

# **PRODUCTION AND ANALYSIS OF AN OIL SPILL DATABASE FOR LOUISIANA**

Robert Gramling, Craig Forsyth, George Wooddell  
University of Louisiana at Lafayette

**Technical Report Series  
00-003**

---

## **DISCLAIMER**

This report was prepared under a contract between The University of Louisiana at Lafayette and the Louisiana Applied and Educational Oil Spill Research and Development Program (OSRADP). The contents of this document do not necessarily reflect the views and policies of the Louisiana Oil Spill Coordinator's Office—Office of the Governor or those of the Louisiana Applied and Educational Oil Spill Research and Development Program, nor does mention of trade names or commercial products constitute endorsement or recommendation for use by the state of Louisiana.

## **REPORT AVAILABILITY**

Additional copies of this report may be obtained by writing to:

The Louisiana Applied and Educational Oil Spill Research and Development Program  
2000 Deliverables  
258 A/B Military Science Building  
Baton Rouge, Louisiana 70803  
Telephone Number: (225) 578-3477 ● FAX Number (225) 578-0403  
*or from*

The Louisiana Oil Spill Coordinator/Office of the Governor  
Natural Resources Building, 625 North 4<sup>th</sup> Street, Room 800  
Baton Rouge, LA. 70802  
Telephone Number: (225) 219-5800 ● FAX Number (225) 219-5802

---

## **TABLE OF CONTENTS**

[1.0 Introduction](#)

[2.0 Data Availability](#)

[3.0 Methods](#)

---

## **Production and Analysis of an Oil Spill Database for Louisiana**

---

### **Abstract**

This is an interim report for a two year data collection and archiving project. The final deliverable will be a database of oil spills in and off the coast of Louisiana between 1992 and 1999. When combined with information that the Oil Spill Coordinator's office has been collecting since 2000, this database will provide continuously updated coverage of oil spills from 1992. For each spill, a variety of information will be included, such as the latitude and longitude coordinates, the size of the spill, the substance spilled (e.g. crude oil, diesel fuel etc.), the cause of the spill, and a description of the physical location.

---

### **1.0 Introduction**

Effective oil spill prevention and response requires data about the types and locations of previous spills. Using modern PC based databases and Geographic Information (GIS) technology to analyze oil spills' latitudes and longitudes, spill prevention and response organizations can perform their own analyses of spill patterns and tailor their organizational behavior accordingly. But until recently, researchers had not compiled the large GIS databases needed for this type of analysis in Louisiana. Our two year project is meeting this need and developing an extensive database for Louisiana oil spills since 1992.

### **2.0 Data Availability**

The records of the National Response Center (NRC) are the primary source of information concerning oil and chemical spills in the United States. The NRC serves as the sole national point of contact for reporting all oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories. The NRC is staffed by Coast Guard personnel who maintain a 24 hours a day,

365 days a year telephone watch. NRC watch standers enter telephone reports of pollution incidents into the Incident Reporting Information System and immediately relay each report to the predesignated federal on-scene coordinator. Spills occurring in Louisiana are also forwarded to the Louisiana Oil Spill Coordinator's office. The information collected is recorded on a standard form that has entries for the spill location (including address, latitude, longitude, and township range), date and time of the spill, cause of the spill, a "chris code" that identifies the substance spilled, remedial actions taken, and monetary damages. If the spill involves a vessel in the navigable waters of the U.S., the Coast Guard becomes the federal on-scene coordinator. In these cases, the latitude and longitude of the spill are recorded.

However, because most spills are not in navigable waters, they are reported by a wide variety of individuals who do not know the spills' latitudes or longitudes. As a result, approximately three quarters of the incidents (2097 of 2953 for 1997) reported do not have map coordinates associated with them. Most incidents' locations are reported with an address or a description of the location (e.g. "3.5 miles out Highway 90," or "the intersection of Highway 82 and 90"). These locations cannot be loaded into analytical software such as geographic information systems, or even entered into standard database programs that monitor trends. Thus, geographic or other spatial analysis is not possible until coordinates can be assigned to each incident.

There are two important reasons to spatially analyze the distribution of oil spills in Louisiana. The first reason is prevention. Until we know in some coherent fashion where spills are occurring, we cannot extrapolate from the past to address underlying causes of spills. Current prevention data are largely unorganized or in records that cannot be mapped. As a result, trends cannot be established in any meaningful way. The second reason to tie spill incidents to map coordinates is that spatial data can be used to enhance spill response. For example, if the proper database was available, spill response contractors and the Louisiana Oil Spill Coordinator's Office could map past spills that required a response. Knowing that certain locations in their response region are high probability spill sites would allow contractors to develop contingency plans in advance. Spatial analysis is also important for any attempt to determine such factors as migration of oils through drainage basins, the potential for water table seepage, and overall environmental impacts. Such determinations cannot be made, however, until the data of the NRC is mapped.

The current project is adding map coordinates to the NRC data in order to make this information available to the Oil Spill Coordinator's office and industry. The data will be put in standardized machine readable format that can be directly loaded as a layer in the GIS Louisiana Oil Spill Contingency Plan Map. The project will also perform initial spatial analysis. The primary deliverable of the project will be a database that includes all of the reported spills in Louisiana between 1992 and 1999. When coupled with the data the Oil Spill Coordinator's office has been collecting since 2000, the resulting database will provide continuously updated coverage of oil spills from 1992. The year 1992 was established as the cut off date since the Coast Guard changed its reporting format in that year. As a result, data prior to 1992 is not as reliable as data in the new format. Based on

our examination of the 1997 data, we estimate that this database will include between 25,000 and 30,000 cases. The database will be included (with a readme file describing the data fields in detail) on the CD ROM that the Louisiana Oil Spill Research and Development Program produces each year to showcase its annual research deliverables. In addition to the full database, spills greater than five gallons will be extracted and provided in a separate database. The smaller database will allow industrial users, whose spreadsheets may not easily accommodate 30,000 entries, to do their own analysis. Other project deliverables include a standard report describing how the coordinates were generated, any limitations, and the results of the preliminary spatial analysis.

### **3.0 Methods**

Eight years of data from the NRC have been downloaded from the Web. Louisiana cases involving petroleum products have been removed from the national database and loaded into an Excel spreadsheet. The data were then sorted by parish. Students trained in the use of Excel, Delorme Street Atlas, and the associated electronic phone book software then began the ongoing mapping process.

If we have a spill address or the name of the facility where the incident occurred, Delorme can usually find it. The latitude and longitude can then be read directly from the software and entered into Excel. If there is no address, but the description is fairly precise (e.g. 3.5 miles north on Hwy 321 from the intersection with Hwy 31), the location can be visually located and pinpointed. The latitude and longitude can then be directly read from the Delorme Atlas. For locations that are less precisely defined (e.g. Iberia Field 10 miles east of New Iberia, or Exxon refinery, New Orleans), we use another off the shelf software program, Delorme Topo. This program uses an electronic version of USGS quad sheets and charts of the major waterways to obtain latitude and longitude coordinates. In approximately 5 to 10% of the cases, the description is so vague (e.g. "off Highway 190" or "Port Barre, LA") that attempts to provide coordinates would be misleading. These cases will be left in the database for non-spatial analysis; they will not be assigned latitudes and longitudes. Some locations are important to include in the database (because of the size of the spill, or multiple spills) but cannot be located due to outdated quad maps (some Louisiana quad maps are as old as 1951). These sites will be visited and shot in with a global positioning system.

We are now entering the second year of an effort to add map coordinates (latitude and longitude) to records of hazardous spills in Louisiana and make these data available in standard database format. We have accomplished more than half of this goal (see Table 1).

We have encountered one complication: oil spills that do not impact waterways are not classified as hazardous and are not reported to the NRC. The Louisiana Department of Environmental Quality (LDEQ) does record dry land oil spills, and the data are public. So far, however, we have been unable to obtain the LDEQ data. We are seeking help

toward that end. If we are successful in obtaining the requisite data from LDEQ, we will deliver a database that not only includes the coordinates of each spill for eight years, but also the material spilled, the amount spilled, contact information on the potentially responsible party, road and other infrastructure closings associated with the spills, the date and time of the spill, and all other data reported about the spill (see Appendix A for a case study from the database, transposed for formatting purposes).

## Appendix A

NRC Case	371914	371919
N	29.03.1	92.12.632
W	89.18.9	92.12.632
Location	PLATFORM: L OCSG: 0133	BUCK POINT FIELD
Parish	GRAND ISLE	VERMILLION
City		INTERCOASTAL CITY
Zip		
ChrisCode	OHY	OMT
Material	HYDRAULIC OIL	OIL, MISC: MOTOR
QTY	0.02	4
Unit	GAL	GAL
QtyinH2O	0.02	4
UnitH2O	GAL	GAL
Date Call	01/01/97	01/01/97
Type Call	STANDARD REPORT	STANDARD REPORT
This Inc	Occurred	Occurred
Date Time	01/01/97 08:00am	01/01/97 08:00am
Type Inc	OFFSHORE	MARINE
Milepost		
State	LA	LA
Suspect	CONOCO	FALCON INLAND
sAddress	PO 51266	PO BOX 1968 24 CONCORD RD
sCity	LAFAYETTE	HOUMA
sState	LA	LA
sZip	70508	

Cause	UNKNOWN	
Description	Hydraulic line on crane on offshore platform/unknown cause at time of report	Equipment failure Engine on a small crew boat Engine blew a piston
Medium	GULF OF MEXICO	FRESH WATER CANAL
Affected	WATER	WATER
deaths		
Injuries		
Damages	NO	NO
Evacuations	NO	NO
Nevac		
Airclosed	NO	NO
Roadclosed	NO	NO

---

**Table 1** Completion

	1992	1993	1994	1995	1996	1997	1998	1999
Missing	1,956	175	282	535	4,735	2,182	806	
Percent Missing	39%	4%	6%	11%	88%	42%	16%	100%
All records	4,966	4,439	4,899	4,675	5,387	5,194	4,897	

---