CommEn *Space*

The Comm*u*nity & En*v*ironment *Sp*atial *A*nalysis *Ce*nter

Expert Support for NOAA Damage Assessment Center's Geographic Information System Development

Introduction:

The Damage Assessment Center (DAC) uses a Geographic Information System (GIS) to support the evaluation of contaminant levels in intertidal and subtidal sediments in industrial waterways and the associated impacts on natural resources. This work depends upon data resources from a wide variety of institutions presenting data organization and registration (spatial alignment) challenges. Effective evaluation of sediment contaminant levels requires conversion of field sediment samples to contaminant footprints that are suitable input for Habitat Equivalency Analysis (HEA). Damage to natural resources and habitats are based upon proximity to contaminant concentrations.

In meeting the challenges of data organization, registration and analysis to support contaminant impact assessments, DAC has encountered limitations in both the functionality of commercially available GIS software packages and staff technical skills. CommEn Space provides custom GIS and spatial data solutions for community and environmental applications through tool development, staff training and data base design. This document presents a series of action steps designed to overcome the difficulties experienced by DAC and contribute to the optimal utilization of desk-top GIS operations at DAC.

Challenges Expressed by DAC:

In the Statement of Work (SOW) dated July 5, 2000, DAC expressed three main data analysis/management needs:

(1) Delineating injury footprints from more than two dozen substances of concern and relating injury footprints to several habitat data layers;
(2) Establishing a locator grid system to identify specific injury footprints with specific potentially responsible parties (PRPs)
(3) Registering geographic data from external sources that were developed with different geographical projections (e.g., NAD27 (North American Datum for 1927) and NAD83) to NOAA data resources.

Accomplishing these specific needs will require review of the DAC GIS database for the purpose of assuring its efficient organization and effective data/analysis documentation practices.

Proposed Actions:

The following action steps reflect DAC's needs as expressed in the SOW. Modifications to the original action steps and their order have been made in an effort to provide a cohesive and comprehensive development and training initiative that will serve DAC in future GIS initiatives. In the event that DAC's expressed needs in a given activity are found to be beyond of those stated in the SOW, CommEn Space will complete the activity up to the limits of the contract resources.

Activity 1 – Kick-off Meeting with NOAA:
A half-day meeting to exchange information on the current state of DAC's GIS activities and discuss the multiple uses of output from GIS analyses.

Activity 2 – Database Design:
All GIS initiatives require a well-organized database supported by protocol for additions, updates and edits.

2a. Establish Data Directory and Operating Procedures –
CommEn Space will review DAC's data holdings and suggest an organizing structure to facilitate analysis implementation. Restructuring of DAC's data resources will be prioritized and implemented as permitted by the constraints of the contract.

2b. Staff Orientation on Data Directory
Staff will be trained on the main features of the data directory and how to extend its structure to accommodate new contents.

2c. Data Coordinate & Projection Solution
Following an assessment of the most common projection problems faced by DAC, CommEn Space will provide a processing solution implemented in ArcView 3.2. Suggestions for alternate projection solutions will be made in the event that ArcView is not suitable for a given projection task.

2d. Staff Training on Projections
Training will familiarize DAC staff on what data and what projection operations are suitable in ArcView and when other alternatives should be applied.

2e. Assess Metadata & Data Documentation Needs
CommEn Space will review the organizational and logistical needs of DAC and suggest an appropriate data and analysis documentation procedure.

2f. Staff Training on Metadata
DAC staff will be trained on how to document the data sets they produce.

Activity 3 - Data Integration/Analysis Design

Data analysis design and support will focus on developing solutions to contaminant footprint delineation and analysis to support Habitat Equivalency Analysis for the Hylebos Waterway.

3a. Analysis Methods Review

Following Activity 1, CommEn Space will review current spatial analysis practices that could support DEC's contaminant footprint analyses.

3b. Design

Given the existing data resources, accuracy requirements, output specifications and other intended uses, CommEn Space will design appropriate spatial analysis support methods and tools.

3c. Pilot Implementation

The methods and tools will be tested and refined on sample data to assure they are effective and replicable.

3d. Staff Training

DAC staff will be instructed and coached in implementation of the analysis procedures.

3f. Draft Report

Upon request, CommEn Space will provide an interim report on the analysis methods and tool support developed for DAC.

Activity 4 - Final Documentation

4a. Verbal Report/Presentation

4b. Written Report

Upon request, CommEn Space will provide a final report on the analysis methods and tool support developed for DAC.

Additional Considerations:

Prior to and during the performance of the services, CommEn Space will take all steeps deemed necessary by DAC to avoid, mitigate or neutralize any actual or apparent conflict of interest.

All information collected and reported, including supporting documentation as well as reports generated in draft or final form by CommEn Space will remain the sole property of the Government and shall not be released, removed from the Program's offices, or used in any manner not specifically associated with the Program without specific approval of the Government.

CommEn Space is aware that DAC's spatial analysis activities support natural resource injury compensation and all steps in the analysis must withstand litigative scrutiny. All analysis and tool design will use processes and yield results that are clearly reproducible and are operationally consistent.

Licensing:
All software tools developed by CommEn Space in the course of this project will remain the intellectual property of CommEn Space. DAC will enter into a non-transferable user agreement with CommEn Space for unlimited use of software tools, but is prohibited from distribution of said tools. CommEn Space will provide technical support for the tools provided for the duration of the contract.

Execution:
CommEn Space is confidant that all activities can be accomplished within the time limitations expressed in the SOW.

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