

Project No. 421167
January 1988



#7
Final Report

Endangerment Assessment

**Brio Refining Inc. and
Dixie Oil Processors Site**

Friendswood, Texas

prepared for

Brio Task Force

In Fulfillment Of Consent Order Requirements
Docket No. CERCLA VI-9-85

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ENDANGERMENT ASSESSMENT
BRIO REFINING INC. AND
DIXIE OIL PROCESSING SITE
FRIENDSWOOD, TEXAS

Prepared for:
BRIO TASK FORCE

Prepared by:
IT CORPORATION
Project No. 421167

January 1988

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**ENDANGERMENT ASSESSMENT
BRIO/DOP SITE
HARRIS COUNTY, TEXAS**

1.0 INTRODUCTION

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Part 300) requires development of an Endangerment Assessment (EA) at sites listed on the National Priorities List (NPL) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986.

The objective of the EA is to identify possible risks to human health and the environment due to exposure to hazardous materials present in the environmental media at these sites. This EA is designed to identify and evaluate those risks for two adjacent Superfund sites: the Brio Refining and Dixie Oil Processors (Brio/DOP) sites.

This EA documents that determination of endangerment and serves as the basis for evaluating the alternative in the Feasibility Study (FS). In addition, the EA characterizes one of the selection criteria for the remedial alternatives, namely public health concerns. It establishes the site baseline condition and is an assessment of the risks represented by those baseline conditions assuming no future action.

The principal guidance document used to prepare this EA is "The Endangerment Assessment Handbook", ICAIR Life Sciences Inc. U. S. Office of Waste Programs Enforcement, draft dated August 1985 (ICAIR, 1985).

Specifically the scope and content of the EA include all of the data and information required in a Level 3 EA document (i.e., the most quantitative detail) as defined in Chapter 5 of the above citation.

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Other endangerment assessment guidance documents, health risk assessment reports and references consulted in the preparation of this EA, include:

- Versar (1986) Superfund Exposure Assessment Manual, Draft, Washington, D.C.: U.S. EPA, Office of Emergency and Remedial Response. Contract No. 68-01-6871, draft dated January 14, 1986.
- EPA (1986) Superfund Public Health Evaluation Manual, Washington, D.C.: U.S. EPA, Office of Emergency and Remedial Response. Contract No. 68-01-7090 Task 7, EPA 540/1-86/060, October 1986, (prior drafts dated December 18, 1985 and May 22, 1985 were entitled Superfund Health Assessment Manual).
- ICAIR, Life Systems Inc. (1985) Toxicology Handbook: Principles Related to Hazardous Waste Site Investigations, Draft, Washington, D.C.: Environmental Protection Agency, Office of Waste Programs Enforcement, Contract No. 68-01-7037, draft dated August 1985.
- EPA (1984) Endangerment Assessment Guidance, internal memorandum from Lee Thomas, EPA Administrator, to EPA Regional Administrators, Regions I-X.
- EPA (1985) Endangerment Assessment Guidance, Draft, memorandum from J. Winston Porter, EPA Asst. Administrator, dated September 20, 1985.
- EPA (1986) Guideline for Carcinogenic Risk Assessment (Federal Register, September 24, 1986).
- EPA (1986) Guideline for Exposure Assessment (Federal Register, September 24, 1986).
- EPA (1986) Guideline for Mutagenicity Risk Assessment (Federal Register, September 24, 1986).
- EPA (1986) Guideline for Assessment of Chemical Mixtures, (Federal Register, September 24, 1986).
- EPA (1986) Guideline for Assessment of Suspect Developmental Toxicants (Federal Register September 24, 1986).
- U.S. Interagency Staff Group on Carcinogens (1986) "Chemical Carcinogens: A Review of the Science and its Associated Principles", Environmental Health Perspectives, Vol. 67, pp. 201-282.

Chapter 2 summarizes the characterization of the site as contained in the Remedial Investigation (RI) and Summary Remedial Investigation (SRI). It provides general site information and describes the location and physical setting. Past history of residuals and crude oil processing is described to give insight into the origin of chemical constituents detected in the various environmental media. Past investigations described in the RI were used as background information. The RI and SRI chemical analytical data are summarized in the context of the EA requirements. Occurrence and distribution of constituents of concern are described in order to focus on potential exposure pathways.

In Chapter 3, the potential for mobility, transport, and environmental fate of the individual constituents found at the Brio/DOP site is presented, based on their chemical and physical properties and the site characteristics.

The hazards associated with the site specific constituents are identified in Chapter 4. Chemicals of concern are selected to represent the hazards posed by the site on the basis of concentration levels, toxicity, frequency of detection as a measure of prevalence across the site in various media, and persistence in the environment. The site constituents are evaluated in terms of acute, subchronic, and chronic toxicity; carcinogenicity; mutagenicity; and potential health consequences.

Chapter 5 describes the site-specific exposure assessment. Receptors, both human and environmental, are defined using appropriate descriptions. Pathways for potential exposure are postulated and evaluated for plausibility. Exposure concentrations, where appropriate for this pathway assessment, are calculated at the potential receptor locations for the postulated scenarios.

Chapter 6 evaluates current risks resulting from existing site conditions. This analysis assumes that there will be no future change in transport and migration pathways.

Chapter 7 considers future risks that might result from such changes in site conditions such as erosion of the cover on the existing pits, etc. Acceptable levels of chemical constituents are established for specific exposure pathways

by assuming that these pathways, while not posing a significant health risk now, may do so in the future. Appropriate clean up goals that adequately protect the public health and environment are established in Chapter 7.

Interrisk comparisons, presented in Chapter 8, provide perspective associated with the calculated risk levels. The conclusions derived from the EA are presented in Chapter 9.

2.0 SITE HISTORY AND CHARACTERIZATION

The EA is designed to be a concise, self-contained document. Therefore, a short site description and history is presented in order to furnish relevant site background information. The site description presents the general characteristics of the site and its setting. The history of activities at Brio/DOP is intended to assist the reader in understanding how current site conditions developed.

This EA covers two adjacent Superfund site locations: the Brio Refining (Brio) site and the Dixie Oil Processors (DOP) site. The site location and vicinity maps are shown in Figures 2-1, 2-2, and 2-3. The following section describes each site in terms of operational history and previous investigation results.

2.1 SITE DESCRIPTION AND HISTORY

2.1.1 Site Location

The Brio and DOP sites are located in Harris County approximately 20 miles southeast of Houston, Texas. The sites are about 1.5 miles southwest of Interstate Highway 45 South (Gulf Freeway) at the Ellington Field exit. Friendswood is located approximately 1 to 2 miles to the south. As shown in Figure 2-2, the Brio and DOP sites are located north and south of Dixie Farm Road. For ease of reference, portions of both sites occurring north of Dixie Farm Road are designated "North", while those south of Dixie Farm Road are designated "South".

The Brio North and DOP North parcels are separated by a flood control ditch, a local tributary of Clear Creek designated as Mud Gully. The gully runs generally from north to south along the western boundary of the Brio property and discharges into Clear Creek. Clear Creek flows from west to east about one-half mile south of the site. Brio North is bordered to the northwest by Southbend Subdivision and to the northeast by Beamer Road. DOP North is

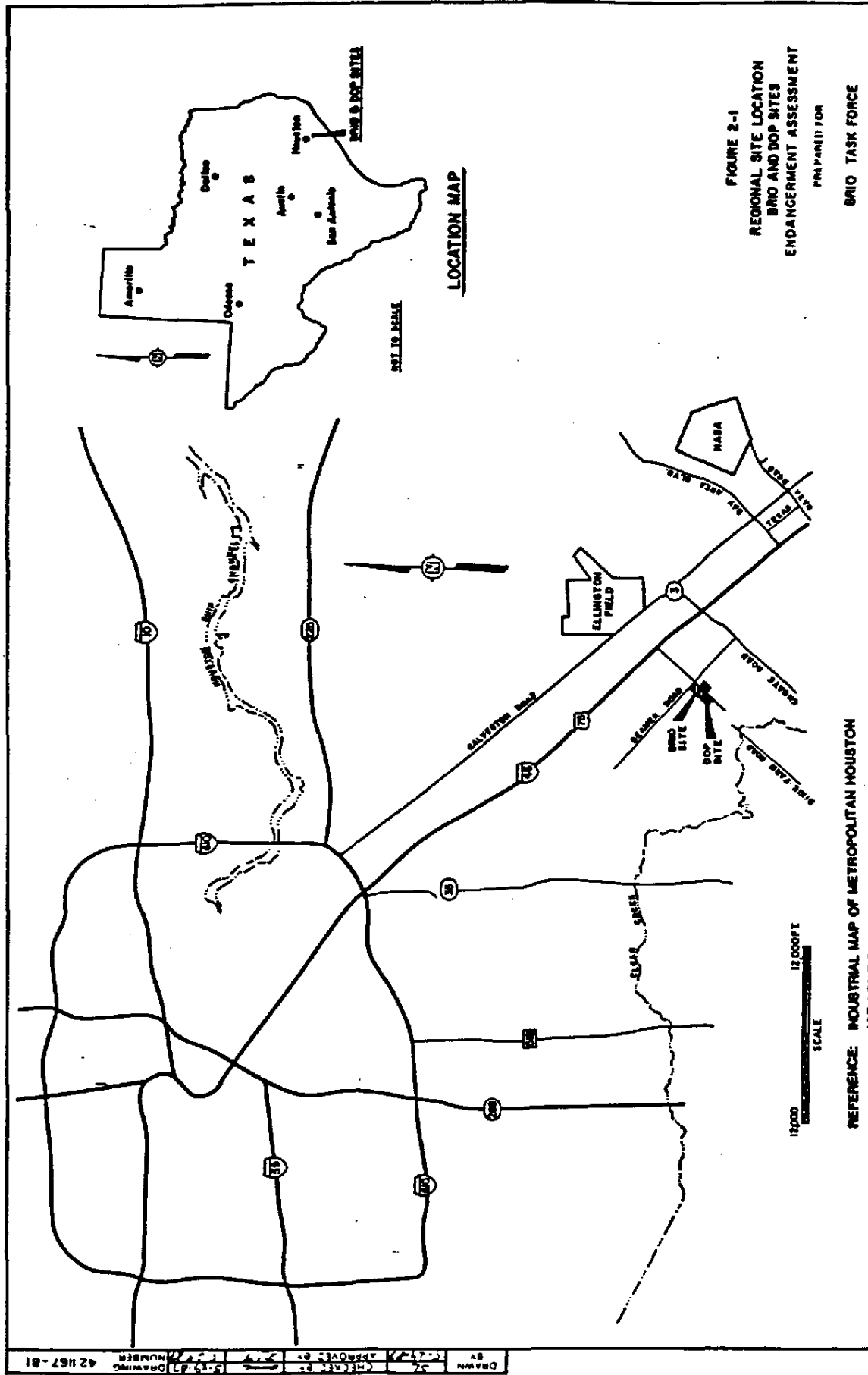


FIGURE 2-1
REGIONAL SITE LOCATION
BMD AND DOP SITES
ENDANGERMENT ASSESSMENT
PREPARED FOR
BRIO TASK FORCE

REFERENCE: INDUSTRIAL MAP OF METROPOLITAN HOUSTON
10TH EDITION
EDITED BY SOUTHWEST BANKS

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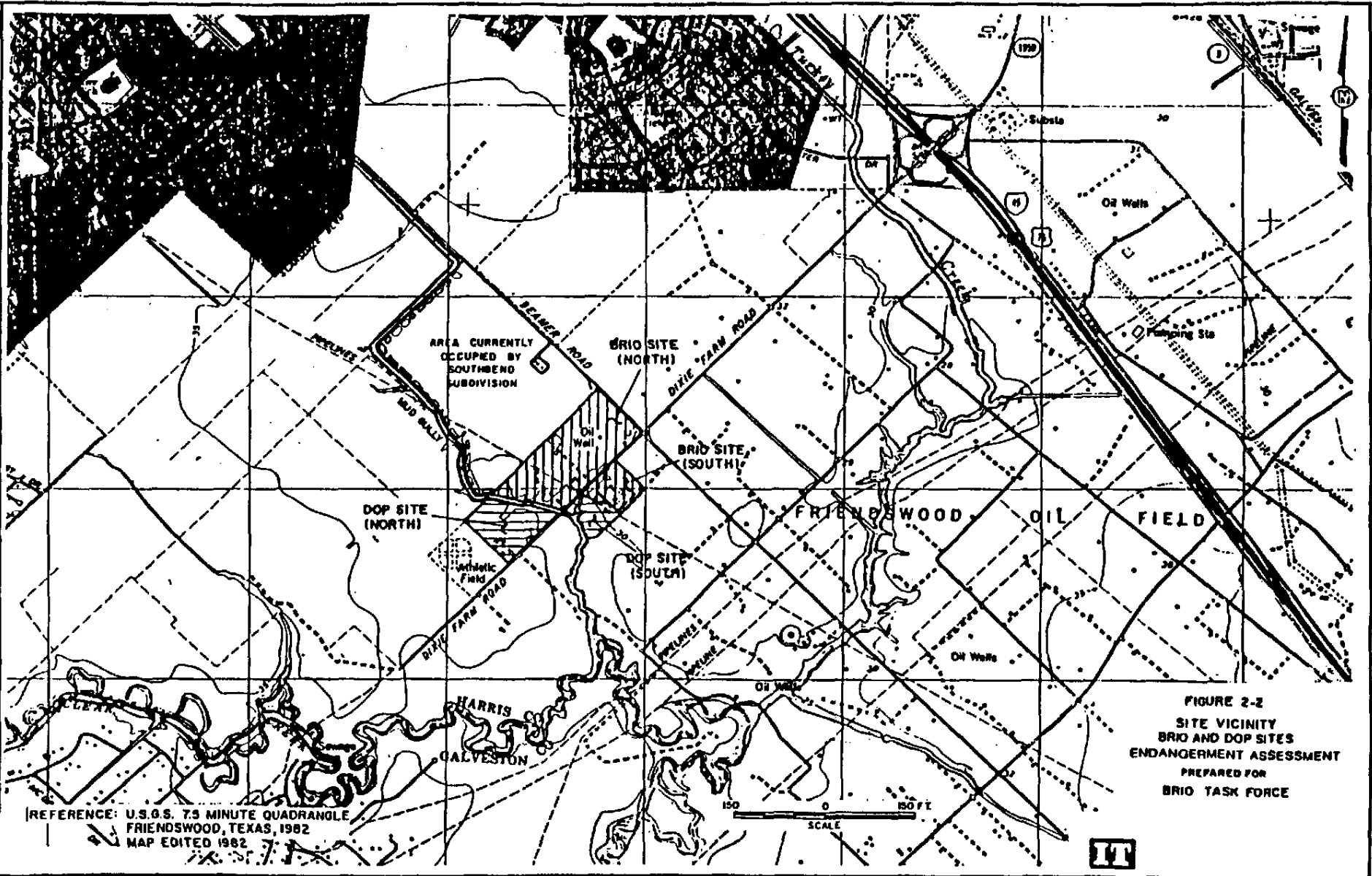


FIGURE 2-2
 SITE VICINITY
 BRIO AND DOP SITES
 ENDANGERMENT ASSESSMENT
 PREPARED FOR
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Do Not Scale This Drawing