LOUISIANA RESTORATION AREA TRUSTEE IMPLEMENTATION GROUP
of the
DEEPWATER HORIZON TRUSTEE COUNCIL

In re: Oil Spill by the Oil Rig "Deepwater Horizon" in the Gulf of Mexico
on April 20, 2010,
Civil Action Nos. 10-4536; 10-04182; 10-03059; 13-4677; 13-158; 13-00123 (ED. La.)
MDL No. 2179

Resolution # LA-2023-013

Resolution of the Louisiana Trustee Implementation Group to Approve the Attached "Louisiana Data Management Interoperability Monitoring and Adaptive Management Activities Implementation Plan (MAIP)" and to Approve and Allocate Funds to Implement this MAIP

1. In accordance with the Oil Pollution Act of 1990 (OPA), the National Environmental Policy Act (NEPA), the *Deepwater Horizon* (DWH) Oil Spill: *Final Programmatic Damage Assessment Restoration Plan and Final Programmatic Environmental Impact Statement* (PDARP/PEIS), and the *Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the Deepwater Horizon (DWH) Oil Spill* (TC SOPs), the undersigned representatives of the Louisiana Trustee Implementation Group (LA TIG) hereby approve the attached *Louisiana Data Management Interoperability Monitoring and Adaptive Management Activities Implementation Plan* (MAIP) and approve and allocate funds to the Louisiana Coastal Protection and Restoration Authority (CPRA) and the National Oceanic and Atmospheric Administration (NOAA) for the implementation of the MAIP.

2. The activities to be funded through this Resolution support the restoration of natural resources and services injured or lost as a result of the DWH oil spill and help carry out the restoration goals identified in the Final PDARP/PEIS and the Record of Decision that provides and explains the Trustees' selection of the Preferred Alternative (Alternative A) for the Programmatic Restoration Plan in the Final PDARP/PEIS. The tasks are also consistent with the Consent Decree resolving the civil actions referenced above. Specifically, this MAIP is intended to increase access to and integrate available and collected data through best data sharing practices and protocols. The objectives are to enable machine to machine NRDA data interoperability from CIMS to DIVER and ERMA through construction of CIMS API touchpoints to facilitate transfer and synergies, while minimizing duplication of Project Manager tasks and utilization for restoration management, planning, and decision making.

3. It is resolved that, after due deliberation, extensive discussion, and review of the tasks, level of effort, and costs, through this Resolution and associated DWH Trustee Withdrawal Forms, the LA TIG requests disbursement of Monitoring and Adaptive Management funds in the amount of

$600,000 to Louisiana Coastal Protection and Restoration Authority (CPRA) and $421,762 to NOAA from the DOI Restoration Fund to implement the MAIP. The funds will be used as follows:

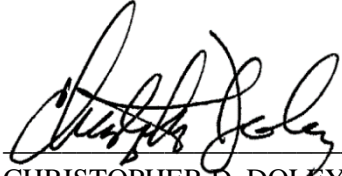| Resolution	Project Name	Project ID	Restoration Type	Trustee	Withdrawal from Restoration Fund	Total Project Budget
LA-2023-013	LA Data Management	344	MAM	CPRA	$600,000	$1,021,762
				NOAA	$421,762	

4. These funds may only be used for project implementation activities as described in the attached MAIP and described in this resolution. Any other use of funds disbursed pursuant to this Resolution is prohibited. Any non-authorized use of disbursed funds must be reported to the full IA TIG immediately upon discovery of unauthorized use. Any remaining funds will be accounted for according to the applicable provisions in the TC SOPs.

5. The LA TIG Trustees agree that all applicable regulatory compliance activities must be completed and appropriately documented prior to undertaking any regulated activities.

6. It is resolved that having reviewed these project implementation activities, the duly authorized officials for the LA TIG authorize the utilization and expenditure of these funds. This Resolution may be authorized in counterparts.

Resolution # LA-2023-013

RESTORATION IN LOUISIANA TRUSTEE IMPLEMENTATION GROUP

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KYLE R. "CHIP" KLINE, JR.
Representative for Louisiana

Resolution # LA-2023-013

RESTORATION IN LOUISIANA TRUSTEE IMPLEMENTATION GROUP

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CHRISTOPHER D. DOLEY
Principal Representative, National Oceanic and Atmospheric Administration

_____

MARY JOSIE BLANCHARD
Principal Representative, Department of the Interior

_____

RONALD HOWARD
Alternate to Principal Representative, U.S. Department of Agriculture

_____

MARY KAY LYNCH
Alternate to Principal Representative, U.S. Environmental Protection Agency

DATE OF LAST SIGNATURE: June 20, 2023

Deepwater Horizon

Louisiana Trustee Implementation Group

MONITORING AND ADAPTIVE MANAGEMENT ACTIVITY IMPLEMENTATION PLAN:

LOUISIANA DATA MANAGEMENT

INTEROPERABILITY

May 2023

Implementing Trustee: CPRA

Introduction

The Deepwater Horizon (DWH) oil spill settlement in 2016 provides the Natural Resource Damage Assessment (NRDA) Trustees (Trustees) up to $8.8 billion, distributed over 15 years, to restore natural resources and services injured by the spill. As described in the DWH oil spill Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement (PDARP/PEIS; DWH NRDA Trustees 2016), the Trustees selected a comprehensive, integrated ecosystem approach to restoration. The Final PDARP/PEIS considers programmatic alternatives, composed of Restoration Types, to restore natural resources, ecological services, and recreational use services injured or lost as a result of the DWH oil spill incident. As shown in the PDARP/PEIS, the injuries caused by the DWH oil spill affected such a wide array of linked resources over such an enormous area that the effects must be described as constituting an ecosystem-level injury. The PDARP/PEIS and information on the settlement with BP Exploration and Production Inc. (called the Consent Decree) are available at the Gulf Spill Restoration website.

Foundational data are the driving force and backbone of science and promote sound organizational decision making efforts. These data are essential as they frame the fundamental objectives for effective scientific planning, resource utilization, and informed decision making. Furthermore, coastal scientific communities, project managers, and other professionals rely heavily on large complex data sets, such as monitoring data. Coastal Louisiana is home to several long-term foundational monitoring data collection efforts (e.g., Coastwide Reference Monitoring System [CRMS], Barrier Island Comprehensive Monitoring [BICM], Fisheries Independent Monitoring Program [FIMP]) and the need for data accessibility and discoverability is vital for ecosystem restoration success. Monitoring data collected and processed under these programs advises strategic planning, engineering and design, and implementation of the most cost-effective ecological restoration activities. However, the rapid advancements in technologies and applications have paved way for tremendous volumes of data. As such, data sharing and data interoperability collaborative efforts must be established to enable best resource management practices.

These large, complex data sets must receive proper data management, quality assurance, data engineering, data governance, and follow strict data security protocols. Moreover, data accessibility and interoperability are essential to the planning, implementation, and long-term success of NRDA restoration projects. Through Cross-TIG collaboration and data sharing, project implementation and project benefits will be maximized while minimizing data duplication as stated in the LA TIG MAM Strategy (Table 10), and were previously identified in the Louisiana Adaptive Management Status and Improvement Report: Vision and Recommendations report (Deepwater Horizon Louisiana Trustee Implementation Group, 2021; The Water Institute of the Gulf, 2020). Specifically, enabling Louisiana's Coastal Information Management System (CIMS) enterprise database and various application portals to communicate with NOAA's Data Integration Visualization Exploration and Reporting (DIVER) application through application programming interface (API) touchpoint development to support adaptive management and restoration planning and evaluation is key to this endeavor.

Purpose of this Document

This Monitoring and Adaptive Management Activity Implementation Plan (MAIP) describes the Monitoring and Adaptive Management (MAM) Activity "*Support for LA TIG Data Management Interoperability*", which will support the Louisiana Trustee Implementation Group (LA TIG) MAM Fundamental Objectives. These objectives are outlined in the PDARP/PEIS. In addition, this document provides information about the activities to be implemented; describes their applicability to the PDARP/PEIS and describes their consistency with the programmatic alternatives selected by the DWH Trustees in the PDARP/PEIS.

The DWH LA TIG is in the process of planning and implementing a multitude of restoration projects across coastal Louisiana to restore the fragile ecosystem and degrading marshes that were impacted heavily by the DWH oil spill. Restoration projects must leverage existing foundational monitoring initiatives and new targeted data collection efforts to achieve the necessary project evaluation outcomes to inform future adaptive management and decision making. Accessible data are critical for successful project management. This activity will establish the capability of system-to-system communication allowing data to remain current and easily accessible on NOAA's DIVER and ERMA applications from CPRA's CIMS application.

The following table is in the *LA TIG Monitoring and Adaptive Management Strategy*. This MAIP is outlining effort focused on 4. *Data Management: increase access to and availability of collected data, monitoring, project documents, and lessons learned from LA TIG restoration projects and MAM activities*, addressing the fundamental objective related to increasing access and availability of collected data and monitoring for NRDA restoration projects.

LA TIG Programmatic MAM Needs	Possible Activities to address Programmatic MAM Need
1. DWH NRDA Lessons learned are systematically captured and incorporated into future project selection, design, implementation, and evaluation accessed by Trustees and available for use by planners/ engineers/ consultants for DWH NRDA in coastal Louisiana	• Develop and employ a process for identifying lessons learned from LA TIG restoration projects and rationale for operation and maintenance decisions to inform future planning and objective setting • Capture LA TIG restoration lessons learned (e.g., within DIVER or a database), where they can be accessed by project planners, implementers, and contractors • Evaluate former projects conducted under other programs, as needed, to apply lessons learned to DWH NRDA restoration planning (AM Framework Report #59)
2. Relative effectiveness of different restoration approaches are identified	• Develop best practice guidelines for restoring for injured resources and increasing habitat services in coastal Louisiana – *To be informed by Cross RT Table activity* **1.a.**; *also, per Adaptive Management Framework Report recommendation 3.0*
3. Understand the influence that DWH NRDA restoration has on ecosystem condition of coastal Louisiana at present and for comparison at 5-year intervals	• Contribute to integrated coastal ecosystem condition reporting (assessment / report card that quantitatively synthesizes physical, ecological, social; at coastal basin level and coast-wide scales) in coastal Louisiana, focusing on assessing progress towards short- and long-term programmatic DWH NRDA goals and objectives – *To be informed by Cross RT Table activity* **1.a.**; *also, per Adaptive Management Framework Report recommendation 3.0* • Expand model-based comparisons of predicted future condition in terms of DWH NRDA programmatic objectives and compare to observed data, adjusting as appropriate (AM Framework Report #23) • Contribute to regular evaluation and refinement of SWAMP monitoring purpose and design, with a focus on components of SWAMP that are utilized for LA TIG restoration planning, implementation, and monitoring and evaluation (AM Framework Report #19)
4. **Data Management: increase access to and availability of collected data, monitoring, project documents, and lessons learned from LA TIG restoration projects and MAM activities**	• Enable interoperability of CIMS, LDWF FIMP (and other datasets as necessary) and DIVER to facilitate transfer and synergies, while minimizing duplication of data access and utilization for restoration management, planning, and decision making (AM Framework Report 2.0) • Assist in aligning monitoring methodologies and core performance monitoring metrics amongst Louisiana data collection efforts (AM Framework Report #18) • Develop or refine LA TIG data management guidelines, including guidance on use of DIVER and CIMS for data associated with LA TIG restoration projects, and where possible, improve alignment between DIVER and CIMS guidelines and templates, including for data management plans, data repository reporting, storage protocols, metadata standards, and data discoverability (AM Framework Report #40, 45, 47,50,52) • Enable public access to numerical models and tools used by the LA TIG (AM Framework Report 7.0) (e.g., DIVER or an online model repository)

5. Increase communications about MAM within and across agencies, stakeholders, and the public to support effective adaptive management of coastal restoration in Louisiana, to increase public transparency, and to increase engagement with and understanding of LA TIG restoration efforts	• In coordination with the DWH NRDA communications team, develop communication approaches (e.g., outreach events, synthesis fact sheets) that increase effectiveness of dissemination of MAM information (AM Framework Report 6.0 and #91) • Engage the public in the development of an LA TIG MAM Outreach and Communications Plan (AM Framework Report #71) • Develop methods to measure the effectiveness of public outreach, communication, and stakeholder engagement (AM Framework Report #72) • Leverage opportunities for Trustee agencies to collect and utilize public data (AM Framework Report #73) • Coordinate a biannual LA Adaptive Management Implementation Working Group meeting to seek opportunities for knowledge transfer across agencies involved in Louisiana restoration (AM Framework

Table 1: Programmatic Adaptive Management Needs and Activities.

Monitoring and Adaptive Management Goals Addressed by this MAM Activity (Data Management)

This MAM activity aligns with the LA TIG MAM Strategy (DWH LA TIG 2021) by addressing data management and data interoperability efforts to facilitate transfer and synergies of data from CIMS to DIVER, while minimizing duplication of data access and utilization for restoration management, planning, and decision making (AM Framework Report 2.0). This activity will address the LA TIG Programmatic MAM needs number 4 (Table 10, pg 26; LA TIG MAM Strategy 2021) and MAM activities to develop and increase access to and availability of collected data, monitoring, project documents, and lessons learned from LA TIG restoration projects and MAM activities. Increasing data discoverability and data sharing mechanisms will in turn support development of SMART objectives associated with the Data Management MAM Fundamental Objectives listed below.

1. *Enable machine to machine NRDA data interoperability (i.e., CIMS application programming interface [API] touchpoints will be developed)*
2. *Increase LA TIG restoration project data access and data discoverability*
3. *Minimize duplicative data access efforts*
4. *Provide increased data governance, maintenance, security, and preservation*

MAM Activity Overview

Activity Description

This project will address the Louisiana Data Management activity regarding CIMS to DIVER data interoperability. Three years of programming, cross-system collaboration, and continued data governance is expected.

Background

This project will enable coastal restoration monitoring data interoperability between CPRA's Coastal Information Management System (CIMS) and NOAA's applications Data Integration Visualization Exploration and Reporting (DIVER) Explorer and the Environmental Response Management Application (ERMA) platform. As such, this data interoperability project will provide greater accessibility and discoverability for the scientific community, which in turn, will help inform the overall coastal restoration project planning and implementation efforts and decisions.

CIMS (https://cims.coastal.la.gov) was developed to support CPRA's data management and delivery capabilities. CIMS combines several applications (e.g., a network of webpages, GIS databases, and multiple relational tabular databases) into one public-facing, GIS-integrated system capable of robust visualizations and data delivery (CPRA, 2018). Data and information generated through the coastal protection and restoration program is available to all interested parties through the various CIMS application portals including spatial viewers, tabular download web pages, and a library/document retrieval system along with a suite of public-facing web services providing programmatic access. This project will expand upon CIMS current web services capabilities through API touchpoint development. These API touchpoints will allow web applications (DIVER) to communicate directly with CIMS web services to retrieve pertinent NRDA monitoring datasets.
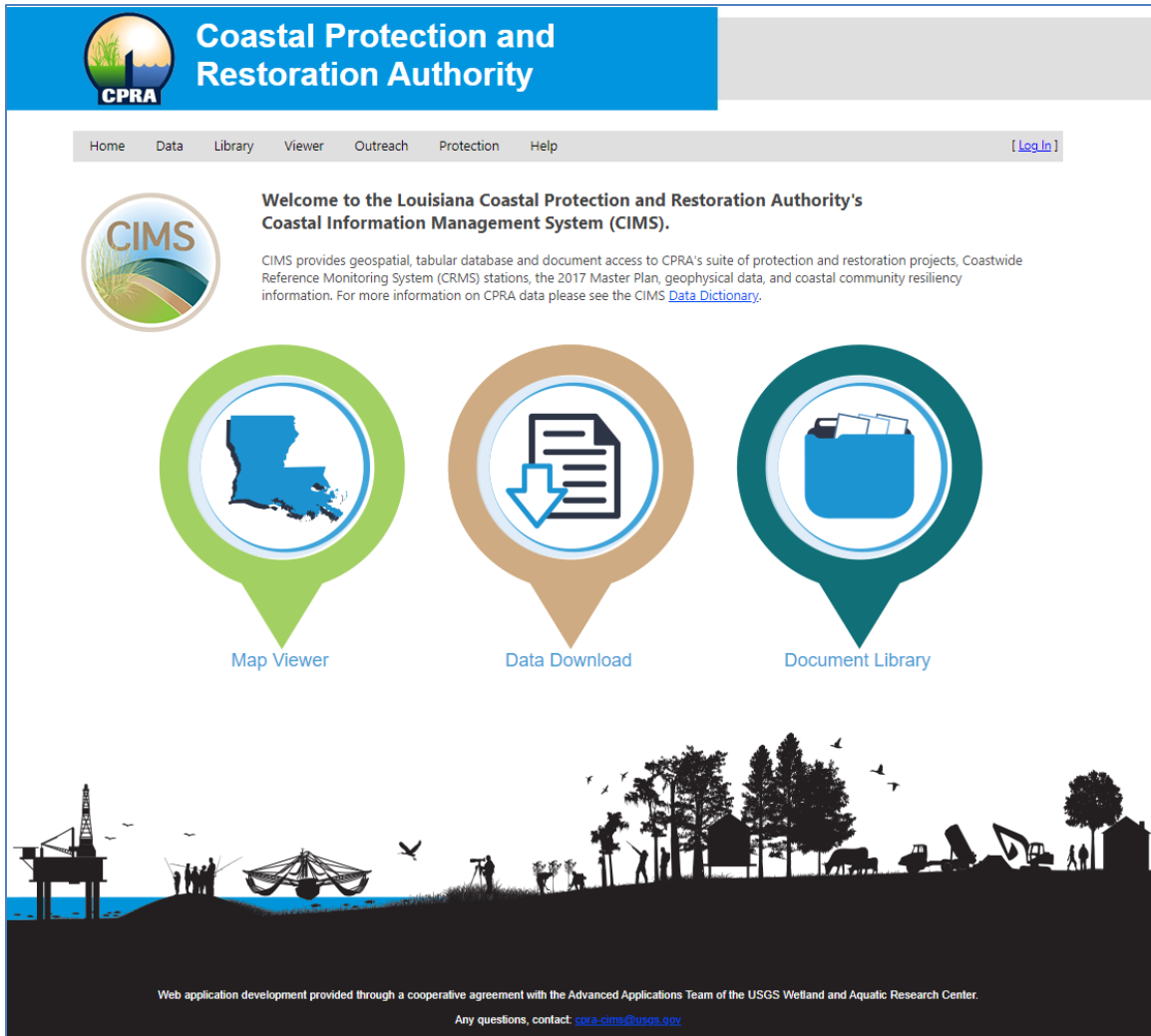
Figure 1: CPRA Coastal Information Management System (CIMS) online interface.

Pertinent NRDA datasets retrieved from CIMS will be displayed in NOAA's DIVER Explorer and the ERMA platform. DIVER is NOAA's platform that provides access to a vast amount of NRDA-related response, assessment, and restoration project information and environmental data for the scientific community to explore (DIVER, 2020). Regional datasets are made publicly available through the DIVER platform with the ability to further filter by desired data category and/or workgroup. Accessing these data are essential to inform future planning and restoration initiatives. Therefore, obtaining the most up-to-date accurate data sets is critical. Both CPRA and NOAA are fully committed to sharing NRDA related

monitoring and restoration information to help coastal stakeholders make informed, science-based decisions.
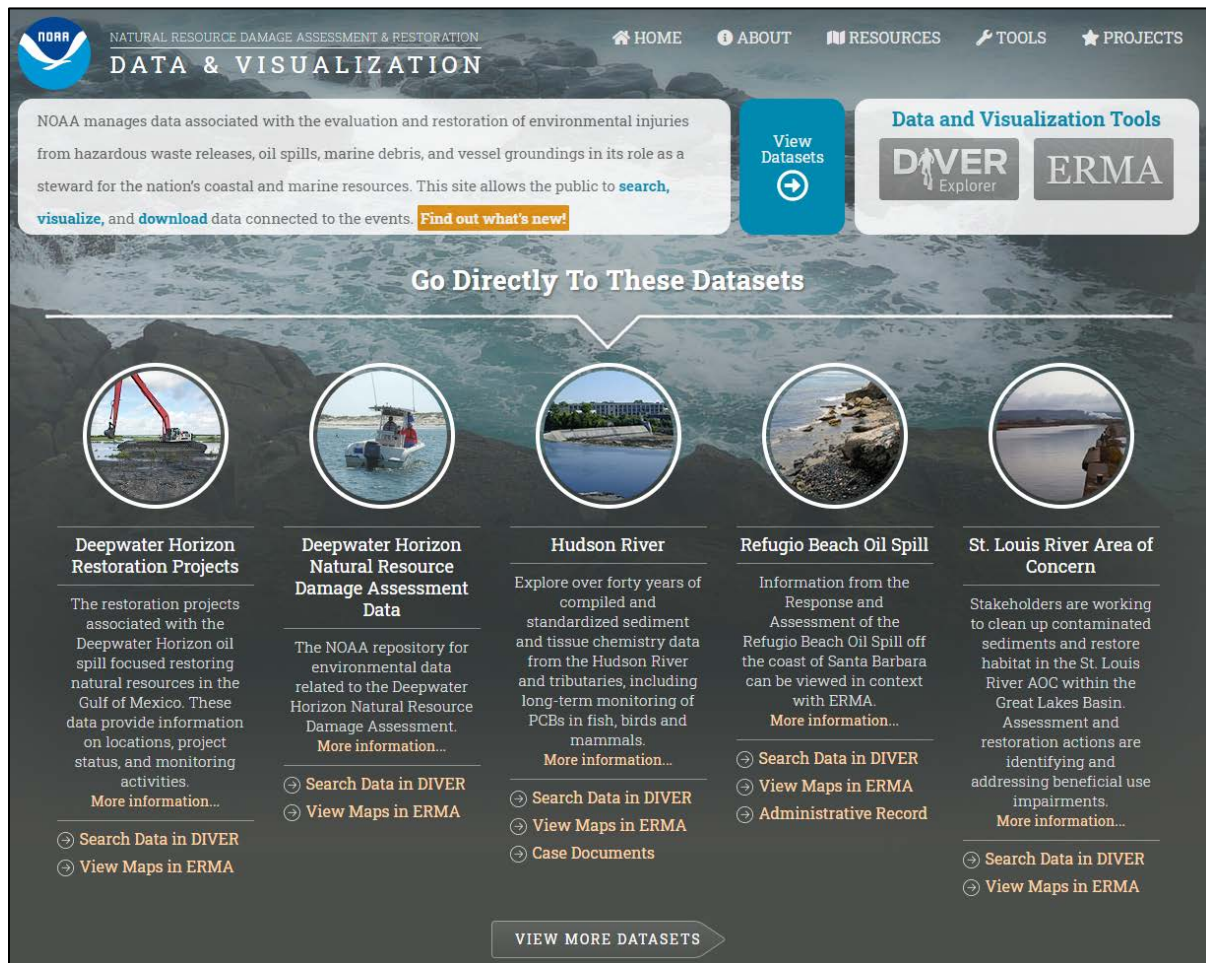

Figure 2: NOAA Natural Resource Damage Assessment & Restoration Data & Visualization online interface.

The Environmental Response Management Application (ERMA) is an online geographic information system (GIS) and visualization tool constructed by NOAA to view GIS layers and additional pertinent environmental information related to damage assessments, restoration activities, and environmental response monitoring efforts (ERMA, 2015).
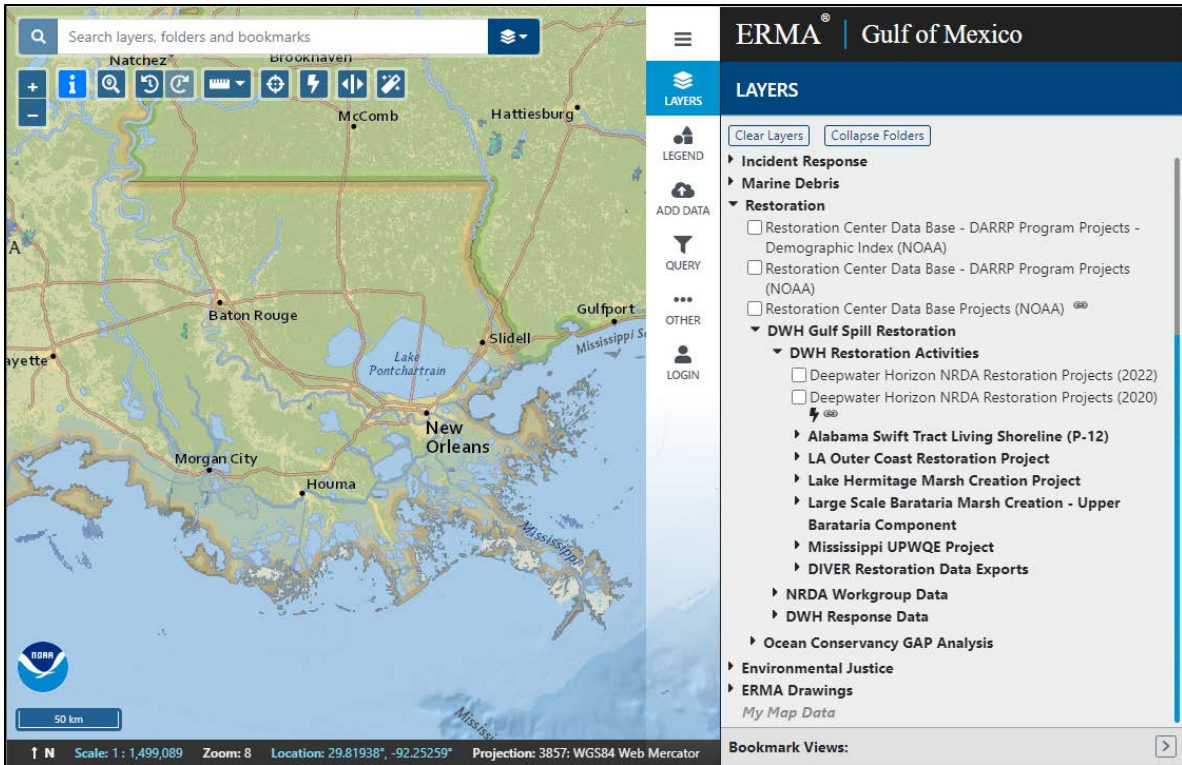
Figure 3: Environmental Response Management Application (ERMA) online interface.

Objectives

The goal of this MAM Activity is to increase access to and integrate available and collected data through best data sharing practices and protocols. The objectives are to enable machine to machine NRDA data interoperability from CIMS to DIVER and ERMA through construction of CIMS API touchpoints to facilitate transfer and synergies, while minimizing duplication of Project Manager tasks and utilization for restoration management, planning, and decision making (AM Framework Report 2.0).
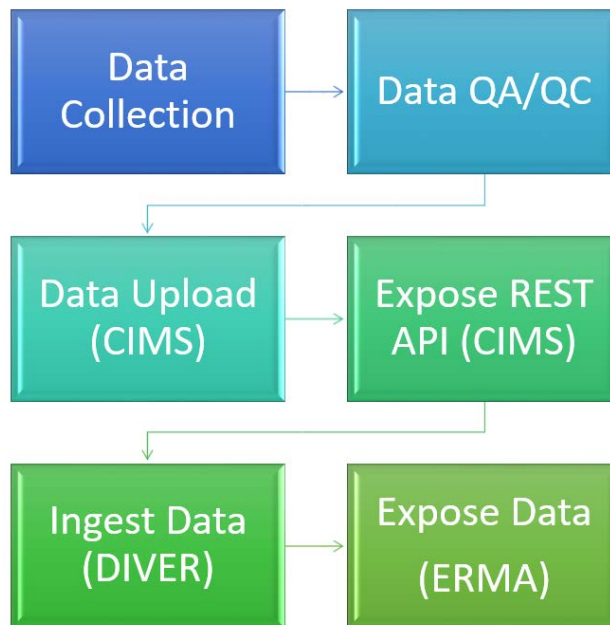
Figure 4: Potential NRDA data flow.

Tasks
- Task 1 (CPRA/USGS): The overall objective of task 1 is to build an application programming interface (API) framework exposing API touchpoints for select NRDA-funded data currently stored within CIMS. API development will be implemented on the CIMS application stack and will return results in the JSON open standard format.
  - o In collaboration with NOAA, prioritize data types to be made accessible through API
  - o Define the endpoints and the JSON data that will be returned
  - o Design API framework
  - o Implement endpoints by writing necessary software code to handle requests
  - o Test API to ensure it is working as expected
  - o Fix bugs and/or issues as needed
  - o Document the API framework to allow developers a clear understanding and access
  - o Provide examples for developers
  - o Deploy the API to production
  - o Provide security and scaling
- Task 2 (CPRA/NOAA/USGS): This MAM activity task pertains directly to the interoperability, integration, and access to NRDA-funded restoration data. This specific activity entails the development and coding needed to retrieve pertinent data sets from API endpoints implemented and made available through task 1. Discussions will occur as needed between the CIMS and DIVER teams. Modifications from task 1 may or may not be identified.
  - o USGS will provide NOAA developers API documentation and overview
  - o NOAA will build necessary request URL to retrieve applicable monitoring data (e.g., CRMS, FIMP tabular data)
  - o NOAA will call the API endpoints applying necessary parameters and queries to programmatically retrieve pertinent NRDA restoration data

- o NOAA will identify and document any issues with retrieving data communicating with CPRA and USGS as needed
- ● Task 3a (CPRA/NOAA): This task will involve creating linkages between projects in CIMS and LA TIG and DIVER Restoration Projects, potentially updating the data submittal process, and implementing DIVER Data Packages and linkages between systems
    - o NOAA DIVER Developers will enhance connections between the DIVER Restoration Portal and the DIVER Environmental data warehouse to support Restoration Project ID queries.
    - o DIVER Team will expose the Project IDs and Component IDs to the CIMS team. A cross-walk will be created to allow for linking projects and environmental data between systems
    - o CPRA/NOAA will address and implement changes to data submittal to the DIVER Restoration Portal to accommodate updated data sharing and data flow. This may involve changes to the Documents tab in the Restoration Portal
    - o CPRA/NOAA will scope and implement Data Packages within DIVER for CIMS data that will provide landing pages with links to CPRA/CIMS.
- ● Task 3b (CPRA/NOAA): This task involves inputting and display of CPRA spatial data layers directly in ERMA.
    - o NOAA/CPRA will scope and implement ERMA display for CIMS data – and potentially LA TIG-wide environmental data
        - ▪ Use CIMS RESTful API for spatial data layer display in ERMA
        - ▪ Potentially establish token-based ERMA/CIMS spatial data display and exchange
    - o Discussions and review with SME for displaying spatial data layers in ERMA including NRDA Restoration CRMS sites and potentially NRDA Restoration FIMP data
    - o CPRA/NOAA will evaluate and scope development of ERMA dashboards for CIMS NRDA data

Activity Implementation Description

Project activities include:

1. **Project Planning:** Discussion with DIVER/CIMS application development teams
    a. Design application programming interface (API) framework
    b. Determine number of FTEs to assign
2. **Programming:**
    a. USGS
        i. Develop, test, and deploy API framework software solution
        ii. Expose API touchpoints
        iii. Provide API framework documentation
    b. NOAA
        i. Develop, test, and deploy software solution for data consumption (using API touchpoints) from CIMS into DIVER
        ii. Expose consumed data in NOAA applications (e.g., DIVER, ERMA)
3. **Coordination**
    a. This project will involve coordination among CPRA coastal scientists, NOAA/DIVER application team members and USGS/CIMS application team members.

b. The project team will provide periodic updates (i.e. programming milestones; implementation) on this project to the LA TIG, and to other Trustees and TIGs as needed.
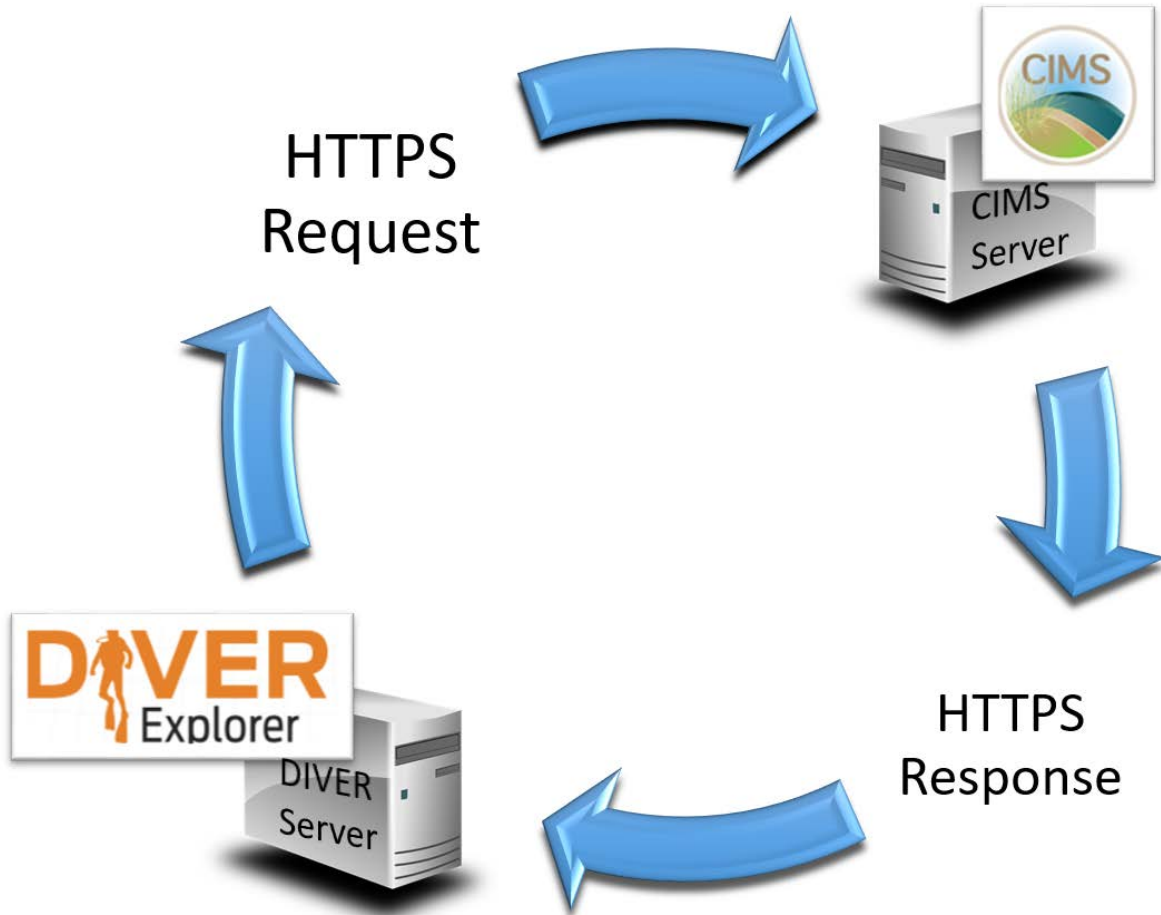

Figure 5: API REST Services Diagram.

Project Location

This project is a 100% in-office data integration activity. Data will extend from the northern CPRA Jurisdiction Area boundary to the south extending approximately 55mi beyond the Louisiana State and Federal boundary.
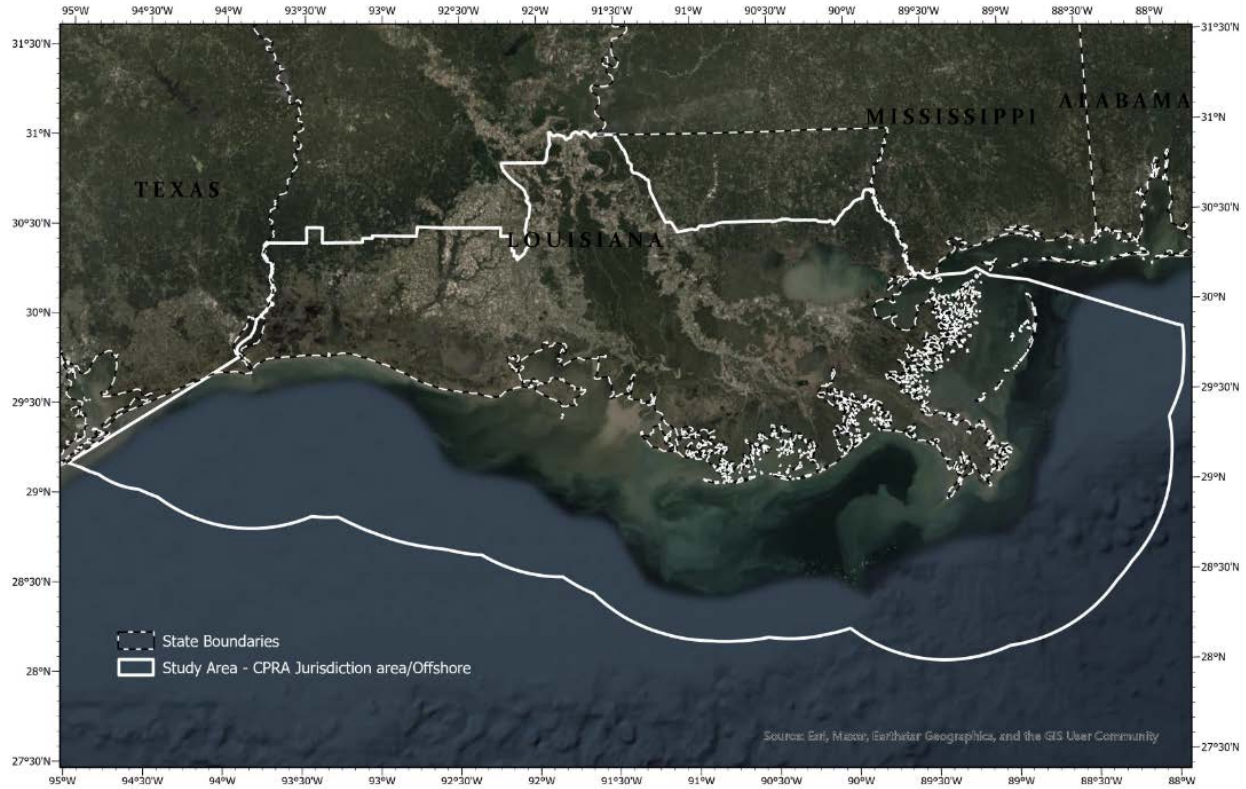

Figure 6: CPRA Jurisdiction Area boundary.

Project Outputs/Deliverables

Data sharing will promote access to and availability of collected data and monitoring results for restoration planning and decision making.

Expected project deliverable is system-to-system (CIMS to DIVER) NRDA data integration for visualization and data access.

Figure 7: CPRA NRDA funded project footprints.

- Select CIMS tabular data:

  - Pertinent CRMS tabular data
    - Accretion
      - These data are collected from specific locations within herbaceous marsh areas and forested swamp/bottomland hardwood areas, and are collected at semi-annually and annually after monitoring station establishment. Accretion measurements show rates of soil accretion or soil erosion at a location.
    - Forest Vegetation
      - These data are collected from stations that are usually either distributed randomly or along transects within a project area. Data are collected at various time intervals ranging from seasonally to every 2-3 years.
    - Marsh vegetation
      - These data are collected from stations that are usually either distributed randomly within a project area or randomly along transects within a project area. Data are collected at various time intervals ranging from seasonally to every 2-3 years.
    - Aboveground Biomass
      - These data are collected from areas that represent specific vegetative communities and are collected at approximately 5-year intervals. Parameters sampled include: aboveground live and dead vegetation biomass, vegetation species present, number of plant stems, total carbon, total nitrogen, and total phosphorus of leaf material
    - Soil Properties (includes belowground vegetation biomass)

- As part of the Coastwide Reference Monitoring System (CRMS) program, soil characteristics are surveyed approximately every 6 to 10 years at all sites. Parameters sampled include wet & dry soil pH, soil specific conductance, soil salinity, soil moisture content, bulk density, percent organic matter, and wet & dry volume. Separately, and as part of the SystemWide Assessment and Monitoring Program (SWAMP), soil characteristics, soil nutrients, and belowground vegetation biomass are collected at a subset of CRMS sites at approximately 5-year intervals. These samples are collected in association with seven target plant taxa. SWAMP parameters sampled include soil moisture content, bulk density, percent organic matter, wet & dry volume, organic density, total carbon, total nitrogen, and total phosphorus of sediment and carbon density. Belowground vegetation associated with SWAMP include live and dead biomass parameters.
  - Surface Elevation
    - These data are collected at specific locations within herbaceous marsh areas and forested swamp/bottomland hardwood areas, and are collected at various time intervals ranging from semi-annually to every two 2-3 years. The sampling parameters consist of several sediment elevation measurements taken relative to a rod driven to refusal at each location.
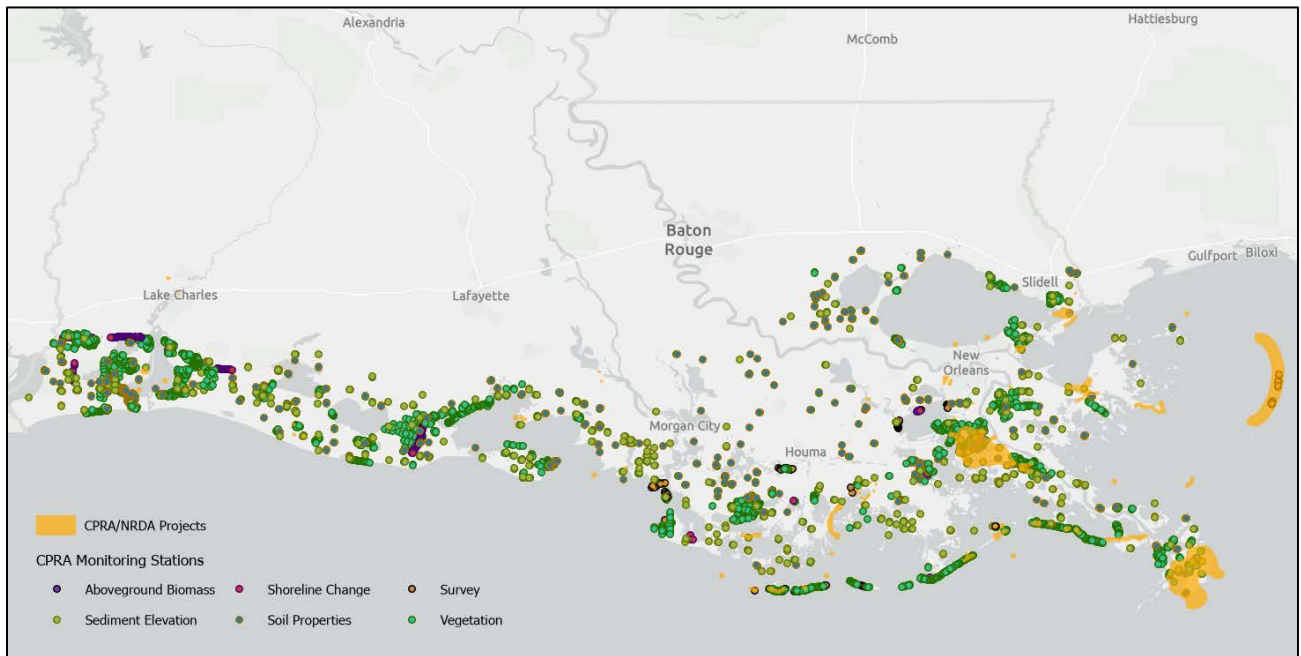

Figure 8: NRDA Funded CPRA Projects and select CRMS Monitoring Stations.

- FIMP tabular data
  - Trawls biological/physical sampling data

- Bottom trawls (6-foot, 16-foot, 20-foot) used to sample fisheries biological and physical characteristics during the LDWF sampling season (LWDF fisheries manual - LDWF 2019).

  ■ Nets/Seines biological and physical sampling data
    - Nets (seines, gill nets, trammel nets) used to sample fisheries biological and physical characteristics during the LDWF sampling season. (LDWF fisheries manual - LDWF 2019).

  ■ Mollusk/Oyster biological and physical sampling data
    - Oyster/mollusk sampling (square-meter, dredge) data. Electrofishing biological and physical sampling data
  ■ Electrofishing biological and physical sampling data
    - Electrofishing technique used to sample fisheries biological and physical characteristics during the LDWF sampling season. (LWDF fisheries manual - LDWF 2019).
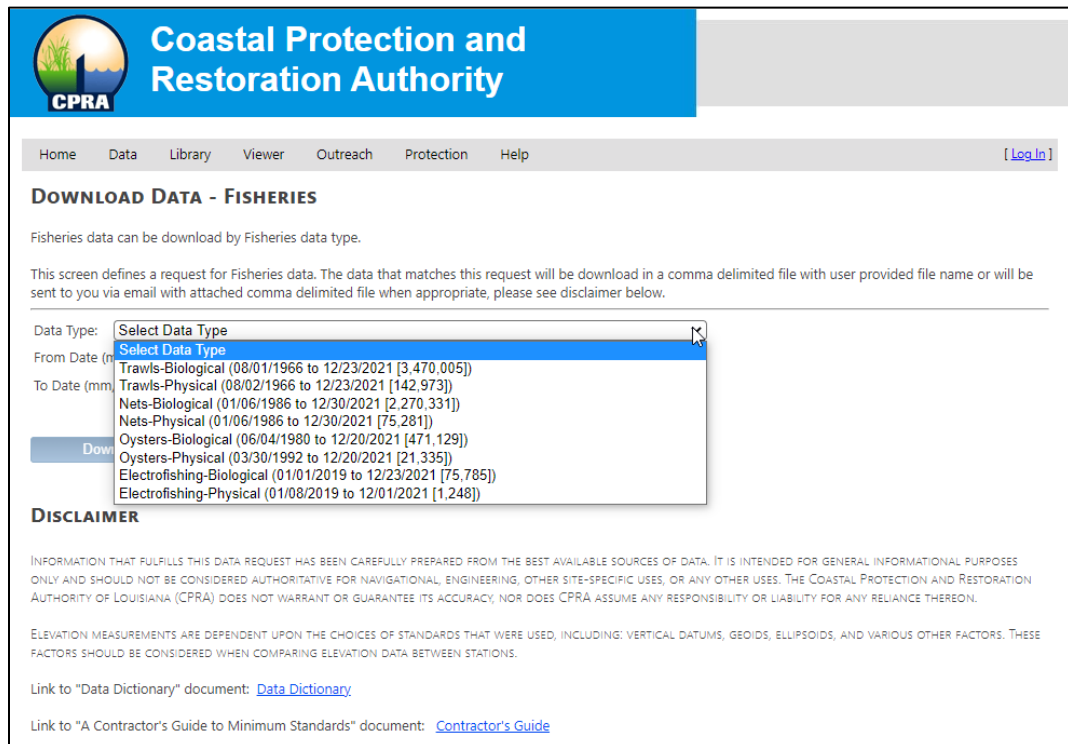

Figure 9: CPRA CIMS online interface to download FIMP data.

Intended Outcomes

The intended outcomes for this project will support the LA TIG Programmatic MAM need (identified within the LA TIG MAM Strategy in table 10, #4, item 1) to enable interoperability of CIMS, LDWF FIMP (and other datasets as necessary) and DIVER to facilitate transfer and synergies, while minimizing duplication of data access and utilization for restoration management, planning, and decision making (AM Framework Report 2.0).

Budget

Organization/Agency	Budget Amount
CPRA (USGS)	$600,000.00 (Total)
CPRA	$200,000.00
USGS	$400,000.00
NOAA	$421,762 (Total)
Total	$1,021,762.00 (Grand Total)

Schedule
This MAM Activity will be completed within a 3-year timeframe with project start-up in Federal FY23 (October 2023).

Activity	2023	2024	2025	2026
Project Initiated	X			
Project Planning	X			
CIMS API Design	X	X		
CIMS API Software Development/Documentation		X		
DIVER data consumption and transformation Software Development		X	X	
Software Development to expose consumed data within NOAA applications (e.g., DIVER, ERMA)			X	X
Final products (CIMS API Software and Documentation) Interoperability and increased data discovery of pertinent NRDA datasets within CIMS, DIVER Explorer queries and Data Packages, and ERMA spatial data layers.				X

Implementation Roles

CPRA, NOAA, and DOI/USGS are the implementing Trustees responsible for planning, organizing, and overseeing the entire CIMS to DIVER/ERMA data integration process. Additionally, CPRA will provide administration and project planning throughout task 1 and a portion of task 2 while NOAA will provide administration oversight for a portion of task 2 and task 3. Both CPRA and NOAA may provide technical input and guidance throughout the life cycle of the data integration process. CPRA/USGS will assume the technical lead role for task 1 and a portion of task 2 while NOAA will assume technical lead for a portion of task 2 and task 3. CPRA/USGS and NOAA will work both collaboratively and independently over the course of this three-year endeavor planning, building code, documenting processes, and testing applications and software. CPRA/USGS and NOAA will provide continual updates to CPRA and NOAA on project implementation, progress, adjustments, and allow for technical review and comments throughout each task.

Data Management and Reporting

The DWH Trustees, as stewards of public resources under Oil Pollution Act (OPA), will inform the public on the MAM activity's progress and performance. Therefore, NOAA will report the status of the proposed activity via the Data Integration, Visualization, Exploration, and Reporting (DIVER) Restoration Portal annually, as outlined in Chapter 7 of the PDARP/PEIS (DWH Trustees, 2016). All reports, documents, and final datasets created as part of this MAM activity, including a NOAA final summary report synthesizing the findings of the activity, will also be stored on the DIVER Restoration Portal.

Data storage and accessibility will be consistent with the guidelines in Section 3.1.3 of the MAM Manual (DWH NRDA Trustees 2021). In the event of a public records request related to data and information that are not already publicly available, the Trustee to whom the request is addressed would provide notice to the other LA TIG members prior to releasing any data that are the subject of the request.

Consistency of MAM Activity with the PDARP/PEIS

The PDARP/PEIS established goals for adaptive management at project and programmatic scales across restoration activities in the northern Gulf of Mexico related to resources injured by the Deepwater Horizon oil spill. This activity is designed to support a primary component of Adaptive Management – improving future restoration outcomes by enabling data interoperability of CIMS, LDWF, FIMP (and other datasets as needed) and DIVER to facilitate transfer of synergies, while minimizing duplication of data access and utilization for restoration management, planning, and decision making. This is also consistent with the Louisiana Adaptive Management Status and Improvement Report: Vision and Recommendations and the Louisiana Trustee Implementation Group Monitoring and Adaptive Management Strategy (Deepwater Horizon Louisiana Trustee Implementation Group, 2021; The Water Institute of the Gulf, 2020). Therefore, this MAM activity is consistent with the PDARP/PEIS.

National Environmental Policy Act (NEPA) Review

The proposed MAM activity is a desktop study only and no field or laboratory work is required.

The Trustees' approach to compliance with NEPA summarized in this section is consistent with, and tiers where applicable from, the PDARP/PEIS Section 6.4.14. Relevant analyses from the PDARP/PEIS are

incorporated by reference. Such incorporation by reference of information from existing plans, studies or other material is used in this analysis to streamline the NEPA process and to present a concise document that briefly provides sufficient evidence and analysis to address the Louisiana TIG's compliance with NEPA (40 CFR 1506.3, 40 CFR § 1508.9).

As discussed in Chapter 6 of the PDARP/PEIS, a TIG may propose funding a planning phase (e.g., initial engineering, design, and compliance) in one plan for a conceptual project, or for studies needed to maximize restoration planning efforts. This would allow the TIG to develop information needed leading to sufficient project information to develop a more detailed analysis in a subsequent restoration plan, or for use in the restoration planning process. Where these conditions apply and activities are consistent with those described in the PDARP/PEIS, NEPA evaluation is complete and no additional evaluation of individual activities is necessary at this time

NEPA Review of MAM Activity
The MAM activity would be limited to planning and data management activities for the development of a Louisiana Data Management Interoperability plan. None of the actions would negatively impact resources or have environmental consequences.

NEPA Conclusion
After review of the proposed activities against those actions previously evaluated in the PDARP/PEIS, the Louisiana TIG determined that these activities are consistent with the PDARP/PEIS evaluation of preliminary phases of restoration (planning, feasibility studies, design engineering, and permitting activities) provided in Section 6.4.14 of the PDARP/PEIS. Therefore, no further NEPA analysis is required at this time.

Compliance with Other Environmental Laws and Regulations
The proposed MAM activity is a desktop study only and no field or laboratory work is required.

The Louisiana TIG has completed technical assistance with the appropriate regulatory agencies for this MAM activity based on the description in the MAIP. Because all proposed activities are desktop activities, NOAA and DOI, on behalf of the LA TIG, determined that no effects to ESA-listed species and habitats, designated Essential Fish Habitat (EFH) and marine mammals protected under Marine Mammal Protection Act (MMPA) are expected. Thus, consultations and permits from National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) are not required.

Additionally, the proposed project was evaluated under the following statutes through a Biological Evaluation (BE) form review and it was determined that the following statutes do not apply based on the nature of the work (desktop analysis only):

- Migratory Bird Treaty Act (USFWS)
- Bald and Golden Eagle Protection Act (USFWS)
- Coastal Zone Management Act
- Coastal Barrier Resources Act (USFWS)
- Rivers and Harbors Act/Clean Water Act
- National Historic Preservation Act (Section 106)

Federal environmental compliance responsibilities and procedures follow the Trustee Council Standard Operating Procedures (SOP), which are laid out in Section 9.4.6 of that document. Following the SOP, the Implementing Trustees for each activity will ensure that the status of environmental compliance (e.g., completed vs. in progress) is tracked through the Restoration Portal. Documentation of regulatory compliance will be available in the Administrative Record that can be found at the DOI's Online Administrative Record repository for the DWH NRDA (https://www.doi.gov/deepwaterhorizon/adminrecord). The current status of environmental compliance can be viewed at any time on the Trustee Council's website: http://www.gulfspillrestoration.noaa.gov/environmental-compliance/.

Table 1. Status of federal regulatory compliance reviews and approvals for the proposed project: Louisiana Data Management Interoperability

Federal Statute	Compliance Status
Bald and Golden Eagle Protection Act (USFWS)	Not Applicable
Coastal Barrier Resources Act (USFWS)	Not Applicable
Coastal Zone Management Act	Not Applicable
Endangered Species Act (NMFS)	Not Applicable
Endangered Species Act (USFWS)	Not Applicable
Essential Fish Habitat (NMFS)	Not Applicable
Marine Mammal Protection Act (NMFS)	Not Applicable
Marine Mammal Protection Act (USFWS)	Not Applicable
Migratory Bird Treaty Act (USFWS)	Not Applicable
National Historic Preservation Act	Under Evaluation
Rivers and Harbors Act/Clean Water Act	

Literature Cited

Coastal Protection and Restoration Authority (CPRA) of Louisiana. 2018. Coastwide Reference Monitoring System. Coastal Information Management System (CIMS) database. https://cims.coastal.la.gov. Accessed January 4, 2023.

Deepwater Horizon Louisiana Trustee Implementation Group. (2021).Louisiana Trustee Implementation Group Monitoring and Adaptive Management Strategy (Final) (p. 26). Baton Rouge, LA.

DIVER. 2020. Web Application: Data Integration Visualization Exploration and Reporting Application, National Oceanic and Atmospheric Administration. Retrieved: January, 12, 2023, from https://www.diver.orr.noaa.gov

DWH NRDA Trustees. (2016). Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the Deepwater Horizon (DWH) Oil Spill. Deepwater Horizon (DWH) Natural Resource Damage Assessment Trustees.

ERMA. 2015. Web Application: Gulf of Mexico Environmental Response Management Application, National Oceanic and Atmospheric Administration. Retrieved: June, 13, 2023, from http://erma.noaa.gov/gulfofmexico

Louisiana Department of Wildlife & Fisheries. (2019). Marine Fisheries Section: *Independent Sampling Activities (Field Manual) (p. 48)*

The Water Institute of the Gulf. (2020). Louisiana adaptive management status and improvement report: Vision and recommendations (Technical Document No. Task Order 50.2, Contract No. 2503-12-58) (p. 202). Baton Rouge, Louisiana: The Water Institute of the Gulf. Prepared for the Coastal Protection and Restoration Authority (CPRA) and the Louisiana Trustee Implementation Group (LA TIG), funded by the LA TIG.