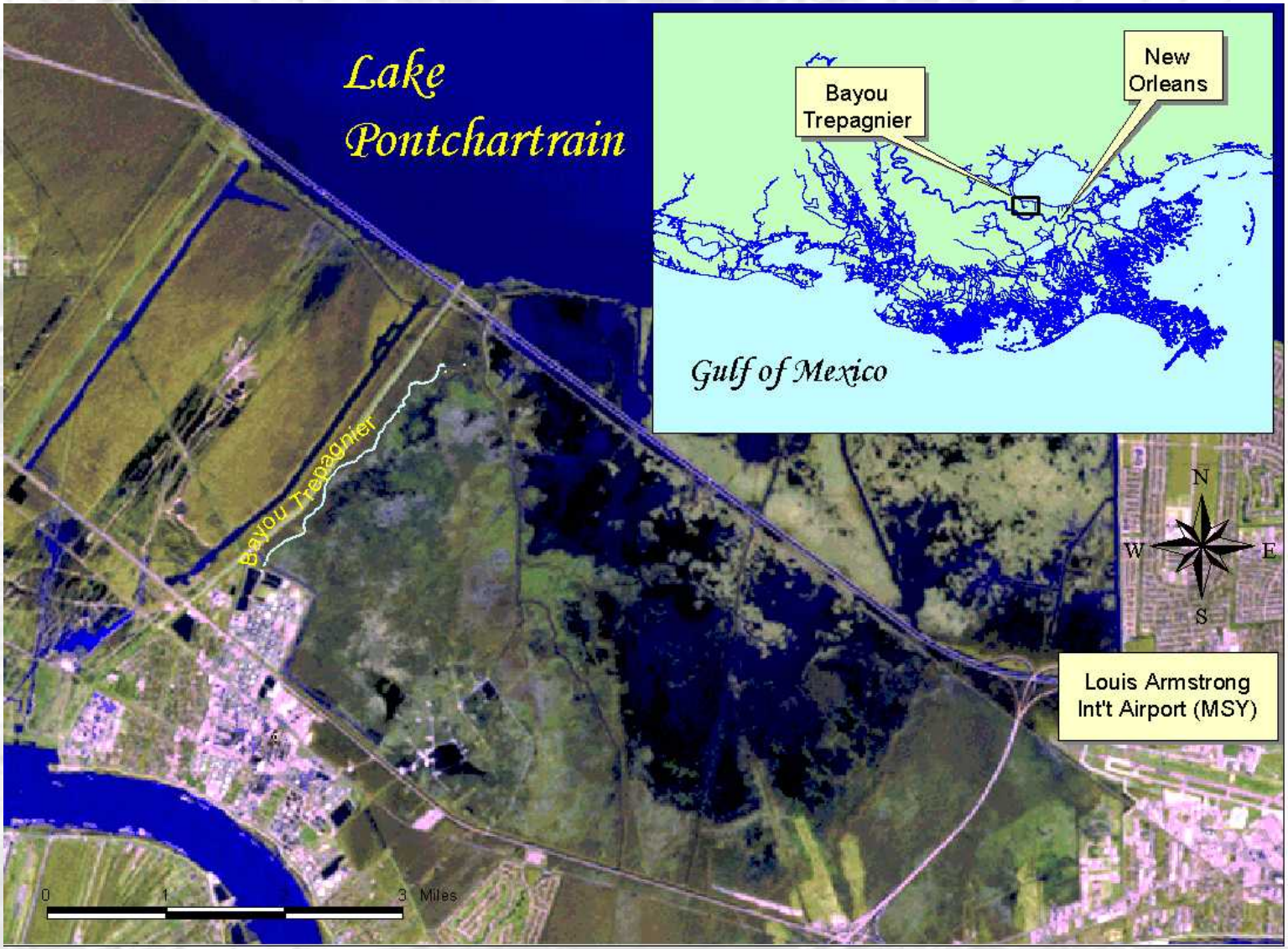
Where is Bayou Trepagnier?



Historic Bayou Trepagnier

- **ca. 2600 – 1500 yrs BP** – St. Bernard Delta, Mississippi River occupies the area & creates a bayou rich system

- **ca. 1900 BP** – Communities of the Marksville branch of the Hopewell system occur along major streams, the southwest coast, and on the Teche and St. Bernard deltas, plus the older ones.

- **1718 -** Jean Baptiste Le Moyne, Sieur de Bienville and John Law founded the City of New Orleans. The French Quarter street plan was made by Adrien de Pauger.

- **18th & early 19th-** Spanish and French land grants fronted the Mississippi River and stretched back along the relatively high grounds of its banks to the swamp or marsh. The Sellers Plantation dug ditches down the edges of its property drain it and connect the bayous into the swamp.

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Early Industrialization and Civil Construction

- **1901 –** Spindletop Oil Field Discovered, Gulf Refinery built at Port Arthur, TX.
- **ca. 1910 -** Standard Oil Co. Baton Rouge, LA and New Jersey refineries built
- **1920** - Roxana Oil of Oklahoma establishes the 5,000 barrels per day (bpd) New Orleans Refining Company (NORCO) at what is now Norco, LA.
- Refinery wastewater begins to be discharged to Bayou Trepagnier.
- **1927** – Catastrophic Mississippi River flood.
- **1929** - Bonnet Carre spillway, built by the USACOE, radically alters the configuration of Bayou Trepaginer. The natural 'headwaters' to the west are eliminated by the spillway's lower guide levee, as is a portion of the bayou further downstream.

Shell Petroleum Corporation acquires the refinery.

- **ca. 1951** Bayou dredged to improve drainage by Louisiana Highway Department & material side cast creating spoil bank

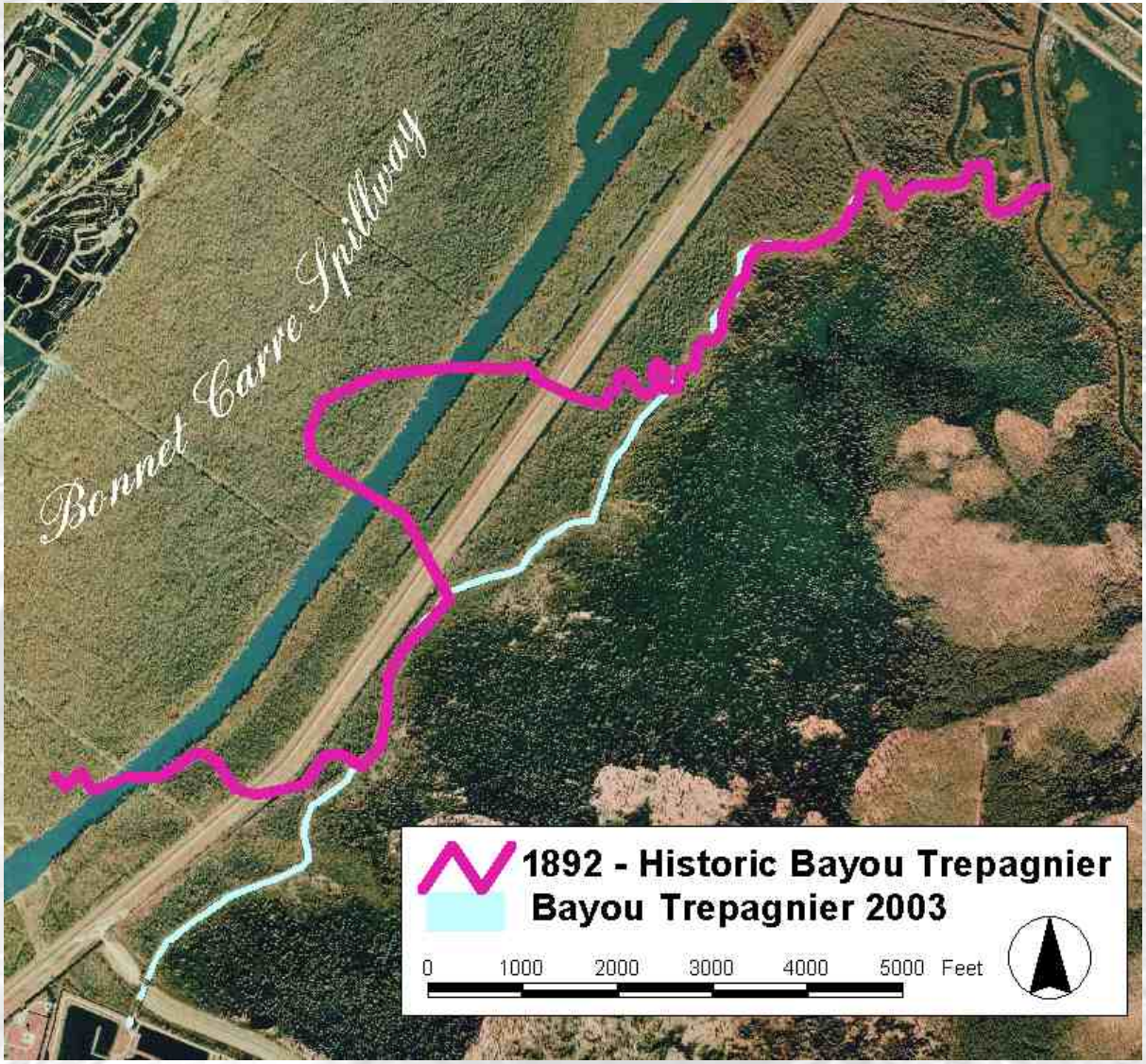
Ignorant Public Policy?

All refineries located on the Mississippi discharged to the river except the Shell Norco & Pan-American Refineries, just upstream of the New Orleans area drinking water intakes.

These two refineries discharged to the swamps via Bayou Trepagnier and Bayou LaBranche respectively, due to the potential for human health issues associated with the river.

In the final decade of the 20th century, the refinery discharge was redirected to the Mississippi River due to ecological concerns.

Original Bayou Route



The problem is discovered

- **1984** Sierra Club raises the issue of refinery related contamination in Bayou Trepagnier.
- **1986** LDEQ, unable to reach an agreement with Shell over the level of contamination and appropriate remedy, begins an independent study of Bayou Trepagnier, conducted by the agency's water division.
- **1989** LDEQ Impact Assessment of Bayou Trepagnier completed and orders Shell to conduct an RI/FS.

Discharges to the Bayous

- **1920** Refinery wastewater begins to be discharged to Bayou Trepagnier.

- **1992** Shell continues discharge of warm, treated waste freshwater to Bayou Trepagnier.

- **1995** Shell removes its freshwater discharge from Bayou Trepagnier and reroutes it to the Mississippi River., reducing freshwater inflow and exacerbating salinity intrusion in the swamp.

The Remedial Investigation & Chemicals of Concern

- **1992** Remedial Investigation completed.

Lead (Pb) - Octane boosting tetraethyl lead (TEL) discovered. (1921)

Chromium (Cr) – chromium,antioxidant for the cooling towers (ca 1960s)

Zinc (Zn) – zinc,replaces Cr the cooling towers (ca 1984)

Polynuclear aromatic hydrocarbons (PAH) – Oil refining operations (ca. 1920?)

Oil & Grease (O&G) – Oil refining operations (ca. 1920?)

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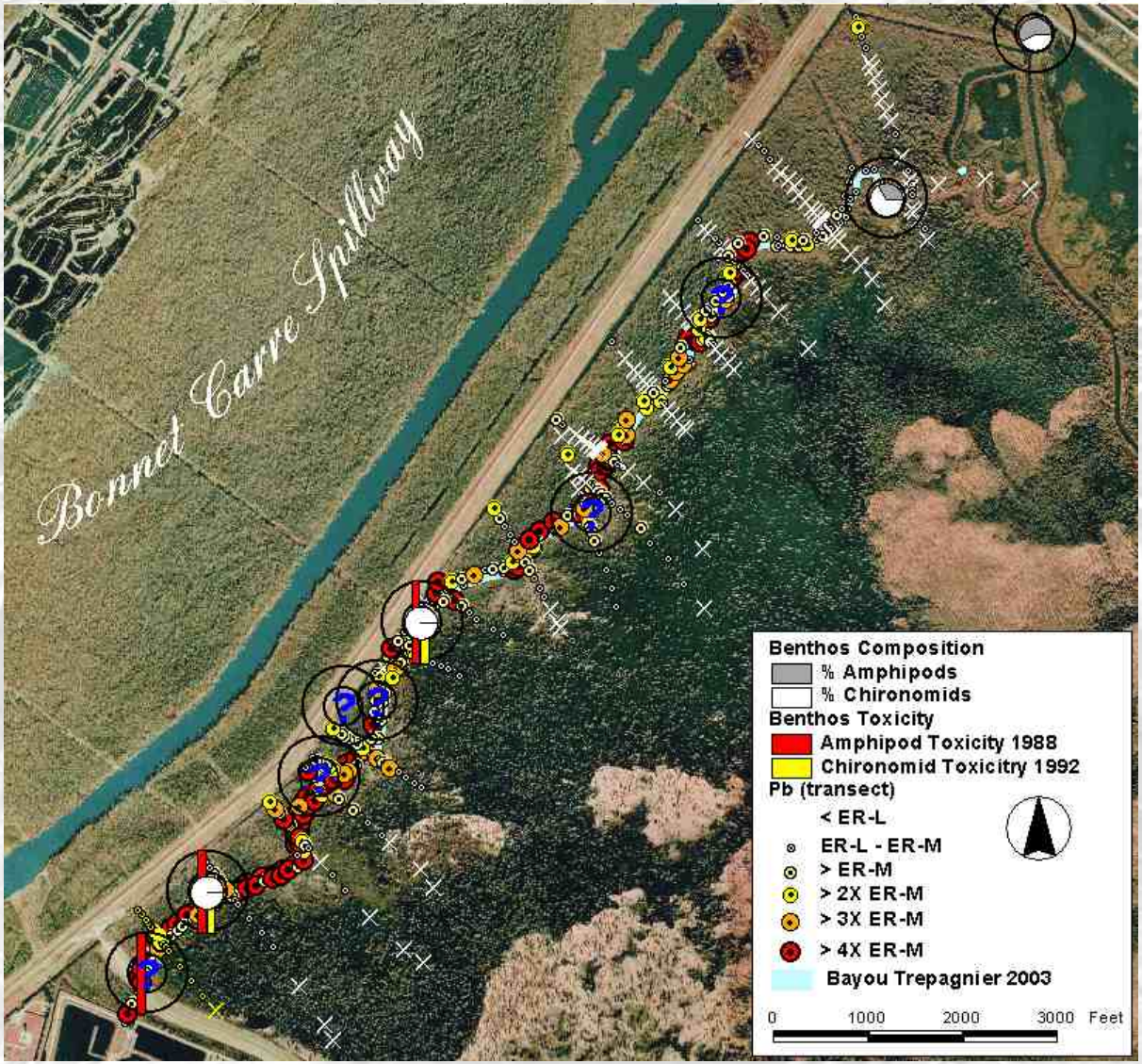
Bayou Trepagnier Data



Impasse on the Bayou

- **1996** Feasibility Study recommending Monitored Natural Recovery completed; Public and CRCL disagree in writing.

- **1997** Draft Decision Document from LDEQ proposed; Public, CRCL and LPBF strenuously object in writing.

- **1998 – 2000** CRCL; working in coordination with the LPBF, Sierra Club, and concerned citizens; continues to express grave concerns in writing.

LDEQ does not issue the proposed Decision Document.

1989 - 2000 Results?

- No one talking to one another
- Lawsuits threatened
- Process followed; no closure
- Data in boxes
- Trustees not involved
- Public not involved
- *Where are we?!*

Not moving forward

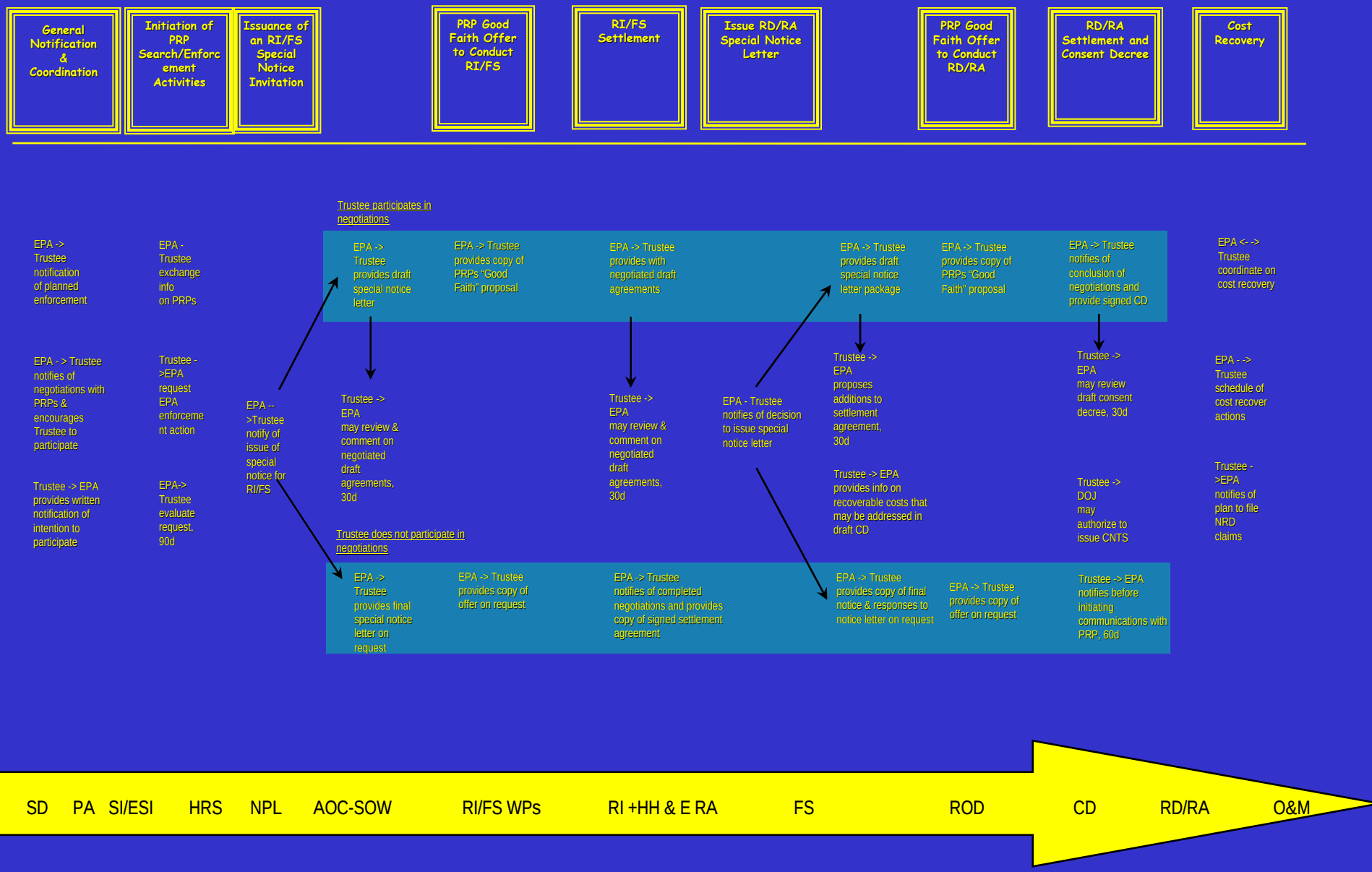
The new approach

- **2000 -** Good Friday, April 21, 2000: CRCL, LPBF, Motiva, NOAA and EPA, spend a day on Bayou Trepagnier. An impromptu lunch meeting ensues on the grassy levee after the canoe trip and a new approach to the site is proposed.

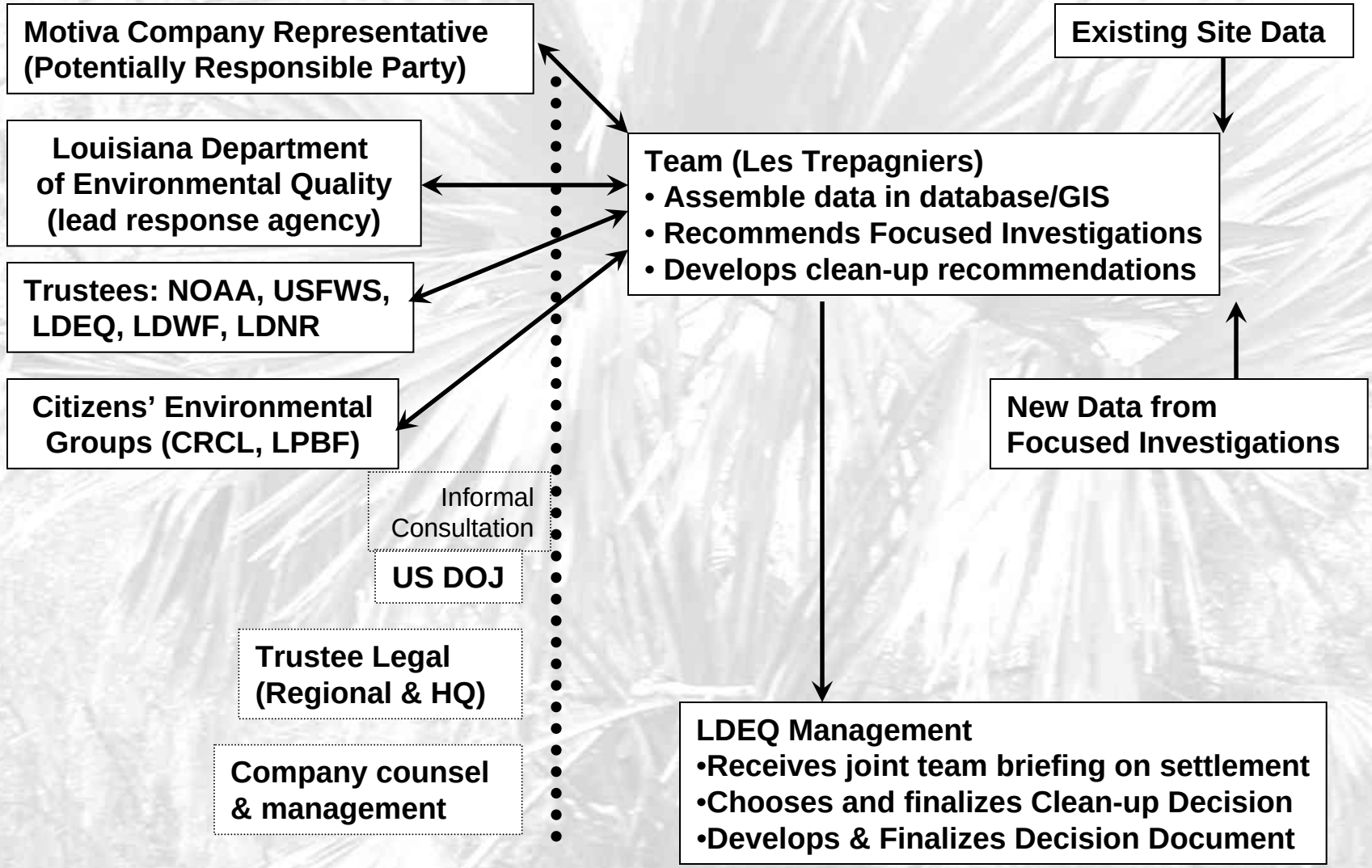
- **2/2001 -** Shell begins a cooperative, integrated remediation and restoration planning process with NOAA, USFWS, LDNR, LDWF, and LDEQ.

- **4/2001** – Labranche Wetlands Community (the Mayor), CRCL & LPBF join the Team.

The Normal Remedial Process



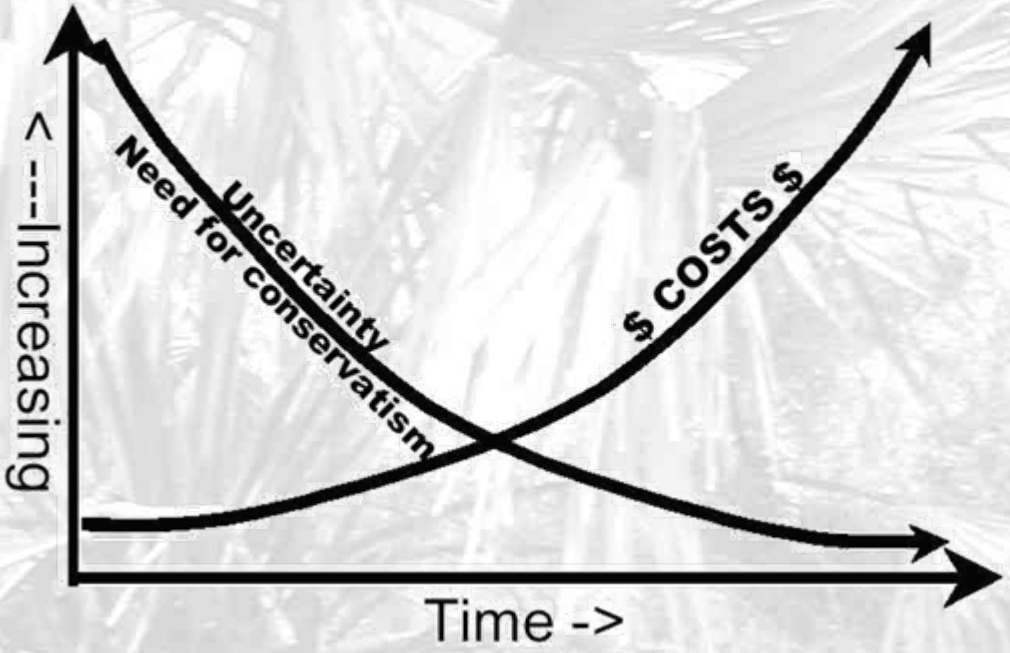
First Half of the Process (remedial)



The Reasonably Conservative Approach to Natural Resource Damage Assessment

…it is sometimes better to make reasonable, conservative estimates of natural resource injuries/losses using information obtained for other purposes than to spend additional time and money on injury assessment studies.

… at some point the additional costs to refine the conservative estimate do not justify further investment considered against the costs to provide additional habitat compensation.



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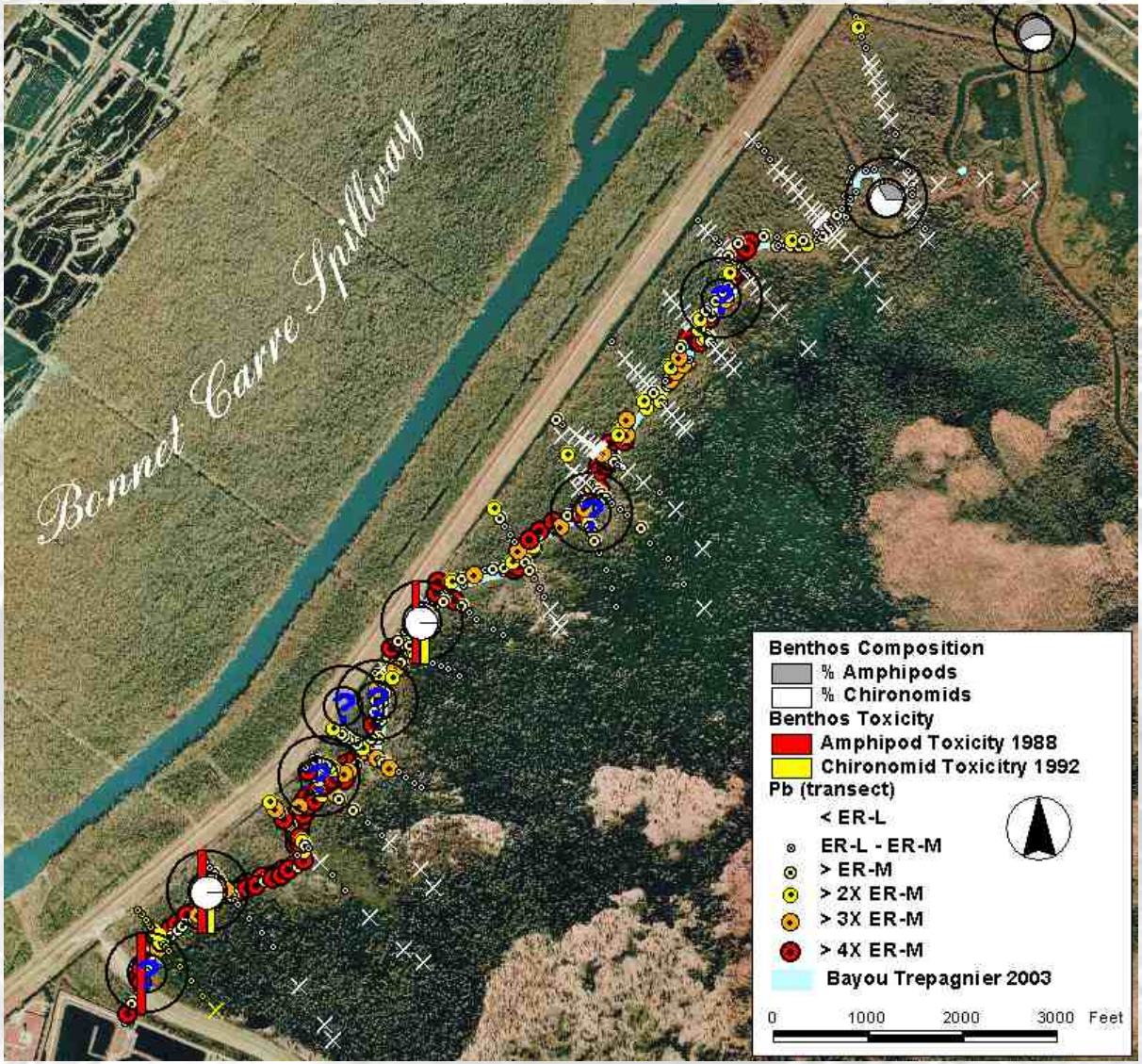
Bayou Trepagnier Data

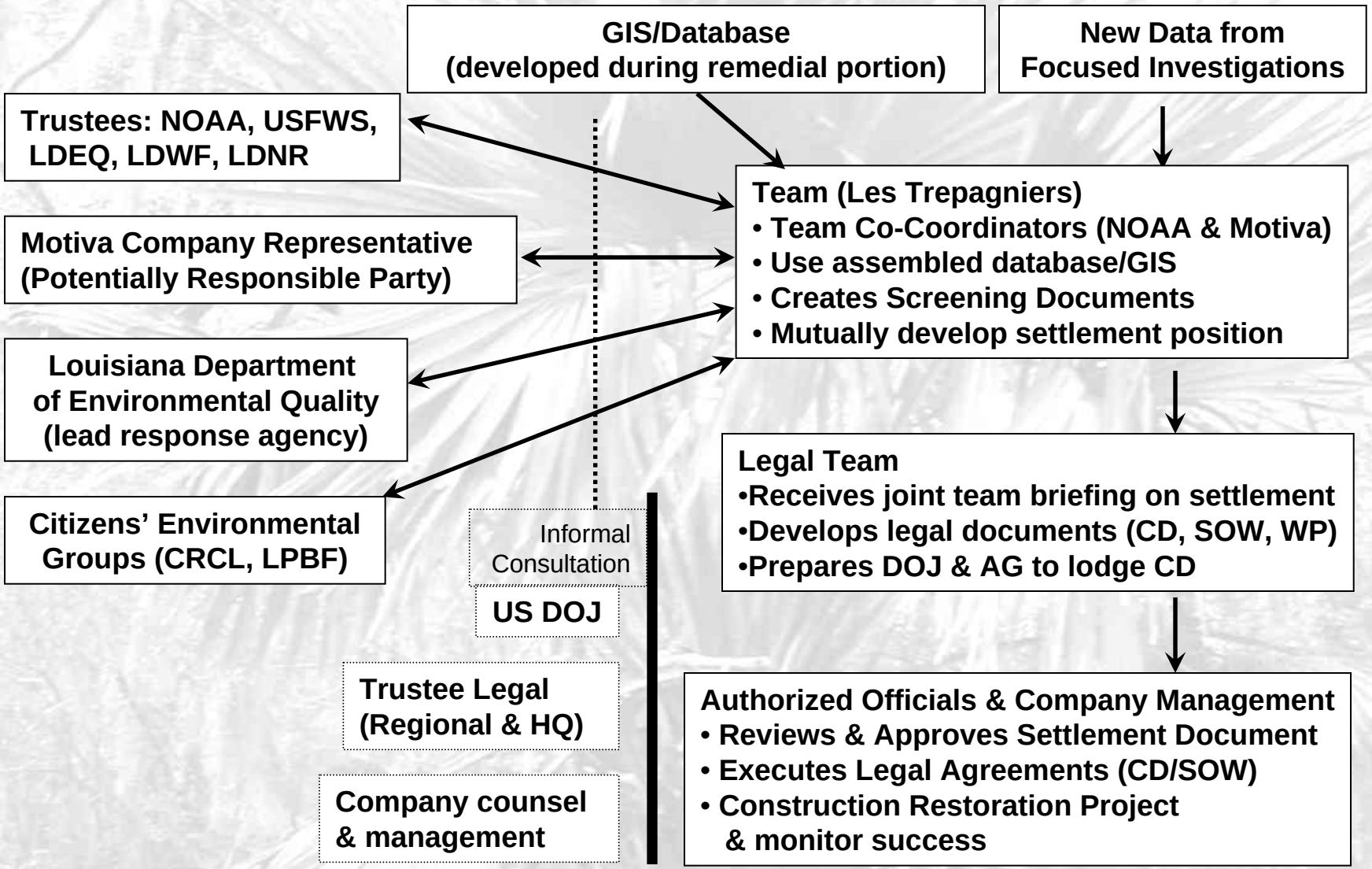


Cooperative, Reasonably Conservative Injury Evaluation

a Natural Resource Damage Assessment Approach…

- Insert Trustee issues in remedial process
- Share RI data as soon as available/create database & GIS
- Consider working under PRP/Trustee MOA
- Habitat / resource based assessment
- "Reasonably Conservative" approach using site specific studies, RI data and the literature
- Stipulation on injury quantification (Technical Memos)
- Frequent public meetings
- Goal - Earlier - In-kind restoration

Second Half of the Process (NRDA)



Critical Facets in the Trepagnier Process

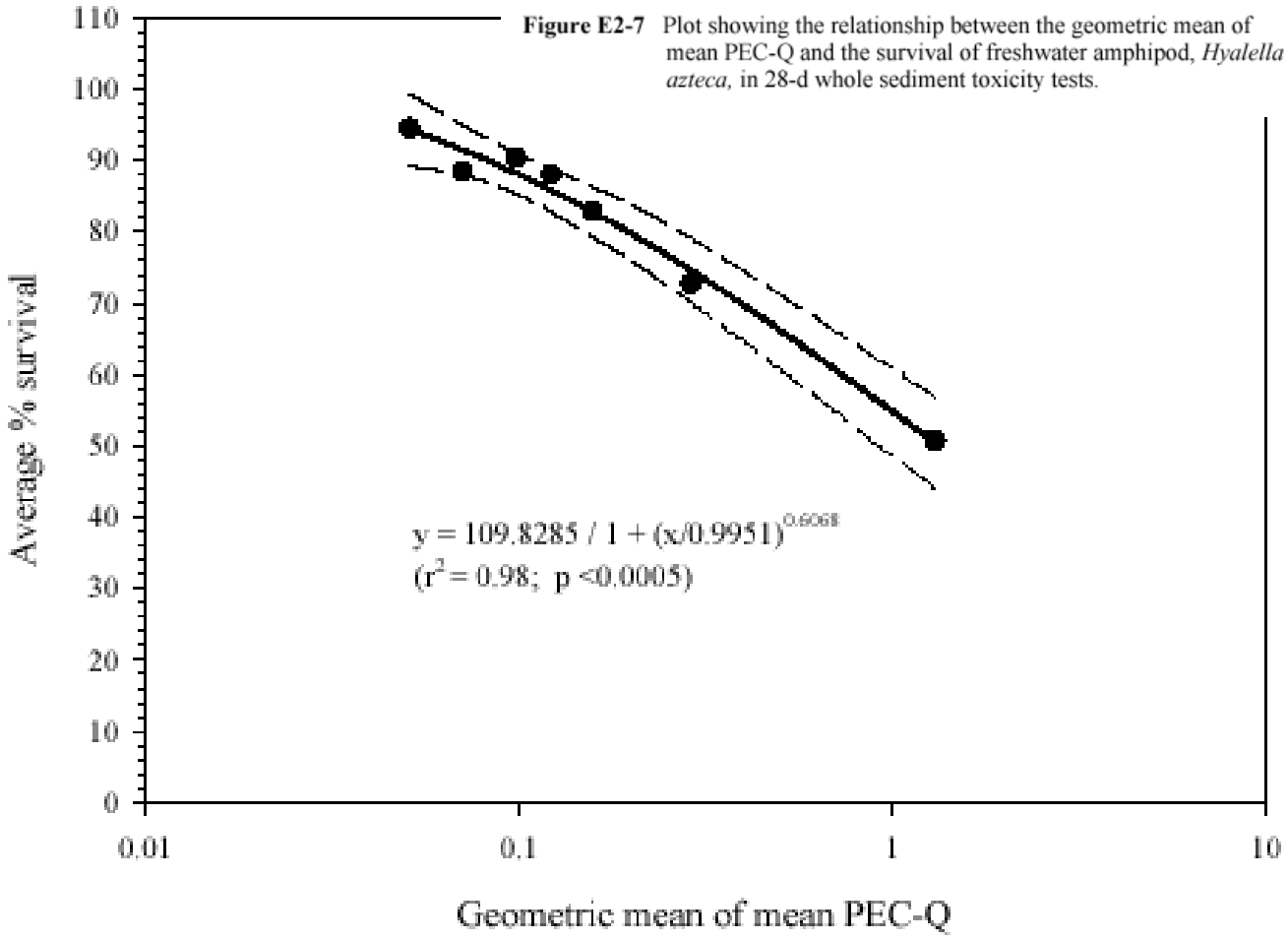
- CRCL was already established as an umbrella organization to represent public interests on the team allowing a single POC.
- The team agreed to a moratorium on publicity
  (don't "try the case" in the media)
- The team decided on planning remediation and restoration through a single process allowing holistic resolution of the site's problems.
- Quickly focused on resolution of the site's problems rather than on history.

Critical Facets in the Trepagnier Process

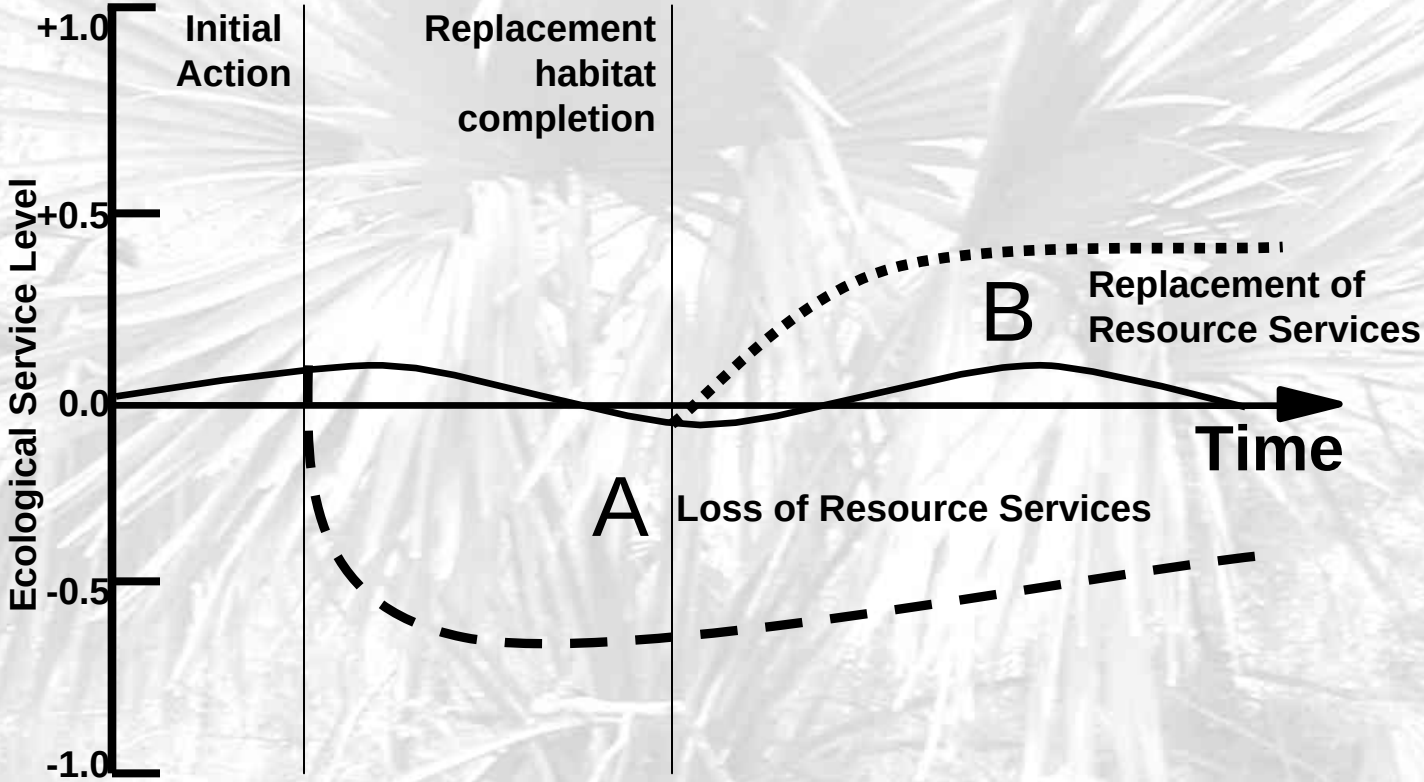
- Agreed to use Reasonably Conservative Benthos Injury thresholds based on sediment quality guidelines.
- Used assessment tools (e.g., GIS-linked database) that would facilitate rapid progress in the assessment.
- The team willing to accept larger, up front, coordination and transaction costs.
- As issues were identified, focused investigations were conducted to fill those data gaps.

Sediment Quality Guidelines Used to Develop Benthic Injury Thresholds

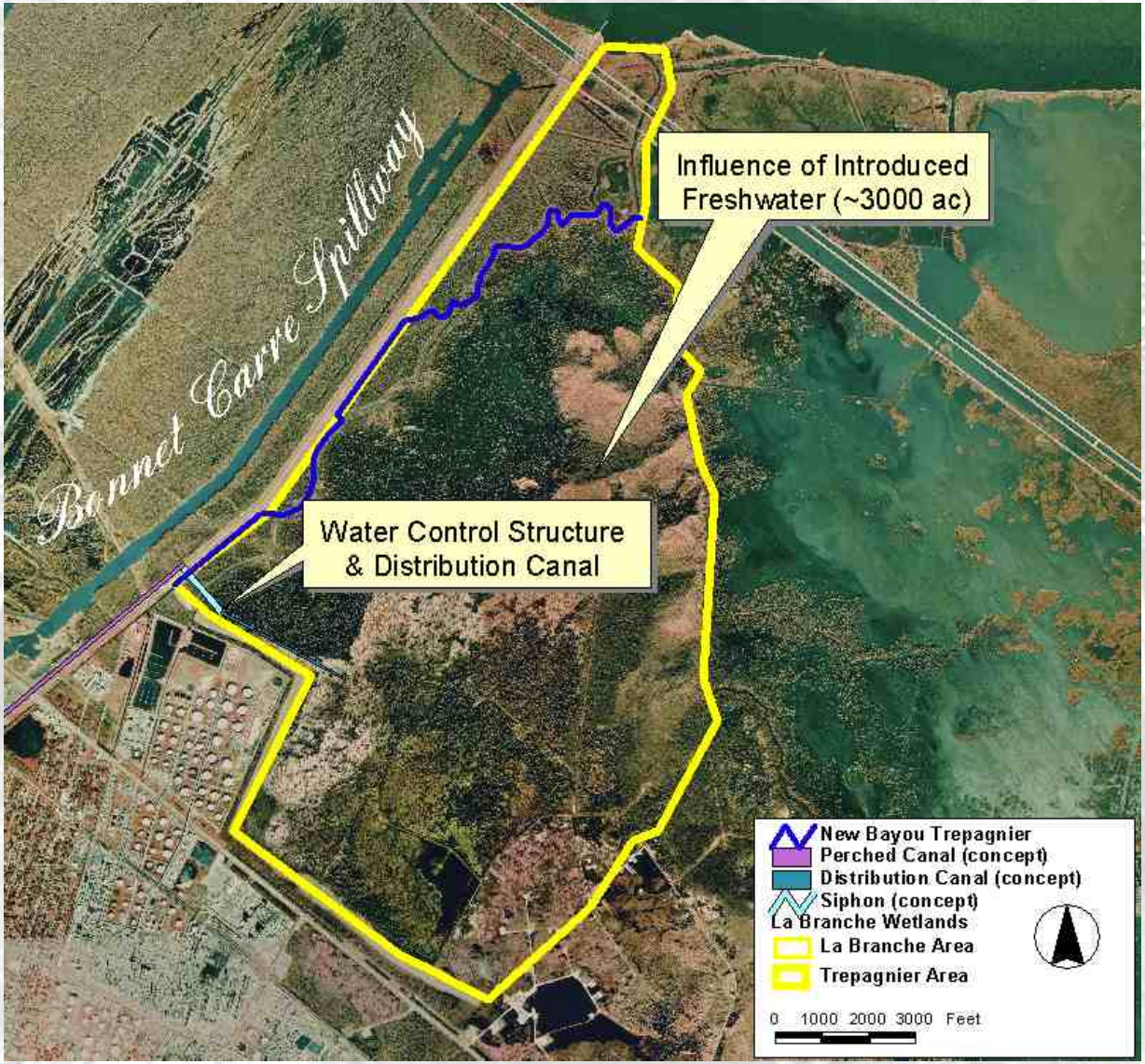
Figure E2-7 Plot showing the relationship between the geometric mean of mean PEC-Q and the survival of freshwater amphipod, *Hyalella azteca,* in 28-d whole sediment toxicity tests.



Habitat Equivalency Analysis



Hydrodynamic & WVA Model Domain & Restoration Conceptual Design



Initial Assessment Progress

- **2/2001** – The team (les Trepagniers) begins its work
- **10/2001** – Most of the injury assessment phase of the work is complete.
- **Early 2002** – began to investigate potential restoration projects.
- **Spring 2002** – Dredging/capping/MNR as remediation and freshwater reintroduction as restoration appear promising, field investigations to support these concepts begin to resolve technical issues

... Predicted Future Path???

- **Summer 2003** LDEQ Issues Remedial Decision Document. Remedial construction begins, including restoration earthwork.

- **Late 2003** Les Trepaniers complete draft Restoration Plan / Environmental Assessment and lodge federal consent decree. CD filed.

- **Late 2004** Construction complete on remediation and restoration (R&R) projects.

… Predicted Future Path???

- **2004 – 2009** Monitoring of R&R projects. Labranche Wetland Fund completes 2D hydrodynamic salinity and flow model for the entire 15,000 acre wetland.

- **2003 – until -** State and federal trustees, CRCL (working in coordination with the LPBF, Sierra Club, the Labranche Wetlands Fund & concerned citizens) & the USACE develop several small freshwater diversion projects into the Labranche Wetlands .


Questions?